N00213.AR.000541
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SITE ASSESSMENT REPORTS FOR FORMER MISSILE HAWK SITES SITE G-01 GEIGER KEY AND SITE B-01 BOCA CHICA KEY NAS KEY WEST FL
2/1/2002
BLASLAND, BOUCK AND LEE

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Susan Collins

Site Assessment Reports

Former Hawk Missile Sites
Site G-01 – Geiger Key
Site B-01 – Boca Chica Key

Naval Air Station
Public Works Department
Key West, Florida

February 2002

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

REPORT

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Statement of Geologic Review

In accordance with Chapter 492.111 (3) of the Florida Statutes, these Site Assessment Reports prepared for the Former Hawk Missile Sites B-01 and G-01, located at Naval Air Station (NAS) Key West, Florida have been reviewed by a Professional Geologist registered in the state of Florida.

Approved for Submittal:

Amanda Shearer, P.G.
License No. 0001116
Date: February _____, 2002

Table of Contents

Section 1. Introduction and Background Information 1-1

1.1 Purpose 1-1
1.2 Site Locations and Areas of Investigation 1-1
1.3 Previous Investigations 1-2
1.3.1 Site G-01 1-2
1.3.2 Site B-01 1-2
1.4 Regional Geology and Hydrogeology 1-2
1.5 Potable Well Survey 1-3
1.6 Aquifer Classification 1-3

Section 2. Site Assessment – G-01 2-1

2.1 General 2-1
2.2 Soil Sampling and Analysis 2-1
2.3 Monitoring Well Installation 2-2
2.4 Groundwater Sampling and Analysis 2-2
2.5 Site-Specific Geology 2-4
2.6 Aquifer Characteristics 2-4
2.7 Groundwater Flow 2-5

Section 3. Site Assessment – B-01 3-1

3.1 General 3-1
3.2 Soil Sampling and Analysis 3-1
3.3 Monitoring Well Installation 3-1
3.4 Groundwater Sampling and Analysis 3-2
3.5 Site-Specific Geology 3-3
3.6 Aquifer Characteristics 3-3
3.7 Groundwater Flow 3-4

Section 4. Conclusions and Recommendations 4-1

4.1 Conclusions 4-1
4.2 Recommendations 4-2
4.2.1 Natural Attenuation Monitoring Plan – Site G-01 4-2
4.2.2 Natural Attenuation Monitoring Plan – Site B-01 4-3

Section 5. References 5-1

Figures

1-1 Site Location Map - Site G-01
1-2 Site Location Map - Site B-01
2-1 Site Vicinity Map - Site G-01
2-2 Site Map - Site G-01
2-3 Soil OVA Map - Site G-01
2-4 VOAs, EDB & Lead in Groundwater - Site G-01

2-5 PAHs, Naphthalenes & TRPH in Groundwater - Site G-01
2-6 Hydraulic Gradient (Low Tide) - Site G-01
2-7 Hydraulic Gradient (Mid Tide) - Site G-01
3-1 Site Vicinity Map - Site B-01
3-2 Site Map - Site B-01
3-3 Soil OVA Map - Site B-01
3-4 Groundwater Quality - Site B-01
3-5 Hydraulic Gradient (Mid Tide) - Site B-01
3-6 Hydraulic Gradient (Low Tide) - Site B-01

Tables

2-1 Summary of Organic Vapor Analysis - Site G-01
2-2 Summary of Detected Soil Analytical Parameters - Site G-01
2-3 Summary of Soil Analytical Data (Synthetic Precipitation Leaching Procedure) - Site G-01
2-4 Monitoring Well Completion Summary - Site G-01
2-5 Summary of Groundwater Analytical Data Purgeable Aromatics, EDB and Lead - Site G-01
2-6 Summary of Groundwater Analytical Data Polynuclear Aromatic Hydrocarbons and TRPH - Site G-01
2-7 Tidal Influence on Water Levels - Site G-01
3-1 Summary of Organic Vapor Analysis - Site B-01
3-2 Summary of Detected Soil Analytical Parameters - Site B-01
3-3 Summary of Soil Analytical Data (Synthetic Precipitation Leaching Procedure) - Site B-01
3-4 Monitoring Well Completion Summary - Site B-01
3-5 Summary of Groundwater Analytical Data Purgeable Aromatics, EDB and Lead - Site B-01
3-6 Summary of Groundwater Analytical Data Polynuclear Aromatic Hydrocarbons and TRPH - Site B-01
3-7 Tidal Influence on Water Levels - Site B-01

Appendices

A Soil Analytical Data - Site G-01
B Well Completion Logs - Site G-01
C Groundwater Analytical Data - Site G-01
D Slug Test Results - Site G-01
E Soil Analytical Data - Site B-01
F Well Completion Logs - Site B-01
G Groundwater Analytical Data - Site B-01
H Slug Test Results - Site B-01

1. Introduction and Background Information

This document comprises two Site Assessment Reports (SARs). Blasland, Bouck & Lee, Inc. (BBL) prepared these SARs to document investigations associated with diesel fuel discharges discovered during closure of aboveground storage tanks (ASTs) at two former Hawk Missile sites at the U.S. Naval Air Station (NAS) Key West. The locations are: 1) former Hawk Missile Site AST G-01 on Geiger Key and 2) former Hawk Missile Site AST B-01 on Boca Chica Key. There is no Florida Department of Environmental Protection (FDEP) facility identification number for the B-01 site. The FDEP facility identification number for Site G-01 is 9300860.

1.1 Purpose

The purpose of the Site Assessments (SA) were to determine the degree and extent of potential soil and groundwater impacts by petroleum product resulting from the discharge of an unknown quantity of diesel fuel, and to determine the factors controlling contaminant migration. BBL personnel performed the assessments in accordance with Florida Administrative Code (FAC) Chapter 62-770.

Pursuant to Contract Number N62467-99-D-2745, under Task Order 0015, Mod 01, the United States Navy (USN) authorized BBL to initiate SA activities at both sites on June 29, 2001. This report presents a summary of SA activities, results of the soil and groundwater quality assessment, and recommendations for site rehabilitation.

1.2 Site Locations and Areas of Investigation

This report encompasses two site assessments:

1) former Geiger Key Hawk Missile Site (Site G-01) on Boca Chica Road on Geiger Key and,
2) former Boca Chica Hawk Missile Site (Site B-01) on the north end of Boca Chica Key.

Both sites are located in the Florida Keys on property owned by the Navy, in Monroe County, Florida.

The two sites are very similar in design. Each site formerly had a 2,000-gallon and a 500-gallon AST containing diesel fuel. The tanks were removed in April 1996 at B-01 and closed in place at site G-01. The sites consist of gravel pads where the 2,000-gallon tanks sat adjacent to a one-story concrete maintenance building and the 500-gallon tanks were adjacent to another similar size building approximately 300 feet away from the 2,000-gallon tank. Other buildings in the area include concrete storage areas, towers and buildings associated with the former Hawk Missile sites. Both areas are out of use, with the exception of a NOAA tower, 1,000-gallon JP-5 AST and emergency generator at site B-01. The existing AST at site B-01 was installed in May 1996, and is double-walled, contained within a vault, with level gauges and an alarm, and is approximately 250 feet west of the study area for this SA.

The site locations are shown on **Figures 1-1** and **1-2**. Site G-01 is located in Section 27, Township 67 South, Range 26 East, and Site B-01 is located Section 19, Township 67 South, Range 26 East, as referenced on the Boca Chica Key, Florida U.S. Geological Survey (USGS) topographic quadrangle map. The elevations of the sites are less than 5 feet above mean sea level (MSL).

According to the USGS 7.5-minute series topographic map for Boca Chica Key, Florida (1971), the Atlantic Ocean is within 500 feet to the south, east and west of the G-01 site. The Gulf of Mexico is within 500 feet to the north, east, and west of the B-01 site. There are wetlands (saltwater ponds) with mangroves located within a few feet of each of the sites.

1.3 Previous Investigations

1.3.1 Site G-01

This site previously had a 2,000-gallon and a 500-gallon AST used to store diesel fuel for emergency generators. The ASTs were properly closed in place on April 27, 1996. The Closure Report indicated that the soil and groundwater in the vicinity of the 2,000-gallon AST showed signs of petroleum hydrocarbons above the state target levels and recommended that a Contamination Assessment be performed. The Navy submitted a Closure Assessment Form to the FDEP on June 17, 1996.

1.3.2 Site B-01

This site previously had a 2,000-gallon and a 500-gallon AST used to store diesel fuel for emergency generators. The ASTs were properly closed by removal on April 14, 1996. The Closure Report indicated that the soil and groundwater in the vicinity of the 2,000-gallon AST showed signs of petroleum hydrocarbons above the state target levels and recommended that a Contamination Assessment be performed. The Navy submitted a Closure Assessment Form to the FDEP on June 17, 1996.

1.4 Regional Geology and Hydrogeology

The Florida Keys are located in Monroe County at the southern tip of the Florida Peninsula. Monroe County can be divided into two distinct zones: the portion on the mainland of Florida, and the Florida Keys, which stretch 135 miles from the mainland to the southwest. The Florida Keys are composed of numerous small islands (keys). The land area of the Florida Keys totals approximately 105 square miles.

The climate of the Florida Keys is subtropical to tropical. The Keys receive some of the lowest amounts of rainfall in Florida. The mean annual rainfall in Key West is 25 inches per year (Lane, 1986).

The Florida Keys are divided into the upper Keys and the lower Keys. The upper Keys, from Key Largo to Big Pine Key, are composed mainly of the Key Largo Limestone, a Pleistocene-age coral reef. The lower Keys, from Big Pine Key to Key West, are composed of the Miami Limestone, which is sometimes called the Miami Oolite. The Miami Limestone is typically a white, sandy oolitic (spherical calcareous grains) limestone reaching a maximum thickness of 40 feet. The Miami Limestone is underlain by the Key Largo Limestone, which is considered bedrock. The thickness of the Key Largo Limestone varies from approximately 75 feet to 200 feet. Its major constituents are the cemented remains of ancient coral reefs.

The Key Largo Limestone is underlain (in order) beneath the lower keys by the Tamiami Limestone of Miocene age, the Miocene age Hawthorn Formation/Tampa Limestone, the Oligocene Suwannee Limestone, and the Eocene Avon Park Limestone.

Two aquifer systems are present beneath Monroe County, the surficial aquifer system and the Floridan aquifer system. These aquifer systems are separated from one another by the Hawthorn confining zone. The top of the Floridan aquifer is estimated to be at least 800 feet below land surface (BLS). However, in south Florida the Tamiami Formation acts as a confining unit. The Tamiami Formation is composed of limestone, clay, and marl, and forms the upper part of the basal confining unit of the surficial aquifer. The depth of the Tamiami Formation in the lower Keys is estimated to be approximately 200 feet BLS.

The surficial aquifer system is present beneath all of the keys; however, on most of the keys the aquifer contains salt or brackish water. The water quality of the Floridan aquifer system is poor throughout all of Monroe County and decreases in quality to the south. Total dissolved solids (TDS) concentrations range from 3,430 to 37,500 milligrams per liter (mg/L).

1.5 Potable Well Survey

There is no source of large quantities of potable groundwater in the Florida Keys. Drinking water to the Florida Keys is supplied by wellfields in Dade County and is delivered by the Florida Keys Aqueduct Authority pipeline that runs from Dade County to Key West. Desalination plants that produce potable water from seawater provide backup capabilities. Small lenses of freshwater may exist beneath the larger keys, but these lenses can produce only very limited quantities of water.

A survey of wells within a one-half mile radius of the sites was performed to identify potential users of groundwater in the immediate area. Ben Shula of the Monroe County Department of Health and Rehabilitation Services (HRS) stated that he was unaware of any drinking water wells on Boca Chica Key or Geiger Key (personal communication with Amanda Shearer on January 25, 2002). HRS does not consider the aquifers beneath the Keys to be an approved potable water source. Gus Rios of FDEP in Marathon stated that the aquifers beneath the Keys are generally considered Class G-III quality, but are still classified as G-II aquifers (personal communication with Amanda Shearer on September 29, 1999). Several fire wells are present throughout NAS, but do not contain pumps.

1.6 Aquifer Classification

BBL collected one groundwater sample from shallow well MW-1 at Site G-01 and one sample from shallow well MW-5 at Site B-01 for analysis of TDS by EPA Method 160.1. Results of the TDS analyses indicated a concentration of 8,520 mg/L in MW-1 from site G-01 and 564 mg/L in the sample from MW-5 at Site B-01. (See **Sections 2.0** and **3.0** of this SAR for well locations and descriptions. Laboratory results are provided in **Appendices C** and **G**.)

Rule 62-520.410(1) of the FAC states that a Class G-III aquifer is one which has a TDS content of 10,000 mg/L or greater; or which has total TDS of 3,000 mg/L to 10,000 mg/L and either has been reclassified by the Environmental Regulation Commission as having no reasonable potential as a future source of drinking water, or has been designated by the FDEP as an exempted aquifer pursuant to Rule 62-28.130(3), FAC. Groundwater in the lower Florida Keys is not an approved drinking water source (according to HRS). FDEP Marathon has stated that the surficial aquifer in the Keys is generally considered Class G-III quality.

Although the groundwater in the vicinity of each of the sites is unlikely to ever be used as a drinking water source, BBL recommends that standard Chapter 62-777, FAC target levels be used for these sites due to the proximity of the sites to surface water bodies.

2. Site Assessment – G-01

2.1 General

Prior to installing soil borings and monitoring wells at the site, an underground utility location check was performed by BBL and NAS personnel. Prior to drilling, each boring location was hand dug to four feet with a post-hole digger to check for utilities. **Figure 2-1** shows the site vicinity and site utilities. All drilling was performed by Groundwater Protection, Inc., a certified drilling contractor. Proper decontamination procedures were followed prior to each hole bored.

All sampling was performed in accordance with BBL's Comprehensive Quality Assurance Plan (CompQAP) No. 880552G approved by FDEP. All laboratory analytical work was performed by Analytical Environmental Services, Inc., an FDEP-certified laboratory.

Figure 2-2 shows the site map with closed in place AST location and surrounding area.

2.2 Soil Sampling and Analysis

Soil samples were collected on October 24 and 25, 2001, at locations SB-1 through SB-12 at 1- to 2-foot intervals to the water table using a decontaminated stainless steel hand auger or post-hole digger. The soil samples were analyzed for headspace organic vapor readings using a Photovac Microtip HL-200 photoionization detector (PID), in accordance with the procedure in Chapter 62-770, FAC. Soil samples collected in the upper two to four feet at locations SB-4, SB-9, SB-11, and SB-12 were greater than 50 parts per million (ppm) on the PID and had noticeable petroleum odor. OVA readings are recorded in **Table 2-1** and are shown on **Figure 2-3**.

Because diesel fuel was previously stored at the site, the petroleum contaminants at the site are classified as constituents of the Kerosene Analytical Group, as defined in Chapter 62-770, FAC. Three soil samples were collected on October 24, 2001 near the former tank location, for laboratory analysis of:

a. EPA Method 8020 (Volatile Organic Aromatics [VOAs], including methyl tert-butyl ether [MTBE],
b. EPA Method 8270 SIM (polynuclear aromatic hydrocarbons [PAHs]),
c. FL-PRO (total recoverable petroleum hydrocarbons [TRPH].

Samples SB-1 (2-4), SB-3 (0-2) and SB-5 (2-4) (with the numbers in parentheses being the sample depth interval) were collected for analysis, representing low, medium and high OVA readings. The laboratory analyses indicated that TRPH was above the Chapter 62-777, FAC target level for Commercial/Industrial Direct Exposure Use Assumptions in Sample SB-5 (2-4) (**Table 2-2**). However, this sample was wet at 3 feet below land surface (BLS) and is probably indicative of groundwater impacts rather than representative of soil contamination. These soil samples were also analyzed for leaching potential using the Synthetic Precipitation Leaching Procedure (SPLP). TRPH in sample SB-5 (2-4) was above the Chapter 62-777, FAC target level. The SPLP analyses are summarized on **Table 2-3**.

Although elevated OVA readings were detected in the soil on site, the water table was encountered between 1 and 3 feet BLS on the day sampled. Based on hydrogeologic knowledge of the keys, the proximity to surface water at the site, and the low elevation of the site, the water table most likely fluctuates up to ground surface during the rainy season. There is probably no continuous vadose zone on site. Therefore, as long as the site is

only used for commercial/industrial purposes, contaminated soil does not appear to be a serious concern at this site. The complete laboratory analytical reports with chain-of-custody and field sampling logs are provided in **Appendix A**.

2.3 Monitoring Well Installation

The rationale for the placement of the monitoring wells was based on the location of the closed-in-place AST and observations made in the field during soil sampling. Six shallow monitoring wells (MW-1 through MW-6) and one vertical extent well (MW-1A) were installed at the site to evaluate the extent of hydrocarbon impacts to groundwater (see **Figure 2-2**). The wells were installed under the observation of BBL geologists and were constructed to allow for representative sampling of groundwater and free product, if present, at the site.

Wells MW-1 through MW-6 were installed on October 24 and 25, 2001. All shallow monitor wells were installed with a 6.25-inch inside diameter (I.D.) hollow-stem auger to a depth of 12 feet BLS. The wells were constructed with a 2-foot section of 2-inch diameter, Schedule 40 PVC solid casing connected flush to 10 feet of 2-inch diameter, 0.010-inch slot, Schedule 40 PVC mill-slotted screen. The annular space around the well screens was filled to 1 foot above the screened interval using 30/45 graded silica sand filter media during auger removal. Approximately 0.5 feet of fine sand was used as a plug to prevent grout from seeping into the filter pack. The remaining annular space in each well was then grouted to land surface with a neat cement slurry (Portland, Type I).

Vertical extent well MW-1A was installed next to MW-1 adjacent to the closed-in-place AST on October 24 and 25, 2001. The well was installed to a total depth of 25 feet BLS using a hollow-stem auger. Well MW-1A was constructed with a 6-inch surface casing to a depth of 20 feet BLS to prevent the downward migration of contaminants to the lower portion of the surficial aquifer during well construction. The well was constructed of 20 feet of 2-inch diameter, Schedule 40 PVC solid casing connected flush to 5 feet of 2-inch diameter, 0.010-inch, Schedule 40 PVC mill-slotted screen. The annular space around the well screen was filled to 2 feet above the screened interval using 30/45 graded silica sand filter media. Two feet of fine sand was used as a plug above the filter pack to prevent grout from migrating into the filter pack during subsequent grouting procedures. The remaining annular space was grouted to land surface with a neat cement slurry (Portland, Type I).

All wells were fitted with locking caps and locks and contained within flush-mounted, bolt-down, traffic-bearing manholes.

A monitoring well completion summary is included in **Table 2-4**. Well completion diagrams are provided in **Appendix B**.

All wells were developed by purging and surging using a centrifugal pump and reinforced hose to remove fine-grained sediments. The hose was properly decontaminated and steam-cleaned prior to placement in each well. The wells were developed until the purge water was visually free of sand and silt.

Free product was not detected in any of the soil borings or monitoring wells on site.

2.4 Groundwater Sampling and Analysis

Groundwater samples were collected for laboratory analysis to assess the potential for the existence of dissolved petroleum hydrocarbons in the groundwater at the site. Monitoring wells MW-1 through MW-6 were sampled

on November 14, 2001. Appropriate quality assurance samples were collected and analyzed, including a duplicate sample from well MW-6 (labeled duplicate), an equipment blank, and a trip blank which was transported to and from the site in the sample kit.

To ensure the presence of formation water in the wells, the water levels were measured in the wells, then the monitoring wells were purged of five well volumes. pH, specific conductance, and temperature were measured using a Hydac® water quality instrument prior to sampling. The Hydac® was calibrated according to the manufacturer's directions prior to sampling the purge water. Purging was accomplished using pre-cleaned, dedicated polyethylene tubing and a peristaltic pump operating at a low flow rate of less than 0.5 liter per minute. Purge water was discharged onto the source area.

Once purging was completed, samples were collected using pre-cleaned, dedicated disposable Teflon® bailers. Copies of the field water sampling logs are included in **Appendix C.** All sampling was performed and equipment was decontaminated in accordance with BBL's FDEP-approved CompQAP.

All samples were collected and placed in laboratory-prepared (appropriately preserved) sample containers, stored under ice, and shipped via overnight courier in sealed coolers to Analytical Environmental Services, Inc. Because diesel fuel was used at the site, the samples were analyzed for the following:

a. EPA Method 8021 (VOAs, including MTBE).
b. EPA Method 8270 SIM (PAHs).
c. FL-PRO (TRPH).
d. EPA Method 239.2 (Lead).
e. EPA Method 8011 (Ethylene Dibromide [EDB]).

Additionally, sample MW-1 was analyzed for TDS (see **Section 1.6**).

Groundwater laboratory analytical results indicated the only VOA above Chapter 62-777, FAC target levels was benzene in samples from MW-6, with concentrations of 6.3 ug/L and 6.7 ug/L, for the sample and duplicate. Sample MW-4 contained benzo(b)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene above target levels. Sample MW-5 had a reported concentration of acenaphthene of 66 ug/L, which is above the target level of 20 ug/L and naphthalene of 26 ug/L, which is above the target level of 20 ug/L. Sample MW-6 and duplicate had concentrations of naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and TRPH above target levels. All other parameters analyzed in the wells on site were below Chapter 62-777, FAC target levels. The groundwater analytical results indicated that vertical extent well MW-1A has not been impacted by petroleum hydrocarbons.

Tables 2-5 and **2-6** summarize the laboratory analytical results for the November 14, 2001, sampling event. The complete laboratory report and chain-of-custody record are provided in **Appendix C. Figures 2-4 and 2-5** illustrate the groundwater analytical results.

Groundwater analytical results from the monitoring well samples indicate that petroleum hydrocarbons are present near the northern portion of the study area near MW-4, MW-5 and MW-6 above Chapter 62-777, FAC target levels. Dissolved petroleum hydrocarbons may have migrated north of the tank area under the building, possibly influenced by fill material under the building. Another scenario, however, is that the source of these petroleum hydrocarbons was a result of maintenance activities performed in the building itself, and not the former AST. The abandoned building shows remnants of drain areas in the floor and possibly former hydraulic lifts.

(Note that the equipment blank sample, which was collected following sample MW-3 and prior to sample MW-2, contained low levels of VOAs and PAHs. Since the water quality analyses from samples from MW-2 and MW-3 contained none of those PAHs and only very low levels of VOAs, BBL suspects that the equipment blank water used was contaminated and not the equipment itself.)

2.5 Site-Specific Geology

Lithologic data about the site were gathered from the split-spoon samples collected at soil boring locations SB-1 through SB-12. Lithologic descriptions are included in **Table 2-1**.

Based on observations during advancement of the borings, the surficial aquifer material can be generally classified as unconsolidated pinkish white, oolitic lime sand with quartz sand and limestone fragments to a depth of at least 25 feet (the deepest unit drilled). Location SB-3 had dark brown, silty sand and peat from the surface to about 4 feet BLS. Locations SB-5 and SB-7 had a peat layer from 2 to 4 feet BLS.

2.6 Aquifer Characteristics

In order to estimate aquifer characteristics at this site, slug tests were performed in shallow wells MW-2 and MW-3 and vertical extent well MW-1A on November 14, 2001.

Slug tests were performed by quickly removing a slug of water from the well using a centrifugal pump and measuring the recovery rate with an in-situ Hermit 1000 data logger and associated 15-psi pressure transducer. The slug test results were plotted on semi-logarithmic graphs and evaluated by use of the computer program AQTESOLV for Windows® (Duffield, 1999-2000) using the Bouwer and Rice method (Bouwer and Rice, 1976, updated 1989). The results of these tests were used to estimate the horizontal hydraulic conductivity and horizontal groundwater flow velocity in the surficial aquifer beneath the site. The calculated hydraulic conductivity for the upper 12 feet of aquifer varied from 0.6036 feet per day to 0.7384 feet per day (average of approximately 0.4 feet per day). The hydraulic conductivity estimated for the zone from 20 to 25 feet BLS was 8.879 feet per day.

The transmissivity of the surficial aquifer in the site area was estimated using the equation:

$$T = Kb$$

Where: T = transmissivity
K = hydraulic conductivity
b = aquifer thickness

Based on literature review, the surficial aquifer thickness may be 40 feet (the maximum thickness of the Miami limestone). Using the hydraulic conductivities calculated, the transmissivity of the surficial aquifer varies from about 16 square feet per day to 355 feet per day.

A copy of the slug test analyses are provided in **Appendix D**.

2.7 Groundwater Flow

Tops of casings of all monitor wells were surveyed to determine the elevations relative to an assumed elevation of 5 feet MSL. The water levels in all wells were measured two times on November 14, 2001, to account for tidal fluctuations. Measurements were recorded within an accuracy of 0.01 feet with a water level indicator. Groundwater elevations were determined by subtracting the depth to groundwater from the relative top-of-casing elevation. The water table was encountered on site at a depth of approximately 3 feet BLS. **Table 2-7** presents the groundwater elevation data. Groundwater contour maps for November 14, 2001, are provided as **Figures 2-6** and **2-7**. Groundwater flow varied little with the tides. The flow direction was generally toward the west during low tide and mid-tide. Water levels fluctuated about 1/10th of a foot during the period.

Estimated groundwater velocity for the surficial aquifer was calculated using an adaptation of Darcy's Law:

$$V = \frac{Ki}{N_e}$$

Where: V = groundwater flow velocity
K = hydraulic conductivity
i = hydraulic gradient
N_e = effective porosity

The hydraulic conductivity value used for this calculation, 0.4 feet per day (see **Section 2.6**), is the average between monitoring wells MW-2 and MW-3. A hydraulic gradient of 0.007 feet per foot was used, which is the average of the gradient detected at the site on November 14, 2001. The effective porosity of the oolitic sands of the surficial aquifer is estimated at 25 percent. Therefore:

$$V = \frac{0.4 \text{ ft/day} \times 0.007 \text{ ft/ft}}{0.25} = 0.01 \text{ feet per day}$$

or 4 feet per year.

3. Site Assessment – B-01

3.1 General

Prior to installing soil borings and monitoring wells at the site, an underground utility location check was performed by BBL and NAS personnel. Prior to drilling, each boring location was hand dug to four feet with a post-hole digger to check for utilities. **Figure 3-1** shows the site vicinity and site utilities. All drilling was performed by Groundwater Protection, Inc., a certified drilling contractor. Proper decontamination procedures were followed prior to each hole bored.

All sampling was performed in accordance with BBL's Comprehensive Quality Assurance Plan (CompQAP) No. 880552G approved by FDEP. All laboratory analytical work was performed by Analytical Environmental Services, Inc., an FDEP-certified laboratory.

Figure 3-2 shows the site map with former AST location, utilities and surrounding area.

3.2 Soil Sampling and Analysis

Soil samples were collected on October 22 and 23, 2001, at locations SB-1 through SB-5 at 2-foot intervals to the water table using a decontaminated stainless steel hand auger or post-hole digger. The soil samples were analyzed for headspace organic vapor readings using a Photovac Microtip HL-200 PID, in accordance with the procedure in Chapter 62-770, FAC. None of the soil samples collected in the vadose zone indicated OVA readings above 10 ppm on the PID and none had noticeable petroleum odor. OVA readings are recorded in **Table 3-1** and are shown on **Figure 3-3**.

Because diesel fuel was previously stored at the site, any petroleum contaminants at the site would be classified as constituents of the Kerosene Analytical Group, as defined in Chapter 62-770, FAC. Two soil samples were collected on October 22, 2001 near the former tank location, for laboratory analysis of:

a. EPA Method 8020,
b. EPA Method 8270 SIM PAH,
c. FL-PRO.

Samples SB-1 (0-2) and SB-4 (0-2) (with the numbers in parentheses being the sample depth interval) were collected for analyses. The laboratory analyses indicated that all parameters analyzed were below laboratory detection limits (**Table 3-2**). These soil samples were also analyzed for leaching potential using the SPLP. All parameters analyzed were below laboratory detection limits. The SPLP analyses are summarized on **Table 3-3**.

The complete laboratory analytical report with chain-of-custody and field sampling logs are provided in **Appendix E**.

3.3 Monitoring Well Installation

The rationale for the placement of the monitoring wells was based on the location of the former AST and observations made in the field during soil sampling. Five shallow monitoring wells (MW-1 through MW-5)

were installed at the site to evaluate the presence and extent of hydrocarbon impacts to groundwater (**Figure 3-2**). The wells were installed under the observation of BBL geologists and were constructed to allow for representative sampling of groundwater and free product, if present, at the site.

Wells MW-1 through MW-5 were installed on October 23, 2001. All monitor wells were installed with a 6.25-inch inside diameter (I.D.) hollow-stem auger to a depth of 11 feet BLS. The wells were constructed with a 1-foot section of 2-inch diameter, Schedule 40 PVC solid casing connected flush to 10 feet of 2-inch diameter, 0.010-inch slot, Schedule 40 PVC mill-slotted screen. The annular space around the well screens was filled to 0.5 foot above the screened interval using 30/45 graded silica sand filter media during auger removal. Approximately 0.25 feet of fine sand was used as a plug to prevent grout from seeping into the filter pack. The remaining annular space in each well was then grouted to land surface with a neat cement slurry (Portland, Type I). All wells were fitted with locking caps and locks and contained within flush-mounted, bolt-down, traffic-bearing manholes.

A monitoring well completion summary is included in **Table 3-4**. Well completion diagrams are provided in **Appendix F**.

All wells were developed by purging and surging using a centrifugal pump and reinforced hose to remove fine-grained sediments. The hose was properly decontaminated and steam-cleaned prior to placement in each well. The wells were developed until the purge water was visually free of sand and silt.

Free product was not detected in any of the soil borings or monitoring wells on site.

3.4 Groundwater Sampling and Analysis

Groundwater samples were collected for laboratory analysis to assess the potential for the existence of dissolved petroleum hydrocarbons in the groundwater at the site. Monitoring wells MW-1 through MW-5 were sampled on November 13, 2001. Appropriate quality assurance samples were collected and analyzed, including a duplicate sample from well MW-1 (labeled duplicate), and a trip blank which was transported to and from the site in the sample kit.

To ensure the presence of formation water in the wells, the water levels were measured in the wells, then the monitoring wells were purged of five well volumes. pH, specific conductance, and temperature were measured using a Hydac® water quality instrument prior to sampling. The Hydac® was calibrated according to the manufacturer's directions prior to sampling the purge water. Purging was accomplished using pre-cleaned, dedicated polyethylene tubing and a peristaltic pump operating at a low flow rate of less than 0.5 liter per minute. Purge water was discharged onto the source area.

Once purging was completed, samples were collected using pre-cleaned, dedicated disposable Teflon® bailers. Copies of the field water sampling logs are included in **Appendix G**. All sampling was performed and equipment was decontaminated in accordance with BBL's FDEP-approved CompQAP.

All samples were collected and placed in laboratory-prepared (appropriately preserved) sample containers, stored under ice, and shipped via overnight courier in sealed coolers to Analytical Environmental Services, Inc. Because diesel fuel was used at the site, the samples were analyzed for the following:

a. EPA Method 8021 (VOAs, including MTBE).
b. EPA Method 8270 SIM (PAHs).

c. FL-PRO (TRPH).
d. EPA Method 239.2 (Lead).
e. EPA Method 8011 (EDB).

Additionally, sample MW-5 was analyzed for TDS (see **Section 1.6**).

Groundwater laboratory analytical results indicated no VOAs above Chapter 62-777, FAC target levels. The duplicate to MW-1 indicated benzo(b)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene slightly above target levels, however none of these parameters was detected in sample MW-1. Sample MW-3 contained dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene slightly above target levels. All other parameters analyzed in the wells on site were below Chapter 62-777, FAC target levels.

Tables 3-5 and **3-6** summarize the laboratory analytical results for the November 13, 2001, sampling event. The complete laboratory reports and chain-of-custody records are provided in **Appendix G**. **Figure 3-4** illustrates the groundwater analytical results.

Groundwater analytical results from the monitoring well samples indicate that PAHs are present near the northern portion of the study area near MW-1 and MW-3 above Chapter 62-777, FAC target levels.

3.5 Site-Specific Geology

Lithologic data about the site were gathered from the split-spoon samples collected at locations SB-1 through SB-5. Lithologic descriptions are included **Table 3-1**.

Based on observations during advancement of the monitoring wells, the surficial aquifer material can be generally classified as unconsolidated pinkish white, oolitic sand, with coral and limestone fragments to a depth of approximately 12 feet BLS, underlain by pinkish white limestone with minor coral to 25 feet BLS, the deepest unit drilled.

3.6 Aquifer Characteristics

In order to estimate aquifer characteristics at this site, slug tests were performed in shallow wells MW-4 and MW-5 on November 13, 2001.

