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Final Report

Request for No Further Action Installation Restoration (IR) Program Site 10 Ground Water Naval Air Station Joint Reserve Base Horsham Township, Pennsylvania

Contract No. N62472-92-1296
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Prepared for

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Engineering Field Activity, Northeast
Naval Facilities Engineering Command
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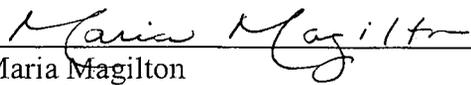
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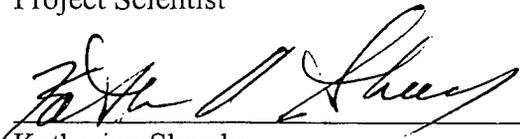
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CONTENTS

	<u>Page</u>
LIST OF FIGURES	Figure-1
LIST OF TABLES	Table-1
1.0 INTRODUCTION	1
1.1 OBJECTIVE.....	1
1.2 REPORT ORGANIZATION	2
2.0 SITE DESCRIPTION	4
2.1 BASE/SITE LOCATION.....	4
2.2 PHYSICAL FEATURES	4
2.2.1 Topography	4
2.2.2 Soil.....	4
2.2.3 Geology	5
2.2.4 Hydrology.....	5
2.3 SITE HISTORY	7
2.4 PREVIOUS INVESTIGATIONS	8
2.4.1 Ground-water Results.....	8
3.0 FIELD METHODOLOGY	10
3.1 MONITORING WELL INSTALLATION AND DEVELOPMENT	11
3.1.1 Well Construction.....	11
3.1.2 Well Development.....	12
3.2 DECONTAMINATION.....	12
3.3 GROUND-WATER PURGING AND SAMPLING	13
3.4 SAMPLE HANDLING/CHAIN-OF-CUSTODY	16
3.5 QUALIY CONTROL (QC) SAMPLES.....	17
3.6 DATA VALIDATION	18
3.7 INVESTIGATION-DERIVED MATERIAL (IDM).....	18
4.0 SITE CHARACTERIZATION.....	20
4.1 SITE SPECIFIC SOIL.....	20
4.2 SITE SPECIFIC GEOLOGY	20
4.3 SITE SPECIFIC HYDROGEOLOGY	21
5.0 ECOLOGICAL SCREENING.....	23
6.0 REMEDIATION.....	24
6.1 REMEDIAL ACTIVITIES PERFORMED AT IR SITE 10	24
7.0 DEMONSTRATION OF ATTAINMENT.....	25
7.1 POINT OF COMPLIANCE (POC).....	25
7.2 REGULATORY OVERVIEW.....	25
7.3 STATEWIDE HEALTH STANDARD	27
7.3.1 2003 Ground-water Sample Results.....	27
7.3.2 2004 Ground-water Sample Results.....	29
7.3.3 Supporting Soil Analytical Data.....	30
7.3.4 Trend of Benzene as a Potential Contaminant of Concern	31

CONTENTS (continued)

7.4	FATE AND TRANSPORT ANALYSIS (QUICK DOMENICO)	32
7.5	2003 EVALUATION OF NATURAL ATTENUATION PARAMETERS	32
7.6	VAPOR INTRUSION ANALYSIS	33
8.0	SUMMARY AND CONCLUSIONS	34
8.1	CONCLUSIONS	34

REFERENCES

APPENDIX A:	MAP 61 AMBLER, ATLAS OF PRELIMINARY GEOLOGIC QUADRANGLE MAPS OF PENNSYLVANIA
APPENDIX B:	DELAWARE RIVER BASIN MAP, DELAWARE RIVER BASIN COMMISSION
APPENDIX C:	NEW AND EXISTING WELL CONSTRUCTION DIAGRAMS
APPENDIX D:	2003 AND 2004 WELL PURGING RECORDS
APPENDIX E:	2003 AND 2004 CHAIN OF CUSTODIES
APPENDIX F:	2003 AND 2004 DATA VALIDATION REPORTS
APPENDIX G:	2003 AND 2004 WASTE MANIFESTS
APPENDIX H:	2003 BORE LOGS
APPENDIX I:	HISTORIC BORE LOGS
APPENDIX J:	CROSS SECTIONS
APPENDIX K:	2003 USGS LOGS
APPENDIX L:	BENZENE AS POTENTIAL CONTAMINANT OF CONCERN, LINE GRAPHS
APPENDIX M:	QUICK DOMENICO SPREADSHEETS
APPENDIX N:	1993 FORMER PLUME FIGURE AND NATURAL ATTENUATION TABLE

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
1	NASJRB site location map showing base boundary (Point of Compliance) and IR Site 10 location
2	Historic well locations at IR Site 10
3	New and existing well locations at IR Site 10 and east of IR Site 10
4	Bedrock Surface Map
5	2003 IR Site 10 ground-water contour map
6	2004 IR Site 10 ground-water contour map

LIST OF TABLES

<u>Number</u>	<u>Title</u>
1	June 1989 Ground-water Analytical Results-VOC
2	September 1989 Ground-water Analytical Results-VOC
3	December 1989 Ground-water Analytical Results-VOC
4	1991 Ground-water Analytical Results-VOC
5	1991 Ground-water Analytical Results-SVOC
6	1993 Ground-water Analytical Results-VOC
7	1997 Ground-water Analytical Results-VOC
8	2003 and 2004 Sample Identification Numbers and Collection Dates
9	Detected Analytes in Investigation-Derived Material
10	2003 Ground-water Analytical Results-VOC
11	2003 Ground-water Analytical Results-SVOC
12	2003 Ground-water Analytical Results-METALS
13	2003 Ground-water Analytical Results-VOC BLANKS
14	2003 Ground-water Analytical Results-SVOC BLANKS
15	2003 Ground-water Analytical Results-METALS BLANKS
16	2004 Ground-water Analytical Results-VOC
17	2004 Ground-water Analytical Results-SVOC
18	2004 Ground-water Analytical Results-METALS
19	2004 Ground-water Analytical Results-VOC BLANKS

- 20 2004 Ground-water Analytical Results-SVOC BLANKS
- 21 2004 Ground-water Analytical Results-METALS BLANKS
- 22 2003 Surface Soil Analytical Results-VOC
- 23 2003 Subsurface Soil Analytical Results-VOC
- 24 2003 Surface Soil Analytical Results-SVOC
- 25 2003 Subsurface Soil Analytical Results-SVOC
- 26 2003 Surface Soil Analytical Results-METALS
- 27 2003 Subsurface Soil Analytical Results-METALS
- 28 2003 Soil Analytical Results-VOC BLANKS
- 29 2003 Soil Analytical Results-SVOC BLANKS
- 30 2003 Soil Analytical Results-METALS BLANKS

1.0 INTRODUCTION

This Final Report Request for No Further Action has been prepared by EA Engineering, Science, and Technology, Inc. (EA) under Contract Number N62472-92-D-1296, as authorized by Engineering Field Activity (EFA) Northeast, EFA Northeast, Naval Facilities Engineering Command.

Installation Restoration (IR) Program Site 10 consists of a former fuel farm where Light Non-Aqueous Phase Liquid (LNAPL) had been detected in the past. EA was initially tasked with a ground-water investigation of IR Site 10 at the Naval Air Station Joint Reserve Base (NASJRB), Horsham Township, Pennsylvania (PA) in 1989. EA installed a LNAPL vacuum-enhanced recovery system in 1998 which due to a variety of mechanical failures, is no longer operational. Due to communications with the Pennsylvania Department of Environmental Protection (PADEP) it was agreed by PADEP, EFA Northeast, and EA that site contamination may have decreased to a low enough level to warrant site closure for ground water. However, PADEP requested that additional ground-water samples be collected and evaluated in addition to an evaluation of historic ground-water sample results to determine if the site can demonstrate attainment. PADEP recommended the installation of 5 new wells and two rounds of ground-water sampling of new and existing wells. Based on PADEP's review of the two recent rounds of ground-water results, PADEP stated per conversation in June 2004 that the record of analysis results from sampling rounds conducted from 1989 to the present provide sufficient information to characterize the trend of ground water quality and to demonstrate attainment for No Further Action (NFA). Note that the IR Site Soil was addressed separately from the IR Site 10 Ground water in the *Final, IR Site 10 Soil Letter Report to Support No Further Investigation at this Time NASJRB Willow Grove, PA-Navy Fuel Farm*, dated 19 December 2003.

1.1 OBJECTIVE

The objective of this investigation is to adequately characterize potential impacts to ground water and confirm or deny the presence of ground-water contaminants as a result of the release associated with the IR Site 10 Fuel Farm in order to determine if the site conditions demonstrate attainment for No Further Action. The objective of this report is to provide this demonstration of attainment for No Further Action. Investigations were performed in accordance with the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2 of 1995).

1.2 REPORT ORGANIZATION

This report provides a detailed overview of historic ground-water sampling events of the existing ground-water monitoring wells, the two recent ground-water sampling events of the 19 existing and 5 new ground-water monitoring wells, the approach for field activities, sample analysis results and data interpretation. The report is organized as follows:

- **Section 1 – Introduction:** Includes the objective of the project and the report organization.
- **Section 2 – Site Description:** Presents a description of NASJRB and IR Site 10 including: site description, physical features, and site history.
- **Section 3 – Field Methodology:** Presents a brief description of activities performed, description of well installation, and ground-water sampling, sample handling/chain of custody, quality control, decontamination, and investigation-derived material (IDM). This section also lists the regulated substances of IR Site 10.
- **Section 4 – Site Characterization:** Presents a description of the site specific soil, geology, and hydrogeology. This section includes the ground-water contour maps, bedrock surface map, cross sections, bore logs, and e-logs.
- **Section 5- Ecological Screening:** Provides a comparison of site conditions to the regulatory criteria to demonstrate that ecological screening is not required.
- **Section 6- Remediation:** Overview of the remedial activities performed at IR Site 10.
- **Section 7- Demonstration of Attainment:** Defines the point of compliance and provides an overview of the current regulatory status. Section 2 and Section 7 fulfill the attainment requirements of the Statewide Health Standard in accordance with Act 2 for the potential contaminants of concern for No Further Action. This section includes the recent ground-water analytical results in relation to the Statewide Health Standard, line graphs of the past and recent ground-water analytical results for benzene, fate and transport analysis, 2003 evaluation of natural attenuation parameters, and a discussion of IR Site 10 in terms of vapor intrusion.

- **Section 8– Summary and Conclusions:** Summary and conclusion of the regulated substances of concern in relation to demonstration of attainment for No Further Action.

2.0 SITE DESCRIPTION

2.1 BASE/SITE LOCATION

The NASJRB, Pennsylvania is located in Horsham Township, Montgomery County in southeastern Pennsylvania, approximately 15 miles northwest of Philadelphia (Figure 1).

NASJRB occupies approximately 1,000 acres bordered on the east by PA Route 611, on the southwest by PA Route 463 and on the north by Keith Valley Road. NASJRB's current mission is to provide support for operations involving aviation and to train reservists. The base provides facilities, services, and materials and training to directly support assigned military units.

IR Site 10, the Former Navy Fuel Farm, is located along the north side of Privet Road and immediately south of the Pennsylvania Air National Guard (PAANG) portion of the Air Reserve Station (ARS) at NASJRB. IR Site 10 is bordered by Naval Air Station (NAS) property on the south and east and by ARS property on the north and west. Located to the north of IR Site 10 are ARS buildings. Several other base facilities exist within 1,000 ft of the site. IR Site 10 is approximately 2 acres in area and consists of above ground storage tanks (ASTs), associated aboveground piping, paved parking lots, paved roads, and small buildings.

2.2 PHYSICAL FEATURES

2.2.1 Topography

The NASJRB area lies in the Triassic Lowlands Section of the Piedmont Physiographic Province. This section is characterized by rolling topography. Broad northeast-southwest trending ridges in the area reflect resistant sandstone beds and diabase dikes. NASJRB occupies a relative topographic high, which precludes surface water from flowing onto the base. IR Site 10 consists of a combination of gently sloping and flat topography. IR Site 10 surface elevations range from 322.9 to 298.6 feet (ft) above mean sea level (MSL). Natural slopes are less than three percent, however, where a re-grading has occurred they may be steeper.

2.2.2 Soil

Previous and recent drilling activities at the NASJRB indicate that overburden thickness varies from 4 to 22 ft thick. On average, the soil consists of brown, yellowish-brown, and reddish-brown, and orange mixtures of silt, clay, and sand. Additional details relative to the soil at IR Site 10 are presented in Section 4 of this report.

The Soil Survey of Montgomery County (*United States Department of Agriculture, 1967*)

indicates that five major soil series are found within the boundaries of NASJRB. These series include the Landsdale, Lawrenceville, Chalfont, and Readington silt loams and the Landsdale loam. In addition, Made land, consisting of shale and sandstone materials used as fill, is found within NASJRB. Readington silt loam, Doylestown silt loam, and Made land shale and sandstone are found within IR Site 10. On average, the soil exhibits moderate to slow permeability that encourages rapid runoff during normal precipitation events.

2.2.3 Geology

The geology of NASJRB has been characterized based on geologic logs of past soil borings as well as published information. Depth to bedrock varies from 4 to 15 ft depending on whether the area has undergone construction activities. Regional bedrock formation dip ranges from 5 to 15 degrees with strike to the north-northwest. Rock beds vary in thickness, often pinching out or grading into other facies, making stratigraphic correlation difficult.

The Middle Arkosic Member of the Late Triassic Stockton Formation underlies unconsolidated materials. Appendix A includes *Map 61 Ambler, Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania* which shows the location of the US Naval Air Station as part of the Stockton Formation. This member consists of interbedded red shale, siltstone, and gray-tan, medium-grained, arkosic sandstone, which were deposited as part of a coalescing fluvial channel system. Red shale and siltstone are predominant along the southern edge of the facility, whereas the arkosic sandstone underlies the remainder of the facility.

Site specific details of the geology based on recent drilling (2003) at IR Site 10 and site specific historic bore logs are presented in Section 4 of this report.

2.2.4 Hydrology

The NASJRB lies within an upland area that forms a local drainage divide between the Little Neshaminy Creek drainage basin to the north and the Pennypack Creek drainage basin to the south. These local basins lie within the regional Delaware River drainage basin. Runoff from base surface areas is primarily channeled through open drainage swales and enclosed storm sewers to five primary outfall areas. Three of these outfalls to the Park Creek. The fourth outfall flows in an intermittent stream into the Pennypack Creek and the fifth outfall is connected to the Northern Storm Sewer System. Appendix B includes the *Delaware River Basin Map by the Delaware River Basin Commission*.

Water levels in existing monitoring wells can fluctuate several feet annually due to seasonal influences. In most cases, ground water is observed within the bedrock fractures or within the weathered zone immediately overlying competent bedrock. Static water levels not only reflect the regional potentiometric surface, but also the composite head resulting from the different water-yielding zones that the wells intercept. For this reason, water levels may show marked differences between nearby wells depending on the number, location, and size of the fractures intercepted by each well.

A topographic ridge exists on NASJRB that acts as a ground and surface water divide. This divide trends southwest to northeast and is found in the southern portion of the installation in the vicinity of the Fire Training Area. Ground water north of this divide flows in a northwest direction and that to the south flows in a northeast direction.

IR Site 10 lies north of this divide, therefore, flow is predominantly to the northwest. However, because flow is predominantly through rock fractures within the bedrock or weathered bedrock, localized flow direction may vary. Ground-water flow through arkosic sandstone is more rapid than through shale/siltstone as evidenced by more rapid recharge rates during well development and purging prior to sampling. This may also be due to the greater size and density of fractures present within the sandstone. Site specific ground-water flow based on the 2003 and 2004 ground-water sampling events is presented in Section 4.

The average hydraulic conductivity has been calculated to be approximately 4.05×10^{-5} centimeters per second (cm/sec) (EA, 1998). The average ground-water velocity has been calculated to be approximately 30 ft/year, assuming an effective porosity of 7 percent (EA, 1998) and a current hydraulic gradient of 1.43×10^{-2} ft/ft. The current hydraulic gradient is based on the 2004 ground-water contour map discussed in Section 4. EA has conducted aquifer tests in the past during low and high water table conditions and results of the remedial system operations indicate that wells previously installed at IR Site 10 are low yielding. These wells typically yield 0 to 2 gal per minute (gpm) during low water table conditions and 5 to 10 gpm during high water table conditions (EA, 1998).