Slug tests were performed by quickly removing a slug of water from each well using a centrifugal pump and measuring the recovery rate with an in-situ Hermit 1000 data logger and associated 15-psi pressure transducer. The slug test results were plotted on semi-logarithmic graphs and evaluated by use of the computer program AQTESOLV for Windows® (Duffield, 1999-2000) using the Bouwer and Rice method (Bouwer and Rice, 1976, updated 1989). The results of these tests were used to estimate the horizontal hydraulic conductivity and horizontal groundwater flow velocity in the surficial aquifer beneath the site. The calculated hydraulic conductivity for the upper 12 feet of aquifer varied from 0.3162 feet per day to 3.644 feet per day (average of approximately 2 feet per day).

The transmissivity of the surficial aquifer in the site area was estimated using the equation:

$T = Kb$

Where: T = transmissivity
K = hydraulic conductivity
b = aquifer thickness

Based on literature review, the surficial aquifer thickness may be 40 feet (the maximum thickness of the Miami Limestone). Using the hydraulic conductivities calculated, the transmissivity of the surficial aquifer averages 80 square feet per day.

A copy of the slug test analyses are provided in **Appendix H**.

3.7 Groundwater Flow

Tops of casings of all monitor wells were surveyed to determine the elevations relative to an assumed elevation of 5 feet MSL. The water levels in all wells were measured two times on November 13, 2001, to account for tidal fluctuations. Measurements were recorded within an accuracy of 0.01 feet with a water level indicator. Groundwater elevations were determined by subtracting the depth to groundwater from the relative top-of-casing elevation. The water table was encountered on site at a depth of approximately 3 feet BLS. **Table 3-7** presents the groundwater elevation data. Groundwater contour maps for November 13, 2001 are provided as **Figures 3-5** and **3-6**. Groundwater flow varied with the tides. The flow direction was generally toward the east during mid-tide and toward the north during low tide. Water levels fluctuated about $1/10^{th}$ to $2/10^{th}$ feet during the period.

Estimated groundwater velocity for the surficial aquifer was calculated using an adaptation of Darcy's Law:

$$V = \frac{Ki}{N_e}$$

Where: V = groundwater flow velocity
K = hydraulic conductivity
i = hydraulic gradient
N_e = effective porosity

The hydraulic conductivity value used for this calculation, 2 feet per day (see **Section 3.6**), is the average between monitoring wells MW-4 and MW-5. A hydraulic gradient of 0.0025 feet per foot was used, which is the average of the gradient measured at the site on November 13, 2001. The effective porosity of the oolitic sands of the surficial aquifer is estimated at 25 percent. Therefore:

$$V = \frac{2 \text{ ft/day} \times 0.0025 \text{ ft/ft}}{0.25} = 0.02 \text{ feet per day}$$

or 7 feet per year.

4. Conclusions and Recommendations

4.1 Conclusions

These site assessments were conducted in accordance with Chapter 62-770, FAC to evaluate the presence and delineate the extent of petroleum hydrocarbons in the soil and groundwater resulting from discharges from former diesel ASTs. The following summarizes each investigation findings:

Site G-01

- The assumed source of the petroleum discharge, the AST, has been properly closed in place. The entire site area is abandoned and no activities are conducted at this former Hawk Missile site.
- Kerosene Analytical Group constituents were discharged at the site.
- No free product has been detected in any soil boring or monitoring well on site.
- The groundwater table was encountered at approximately 3 feet BLS at the site.
- No potable or irrigation wells were identified on Geiger Key.
- One soil sample with the highest OVA reading contained TRPH above Commercial/Industrial direct exposure target levels. This sample was collected near the water table and was probably impacted by the groundwater and not indicative of vadose zone conditions. There is probably no true vadose zone on site, since the water table depth during this study on site ranged from 1 to 3 feet BLS, and is probably occasionally at or near the ground surface during the rainy season.
- Groundwater analytical results from the monitoring well samples indicate that petroleum hydrocarbons are present near the northern portion of the study area near MW-4, MW-5 and MW-6 above Chapter 62-777, FAC target levels. Dissolved petroleum hydrocarbons may have migrated north of the tank area under the building, possibly influenced by fill material under the building. Another potential source was maintenance activities within the building when it was in use. The full horizontal extent of petroleum hydrocarbons in groundwater on site has not been defined. The vertical extent of impact is less than 20 feet BLS.

Site B-01

- The assumed source of the petroleum discharge, the AST, has been removed. The entire site area is abandoned and no activities are conducted at this former Hawk Missile site, with the exception of a NOAA tower and associated AST approximately 250 feet away from the study area.
- Kerosene Analytical Group constituents were discharged at the site.
- No free product has been detected in any soil boring or monitoring well on site.
- The groundwater table was encountered at approximately 3 feet BLS at the site.
- No potable or irrigation wells exist on Boca Chica Key.

- Soils exceeding Commercial/Industrial direct exposure target levels were not detected on site.
- Dissolved petroleum constituents in groundwater slightly exceeded target levels for certain PAHs in wells MW-1 and MW-3. The extent of the dissolved petroleum hydrocarbon plume has adequately been defined.

4.2 Recommendations

Dissolved petroleum hydrocarbons above Chapter 62-777, FAC target levels are present in the groundwater at both sites. Free product has not been detected in the media at either site.

Site G-01

Although the full horizontal extent of dissolved petroleum hydrocarbons in the groundwater has not been fully defined, the concentrations are not high enough to warrant further site assessment at this time. Natural Attenuation Monitoring is recommended for this site. Prior to the initial round of sampling under the monitoring plan, three additional shallow monitoring wells should be installed at the following locations to ensure the extent of groundwater impacts has been defined:

1) 30 feet west of MW-6,
2) 30 feet north of MW-6
3) 30 feet north of MW-5.

Soil headspace analysis should be conducted on soil samples collected above the water table at each of the new well locations.

Site B-01

Natural Attenuation Monitoring is recommended for this site.

4.2.1 Natural Attenuation Monitoring Plan – Site G-01

The proposed monitoring wells to be sampled, the sampling parameters, the sampling frequency, and duration are as follows:

Monitoring Wells	Contaminants of Concern	Frequency	Duration
MW-4, MW-5, MW-6, and the three new shallow monitoring wells*.	VOAs, PAHs, TRPH	Semiannually	One to five years

*If new well samples indicate dissolved petroleum hydrocarbon concentrations below target levels, those wells will be dropped from the monitoring plan.

If two consecutive sampling events indicate concentrations have decreased below target levels, approval for a Site Rehabilitation Completion Order will be requested.

4.2.2 Natural Attenuation Monitoring Plan – Site B-01

The proposed monitoring wells to be sampled, the sampling parameters, the sampling frequency, and duration are as follows:

Monitoring Wells	Contaminants of Concern	Frequency	Duration
MW-1, MW-3	PAHs	Semiannually	One to two years

If two consecutive sampling events indicate concentrations have decreased below target levels, approval for a Site Rehabilitation Completion Order will be requested.

5. References

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Figures

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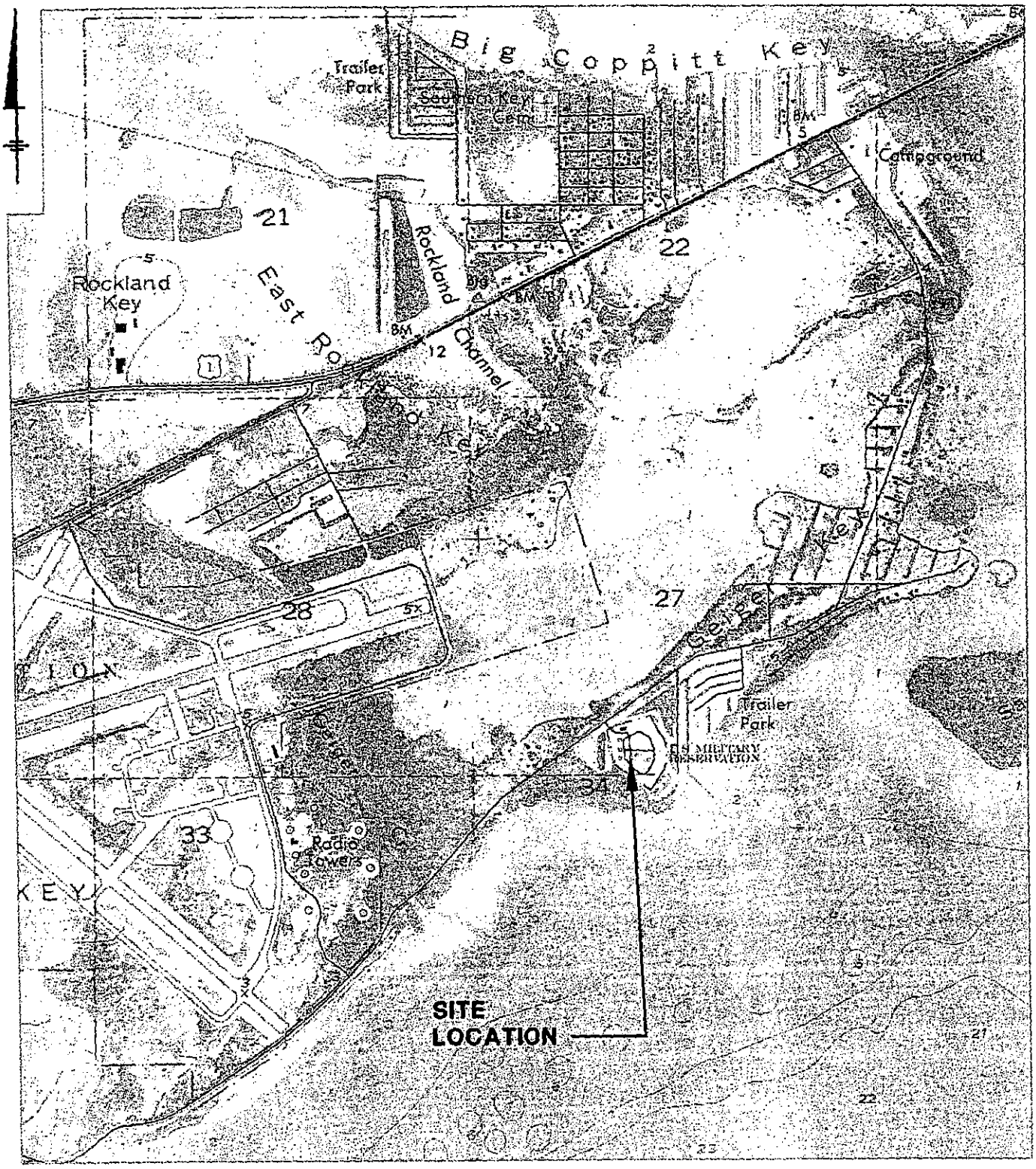
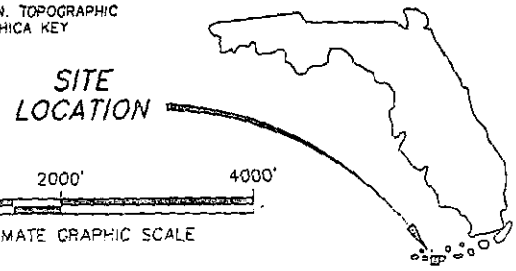
engineers & scientists



SOURCE: USGS 7.5 MIN. TOPOGRAPHIC
QUADRANGLE: BOCA CHICA KEY
REVISION: 1971
COUNTY: MONROE
TOWNSHIP: 67S
RANGE: 28E
SECTION: 27



0 2000' 4000'

APPROXIMATE GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

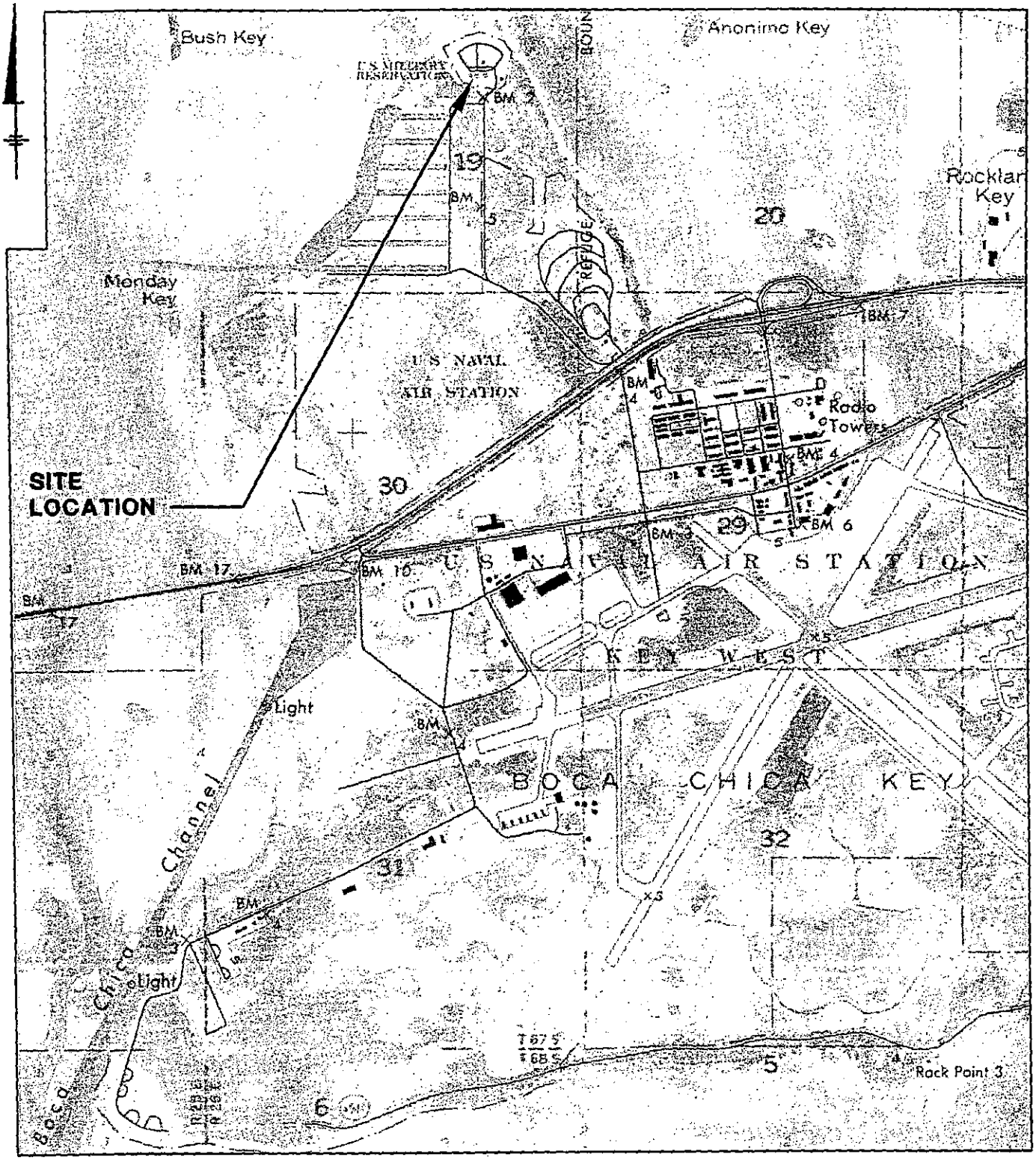
SITE ASSESSMENT REPORT

SITE LOCATION MAP FOR FORMER HAWK MISSILE SITE G-01 GEIGER KEY

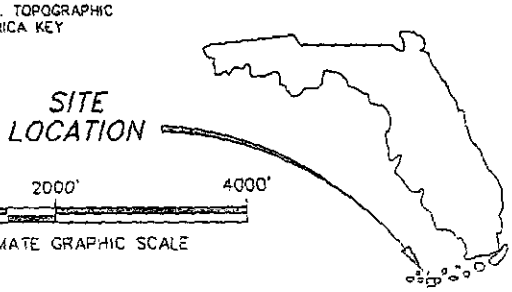
BBL
BLASLAND, BOUCK & LEE, INC

FIGURE 1-1

X: NAS-GEIGERKEY.JPG
P: STD-PC2\AP
1/31/02 7AM-54-JAB



SOURCE: USGS 7.5 MIN. TOPOGRAPHIC
QUADRANGLE: BOCA CHICA KEY
REVISION: 1971
COUNTY: MONROE
TOWNSHIP: 67S
RANGE: 26E
SECTION: 19



0 2000' 4000'

APPROXIMATE GRAPHIC SCALE

X: NAS-7P.JPG
P: STD-PCZ\AP
1/3/02 TAM-94-JAR

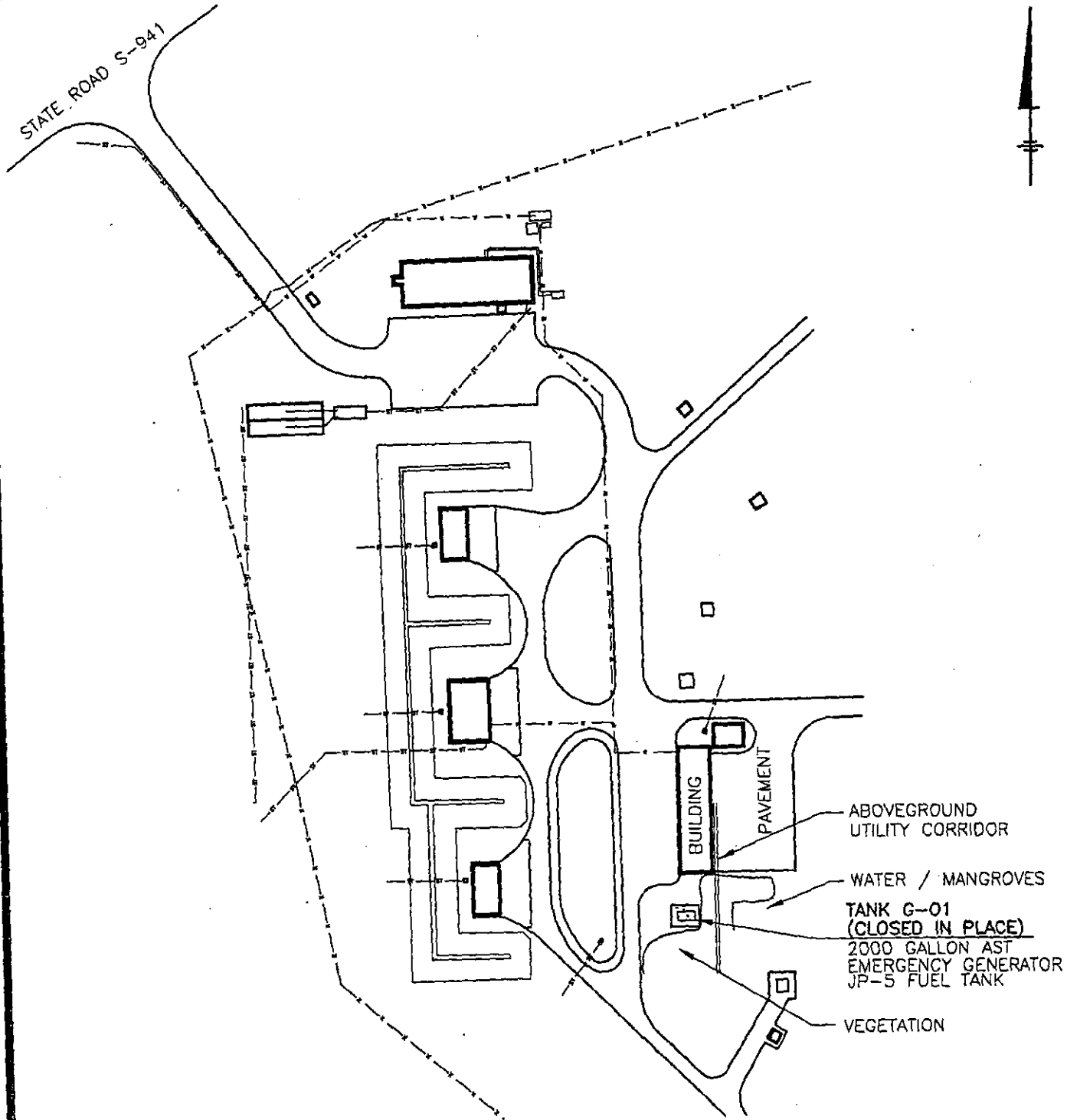
NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

SITE LOCATION MAP FOR FORMER HAWK MISSILE SITE B-01 BOCA CHICA KEY

BBL
BLASLAND, BOUCK & LEE, INC

FIGURE 1-2



LEGEND

WATER LINE

STORM DRAIN

0 100' 200'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

SITE VICINITY MAP FOR FORMER HAWK MISSILE SITE G-01 GEIGER KEY

BBL
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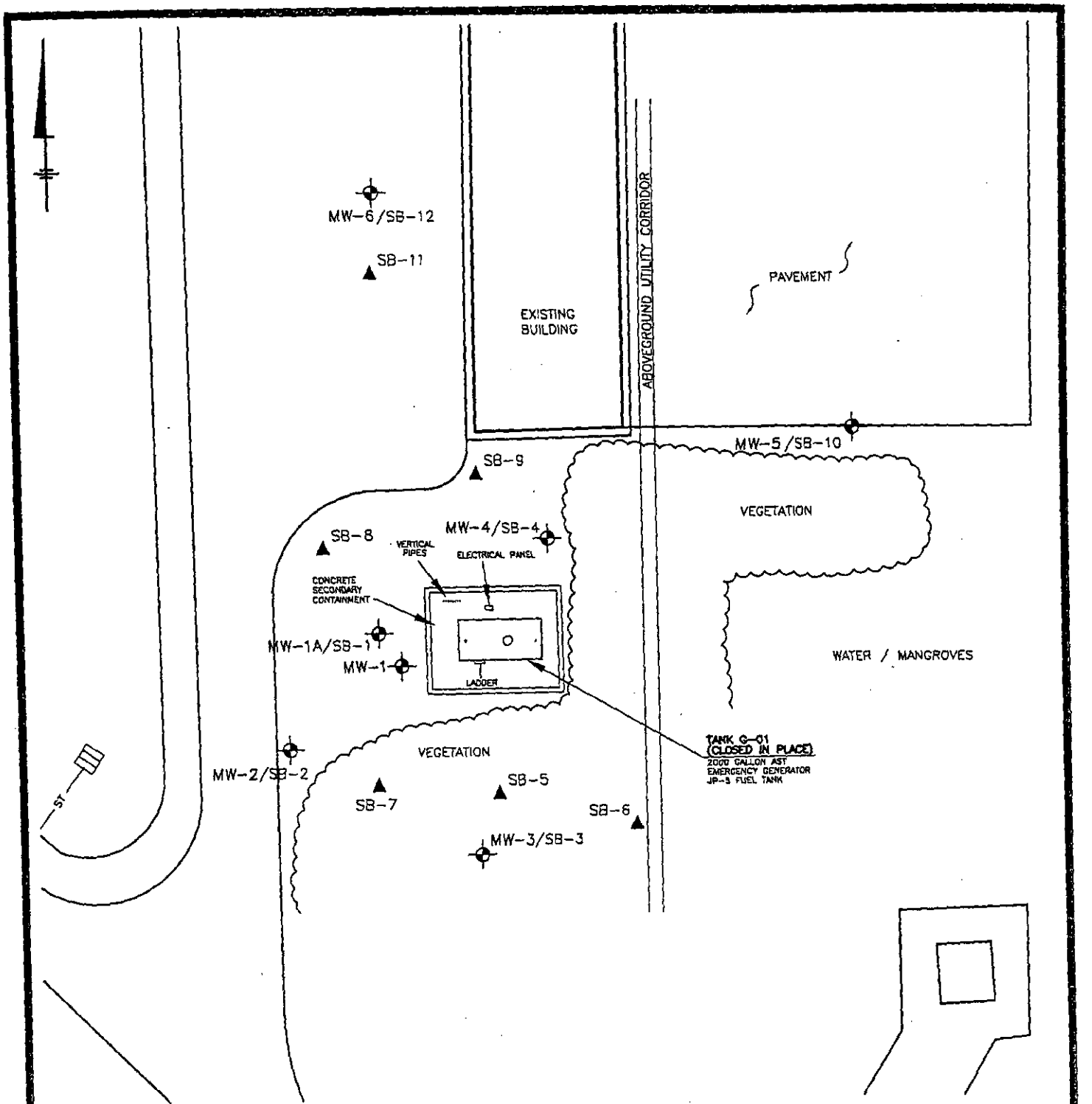
FIGURE 2-1

P: PAGESET\PLT-BL
1/3/07 TAM-S4-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

—— ST —— ST —— STORM DRAIN

MONITORING WELL/SOIL BORING

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

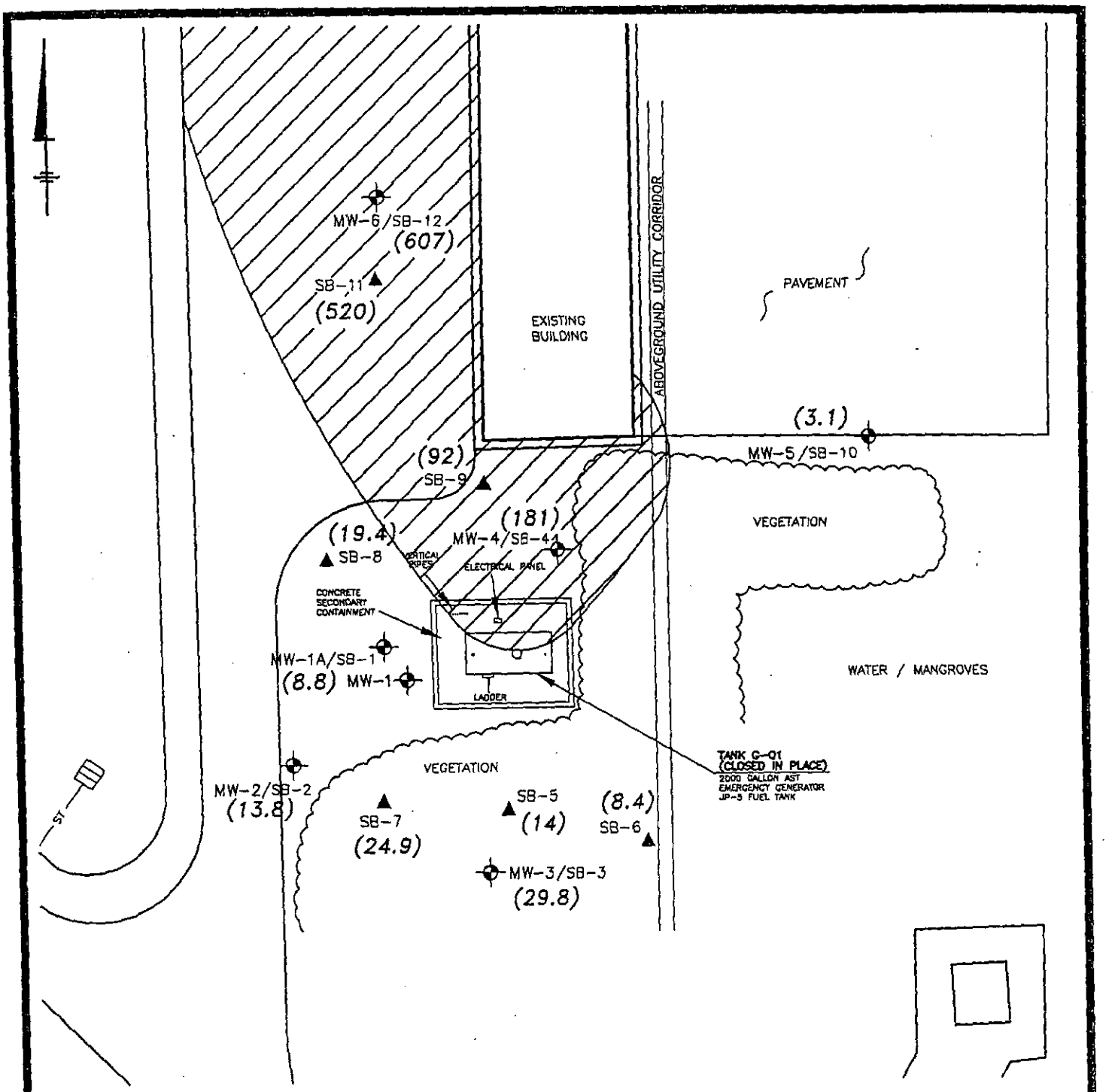
SITE MAP FOR FORMER HAWK MISSILE SITE G-01 GEIGER KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE 2-2

P: PAGESET\PLT-BL
1/3/02 TAM-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

—ST—ST— STORM DRAIN

MONITORING WELL/SOIL BORING

SOIL BORING

(24.9) HIGHEST OVA READING IN VADOSE ZONE (ppm)

ESTIMATED EXTENT OF SOILS >50 ppm

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

SOIL OVA MAP FOR FORMER HAWK MISSILE SITE G-01 GEIGER KEY

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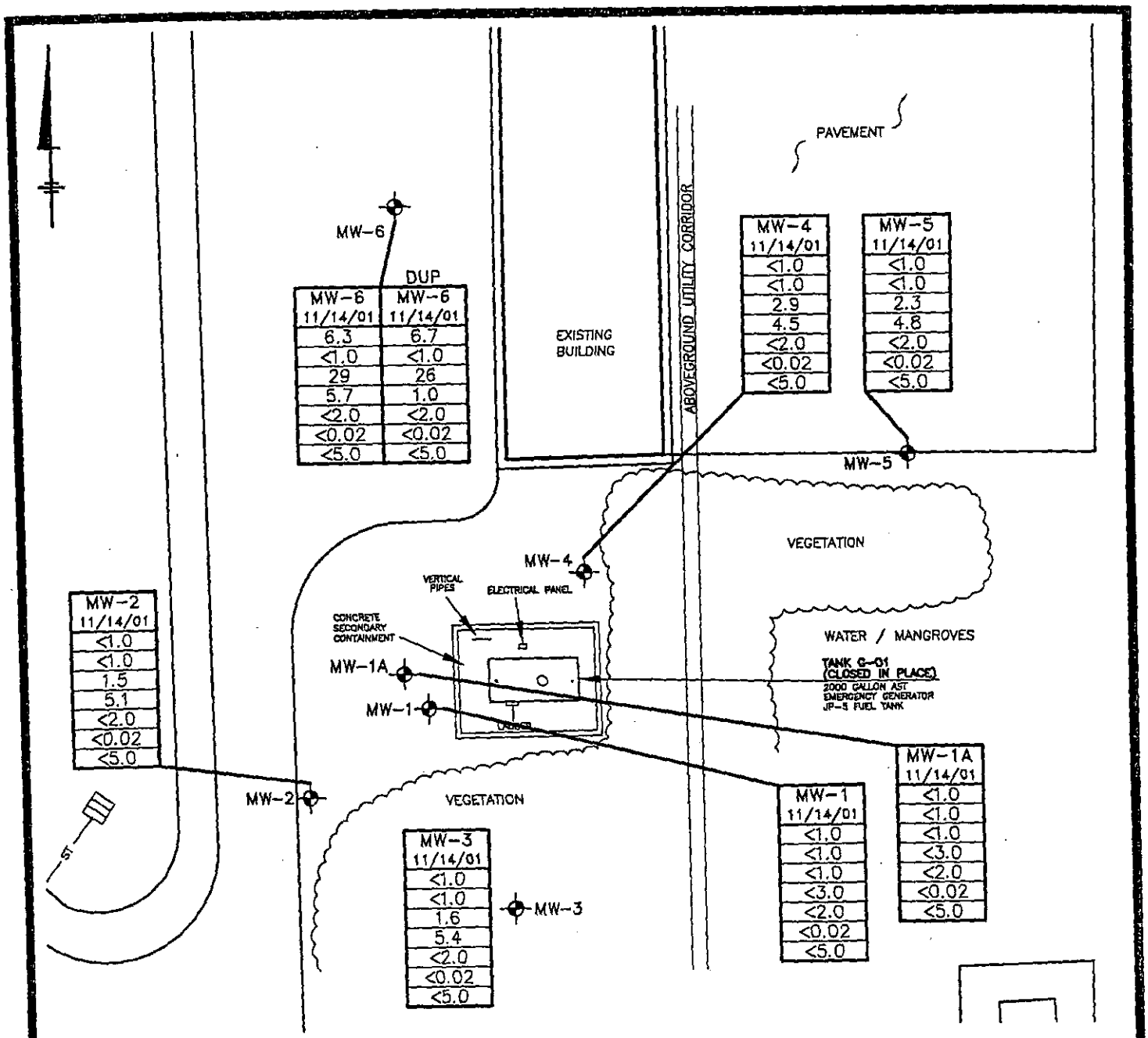
FIGURE 2-3