2.3 SITE HISTORY

From 1950 to 1991, two partially buried 210,000-gallon (gal) JP-4/JP-5 aviation fuel ASTs (Tank Numbers 115 and 116) were located at the former Navy Fuel Farm. A 500-gal underground waste oil tank and an underground diesel fuel tank of unknown size were also located at the southwestern corner of the site.

In 1986, a spill occurred when Tank No. 115 was overfilled and fuel was released from the vent pipe onto the ground. The event was attributed to faulty gauges that registered less fuel than was actually present. During this same year, a utility trench was excavated along the western boundary of the site, but work was discontinued when light non-aqueous phase liquid (LNAPL) was observed floating on the water within the trench. The area where LNAPL was discovered is immediately adjacent to a former dry well. The dry well was the discharge point for water that was periodically siphoned from bottom of tanks 115 and 116.

In March 1989, JP-5 jet fuel was detected emanating from two patches of dead grass on the west side on Tank No. 115. In response, the two main fuel tanks (Tank Numbers 115 and 116) were emptied. In 1991 the two main fuel tanks, the waste oil and diesel fuel underground storage tanks (USTs) were removed. Inspection of the waste oil tank during removal revealed the tank was not intact as holes up to 1 inch in diameter were reported. Subsequent to the completion of the removal activities, a new AST system was installed to the east of the former tank field location. The new tank system consists of aboveground steel storage tanks set in a concrete berm.

The Navy completed a pilot study of remedial alternatives to address the recovery of LNAPL petroleum products at the Navy Fuel Farm (EA, 1996). Based on the results of the pilot study, the Navy proceeded with a vacuum-enhanced LNAPL recovery system in 1998 to include recovery from three existing wells (NFFW-2R, NFFW-14, and NFFW-16). The system has not been operational since 21 September 2001. EA continued to check the recovery wells and monitoring wells monthly for LNAPL using a hand bailer (for visual check) and an Oil/Water Interface probe. During the December 2001 to July 2002 monitoring events, LNAPL was not detected either in the bailer or with the Oil/Water Interface probe. However, petroleum odors were occasionally noted. In August 2002, the Oil/Water Interface probe indicated a slight presence of LNAPL in the recovery well NFFW-2R. The Oil/Water Interface probe measured a LNAPL thickness of 0.1 foot at recovery well NFFW-16. As of August 2002, EA discontinued the monitoring events due to the discussions occurring between EA, EFA Northeast, and PADEP in relation to this investigation.

2.4 PREVIOUS INVESTIGATIONS

Several investigations have been conducted at the Navy Fuel Farm to assess the extent of petroleum hydrocarbons. Pilot studies have also been conducted to assess remedial alternatives at the site and a vacuum-enhanced LNAPL recovery system was implemented in 1998. The following was summarized from the *Final Sampling and Analysis Report for Remedial Action at the Navy Fuel Farm Naval Air Station Joint Reserve Base (NASJRB) Willow Grove, PA*, dated 11 June 1998, prepared by EA for the Department of the Navy, Northern Division, Naval Facilities Engineering Command.

2.4.1 Ground-water Results

Ground-water samples were collected from selected monitoring wells from June 1989 through September 1997. Several existing wells sampled prior to 1997 were not sampled due to the occurrence of LNAPL (wells exhibiting LNAPL were not sampled). The historic well locations are shown on Figure 2. The ground-water sample analysis results from June 1989 through September 1997 have been compared to the Statewide Health Standard which is the current Medium Specific Concentrations (MSC) for ground water using the Non-Residential values for a used aquifer with Total Dissolved Solids (TDS) = <2,500 mg/L and are presented in this section.

During the ground-water sampling events in June 1989, September 1989, and December 1989, five to six of the seven wells present onsite at the (NFFW-1 through NFFW-7) were sampled during each of the sampling events. Well NFFW-6 was not sampled due to the presence of LNAPL. Well NFFW-2 was not sampled during the June 1989 sampling event due to the presence of LNAPL. The ground-water samples were analyzed for nine volatile organic compounds (VOCs), total organic carbon (TOC), and total petroleum hydrocarbon (TPH). Benzene, ethylene chloride, and trichloroethene exceeded the current MSCs. However, methylene chloride exceeded the MSC in only NFFW-5 during one of the three sampling events. In addition, methylene chloride is thought to be a laboratory contaminant. Trichloroethene was only detected in one sampling event above the MSC in the duplicate version of NFFW-7 alone. Therefore, methylene chloride and trichloroethene are not considered to be potential contaminants of concern. Tables 1, 2, and 3 provide the VOC analytical results for ground-water sampling events June 1989, September 1989, and December 1989, respectively as compared to the current MSCs.

During the 16 May 1991 ground-water sampling event, six wells were sampled: NFFW-9, NFFW-10, NFFW-11D, NFFW-12D, NFFW-13, and NFFW-16D. Note that the wells sampled

in 1989 were not sampled in 1991. The ground-water samples were analyzed for 11 VOCs.

Table 4 provides the VOC results in comparison to the current MSCs. Trichloroethylene (TCE), benzene, 1,2-dichloroethane, and 4-methyl, 1-2 pentanone exceeded the current MSCs. 1,2-Dichloroethane results were qualified as JB (J-estimated and below the quantitation limit; B-compound detected in method blank). The ground-water samples were also analyzed for 6 semi-volatile organic compounds (SVOC). Table 5 provides the SVOC results in comparison to the current MSCs. Naphthalene and bis(2-ethylhexylphthalate) exceeded the current MSCs. Bis(2-ethylhexylphthalate) was qualified as E (E- estimated and above the quantitation limit) in NFFW-16D.

During the June 1993 ground-water sampling event thirteen wells were sampled (NFFW-3, NFFW-4, NFFW-5, NFFW-8, NFFW-9, NFFW-10, NFFW-11, NFFW-15, NFFW-17, NFFW-18, NFFW-19, NFFW-20 and NFFW-21). Wells NFFW-1, NFFW-2R, NFFW-6, NFFW-7, NFFW-12, NFFW-13, NFFW-14, and NFFW-16 were not sampled due to the presence of LNAPL. The ground-water samples were analyzed for 8 VOCs, TPH (gasoline range organics-GRO), and TPH (jet fuel). Benzene in NFFW-5, NFFW-9, NFFW-11, NFFW-17, NFFW-18, NFFW-19, and NFFW-20 was the only constituent that exceeded the current MSC. NFFW-17, NFFW-18, and NFFW-20 results for benzene are qualified as J (estimated value). None of the wells that were sampled in 1989 with benzene detected above the current MSC were sampled in 1993. Benzene was detected in NFFW-9 in 1991 and 1993, however, the benzene concentration had decreased from 63 ug/L in 1991 to 29 ug/L in 1993. Benzene was not detected in 1991 in NFFW-11, but in 1993 benzene was detected in that well at 16 ug/L. Table 6 provides the VOC results in comparison to the current MSCs.

During the 4 September 1997 ground-water sampling event, ten wells were sampled: NFFW-5, NFFW-6, NFFW-7, NFFW-8, NFFW-10, NFFW-12, NFFW-14, NFFW-16, NFFW-19, and NFFW-20. The ground-water samples were analyzed for TCL VOCs. Benzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, and naphthalene were detected above the current MSCs. However, the analytical results that were above the MSCs for benzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, and naphthalene were all qualified as either D (diluted sample) or E (exceeds instrument calibration range). Table 7 provides the TCL VOC results in comparison to the current MSCs.

3.0 FIELD METHODOLOGY

The following investigative activities were performed at IR Site 10 from May through July 2003 and February 2004:

- Installation of five ground-water monitoring wells,
- soil sampling during the drilling of the five ground-water wells, and
- two rounds of ground-water sampling of the five ground-water wells and the 19 existing wells at IR Site 10 to adequately characterize potential impacts to ground water and confirm or deny the presence of ground-water contaminants as a result of the release associated with the IR Site 10 Fuel Farm.

Field activities and laboratory analysis were performed in accordance with the PADEP approved *Final Work Plan for Various Fieldwork Efforts, Installation Restoration Program Site 10 and 11, Naval Air Station Joint Reserve Base, Pennsylvania* dated March 2003 which includes a Sampling and Analysis Plan, Quality Assurance Project Plan, and a Safety, Health, and Emergency Response Plan.

The first round of ground-water sampling was conducted from 19 May through 21 May 2003 and 2 June through 5 June 2003. The second round of ground-water sampling was conducted from 19 February through 26 February 2004. Sampling of the drums of Investigation-Derived Material (IDM) generated during the 2003 and 2004 sampling event occurred on 10 June 2003 and 25 February 2004, respectively. The new ground-water monitoring wells longitude and latitude were recorded in the field on the 9 June 2003 utilizing the Trimble Backpack GPS. The elevations of the top of casing at the new ground-water monitoring wells were surveyed on 5 June 2003. Offsite disposal of the drums of purged ground water, decontamination water, and Personal Protective Equipment (PPE) occurred on 2 July 2003 and 13 May 2004, respectively.

Note that the IR Site Soil was addressed separately from the IR Site 10 Ground water. IR Site 10 Soil was addressed in the *Final, IR Site 10 Soil Letter Report to Support No Further Investigation at this Time NASJRB Willow Grove, PA-Navy Fuel Farm*, dated 19 December 2003.

3.1 MONITORING WELL INSTALLATION AND DEVELOPMENT

During the period 1 May through 14 May 2003, five borings (during drilling to install the five new ground-water monitoring wells) were advanced to depths ranging from 40 ft to 121 ft below ground surface (bgs). Surface and subsurface soil samples were collected from the borings (addressed under separate document as IR Site 10 Soil as stated above). The borings (well locations) were accomplished by advancing a 10-inch or 12-inch diameter bore hole through the overburden to the top of desired sample intervals by air rotary drill. Ground water was encountered within bedrock during drilling.

In May 2003, five ground-water monitoring wells (10MW24, 10MW25, 10MW26, 10MW27, and 10MW28) were installed at the site. The ground-water monitoring well locations including the five new wells and the pre-existing wells are presented on Figure 3. The monitoring well construction diagrams are provided in Appendix C. The ground elevations and top of casing elevations are provided on the well construction diagrams and/or the bore logs (Section 4).

3.1.1 Well Construction

Ground-water monitoring wells were installed using air rotary drill techniques. Well construction was performed in accordance with *PADEP Bureau of Watershed Management Ground-water Monitoring Guidance Manual*, 1 December 2001.

The newly installed ground-water monitoring wells (10MW24, 10MW25, 10MW26, and 10MW28) were constructed using a 4 inch inside diameter, flush-threaded PVC screen (0.020 slot) and PVC riser and were completed with 10 ft of screen each. The annular space between the well and bore hole was backfilled with chemically inert sand to a depth 2 ft above the top of the screen. Soundings of the depth to the top of the sand were made continuously during well installation to minimize bridging. A bentonite seal was tremied above the filter pack and was composed of commercially available coarse-grade bentonite. The bentonite seal was placed at the top of bedrock to prevent seepage. The bentonite was hydrated following placement. Remaining annular space was backfilled to grade with cement-bentonite grout. Note that 10MW27 is an open bore hole (Appendix C).

The wells were completed with a well cover and locked.

The placement of screens were based on the United States Geological Survey (USGS) interpretations of the USGS e-logs in the field. The e-logs were interpreted in the field by USGS to distinguish areas of high water flow zones. Screens were placed within a high water flow

zone interval. The e-logs are presented and discussed in Section 4 in terms of low, moderate, and high water flow zones.

3.1.2 Well Development

The newly installed ground-water monitoring wells were developed in May 2003 by personnel from Eichelbergers, Inc. Each well was first mechanically surged using a submersible pump and pumped clear of sediment. Surging continued until little or no sediment entered the well.

Following the surging process, each well was continuously pumped using a submersible pump. Pumping continued until the water was visibly clear and free of fines, and a minimum removal of three times the standing water volume in the well (to include the well screen and casing plus saturated annulus, assuming 30 percent porosity).

3.2 DECONTAMINATION

The primary objective of the decontamination process was to prevent the accidental introduction of potential contaminants to non-contaminated areas and/or samples.

A decontamination pad was constructed adjacent to the EA remediation shed at IR Site 10. The pad consisted of three layers of heavy-gauge plastic and was bounded by hay bales. The dimensions of the pad were sufficient to accommodate the back of the drill rig and deep enough to contain and store sediment and water from the decontamination procedure. Potable water for the decontamination was drawn from the truck wash station located adjacent to Building 78 at NASJRB, PA. Down-hole equipment (including bits and rods) related to drilling was pressure washed between each well location.

Other non-dedicated sampling equipment including split spoons, submersible pumps, interface probes (IFPs), etc. were decontaminated as described below:

- Cleaned thoroughly with potable water and detergent (alconox or liquinox), using a brush to remove particulate matter and surface films.
- Rinsed thoroughly with potable water supplied by NASJRB.
- Rinsed with isopropyl alcohol followed by a nitric acid rinse.
- Rinsed thoroughly with de-ionized water.
- The equipment was allowed to air dry before reuse.

3.3 GROUND-WATER PURGING AND SAMPLING

The 1st and 2nd ground-water sampling events occurred in May - June 2003 and February 2004, respectively. A two-person field team gauged and sampled each of the 5 newly installed ground-water monitoring wells and the 19 existing ground-water monitoring wells during both of the ground-water sampling events. Water levels were gauged using an oil and water IFP.

The wells were purged and sampled using low-flow sampling methodology. The wells were purged by continuously pumping the monitoring well using a submersible pump equipped with dedicated 3/8-in. inside diameter polyethylene tubing. Temperature, pH, specific conductivity, redox potential (ORP), dissolved oxygen (DO), and turbidity were monitored in-line utilizing a Horiba U-22 water quality meter. Ground water was withdrawn at a rate of 200 ml/min and water quality measurements were collected at 4 to 5-minute intervals. Pumping continued until the following criteria were met: water quality parameters had stabilized (± 0.1 for pH units, $\pm 3\%$ for temperature and conductivity, ± 10 mv for redox potential (ORP), and $\pm 10\%$ for turbidity and DO). Appendix D presents the Well Purging and Sampling Records. Gauging data for the wells are presented on the Well Purging and Sampling Records. Table 8 summarizes the identification and collection date for each ground-water sample during both of the ground-water sampling events.

The 1st round of ground-water samples were submitted to Lionville Laboratory, Inc. for analysis of the following parameters and methods:

- TCL VOC by Method SW 846 8260 B
- Bromoform, Dibromochloromethane, and Cumene by Method SW 846 8260B with 25 ml purge.
- EDB by Method 504
- Methane (natural attenuation parameter) by Method RSK 175
- TCL SVOC by Method SW 846 8270C
- Benzo(a)pyrene by Method SW 846 8310
- TAL Metals by Method SW 846 6010B

In addition to methane, temperature, pH, dissolved oxygen, and Eh, the 1st round of ground-water samples were analyzed for the following additional natural attenuation parameters and methods in the field as per PADEP request:

- Ferrous Iron by HACH Color Disc Kit
- Sulfate by HACH Colorimeter
- Hydrogen Sulfide by HACH Color Chart Kit

The method numbers were approved by PADEP as documented in the *Final Work Plan for Various Fieldwork Efforts, Installation Restoration Program Sites 10 and 11, Naval Air Station Joint Reserve Base; Willow Grove, Pennsylvania* dated March 2003. However, based on the 1st round of ground-water analytical results (i.e. dilutions), PADEP advised EA to utilize lower laboratory detection limits during the 2nd round of sampling in order to be conservative when comparing the analytical results with the PADEP Statewide Health Standards (calculated Medium Specific Concentration). In addition, PADEP stated that the laboratory detection limits for the regulated substances of concern for IR Site 10 must meet the MSCs. PADEP also stated that the laboratory detection limits for analytes that were analyzed for and not documented as regulated substances of concern for IR Site 10 must either meet the MSCs or Practical Quantitation Limits (PQLs). The regulated substances of concern for IR Site 10 were documented by PADEP in an email dated 13 February 2003 titled *Site 10/Site 11SAP and QAPP Review Comments, NASJRB Willow Grove COCs.xls*. These regulated substances of concern (portion of *Table IV-9 Short List of Petroleum Products, PADEP Act 2, Technical Guidance Manual, Section IV General Guidance*) for IR Site 10 are as follows:

Material	Regulated Substance
Jet Fuel	Benzene Toluene Ethyl benzene Xylenes (total) Naphthalene Cumene EDC (1,2-dichloroethane) EDB (1,2-dibromoethane) Lead (total)
Diesel Fuel	Fluorene Benzene Toluene Ethyl benzene Cumene Naphthalene Phenanthrene
Used Motor Oil	Pyrene Benzene Toluene Ethyl benzene Cumene Naphthalene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Lead (total) Benzo(g,h,i)perylene

The 2nd round of ground-water samples were not analyzed for the following natural attenuation parameters and methods as directed by PADEP:

- Methane by RSK 175
- Ferrous Iron by HACH Color Disc Kit
- Sulfate by HACH Colorimeter
- Hydrogen Sulfide by HACH Color Chart Kit

Based on the need to lower the laboratory detection limits, the 2nd round of ground-water samples were submitted to Lionville Laboratory, Inc. for analysis of the following parameters and methods:

- TCL VOC by SW 846 8260 B

- Bromoform, Dibromochloromethane, and Cumene by EPA Method 8260B with 25 ml purge.
- EDB by Method SW 846 8011
- 1,1,2,2-Tetrachloroethane by Method SW 846 8021
- TCL SVOC by Method SW 846 8270C
- The following PAHs by Method SW 846 8310:
 - Benzo(a)anthracene
 - Chrysene
 - Benzo(b)fluoranthene
 - Benzo(k)fluoranthene
 - Benzo(a)pyrene
 - Indeno(1,2,3-cd)pyrene
 - Dibenz(a,h)anthracene
 - Benzo(g,h,i)perylene
- Hexachloroethane, hexachlorobenzene, and hexachlorobutadiene by Method SW 846 8121
- Pentachlorophenol by Method SW 846 8151
- TAL Metals by Method SW 846 6010B

3.4 SAMPLE HANDLING/CHAIN-OF-CUSTODY

The samples were sent via Federal Express and/or hand delivered to Lionville Laboratory, Inc. for analysis. Chain of custody forms were initiated by the sampler at the time samples were collected. Following sample collection, containers were sealed and placed in a cooler with bagged ice and cooled to 4°C or less. The chain of custody was placed in a plastic bag and taped

to the inside of the cooler lid. The cooler was sealed with adhesive tape, labeled, and secured with custody seals. Copies of the chain of custody for each sampling event and laboratory analytical reports are included in Appendix E.