P: PAGESET\PLT-BL
1/31/02 TAM-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

—— ST —— ST —— STORM DRAIN

MONITORING WELL

MW-1	SAMPLE LOCATION
11/14/01	SAMPLE DATE
<1.0	BENZENE (µg/L)
<1.0	TOLUENE (µg/L)
<1.0	ETHYLBENZENE (µg/L)
<3.0	TOTAL XYLENE (µg/L)
<2.0	MTBE (µg/L)
<0.02	EDB (µg/L)
<5.0	LEAD (µg/L)

(µg/L) = MICROGRAMS PER LITER
MTBE = METHYL TERT-BUTYL ETHER
VOA = VOLATILE ORGANIC AROMATICS, INCLUDING MTBE
EDB = 1,2-DIBROMOETHANE

0 20' 40'
GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

VOAs, EDB & LEAD IN GROUNDWATER
FORMER HAWK MISSILE SITE G-01
GEIGER KEY

BBL
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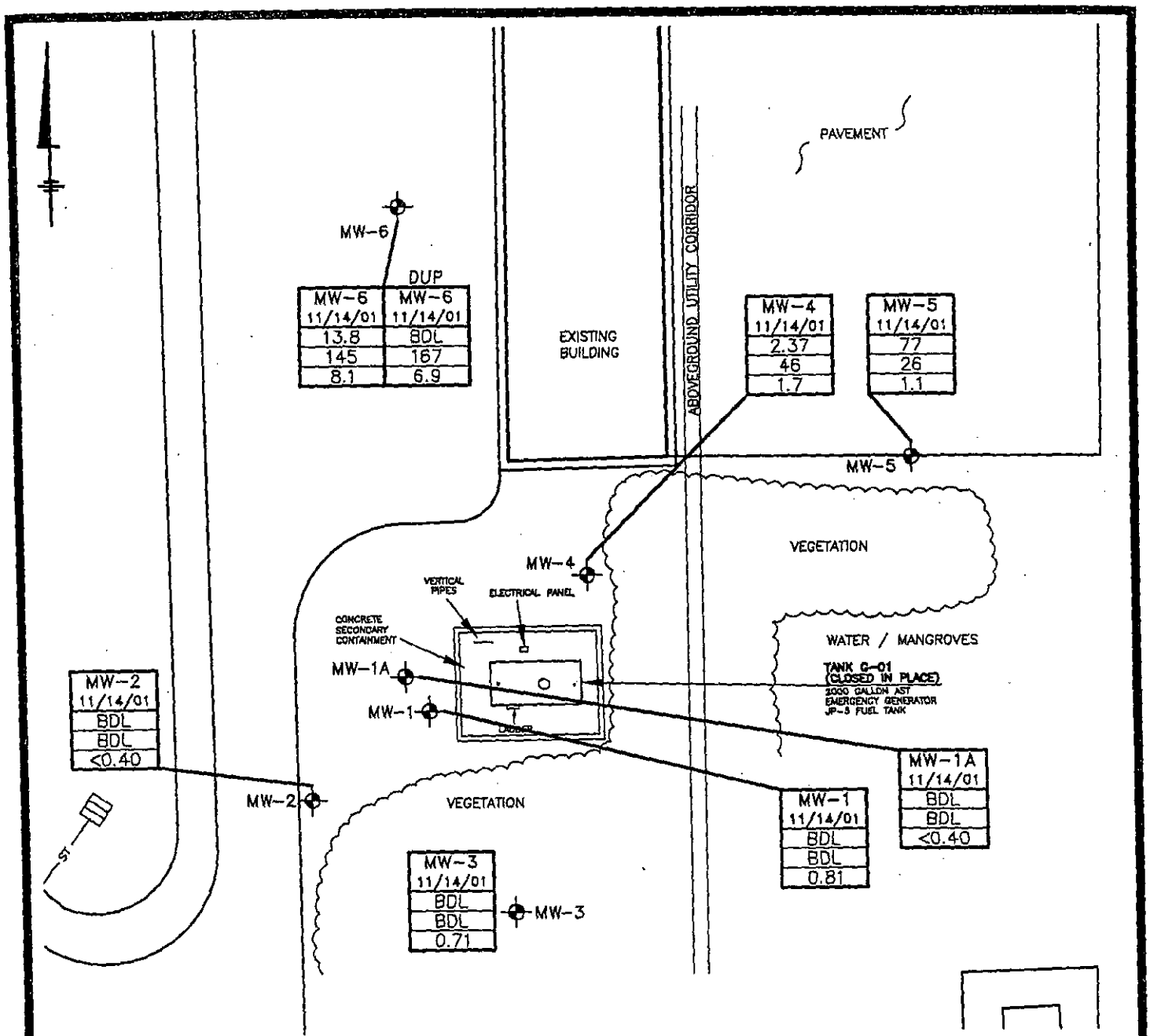
FIGURE
2-4

P: PAGESET\PLT-BL
1/3/02 JAN-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

MW-1	SAMPLE LOCATION
11/14/01	SAMPLE DATE
<1.0	TOTAL PAHs (µg/L)
<1.0	TOTAL NAPHTHALENE (µg/L)
<1.0	TRPH (mg/L)

(µg/L) = MICROGRAMS PER LITER

(mg/L) = MILLIGRAMS PER LITER

BDL = BELOW DETECTION LIMITS

TRPH = TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

TOTAL PAHs = POLYNUCLEAR AROMATIC HYDROCARBONS LESS NAPHTHALENES

TOTAL NAPHTHALENE = NAPHTHALENE, 1-METHYLNAPHTHALENE AND 2-METHYLNAPHTHALENES

—ST—ST— STORM DRAIN

MONITORING WELL

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

PAHs, NAPHTHALENES & TRPH IN GROUNDWATER FORMER HAWK MISSILE SITE G-01 - GEIGER KEY

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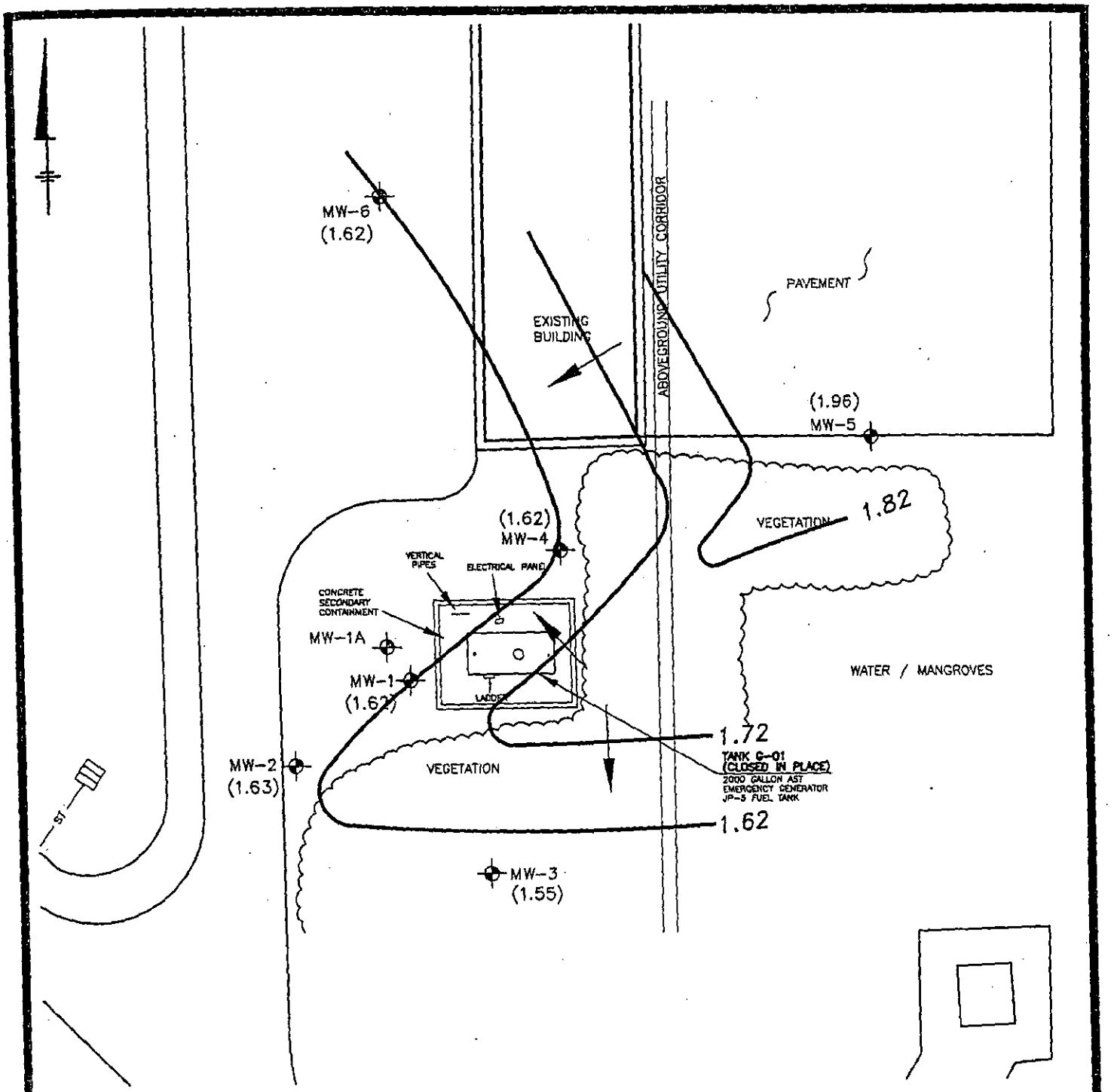
FIGURE 2-5

P: PAGESET\PLT-BL

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'



LEGEND

—ST—ST— STORM DRAIN

MONITORING WELL/SOIL BORING

GROUNDWATER ELEVATION CONTOUR LINE (FEET)

(1.55) RELATIVE GROUNDWATER ELEVATION (11/14/01 8:55am)

ESTIMATED GROUNDWATER FLOW DIRECTION

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

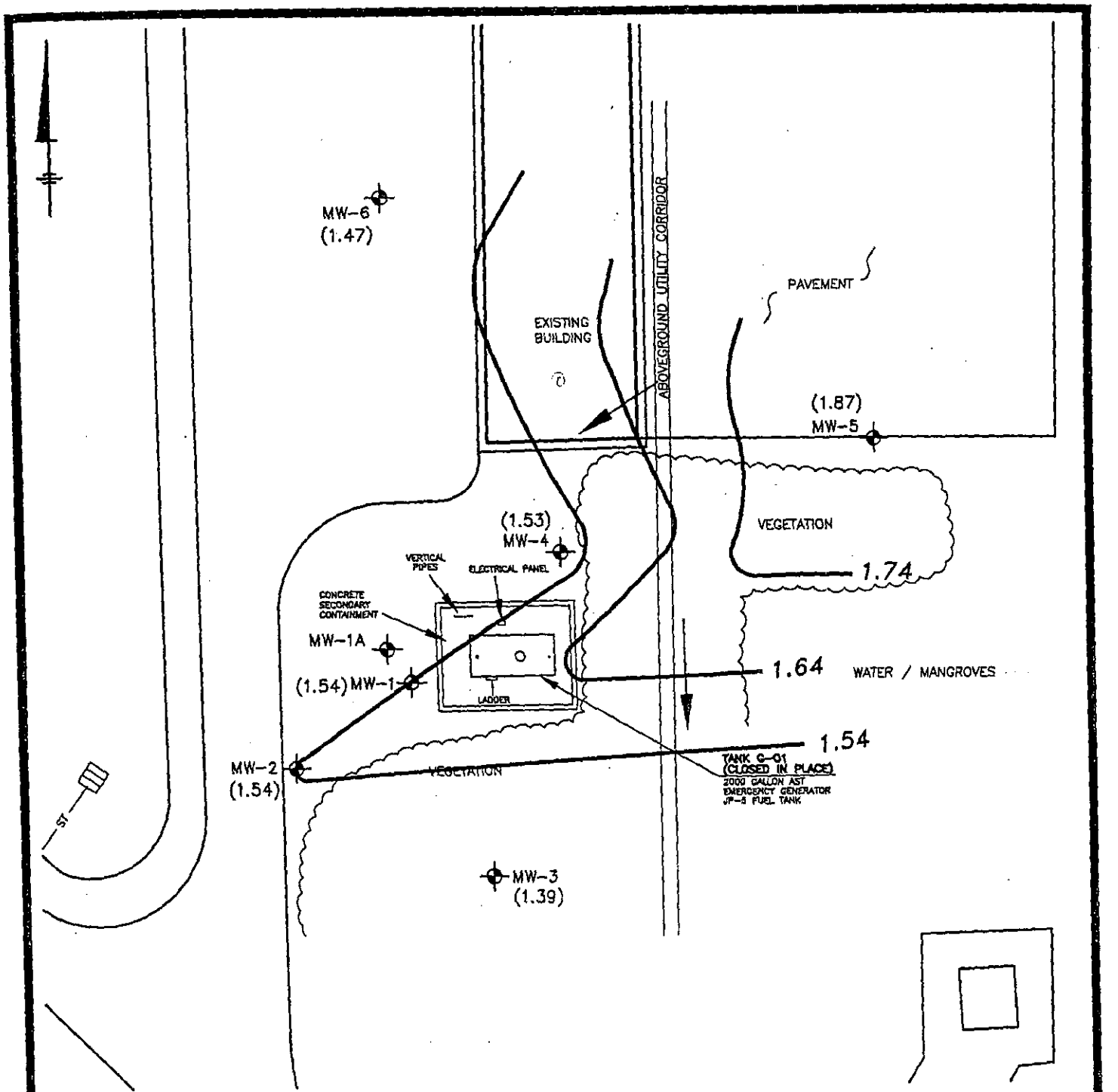
HYDRAULIC GRADIENT (LOW TIDE)
FORMER HAWK MISSILE SITE G-01
GEIGER KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE
2-6

P: PAGESET\PLT-BL

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'



LEGEND

—ST—ST— STORM DRAIN

MONITORING WELL/SOIL BORING

GROUNDWATER ELEVATION CONTOUR LINE (FEET)

(1.39) RELATIVE GROUNDWATER ELEVATION (11/14/01 5:00pm)

ESTIMATED GROUNDWATER FLOW DIRECTION

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

HYDRAULIC GRADIENT (MID-TIDE)
FORMER HAWK MISSILE SITE G-01
GEIGER KEY

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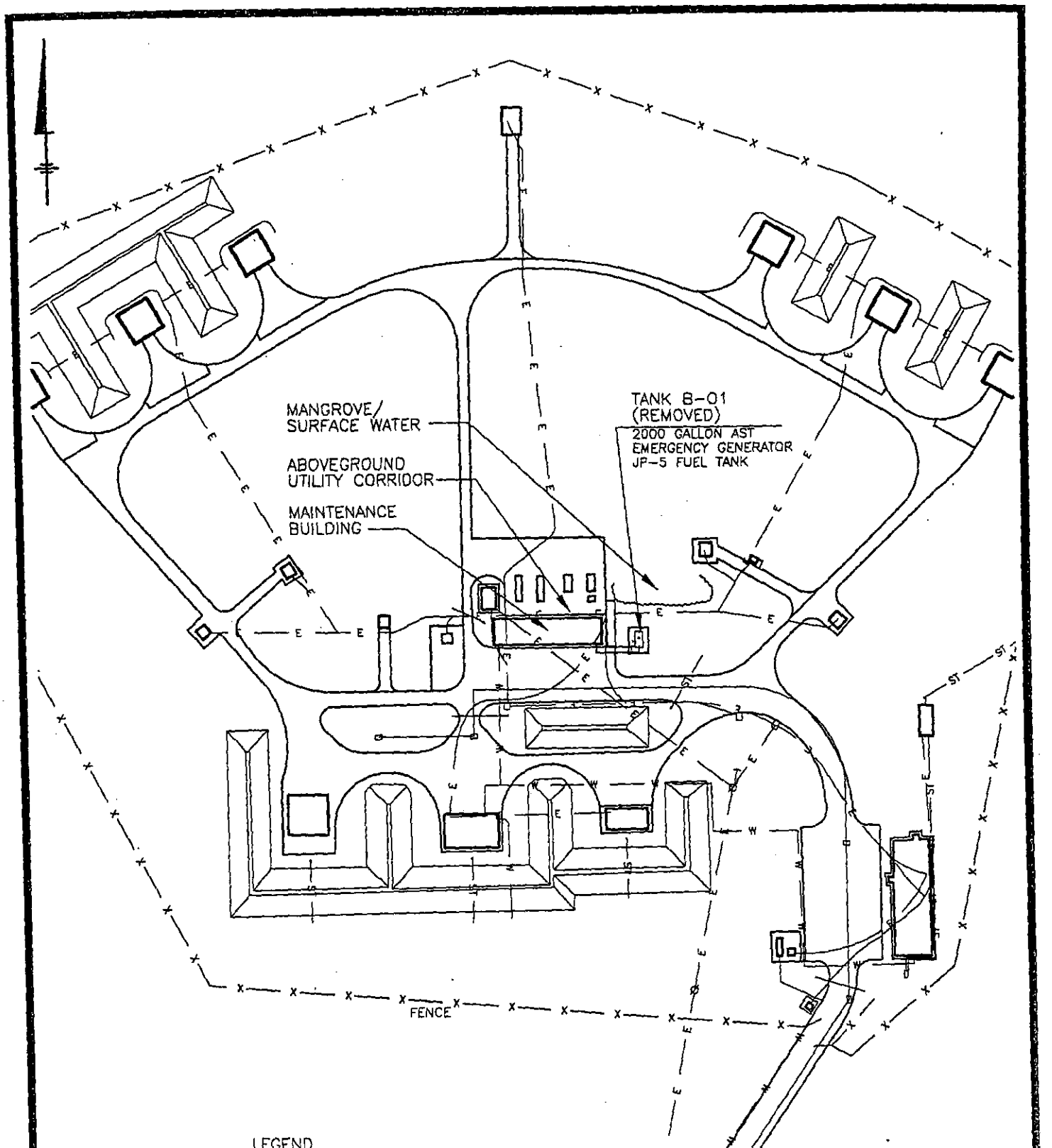
FIGURE
2-7

P: PAGESET\PLT-BL

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'QUEST ENVIRONMENTAL & INFRASTRUCTURE'



LEGEND

—E—E—	ELECTRIC LINE
—W—W—	WATER LINE
—ST—ST—	STORM DRAIN
———	ELECTRIC HANDHOLE

0 100' 200'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

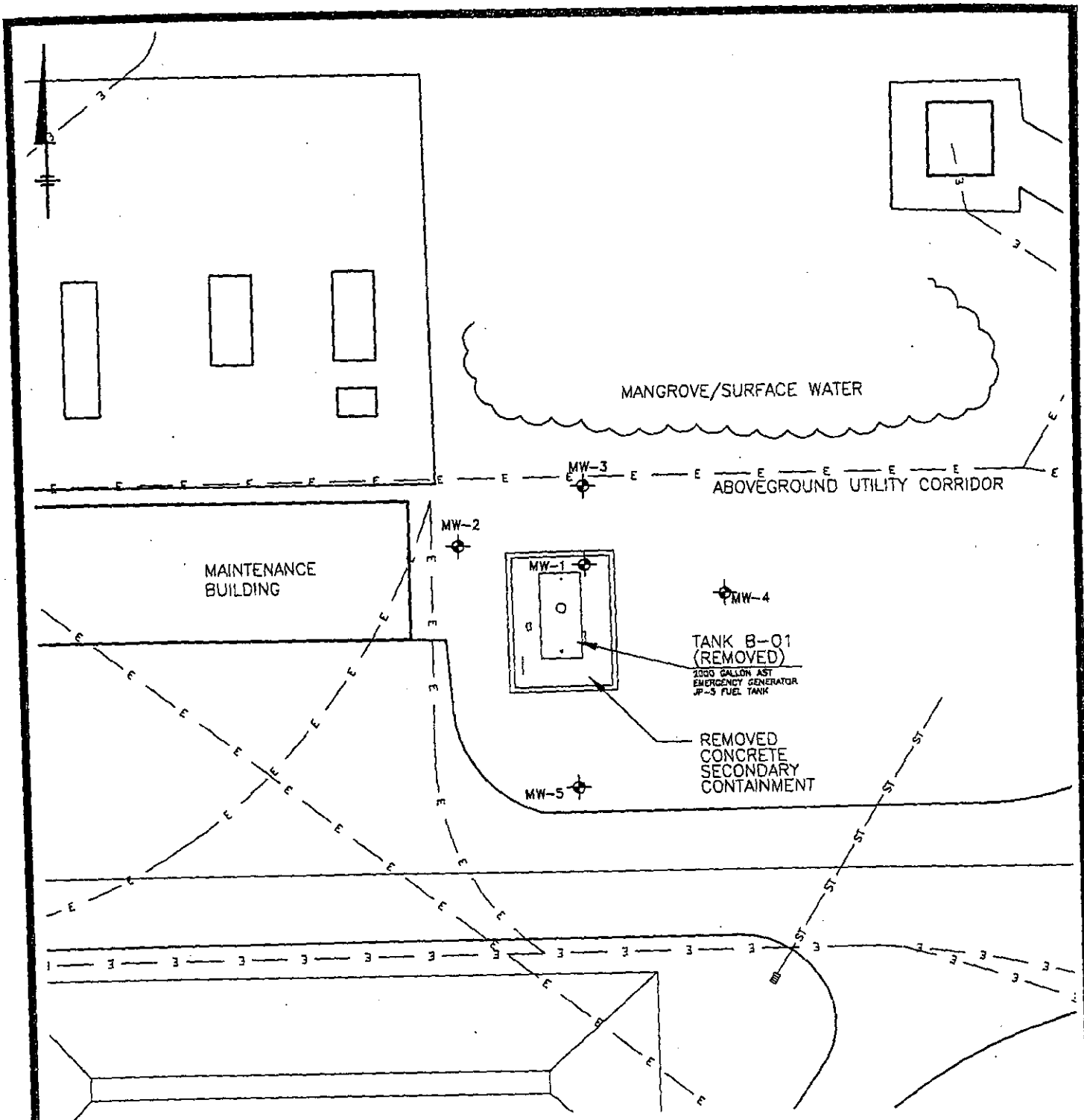
SITE VICINITY MAP FOR FORMER HAWK MISSILE SITE B-01 BOCA CHICA KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE 3-1

P: PAGESET/PLT-AP
1/31/02 TAM-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

- E — ELECTRIC LINE
- W — WATER LINE
- ST — STORM DRAIN
- ELECTRIC HANDHOLE
- MONITORING WELL/SOIL BORING

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

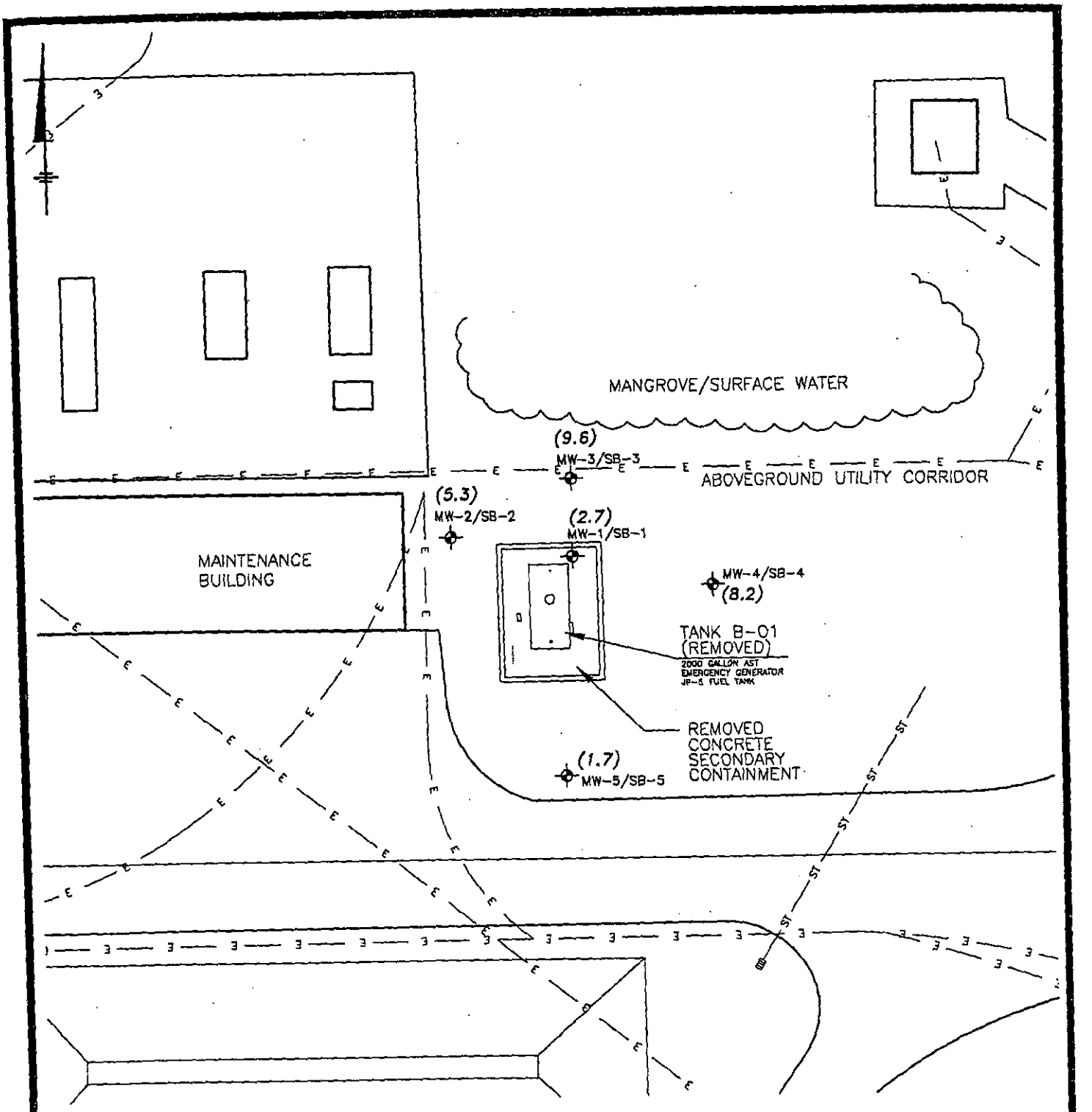
SITE MAP FOR FORMER HAWK MISSILE SITE B-01 BOCA CHICA KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE 3-2

P: PAGESET\PLT-AP

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

- E — ELECTRIC LINE
- W — WATER LINE
- ST — STORM DRAIN
- ELECTRIC HANDHOLE
- MONITORING WELL/SOIL BORING
- (24.9) HIGHEST OVA READING IN VADOSE ZONE (ppm)

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

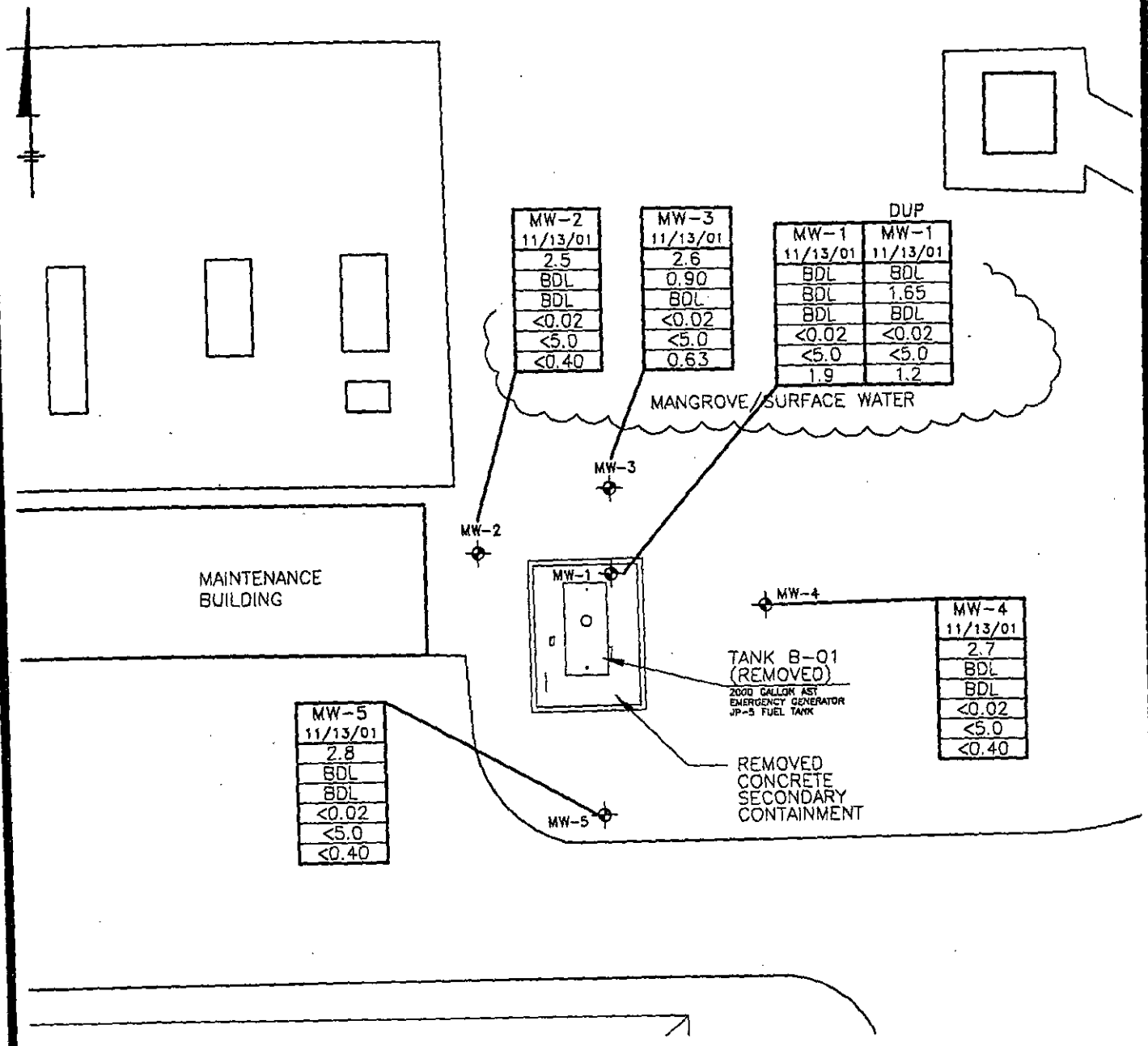
SOIL OVA MAP
FORMER HAWK MISSILE SITE B-01
BOCA CHICA KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE
3-3

P: PAGESET\PLT-AP
1/31/02 TAM-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

MONITORING WELL/SOIL BORING

MW-1	SAMPLE LOCATION
11/13/01	SAMPLE DATE
BDL	TOTAL VOAs (µg/L)
BDL	TOTAL PAHs (µg/L)
BDL	TOTAL NAPHTHALENE (µg/L)
<0.02	EDB (µg/L)
<5.0	LEAD (µg/L)
1.9	TRPH (mg/L)

(µg/L) = MICROGRAMS PER LITER
(mg/L) = MILLIGRAMS PER LITER
BDL = BELOW DETECTION LIMITS
VOA = BENZENE, TOLUENE, ETHYL BENZENE AND TOTAL XYLENES
PAH = POLYNUCLEAR AROMATIC HYDROCARBONS

0 20' 40'
GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

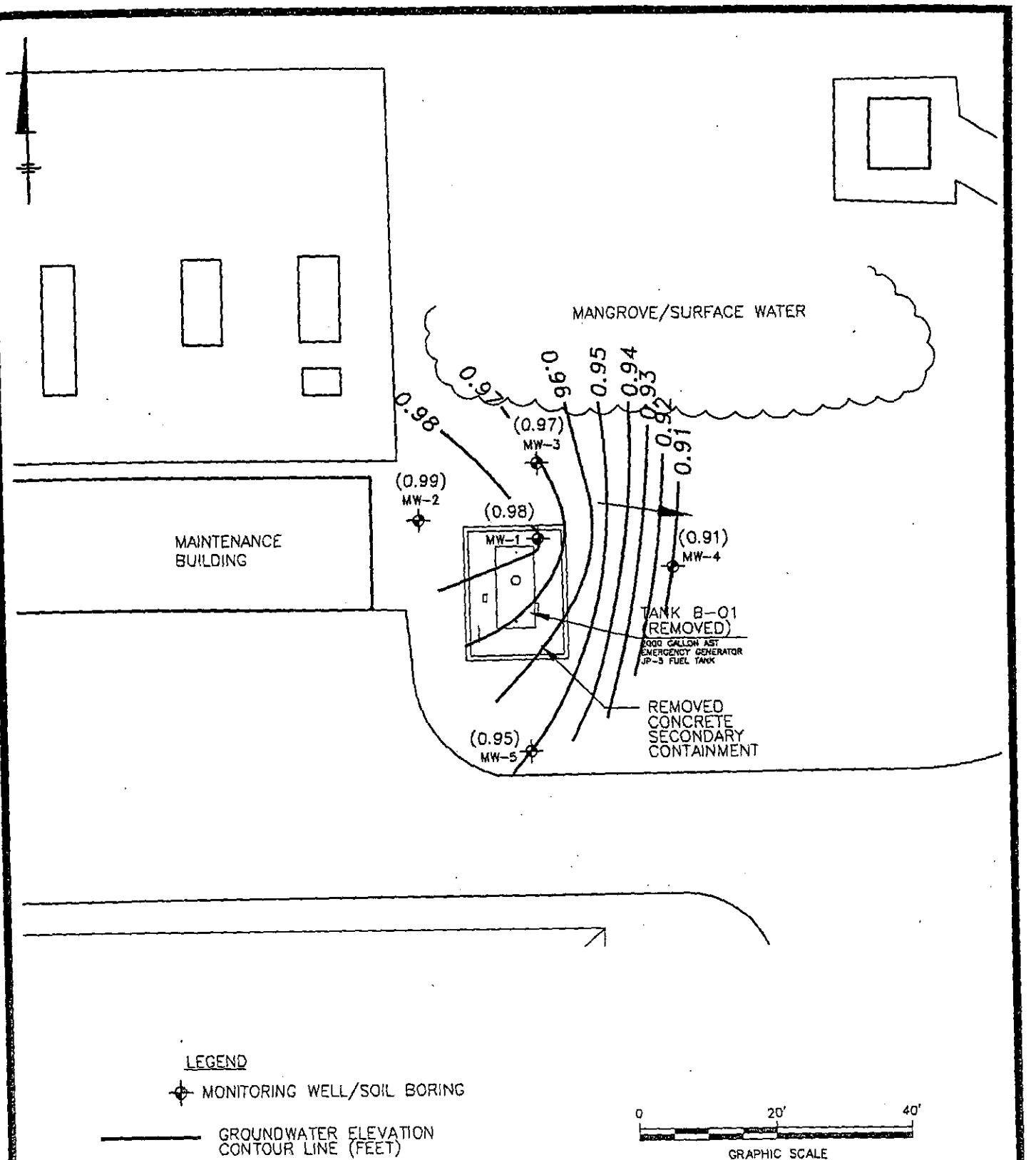
GROUNDWATER QUALITY
FORMER HAWK MISSILE SITE B-01
BOCA CHICA KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE 3-4

F: PAGESET\PLT-AP

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

MONITORING WELL/SOIL BORING

GROUNDWATER ELEVATION CONTOUR LINE (FEET)

(0.95) RELATIVE GROUNDWATER ELEVATION (11/13/01 3:48am)

ESTIMATED GROUNDWATER FLOW DIRECTION

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

HYDRAULIC GRADIENT (MID-TIDE)
FORMER HAWK MISSILE SITE B-01
BOCA CHICA KEY

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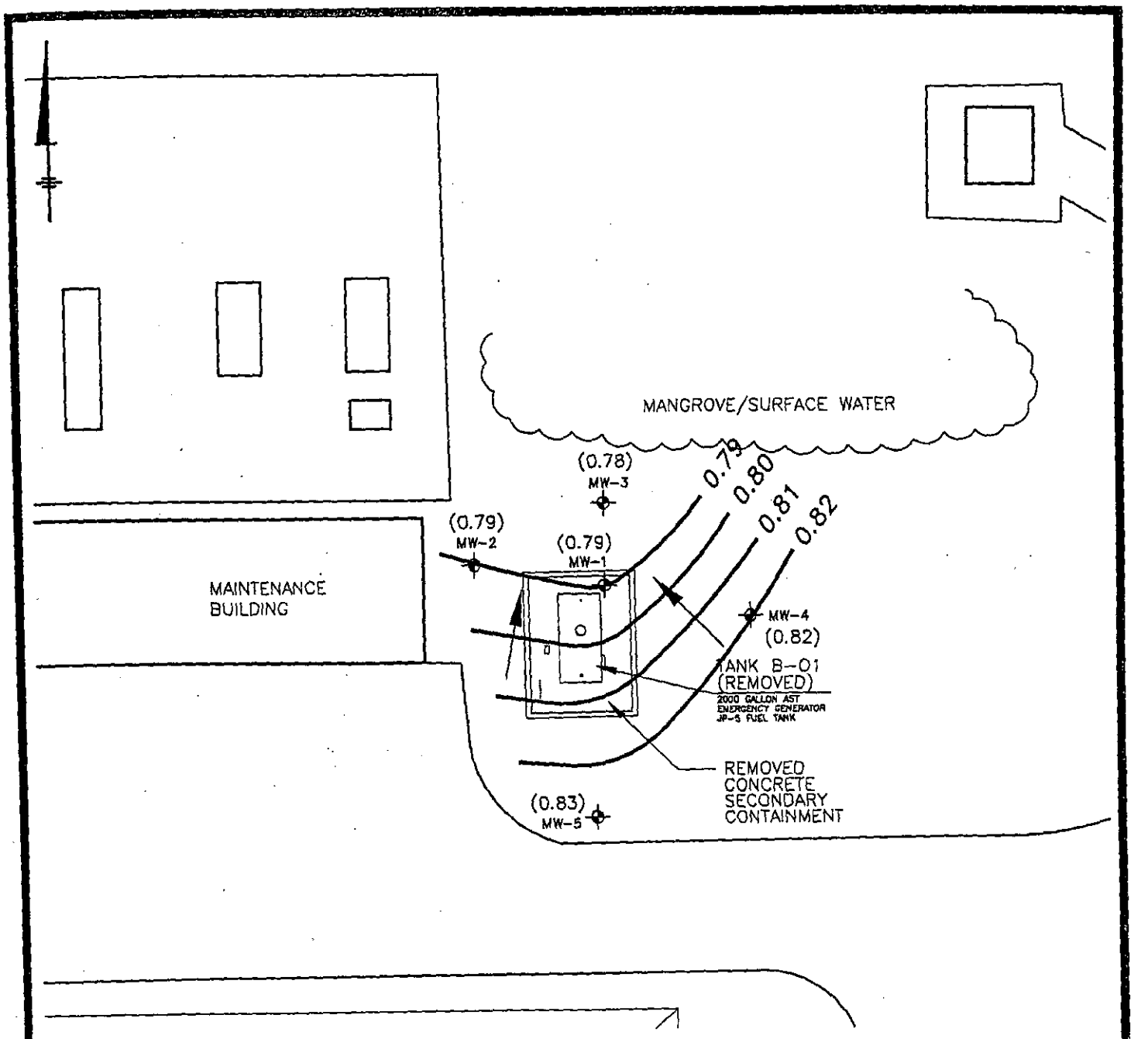
FIGURE
3-5

P: PAGESET\PLT-AP
1/25/02 TAM-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.



LEGEND

MONITORING WELL/SOIL BORING

GROUNDWATER ELEVATION CONTOUR LINE (FEET)

(0.82) RELATIVE GROUNDWATER ELEVATION (11/13/01 4:23pm)

ESTIMATED GROUNDWATER FLOW DIRECTION

0 20' 40'

GRAPHIC SCALE

NAVAL AIR STATION
KEY WEST, FLORIDA

SITE ASSESSMENT REPORT

HYDRAULIC GRADIENT (LOW TIDE)
FORMER HAWK MISSILE SITE B-01
BOCA CHICA KEY

BBL
BLASLAND, BOUCK & LEE, INC.

FIGURE
3-6

P: PAGESET\PLT-AP
1/31/02 TAM-54-JAR

SOURCE: Base map (Sitemap\G-01.dwg) provided by 'RUST ENVIRONMENTAL & INFRASTRUCTURE'.

Tables

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Table 2-1

Summary of Organic Vapor Analysis

Former Hawk Missile Site G-01
Geiger Key
NAS Key West, Florida

Boring/ Well	Date Sampled	Sample Depth (ft BLS)	Organic Vapors (ppm)	Notes
SB-1/ MW-1A	10/24/01	0-2	5.8	Pinkish white, oolitic lime sand w/limerock. 7.5 YR 8/2. SM
		2-4	8.8	Pinkish white, oolitic lime sand w/limerock. 7.5 YR 8/2. SM
		4-6	278	Pinkish white, silty oolitic lime sand w/limerock. Wet. Petro odor. 7.5 YR 8/2. SM
		10-12	40.3	Pinkish white, silty oolitic lime sand w/limerock. Wet. Petro odor. 7.5 YR 8/2. SM
		15-17	7.1	Pinkish white, silty oolitic lime sand w/limerock. Wet. Petro odor. 7.5 YR 8/2. SM
		20-22	26.1	Pinkish white, silty oolitic lime sand w/limerock. Wet. Petro odor. 7.5 YR 8/2. SM
		23-25	13.3	Pinkish white, silty oolitic lime sand w/limerock. Wet. Petro odor. 7.5 YR 8/2. SM
SB-2/ MW-2	10/24/01	0-2	13.8	Pinkish white, oolitic lime sand w/limerock. 7.5 YR 8/2. SM
		2-4	12.1	Pinkish white, oolitic lime sand w/limerock. Wet. 7.5 YR 8/2. SM
SB-3/ MW-3	10/24/01	0-2	29.8	Dark brown silty sand and peat. 7.5 YR 2.5/1. SM
		2-4	96.4	Dark brown silty sand and peat. Damp. Petro odor. 7.5 YR 2.5/1 SM
SB-4/ MW-4	10/24/01	0-2	28.3	Light pinkish white oolite. Silty w/organics. 7.5 YR 8/2. SM
		2-4	181	Light pinkish white oolite. Silty w/limestone fragments. 7.5 YR 8/2. SM
		4-6	234	Light pinkish white oolite. Silty w/limestone fragments. Wet @ 4'. 7.5 YR 8/2. SM
SB-5	10/24/01	0-2	14	Tan/gray oolitic lime sand w/limestone fragments and organics. 7.5 YR 7/2. SM
		2-4	998.2	Dark brown peat. Wet @ 3'. Petro odor. 7.5 YR 2.5/1. Pt
SB-6	10/24/01	0-1	8.4	Tan/gray silty oolite w/limestone fragments and oganics. 7.5 YR 7/2. SM
		1-2	8.5	Tan/gray silty , slightly clayey, oolite w/limestone fragments and organics. Wet @ 1'. 7.5 YR 7/2. SM
SB-7	10/24/01	0-2	24.9	Light pinkish white oolite w/quartz sand, organics, and limestone fragments. 7.5 YR 8/2. SM
		2-4	11.8	Dark brown peat. Wet. 7.5 YR 2.5/1. Pt
SB-8	10/24/01	0-2	13.3	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		2-4	19.4	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		4-6	261.5	Light pinkish white silty oolite w/quartz sand and limestone fragments. Wet. 7.5 YR 8/2. SM.
SB-9	10/24/01	0-2	21.7	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.

Boring/ Well	Date Sampled	Sample Depth (ft BLS)	Organic Vapors (ppm)	Notes
		2-4	92	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		4-6	590	Light pinkish white silty oolite w/quartz sand and limestone fragments. Wet @ 4'. 7.5 YR 8/2. SM.
SB-10/ MW-5	10/25/01	0-2	3.1	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		2-4	2.0	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		4-6	43.1	Light pinkish white silty oolite w/quartz sand and limestone fragments. Wet. 7.5 YR 8/2. SM.
SB-11	10/24/01	0-2	31.5	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		2-4	520	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		4-6	610	Light pinkish white silty oolite w/quartz sand and limestone fragments. Wet. 7.5 YR 8/2. SM.
SB-12/ MW-6	10/25/01	0-2	19.2	Light pinkish white silty oolite w/quartz sand and limestone fragments. 7.5 YR 8/2. SM.
		2-4	607	Light pinkish white silty oolite w/quartz sand and limestone fragments. Petro odor. 7.5 YR 8/2. SM.
		4-6	977	Light pinkish white silty oolite w/quartz sand and limestone fragments. Wet. Petro odor. 7.5 YR 8/2. SM.

ppm = parts per million ft = feet BLS = below land surface HC = hydrocarbon

Equipment: Photovac Microtip HL-200 photoionization detector.

Source: Blasland, Bouck, & Lee, Inc. 2001.

Table 2-2

Summary of Detected Soil Analytical Parameters

Former Hawk Missile Site G-01
Geiger Key
NAS Key West, Florida

Sample Date: October 24, 2001

Parameter	SB-1 (2-4)	SB-3 (0-2)	SB-5 (2-4)	Target Level
Benzene	<1.1	<1.2	17	1,600 (3)
Toluene	<1.1	<1.2	69	2,600,000 (3)
Ethylbenzene	<1.1	<1.2	1,100	8,400,000 (3)
Total Xylenes	<1.1	<1.2	7,600	40,000,000 (3)
Naphthalene	<390	<430	16,000	270,000 (3)
Phenanthrene	<390	<430	15,000	30,000,000 (3)
TRPH (2)	14,000	<4,000	**9,200,000**	2,500,000 (3)

Notes:
All results in micrograms per kilogram (ug/Kg).
Concentrations in bold exceed target level.

ND = not detected at laboratory detection limits (each parameter varies)
(1) Halogenated and Aromatic Volatiles
(2) Total Recoverable Petroleum Hydrocarbons
(3) Direct Exposure Commercial/Industrial Use

Sources: Blasland, Bouck, & Lee, Inc., 2001; Analytical Environmental Services, Inc., 2001.

Table 2-3

Summary of Soil Analytical Data
(Synthetic Precipitation Leaching Procedure)

Former Hawk Missile Site G-01
Geiger Key
NAS Key West, Florida

Sample Date: October 24, 2001

Parameter	SB-1 (2-4)	SB-3 (0-2)	SB-5 (2-4)	Target Level
Total VOAs(1)	ND	ND	ND	Varies
Total PAHs	ND	ND	ND	Varies
TRPH (3)	<4.0	<4.0	**6.5**	5

Notes:
All results in micrograms per liter (ug/L), except TRPH in milligrams per liter (mg/L)
ND = not detected at laboratory detection limits (each parameter varies)
(1) Total Volatile Organic Aromatics
(2) Total Polynuclear Aromatic Hydrocarbons
(3) Total Recoverable Petroleum Hydrocarbons
Concentrations in bold exceed target level.

Sources: Blasland, Bouck, & Lee, Inc. 2001; Analytical Environmental Services, Inc, 2001.

Table 2-4

Monitoring Well Completion Summary

Former Hawk Missile Site G-01
Geiger Key
NAS Key West, Florida

Well	Date Installed	Purpose	Total Well Depth (ft BLS)	Diameter (in)	Well Casing Length (ft)	Screen Length (ft)	Screen Slot Size (in)	Sand Pack	Screen Interval (ft BLS)	Completion
MW-1	10/24/01	Source	12	2	2	10	0.010	30/45	2-12	Flush
MW-1A	10/24-25/01	Vertical	25	2	20	5	0.010	30/45	20-25	Flush
MW-2	10/24/01	Perimeter	12	2	2	10	0.010	30/45	2-12	Flush
MW-3	10/24/01	Perimeter	12	2	2	10	0.010	30/45	2-12	Flush
MW-4	10/24/01	Perimeter	12	2	2	10	0.010	30/45	2-12	Flush
MW-5	10/25/01	Perimeter	12	2	2	10	0.010	30/45	2-12	Flush
MW-6	10/25/01	Perimeter	12	2	2	10	0.010	30/45	2-12	Flush

Notes:
All monitoring wells are constructed of Schedule 40 PVC.
BLS = below land surface, in = inches, ft = feet

Source: Blasland, Bouck, & Lee, Inc., 2001.

Table 2-5

Summary of Groundwater Analytical Data
Purgeable Aromatics, EDB and Lead

Former Hawk Missile Site G-01
Geiger Key
NAS Key West, Florida

Sample Date: November 14, 2001

Well No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE[1]	EDB[2]	Lead
MW-1	<1.0	<1.0	<1.0	<3.0	<2.0	<0.02	<5
MW-1A	<1.0	<1.0	<1.0	<3.0	<2.0	<0.02	<5
MW-2	<1.0	<1.0	1.5	5.1	<2.0	<0.02	<5
MW-3	<1.0	<1.0	1.6	5.4	<2.0	<0.02	<5
MW-4	<1.0	<1.0	2.9	4.5	<2.0	<0.02	<5
MW-5	<1.0	<1.0	2.3	4.8	<2.0	<0.02	<5
MW-6	**6.3**	<1.0	29	5.7	<2.0	<0.02	<5
Duplicate (MW-6)	**6.7**	<1.0	26	1.0	<2.0	<0.02	<5
62-777, FAC Target Level	1	40	30	20	50	0.02	15

Notes:
All results in micrograms per liter (ug/L)
(1) Methyl tert-butyl ether
(2) 1,2 dibromoethane
Concentrations in bold exceed target level.

Sources: Blasland, Bouck, & Lee, Inc., 2001; Analytical Environmental Services, Inc., 2001.

Table 2-6

Summary of Groundwater Analytical Data
Polynuclear Aromatic Hydrocarbons and TRPH

Former Hawk Missile Site G-01
Geiger Key
NAS Key West, Florida

Sample Date: November 14, 2001

Well No.	Total PAHs[1]	Acenaphthene	Fluorene	Phenanthrene	Benzo(b) fluoranthene	Benzo(a) pyrene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd)pyrene
MW-1	ND	<10	<10	<10	<0.20	<0.20	<0.20	<0.20
MW-1A	ND	<10	<10	<10	<0.20	<0.20	<0.20	<0.20
MW-2	ND	<10	<10	<10	<0.20	<0.20	<0.20	<0.20
MW-3	ND	<10	<10	<10	<0.20	<0.20	<0.20	<0.20
MW-4	2.37	<10	<10	<10	**0.69**	**0.44**	**0.54**	**0.70**
MW-5	77	66	<10	11	<0.20	<0.20	<0.20	<0.20
MW-6	13.8	<10	6.5	7.3	<0.20	<0.20	<0.20	<0.20
Duplicate (MW-6)	ND	<10	<10	<10	<0.20	<0.20	<0.20	<0.20
62-777, FAC Target Level	Varies	20	280	210	0.2	0.2	0.2	0.2

Well No.	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	TRPH[1]
MW-1	<10	<10	<10	0.81
MW-1A	<10	<10	<10	<0.40
MW-2	<10	<10	<10	<0.40
MW-3	<10	<10	<10	0.71
MW-4	11	16	19	1.7
MW-5	26	<10	<10	1.1
MW-6	38	60	47	**8.1**
Duplicate (MW-6)	42	72	53	6.9
62-777, FAC Target Level	20	20	20	5

Notes:
All results in micrograms per liter (ug/L), except TRPH in milligrams per liter (mg/L).
ND = not detected at laboratory detection limits (varies)
Concentrations in bold exceed target levels.

(1) Polynuclear Aromatic Hydrocarbons (all except naphthalene and methylnaphthalenes)
(2) Total Recoverable Petroleum Hydrocarbons

Sources: Blasland, Bouck, & Lee, Inc., 2001; Analytical Environmental Services, Inc., 2001.

Table 3-1

Summary of Organic Vapor Analysis

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Boring/ Well	Date Sampled	Sample Depth (ft BLS)	Total Organic Vapors (ppm)	Notes
SB-1/ MW-1	10/22/01	0-2	2.7	Pinkish white, oolitic sand, with coral and limestone fragments. 2.5 YR 8/2. SM.
		2-4	4.2	Pinkish white, clayey oolitic sand, with coral and limestone fragments. Wet @ 2.5'. 2.5 YR 8/2. SM.
		10-12	5.3	Pinkish white, clayey oolitic sand, with minor limestone fragments. 2.5 YR 8/3. SM.
		15-17	4.2	White/pinkish white limestone with minor coral hash. 2.5 YR 8/2.
		20-22	5.6	White/pinkish white limestone with minor coral hash. 2.5 YR 8/2.
		22-24	4.1	White/pinkish white limestone with minor coral hash. 2.5 YR 8/2.
		24-25	6.0	White/pinkish white limestone with minor coral hash. 2.5 YR 8/2.
SB-2/ MW-2	10/22/01	0-2	5.3	Pinkish white, silty oolitic sands. 5 YR 8/2.
		2-4	2.7	Pinkish white, silty oolitic sands. Wet @ 3'. 5 YR 8/2.
SB-3/ MW-3	10/23/01	0-2	6.1	Pinkish white, silty oolitic sands. 5 YR 8/2.
		2-4	9.6	Pinkish white, silty oolitic sands. 5 YR 8/2.
		5-7	4.5	Gray silty oolitic sands. Wet @ 4'. 5 YR 6/1.
SB-4/ MW-4	10/23/01	0-2	8.2	Pinkish white, silty oolitic sands. 5 YR 8/2.
		2-4	11.7	Pinkish white, silty oolitic sands. Wet @ 3.5'. 5 YR 8/2.
SB-5/ MW-5	10/23/01	0-2	1.7	Pinkish white, silty oolitic sands. 5 YR 8/2.
		2-4	4.5	Pinkish white, silty oolitic sands. Wet @ 3.5'. 5 YR 8/2.

ppm = parts per million ft = feet BLS = below land surface

Equipment: Photovac Microtip HL-200photoionization detector.

Source: Blasland, Bouck, & Lee, Inc. 2001.

Table 3-2

Summary of Detected Soil Analytical Parameters

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Sample Date: October 22, 2001

Parameter	SB-1 (0-2)	SB-4 (0-2)	Target Level
Total Volatiles (1)	ND	ND	Varies
PAHs(2)	ND	ND	Varies
TRPH (3)	<4.7	<4.6	2,500 (4)

Notes:
All results in micrograms per kilogram (ug/Kg), except TRPH in milligrams per kilogram (mg/Kg)

ND = not detected at laboratory detection limits (each parameter varies)

(1) Halogenated and Aromatic Volatiles
(2) Polynuclear Aromatic Hydrocarbons
(3) Total Recoverable Petroleum Hydrocarbons
(4) Direct Exposure Commercial/Industrial Use

Sources: Blasland, Bouck, & Lee, Inc., 2001; Analytical Environmental Services, Inc., 2001.

Table 3-3

Summary of Soil Analytical Data
(Synthetic Precipitation Leaching Procedure)

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Sample Date: October 22, 2001

Parameter	SB-1 (0-2)	SB-4 (0-2)	Target Level
Total VOAs(1)	ND	ND	Varies
Total PAHs(2)	ND	ND	Varies
TRPH (3)	<4.0	<4.0	5

Notes:
All results in micrograms per liter (ug/L), except TRPH in milligrams per liter (mg/L)
ND = not detected at laboratory detection limits (each parameter varies)
(1) Total Volatile Organic Aromatics
(2) Total Polynuclear Aromatic Hydrocarbons
(3) Total Recoverable Petroleum Hydrocarbons

Sources: Blasland, Bouck, & Lee, Inc. 2001; Analytical Environmental Services, Inc., 2001.

Table 3-4

Monitoring Well Completion Summary

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Well	Date Installed	Purpose	Total Well Depth (ft BLS)	Diameter (in)	Well Casing Length (ft)	Screen Length (ft)	Screen Slot Size (in)	Sand Pack	Screen Interval (ft BLS)	Completion
MW-1	10/23/01	Source	11	2	1	10	0.010	30/45	1-11	Flush
MW-2	10/23/01	Perimeter	11	2	1	10	0.010	30/45	1-11	Flush
MW-3	10/23/01	Perimeter	11	2	1	10	0.010	30/45	1-11	Flush
MW-4	10/23/01	Perimeter	11	2	1	10	0.010	30/45	1-11	Flush
MW-5	10/23/01	Perimeter	11	2	1	10	0.010	30/45	1-11	Flush

Notes:
All monitoring wells are constructed of Schedule 40 PVC.
BLS = below land surface, in = inches, ft = feet

Source: Blasland, Bouck, & Lee, Inc., 2001.

Table 3-5

Summary of Groundwater Analytical Data
Purgeable Aromatics, EDB and Lead

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Sample Date: November 13, 2001

Well No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE[1]	EDB[2]	Lead
MW-1	<1.0	<1.0	<1.0	<3.0	<2.0	<0.02	<5
Duplicate (MW-1)	<1.0	<1.0	<1.0	<3.0	<2.0	<0.02	<5
MW-2	<1.0	<1.0	<1.0	2.5	<2.0	<0.02	<5
MW-3	<1.0	<1.0	<1.0	2.6	<2.0	<0.02	<5
MW-4	<1.0	<1.0	<1.0	2.7	<2.0	<0.02	<5
MW-5	<1.0	<1.0	<1.0	2.8	<2.0	<0.02	<5
62-777, FAC Target Level	1	40	30	20	50	0.02	15

Notes:
All results in micrograms per liter (ug/L)
(1) Methyl tert-butyl ether
(2) 1,2 dibromoethane

Sources: Blasland, Bouck, & Lee, Inc., 2001; Analytical Environmental Services, Inc., 2001.

Table 3-6

Summary of Groundwater Analytical Data
Polynuclear Aromatic Hydrocarbons and TRPH

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Sample Date: November 13, 2001

Well No.	Total PAHs[1]	Benzo(b) fluoranthene	Benzo(a) pyrene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd)pyrene
MW-1	ND	<0.20	<0.20	<0.20	<0.20
Duplicate (MW-1)	1.65	**0.41**	**0.30**	**0.41**	**0.53**
MW-2	ND	<0.20	<0.20	<0.20	<0.20
MW-3	0.90	<0.20	<0.20	**0.39**	**0.51**
MW-4	ND	<0.20	<0.20	<0.20	<0.20
MW-5	ND	<0.20	<0.20	<0.20	<0.20
62-777, FAC Target Level	Varies	0.2	0.2	0.2	0.2

Well No.	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	TRPH[1]
MW-1	<10	<10	<10	1.9
Duplicate (MW-1)	<10	<10	<10	1.2
MW-2	<10	<10	<10	<0.40
MW-3	<10	<10	<10	0.63
MW-4	<10	<10	<10	<0.40
MW-5	<10	<10	<10	<0.40
62-777, FAC Target Level	20	20	20	5

Notes:
All results in micrograms per liter (ug/L), except TRPH in milligrams per liter (mg/L).
ND = not detected at laboratory detection limits (varies)

(1) Polynuclear Aromatic Hydrocarbons (all except naphthalene and methylnaphthalenes)
(2) Total Recoverable Petroleum Hydrocarbons

Sources: Blasland, Bouck, & Lee, Inc., 2001; Analytical Environmental Services, Inc., 2001.

Table 3-7

Tidal Influence on Water Levels

Former Hawk Missile Site B-01
Boca Chica Key
NAS Key West, Florida

Well	TOC Elevation (ft MSL)	Latitude/ Longitude	Depth to Water 11:48am 11/13/01	Depth to Water 4:23pm 11/13/01	Water Table Elevation 11:48am 11/13/01	Water Table Elevation 4:23pm 11/13/01
MW-1	4.05	N24°35'50.6"/W81°42'09.5"	3.07	3.26	0.98	0.79
MW-2	3.99	N24°35'50.8"/W81°42'09.8"	3.00	3.20	0.99	0.79
MW-3	3.96	N24°35'50.8"/W81°42'09.5"	2.99	3.18	0.97	0.78
MW-4	3.89	N24°35'50.7"/W81°42'09.2"	2.98	3.07	0.91	0.82
MW-5	3.94	N24°35'50.6"/W81°42'09.5"	2.99	3.11	0.95	0.83

Notes:
All depth to water measurements taken from top of casing in feet
ft MSL = feet mean sea level (relative)
TOC = top of casing
Benchmark assumed 5.00 ft MSL
Tides for Boca Chica Channel Bridge: 11/13/01: Low - 3:09 am; 3:07 pm High –9:49 am; 9:32 pm

Source: Blasland, Bouck, & Lee, Inc., 2001; Tides Online, 2001.

Appendix A

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

November 13, 2001

Amanda Shearer
Blasland, Bouck & Lee
15741 Vinola Court
Montverde, FL 34756
TEL (407) 469-3165
FAX (407) 469-3165

RE: Hawk Missle Site G-O1 Order 0110588

Dear Amanda Shearer:

Analytical Environmental Servs, Inc. received 3 samples on 10/25/2001 10:35:00 AM for the analyses presented in the following report.

No problems were encountered during analyses. Additionally, all results for the associated quality control samples were within EPA and/or AES established limits except where noted in the project Case Narrative.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

for

April Harvey
Customer Service Manager

Revision 1: Detection Limits corrected at client request.

2781 Presidential Parkway, Suite 111 • Atlanta, Georgia 30340 • Tel: (770) 457-8177 • FAX: (770) 457-8188

ALYTICAL ENVIRONMENTAL SERVICES, INC

Presidential Parkway, Suite 111, Atlanta GA 30340-0370

.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 0110588

Date: 10/24/01 Page 1 of 1

PANY: aslind Bouck + Lee

ADDRESS: 3350 Buschwood Park Dr 100 Tampa, FL 33618

NE: 07/469-3165

FAX: 407/469-3352

PLED BY: Shearer / D. Pressa

SIGNATURE:

ANALYSIS REQUESTED

SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	8270 Sim PAH / SPLP	FL Pro + SPLP	8020 + SPLP	% moisture	REMARKS	No # of Containers
SB-1 (2-4)	10/24/01	910	✓		SO	✓	✓	✓	✓	need both totals	
SB-3 (0-2)	10/24/01	1330	✓		SO	✓	✓	✓	✓	+ SPLP num	
SB-5 (2-4)	10/24/01	1400	✓		SO	✓	✓	✓	✓	"	

PRESERVATION

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
	10/24/01 1530	1: Brian Fried	10/25/01 10:35AM
		2:	
		3:	

PROJECT INFORMATION

PROJECT NAME: Hawk Missile Site G-01

PROJECT #: 880.26.03

FAC ID#:

SITE ADDRESS: NAS Key West

PROJECT MANAGER: Amanda Shearer

INVOICE TO: (IF DIFFERENT FROM ABOVE)

RECEIPT

Total # of Containers

Turnaround Time Request

- ✓ Standard 3-5 Business Days
- ○ Same Day Rush (auth req.)
- ○ Next Business Day Rush
- ○ 2 Business Day Rush
- ○ Other _____

PROGRAM (see codes): _____

DATA PACKAGE: I II III IV

CIAL INSTRUCTIONS/COMMENTS: eed both totals + SPLP

SHIPMENT METHOD

OUT / / VIA:

IN / / VIA:

CLIENT FedEx UPS MAIL COURIER

GREYHOUND OTHER _____

OTE/CONTRACT #:

TRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

ESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) NA = None

HNO3 THIST MSUST NCUST SCUST GAUST GACONV FLCONV

White Copy - ORIGINAL; Yellow Copy - LAB; Pink Copy - CLIENT

Analytical Environmental Servs, Inc.

Sample Receipt Checklist

Client Blasland, Bouck, & Lee

Work Order Number 0110588

Date and Time 10/25/01 @ 10:35AM

Received by BFF

Checklist completed by Brian Fried (Signature) _____ (Date)

Reviewed by SM (Initials) 10/25/01 (Date)

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ✓	No _	Not Present _
Custody seals intact on shippping container/cooler?	Yes ✓	No _	Not Present _
Custody seals intact on sample bottles?	Yes _	No _	Not Present ✓
Chain of custody present?	Yes ✓	No _	
Chain of custody signed when relinquished and received?	Yes ✓	No _	
Chain of custody agrees with sample labels?	Yes ✓	No _	
Samples in proper container/bottle?	Yes ✓	No _	
Sample containers intact?	Yes ✓	No _	
Sufficient sample volume for indicated test?	Yes ✓	No _	
All samples received within holding time?	Yes ✓	No _	
Container/Temp Blank temperature in compliance?	Yes ✓	No _	On Ice 5°C
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes _	No _
Water - pH acceptable upon receipt?	~~Yes _~~	~~No _~~ → N/A	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments:

Corrective Action

Analytical Environmental Servs, Inc. Date: *05-Nov-01*

CLIENT: Blasland, Bouck & Lee
Project: Hawk Missle Site G-O1
Lab Order: 0110588

CASE NARRATIVE

PAH Analysis via SW-846 Method 8270C

The recovery of benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene was above laboratory acceptance limits in the LCS sample analyzed as part of the extraction batch. Although the data may have a high bias, these target analytes were not observed in the client samples.

Due to matrix interference, it was not possible to measure any target analytes in sample SB-5(2-4) (AES# 0110588-003C) without dilution. The sample was diluted ten-fold and reanalyzed and all associated quality control was within laboratory acceptance limits. The accompanying results of the diluted sample were reported.