Samples collected for analysis were recorded in the soil boring logs, well purging and sampling records, and/or project field notebooks. These notebooks will be kept on file for reference. Each sample collected during field activities was given a unique sample identification (ID) used to establish each discrete sampling point. The sample ID was included on the chain of custody and bottle label. This information was entered into the appropriate data tables and appended to the laboratory electronic data deliverables (EDD).

Note that during the 2nd round of sampling Federal Express (FedEx) failed to deliver the sample bottles collected on Friday, 19 February 2004 for 20 February 2004 Saturday delivery as indicated on the Fedex air bill and receipt. The samples arrived at the laboratory on Monday, 23 February 2004. A few of the sample bottles were warmer than the laboratory cut off temperature of 6 °C. Therefore, well numbers 10MW20, 10MW25, 10MW27 and the MS/MSD sample associated with 10MW25 and the rinsate blank were resampled for the full suite of analysis as per EFA Northeast direction. In addition, in a Fedex delivery to the lab on 25 February 2004, 14 bottles were broken in total. The laboratory contacted EA and stated that, except for two wells, there was enough sample volume remaining that the incident did not impact the analysis. There was insufficient sample volume to complete the pentachlorophenol analysis for well numbers 10MW01 and 10MW18. Therefore, EA returned to the site and resampled these two wells for pentachlorophenol analysis only.

3.5 QUALITY CONTROL (QC) SAMPLES

One rinsate blank, one field blank, and one matrix spike/matrix spike duplicate (MS/MSD) were analyzed from each of the 1st and 2nd ground-water sampling events. In addition, a trip blank set was submitted for analysis with each batch of VOCs for a total of 5 trip blank sets analyzed from the 1st round of ground-water sampling and 6 trip blanks sets analyzed from the 2nd round of sampling. The QC samples were analyzed for the same constituents as discussed above depending on the media analyzed.

The results of the field duplicates were compared to the actual sample to determine laboratory consistency in the results. QC samples were preserved, handled, transported, and analyzed in a manner identical to the actual samples. The duplicate sample and MS/MSD identification

numbers and their associated representative sample identification number are listed in the Table 8.

3.6 DATA VALIDATION

An independent third-party validator performed the data validation on the laboratory data excluding the Full TCLP, reactivity, corrosivity, and ignitability analysis. The procedure followed the U.S. EPA Region III's data validation procedures: "Region III Modifications to the Laboratory Data Validation Functional Guidelines for Organic Data Review, Multimedia, Multi-Concentration" (dated September 1994); "Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses" (dated April 1993). The results of the data validation are provided in Appendix F. No major problems were noted.

3.7 INVESTIGATION-DERIVED MATERIAL (IDM)

IDM, consisting of soil cuttings, rock cuttings, decontamination water, and purged water generated during field activities, were contained in 55-gal drums that were suitable for storage of hazardous materials [U.S. Department of Transportation (DOT) 17-H or 17-E 55-gal drums] and staged adjacent to the EA remediation shed at IR Site 10. In addition, used PPE was placed in plastic garbage bags along with the decon pad plastic sheets and contained in 55-gallon drums. The drums were labeled with weather-resistant labels with indelible marker. The labels provided the following information: site number, well number, contents of drums, point-of-contact, date, and telephone number. The soil and water contained within the drums were analyzed following disposal parameters and methods disposal:

- TCLP VOC by SW846 8260B
- TCLP SVOC by SW846 8270C
- TCLP Herbicides by SW846
- TCLP Pesticides by SW846 8081A
- TCLP Metals by SW846 6010B

In addition, the water contained within the drums was sampled for reactive cyanide by SW846 9014, reactive sulfide by SW846 9034, corrosivity by SW846 1110(mod), and ignitability by SW846 1010.

Based on laboratory analytical results (Appendix F) of fourteen representative samples collected from the soil cuttings and water were characterized as a non-hazardous waste and were removed for disposal on 2 July 2003 and 13 May 2004 by Capitol Environmental Services, Inc. The waste manifests are included in Appendix G. IDM Analytes detected above the reporting limit are shown in Table 9.

4.0 SITE CHARACTERIZATION

4.1 SITE SPECIFIC SOIL

Recent drilling activities in 2003 at the NASJRB indicates that overburden thickness varies from 10 to 22 ft thick. The predominate soil type at each of the five new well locations along with the overburden thickness is as follows:

Well Identification	Overburden Thickness (ft bgs)	Predominate Soil Type
10MW24	14	Reddish brown sand with traces of clay
10MW25	22	Dark reddish brown sand and clay mixture
10MW26	16	Dark yellowish brown sand and clay mixture or sand
10MW27	10	Reddish brown sand and clay mixture
10MW28	10	Reddish brown sand and clay mixture

Bore logs showing the detailed overburden are presented in Appendix H. In addition, the bore logs provide the longitude and latitude for each of the five newly installed wells. Bore logs of the earlier well locations at IR Site 10 are presented in Appendix I. Two cross sections (including water bearing units) covering from west to east of IR Site 10 are included in Appendix J. Note that 10MW27 and 10MW28 are located east of IR Site 10 at NASJRB. The cross section from NFFW-15 to NFFW-21 consists predominately of clayey silt to silty clay and silt with some sandy silt to fine sand in the east with some fill (NFFW-21). The cross section from 10MW25 to 10MW28 consists predominately of sandy silt to fine sand with some fill at NFFW-21.

4.2 SITE SPECIFIC GEOLOGY

Recent drilling activities in 2003 at NASJRB indicates that bedrock is encountered between 10 to 22 ft bgs at IR Site (10MW24, 10MW25, and 10MW26) and at 10 ft bgs to the east of IR Site 10 (10MW27 and 10MW28). The predominate bedrock type and depth that bedrock was encountered at each of the five new well locations is as follows:

Well Identification	Depth Bedrock (ft bgs)	Predominate Bedrock Type
10MW24	14	Dark Reddish Brown shale and/or sandstone
10MW25	22	Dark Reddish Brown sandstone, siltstone, and/or shale
10MW26	16	Dark yellowish brown, dark grayish brown, and dark gray sandstone, siltstone, and/or shale
10MW27	10	Reddish brown sandstone/siltstone
10MW28	10	Reddish brown sandstone/siltstone

Figure 4 presents the bedrock surface map. The bedrock surface map presents the contour lines of the bedrock surface elevations throughout IR Site 10 and to the northeast of IR Site 10. The bedrock surface map is based on the 2003 bore logs, historic bore logs, and on Site 1 bore logs (*Tetrattech, 2003*). The bedrock surface elevations within IR Site 10 decrease in elevation from south to north.

Bore logs showing the detailed geology are presented in Appendix H. In addition, the bore logs provide the longitude and latitude for each of the five newly installed wells. Bore logs of the earlier well locations at IR Site 10 are presented in Appendix I. Two cross sections (including water bearing units) covering west to east of IR Site 10 are included in Appendix J. Note that 10MW27 and 10MW28 are located east of IR Site 10 at NASJRB. The cross section from NFFW-15 to NFFW-21 consists of interbedded siltstone, shale, and sandstone of the Stockton Formation. The cross section from 10MW25 to 10MW28 consists of interbedded siltstone, shale, and sandstone of the Stockton Formation.

In addition, the e-logs produced by the USGS are included in Appendix K. USGS interpreted the e-logs in the field to determine where the low, moderate, and high water zones were present. USGS based on the locations of the highest water zones proposed intervals were 10 ft screen(s) could be installed. The suggested placement of screen interval(s) in the high water zones is handwritten on the e-logs in Appendix K by USGS.

4.3 SITE SPECIFIC HYDROGEOLOGY

Hydrogeologic water levels in existing monitoring wells throughout NASJRB can fluctuate several feet annually due to seasonal influences and different water-yielding zones that the wells intercept. The IR Site 10 newly installed wells (10MW24, 10MW25, 10MW26, 10MW27, and 10MW28 on Figure 3) were gauged during the two recent ground-water sampling events. Ground water was measured at depths ranging from 5 ft bgs to 24 ft bgs (generally in bedrock)

during the 2003 ground-water sampling event. Ground water was measured at depths ranging from 5 ft bgs to 27 ft bgs (generally in bedrock) during the 2004 ground-water sampling event. Ground-water flows from the south to the north at IR Site 10 and the surrounding area. The ground-water flow is based on the 2003 and 2004 sampling events. The 2003 and 2004 ground-water contour lines and flow direction are presented on Figure 5 and 6 , respectively.

5.0 ECOLOGICAL SCREENING

In order to assure completeness the need for ecological screening has been evaluation against the PADEP Act 2 Chapter 250.311 Evaluation of Ecological Receptors criteria listed in Chapter 250.311(b) paragraph (1), (2), or (3). The criteria states "no additional evaluation is required if the remediation attains a level equal to $1/10^{\text{th}}$ of the value in Appendix A, Tables 3 and 4, except for constituents of potential ecological concern identified in Table 8, or if the criteria in paragraph (1), (2), or (3) are met."

(1) "Jet fuel, gasoline, kerosene, number two fuel oil or diesel fuel are the only constituents detected onsite."

(2) "The area of contaminated soil is less than 2 acres and the area of contaminated sediment is less than 1,000 square feet."

(3) "The site has features, such as buildings, parking lots or graveled paved areas, which would obviously eliminate the specific exposure pathways, such as soil exposure."

IR Site 10 ground water demonstrates attainment in regulation with the attainment level equal to $1/10^{\text{th}}$ of the value in Appendix A, Tables 3 and 4. In addition, IR Site 10 falls under paragraph (1) based on that the past release consisted of petroleum products alone.

6.0 REMEDIATION

6.1 REMEDIAL ACTIVITIES PERFORMED AT IR SITE 10

As summarized in Section 2, the remedial action taken at IR Site 10 consisted of a vacuum-enhanced LNAPL recovery system that was implemented in 1998 and taken offline in 2001. Based on the PADEP approved *Final System Performance Report, Vacuum Enhanced LNAPL and Ground-water Recovery and Treatment System, January 2000 through December 2000, Site 10 Navy Fuel Farm* dated June 2001, the report concluded the following:

- System operation developed a cone depression around the recovery wells and the system captured and recovered LNAPL.
- Approximately 41-gal of LNAPL was recovered in 2000.
- LNAPL recovery decreased significantly (85 percent) since 1998.
- In 2000, most of the LNAPL (68 percent) was recovered during periods of low water table elevation an/or low rainfall.
- Recoverable amounts of LNAPL remain in the subsurface.
- Vacuum enhanced LNAPL recovery may no longer be cost effective at this site.

Based on the Final System Performance Report, PADEP agreed that site contamination may have decreased to a low enough level to warrant a possible path to site closure. However, PADEP requested that additional ground-water samples be collected and evaluated. The 2003 and 2004 analytical results are discussed in Section 7. Note that based on the most recent gauging events discussed in Section 2, LNAPL did not appear to be present within the existing wells based on the IFP readings. In addition, no LNAPL was encountered during the 2003 and 2004 sampling events.

Remediation activities onsite also included the removal of ASTs and USTs as discussed in Section 2 and the removal of approximately 6500 cubic yards of soil associated with the tank removals (*EA, 1994*).

7.0 DEMONSTRATION OF ATTAINMENT

7.1 POINT OF COMPLIANCE (POC)

For attainment of the Statewide Health Standard for ground water, the point of compliance is the property boundary that existed at the time the contamination was discovered as shown on Figure 1. Therefore, for IR Site 10 the point of compliance is considered to be the boundary of NASJRB, Horsham Township. Statewide health standards shall be attained at and beyond the point of compliance. For the purposes of demonstrating attainment of the statewide health standard for ground water the following wells will be identified as compliance wells (downgradient wells): NFFW-10, NFFW-15, and NFFW-17. These wells are compliance wells because they are located downgradient of the site before the point of compliance.

7.2 REGULATORY OVERVIEW

As outlined in Section 1, the objective of this investigation is to adequately characterize potential impacts to ground water and confirm or deny the presence of ground water potential contaminants of concern as a result of the release associated with the IR Site 10 Fuel Farm in order to determine if the site can demonstrate attainment for No Further Action. Given the past and recent investigations performed at IR Site 10 in terms of ground water, the following actions were completed in order to realize the objective and are presented in this Section unless otherwise noted.

1. Comparison of the ground-water quality data (2003 and 2004) to the Statewide Health Standard (calculated MSC) before the point of compliance. In addition, the soil analytical results are being discussed solely as supporting documentation of ground-water analytical results of the newly installed wells.
2. Completion of an analysis of ground water through the statistical time trend analysis (fate and transport analysis-Quick Domenico) which evaluates the plume stability and shows that the contaminant concentrations at the point of compliance will not exceed the standard within 1,000 ft downgradient of the property boundary (NASJRB boundary) within 30 years. The time trend analysis is based on the two recent rounds of ground-water sampling from 2003 and 2004.
3. Comparison of past ground-water analytical results with the Statewide Health Standard which is the current applicable calculated

MSC (discussed in Section 2). In addition, the past analytical results were compared with the two recent rounds (2003 and 2004) of ground-water analytical results to show the trend of benzene. This trend only included the wells that are currently present onsite and is discussed in this section.

4. Limited evaluation of natural attenuation parameters qualitatively from the 2003 ground-water sampling event.
5. Discussion of Vapor Intrusion as per the *Land Recycling Program Technical Guidance Manual-Section IV.A.4, Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard, 24 January 2004*.

In addition, Act 2 guidance requires that the demonstration of attainment for ground water be based on a sufficient number and locations of monitoring wells necessary to demonstrate attainment and eight consecutive quarters of ground-water data. However, as an alternative to eight consecutive quarters of ground-water data, PADEP may accept fewer rounds of ground-water sampling [25 Pa. Code § 250.704(d)(1-4(ii))] under the following conditions:

- (1) There is adequate spatial monitoring of the plume upgradient which indicates a decreasing concentration trend toward the downgradient property boundary.
- (2) Parameters affecting the fate and transport of regulated substances within the plume have been fully evaluated.
- (3) Concentrations of regulated substances in the plume at the point of compliance monitoring wells along the downgradient property boundary are all less than or equal to the ground-water standard or the limit relating to the PQL, whichever is higher, in all samples collected during the quarters of monitoring.
- (4) One of the following are met:
 - (i) The age of the plume is sufficiently well known to permit a judgement to be made regarding its stability.
 - (ii) The remediation includes source removal or containment actions which would reduce the chemical flux into the plume.