Analytical Environmental Servs, Inc.

Date: *13-Nov-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(2-4)
Lab Order:	0110588	**Collection Date:**	10/24/2001 9:10:00 AM
Project:	Hawk Missle Site G-O1		
Lab ID:	0110588-001	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	100		µg/L	20	10/26/2001 6:58:00 PM
Ethylbenzene	BRL	100		µg/L	20	10/26/2001 6:58:00 PM
m,p-Xylene	BRL	100		µg/L	20	10/26/2001 6:58:00 PM
Methyl tert-butyl ether	BRL	100		µg/L	20	10/26/2001 6:58:00 PM
o-Xylene	BRL	100		µg/L	20	10/26/2001 6:58:00 PM
Toluene	BRL	100		µg/L	20	10/26/2001 6:58:00 PM
Surr: 4-Bromofluorobenzene	79.7	70.2-131		%REC	20	10/26/2001 6:58:00 PM
Surr: Dibromofluoromethane	89.2	80.3-123		%REC	20	10/26/2001 6:58:00 PM
Surr: Toluene-d8	92.3	89.1-120		%REC	20	10/26/2001 6:58:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Acenaphthylene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Acenaphthene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Fluorene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Phenanthrene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Anthracene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Fluoranthene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Pyrene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Benz(a)anthracene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Chrysene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Benzo(b)fluoranthene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Benzo(k)fluoranthene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Benzo(a)pyrene	BRL	120		µg/Kg-dry	1	10/31/2001 7:49:00 PM
Dibenz(a,h)anthracene	BRL	120		µg/Kg-dry	1	10/31/2001 7:49:00 PM
Benzo(g,h,i)perylene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Indeno(1,2,3-cd)pyrene	BRL	390		µg/Kg-dry	1	10/30/2001 8:46:00 PM
Surr: 2-Fluorobiphenyl	61.6	26-99		%REC	1	10/30/2001 8:46:00 PM
Surr: 4-Terphenyl-d14	72.6	29-101		%REC	1	10/30/2001 8:46:00 PM
Surr: Nitrobenzene-d5	55.7	15-109		%REC	1	10/30/2001 8:46:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Acenaphthylene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Acenaphthene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Fluorene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Phenanthrene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Anthracene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Fluoranthene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Pyrene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Benz(a)anthracene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quanititation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *13-Nov-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(2-4)
Lab Order:	0110588	**Collection Date:**	10/24/2001 9:10:00 AM
Project:	Hawk Missle Site G-O1		
Lab ID:	0110588-001	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Chrysene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Benzo(b)fluoranthene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Benzo(k)fluoranthene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Benzo(a)pyrene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Dibenz(a,h)anthracene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Benzo(g,h,i)perylene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Indeno(1,2,3-cd)pyrene	BRL	100		µg/L	1	10/30/2001 2:05:00 AM
Surr: Nitrobenzene-d5	55.9	40-110		%REC	1	10/30/2001 2:05:00 AM
Surr: 2-Fluorobiphenyl	81.2	43-110		%REC	1	10/30/2001 2:05:00 AM
Surr: 4-Terphenyl-d14	75.4	10-121		%REC	1	10/30/2001 2:05:00 AM
VOLATILE ORGANICS		**SW8260B**				Analyst: **JTC**
m,p-Xylene	BRL	1.1		µg/Kg-dry	1	10/29/2001 10:54:00 PM
o-Xylene	BRL	1.1		µg/Kg-dry	1	10/29/2001 10:54:00 PM
Methyl tert-butyl ether	BRL	5.7		µg/Kg-dry	1	10/29/2001 10:54:00 PM
Benzene	BRL	1.1		µg/Kg-dry	1	10/29/2001 10:54:00 PM
Toluene	BRL	1.1		µg/Kg-dry	1	10/29/2001 10:54:00 PM
Ethylbenzene	BRL	1.1		µg/Kg-dry	1	10/29/2001 10:54:00 PM
Surr: 4-Bromofluorobenzene	73.1	50-150		%REC	1	10/29/2001 10:54:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	14	4.7		mg/Kg-dry	1	10/31/2001 3:42:00 AM
Surr: C39	79.5	60-118		%REC	1	10/31/2001 3:42:00 AM
Surr: o-Terphenyl	82.5	42-193		%REC	1	10/31/2001 3:42:00 AM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	4.0		mg/L	1	10/31/2001 2:30:00 AM
Surr: C39	66.8	42-193		%REC	1	10/31/2001 2:30:00 AM
Surr: o-Terphenyl	87.8	82-142		%REC	1	10/31/2001 2:30:00 AM
PERCENT MOISTURE		**D2216**				Analyst: **MLW**
Percent Moisture	14.8	0		wt%	1	10/29/2001 5:32:00 PM

Qualifiers:

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B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *13-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0110588
Project: Hawk Missle Site G-O1
Lab ID: 0110588-002

Client Sample ID: SB-3(0-2)
Collection Date: 10/24/2001 1:30:00 PM
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	100		µg/L	20	10/26/2001 7:33:00 PM
Ethylbenzene	BRL	100		µg/L	20	10/26/2001 7:33:00 PM
m,p-Xylene	BRL	100		µg/L	20	10/26/2001 7:33:00 PM
Methyl tert-butyl ether	BRL	100		µg/L	20	10/26/2001 7:33:00 PM
o-Xylene	BRL	100		µg/L	20	10/26/2001 7:33:00 PM
Toluene	BRL	100		µg/L	20	10/26/2001 7:33:00 PM
Surr: 4-Bromofluorobenzene	79.7	70.2-131		%REC	20	10/26/2001 7:33:00 PM
Surr: Dibromofluoromethane	88.7	80.3-123		%REC	20	10/26/2001 7:33:00 PM
Surr: Toluene-d8	94.0	89.1-120		%REC	20	10/26/2001 7:33:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Acenaphthylene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Acenaphthene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Fluorene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Phenanthrene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Anthracene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Fluoranthene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Pyrene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Benz(a)anthracene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Chrysene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Benzo(b)fluoranthene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Benzo(k)fluoranthene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Benzo(a)pyrene	BRL	130		µg/Kg-dry	1	10/31/2001 8:27:00 PM
Dibenz(a,h)anthracene	BRL	130		µg/Kg-dry	1	10/31/2001 8:27:00 PM
Benzo(g,h,i)perylene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Indeno(1,2,3-cd)pyrene	BRL	430		µg/Kg-dry	1	10/30/2001 9:21:00 PM
Surr: 2-Fluorobiphenyl	73.4	26-99		%REC	1	10/30/2001 9:21:00 PM
Surr: 4-Terphenyl-d14	80.9	29-101		%REC	1	10/30/2001 9:21:00 PM
Surr: Nitrobenzene-d5	48.2	15-109		%REC	1	10/30/2001 9:21:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Acenaphthylene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Acenaphthene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Fluorene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Phenanthrene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Anthracene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Fluoranthene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Pyrene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Benz(a)anthracene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *13-Nov-01*

CLIENT:	Blasland, Bouck & Lee	Client Sample ID:	SB-3(0-2)
Lab Order:	0110588	Collection Date:	10/24/2001 1:30:00 PM
Project:	Hawk Missle Site G-O1		
Lab ID:	0110588-002	Matrix:	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Chrysene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Benzo(b)fluoranthene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Benzo(k)fluoranthene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Benzo(a)pyrene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Dibenz(a,h)anthracene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Benzo(g,h,i)perylene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Indeno(1,2,3-cd)pyrene	BRL	100		µg/L	1	10/30/2001 2:40:00 AM
Surr: Nitrobenzene-d5	53.7	40-110		%REC	1	10/30/2001 2:40:00 AM
Surr: 2-Fluorobiphenyl	71.3	43-110		%REC	1	10/30/2001 2:40:00 AM
Surr: 4-Terphenyl-d14	76.2	10-121		%REC	1	10/30/2001 2:40:00 AM
VOLATILE ORGANICS		**SW8260B**				Analyst: **JTC**
m,p-Xylene	BRL	1.2		µg/Kg-dry	1	10/29/2001 11:23:00 PM
o-Xylene	BRL	1.2		µg/Kg-dry	1	10/29/2001 11:23:00 PM
Methyl tert-butyl ether	BRL	6.1		µg/Kg-dry	1	10/29/2001 11:23:00 PM
Benzene	BRL	1.2		µg/Kg-dry	1	10/29/2001 11:23:00 PM
Toluene	BRL	1.2		µg/Kg-dry	1	10/29/2001 11:23:00 PM
Ethylbenzene	BRL	1.2		µg/Kg-dry	1	10/29/2001 11:23:00 PM
Surr: 4-Bromofluorobenzene	67.4	50-150		%REC	1	10/29/2001 11:23:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	5.2		mg/Kg-dry	1	10/31/2001 4:18:00 AM
Surr: C39	108	60-118		%REC	1	10/31/2001 4:18:00 AM
Surr: o-Terphenyl	90.1	42-193		%REC	1	10/31/2001 4:18:00 AM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	4.0		mg/L	1	10/31/2001 3:06:00 AM
Surr: C39	84.0	42-193		%REC	1	10/31/2001 3:06:00 AM
Surr: o-Terphenyl	106	82-142		%REC	1	10/31/2001 3:06:00 AM
PERCENT MOISTURE		**D2216**				Analyst: **MLW**
Percent Moisture	23.8	0		wt%	1	10/29/2001 5:32:00 PM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *13-Nov-01*

CLIENT:	Blasland, Bouck & Lee	Client Sample ID:	SB-5(2-4)
Lab Order:	0110588	Collection Date:	10/24/2001 2:00:00 PM
Project:	Hawk Missle Site G-O1		
Lab ID:	0110588-003	Matrix:	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	100		µg/L	20	10/26/2001 8:08:00 PM
Ethylbenzene	BRL	100		µg/L	20	10/26/2001 8:08:00 PM
m,p-Xylene	BRL	100		µg/L	20	10/26/2001 8:08:00 PM
Methyl tert-butyl ether	BRL	100		µg/L	20	10/26/2001 8:08:00 PM
o-Xylene	BRL	100		µg/L	20	10/26/2001 8:08:00 PM
Toluene	BRL	100		µg/L	20	10/26/2001 8:08:00 PM
Surr: 4-Bromofluorobenzene	82.3	70.2-131		%REC	20	10/26/2001 8:08:00 PM
Surr: Dibromofluoromethane	91.1	80.3-123		%REC	20	10/26/2001 8:08:00 PM
Surr: Toluene-d8	93.7	89.1-120		%REC	20	10/26/2001 8:08:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	16,000	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Acenaphthylene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Acenaphthene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Fluorene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Phenanthrene	15,000	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Anthracene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Fluoranthene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Pyrene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Benz(a)anthracene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Chrysene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Benzo(b)fluoranthene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Benzo(k)fluoranthene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Benzo(a)pyrene	BRL	420		µg/Kg-dry	1	10/31/2001 9:06:00 PM
Dibenz(a,h)anthracene	BRL	420		µg/Kg-dry	1	10/31/2001 9:06:00 PM
Benzo(g,h,i)perylene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Indeno(1,2,3-cd)pyrene	BRL	14,000		µg/Kg-dry	10	10/31/2001 2:25:00 PM
Surr: 2-Fluorobiphenyl	67.8	26-99		%REC	10	10/31/2001 2:25:00 PM
Surr: 4-Terphenyl-d14	63.8	29-101		%REC	10	10/31/2001 2:25:00 PM
Surr: Nitrobenzene-d5	107	15-109		%REC	10	10/31/2001 2:25:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Acenaphthylene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Acenaphthene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Fluorene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Phenanthrene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Anthracene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Fluoranthene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Pyrene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Benz(a)anthracene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quanititation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *13-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0110588
Project: Hawk Missle Site G-O1
Lab ID: 0110588-003

Client Sample ID: SB-5(2-4)
Collection Date: 10/24/2001 2:00:00 PM
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Chrysene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Benzo(b)fluoranthene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Benzo(k)fluoranthene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Benzo(a)pyrene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Dibenz(a,h)anthracene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Benzo(g,h,i)perylene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Indeno(1,2,3-cd)pyrene	BRL	100		µg/L	1	10/30/2001 3:15:00 AM
Surr: Nitrobenzene-d5	66.6	40-110		%REC	1	10/30/2001 3:15:00 AM
Surr: 2-Fluorobiphenyl	88.3	43-110		%REC	1	10/30/2001 3:15:00 AM
Surr: 4-Terphenyl-d14	79.7	10-121		%REC	1	10/30/2001 3:15:00 AM
VOLATILE ORGANICS		**SW8260B**				Analyst: **JTC**
m,p-Xylene	4,100	210		µg/Kg-dry	50	10/31/2001 1:12:00 AM
o-Xylene	3,500	210		µg/Kg-dry	50	10/31/2001 1:12:00 AM
Methyl tert-butyl ether	BRL	33		µg/Kg-dry	1	10/30/2001 12:22:00 AM
Benzene	17	6.7		µg/Kg-dry	1	10/30/2001 12:22:00 AM
Toluene	69	6.7		µg/Kg-dry	1	10/30/2001 12:22:00 AM
Ethylbenzene	1,100	6.7		µg/Kg-dry	1	10/30/2001 12:22:00 AM
Surr: 4-Bromofluorobenzene	80.9	50-150		%REC	1	10/30/2001 12:22:00 AM
Surr: 4-Bromofluorobenzene	99.3	50-150		%REC	50	10/31/2001 1:12:00 AM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	9,200	83		mg/Kg-dry	5	10/31/2001 4:30:00 PM
Surr: C39	63.7	60-118		%REC	1	10/31/2001 4:54:00 AM
Surr: o-Terphenyl	143	42-193		%REC	1	10/31/2001 4:54:00 AM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	6.5	4.0		mg/L	1	11/2/2001 9:43:00 AM
Surr: C39	107	42-193		%REC	1	11/2/2001 9:43:00 AM
Surr: o-Terphenyl	85.5	82-142		%REC	1	11/2/2001 9:43:00 AM
PERCENT MOISTURE		**D2216**				Analyst: **MLW**
Percent Moisture	76.0	0		wt%	1	10/29/2001 5:32:00 PM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.26.03 Page 1 of 3

Site Location Fmr. Hawk Site G-01

Sample I.D. No. SB-1 (2-4) Coded/Replicate No.

Date 10/24/01 Time of Sampling: Begin 9:10 End

Weather hot, muggy

Site Description adjacent to secondary containment

SAMPLING DATA

Collection Method hand auger

Depth 2-4' Moisture Content dry

Color white lt. pink Odor no

Description oolitic lime sand w/ limerock

Analyses Required (Order of Collection)	Container Description
8020 Totals + SPLP	encore
8270SIM PAH "	glass jar
FL-PRO "	"
% moisture	"

Sample Monitoring (TIP, OVA, HNU, etc.) PID - 8.8 ppm

Remarks

(Visitors, Field Decon)

(QC Sample Locations/Time)

Sampler(s) (Signatures)

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.26.03 Page 2 of 3

Site Location Former Hawk site G-01

Sample I.D. No. SB-3 (0-2') Coded/Replicate No.

Date 10/24/01 Time of Sampling: Begin 1330 End

Weather hot, muggy

Site Description ~30' south of ~~[illegible]~~ secondary containment

SAMPLING DATA

Collection Method hand-auger

Depth 0-2' Moisture Content dry

Color white, lt. pink Odor no

Description oolitic lime sand w/ l.s. frags.

Analyses Required (Order of Collection)	Container Description
8020 Totals + SPLP	encore
8270 SIM PAH "	glass jar
FL PRO "	"
Zonolite	"

Sample Monitoring (TIP, OVA, HNU, etc.) PID - 298 ppm

Remarks

(Visitors, Field Decon)

(QC Sample Locations/Time)

Sampler(s) (Signatures)

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.26.03 Page 3 of 3

Site Location Former Hawk Site G-01

Sample I.D. No. SB-5 (2-4) Coded/Replicate No.

Date 10/24/01 Time of Sampling: Begin 1400 End

Weather hot, muggy

Site Description South side of former AST

SAMPLING DATA

Collection Method hand auger

Depth 2-4' Moisture Content wet

Color dark brown Odor Petro

Description Peat

Analyses Required (Order of Collection)	Container Description
8020 Totals + SPLP	encore
8270 SIMPAH " "	glass jar
A-PRO " "	"
% moisture	"

Sample Monitoring (TIP, OVA, HNU, etc.) PID - 998.2

Remarks Petro odor.

(Visitors, Field Decon)

(QC Sample Locations/Time)

Sampler(s) (Signatures)

Appendix B

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

WELL COMPLETION LOG

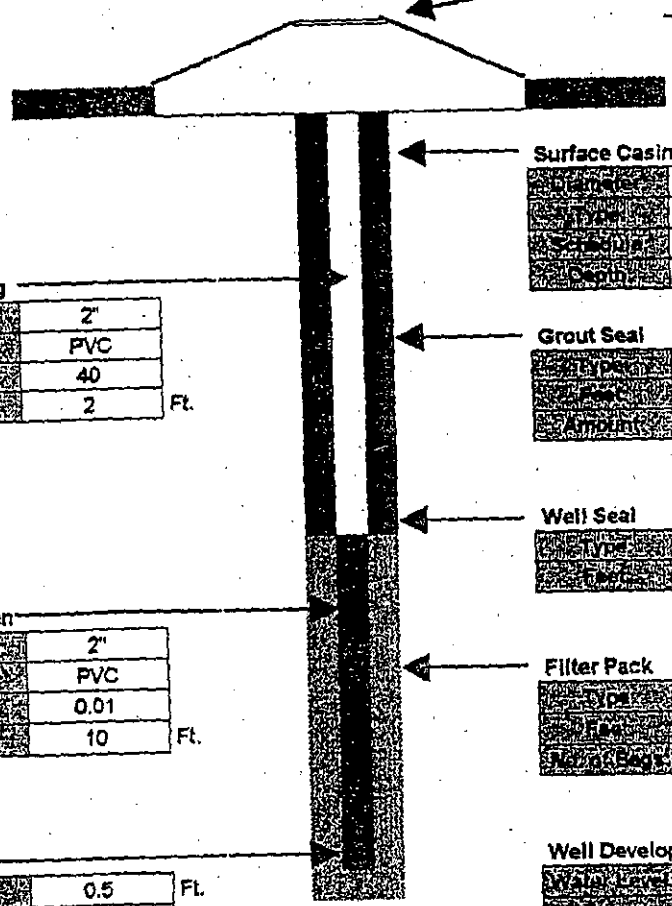
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW-1
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites G-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags Weight	Filter Type	Well Seal
2"	PVC	12	10	2	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.5	Feet	11	0.5



Surface Completion
8x8

Surface Casing

Diameter	
Type	
Schedule	
Depth	

Intermediate Casing

Diameter	
Type	
Schedule	
Depth	

Well Casing

Diameter	2"	
Type	PVC	
Schedule	40	
Lenght	2	Ft.

Grout Seal

Type	1 Portland	
Feet	0.5	
Amount	1	Bags

Well Seal

Type	30/65
Feet	0.5

Well Screen

Diameter	2"	
Type	PVC	
Slot	0.01	
Lenght	10	Ft.

Filter Pack

Type	30/45
Feet	11
No. of Bags	6x50lb

N

Sump

Length	0.5	Ft.
Type	PVC	

Well Development

Water Level			
Method			
Sediment	Cloudy	Effluent	Clear
Turbidity			
GPM			

Contractor Information

Contractor #	2638
Completion	10/25/2001
Driller	Jeff Zeigler
Lead Hand	John Hildereth
Aid Man	Bill Hammond
Drill Rig	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

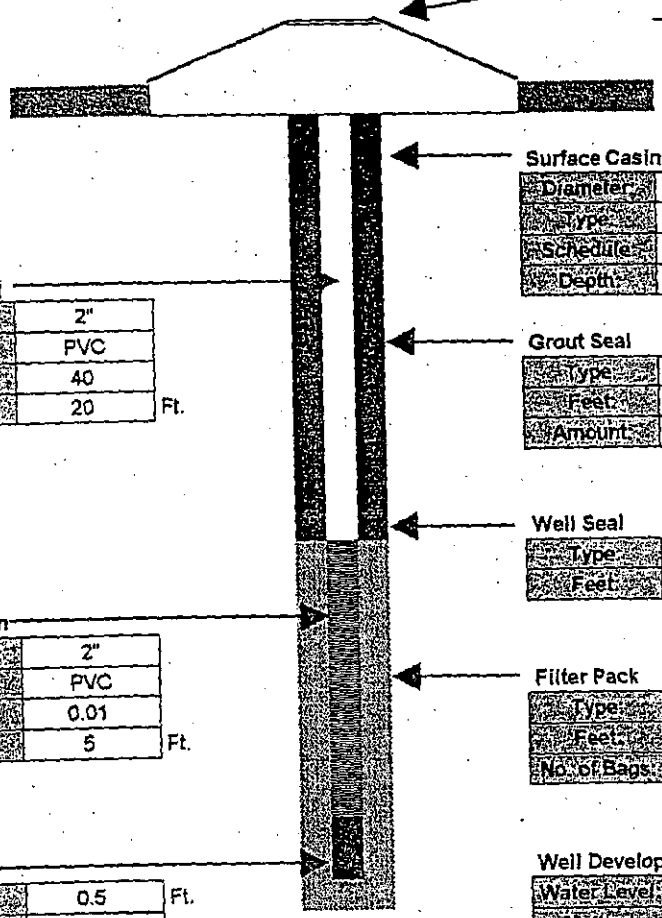
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW1A
Method Used: Mud Rotary
Borehole Dia. 6"

Site Information:
Name: Hawk Sites (G-01)
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	25	5	20	2	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		16	Feet	7	2



Surface Completion
8x8

Surface Casing

Diameter:	6"
Type:	PVC
Schedule:	40
Depth:	18'

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Length:	20 Ft.

Grout Seal

Type:	I Portland
Feet:	16
Amount:	2 Bags

Well Seal

Type:	30/65
Feet:	2

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	5 Ft.

Filter Pack

Type:	30/45
Feet:	7
No. of Bags:	6x50lb

N

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company: Groundwater Protection, Inc.
Address: 1824 W. Washington Street
C,S,Z: Orlando, Florida 32805
Phone/FAX: (407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

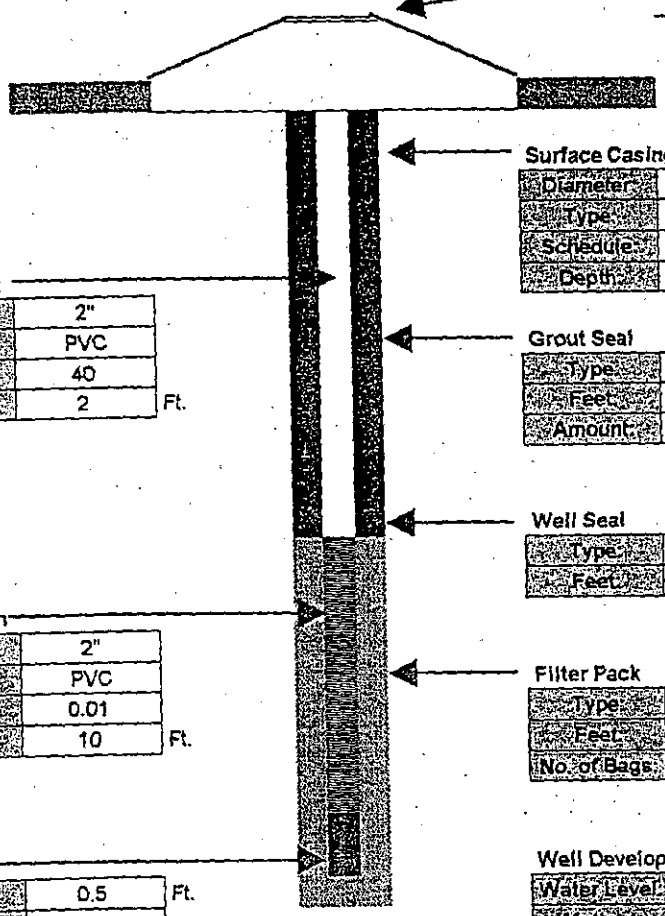
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW2
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites G-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.5	Feet	11	0.5



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Lenght:	2 Ft.

Grout Seal

Type:	I Portland
Feet:	0.5
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	0.5

N

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	10 Ft.

Filter Pack

Type:	30/45
Feet:	11
No. of Bags:	6x50lb

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

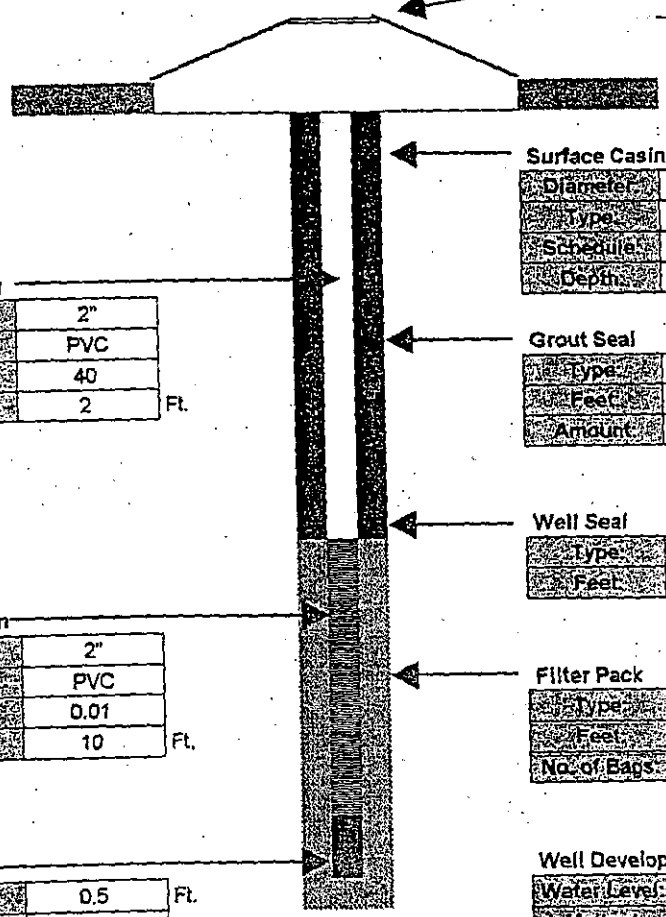
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW3
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites
Address: NAS Key West G-01
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.5	Feet	11	0.5



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Lenght:	2 Ft.

Grout Seal

Type:	I Portland
Feet:	0.5
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	0.5

N

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	10 Ft.

Filter Pack

Type:	30/45
Feet:	11
No. of Bags:	6x50lb

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

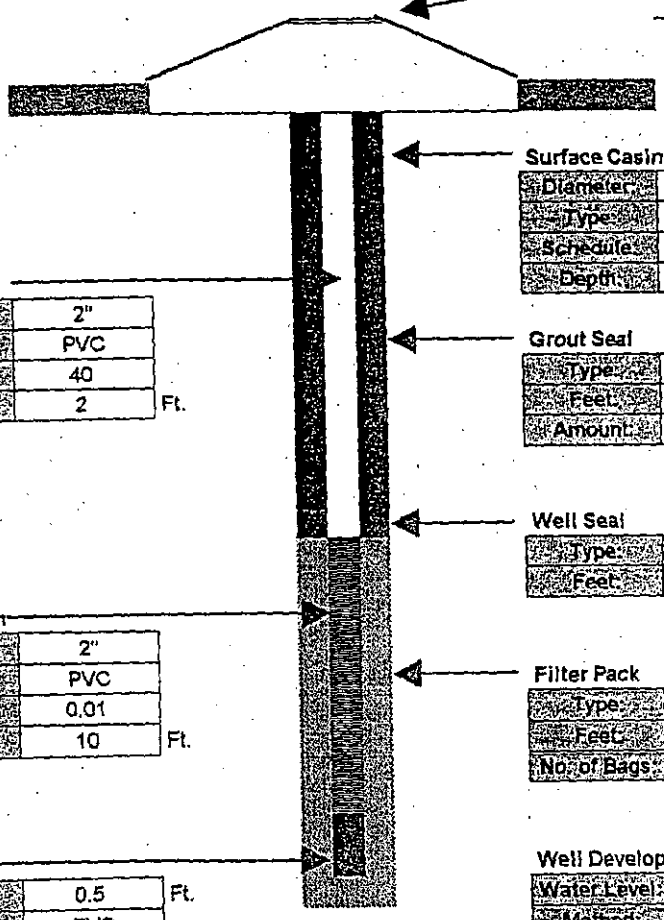
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW4
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites G-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.5	Feet	11	0.5



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Lenght:	2 Ft.

Grout Seal

Type:	I Portland
Feet:	0.5
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	0.5

N

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	10 Ft.

Filter Pack

Type:	30/45
Feet:	11
No. of Bags:	6x50lb

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

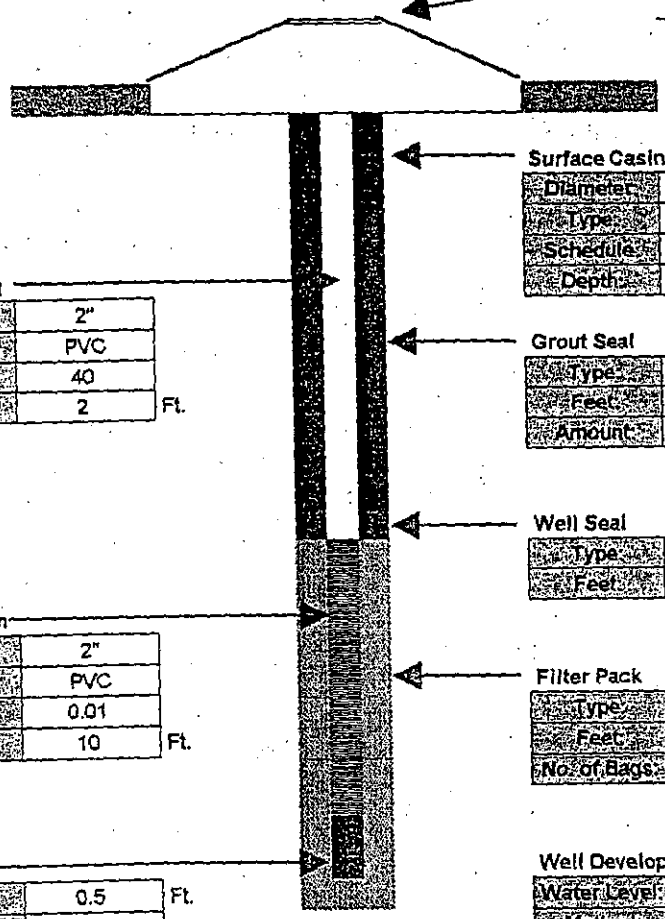
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW5
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites - 6-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.5	Feet	11	0.5



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Lenght:	2 Ft.

Grout Seal

Type:	I Portland
Feet:	0.5
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	0.5

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	10 Ft.

Filter Pack

Type:	30/45
Feet:	11
No. of Bags:	6x50lb

N

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

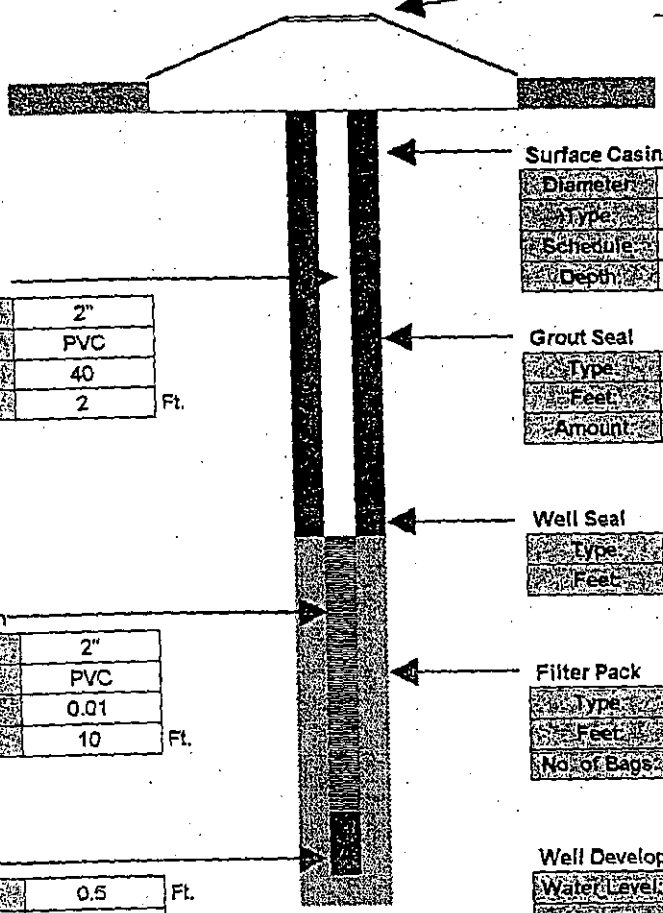
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW6
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites G-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.5	Feet	11	0.5



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"	
Type:	PVC	
Schedule:	40	
Lenght:	2	Ft.

Grout Seal

Type:	I Portland	
Feet:	0.5	
Amount:	1	Bags

Well Seal

Type:	30/65
Feet:	0.5

Well Screen

Diameter:	2"	
Type:	PVC	
Slot:	0.01	
Length:	10	Ft.

Filter Pack

Type:	30/45
Feet:	11
No. of Bags:	6x50lb

N

Sump

Length:	0.5	Ft.
Type:	PVC	

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

Appendix C

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

November 27, 2001

Amanda Shearer
Blasland, Bouck & Lee
15741 Vinola Court
Montverde, FL 34756
TEL: (407) 469-3165
FAX (407) 469-3165

RE: Hawk Site GO1

Order No.: 0111340

Dear Amanda Shearer:

Analytical Environmental Servs, Inc. received 9 samples on 11/15/01 11:00:00 AM for the analyses presented in the following report.

No problems were encountered during analyses. Additionally, all results for the associated quality control samples were within EPA and/or AES established limits except where noted in the project Case Narrative.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

for
Art Humphreys
Project Manager/Marketing

Analytical Environmental Services, Inc.

Sample Receipt Checklist

Client BBL

Work Order Number 0111340

Date and Time 11/15/01 @ 11:00AM

Received by BFF

Checklist completed by Brian Friel (Signature) 11/15/01 (Date)

Reviewed by [illegible] (Initials) 11/15/01 (Date)

Carrier name:

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shippping container/cooler?	Yes __	No __	Not Present ✓
Custody seals intact on sample bottles?	Yes __	No __	Not Present __
Chain of custody present?	Yes ✓	No __	
Chain of custody signed when relinquished and received?	Yes ✓	No __	
Chain of custody agrees with sample labels?	Yes ✓	No __	
Samples in proper container/bottle?	Yes ✓	No __	
Sample containers intact?	Yes __	No ✓	
Sufficient sample volume for indicated test?	Yes ✓	No __	
All samples received within holding time?	Yes ✓	No __	
Container/Temp Blank temperature in compliance?	Yes ✓	No __	_____
Water - VOA vials have zero headspace?	No VOA vials submitted __	Yes ✓	No __
Water - pH acceptable upon receipt?	Yes ✓	No __	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: MW-5 and EQ Blank had one 1L Amber-NP and one 1L-H_2SO_4 broken. Sufficient sample volume is still available; proceed with analyses.

Corrective Action

CASE NARRATIVE

EDB Analysis via SW-846 Method 8011

The recovery of EDB in the spiked samples MW-1 (AES# 0111340-001A), MW-2 (AES# 0111340-003A), and MW-6 (AES# 0111340-007A) were below laboratory acceptance limits. The failure of these samples to meet data quality objectives was deemed to be due to a matrix interference.

PAH Analysis via SW-846 Method 8270C

Originally, samples MW-1 (AES# 0111340-001B), MW-5 (AES# 0111340-006B), and Equipment Blank (AES# 0111340-008B) were analyzed for PAH via SW-846 Method 8310. There is only one surrogate in this method, 4-terphenyl-d14. Per client request, the samples were reanalyzed via SW-846 Method 8270C SIM and SW-846 Method 8270C. This method has 3 surrogates associated with it including nitrobenzene and 2-fluorobiphenyl. Because these surrogates were monitored but not added, their recovery was reported as "0 percent".

The recovery of surrogate 4-terphenyl-d14 in samples MW-5 (AES# 0111340-006B) and Equipment Blank (AES# 0111340-008B) was above laboratory acceptance limits.

ALYTICAL ENVIRONMENTAL SERVICES, INC

Presidential Parkway, Suite 111, Atlanta GA 30340-0370

: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 011340

Date: 11/14/01 Page 1 of 1

PANY: BBL

NE: 407-469-3165

PLED BY: N. Esposito

ADDRESS: 15741 Viola Ct. Montverde, FLA 34756

FAX: 407-469-3392

SIGNATURE:

ANALYSIS REQUESTED

SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	8021 BTEX/m	8270 SIM PAH	FL-PRO	PB	EDB	TDS	PRESERVATION H	I	S	N	I	I	No # of Containers	REMARKS
MW-1	11/14/01	1437	X		GW	✓	✓	✓	✓	✓	✓							9	-1
MW-1A		0939	X			✓	✓	✓	✓	✓								8	-2
MW-2		1238	X			✓	✓	✓	✓	✓								8	-3
MW-3		1134	X			✓	✓	✓	✓	✓								8	-4
MW-4		1527	X			✓	✓	✓	✓	✓								8	-5
MW-5		1022	X			✓	✓	✓	✓	✓								8	-6
MW-6		1610	X			✓	✓	✓	✓	✓								8	-7
EQUIP. BLANK		1152	X		W	✓	✓	✓	✓	✓								8	-8
Duplicate		1200	X		GW	✓	✓	✓	✓	✓								8	-9

INQUISHED BY:	DATE/TIME	RECEIVED BY	DATE/TIME
	11/14/01 17:30	1: Bruin Frail	11/15/01 @ 11:00
		2:	
		3:	

PROJECT INFORMATION

PROJECT NAME: McHawk Site GO1

PROJECT #: 880.26.003

FAC ID#:

SITE ADDRESS: NASKW

PROJECT MANAGER: AMANDA SHEARER

INVOICE TO: (IF DIFFERENT FROM ABOVE) BBL - Tampa Office

RECEIPT

Total # of Containers: 73

Turnaround Time Request

- ⊗ Standard 3-5 Business Days
- ○ Same Day Rush (auth req.)
- ○ Next Business Day Rush
- ○ 2 Business Day Rush
- ○ Other _____

PROGRAM (see codes): _____

DATA PACKAGE: I II III IV

CIAL INSTRUCTIONS/COMMENTS: c. 62.777 FAC Detection Limits

SHIPMENT METHOD

OUT 11/14/01 VIA: FED-EX

IN / / VIA:

CLIENT FedEx UPS MAIL COURIER

GREYHOUND OTHER _____

OTE/CONTRACT #:

TRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

SERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) NA = None

NONE NONIST NCUST SCUST GAUST GACONV FLCONV

White Copy - ORIGINAL; Yellow Copy - LAB; Pink Copy - CLIENT

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GOI
Lab ID: 0111340-001

Client Sample ID: MW-1
Collection Date: 11/14/01 2:37:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
RESIDUE, DISSOLVED (TDS)		**E160.1**				Analyst: **LAV**
Residue, Dissolved (TDS)	8,520	5.00		mg/L	1	11/21/01 11:08:00 AM
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 12:30:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 11:45:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	1.0		µg/L	1	11/19/01 11:59:00 PM
Ethylbenzene	BRL	1.0		µg/L	1	11/19/01 11:59:00 PM
m,p-Xylene	BRL	2.0		µg/L	1	11/19/01 11:59:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 11:59:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 11:59:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 11:59:00 PM
Surr: 4-Bromofluorobenzene	91.8	70.2-131		%REC	1	11/19/01 11:59:00 PM
Surr: Dibromofluoromethane	89.1	80.3-123		%REC	1	11/19/01 11:59:00 PM
Surr: Toluene-d8	96.4	89.1-120		%REC	1	11/19/01 11:59:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Acenaphthene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Fluorene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Phenanthrene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Anthracene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Fluoranthene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Pyrene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 6:38:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 6:38:00 PM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/20/01 6:38:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 6:38:00 PM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/20/01 6:38:00 PM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/20/01 6:38:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/23/01 9:26:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/20/01 6:38:00 PM
Surr: Nitrobenzene-d5	0	40-110	S	%REC	1	11/23/01 9:26:00 PM
Surr: 2-Fluorobiphenyl	0	43-110	S	%REC	1	11/23/01 9:26:00 PM
Surr: 4-Terphenyl-d14	100	10-121		%REC	1	11/23/01 9:26:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-001

Client Sample ID: MW-1
Collection Date: 11/14/01 2:37:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Petroleum Range Organics	0.81	0.40		mg/L	1	11/17/01 6:51:00 AM
Surr: C39	54.2	42-193		%REC	1	11/17/01 6:51:00 AM
Surr: o-Terphenyl	95.8	82-142		%REC	1	11/17/01 6:51:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
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R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-002

Client Sample ID: MW-1A
Collection Date: 11/14/01 9:39:00 AM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 12:34:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 12:09:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	1.0		µg/L	1	11/20/01 12:32:00 AM
Ethylbenzene	BRL	1.0		µg/L	1	11/20/01 12:32:00 AM
m,p-Xylene	BRL	2.0		µg/L	1	11/20/01 12:32:00 AM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/20/01 12:32:00 AM
o-Xylene	BRL	1.0		µg/L	1	11/20/01 12:32:00 AM
Toluene	BRL	1.0		µg/L	1	11/20/01 12:32:00 AM
Surr: 4-Bromofluorobenzene	93.3	70.2-131		%REC	1	11/20/01 12:32:00 AM
Surr: Dibromofluoromethane	93.0	80.3-123		%REC	1	11/20/01 12:32:00 AM
Surr: Toluene-d8	97.8	89.1-120		%REC	1	11/20/01 12:32:00 AM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Acenaphthylene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
1-Methylnaphthalene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
2-Methylnaphthalene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Acenaphthene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Fluorene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Phenanthrene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Anthracene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Fluoranthene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Pyrene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 7:16:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 7:16:00 PM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/20/01 7:16:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 7:16:00 PM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/20/01 7:16:00 PM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/20/01 7:16:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/20/01 11:53:00 AM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/20/01 7:16:00 PM
Surr: Nitrobenzene-d5	54.2	40-110		%REC	1	11/20/01 11:53:00 AM
Surr: 2-Fluorobiphenyl	63.9	43-110		%REC	1	11/20/01 11:53:00 AM
Surr: 4-Terphenyl-d14	66.9	10-121		%REC	1	11/20/01 11:53:00 AM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	0.40		mg/L	1	11/17/01 7:26:00 AM
Surr: C39	55.0	42-193		%REC	1	11/17/01 7:26:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-002

Client Sample ID: MW-1A
Collection Date: 11/14/01 9:39:00 AM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	88.1	82-142		%REC	1	11/17/01 7:26:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-003

Client Sample ID: MW-2
Collection Date: 11/14/01 12:38:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 12:38:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 12:33:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 4:05:00 PM
Ethylbenzene	1.5	1.0		µg/L	1	11/19/01 4:05:00 PM
m,p-Xylene	5.1	2.0		µg/L	1	11/19/01 4:05:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 4:05:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 4:05:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 4:05:00 PM
Surr: 4-Bromofluorobenzene	108	70.2-131		%REC	1	11/19/01 4:05:00 PM
Surr: Dibromofluoromethane	107	80.3-123		%REC	1	11/19/01 4:05:00 PM
Surr: Toluene-d8	104	89.1-120		%REC	1	11/19/01 4:05:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Acenaphthene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Fluorene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Phenanthrene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Anthracene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Fluoranthene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Pyrene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 7:55:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 7:55:00 PM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/20/01 7:55:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 7:55:00 PM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/20/01 7:55:00 PM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/20/01 7:55:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/20/01 12:29:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/20/01 7:55:00 PM
Surr: Nitrobenzene-d5	54.1	40-110		%REC	1	11/20/01 12:29:00 PM
Surr: 2-Fluorobiphenyl	64.4	43-110		%REC	1	11/20/01 12:29:00 PM
Surr: 4-Terphenyl-d14	76.4	10-121		%REC	1	11/20/01 12:29:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	0.40		mg/L	1	11/17/01 8:02:00 AM
Surr: C39	61.9	42-193		%REC	1	11/17/01 8:02:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-003

Client Sample ID: MW-2
Collection Date: 11/14/01 12:38:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	87.8	82-142		%REC	1	11/17/01 8:02:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-004

Client Sample ID: MW-3
Collection Date: 11/14/01 11:34:00 AM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 12:42:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 12:57:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 4:39:00 PM
Ethylbenzene	1.6	1.0		µg/L	1	11/19/01 4:39:00 PM
m,p-Xylene	5.4	2.0		µg/L	1	11/19/01 4:39:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 4:39:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 4:39:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 4:39:00 PM
Surr: 4-Bromofluorobenzene	110	70.2-131		%REC	1	11/19/01 4:39:00 PM
Surr: Dibromofluoromethane	108	80.3-123		%REC	1	11/19/01 4:39:00 PM
Surr: Toluene-d8	104	89.1-120		%REC	1	11/19/01 4:39:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Acenaphthene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Fluorene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Phenanthrene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Anthracene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Fluoranthene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Pyrene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 8:33:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 8:33:00 PM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/20/01 8:33:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 8:33:00 PM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/20/01 8:33:00 PM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/20/01 8:33:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/20/01 1:05:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/20/01 8:33:00 PM
Surr: Nitrobenzene-d5	56.6	40-110		%REC	1	11/20/01 1:05:00 PM
Surr: 2-Fluorobiphenyl	59.5	43-110		%REC	1	11/20/01 1:05:00 PM
Surr: 4-Terphenyl-d14	66.8	10-121		%REC	1	11/20/01 1:05:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	0.71	0.40		mg/L	1	11/17/01 8:37:00 AM
Surr: C39	47.3	42-193		%REC	1	11/17/01 8:37:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-004

Client Sample ID: MW-3
Collection Date: 11/14/01 11:34:00 AM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	91.0	82-142		%REC	1	11/17/01 8:37:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-005

Client Sample ID: MW-4
Collection Date: 11/14/01 3:27:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 12:46:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 1:21:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 5:13:00 PM
Ethylbenzene	2.9	1.0		µg/L	1	11/19/01 5:13:00 PM
m,p-Xylene	4.5	2.0		µg/L	1	11/19/01 5:13:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 5:13:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 5:13:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 5:13:00 PM
Surr: 4-Bromofluorobenzene	112	70.2-131		%REC	1	11/19/01 5:13:00 PM
Surr: Dibromofluoromethane	109	80.3-123		%REC	1	11/19/01 5:13:00 PM
Surr: Toluene-d8	104	89.1-120		%REC	1	11/19/01 5:13:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	11	10		µg/L	1	11/20/01 1:40:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
1-Methylnaphthalene	16	10		µg/L	1	11/20/01 1:40:00 PM
2-Methylnaphthalene	19	10		µg/L	1	11/20/01 1:40:00 PM
Acenaphthene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Fluorene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Phenanthrene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Anthracene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Fluoranthene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Pyrene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 9:11:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 9:11:00 PM
Benzo(b)fluoranthene	0.69	0.20		µg/L	1	11/20/01 9:11:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 9:11:00 PM
Benzo(a)pyrene	0.44	0.20		µg/L	1	11/20/01 9:11:00 PM
Dibenz(a,h)anthracene	0.54	0.20		µg/L	1	11/20/01 9:11:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/20/01 1:40:00 PM
Indeno(1,2,3-cd)pyrene	0.70	0.20		µg/L	1	11/20/01 9:11:00 PM
Surr: Nitrobenzene-d5	62.5	40-110		%REC	1	11/20/01 1:40:00 PM
Surr: 2-Fluorobiphenyl	69.1	43-110		%REC	1	11/20/01 1:40:00 PM
Surr: 4-Terphenyl-d14	78.2	10-121		%REC	1	11/20/01 1:40:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	1.7	0.40		mg/L	1	11/17/01 9:13:00 AM
Surr: C39	47.6	42-193		%REC	1	11/17/01 9:13:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-005

Client Sample ID: MW-4
Collection Date: 11/14/01 3:27:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	86.5	82-142		%REC	1	11/17/01 9:13:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-006

Client Sample ID: MW-5
Collection Date: 11/14/01 10:22:00 AM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 12:50:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 1:45:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 5:47:00 PM
Ethylbenzene	2.3	1.0		µg/L	1	11/19/01 5:47:00 PM
m,p-Xylene	4.8	2.0		µg/L	1	11/19/01 5:47:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 5:47:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 5:47:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 5:47:00 PM
Surr: 4-Bromofluorobenzene	111	70.2-131		%REC	1	11/19/01 5:47:00 PM
Surr: Dibromofluoromethane	109	80.3-123		%REC	1	11/19/01 5:47:00 PM
Surr: Toluene-d8	105	89.1-120		%REC	1	11/19/01 5:47:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	26	10		µg/L	1	11/23/01 8:47:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
Acenaphthene	66	10		µg/L	1	11/23/01 8:47:00 PM
Fluorene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
Phenanthrene	11	10		µg/L	1	11/23/01 8:47:00 PM
Anthracene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
Fluoranthene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
Pyrene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 9:50:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 9:50:00 PM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/20/01 9:50:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 9:50:00 PM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/20/01 9:50:00 PM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/20/01 9:50:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/23/01 8:47:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/20/01 9:50:00 PM
Surr: Nitrobenzene-d5	0	40-110	S	%REC	1	11/23/01 8:47:00 PM
Surr: 2-Fluorobiphenyl	0	43-110	S	%REC	1	11/23/01 8:47:00 PM
Surr: 4-Terphenyl-d14	146	10-121	S	%REC	1	11/23/01 8:47:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	1.1	0.40		mg/L	1	11/17/01 9:49:00 AM
Surr: C39	45.9	42-193		%REC	1	11/17/01 9:49:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-006

Client Sample ID: MW-5
Collection Date: 11/14/01 10:22:00 AM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	87.6	82-142		%REC	1	11/17/01 9:49:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
I - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-007

Client Sample ID: MW-6
Collection Date: 11/14/01 4:10:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 1:04:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 2:09:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	6.3	1.0		µg/L	1	11/19/01 6:20:00 PM
Ethylbenzene	29	1.0		µg/L	1	11/19/01 6:20:00 PM
m,p-Xylene	4.4	2.0		µg/L	1	11/19/01 6:20:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 6:20:00 PM
o-Xylene	1.3	1.0		µg/L	1	11/19/01 6:20:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 6:20:00 PM
Surr: 4-Bromofluorobenzene	111	70.2-131		%REC	1	11/19/01 6:20:00 PM
Surr: Dibromofluoromethane	108	80.3-123		%REC	1	11/19/01 6:20:00 PM
Surr: Toluene-d8	105	89.1-120		%REC	1	11/19/01 6:20:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	38	5.0		µg/L	1	11/20/01 2:16:00 PM
Acenaphthylene	BRL	5.0		µg/L	1	11/20/01 2:16:00 PM
1-Methylnaphthalene	60	5.0		µg/L	1	11/20/01 2:16:00 PM
2-Methylnaphthalene	47	5.0		µg/L	1	11/20/01 2:16:00 PM
Acenaphthene	BRL	5.0		µg/L	1	11/20/01 2:16:00 PM
Fluorene	6.5	5.0		µg/L	1	11/20/01 2:16:00 PM
Phenanthrene	7.3	5.0		µg/L	1	11/20/01 2:16:00 PM
Anthracene	BRL	5.0		µg/L	1	11/20/01 2:16:00 PM
Fluoranthene	BRL	5.0		µg/L	1	11/20/01 2:16:00 PM
Pyrene	BRL	5.0		µg/L	1	11/20/01 2:16:00 PM
Benz(a)anthracene	BRL	0.10		µg/L	1	11/20/01 10:28:00 PM
Chrysene	BRL	2.0		µg/L	1	11/20/01 10:28:00 PM
Benzo(b)fluoranthene	BRL	0.10		µg/L	1	11/20/01 10:28:00 PM
Benzo(k)fluoranthene	BRL	0.25		µg/L	1	11/20/01 10:28:00 PM
Benzo(a)pyrene	BRL	0.10		µg/L	1	11/20/01 10:28:00 PM
Dibenz(a,h)anthracene	BRL	0.10		µg/L	1	11/20/01 10:28:00 PM
Benzo(g,h,i)perylene	BRL	5.0		µg/L	1	11/20/01 2:16:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.10		µg/L	1	11/20/01 10:28:00 PM
Surr: Nitrobenzene-d5	71.0	40-110		%REC	1	11/20/01 2:16:00 PM
Surr: 2-Fluorobiphenyl	69.5	43-110		%REC	1	11/20/01 2:16:00 PM
Surr: 4-Terphenyl-d14	78.0	10-121		%REC	1	11/20/01 2:16:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	8.1	0.40		mg/L	1	11/17/01 10:25:00 AM
Surr: C39	64.1	42-193		%REC	1	11/17/01 10:25:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-007

Client Sample ID: MW-6
Collection Date: 11/14/01 4:10:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	97.0	82-142		%REC	1	11/17/01 10:25:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-008

Client Sample ID: EQUIPMENT BLANK
Collection Date: 11/14/01 11:52:00 AM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 1:08:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 2:33:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 6:54:00 PM
Ethylbenzene	1.3	1.0		µg/L	1	11/19/01 6:54:00 PM
m,p-Xylene	3.8	2.0		µg/L	1	11/19/01 6:54:00 PM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/19/01 6:54:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 6:54:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 6:54:00 PM
Surr: 4-Bromofluorobenzene	110	70.2-131		%REC	1	11/19/01 6:54:00 PM
Surr: Dibromofluoromethane	108	80.3-123		%REC	1	11/19/01 6:54:00 PM
Surr: Toluene-d8	106	89.1-120		%REC	1	11/19/01 6:54:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Acenaphthene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Fluorene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Phenanthrene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Anthracene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Fluoranthene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Pyrene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/20/01 11:06:00 PM
Chrysene	BRL	4.0		µg/L	1	11/20/01 11:06:00 PM
Benzo(b)fluoranthene	1.2	0.20		µg/L	1	11/20/01 11:06:00 PM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/20/01 11:06:00 PM
Benzo(a)pyrene	0.84	0.20		µg/L	1	11/20/01 11:06:00 PM
Dibenz(a,h)anthracene	0.71	0.20		µg/L	1	11/20/01 11:06:00 PM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/23/01 8:09:00 PM
Indeno(1,2,3-cd)pyrene	0.92	0.20		µg/L	1	11/20/01 11:06:00 PM
Surr: Nitrobenzene-d5	0	40-110	S	%REC	1	11/23/01 8:09:00 PM
Surr: 2-Fluorobiphenyl	0	43-110	S	%REC	1	11/23/01 8:09:00 PM
Surr: 4-Terphenyl-d14	136	10-121	S	%REC	1	11/23/01 8:09:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	0.40		mg/L	1	11/17/01 11:02:00 AM
Surr: C39	43.0	42-193		%REC	1	11/17/01 11:02:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-008

Client Sample ID: EQUIPMENT BLANK
Collection Date: 11/14/01 11:52:00 AM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	83.1	82-142		%REC	1	11/17/01 11:02:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-009

Client Sample ID: DUPLICATE
Collection Date: 11/14/01 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.00500		mg/L	1	11/16/01 1:12:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/20/01 2:57:00 AM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	6.7	1.0		µg/L	1	11/20/01 1:05:00 AM
Ethylbenzene	26	1.0		µg/L	1	11/20/01 1:05:00 AM
m,p-Xylene	BRL	2.0		µg/L	1	11/20/01 1:05:00 AM
Methyl tert-butyl ether	BRL	2.0		µg/L	1	11/20/01 1:05:00 AM
o-Xylene	1.0	1.0		µg/L	1	11/20/01 1:05:00 AM
Toluene	BRL	1.0		µg/L	1	11/20/01 1:05:00 AM
Surr: 4-Bromofluorobenzene	96.5	70.2-131		%REC	1	11/20/01 1:05:00 AM
Surr: Dibromofluoromethane	90.5	80.3-123		%REC	1	11/20/01 1:05:00 AM
Surr: Toluene-d8	98.5	89.1-120		%REC	1	11/20/01 1:05:00 AM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	42	10		µg/L	1	11/20/01 2:52:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
1-Methylnaphthalene	72	10		µg/L	1	11/20/01 2:52:00 PM
2-Methylnaphthalene	53	10		µg/L	1	11/20/01 2:52:00 PM
Acenaphthene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Fluorene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Phenanthrene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Anthracene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Fluoranthene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Pyrene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 11:17:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 11:17:00 AM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/21/01 11:17:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 11:17:00 AM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/21/01 11:17:00 AM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/21/01 11:17:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/20/01 2:52:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/21/01 11:17:00 AM
Surr: Nitrobenzene-d5	77.2	40-110		%REC	1	11/20/01 2:52:00 PM
Surr: 2-Fluorobiphenyl	83.1	43-110		%REC	1	11/20/01 2:52:00 PM
Surr: 4-Terphenyl-d14	88.4	10-121		%REC	1	11/20/01 2:52:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	6.9	0.40		mg/L	1	11/17/01 11:39:00 AM
Surr: C39	54.0	42-193		%REC	1	11/17/01 11:39:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *27-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111340
Project: Hawk Site GO1
Lab ID: 0111340-009

Client Sample ID: DUPLICATE
Collection Date: 11/14/01 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	84.4	82-142		%REC	1	11/17/01 11:39:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 13, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-1	SAMPLE ID: MW-1	DATE: 11/24/01
SITE NAME: USNKW Hawk Site - G07	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 12.00	DEPTH TO WATER (ft): 3.56	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (12.00 - 3.56) x 0.16 = 1.35 gal ~ 5 vol's = 6.75 gals

PURGE METHOD: Paastaltic Pump	PURGING INITIATED AT: 1406	PURGING ENDED AT: 1430	
	PURGE RATE (gpm):	TOTAL VOLUME PURGED (gal):	

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.75	8.08	27.95	OVERLIMIT	NONE	NONE/H_2S	CLEAR	NO SILT

SAMPLING DATA

SAMPLED BY / AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): Paastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 14:37

FIELD DECONTAMINATION: Y (N) FIELD-FILTERED: Y (N) DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	NONE		PB
2	AG	950 ml	C	—		8270 Sim PAH
1	AG	950 ml	H_2SO_4	NONE		FL-PRO
1	HDP	500 ml	C	—		TDS

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 13, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-1A	SAMPLE ID: MW-1A	DATE: 11/14/01
SITE NAME: USNKW Hawk Site-G01	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 25.00	DEPTH TO WATER (ft): 3.76	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

= (25.00 - 3.76) x 0.16 = 3.4 gal - 5 vol's = 17.0 gals

PURGE METHOD: Peristaltic Pump	PURGING INITIATED AT: 08:56	PURGING ENDED AT: 09:32
	PURGE RATE (gpm): 0.47	TOTAL VOLUME PURGED (gal): 17.0

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	17.0	7.69	27.39	Off-scale	Yellowish	None/H_2S	Clear	No silt

SAMPLING DATA

SAMPLED BY/AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): Peristaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 09:39

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	None		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	None		DB
2	AG	950 ml	C	—		8270 SIM PAH
1	AG	950 ml	H_2SO_4	None		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(1)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 13, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-2	SAMPLE ID: MW-2	DATE: 11/14/01
SITE NAME: USNKW Hawk Site-G01	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 12.00	DEPTH TO WATER (ft): 2.98	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (12.00 - 2.98) x 0.16 = 1.45 gal ~ 5 vols = 7.25 gal

PURGE METHOD: Paraastaltic Pump	PURGING INITIATED AT: 1205	PURGING ENDED AT: 1231	
	PURGE RATE (gpm): 0.27	TOTAL VOLUME PURGED (gal): 7.25	

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	7.25	8.28	29.40	ABOVE LIMIT	WHITE	H_2S	SLGT. CLOUD	NO SIG

SAMPLING DATA

SAMPLED BY / AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Paraastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1238

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	NONE		PB
2	AG	950 ml	C	—		8270 Sim PAH
1	AG	950 ml	H_2SO_4	NONE		FL-PRO

REMARKS: Equip. Blnk Coll. Prior to Purging

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 13, 1993

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-3	SAMPLE ID: MW-3	DATE: 11/14/01
SITE NAME: USNKW Hawk Site-GOL	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 12.00	DEPTH TO WATER (ft): 1.88	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (12.00 - 1.88) x 0.16 = 1.62 gal ~ 5 vol's = 8.1

PURGE METHOD: Paastaltic Pump	PURGING INITIATED AT: 10:46	PURGING ENDED AT: 11:27	
	PURGE RATE (gpm): 0.26	TOTAL VOLUME PURGED (gal): 8.1	

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	8.1	7.60	27.74	ABOVE LIMIT	TAN	STRONG H_2S	CLOUDY	SILTY

SAMPLING DATA

SAMPLED BY/ AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S):		
SAMPLING METHOD(S): Paastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 11:34	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	None		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	None		PB
2	AG	950 ml	C	—		8270 Sim PAH
1	AG	950 ml	H_2SO_4	None		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(1)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-4	SAMPLE ID: MW-4	DATE: 11/14/01
SITE NAME: USNKW Hawk Site-G01	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 12.00	DEPTH TO WATER (ft): 3.56	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

= (12.00 - 3.56) x 0.16 = 1.35 gal ~ 5 vols = 6.75 gals

PURGE METHOD: Paastaltic Pump	PURGING INITIATED AT: 1458	PURGING ENDED AT: 1520
	PURGE RATE (gpm):	TOTAL VOLUME PURGED (gal): 6.75

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.75	7.81	27.77	OVERLIMIT	WHITISH	MOD./H2S	SLGT. CLOUD	NO SHEET

SAMPLING DATA

SAMPLED BY/ AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Paastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1527

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO3	NONE		DB
2	AG	950 ml	C	—		8270 SIM PAH
1	AG	950 ml	H2SO4	NONE		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(1)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 11, 1995

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-5	SAMPLE ID: MW-5	DATE: 11/14/01
SITE NAME: USNKW Hawk Site - G01		SITE LOCATION: Boca Chica Key West, FLA	

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 12.00	DEPTH TO WATER (ft): 2.66	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (12.00 - 2.66) x 0.16 = 1.5 gpv - 5 vol's = 7.5

PURGE METHOD: Paastaltic Pump	PURGING INITIATED AT: 09:48	PURGING ENDED AT: 10:15	
	PURGE RATE (gpm): 0.27	TOTAL VOLUME PURGED (gal): 7.5	

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	7.5	8.02	28.22	2046	NONE	NONE/H_2S	CLEAR	NO SILT

SAMPLING DATA

SAMPLED BY/ AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): Paastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 10:22

FIELD DECONTAMINATION: Y (N) FIELD-FILTERED: Y (N) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	NONE		DB
2	AG	950 ml	C	—		8270 SIM PAH
1	AG	950 ml	H_2SO_4	NONE		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 13, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-6	SAMPLE ID: MW-6	DATE: 11/14/01
SITE NAME: USNKW Hawk Site-602	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 12.00	DEPTH TO WATER (ft): 3.75	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (12.00 - 3.75) x 0.16 = 1.32 gal ~ 5 vol's = 6.6 gals

PURGE METHOD: Peristaltic Pump	PURGING INITIATED AT: 1538	PURGING ENDED AT: 1602
	PURGE RATE (gpm):	TOTAL VOLUME PURGED (gal): 6.6

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.6	7.66	30.06	OVERLIMIT	WHITESH	MOD/H_2S	SLGT. CLOUD	NO SKT

SAMPLING DATA

SAMPLED BY / AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Peristaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1610

FIELD DECONTAMINATION: Y (N) FIELD-FILTERED: Y (N) DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	NONE		PB
2	AG	950 ml	C	—		8270 SIM PAH
1	AG	950 ml	H_2SO_4	NONE		FL-PRO

REMARKS:

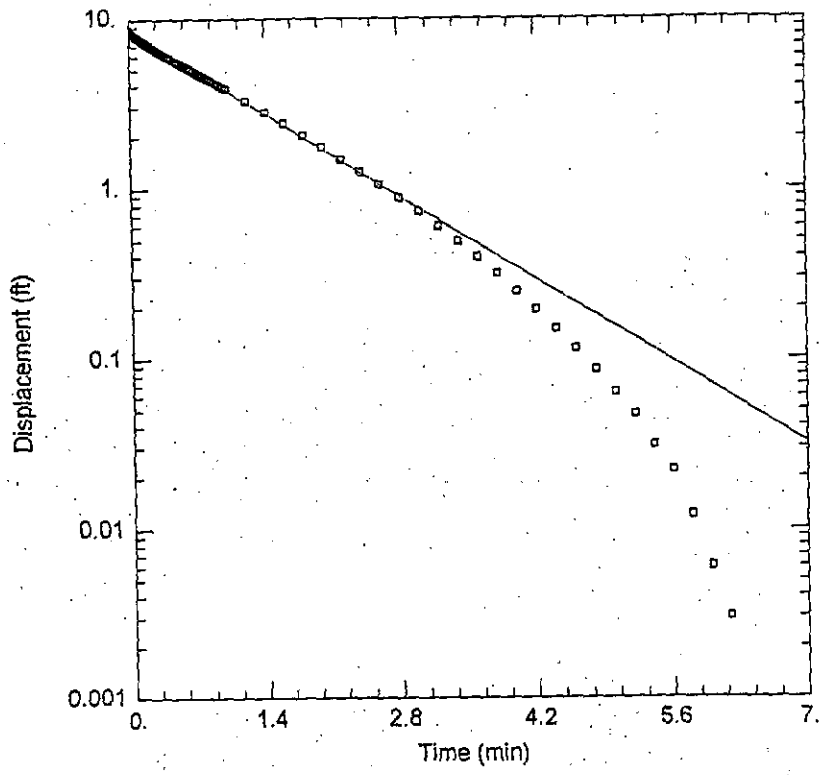
MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