Based on PADEP's review of the two recent rounds of ground-water results, PADEP stated per conversation in June 2004 that the record of analysis results from sampling rounds conducted

from 1989 to the present provide sufficient information to characterize the trend of ground water quality and to demonstrate attainment. The discussion of how the site meets these criteria is presented in Section 8.

7.3 STATEWIDE HEALTH STANDARD

The remediation standard was selected as per the guidance in the PADEP Act 2 Technical Guidance Manual, Section II Remediation Standard, Section B Statewide Health Standard, dated 4 May 2002.

The soil sample analytical results (discussed below in terms relative to the ground-water analytical results) were compared to the calculated remediation standard. The guidance provides the following procedure for evaluation of soil samples collected between 0 to 15 ft bgs. The soil standard involves comparing two numerical standards: the direct contact number versus the greater of the two soil-to-ground-water numbers (the generic value versus the 100 X the ground-water Medium-Specific Concentration (MSC)). The appropriate standard is the lowest value that is either the direct contact number or the greater of the two soil-to-groundwater numbers. The direct contact number for IR Site 10 in determining the appropriate standard is the non-residential surface soil (0-2 feet bgs) and the nonresidential subsurface soil (2 ft to 15 ft bgs). The soil-to-groundwater number for IR Site 10 in determining the appropriate standard is a used aquifer with total dissolved solids less than or equal to 2500 mg/L for non-residential.

The past ground-water analytical results discussed in Section 2 and the recent ground-water analytical results discussed below in this section were compared to the current MSC for ground water using the non-residential values for a used aquifer with TDS = < 2,500 mg/L.

7.3.1 2003 Ground-water Sample Results

A total of 24 ground-water samples and 1 duplicate were submitted from the 1st recent round (2003) of ground-water sampling for laboratory analysis for the constituents listed in Section 3 from the new and existing ground-water monitoring wells. The new ground-water monitoring wells were installed in May 2003 and June 2003. Validated laboratory data results are provided in Appendix F and summarized on the tables as described below. In addition, ferrous iron, sulfate, and hydrogen sulfide were analyzed in the field for natural attenuation purposes and are discussed separately in Section 7.5.

Benzene slightly exceeded the applicable calculated MSC in a newly installed well, 10MW24. Note that the result is qualified as J which indicates an estimated value. No other TCL VOCs

exceeded the applicable calculated MSCs as shown on Table 10. The wells downgradient (compliance wells) of 10MW24 did not exceed the applicable calculated MSC for benzene. However, benzene will be further evaluated in Section 7.4 (Fate and Transport Analysis).

Bis(2-ethylhexyl)phthalate exceeded the applicable calculated MSC in three of the 24 ground-water samples including a duplicate sample. However, bis(2-ethylhexyl)phthalate was detected in all the quality control samples collected, therefore, the laboratory was contacted to inquire if bis(2-ethylhexyl)phthalate is a common laboratory contaminant. In an email dated 2 April 2004, Lionville Laboratory stated bis(2-ethylhexyl)phthalate is ubiquitous in the environment including sampling media, sampling clothing, laboratory worker clothing, dust particles, milk cartons, teething rings, children toys, etc. In addition, bis(2-ethylhexyl)phthalate is not a regulated substance (Section 3) associated with past site releases. Therefore, bis(2-ethylhexyl)phthalate is not considered a potential contaminant of concern. Benzo(a)pyrene slightly exceeded the applicable calculated MSC in the duplicate sample alone of the 24 ground-water samples. Note that the result is qualified as L indicating that the analyte is present, but the reported value may be biased low, and the actual value is expected to be higher. However, benzo(a)pyrene in the investigative sample associated with the duplicate sample did not exceed the applicable MSC. In addition, the compliance wells did not exceed the applicable calculated MSCs for SVOCs. However, benzeno(a)pyrene will be further evaluated in Section 7.4 (Fate and Transport Analysis). No other SVOCs exceeded the applicable MSCs as shown on Table 11.

TAL Metal concentrations exceeded the applicable calculated MSCs as shown on Table 12. Lead exceeded the applicable calculated MSC in two (10MW2R and 10MW14) of the twenty-four investigative ground-water samples and in the field duplicate sample (10DUP01(10MW2R)) associated with one of the two investigative samples. However, the compliance wells did not exceed the applicable calculated MSC for lead. The remaining TAL Metals (iron, manganese, and aluminum) that exceeded the applicable MSCs are not regulated substances (Section 3) associated with type of releases that occurred at the site. Therefore, iron and manganese are not considered potential contaminants of concern.

The quality control analytical results associated with the soil samples are provided in Table 13, Table 14, and Table 15 for TCL VOC (includes methane), TCL SVOC, and TAL Metals, respectively. There were a few quality control analytical results slightly above the laboratory detection limit. However, the majority of these results were qualified as B, L, or R. The B qualifier for inorganics signifies that the parameter was between the Instrument Detection Limit and the Contract Required Detection Limit. The B qualifier for organics signifies the analyte was found in the associated blank as well as in the sample. This indicates possible/probable

blank contamination. The L qualifier signifies that the reported value may be biased low and the actual value is expected to be higher. The R qualifier signifies that the analyte may or may not be present in the sample, therefore, the result is unusable.

7.3.2 2004 Ground-water Sample Results

A total of 24 ground-water samples and 1 duplicate were submitted from the 2nd current round of ground-water sampling for laboratory analysis for the constituents listed in Section 3 from the new and existing ground-water monitoring wells. The new ground-water monitoring wells were installed in May 2003 and June 2003. Validated laboratory data results are provided in Appendix F and summarized on the tables as described below. Ferrous iron, sulfate, methane, and hydrogen sulfide were not analyzed in the field for natural attenuation purposes as advised by PADEP.

Benzene was not above the applicable calculated MSC in 10MW24 or in any of the other well samples. Therefore, benzene is not a potential contaminant of concern. No other TCL VOCs exceeded the applicable calculated MSCs as shown on Table 16.

Bis(2-ethylhexyl)phthalate exceeded the applicable calculated MSC in four of the 24 ground-water samples not including the duplicate associated with one of the four ground-water samples. However, three of the four ground-water samples is qualified as B. The B qualifier for an organic signifies the analyte is found in the associated blank as well as in the samples and indicates a possible/probable blank contamination. The remaining sample result (10MW12) indicated bis(2-ethylhexyl)phthalate above the applicable calculated MSC. However, note that bis(2ethylhexyl)phthalate is a common laboratory contaminant and is ubiquitous in the environment. In addition, bis(2ethylhexyl)phthalate is not a regulated substance related to the past releases of the site. Therefore, bis(2-ethylhexyl)phthalate is not a potential contaminant of concern. Benzo(a)pyrene slightly exceeded the applicable MSC in one (10MW17(NFFW-17)-downgradient well) of the 24 ground-water samples. The fate and transport analysis (Section 7.4) will further investigate benzo(a)pyrene as a potential contaminant of concern. No other TCL SVOCs exceeded the applicable MSCs as shown on Table 17.

Lead slightly exceeded the applicable calculated MSC in two (10MW2R and 10MW07) of the twenty-four investigative ground-water samples. The lead concentration in 10MW07 is qualified as B which for an inorganic indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Detection Limit (CRDL). In addition, note that the lead concentration of 10MW07 did not exceed the applicable calculated MSC in 2003. Note the lead

concentration of 10MW14 in 2003 slightly exceeded the applicable calculated MSC and does not exceed the applicable calculated MSC in 2004. The lead concentration of 10MW2R exceeded the applicable calculated MSC in both 2003 and 2004, however the lead concentration decreased from 2003 to 2004 from 8.3/7.8 ug/L to 5.1 ug/L. However, the compliance wells did not detect lead above the applicable calculated MSC. The remaining TAL Metals (aluminum, iron, and manganese) that exceeded the applicable MSCs are not associated with type of releases that occurred at the site. Therefore, aluminum, iron, and manganese are not considered potential contaminants of concern. No other TAL Metals exceeded the applicable calculated MSCs as shown on Table 18.

The quality control analytical results associated with the ground-water samples are provided in Table 19, Table 20, and Table 21 for the constituents listed above that were analyzed for the 2nd recent round of ground-water sampling. There were a few quality control analytical results slightly above the laboratory detection limit. However, some of the results were qualified as B (inorganics only), K, or J. The B qualifier for inorganics indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL). The K qualifier indicates the analyte is present, the reported value may be biased high, and the actual value is expected to be lower. The J qualifier indicates an estimated value.

7.3.3 Supporting Soil Analytical Data

A total of 10 soil samples and 1 duplicate were submitted for laboratory analysis for TCL VOC, TCL SVOC, and TAL Metals from the soil borings of the newly installed wells completed in May 2003. Validated laboratory data results are provided in Appendix F. Note that the IR Site 10 Soil was addressed separately from the IR Site 10 Ground water in the *Final, IR Site 10 Soil Letter Report to Support No Further Investigation at this Time NASJRB Willow Grove, PA-Navy Fuel Farm*, dated 19 December 2003. These soil sample results are provided here solely as supporting information relative to the IR Site 10 ground-water results.

No TCL VOC concentrations exceeded the applicable calculated MSCs as shown on Table 22 and Table 23 for surface and subsurface soil, respectively. In relation to ground water, the 2004 ground-water analytical sample results for TCL VOCs from the newly installed wells also did not exceed the applicable calculated MSCs. Therefore, these soil sample results are consistent with the 2004 ground-water sample results discussed in Section 7.3.2.

No TCL SVOC concentrations exceeded the applicable calculated MSCs as shown on Table 24 and Table 25 for surface and subsurface soil, respectively. In relation to ground water, the 2003

and 2004 TCL SVOC concentrations from the newly installed wells also did not exceed the applicable calculated MSC. Therefore, these soil sample results are consistent with the 2003 and 2004 ground-water sample results discussed in Section 7.3.1 and 7.3.2, respectively.

No TAL Metal concentrations exceeded the applicable calculated MSCs as shown on Table 26 and Table 27 for surface and subsurface soil, respectively. In relation to the 2003 and 2004 ground water results, the TAL Metal regulated substances also did not exceed the applicable calculated MSC. Therefore, these soil sample results are consistent with the 2003 and 2004 ground-water sample results discussed in Section 7.3.1 and 7.3.2, respectively.

The quality control analytical results associated with the soil samples are provided in Table 28, Table 29, and Table 30 for TCL VOC, TCL SVOC, and TAL Metals, respectively. There were a few quality control analytical results slightly above the laboratory detection limit. However, the majority of these results were qualified as B, R, or K. The B qualifier for inorganics signifies that the parameter was between the Instrument Detection Limit and the Contract Required Detection Limit. The B qualifier for organics signifies the analyte was found in the associated blank as well as in the sample. This indicates possible/probable blank contamination. The R qualifier signifies that the analyte may or may not be present in the sample, therefore, the result is unusable. The K qualifier signifies that the reported value may be biased high and the actual value is expected to be lower.

7.3.4 Trend of Benzene as a Potential Contaminant of Concern

The trend of benzene as a potential contaminant of concern at the existing and newly installed wells currently present at IR Site 10 was compiled in a series of line graphs showing the trend of benzene in relation to time. Appendix L provides the line graphs for the following wells: NFFW-2, NFFW-5, NFFW-7, NFFW-9, NFFW-14, NFFW-16, NFFW-17, NFFW-18, NFFW-19, NFFW-20, and NFFW-24. These wells had benzene detected above the current applicable calculated MSC (potential contaminant of concern) in the past as shown on the graphs. The graphs include benzene results from the sampling events of December 1989 (last sampling event in 1989), 1991, 1993, 1997, 2003, and 2004 (see Section 2). Benzene is no longer a potential contaminant of concern in the existing wells. In one newly installed well (10MW24), benzene is detected above the current MSC in 2003 alone.

7.4 FATE AND TRANSPORT ANALYSIS (QUICK DOMENICO)

As required by PADEP, and in accordance with Act 2, EA performed a time-trend analysis using *Quick Domenico.xls* (QD) to evaluate the dissolved phase plume stability and the potential for the dissolved phase plume to migrate offsite in the future. QD is a spreadsheet application and analytical model for the transport of a decaying contaminant species proposed by Domenico (1987). QD calculates the concentration of contaminants at any point and time downgradient of a source area of known size and concentration. QD is intended for dissolved organic contaminants whose fate and transport can be described or influenced by first order decay and reaction with organic carbon in the soil. The model allows for first order decay and retardation.

Ground-water attainment is achieved when time-trend analysis shows that contaminant concentrations at the point of compliance do not exceed the applicable calculated MSC. As identified in Section 7.3.1 or 7.3.2, benzene and benzo(a) pyrene were detected in ground-water monitoring wells 10MW24, 10MW2R, and NFFW-17 at concentrations slightly above the applicable calculated MSC.

The concentrations of each regulated substance of potential concern (benzene and benzo(a)pyrene) were modeled using QD. As shown in Appendix M, none of these regulated substances of potential concern are estimated to exceed the applicable calculated MSC at the point of compliance within 30 years.

7.5 2003 EVALUATION OF NATURAL ATTENUATION PARAMETERS

Selected natural attenuation parameters (methane, ferrous iron, hydrogen sulfide, and sulfate) were analyzed in 2003 (Table 10 and Appendix D) in addition to basic parameters (pH, conductivity, temperature, oxidation/reduction potential (ORP), turbidity, and dissolved oxygen (DO)) as directed by PADEP. This section provides a brief discussion of these limited data, and the potential that natural attenuation may have played a role, or continues to play a role in the ground-water environment at IR Site 10.

Despite the fact that only limited evidence of contamination was found in ground water at the site in 2003 and 2004, there is evidence that remediation of petroleum hydrocarbons (i.e. benzene) was occurring by natural attenuation in addition to the vacuum enhanced remediation system that was in operation.

Natural attenuation proceeds as follows:

Electron Donor (i.e. benzene)+ Electron Acceptor → Metabolic Byproducts + Energy

Several of the natural attenuation parameters analyzed in 2003 represent certain parts of the above equation. For example sulfate acts as an electron acceptor that is used up during the chemical reaction. Consequently it is expected that sulfate concentrations will be low within a plume that is undergoing natural attenuation compared to sulfate found outside of this plume. Alternatively methane is a metabolic byproduct of the chemical reaction, thus it is expected that methane within the plume would be high and methane outside of the plume would be absent or at low concentrations. In addition the reaction uses up oxygen, thus it is expected that the oxidation reduction potential (ORP) will be lower in plume wells and higher outside of plume wells.

Three wells within the former plume (NFFW-6, NFFW-7, NFFW-12) and three wells out of the former plume (NFFW-3, NFFW-4, NFFW-21) were selected to demonstrate that natural attenuation of the regulated substances of concern (i.e. benzene) may have occurred at the site. The extent of the former plume is shown on a figure in Appendix N, taken from (EA, 1993). Appendix N also includes a table which shows the 2003 results for sulfate, methane, and ORP for these wells. As discussed above, evidence of natural attenuation is seen in the low sulfate levels, increased methane levels, and negative ORP in the wells located in the former plume area.

It is additionally of interest that there is little or no measurable organic contamination of these wells in 2003, yet relatively high methane concentrations. This indicates that the electron donors (benzene or other organic compounds) have been thoroughly degraded (or withdrawn using the recovery system) not that long ago. Presently there is sufficient methane in the ground water to consume any oxygen that would enter this system, consequently the negative ORP is not unexpected. However, over time methane-oxidizing bacteria, common in all environments, should oxidize the residual methane, allowing the ground water to return to normal circumstances.

7.6 VAPOR INTRUSION ANALYSIS

As per the Land Recycling Program Technical Guidance Manual-Section IV.A.4. Vapor Intrusion into Buildings from Ground water and Soil under Act 2 Statewide Health Standard dated 24 January 2004, IR Site 10 Ground water is not a concern as per the guidance. In accordance with Section IV.A.4 Figure 1 GW IAQ Decision Matrix for the Statewide health standard of the guidance, a vapor intrusion analysis is not required. The wells of potential concern sampled during 2003 and 2004 are greater than 100 feet from an inhabited building.

8.0 SUMMARY AND CONCLUSIONS

This Final Report provides a detailed synopsis of the previous and current investigation results and field activities performed by EA.