Appendix D

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists



SLUG TEST RESULTS FOR G01-MW-1A

Data Set: M:\Navy\G01-MW-1A.aqt
Date: 01/08/02 Time: 15:42:26

PROJECT INFORMATION

Company: BBL
Client: Hawk Sites
Project: 880.26.03
Test Location: Key West NAS
Test Well: G01-MW-1A
Test Date: 11/14/01

AQUIFER DATA

Saturated Thickness: 36.25 ft
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (G01-MW-1A)

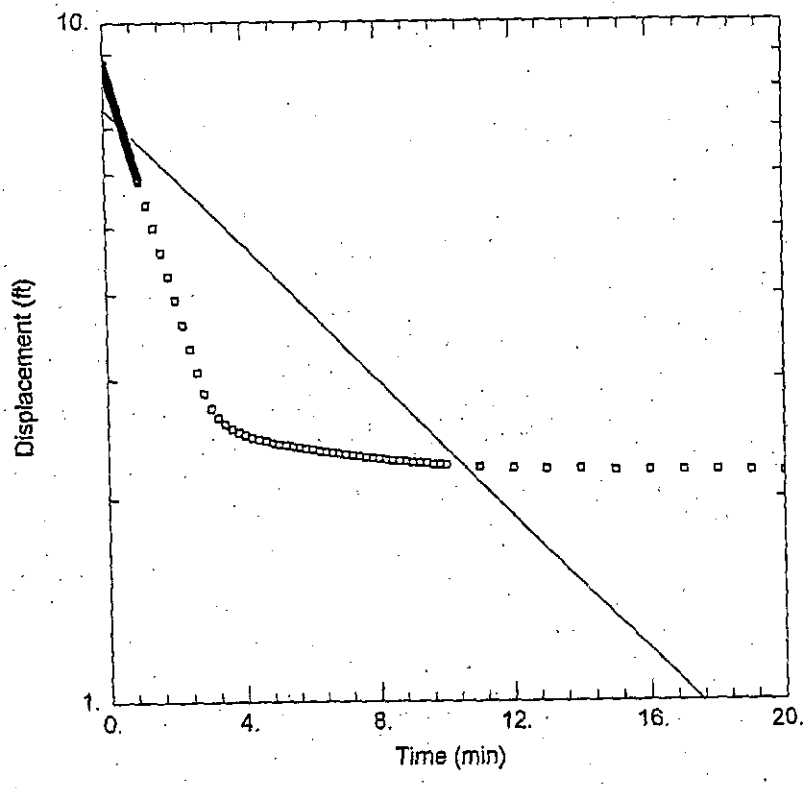
Initial Displacement: 8.599 ft
Wellbore Radius: 0.33 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.2

Casing Radius: 0.083 ft
Well Skin Radius: 0.33 ft
Total Well Penetration Depth: 21.96 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 8.879 ft/day
y0 = 8.332 ft



SLUG TEST RESULTS FOR G01-MW-2

Data Set: M:\Navy\G01-MW-2.aqt
Date: 01/08/02 Time: 17:00:20

PROJECT INFORMATION

Company: BBL
Client: Hawk Sites
Project: 880.26.03
Test Location: Key West NAS
Test Well: G01-MW-2
Test Date: 11/14/01

AQUIFER DATA

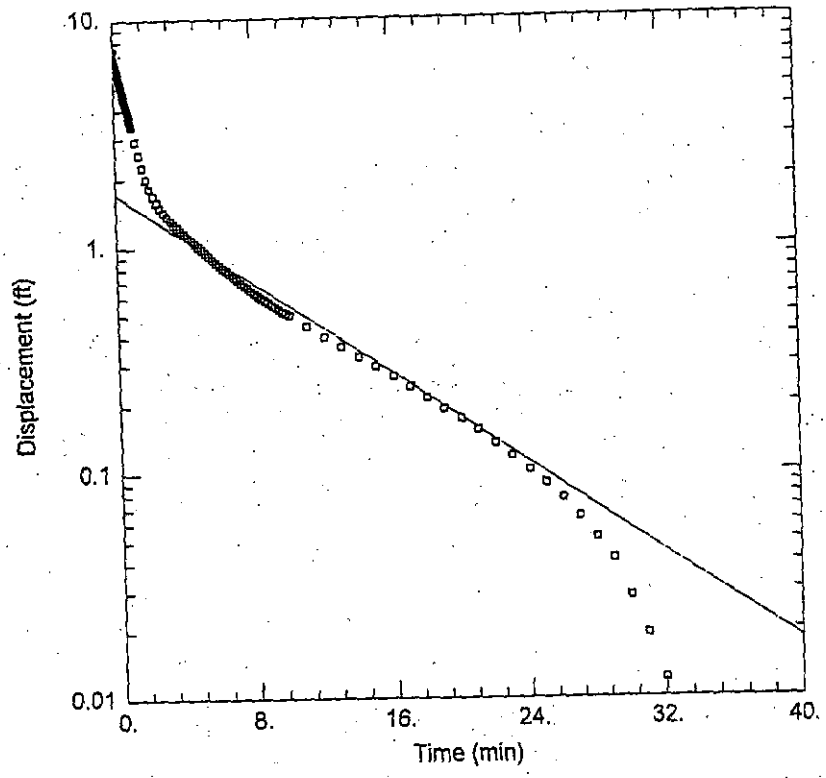
Saturated Thickness: 36.95 ft
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (G01-MW-2)

Initial Displacement: 8.707 ft
Wellbore Radius: 0.33 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.2
Casing Radius: 0.083 ft
Well Skin Radius: 0.33 ft
Total Well Penetration Depth: 7.97 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6036 ft/day
y0 = 7.451 ft



SLUG TEST RESULTS FOR G01-MW-3

Data Set: M:\Navy\G01-MW-3.aqt
Date: 01/08/02
Time: 17:03:17

PROJECT INFORMATION

Company: BBL
Client: Hawk Sites
Project: 880.26.03
Test Location: Key West NAS
Test Well: G01-MW-3
Test Date: 11/14/01

AQUIFER DATA

Saturated Thickness: 37.82 ft
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (G01-MW-3)

Initial Displacement: 7.16 ft
Wellbore Radius: 0.33 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.25
Casing Radius: 0.083 ft
Well Skin Radius: 0.33 ft
Total Well Penetration Depth: 9.82 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.7384 ft/day
y0 = 1.711 ft

Appendix E

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

October 31, 2001

Amanda Shearer
Blasland, Bouck & Lee
15741 Vinola Court
Montverde, FL 34756
TEL (407) 469-3165
FAX (407) 469-3165

RE: Hawk Missle Site BO1 Order 0110520

Dear Amanda Shearer:

Analytical Environmental Servs, Inc. received 2 samples on 10/23/2001 10:05:00 AM for the analyses presented in the following report.

No problems were encountered during analyses. Additionally, all results for the associated quality control samples were within EPA and/or AES established limits except where noted in the project Case Narrative.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

April Harvey
Customer Service Manager

Revision 1: Corrected units for SPLP

8721 Roswell Road, Suite 111 • Atlanta, Georgia 30340 • Tel: (770) 457-8177 • FAX: (770) 457-8188

IALYTICAL ENVIRONMENTAL SERVICES, INC

1 Presidential Parkway, Suite 111, Atlanta GA 30340-0370

..: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 0110520

Date: 10/22/01 Page 1 of 1

IPANY: Blasland Bouck & Lee

ADDRESS: 3350 Buschwood Park Dr Suite 100 Tampa, FL 33618

NE: 407/469-3165

FAX: 407-469-3392

IPLED BY: Dan Press

SIGNATURE:

ANALYSIS REQUESTED

SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	8270SIM/SPLP	FL PRS/SPLP	8020/SPLP	% moisture	REMARKS	No # of Containers
SB-1 (0-2)	10/22/01	0930	✓		SO	✓	✓	✓	✓	Totals + SPLP	
SB-4 (0-2)	10/22/01	1430	✓		SO	✓	✓	✓	✓	" "	

PRESERVATION

INQUISHED BY: DATE/TIME: 10/22/01 1700

RECEIVED BY: 1: DATE/TIME: 10/23/01 10:05am

2:

3:

PROJECT INFORMATION

PROJECT NAME: Hawk Missile Site B01

PROJECT #: 88026.03

FAC ID#:

SITE ADDRESS: NAS Key West

PROJECT MANAGER: Amanda Shearer

INVOICE TO: (IF DIFFERENT FROM ABOVE)

RECEIPT

Total # of Containers

Turnaround Time Request

- ✓ Standard 3-5 Business Days
- Same Day Rush (auth req.)
- Next Business Day Rush
- 2 Business Day Rush
- Other

PROGRAM (see codes):

DATA PACKAGE: I II III IV

ECIAL INSTRUCTIONS/COMMENTS: Note: Need soil samples as totals and SPLP.

SHIPMENT METHOD

OUT 10/22/01 VIA: FedEx

IN / / VIA:

CLIENT FedEx UPS MAIL COURIER GREYHOUND OTHER

E:

OTE/CONTRACT #:

TRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

ESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) NA = None

ALUST TNUST MSUST NCUST SCUST GAUST GACONV FLCONV

White Copy - ORIGINAL; Yellow Copy - LAB; Pink Copy - CLIENT

Analytical Environmental Servs, Inc.

Sample Receipt Checklist

Client Blasland, Bouck & Lee

Date and Time 10/23/01 10:05 AM

Work Order Number 0110520

Received by N. Douglas

Checklist completed by Nolmy Douglas 10/23/01 (Signature / Date)

Reviewed by JA 10/23/01 (Initials / Date)

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ✓	No _	Not Present _
Custody seals intact on shippping container/cooler?	Yes _	No _	Not Present ✓
Custody seals intact on sample bottles?	Yes _	No _	Not Present ✓
Chain of custody present?	Yes ✓	No _	
Chain of custody signed when relinquished and received?	Yes ✓	No _	
Chain of custody agrees with sample labels?	Yes ✓	No _	
Samples in proper container/bottle?	Yes ✓	No _	
Sample containers intact?	Yes ✓	No _	
Sufficient sample volume for indicated test?	Yes ✓	No _	
All samples received within holding time?	Yes ✓	No _	
Container/Temp Blank temperature in compliance?	Yes ✓	No _	4°C
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes _	No _
Water - pH acceptable upon receipt?	~~Yes _~~	~~No _~~	NA nolmy 10/23/01

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments:

Corrective Action

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	Client Sample ID:	SB-1(0-2)
Lab Order:	0110520	Tag Number:	
Project:	Hawk Missle Site BO1	Collection Date:	10/22/2001 9:30:00 AM
Lab ID:	0110520-001A	Matrix:	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS		**SW8260B**				Analyst: **JTC**
m,p-Xylene	BRL	1.1		µg/Kg-dry	1	10/24/2001 7:38:00 PM
o-Xylene	BRL	1.1		µg/Kg-dry	1	10/24/2001 7:38:00 PM
Methyl tert-butyl ether	BRL	5.4		µg/Kg-dry	1	10/24/2001 7:38:00 PM
Benzene	BRL	1.1		µg/Kg-dry	1	10/24/2001 7:38:00 PM
Toluene	BRL	1.1		µg/Kg-dry	1	10/24/2001 7:38:00 PM
Ethylbenzene	BRL	1.1		µg/Kg-dry	1	10/24/2001 7:38:00 PM
Surr: 4-Bromofluorobenzene	76.2	50-150		%REC	1	10/24/2001 7:38:00 PM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(0-2)
Lab Order:	0110520	**Tag Number:**	SPLP Leachate
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 9:30:00 AM
Lab ID:	0110520-001B	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	20		µg/L	20	10/25/2001 4:59:00 AM
Ethylbenzene	BRL	20		µg/L	20	10/25/2001 4:59:00 AM
m,p-Xylene	BRL	20		µg/L	20	10/25/2001 4:59:00 AM
Methyl tert-butyl ether	BRL	20		µg/L	20	10/25/2001 4:59:00 AM
o-Xylene	BRL	20		µg/L	20	10/25/2001 4:59:00 AM
Toluene	BRL	20		µg/L	20	10/25/2001 4:59:00 AM
Surr: 4-Bromofluorobenzene	99.3	70.2-131		%REC	20	10/25/2001 4:59:00 AM
Surr: Dibromofluoromethane	113	80.3-123		%REC	20	10/25/2001 4:59:00 AM
Surr: Toluene-d8	105	89.1-120		%REC	20	10/25/2001 4:59:00 AM

Qualifiers:

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S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(0-2)
Lab Order:	0110520	**Tag Number:**	
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 9:30:00 AM
Lab ID:	0110520-001C	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Acenaphthylene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Acenaphthene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Fluorene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Phenanthrene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Anthracene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Fluoranthene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Pyrene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Benz(a)anthracene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Chrysene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Benzo(b)fluoranthene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Benzo(k)fluoranthene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Benzo(a)pyrene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Dibenz(a,h)anthracene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Benzo(g,h,i)perylene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Indeno(1,2,3-cd)pyrene	BRL	390		µg/Kg-dry	1	10/27/2001 3:47:00 AM
Surr: 2-Fluorobiphenyl	65.4	26-99		%REC	1	10/27/2001 3:47:00 AM
Surr: 4-Terphenyl-d14	78.0	29-101		%REC	1	10/27/2001 3:47:00 AM
Surr: Nitrobenzene-d5	39.9	15-109		%REC	1	10/27/2001 3:47:00 AM
PERCENT MOISTURE		**D2216**				Analyst: **MLW**
Percent Moisture	15.3	0		wt%	1	10/23/2001 5:00:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(0-2)
Lab Order:	0110520	**Tag Number:**	SPLP Leachate
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 9:30:00 AM
Lab ID:	0110520-001D	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Acenaphthylene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Acenaphthene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Fluorene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Phenanthrene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Anthracene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Fluoranthene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Pyrene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Benz(a)anthracene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Chrysene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Benzo(b)fluoranthene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Benzo(k)fluoranthene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Benzo(a)pyrene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Dibenz(a,h)anthracene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Benzo(g,h,i)perylene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Indeno(1,2,3-cd)pyrene	BRL	100		µg/L	1	10/29/2001 3:04:00 PM
Surr: Nitrobenzene-d5	55.6	40-110		%REC	1	10/29/2001 3:04:00 PM
Surr: 2-Fluorobiphenyl	70.0	43-110		%REC	1	10/29/2001 3:04:00 PM
Surr: 4-Terphenyl-d14	93.5	10-121		%REC	1	10/29/2001 3:04:00 PM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(0-2)
Lab Order:	0110520	**Tag Number:**	
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 9:30:00 AM
Lab ID:	0110520-001E	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	4.7		mg/Kg-dry	1	10/30/2001 12:23:00 AM
Surr: C39	111	60-118		%REC	1	10/30/2001 12:23:00 AM
Surr: o-Terphenyl	94.9	42-193		%REC	1	10/30/2001 12:23:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-1(0-2)
Lab Order:	0110520	**Tag Number:**	SPLP Leachate
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 9:30:00 AM
Lab ID:	0110520-001F	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	4.0		mg/L	1	10/30/2001 3:25:00 AM
Surr: C39	67.9	42-193		%REC	1	10/30/2001 3:25:00 AM
Surr: o-Terphenyl	87.7	82-142		%REC	1	10/30/2001 3:25:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-4(0-2)
Lab Order:	0110520	**Tag Number:**	
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 2:30:00 PM
Lab ID:	0110520-002A	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS		**SW8260B**				Analyst: **JTC**
m,p-Xylene	BRL	1.2		µg/Kg-dry	1	10/24/2001 8:07:00 PM
o-Xylene	BRL	1.2		µg/Kg-dry	1	10/24/2001 8:07:00 PM
Methyl tert-butyl ether	BRL	5.9		µg/Kg-dry	1	10/24/2001 8:07:00 PM
Benzene	BRL	1.2		µg/Kg-dry	1	10/24/2001 8:07:00 PM
Toluene	BRL	1.2		µg/Kg-dry	1	10/24/2001 8:07:00 PM
Ethylbenzene	BRL	1.2		µg/Kg-dry	1	10/24/2001 8:07:00 PM
Surr: 4-Bromofluorobenzene	75.5	50-150		%REC	1	10/24/2001 8:07:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-4(0-2)
Lab Order:	0110520	**Tag Number:**	SPLP Leachate
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 2:30:00 PM
Lab ID:	0110520-002B	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	20		µg/L	20	10/25/2001 5:34:00 AM
Ethylbenzene	BRL	20		µg/L	20	10/25/2001 5:34:00 AM
m,p-Xylene	BRL	20		µg/L	20	10/25/2001 5:34:00 AM
Methyl tert-butyl ether	BRL	20		µg/L	20	10/25/2001 5:34:00 AM
o-Xylene	BRL	20		µg/L	20	10/25/2001 5:34:00 AM
Toluene	BRL	20		µg/L	20	10/25/2001 5:34:00 AM
Surr: 4-Bromofluorobenzene	96.1	70.2-131		%REC	20	10/25/2001 5:34:00 AM
Surr: Dibromofluoromethane	111	80.3-123		%REC	20	10/25/2001 5:34:00 AM
Surr: Toluene-d8	108	89.1-120		%REC	20	10/25/2001 5:34:00 AM

Qualifiers:

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B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-4(0-2)
Lab Order:	0110520	**Tag Number:**	
Project:	Hawk Missle Site BOI	**Collection Date:**	10/22/2001 2:30:00 PM
Lab ID:	0110520-002C	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Acenaphthylene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Acenaphthene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Fluorene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Phenanthrene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Anthracene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Fluoranthene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Pyrene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Benz(a)anthracene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Chrysene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Benzo(b)fluoranthene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Benzo(k)fluoranthene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Benzo(a)pyrene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Dibenz(a,h)anthracene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Benzo(g,h,i)perylene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Indeno(1,2,3-cd)pyrene	BRL	380		µg/Kg-dry	1	10/27/2001 4:22:00 AM
Surr: 2-Fluorobiphenyl	58.3	26-99		%REC	1	10/27/2001 4:22:00 AM
Surr: 4-Terphenyl-d14	72.7	29-101		%REC	1	10/27/2001 4:22:00 AM
Surr: Nitrobenzene-d5	65.2	15-109		%REC	1	10/27/2001 4:22:00 AM
PERCENT MOISTURE		**D2216**				Analyst: **MLW**
Percent Moisture	13.7	0		wt%	1	10/23/2001 5:00:00 PM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-4(0-2)
Lab Order:	0110520	**Tag Number:**	SPLP Leachate
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 2:30:00 PM
Lab ID:	0110520-002D	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Acenaphthylene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Acenaphthene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Fluorene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Phenanthrene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Anthracene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Fluoranthene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Pyrene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Benz(a)anthracene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Chrysene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Benzo(b)fluoranthene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Benzo(k)fluoranthene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Benzo(a)pyrene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Dibenz(a,h)anthracene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Benzo(g,h,i)perylene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Indeno(1,2,3-cd)pyrene	BRL	120		µg/L	1	10/29/2001 4:18:00 PM
Surr: Nitrobenzene-d5	56.1	40-110		%REC	1	10/29/2001 4:18:00 PM
Surr: 2-Fluorobiphenyl	76.9	43-110		%REC	1	10/29/2001 4:18:00 PM
Surr: 4-Terphenyl-d14	88.6	10-121		%REC	1	10/29/2001 4:18:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-4(0-2)
Lab Order:	0110520	**Tag Number:**	
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 2:30:00 PM
Lab ID:	0110520-002E	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	4.6		mg/Kg-dry	1	10/30/2001 1:00:00 AM
Surr: C39	112	60-118		%REC	1	10/30/2001 1:00:00 AM
Surr: o-Terphenyl	85.9	42-193		%REC	1	10/30/2001 1:00:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *31-Oct-01*

CLIENT:	Blasland, Bouck & Lee	**Client Sample ID:**	SB-4(0-2)
Lab Order:	0110520	**Tag Number:**	SPLP Leachate
Project:	Hawk Missle Site BO1	**Collection Date:**	10/22/2001 2:30:00 PM
Lab ID:	0110520-002F	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	4.0		mg/L	1	10/30/2001 4:01:00 AM
Surr: C39	89.0	42-193		%REC	1	10/30/2001 4:01:00 AM
Surr: o-Terphenyl	88.1	82-142		%REC	1	10/30/2001 4:01:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Analytical Environmental Servs, Inc. Date: *31-Oct-01*

CLIENT: Blasland, Bouck & Lee
Project: Hawk Missle Site BO1
Lab Order: 0110520

CASE NARRATIVE

PAH Analysis via SW-846 Method 8270C

The recovery of benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene was above laboratory acceptance limits in the LCS sample analyzed as part of the extraction batch. Although the data may have a high bias, these target analytes were not observed in the client samples.

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.26.03 Page 1 of 2

Site Location Fmr Hawk Site B-01

Sample I.D. No. SB-1 (0-2) Coded/Replicate No.

Date 10/22/01 Time of Sampling: Begin 9:30 End

Weather hot, muggy

Site Description

~~Est~~ Fmr location of AST - source area

SAMPLING DATA

Collection Method hand auger

Depth 0'-2' Moisture Content dry

Color white - lt pink Odor no

Description oolite, limestone frags, weathered

Analyses Required (Order of Collection)	Container Description
8020 totals + SPLP	encore
8270 SIM PAH ↑ ↑	glass jar
FL-PRO totals + SPLP	" "
% moisture	" "

Sample Monitoring (TIP, OVA, HNU, etc.) PID - 2.7 ppm

Remarks

(Visitors, Field Decon)

(QC Sample Locations/Time)

Sampler(s) (Signatures)

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.26.03 Page 2 of 2

Site Location Four Hawk Site R-01

Sample I.D. No. SB-4 (0-2) Coded/Replicate No.

Date 10/22/01 Time of Sampling: Begin 1430 End

Weather hot, muggy

Site Description

East of Fm location of AST

SAMPLING DATA

Collection Method hand auger

Depth 0-2' Moisture Content dry

Color white, lt. pink Odor no

Description oolite, limestone frags, weathered

Analyses Required (Order of Collection)	Container Description
8020 totals + SPLP	one
8270 SIM PAH " "	glass jar
FL-PRO " "	"
% moisture	"

Sample Monitoring (TIP, OVA, HNU, etc.) PID 8.2 ppm

Remarks

(Visitors, Field Decon)

(QC Sample Locations/Time)

Sampler(s) (Signatures)

Appendix F

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

WELL COMPLETION LOG

RECEIVED
NOV 05 2001
BLASLAND, BOUCK & LEE
TAMPA

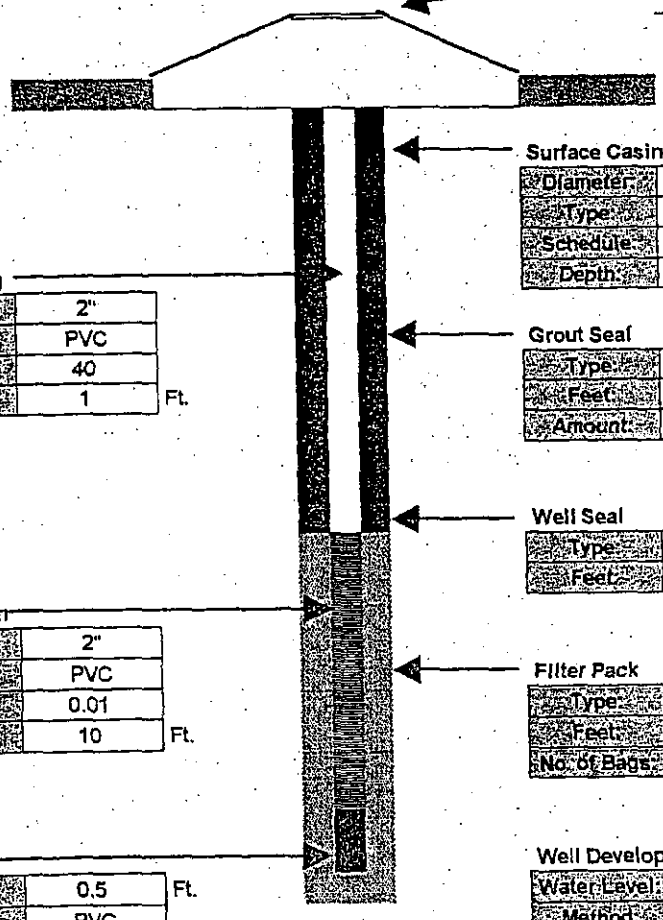
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW1
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites B-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	11	10	1	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.25	Feet	10.5	0.25



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"	
Type:	PVC	
Schedule:	40	
Lenght:	1	Ft.

Grout Seal

Type:	I Portland	
Feet:	0.25	
Amount:	1	Bags

Well Seal

Type:	30/65
Feet:	0.25

Well Screen

Diameter:	2"	
Type:	PVC	
Slot:	0.01	
Length:	10	Ft.

Filter Pack

Type:	30/45
Feet:	10.5
No. of Bags:	6x50lb

N

Sump

Length:	0.5	Ft.
Type:	PVC	

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

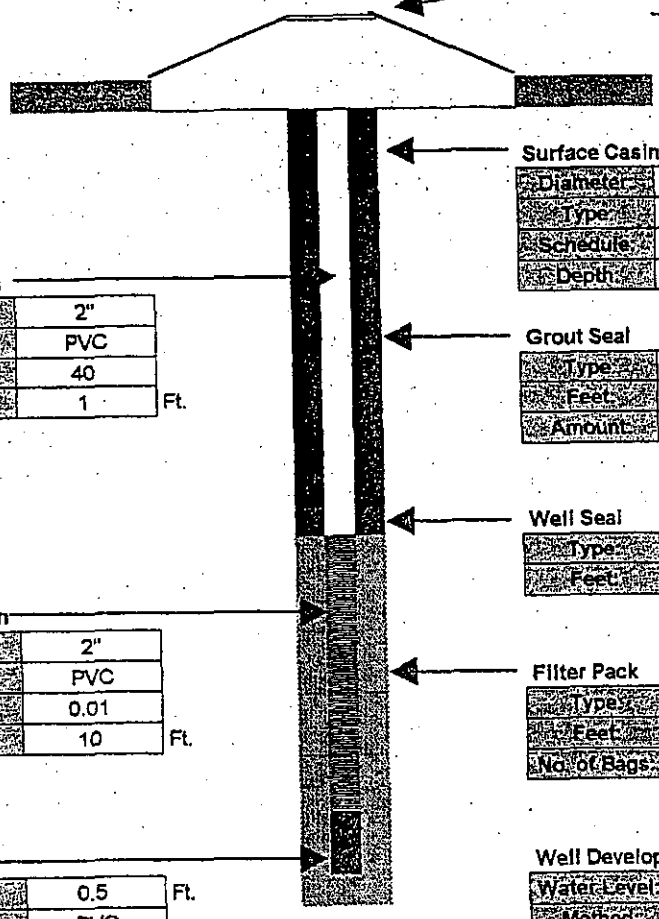
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW2
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites B-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	11	10	1	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.25	Feet	10.5	0.25



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Lenght:	1 Ft.

Grout Seal

Type:	I Portland
Feet:	0.25
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	0.25

N

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	10 Ft.

Filter Pack

Type:	30/45
Feet:	10.5
No. of Bags:	6x50lb

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company: Groundwater Protection, Inc.
Address: 1824 W. Washington Street
C,S,Z: Orlando, Florida 32805
Phone/FAX: (407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

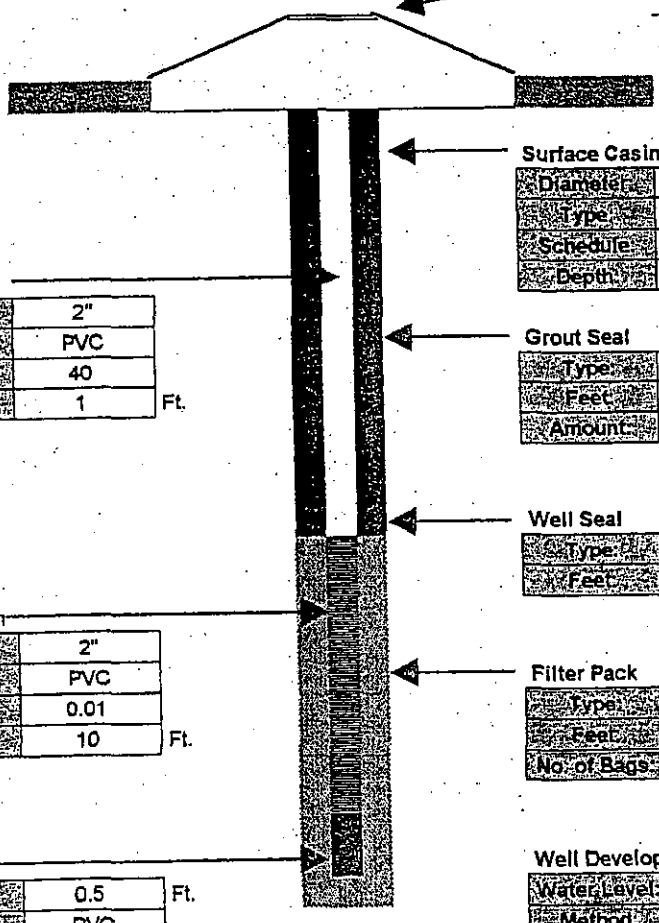
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW3
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites B-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	11	10	1	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.25	Feet	10.5	0.25



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Lenght:	1 Ft.

Grout Seal

Type:	I Portland
Feet:	0.25
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	0.25

Well Screen

Diameter:	2"
Type:	PVC
Slot:	0.01
Length:	10 Ft.

Filter Pack

Type:	30/45
Feet:	10.5
No. of Bags:	6x50lb

N

Sump

Length:	0.5 Ft.
Type:	PVC

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company: Groundwater Protection, Inc.
Address: 1824 W. Washington Street
C,S,Z: Orlando, Florida 32805
Phone/FAX: (407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

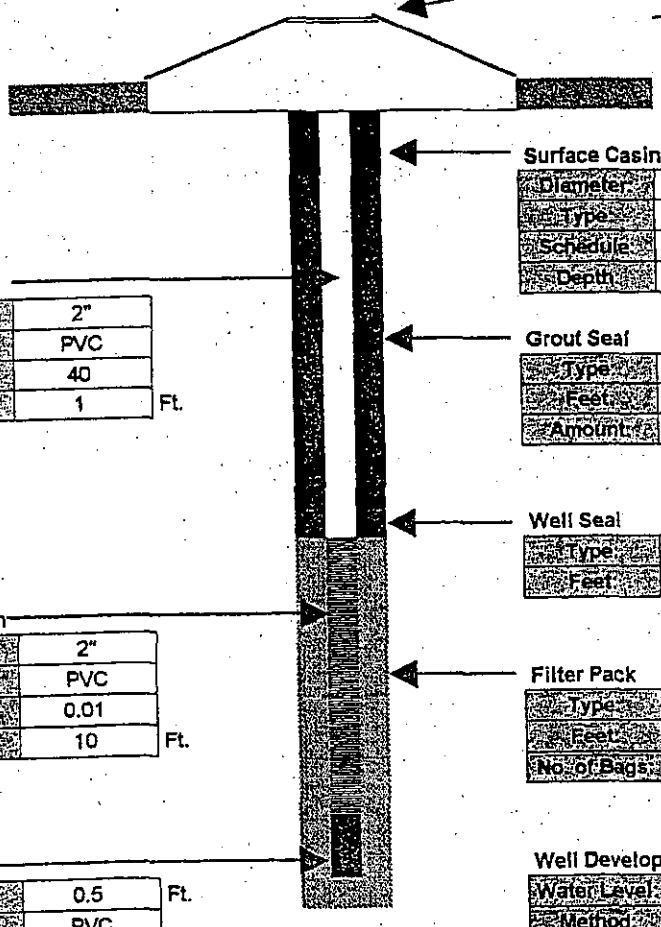
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW4
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites B-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	11	10	1	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.25	Feet	10.5	0.25



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"	
Type:	PVC	
Schedule:	40	
Lenght:	1	Ft.