As discussed in Section 7, benzene, benzo(a)pyrene, and lead are the IR Site 10 regulated substances of concern. However, based on the compliance well analytical results (downgradient wells) benzene demonstrates attainment. This was confirmed through the fate and transport analysis discussed in Section 7.4. Lead also demonstrates attainment based on the compliance well analytical results. Benzo(a)pyrene is a potential contaminant of concern based on benzo(a)pyrene being detected above the applicable calculated MSC in one of the compliance wells (NFFW-17) in 2004. However, benzo(a)pyrene demonstrates attainment as discussed in the fate and transport analysis.

Results of the analysis using QD indicate that the dissolved phase petroleum contaminant plume will not migrate beyond the downgradient property boundary within 30 years.

8.1 CONCLUSIONS

Based on the results of this investigation, site conditions appear to support a demonstration of attainment for ground water at the site. However, the demonstration of attainment for ground water is usually based on eight consecutive quarters of ground-water data. Although historic ground-water monitoring events have been performed at the site, only the most recent two sampling events have confirmed (through the sampling of the downgradient monitoring wells NFFW-10, NFFW-15, and NFFW-17) that the former dissolved phase plume has not migrated beyond the point of compliance.

PADEP has indicated it may accept fewer quarterly sampling events or less under the following conditions: 1) there is adequate spatial monitoring of the plume upgradient which indicates a decreasing concentration trend toward the downgradient property boundary; 2) parameters affecting the fate and transport of regulated substances within the plume have been fully evaluated, 3) concentrations of regulated substances in the plume at the point of compliance monitoring wells along the downgradient property boundary are all less than or equal to the ground-water standard or the limit relating to the PQL, whichever is higher, in all samples collected during the quarters of monitoring, and 4) the age of the plume is sufficiently well known to permit a judgment to be made regarding its stability or remediation includes source removal or containment actions which would reduce the chemical flux into the plume. Based on

PADEP's review of the two recent rounds of ground-water results, PADEP stated as per conversation in June 2004 that the record of analysis results from sampling rounds conducted from 1989 to the present provide sufficient information to characterize the trend of ground water quality and to demonstrate attainment. The adequate spatial monitoring of the regulated substances of concern within the former plume upgradient which indicates a decreasing concentration trend toward the downgradient property boundary is indicated by the results presented in Section 7 and as summarized in the above in this section. In addition, concentrations of regulated substances within the former plume at the point of compliance monitoring wells along the downgradient property boundary are all less than or equal to the ground-water standard or the limit relating to the PQL, whichever is higher, in all samples collected during the quarters of monitoring is indicated by the results presented in Section 7 and as summarized above in this section. Based on the 2003 and 2004 results, the plume no longer exists as evident by the ground-water analytical results of 2003 and 2004 as discussed in Section 7. Parameters affecting the fate and transport of regulated substances within the former plume have been fully evaluated as discussed in Section 7 and summarized above in this section. In addition, the age of the former plume is sufficiently well known to permit a judgment to be made regarding its stability or remediation includes source removal or containment actions which would reduce the chemical flux into the plume has been addressed. The plume is no longer present as discussed above and there is evidence that remediation occurred by natural attenuation, vacuum-enhanced recovery system, and source removal of 6500 cubic yards of soil and tanks associated with releases that occurred on site.

Site conditions at IR Site 10, as demonstrated in Section 7 and summarized in this section, comply with the above conditions as discussed. NASJRB is expected to remain an active military installation for the foreseeable future, supporting the premise that complete Act 2 demonstrations of attainment for ground water for liability protection may be more appropriate at the time of a property transaction or significant change in land use at the IR Site 10 portion of the base. Therefore, EA on behalf of EFA Northeast requests that PADEP accept the two recent rounds of ground-water sampling events in addition to the historic ground-water results to complete the demonstration of attainment requirements for ground water at IR Site 10 for No Further Action. The request for No Further Action at IR Site 10 is for the ground water affected by the past releases that occurred at IR Site 10 from the two partially buried 210,000-gallon (gal) JP-4/JP-5 aviation fuel ASTs (Tank Numbers 115 and 116), the 500-gal underground waste oil tank, and an underground diesel fuel tank of unknown size as discussed in Section 2.3.

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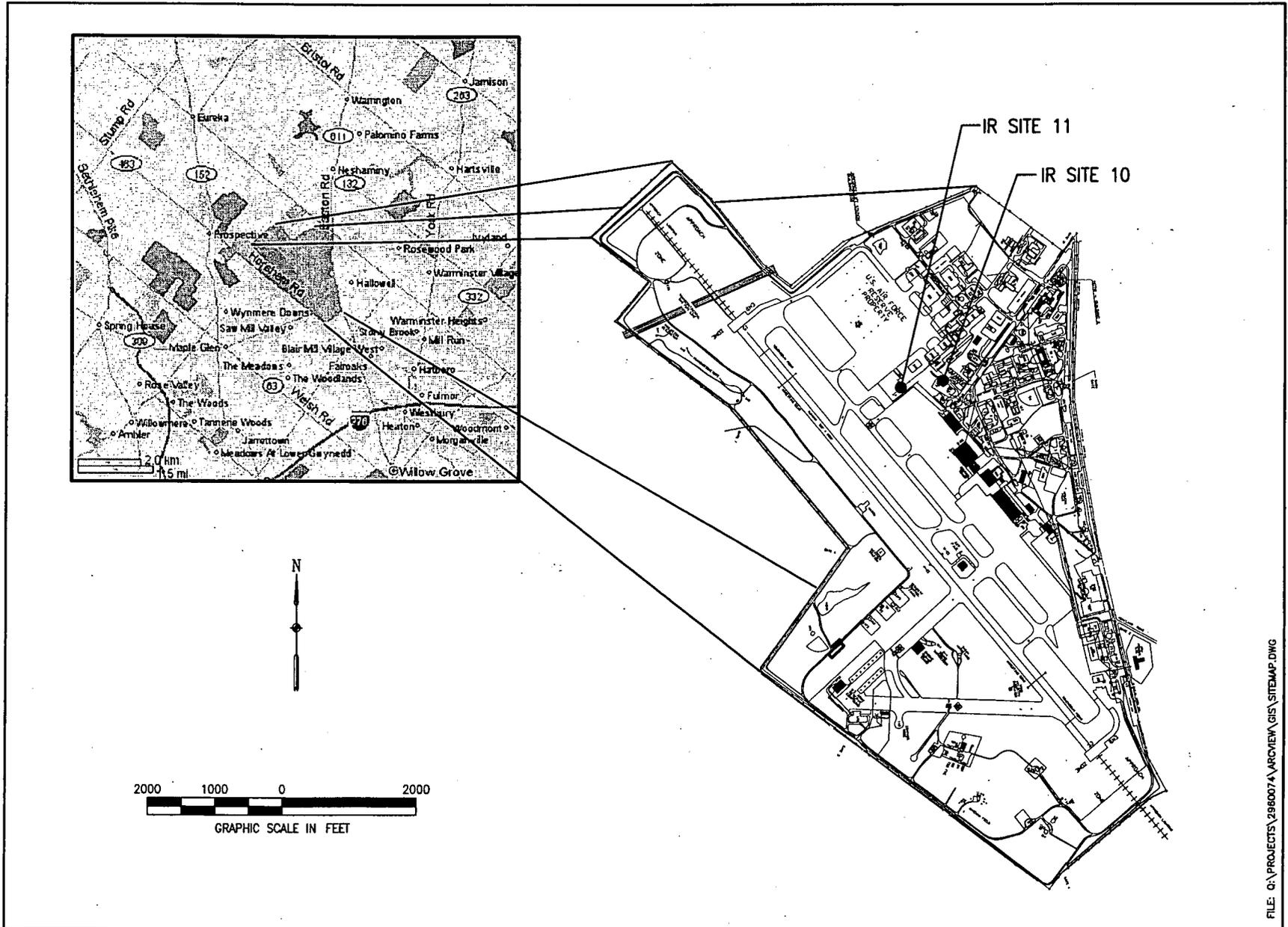
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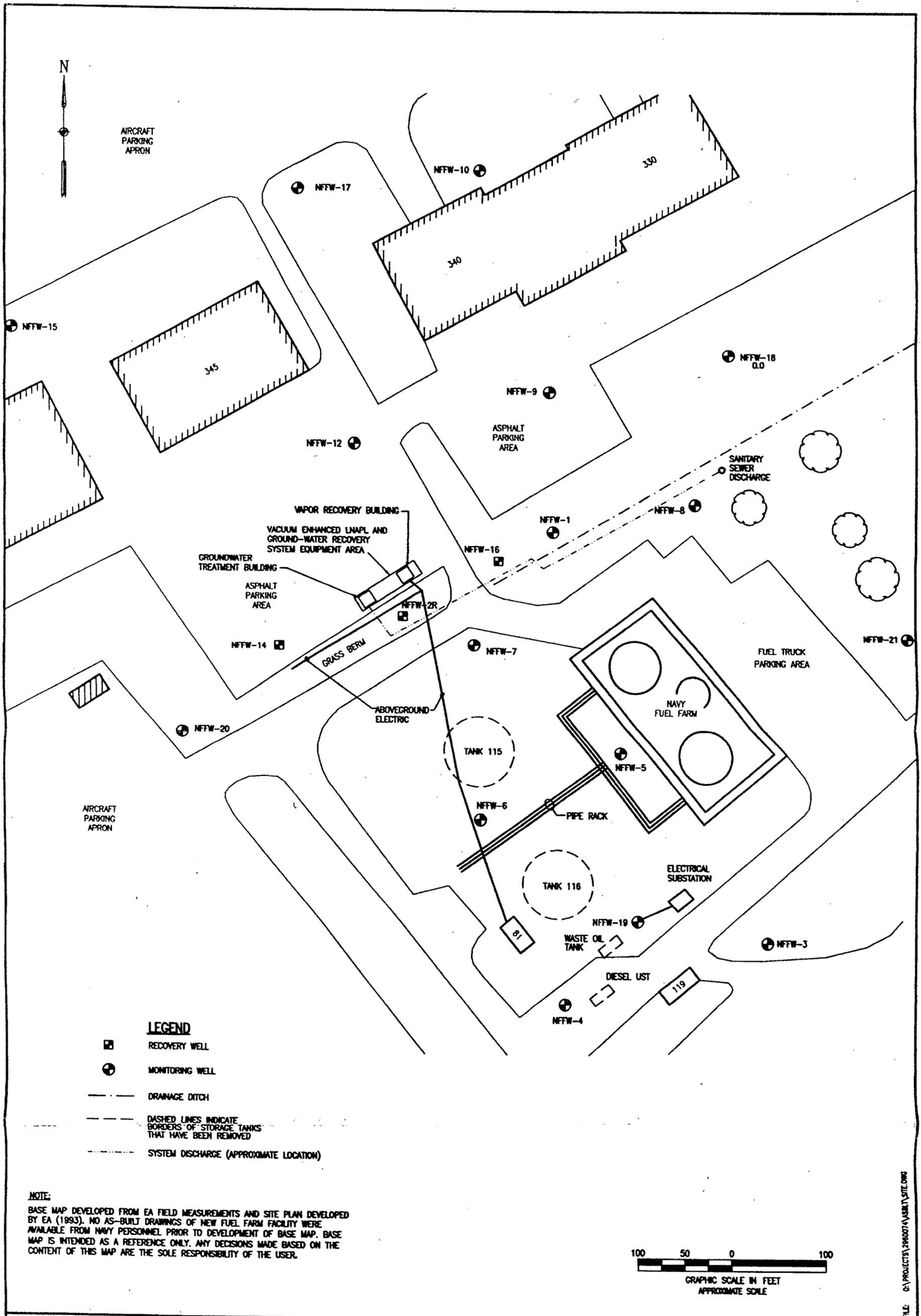
FIGURES



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Figure 1. NASJRB Site Location Map showing base boundary (Point of Compliance) and IR Site 10 location.





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		NAVY FUEL FARM NAVAL AIR STATION JOINT RESERVE BASE WILLOW GROVE, PENNSYLVANIA				SITE PLAN			
PROJECT MGR. HGP	DESIGNED BY MK	DRAWN BY FDV	CHECKED BY CGR	DATE 4-20-99	SCALE AS SHOWN	PROJECT NO. 29600.74	FILE NAME SITE	DRAWING NO. -	FIGURE 1-2

Figure 2. Historic Well Locations at IR Site 10.

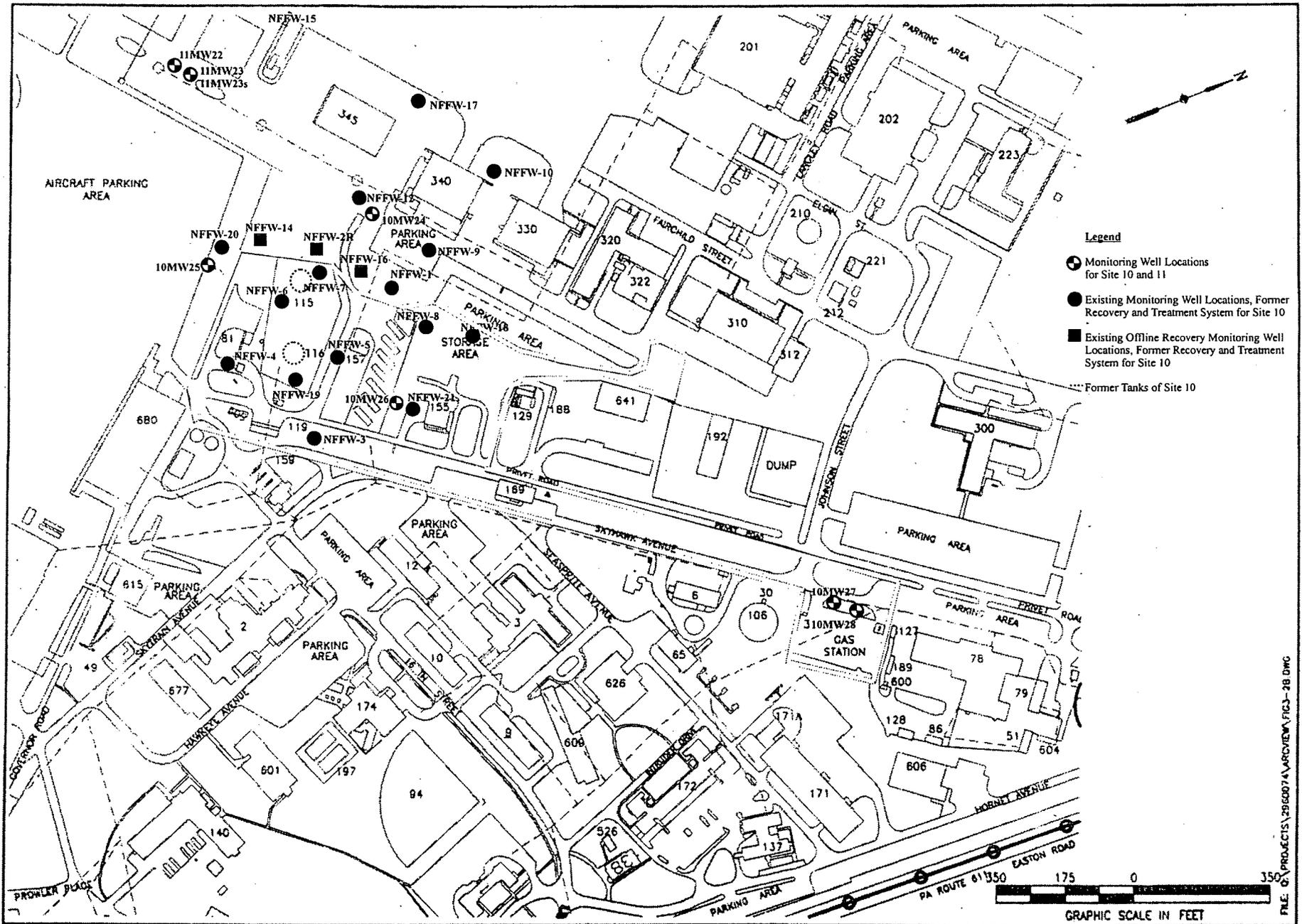


Figure 3. New and existing well locations at IR Site 10 and east of IR Site 10.



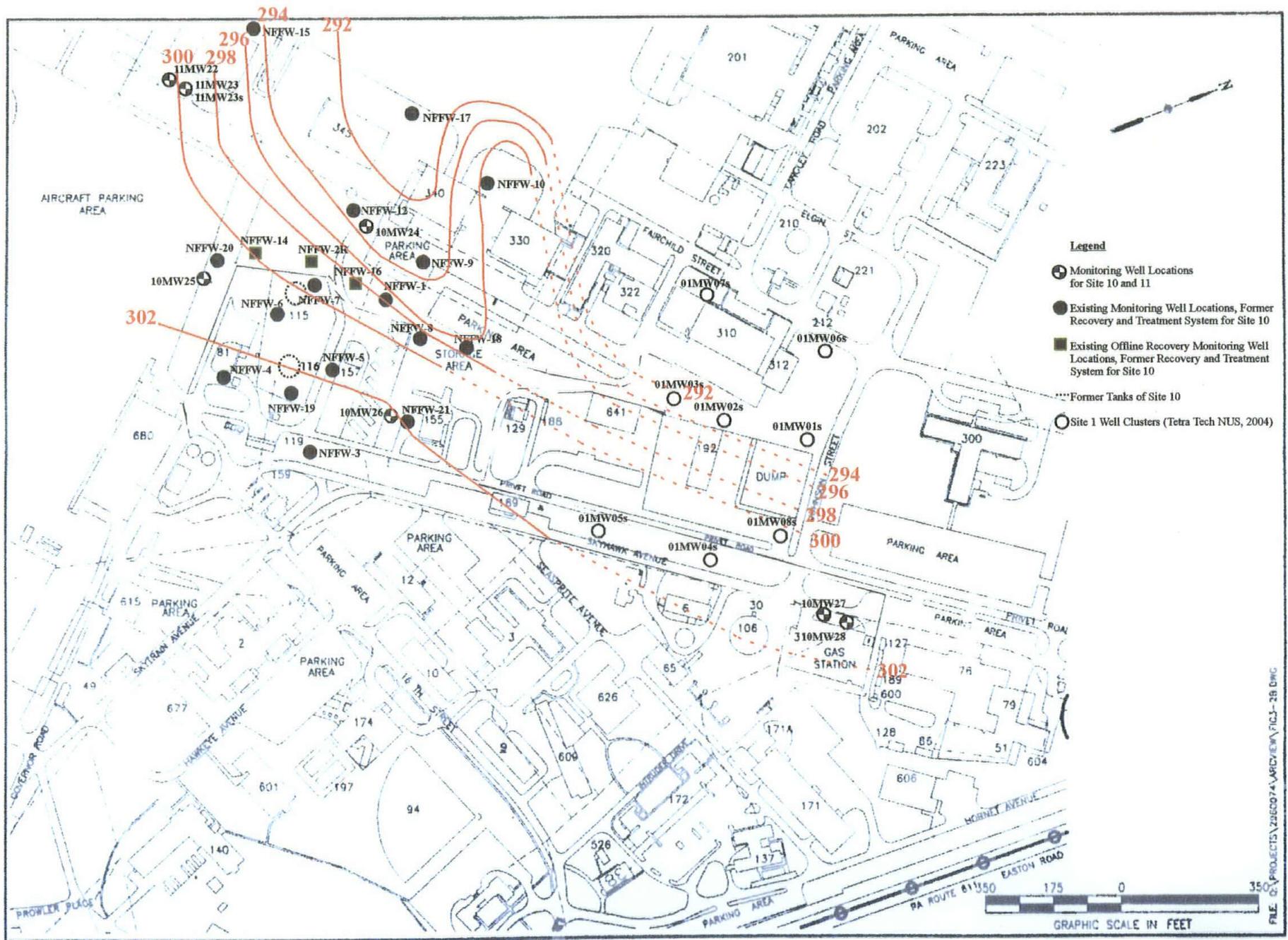


Figure 4. Bedrock Surface Map.



TABLES

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Sample Date Units	ug/L	NFFW-1 6/89 ug/L	NFFW-3 6/89 ug/L	NFFW-4 6/89 ug/L	NFFW-5 6/89 ug/L	NFFW-7 6/89 ug/L
	*MSC					
VOC						
**Methylene Chloride	5 M	<5 J	ND	<1 J	<3 J	ND
**Acetone	10,000 G	<11 J	ND	<13 J	<10 J	ND
**1,1,1-Trichloroethane	200 M	3 J	4 J	ND	ND	ND
**1,1-Dichloroethane	110 N	ND	1 J	ND	ND	ND
**Benzene	5 M	51	ND	ND	3 J	150 J
**Ethylbenzene	700 M	71	ND	ND	ND	61 J
**Xylene (total)	10,000 M	78	ND	ND	ND	220 J
**Trichloroethene	5 M	ND	ND	ND	ND	ND
**2-Butanone	5,800 N	ND	ND	ND	ND	ND
Total organic carbon	NC	89,900	3,700	5,100	27,600	155,000
Total petroleum hydrocarbon	NC	2,100	ND	ND	620 J	110,000

Notes:

*MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS =< 2500 mg/L

**- These constituents were also part of the VOC analysis conducted in 2003

MSC M- Maximum Contaminant Level

MSC G- Ingestion

MSC N- Inhalation

ND- Not Detected

NC- No Criteria

J- Indicates an estimated value.

Concentrations above calculated MSC are bolded and shaded.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Sample Date Units	ug/L	NFFW-1 9/89 ug/L	NFFW-2 9/89 ug/L	NFFW-3 9/89 ug/L	NFFW-4 9/89 ug/L	NFFW-5 9/89 ug/L	NFFW-7 9/89 ug/L	NFFW-7Dup 9/89 ug/L
	*MSC							
VOC								
**Methylene Chloride	5 M	ND						
**Acetone	10,000 G	ND	ND	ND	ND	322.99	1756.1	1907.5
**1,1,1-Trichloroethane	200 M	ND						
**1,1-Dichloroethane	110 N	ND						
**Benzene	5 M	ND	414.37	ND	ND	ND	502.7	508.31
**Ethylbenzene	700 M	ND	652.83	ND	ND	ND	389.99	438.91
**Xylene (total)	10,000 M	ND	1858.8	ND	ND	ND	511.74	493.84
**Trichloroethene	5 M	ND						
**2-Butanone (MEK)	5800N	2862.2	1336.3	ND	ND	188.78	ND	1591
Total organic carbon	NC	5,900	20,300	1,700	1,700	ND	4,100	6,800
Total petroleum hydrocarbon	NC	5,800	14,500	ND	ND	ND	4,200	3,500

Notes:

*MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS =< 2500 mg/L

**- These constituents were also part of the VOC analysis conducted in 2003

MSC M- Maximum Contaminant Level

MSC G- Ingestion

MSC N- Inhalation

ND- Not Detected

NC- No Criteria

J- Indicates an estimated value.

Concentrations above calculated *MSC are bolded and shaded

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Sample Date Units	ug/L	NFFW-1 12/89 ug/L	NFFW-2 12/89 ug/L	NFFW-3 12/89 ug/L	NFFW-4 12/89 ug/L	NFFW-5 12/89 ug/L	NFFW-7 12/89 ug/L	NFFW-7Dup 12/89 ug/L
	MSC							
VOC								
Methylene Chloride	5 M	ND	ND	ND	ND	108.33	ND	ND
Acetone	10,000 G	ND						
1,1,1-Trichloroethane	200 M	ND						
1,1-Dichloroethane	110 N	ND						
Benzene	5 M	ND	567.94	ND	ND	ND	703.83	ND
Ethylbenzene	700 M	41.83 J	620.67	ND	ND	ND	592.77	ND
Xylene (total)	10,000 M	ND	1822.4	ND	ND	ND	650.26	ND
Trichloroethene	5 M	ND	ND	ND	ND	ND	ND	10.85
2-Butanone (MEK)	5800N	ND	ND	ND	ND	850.77	ND	ND
Total organic carbon	NC	6,500	3,700	1,100	880	2,000	10,800	670
Total petroleum hydrocarbon	NC	16,400	11,300	ND	ND	2,300	8,500	ND

Notes:

*MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS =< 2500 mg/L

** - These constituents were also part of the VOC analysis conducted in 2003

MSC M- Maximum Contaminant Level

MSC G- Ingestion

MSC N- Inhalation

ND- Not Detected

NC- No Criteria

J- Indicates an estimated value.

Concentrations above calculated MSC are bolded and shaded

IR Sit 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Sample Date Units	ug/L	NFFW-9 5/16/1991 ug/L	NFFW-10 5/16/1991 ug/L	NFFW-11D 5/16/1991 ug/L	NFFW-12D 5/16/1991 ug/L	NFFW-13 5/16/1991 ug/L	NFFW-16D 5/16/1991 ug/L
VOC	*MSC						
**Acetone	10,000 G	130 B	12 B	1400 B	1900 B	825	2300 B
**1,1 Dichloroethane	110 N	2 J	ND	ND	ND	2 J	ND
1,2 Dichloroethene (total)	***70 M/100 M	ND	ND	ND	ND	ND	ND
**2-Butanone (MEK)	5,800 N	415	ND	2600	3200	2650	3800
**Trichloroethylene (TCE)	5 M	ND	ND	ND	ND	10	ND
**Benzene	5 M	63	ND	ND	ND	40	990
**Toluene	1,000 M	ND	ND	ND	ND	10	85 J
**Ethylbenzene	700 M	10	ND	200 J	300 J	285	350
**Xylene (total)	10,000 M	ND	ND	ND	ND	420	510 J
**1,2-Dichloroethane	5 M	ND	ND	130 JB	110 JB	ND	ND
**4-Methyl, 1-2 pentanone	410 N	ND	ND	ND	2000	ND	ND

Not s:

*MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS =< 2500 mg/L

** - These constituents were also part of the VOC analysis conducted in 2003

***70- cis and 100-trans

MSC M- Maximum Contaminant Level

MSC G- Ingestion

MSC N- Inhalation

ND- Not Detected

J- Estimated, below quantitation limit.

B- Compound Detected in Method Blank

Concentrations above calculated MSC are bolded and shaded

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Sample Date Units	ug/L	NFFW-9 5/16/1991 ug/L	NFFW-10 5/16/1991 ug/L	NFFW-11D 5/16/1991 ug/L	NFFW-12D 5/16/1991 ug/L	NFFW-13 5/16/1991 ug/L	NFFW-16D 5/16/1991 ug/L
SVOC	*MSC						
**Naphthalene	100 H	1 J	ND	170	110	48	120
**2-Methylnaphthalene	2000 G	ND	ND	220	94	96	140
**Fluorene	1900 S	ND	ND	5 J	1 J	2 J	2 J
**Bis(2-Ethylhexylphthalate)	6 M	3 J	ND	240	25	51	170 E
**Dibenzofuran	NC	ND	ND	3 J	1 J	ND	2 J
**Di-n-octylphthalate	2000 G	ND	ND	ND	ND	ND	ND

Notes:

*MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS =< 2500 mg/L

** - These constituents were also part of the VOC analysis conducted in 2003

MSC M- Maximum Contaminant Level

MSC G- Ingestion

MSC N- Inhalation

ND- Not Detected

J- Estimated, below quantitation limit.

E- Estimated, above quantitation limit.

Concentrations above calculated MSC are bolded and shaded.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Sample Date Units	ug/L	NFFW-3 10-21 June 1993 ug/L	NFFW-4 10-21 June 1993 ug/L	NFFW-5 10-21 June 1993 ug/L	NFFW-5D 10-21 June 1993 ug/L	NFFW-8 10-21 June 1993 ug/L	NFFW-9 10-21 June 1993 ug/L	NFFW-10 10-21 June 1993 ug/L	NFFW-11 10-21 June 1993 ug/L	NFFW-15 10-21 June 1993 ug/L	NFFW-17 10-21 June 1993 ug/L	NFFW-18 10-21 June 1993 ug/L	NFFW-19 10-21 June 1993 ug/L	NFFW-20 10-21 June 1993 ug/L	NFFW-21 10-21 June 1993 ug/L
VOC	*MSC														
**Acetone	10,000 G	ND	ND	ND	77	59 B	ND	14 B	ND	13 B	15 B	27 B	24 B	19 B	13 B
**Carbon Disulfide	4,100 N	ND	ND	14	12	ND	ND	ND	ND	ND	ND	ND	ND	17	ND
**Trichloroethene	5 M	ND	ND	ND	ND	ND	ND	ND	ND	3 J	ND	ND	ND	2 J	ND
**Chlorobenzene	100 M	ND	ND	ND	ND	ND	5 J	ND							
**Benzene	5 M	ND	ND	53	62	ND	29	ND	16	ND	6 J	2 J	67	64	1 J
**Toluene	1,000 M	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 J	17 J	2 J	1 J
**Ethylbenzene	700 M	ND	ND	23	21	30	ND	ND	70	ND	ND	ND	320	ND	ND
**Xylene (total)	10,000 M	ND	ND	12	11	9 J	ND	ND	ND	ND	ND	ND	500	46	ND
TPH (Gasoline Range Organics-GRO)	NC	1,600	ND	1,600	1,700	8,800	1,300	360	8,300	ND	530	6,800	6,900	5,900	ND
TPH (JP-4)	NC	ND	ND	ND	ND	3,200	ND	ND	40,000	ND	8,400	ND	3,600,000	1,600,000	ND

Notes:
 *MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS =< 2500 mg/L
 **- These constituents were also part of the VOC analysis conducted in 2003
 MSC M- Maximum Contaminant Level
 MSC G- Ingestion
 MSC N- Inhalation
 ND- Not Detected
 NC- No Criteria
 J- Indicates an estimated value.
 B- This flag is used when the analyte is found in the associated blank as well as in the sample.

It indicates possible/probable blank contamination.
Concentrations above calculated MSC are bolded and shaded.

Table 8 Summary of 1st and 2nd Round Ground-water Sampling Event

Sample Identification	Sample Collection Date	
10MW01 (NFFW-1)	5/19/03	2/24/04 2/27/04
10MW2R (NFFW-2R)	*5/20/03 (10DUP01)	2/19/04
10MW03 (NFFW-3)	5/21/03	2/20/04
10MW04 (NFFW-4)	6/5/03	2/23/04
10MW05 (NFFW-5)	5/21/03	2/23/04
10MW06 (NFFW-6)	5/20/03	2/23/04
10MW07 (NFFW-7)	5/19/03	2/24/04
10MW08 (NFFW-8)	5/20/03	2/24/04
10MW09 (NFFW-9)	5/21/03	2/25/09
10MW10 (NFFW-10)	5/21/03	2/24/04
10MW12 (NFFW-12)	5/19/03	2/19/04
10MW14 (NFFW-14)	5/19/03	2/19/04
10MW15 (NFFW-15)	**5/20/03 (MS/MSD)	2/24/04
10MW16 (NFFW-16)	5/19/03	2/19/04
10MW17 (NFFW-17)	5/21/03	2/24/04
10MW18 (NFFW-18)	5/20/03	2/24/04 2/27/04
10MW19 (NFFW-19)	5/21/03	2/23/04
10MW20 (NFFW-20)	5/21/03	2/20/04 2/27/04
10MW21 (NFFW-21)	5/20/03	2/24/04
10MW24	6/4/03	2/19/04
10MW25	6/4/03	**2/20/04 **2/27/04 (MS/MSD)
10MW26	6/5/03	2/24/04
10MW27	6/3/03	*2/20/04 (10MWDUP) 2/27/04
10MW28	6/3/03	2/20/04

* Duplicate Sample

** includes MS/MSD- Matrix Spike/ Matrix Spike Duplicate

Table 9

INVESTIGATION-DERIVED MATERIAL (IDM) DETECTED ANALYTES

Analyte	*RL	IDW-1	IDW-2	IDW-3	IDW-4	IDW-5	IDW-6	IDW-7	IDW-8	IDW-9	IDW-10	IDW-11	IDW-12	IDW-13	IDW-022504
Matrix		AQ	AQ	AQ	AQ	AQ	SO	AQ							
Sample Date		6/9/03	6/9/03	6/9/03	6/9/03	6/9/03	6/10/03	6/10/03	6/10/03	6/10/03	6/10/03	6/10/03	6/10/03	6/10/03	02/25/04
TCLP METALS (µg/L)															
Barium	1.2	297	395	32.5	125	306	743	311	974	483	1260	1410	1290	1210	309
Cadmium	2.4	ND	ND	ND	ND	ND	ND	ND	3.7	ND	ND	2.7	ND	ND	ND
Chromium	6.0	ND	ND	ND	ND	ND	ND	46.4	ND						
Lead	13.8	ND	ND	15.5	ND	ND	ND	ND	ND	ND	25.7	ND	ND	ND	ND
TCLP VOC (mg/L)															
2-Butanone	0.010		0.048	0.053	0.035	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.019 JB
Benzene	0.005		0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*RL- reporting limit