Grout Seal

Type:	I Portland	
Feet:	0.25	
Amount:	1	Bags

Well Seal

Type:	30/65
Feet:	0.25

Well Screen

Diameter:	2"	
Type:	PVC	
Slot:	0.01	
Length:	10	Ft.

Filter Pack

Type:	30/45
Feet:	10.5
No. of Bags:	6x50lb

N

Sump

Length:	0.5	Ft.
Type:	PVC	

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company:	Groundwater Protection, Inc.
Address:	1824 W. Washington Street
C,S,Z:	Orlando, Florida 32805
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

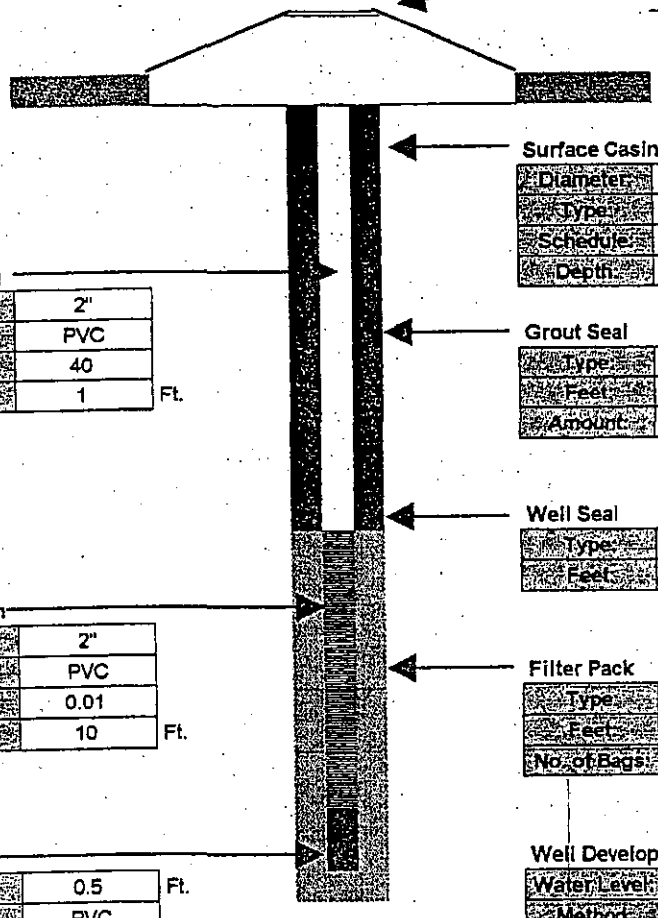
Water Mgmt. Dist.: South Florida
Permit Number: NA

Work Order: 7635
Type of Well: Monitor
Well Number: MW5
Method Used: HSA
Borehole Dia. 8"

Site Information:
Name: Hawk Sites B-01
Address: NAS Key West
C,S,Z: Key West, Florida
S/T/R:

Client / Consultant Information
Consultant: BBL
Field Rep: Amanda Shearer

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	11	10	1	1	6x50lb	30/45	30/65
40	Schedule	Slot Size:	0.01		0.25	Feet	10.5	0.25



Surface Completion
8x8

Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	2"	
Type:	PVC	
Schedule:	40	
Lenght:	1	Ft.

Grout Seal

Type:	I Portland	
Feet:	0.25	
Amount:	1	Bags

Well Seal

Type:	30/65
Feet:	0.25

Well Screen

Diameter:	2"	
Type:	PVC	
Slot:	0.01	
Length:	10	Ft.

Filter Pack

Type:	30/45
Feet:	10.5
No. of Bags:	6x50lb

N

Sump

Length:	0.5	Ft.
Type:	PVC	

Well Development

Water Level:			
Method:			
Start:	Cloudy	Finish:	Clear
Time:			
GPM:			

Contractor Information

Contractor #:	2638
Completion:	10/25/2001
Driller:	Jeff Zeigler
Lead Hand:	John Hildereth
3rd Man:	Bill Hammond
Drill Rig:	D120A

Company: Groundwater Protection, Inc.
Address: 1824 W. Washington Street
C,S,Z: Orlando, Florida 32805
Phone/FAX: (407) 426-7885 / (407) 426-7586

Appendix G

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

November 21, 2001

Amanda Shearer
Blasland, Bouck & Lee
15741 Vinola Court
Montverde, FL 34756
TEL: (407) 469-3165
FAX (407) 469-3165

RE: Hawk Missle Site B-O1 Order No.: 0111310

Dear Amanda Shearer:

Analytical Environmental Servs, Inc. received 6 samples on 11/14/01 11:05:00 AM for the analyses presented in the following report.

No problems were encountered during analyses. Additionally, all results for the associated quality control samples were within EPA and/or AES established limits except where noted in the project Case Narrative.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

for

April Harvey
Customer Service Manager

ALYTICAL ENVIRONMENTAL SERVICES, INC

Presidential Parkway, Suite 111, Atlanta GA 30340-0370

: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 0111310

Date: 11/13/01 Page 1 of 1

ANY: B.L.

E: 7-469-3165

LED BY: N. Esposito

ADDRESS: 15741 Vinola Ct. Montverde, FLA 34756

FAX: 407-469-3392

SIGNATURE:

ANALYSIS REQUESTED

SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	8021 BTEX/m	8270 Sim PAH	Cl-Pro	PB	TDS	EDB	REMARKS	No # of Containers
						PRESERVATION							
						HCL	C	HCL	HNO3	C	C		
MW-5	11/13/01	1238	X		GW	✓	✓	✓	✓	✓	✓	-1	10
MW-4		1320	X		GW	✓	✓	✓	✓		✓	-2	9
MW-3		1413	X		GW	✓	✓	✓	✓		✓	-3	9
MW-2		1457	X		GW	✓	✓	✓	✓		✓	-4	9
MW-1		1545	X		GW	✓	✓	✓	✓		✓	-5	9
Duplicate		1200	X		GW	✓	✓	✓	✓		✓	-6	9

NQUISHED BY: DATE/TIME 11/13/01-1700

RECEIVED BY: 1: Brian Friel DATE/TIME 11/14/01 @ 01:05

2:

3:

PROJECT INFORMATION

PROJECT NAME: Hawk Site B01

PROJECT #: 880.26.003

FAC ID#:

SITE ADDRESS: NASKW

PROJECT MANAGER: Amanda Shearer

INVOICE TO: (IF DIFFERENT FROM ABOVE) BBL Tampa Office

RECEIPT

Total # of Containers 55

Turnaround Time Request

- (X) Standard 3-5 Business Days
- ( ) Same Day Rush (auth req.)
- ( ) Next Business Day Rush
- ( ) 2 Business Day Rush
- ( ) Other _____

PROGRAM (see codes): _____

DATA PACKAGE: I II III IV

IAL INSTRUCTIONS/COMMENTS: :c 62-777, FAC detection imits

SHIPMENT METHOD

OUT 11/13/01 VIA: Fed-Ex

IN / / VIA:

CLIENT FedEx UPS MAIL COURIER GREYHOUND OTHER _____

TE/CONTRACT #:

RIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

SERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) NA = None

GRAM: FLIST FLDC ALUST TNUST MSUST NCUST SCUST GAUST GACONV FLCONV

White Copy - ORIGINAL; Yellow Copy - LAB; Pink Copy - CLIENT

Analytical Environmental Services, Inc.

Sample Receipt Checklist

Client BDL

Date and Time 11/14/01 @ 011:05

Work Order Number 0111310

Received by DFF

Checklist completed by Brian Friel (Signature) 11/14/01 (Date)

Reviewed by DFF (Initials) 11/14/01 (Date)

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shippping container/cooler?	Yes __	No __	Not Present ✓
Custody seals intact on sample bottles?	Yes __	No __	Not Present ✓
Chain of custody present?	Yes ✓	No __	
Chain of custody signed when relinquished and received?	Yes ✓	No __	
Chain of custody agrees with sample labels?	Yes ✓	No __	
Samples in proper container/bottle?	Yes ✓	No __	
Sample containers intact?	Yes ✓	No __	
Sufficient sample volume for indicated test?	Yes ✓	No __	
All samples received within holding time?	Yes ✓	No __	
Container/Temp Blank temperature in compliance?	Yes ✓	No __	4.5°C
Water - VOA vials have zero headspace?	No VOA vials submitted __	Yes ✓	No __
Water - pH acceptable upon receipt?	Yes ✓	No __	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments:

Corrective Action

Analytical Environmental Servs, Inc. Date: *21-Nov-01*

CLIENT: Blasland, Bouck & Lee
Project: Hawk Missle Site B-O1
Lab Order: 0111310

CASE NARRATIVE

EDB Analysis via SW-846 Method 8011

The recovery of EDB in the spiked samples MW-5 (AES# 0111310-001A) and MW-1 (AES# 0111310-005A) were below laboratory acceptance limits.. The failure of these samples to meet data quality objectives was deemed to be due to a matrix interference.

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-001

Client Sample ID: MW-5
Collection Date: 11/13/01 12:38:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
RESIDUE, DISSOLVED (TDS)		**E160.1**				Analyst: **LAV**
Residue, Dissolved (TDS)	564	5.00		mg/L	1	11/21/01 11:08:00 AM
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.0100		mg/L	1	11/19/01 9:32:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 9:22:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 11:21:00 PM
Ethylbenzene	BRL	1.0		µg/L	1	11/19/01 11:21:00 PM
m,p-Xylene	2.8	1.0		µg/L	1	11/19/01 11:21:00 PM
Methyl tert-butyl ether	BRL	1.0		µg/L	1	11/19/01 11:21:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 11:21:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 11:21:00 PM
Surr: 4-Bromofluorobenzene	108	70.2-131		%REC	1	11/19/01 11:21:00 PM
Surr: Dibromofluoromethane	107	80.3-123		%REC	1	11/19/01 11:21:00 PM
Surr: Toluene-d8	106	89.1-120		%REC	1	11/19/01 11:21:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Acenaphthene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Fluorene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Phenanthrene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Anthracene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Fluoranthene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Pyrene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 12:22:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 12:22:00 AM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/21/01 12:22:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 12:22:00 AM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/21/01 12:22:00 AM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/21/01 12:22:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/16/01 4:33:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/21/01 12:22:00 AM
Surr: Nitrobenzene-d5	70.6	40-110		%REC	1	11/16/01 4:33:00 PM
Surr: 2-Fluorobiphenyl	83.6	43-110		%REC	1	11/16/01 4:33:00 PM
Surr: 4-Terphenyl-d14	87.3	10-121		%REC	1	11/16/01 4:33:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-001

Client Sample ID: MW-5
Collection Date: 11/13/01 12:38:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Petroleum Range Organics	BRL	0.40		mg/L	1	11/17/01 2:40:00 AM
Surr: C39	49.0	42-193		%REC	1	11/17/01 2:40:00 AM
Surr: o-Terphenyl	90.6	82-142		%REC	1	11/17/01 2:40:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-002

Client Sample ID: MW-4
Collection Date: 11/13/01 1:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.0100		mg/L	1	11/19/01 9:54:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 9:46:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/19/01 11:54:00 PM
Ethylbenzene	BRL	1.0		µg/L	1	11/19/01 11:54:00 PM
m,p-Xylene	2.7	1.0		µg/L	1	11/19/01 11:54:00 PM
Methyl tert-butyl ether	BRL	1.0		µg/L	1	11/19/01 11:54:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 11:54:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 11:54:00 PM
Surr: 4-Bromofluorobenzene	108	70.2-131		%REC	1	11/19/01 11:54:00 PM
Surr: Dibromofluoromethane	106	80.3-123		%REC	1	11/19/01 11:54:00 PM
Surr: Toluene-d8	105	89.1-120		%REC	1	11/19/01 11:54:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Acenaphthene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Fluorene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Phenanthrene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Anthracene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Fluoranthene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Pyrene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 1:01:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 1:01:00 AM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/21/01 1:01:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 1:01:00 AM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/21/01 1:01:00 AM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/21/01 1:01:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/16/01 5:08:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/21/01 1:01:00 AM
Surr: Nitrobenzene-d5	92.0	40-110		%REC	1	11/16/01 5:08:00 PM
Surr: 2-Fluorobiphenyl	85.2	43-110		%REC	1	11/16/01 5:08:00 PM
Surr: 4-Terphenyl-d14	86.0	10-121		%REC	1	11/16/01 5:08:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	0.40		mg/L	1	11/17/01 3:16:00 AM
Surr: C39	67.4	42-193		%REC	1	11/17/01 3:16:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-002

Client Sample ID: MW-4
Collection Date: 11/13/01 1:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	85.0	82-142		%REC	1	11/17/01 3:16:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-003

Client Sample ID: MW-3
Collection Date: 11/13/01 2:13:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.0100		mg/L	1	11/19/01 9:59:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 10:10:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/20/01 12:28:00 AM
Ethylbenzene	BRL	1.0		µg/L	1	11/20/01 12:28:00 AM
m,p-Xylene	2.6	1.0		µg/L	1	11/20/01 12:28:00 AM
Methyl tert-butyl ether	BRL	1.0		µg/L	1	11/20/01 12:28:00 AM
o-Xylene	BRL	1.0		µg/L	1	11/20/01 12:28:00 AM
Toluene	BRL	1.0		µg/L	1	11/20/01 12:28:00 AM
Surr: 4-Bromofluorobenzene	108	70.2-131		%REC	1	11/20/01 12:28:00 AM
Surr: Dibromofluoromethane	107	80.3-123		%REC	1	11/20/01 12:28:00 AM
Surr: Toluene-d8	106	89.1-120		%REC	1	11/20/01 12:28:00 AM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Acenaphthene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Fluorene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Phenanthrene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Anthracene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Fluoranthene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Pyrene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 1:39:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 1:39:00 AM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/21/01 1:39:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 1:39:00 AM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/21/01 1:39:00 AM
Dibenz(a,h)anthracene	0.39	0.20		µg/L	1	11/21/01 1:39:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/16/01 5:44:00 PM
Indeno(1,2,3-cd)pyrene	0.51	0.20		µg/L	1	11/21/01 1:39:00 AM
Surr: Nitrobenzene-d5	66.1	40-110		%REC	1	11/16/01 5:44:00 PM
Surr: 2-Fluorobiphenyl	82.9	43-110		%REC	1	11/16/01 5:44:00 PM
Surr: 4-Terphenyl-d14	77.7	10-121		%REC	1	11/16/01 5:44:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	0.63	0.40		mg/L	1	11/17/01 3:52:00 AM
Surr: C39	45.3	42-193		%REC	1	11/17/01 3:52:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-003

Client Sample ID: MW-3
Collection Date: 11/13/01 2:13:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	87.6	82-142		%REC	1	11/17/01 3:52:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-004

Client Sample ID: MW-2
Collection Date: 11/13/01 2:57:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.0100		mg/L	1	11/19/01 10:03:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 10:34:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **NWH**
Benzene	BRL	1.0		µg/L	1	11/20/01 1:01:00 AM
Ethylbenzene	BRL	1.0		µg/L	1	11/20/01 1:01:00 AM
m,p-Xylene	2.5	1.0		µg/L	1	11/20/01 1:01:00 AM
Methyl tert-butyl ether	BRL	1.0		µg/L	1	11/20/01 1:01:00 AM
o-Xylene	BRL	1.0		µg/L	1	11/20/01 1:01:00 AM
Toluene	BRL	1.0		µg/L	1	11/20/01 1:01:00 AM
Surr: 4-Bromofluorobenzene	107	70.2-131		%REC	1	11/20/01 1:01:00 AM
Surr: Dibromofluoromethane	108	80.3-123		%REC	1	11/20/01 1:01:00 AM
Surr: Toluene-d8	106	89.1-120		%REC	1	11/20/01 1:01:00 AM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Acenaphthene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Fluorene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Phenanthrene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Anthracene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Fluoranthene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Pyrene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 2:18:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 2:18:00 AM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/21/01 2:18:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 2:18:00 AM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/21/01 2:18:00 AM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/21/01 2:18:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/16/01 6:20:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/21/01 2:18:00 AM
Surr: Nitrobenzene-d5	71.5	40-110		%REC	1	11/16/01 6:20:00 PM
Surr: 2-Fluorobiphenyl	81.6	43-110		%REC	1	11/16/01 6:20:00 PM
Surr: 4-Terphenyl-d14	84.7	10-121		%REC	1	11/16/01 6:20:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	BRL	0.40		mg/L	1	11/17/01 4:28:00 AM
Surr: C39	47.3	42-193		%REC	1	11/17/01 4:28:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-004

Client Sample ID: MW-2
Collection Date: 11/13/01 2:57:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	91.0	82-142		%REC	1	11/17/01 4:28:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-01
Lab ID: 0111310-005

Client Sample ID: MW-1
Collection Date: 11/13/01 3:45:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.0100		mg/L	1	11/19/01 10:07:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 10:58:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	1.0		µg/L	1	11/19/01 5:17:00 PM
Ethylbenzene	BRL	1.0		µg/L	1	11/19/01 5:17:00 PM
m,p-Xylene	BRL	1.0		µg/L	1	11/19/01 5:17:00 PM
Methyl tert-butyl ether	BRL	1.0		µg/L	1	11/19/01 5:17:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 5:17:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 5:17:00 PM
Surr: 4-Bromofluorobenzene	93.0	70.2-131		%REC	1	11/19/01 5:17:00 PM
Surr: Dibromofluoromethane	92.8	80.3-123		%REC	1	11/19/01 5:17:00 PM
Surr: Toluene-d8	95.1	89.1-120		%REC	1	11/19/01 5:17:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Acenaphthene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Fluorene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Phenanthrene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Anthracene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Fluoranthene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Pyrene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 2:56:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 2:56:00 AM
Benzo(b)fluoranthene	BRL	0.20		µg/L	1	11/21/01 2:56:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 2:56:00 AM
Benzo(a)pyrene	BRL	0.20		µg/L	1	11/21/01 2:56:00 AM
Dibenz(a,h)anthracene	BRL	0.20		µg/L	1	11/21/01 2:56:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/16/01 6:55:00 PM
Indeno(1,2,3-cd)pyrene	BRL	0.20		µg/L	1	11/21/01 2:56:00 AM
Surr: Nitrobenzene-d5	70.3	40-110		%REC	1	11/16/01 6:55:00 PM
Surr: 2-Fluorobiphenyl	83.4	43-110		%REC	1	11/16/01 6:55:00 PM
Surr: 4-Terphenyl-d14	74.6	10-121		%REC	1	11/16/01 6:55:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	1.9	0.40		mg/L	1	11/17/01 5:04:00 AM
Surr: C39	54.5	42-193		%REC	1	11/17/01 5:04:00 AM

Qualifiers:
BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-005

Client Sample ID: MW-1
Collection Date: 11/13/01 3:45:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	99.9	82-142		%REC	1	11/17/01 5:04:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-006

Client Sample ID: DUPLICATE
Collection Date: 11/13/01 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
METALS, TOTAL		**SW6010B**				Analyst: **SSS**
Lead	BRL	0.0100		mg/L	1	11/19/01 10:11:00 PM
MICRO-EXTRACTABLE VOLATILE ORGANICS		**SW8011**				Analyst: **BDW**
1,2-Dibromoethane	BRL	0.020		µg/L	1	11/19/01 11:22:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/MS		**SW8260B**				Analyst: **JTC**
Benzene	BRL	1.0		µg/L	1	11/19/01 5:50:00 PM
Ethylbenzene	BRL	1.0		µg/L	1	11/19/01 5:50:00 PM
m,p-Xylene	BRL	1.0		µg/L	1	11/19/01 5:50:00 PM
Methyl tert-butyl ether	BRL	1.0		µg/L	1	11/19/01 5:50:00 PM
o-Xylene	BRL	1.0		µg/L	1	11/19/01 5:50:00 PM
Toluene	BRL	1.0		µg/L	1	11/19/01 5:50:00 PM
Surr: 4-Bromofluorobenzene	92.0	70.2-131		%REC	1	11/19/01 5:50:00 PM
Surr: Dibromofluoromethane	93.1	80.3-123		%REC	1	11/19/01 5:50:00 PM
Surr: Toluene-d8	96.6	89.1-120		%REC	1	11/19/01 5:50:00 PM
POLYAROMATIC HYDROCARBONS		**SW8270C**				Analyst: **JMZ**
Naphthalene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Acenaphthylene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
1-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
2-Methylnaphthalene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Acenaphthene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Fluorene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Phenanthrene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Anthracene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Fluoranthene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Pyrene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Benz(a)anthracene	BRL	0.20		µg/L	1	11/21/01 3:34:00 AM
Chrysene	BRL	4.0		µg/L	1	11/21/01 3:34:00 AM
Benzo(b)fluoranthene	0.41	0.20		µg/L	1	11/21/01 3:34:00 AM
Benzo(k)fluoranthene	BRL	0.50		µg/L	1	11/21/01 3:34:00 AM
Benzo(a)pyrene	0.30	0.20		µg/L	1	11/21/01 3:34:00 AM
Dibenz(a,h)anthracene	0.41	0.20		µg/L	1	11/21/01 3:34:00 AM
Benzo(g,h,i)perylene	BRL	10		µg/L	1	11/16/01 7:30:00 PM
Indeno(1,2,3-cd)pyrene	0.53	0.20		µg/L	1	11/21/01 3:34:00 AM
Surr: Nitrobenzene-d5	75.1	40-110		%REC	1	11/16/01 7:30:00 PM
Surr: 2-Fluorobiphenyl	89.9	43-110		%REC	1	11/16/01 7:30:00 PM
Surr: 4-Terphenyl-d14	84.5	10-121		%REC	1	11/16/01 7:30:00 PM
PETROLEUM RANGE ORGANICS		**FL-PRO**				Analyst: **ARH**
Petroleum Range Organics	1.2	0.40		mg/L	1	11/17/01 5:39:00 AM
Surr: C39	61.6	42-193		%REC	1	11/17/01 5:39:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Analytical Environmental Servs, Inc.

Date: *26-Nov-01*

CLIENT: Blasland, Bouck & Lee
Lab Order: 0111310
Project: Hawk Missle Site B-O1
Lab ID: 0111310-006

Client Sample ID: DUPLICATE
Collection Date: 11/13/01 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: o-Terphenyl	87.1	82-142		%REC	1	11/17/01 5:39:00 AM

Qualifiers:

BRL - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-1	SAMPLE ID: MW-1	DATE: 11/13/01
SITE NAME: USNKW Hawk Site - B07	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 11.00	DEPTH TO WATER (ft): 3.07	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (11.00 - 3.07) x 0.16 = 1.27

PURGE METHOD: Paraltaltic Pump	PURGING INITIATED AT: 1516	PURGING ENDED AT: 1537	
	PURGE RATE (gpm): 0.3	TOTAL VOLUME PURGED (gal): 6.3	

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.3	7.75	27.41	1145	WHITE	None/H2S	Slight Cloudy	No silt

SAMPLING DATA

SAMPLED BY / AFFILIATION: N. Esposito / B.B.L. INC.		SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): Paraltaltic Pump		SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1545
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)		DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	None		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO3	None		DB
2	AG	950 ml	C	—		8270 SIM PAH
	AG	950 ml	H2SO4	None		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(1)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 15, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-2	SAMPLE ID: MW-2	DATE: 11/13/01
SITE NAME: USNKW Hawk Site-B01	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 11.00	DEPTH TO WATER (ft): 3.00	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (11.00 - 3.00) x 0.16 = 1.28

PURGE METHOD: Paastaltic Pump	PURGING INITIATED AT: 1425	PURGING ENDED AT: 1449
	PURGE RATE (gpm): 0.33	TOTAL VOLUME PURGED (gal): 6.4

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.4	8.09	27.02	1018	WHITE	NONE/H_2S	Cloudy	no silt

SAMPLING DATA

SAMPLED BY / AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Paastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1457

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	NONE		DB
2	AG	950 ml	C	—		8270 Sim PAH
	AG	950 ml	H_2SO_4	NONE		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-3	SAMPLE ID: MW-3	DATE: 11/13/01
SITE NAME: USNKW Hawk Site-301	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 11.00	DEPTH TO WATER (ft): 2.99	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (11.00 - 2.99) x 0.16 = 1.28

PURGE METHOD: Paraastaltic Pump	PURGING INITIATED AT: 1333	PURGING ENDED AT: 14:05	
	PURGE RATE (gpm): 0.2	TOTAL VOLUME PURGED (gal): 6.4	

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.4	8.10	28.03	1712	NONE	NONE/H2S	CLEAR	NO SILT

SAMPLING DATA

SAMPLED BY/AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Paraastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 14:13
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO3	NONE		PB
2	AG	950 ml	C	—		8270 SIM PAH
	AG	950 ml	H2SO4	NONE		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 13, 1995

Petroleum or Petroleum Products Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-4	SAMPLE ID: MW-4	DATE: 11/13/01
SITE NAME: USNKW Hawk Site - BO1	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 11.00	DEPTH TO WATER (ft): 2.98	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (11.00 - 2.98) x 0.16 = 1.28

PURGE METHOD: Paraastaltic Pump	PURGING INITIATED AT: 1252	PURGING ENDED AT: 1314
	PURGE RATE (gpm): 0.29	TOTAL VOLUME PURGED (gal): 6.4

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.4	8.07	27.29	807	Whitish	None/H_2S	Slight Cloudy	No silt

SAMPLING DATA

SAMPLED BY/AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Paraastaltic Pump	SAMPLING INTIATED AT:	SAMPLING ENDED AT: 13:20

FIELD DECONTAMINATION: Y (N) FIELD-FILTERED: Y (N) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	None		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	None		PB
2	AG	950 ml	C	—		8270 SIM PAH
2	AG	950 ml	H_2SO_4	None		FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

DEP Form # 62-770.900(1)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-5	SAMPLE ID: MW-5	DATE: 11/13/01
SITE NAME: USNKW Hawk Site B01	SITE LOCATION: Boca Chica Key West, FLA		

PURGE DATA

WELL DIAMETER (in): 2.0	TOTAL WELL DEPTH (ft): 11.00	DEPTH TO WATER (ft): 2.99	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) x WELL CAPACITY =

= (11.00 - 2.99) x 0.16 = 1.28

PURGE METHOD: Parastaltic Pump	PURGING INITIATED AT: 12:07	PURGING ENDED AT: 12:29
	PURGE RATE (gpm): 0.29	TOTAL VOLUME PURGED (gal): 6.4

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
5	6.4	7.85	29.56	901	NONE	NONE/H_2S	CLEAR	No silt

SAMPLING DATA

SAMPLED BY / AFFILIATION: N. Esposito / B.B.L. INC.	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Parastaltic Pump	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 12:38

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40 ml	HCL	NONE		8021 BTEX/m
2	CG	40 ml	C	—		EDB
1	HDP	500 ml	HNO_3	NONE		PB
2	AG	950 ml	C	—		8270 SIM PAH
2	AG	950 ml	H_2SO_4	NONE		FL-PRO
1	HDP	500 ml	C	—		TDS

REMARKS:

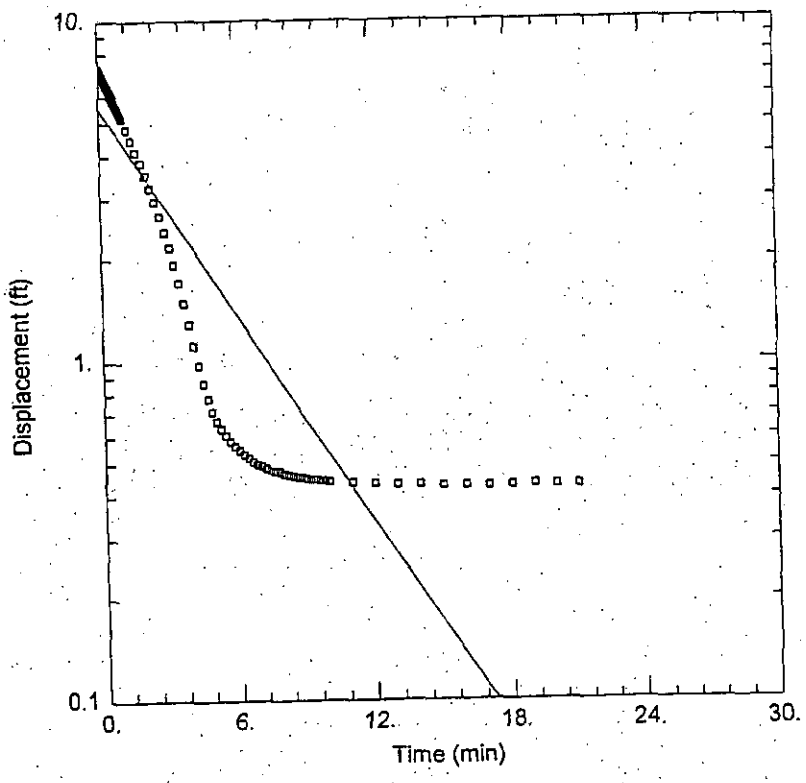
MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

Appendix H

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists



SLUG TEST RESULTS FOR B01-MW-4

Data Set: M:\Navy\B01-MW-4.aqt
Date: 01/08/02
Time: 17:07:04

PROJECT INFORMATION

Company: BBL
Client: Hawk Sites
Project: 880.26.03
Test Location: Key West NAS
Test Well: B01-MW-4
Test Date: 11/13/01

AQUIFER DATA

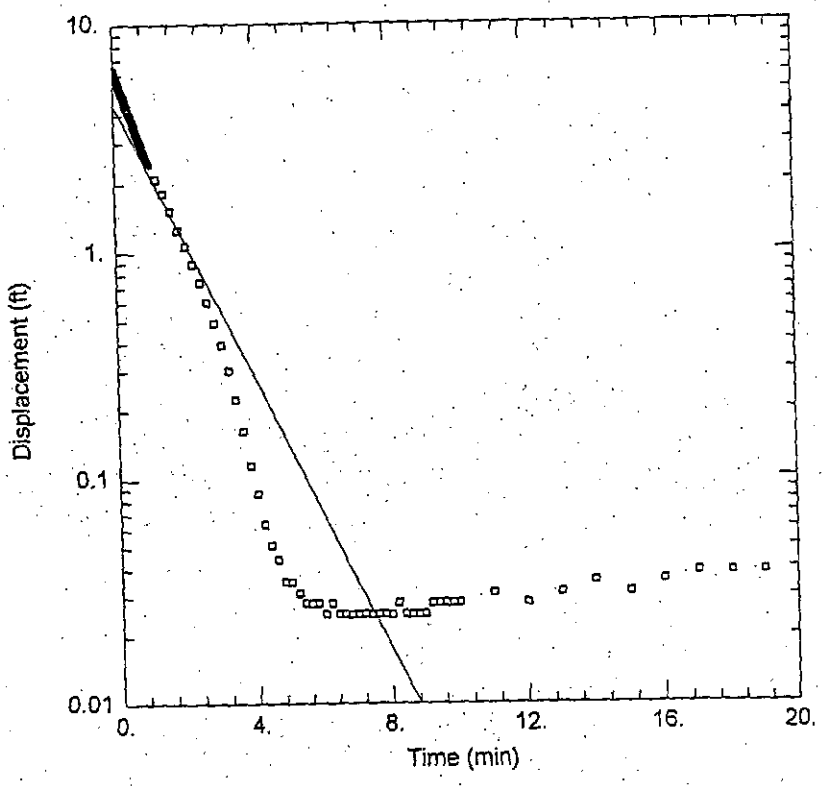
Saturated Thickness: 36.97 ft
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (B01-MW-4)

Initial Displacement: 7.265 ft
Wellbore Radius: 0.33 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.2
Casing Radius: 0.083 ft
Well Skin Radius: 0.33 ft
Total Well Penetration Depth: 8.97 ft

SOLUTION

Aquifer Model: Unconfined
K = 0.3162 ft/day
Solution Method: Bouwer-Rice
y0 = 5.552 ft



SLUG TEST RESULTS FOR B01-MW-5

Data Set: M:\Navy\B01-MW-5.aqt
Date: 01/08/02 Time: 17:09:29

PROJECT INFORMATION

Company: BBL
Client: Hawk Sites
Project: 880.26.03
Test Location: Key West NAS
Test Well: B01-MW-5
Test Date: 11/13/01

AQUIFER DATA

Saturated Thickness: 36.96 ft
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (B0-MW-1)

Initial Displacement: 6.345 ft
Wellbore Radius: 0.33 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.2
Casing Radius: 0.083 ft
Well Skin Radius: 0.33 ft
Total Well Penetration Depth: 7.96 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.644 ft/day
y0 = 4.467 ft