ND-Not Detected above the laboratory detection limit

AQ- Aqueous

SO- Solid (Soil and/or Rock Cuttings)

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW01 (NFFW-1) 0305L438 5/19/2003 ug/L	10MW01RE (NFFW-1) 0305L438 5/19/2003 ug/L	10MW2R (NFFW-2R) 0305L457 5/20/2003 ug/L	10DUP01(10MW2R (NFFW-2R)) 0305L457 5/20/2003 ug/L	10MW03 (NFFW-3) 0305L463 5/21/2003 ug/L	10MW04 (NFFW-4) 0306L586 6/5/2003 ug/L	10MW05 (NFFW-5) 0305L463 5/21/2003 ug/L	10MW06 (NFFW-6) 0305L457 5/20/2003 ug/L	10MW07 (NFFW-7) 0305L438 5/19/2003 ug/L	10MW07RE (NFFW-7) 0305L438 5/19/2003 ug/L	10MW08 (NFFW-8) 0305L457 5/20/2003 ug/L	10MW09 (NFFW-9) 0305L483 5/21/2003 ug/L	10MW10 (NFFW-10) 0305L463 5/21/2003 ug/L	10MW12 (NFFW-12) 0305L438 5/19/2003 ug/L	
VOC	**MSC														
***Methane	NC	18000 K	NA	1700 K	21000 K	<5	<5	30	4,800 K	6,400 K	NA	1,600 K	15,000 K	<5	5,500 K
Chloromethane	3 H	<2	<2 J	<2	<2	<2	<2	<2	<10	<2	<2 J	<2	<2	<2	<2
Bromomethane	10 H	<2	<2 J	<2	<2	<2	<2	<2	<10	<2	<2 J	<2	<2	<2	<2
Vinyl Chloride	2 M	<2	<2 J	<2	<2	<2	<2	<2	<10	<2	<2 J	<2	<2	<2	<2
Chloroethane	900 G	<2	<2 J	<2	<2	<2	<2	<2	<10	<2	<2 J	<2	<2	<2	<2
Methylene Chloride	5 M	<2	1 B	<2	<2	<2	<2	1 B	<2	2 B	<2	<2	<2	<2	<2
Acetone	10,000 G	<5	<5 J	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5
Carbon Disulfide	4,100 N	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	0.3 J
1,1-Dichloroethane	110 N	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
1,1-Dichloroethane	7 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
1,2-Dichloroethane (total)	***70 M/100 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	0.2 J	<1
Chloroform	100 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
1,2-Dichloroethane	5 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
2-Butanone	5,800 N	5 R	5 R	5 R	5 R	5 R	5 R	25 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R
1,1,1-Trichloroethane	200 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Carbon Tetrachloride	5 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Bromodichloromethane	100 M	<1	<1 J	<1	<1	<1	0.2 J	<1	<5	<1	<1 J	<1	<1	<1	<1
1,2-Dichloropropane	5 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
cis-1,3-Dichloropropene	26 G	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Trichloroethene	5 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Dibromochloromethane	NC	<1	<1 J	<1	<1	0.2 J	0.2 J	0.2 J	<5	<1	<1 J	<1	<1	0.4 J	<1
1,1,2-Trichloroethane	5 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Benzene	5 M	0.6 J	0.5 J	0.7 J	0.9 J	<1	<1	<1	<5	0.4 J	0.4 J	0.4 J	0.5 J	<1	0.6 J
Trans-1,3-Dichloropropene	26 G	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Bromoform	100 M	<1	<1 J	<1	<1	0.7 J	<1	<1	<5	<1	<1 J	<1	<1	0.8 J	<1
4-Methyl-2-pentanone	410 N	<5	<5 J	<5	<5	<5	<5	<25	<5	<5 J	<5	<5	<5	<5	<5
2-Hexanone	NC	5 R	5 R	5 R	5 R	5 R	5 R	25 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R
Tetrachloroethene	5 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	0.3 H	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Toluene	1,000 M	<1	<1 J	0.1 J	0.2 J	<1	<1	<1	<5	<1	<1 J	<1	0.1 B	<1	<1
Chlorobenzene	100 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	0.3 J	<1	<1
Ethylbenzene	700 M	0.2 J	0.1 J	3	4 J	<1	<1	<1	<5	2 J	2 J	2 J	0.2 J	<1	0.2 J
Styrene	100 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
Xylene (total)	10,000 M	<1	<1 J	0.2 B	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
1,2-Dibromoethane	0.05 M	<1	<1 J	<1	<1	<1	<1	<1	<5	<1	<1 J	<1	<1	<1	<1
*****1,2-Dibromoethane	0.05 M	<0.018	NA	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	NA	<0.018	<0.018	<0.018	<0.018
Isopropylbenzene	2,300N	0.7 J	0.6 J	5	9 J	<1	<1	<1	5 J	2 J	2 J	9 J	15 J	<1	10 J

Notes:
 * Not valid result based on Data Validation Report.
 **MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS <= 2500 mg/L
 MSC H- Lifetime health advisory level
 MSC M- Maximum Contaminant Level
 MSC G- Ingestion
 MSC N- Inhalation
 ***- Analyzed by Method RSK 175
 ****- cis and 100-trans
 *****- Analyzed by Method 504
 <- Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.
 NA- Not Analyzed
 NC- No Criteria
 J- Indicates an estimated value.
 K- Analyte present. Reported value may be biased high. Actual value is expected to be lower.
 B- This flag is used when the analyte is found in the associated blank as well as in the sample.
 It indicates possible/probable blank contamination.
 R- Unusable results. Analyte may or may not be present in sample.
 Concentrations above calculated MSC are bolded and shaded

EA Engineering, Science, and Technology, Inc.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	**10MW12RE (NFFW-12) 0305L438 5/19/2003 ug/L	10MW14 (NFFW-14) 0305L438 5/19/2003 ug/L	**10MW14RE (NFFW-14) 0305L438 5/19/2003 ug/L	10MW15 (NFFW-15) 0305L457 5/20/2003 ug/L	10MW16 (NFFW-16) 0305L438 5/19/2003 ug/L	**10MW16RE (NFFW-16) 0305L438 5/19/2003 ug/L	10MW17 (NFFW-17) 0305L463 5/21/2003 ug/L	10MW18 (NFFW-18) 0305L457 5/20/2003 ug/L	10MW19 (NFFW-19) 0305L463 5/21/2003 ug/L	10MW20 (NFFW-20) 0305L463 5/21/2003 ug/L	10MW21 (NFFW-21) 0305L457 5/20/2003 ug/L	10MW24 0306L570 6/4/2003 ug/L	10MW25 0306L570 6/4/2003 ug/L	10MW28 0306L586 6/5/2003 ug/L	10MW27 0306L586 6/3/2003 ug/L	10MW28 0306L566 6/3/2003 ug/L		
VOC	**MSC																	
***Methane	NC	NA	1,200 K	NA	<5	11,000 K	NA	23,000 K	1,400 K	620		19,000 K	<5	4,800	88	<5	<5	<5
Chloromethane	3 H	<2 J	<2	<2	<2	<2	<2 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bromomethane	10 H	<2 J	<2	<2	<2	<2	<2 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl Chloride	2 M	<2 J	<2	<2	<2	<2	<2 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	900 G	<2 J	<2	<2	<2	<2	<2 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Methylene Chloride	5 M	1 B	<2	2 B	<2	<2	2 B	<2	<2	<2	<2	<2	<2	<2	0.2 B	<2	<2	<2
Acetone	10,000 G	<5 J	<5	<5	<5	<5	<5 J	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Disulfide	4,100 N	<1 J	0.4 J	0.5 J	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	0.7 J	<1	<1	<1	<1
1,1-Dichloroethane	7 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	2	0.4 J	0.4 J
1,2-Dichloroethane	110 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	0.5 J	0.5 J	0.5 J
1,2-Dichloroethane (total)	****70 M/100 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	0.1 J	<1	1 J	<1	<1	<1	0.2 J
Chloroform	100 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	0.8 B	<1	<1	0.5 B	<1	<1	0.2 J
1,2-Dichloroethane	5 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Butanone	5,800 N	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R
1,1,1-Trichloroethane	200 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	5 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.9 J
Bromodichloromethane	100 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	28 G	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethane	5 M	<1 J	<1	0.2 J	<1	<1	<1 J	<1	<1	<1	<1	0.2 J	<1	0.4 J	0.1 J	0.1 J	0.1 J	2
Dibromochloromethane	NC	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	0.1 B	<1	0.3 B	<1	0.2 J	0.3 J	0.3 J
1,1,2-Trichloroethane	5 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	5 M	0.6 J	2 J	2 J	<1	0.7 J	0.8 J	0.4 J	<1	0.2 J	<1	0.3 J	<1	#210 J2%	<1	<1	<1	<1
Trans-1,3-Dichloropropene	28 G	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	100 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	0.2 B	0.6 B	0.6 B	<1	0.7 J	0.3 J	0.3 J
4-Methyl-2-pentanone	410 N	<5 J	<5	<5	<5	<5	<5 J	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	NC	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R
Tetrachloroethane	5 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	0.8 J	<1	0.4 J	0.2 J	<1	<1	5
1,1,2,2-Tetrachloroethane	0.3 H	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1,000 M	0.1 B	<1	0.1 B	<1	<1	<1 J	<1	<1	<1	<1	0.1 B	<1	1 J	<1	<1	<1	<1
Chlorobenzene	100 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	700 M	0.3 J	5 J	5 J	<1	10 J	10 J	0.2 J	<1	<1	<1	2 J	<1	36 J	<1	<1	<1	<1
Styrene	100 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene (total)	10,000 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	21 J	<1	<1	<1	<1
1,2-Dibromoethane	0.05 M	<1 J	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
****1,2-Dibromoethane	0.05 M	NA	<0.018	NA	<0.018	<0.018	NA	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Isopropylbenzene	2,300 N	10 J	3 J	3 J	<1	28 J	28 J	10 J	<1	1	<1	3 J	<1	12 J	<1	<1	<1	<1

IR Site 10 NASJRB

Final Report, Request for No Further Action

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW01 (NFFW-1) 0305L438 5/19/2003 ug/L	10MW2R (NFFW-2R) 0305L457 5/20/2003 ug/L	10DUP01(10MW2R (NFFW-2R)) 0305L457 5/20/2003 ug/L	10DUP01RE (10MW2R (NFFW-2R)) 0305L457 5/20/2003 ug/L	10MW03 (NFFW-3) 0305L463 5/21/2003 ug/L	10MW04 (NFFW-4) 0306L566 6/5/2003 ug/L	10MW05 (NFFW-5) 0305L463 5/21/2003 ug/L	10MW06 (NFFW-6) 0305L457 5/20/2003 ug/L	10MW06RE (NFFW-6) 305L457 5/21/2003 ug/L	10MW07 (NFFW-7) 0305L438 5/19/2003 ug/L	10MW08 (NFFW-8) 0305L457 5/20/2003 ug/L	10MW09 (NFFW-9) 0305L463 5/21/2003 ug/L	10MW10 (NFFW-10) 0305L463 5/20/2003 ug/L	10MW12 (NFFW-12) 0305L438 5/19/2003 ug/L
SVOC	*MSC													UNDILUTED
Phenol	4,000 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
bis(2-Chloroethyl)ether	0.55 N	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2-Chlorophenol	40 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
1,3-Dichlorobenzene	500 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
1,4-Dichlorobenzene	75 M	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
1,2-Dichlorobenzene	600 M	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2-Methylphenol	5100 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,2'-oxybis(1-Chloropropane)	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
4-Methylphenol	510 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
N-Nitroso-di-n-propylamine	0.37 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Hexachloroethane	1 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Nitrobenzene	51 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Isophorone	100 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2-Nitrophenol	820 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,4-Dimethylphenol	2000 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
bis(2-Chloroethoxy)methane	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,4-Dichlorophenol	20 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
1,2,4-Trichlorobenzene	70 M	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Naphthalene	100 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	3 J	<10	<10	<11
4-Chloroaniline	410 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Hexachlorobutadiene	1 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
4-Chloro-3-methylphenol	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2-Methylnaphthalene	2000 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	5 J	3 J	<10	<11
Hexachlorocyclopentadiene	50 M	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,4,6-Trichlorophenol	31 G	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,4,5-Trichlorophenol	10,000 G	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2-Chloronaphthalene	8200 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2-Nitroaniline	5.8 G	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Dimethylphthalate	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Acenaphthylene	3800 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,6-Dinitrotoluene	100 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
3-Nitroaniline	5.8 G	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Acenaphthene	3800 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
2,4-Dinitrophenol	41 N	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
4-Nitrophenol	60 H	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Dibenzofuran	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	0.6 J
2,4-Dinitrotoluene	8.4 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Dinitrophenol	5000 H	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
4-Chlorophenyl-phenylether	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Fluorene	1900 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
4-Nitroaniline	5.8 G	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	0.6 J
4,6-Dinitro-2-methylphenol	NC	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
N-Nitrosodiphenylamine (1)	530 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
4-Bromophenyl-phenylether	NC	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Hexachlorobenzene	1 M	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Pentachlorophenol	1 M	<27	<25	<250	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Phenanthrene	1100 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	2 J
Anthracene	56 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Carbazole	130G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Di-n-butylphthalate	10,000 G	<11	0.8 B	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Fluorene	250 S	<11	<10	<100	NA	<10	0.7 B	<10	1 B	<11	0.9 B	1 J	0.5 J	<11
Pyrene	130 S	<11	<10	7 J	NA	<10	<10	<10	9 J	<11	<10	<10	<10	4 J
Butylbenzylphthalate	2700 S	<11	<10	<100	NA	<10	<10	<10	7 J	<11	<10	<10	<10	3 J
3,3'-Dichlorobenzidine	5.8 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Benzo(a)anthracene	3.6 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Chrysene	1.9 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	0.9 J
bis(2-Ethylhexyl)phthalate	6 M	0.8 B	<10	<100	NA	<10	<10	<10	0.6 B	<11	1 B	2 J	0.7 J	10 E
Di-n-octyl phthalate	2000 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Benzo(b)fluoranthene	1.2 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Benzo(k)fluoranthene	0.55 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	0.6 J
Benzo(e)pyrene	0.2 M	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
*Benzo(a)pyrene	0.2 M	<0.24	<0.23	<0.23	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Indeno(1,2,3-cd)pyrene	3.6 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Dibenz(a,h)anthracene	0.36 G	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11
Benzo(g,h)perylene	0.26 S	<11	<10	<100	NA	<10	<10	<10	NA	<11	<10	<10	<10	<11

Notes:
 *MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS <= 2500 mg/L
 MSC H- Lifetime health advisory level
 MSC M- Maximum Contaminant Level
 MSC G- Ingestion
 MSC N- Inhalation
 MSC S- Aqueous solubility cap
 ** - Analyzed by Method 8310
 *** - Result is not valid based on data validation report.
 **** - undiluted sample result, not compared with the MSC because the undiluted result is not validated; the diluted results are reported, validated, and compared with the MSC.

< - Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.
 N- Not Available
 NA- Not Analyzed
 NC- No Criteria
 J- Indicates an estimated value.
 L- Analyte present. Reported value may be biased low. Actual value is expected to be higher.
 B- This flag is used when the analyte is found in the associated blank as well as in the sample.
 It indicates possible/probable blank contamination.
 E- This qualifier identifies compounds whose concentrations exceed the calibration range of the instrument.
 (Concentrations above calculated *MSC are bolded and shaded)

EA Engineering, Science, and Technology, Inc.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW12 (NFFW-12) 0305L436 5/19/2003 ug/L	10MW14 (NFFW-14) 0305L438 5/19/2003 ug/L	10MW15 (NFFW-15) 0305L457 5/20/2003 ug/L	10MW16 (NFFW-16) 0305L463 5/19/2003 ug/L	10MW17 (NFFW-17) 0305L463 5/21/2003 ug/L	10MW18 (NFFW-18) 0305L457 5/20/2003 ug/L	10MW19 (NFFW-19) 0305L463 5/21/2003 ug/L	10MW20 (NFFW-20) 0305L463 5/20/2003 ug/L	10MW21 (NFFW-21) 0305L457 6/4/2003 ug/L	10MW24 0306L570 6/4/2003 ug/L	10MW25 0306I570 6/4/2003 ug/L	10MW26 0306L586 6/2/2003 ug/L	10MW27 0306L566 6/3/2003 ug/L	10MW28 0306L566 6/3/2003 ug/L
SVOC	*MSC	DILUTED												
Phenol	4,000 H	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
bis(2-Chloroethyl)ether	0.55 N	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chlorophenol	40 H	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	600 H	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	75 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	600 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Methylphenol	5100 G	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,2'-oxybis(1-Chloropropane)	NC	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Methylphenol	510 G	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitroso-d-n-propylamine	0.37 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachloroethane	1 H	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrobenzene	51 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isophorone	100 H	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Nitrophenol	820 G	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	2000 G	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	NC	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol	20 H	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	70 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	100 H	<33	1 J	<10	75	2 J	<10	0.8 J	<10	21	<10	<10	<10	<10
4-Chloroaniline	410 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	1 H	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol	NC	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	2000 G	<33	<11	<10	51	0.7 J	<10	0.9 J	<10	29	<10	<10	<10	<10
Hexachlorocyclopentadiene	50 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol	31 G	<33	<11	10 R	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	10,000 G	<33	<27	25 R	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
2-Chloronaphthalene	8200 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Nitroaniline	5.8 G	<33	<27	<25	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
Dimethylphthalate	NC	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acephenanthylene	3800 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	100 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
3-Nitroaniline	5.8 G	<33	<27	<25	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
Acenaphthene	3800 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrophenol	41 N	<33	<27	25 R	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
4-Nitrophenol	60 H	<33	<27	25 R	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
Dbenzofuran	NC	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrotoluene	8.4 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Diethylphthalate	5000 H	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenyl-phenylether	NC	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluorene	1800 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Nitroaniline	5.8 G	<33	<27	<25	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
4,6-Dinitro-2-methylphenol	NC	<33	<27	25 R	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
N-Nitrosodiphenylamine (1)	530 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Bromophenyl-phenylether	NC	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	1 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pentachlorophenol	1 M	<33	<27	25 R	<27	<25	<25	<25	<25	<25	<26	<26	<25	<25
Phenanthrene	1100 S	27 J	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Anthracene	66 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbazole	130 S	<33	<11	<10	3 J	<10	<10	<10	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	10,000 G	<33	<11	0.9 B	<11	1 J	<10	0.8 J	<10	0.6 J	<10	<10	<10	<10
Fluoranthene	260 S	31 J	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pyrene	130 S	25 J	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	2700 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	5.8 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	3.6 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chrysene	1.9 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	6 M	<33	<11	0.8 B	<11	5 J	<10	0.7 B	<10	1 J	<10	<10	1 B	<10
Di-n-octyl phthalate	2000 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	1.2 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	0.55 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	0.2 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(e)pyrene	0.2 M	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	3.6 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	0.38 G	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(g,h)perylene	0.26 S	<33	<11	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10

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Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW01(NFFW-1) 0305L438 5/19/2003 ug/L	10MW2R (NFFW-2R) 0305L457 5/20/2003 ug/L	10DUP01(10MW2R (NFFW-2R)) 0305L457 5/20/2003 ug/L	10MW03 (NFFW-3) 0305L463 5/21/2003 ug/L	10MW04 (NFFW-4) 0306L586 6/5/2003 ug/L	10MW05 (NFFW-5) 0305L463 5/21/2003 ug/L	10MW06 (NFFW-6) 0305L457 5/20/2003 ug/L	10MW07 (NFFW-7) 0305L438 5/19/2003 ug/L	10MW08 (NFFW-8) 0305L457 5/20/2003 ug/L	10MW09 (NFFW-9) 0305L463 5/21/2003 ug/L	10MW10 (NFFW-10) 0305L463 5/21/2003 ug/L	10MW12 (NFFW-12) 0305L438 5/19/2003 ug/L	10MW14 (NFFW-14) 0305L438 5/19/2003 ug/L	10MW15 (NFFW-15) 0305L457 5/20/2003 ug/L	
Metals	*MSC														
Aluminum	**200	83.7 B	64.1 B	187 B	52.4 B	13.6 B	52.9 B	69.9 B	60.4 B	73.8 B	77.7 B	50.5 B	58.6 B	70.6 B	39.8 B
Antimony	6.1 J	2.5 B	2.4 B	<2.2	<2.2	<2.2	<2.2	2.6 B	<2.2	<2.2	3.5	<2.2	4.2 B	<2.2	
Arsenic	50 M	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	3.6	<3.3	7.6	<3.3	<3.3	<3.3	<3.3	
Barium	2,000 M	787	973	946	369	281	227	646	468	1,170	1,450	261	823	722	229
Beryllium	4 M	0.3 B	0.36 B	0.49 B	0.31 B	<0.1	0.29 B	0.39 B	0.25 B	0.44 B	0.31 B	0.28 B	0.25 B	0.25 B	0.3 B
Cadmium	5 M	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	
Calcium	NC	56,400	40,100	41,500	41,500	40,500	64,100	58,100	73,700	35,400	45,800	48,000	43,200	46,700	20,800
Chromium	**100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Cobalt	2,000 G	1.1	<1	<1	1.1	2.5	<1	<1	<1	<1	<1	<1	<1	<1	
Copper	1,000 M	1.5	1.7	0.99	<0.6	0.96 B	1.2 B	0.76	1.3	<0.6	<0.6	1.7	2.1	1.2	
Iron	**300	5,270	15,600	15,600	<25.8	37.2	48.1	18,100	4,000	8,120	15,800	<25.8	22,000	4,990	<25.8
Lead	5 M	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	3.8	<2.3	<2.3	<2.3	<2.3	<2.3	
Magnesium	NC	24,300	20,400	21,000	21,000	17,200	14,200	34,000	20,800	12,900	20,800	20,700	26,400	18,300	9,870
Manganese	**50	23,700 J	12,700 J	13,300 J	3.1 B	2.2 B	21.7	15,900 J	1,450 J	12,100 J	19,300	4.3 B	21,700 J	32,900 J	1.2 B
Mercury	2 M	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	<0.1 L	
Nickel	100 H	<1.3	<1.3	2.5	1.8 J	3.6	<1.3	<1.3	<1.3	2.7	1.7 J	6.1 J	<1.3	<1.3	<1.3
Potassium	NC	1,180	5,750	6,180	7,250	1,890	4,530	2,380	2,690	1,820	1,890	3,100	2,180	2,280	
Selenium	50 M	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	
Silver	100 H	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	
Sodium	NC	14,300	18,200	16,800	35,600	17,200	5360	10,600	5,690	16,700	27,100	45,800	21,800	17,700	13,600
Thallium	2 M	<4.5	<4.5	<4.5	<4.5 L	<4.5	<4.5 L	<4.5	<4.5	<4.5	<4.5 L	<4.5	<4.5	<4.5	
Vanadium	720 G	0.58 B	0.19 B	0.31 B	0.47 B	0.5 B	0.34 B	0.55 B	1 B	<0.1	0.47 B	0.21 B	0.12 B	<0.1	
Zinc	2,000 H	20.3 J	94.7 J	44.7 J	195 J	158 J	57.6 J	81.9 J	75.3 J	44 J	99.3 J	202 J	116 J	28 J	87.8 J

Notes:
 *MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS <= 2500 mg/L
 MSC H- Lifetime health advisory level
 MSC M- Maximum Contaminant Level
 MSC G- Ingestion
 **- Secondary Maximum Contaminant Level (SMCL)
 ***- Total Chromium MSC
 <- Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.
 E- The reported value is estimated because of the presence of interference.
 B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the the Contract Required Detection Limit (CRDL).
 J- Estimated value.
 K- Analyte present. Reported value may be biased high. Actual value is expected to be lower.
 L- Analyte present. Reported value may be biased low. Actual value is expected to be higher.
 NC- No Criteria
Concentrations above calculated MSC and/or SMCL are bolded and shaded

IR Site 10 NASJRB

Final Report, Request for No Further Action

EA Engineering, Science, and Technology, Inc.

IR Site 10 NAS/JRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW16 (NFFW-16) 0305L438 5/19/2003 ug/L	10MW17 (NFFW-17) 0305L463 5/21/2003 ug/L	10MW18 (NFFW-18) 0305L457 5/20/2003 ug/L	10MW19 (NFFW-19) 0305L463 5/21/2003 ug/L	10MW20 (NFFW-20) 0305L463 5/21/2003 ug/L	10MW21 (NFFW-21) 0305L457 5/20/2003 ug/L	10MW24 0306L570 6/4/2003 ug/L	10MW25 0306L570 6/4/2003 ug/L	10MW26 0306L566 6/3/2003 ug/L	10MW27 0306L566 6/3/2003 ug/L	10MW28 0306L566 6/3/2003 ug/L	
Metals	*MSC											
Aluminum	**200	64.5 B	42.9 B	138 B	53.6 B	51.1 B	43.4 B	2,510 B	51.8 B	<13.1	36.2 B	57 B
Antimony	6 M	<2.2	2.8	<2.2	<2.2	3.1	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Arsenic	50 M	4	4.9 K	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Barium	2,000 M	1,620	706	577	625	883	308	299	297	456	307	476
Beryllium	4 M	0.26 B	0.15 B	0.43 B	0.31 B	0.15 B	0.42 B	0.24 B	0.27 B	<0.1	0.31 B	0.28 B
Cadmium	5 M	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.44 B
Calcium	NC	48,000	28,500	38,800	42,400	45,900	38,800	61,500	63,100	67,500	20,900	61,900
Chromium	***100 M	<1	<1	<1	<1	1.2	<1	5	1.6	25.2	<1	2.1
Cobalt	2,000 G	<1	<1	19.7	2.7	<1	<1	<1	<1	<1	<1	<1
Copper	1,000 M	1.4	0.69 B	0.88	<0.8	0.93 B	<0.8	6.1	<0.6	1.8 B	<0.6	<0.6
Iron	**300	25,700 B	17,700 B	4,900 B	7,110 B	11,300 B	<25.8	28.1	42.7	<25.8	<25.8	<25.8
Lead	5 M	3.2	<2.3	<2.3	<2.3	2.9	<2.3	3.1 B	3.1 B	<2.3	<2.3	2.8 B
Magnesium	NC	28,800	13,500	15,800	14,800	20,400	18,300	278	13,200	20,600	7,730	18,800
Manganese	**50	12,600 J	13,500 J	9,870 J	9,820 J	15,800 J	1.9 B	0.68	28.5 B	61.1 B	9.8	114 B
Mercury	2 M	<0.1 L	<0.1	<0.1 L	<0.1	<0.1	<0.1 L	<0.1 L				
Nickel	100 H	1.7	<1.3	16.9	3.1 J	16.6 J	<1.3	2.1	2.4	3	5.4	3.3
Potassium	NC	2,830	1,230	1,810	2,020	3,580	5,310	34,300	1,890	29,000	1,520	2,430
Selenium	50 M	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	5.3
Silver	100 H	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Sodium	NC	13,800	13,900	23,900	22,400	21,900	28,600	35,100	18,600	28,300	17,200	23,800
Thallium	2 M	<4.5	<4.5 L	<4.5 L	<4.5 L	<4.5 L	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5
Vanadium	720 G	<0.1	0.47 B	<0.1	<0.1	0.52 B	0.21 B	3.4	1 B	0.51 B	0.41 B	0.72 B
Zinc	2,000 H	179 J	90.4 J	138 J	106 J	70.3 J	129 J	31.8 B	87 J	152 J	188 J	86.5 J

IR Site 10 NAS/JRB

Final Report, Request for No Further Action

IR Site 10 NASJRB, PA

Blanks Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10TB01051903 0305L438 5/19/2003 ug/L	10TB02052003 0305L457 5/20/2003 ug/L	10FB01052003 0305L457 5/20/2003 ug/L	10RB01052003 0305L457 5/20/2003 ug/L	10TB03052103 0305L463 5/21/2003 ug/L	10TB07060303 0306L566 6/3/2003 ug/L	10TB07060403 0306L570 6/4/2003 ug/L	10TB08060503 0306L586 6/5/2003 ug/L
VOC								
*Methane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloromethane	<2	<2	<2	<2	<2	<2	<2	<2
Bromomethane	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	<2	<2	<2	<2	<2	<2	<2	<2
Methylene Chloride	10	10	<2	<2	9	11	<2	0.4 B
Acetone	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Disulfide	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethene (total)	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	<1	<1	2	2	<1	<1	2	1
1,2-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
2-Butanone	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R
1,1,1-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	<1	<1	0.1 J	<1	<1	<1	0.2 J	<1
1,1,2-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	<1	<1	0.4 J	0.2 J	<1	<1	0.4 J	<1
4-Methyl-2-pentanone	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	5 R	5 R	5 R	5 R	5 R	5 R	5 R	5 R
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	0.1 J	<1	<1	<1	0.1 J	0.1 J	<1	0.1 J
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	<1	<1	<1	<1	<1	<1	<1	<1
Xylene (total)	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane	<1	<1	<1	<1	<1	<1	<1	<1
**1,2-Dibromoethane	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.019
Isopropylbenzene	<1	<1	<1	<1	<1	<1	<1	<1

Notes:

*- Analyzed by Method RSK 175

**- Analyzed by Method 504

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

R- Unusable result. Analyte may or may not be present in the sample.

J- Indicates an estimated value.

B- This flag is used when the analyte is found in the associated blank as well as in the sample.

It indicates possible/probable blank contamination.

IR Site 10 NASJRB, PA

Blanks Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10FB01052003 0305L457 5/20/2003 ug/L	10RB01052003 0305L457 5/20/2003 ug/L
SVOC		
Phenol	<10	<10
bis(2-Chloroethyl)ether	<10	<10
2-Chlorophenol	<10	<10
1,3-Dichlorobenzene	<10	<10
1,4-Dichlorobenzene	<10	<10
1,2-Dichlorobenzene	<10	<10
2-Methylphenol	<10	<10
2,2'-oxybis(1-Chloropropane)	<10	<10
4-Methylphenol	<10	<10
N-Nitroso-di-n-propylamine	<10	<10
Hexachloroethane	<10	<10
Nitrobenzene	<10	<10
Isophorone	<10	<10
2-Nitrophenol	<10	<10
2,4-Dimethylphenol	<10	<10
bis(2-Chloroethoxy)methane	<10	<10
2,4-Dichlorophenol	<10	<10
1,2,4-Trichlorobenzene	<10	<10
Naphthalene	<10	<10
4-Chloroaniline	<10	<10
Hexachlorobutadiene	<10	<10
4-Chloro-3-methylphenol	<10	<10
2-Methylnaphthalene	<10	<10
Hexachlorocyclopentadiene	<10	<10
2,4,6-Trichlorophenol	<10	<10
2,4,5-Trichlorophenol	<25	<25
2-Chloronaphthalene	<10	<10
2-Nitroaniline	<25	<25
Dimethylphthalate	<10	<10
Acenaphthylene	<10	<10
2,6-Dinitrotoluene	<10	<10
3-Nitroaniline	<25	<25
Acenaphthene	<10	<10
2,4-Dinitrophenol	<25	<25
4-Nitrophenol	<25	<25
Dibenzofuran	<10	<10
2,4-Dinitrotoluene	<10	<10
Diethylphthalate	<10	<10
4-Chlorophenyl-phenylether	<10	<10
Fluorene	<10	<10
4-Nitroaniline	<25	<25
4,6-Dinitro-2-methylphenol	<25	<25
N-Nitrosodiphenylamine (1)	<10	<10
4-Bromophenyl-phenylether	<10	<10
Hexachlorobenzene	<10	<10
Pentachlorophenol	<25	<25
Phenanthrene	<10	<10
Anthracene	<10	<10
Carbazole	<10	<10
Di-n-butylphthalate	2 J	0.8 J
Fluoranthene	<10	<10
Pyrene	<10	<10
Butylbenzylphthalate	<10	<10
3,3'-Dichlorobenzidine	<10	<10
Banzo(a)anthracene	<10	<10
Chrysene	<10	<10
bis(2-Ethylhexyl)phthalate	0.7 J	0.6 J
Di-n-octyl phthalate	<10	<10
Benzo(b)fluoranthene	<10	<10
Benzo(k)fluoranthene	<10	<10
Benzo(a)pyrene	<10	<10
*Benzo(a)pyrene	<0.23	<0.23
Indeno(1,2,3-cd) pyrene	<10	<10
Dibenz(a,h)anthracene	<10	<10
Benzo(g,h,i)perylene	<10	<10

Notes:

* - Analyzed by Method 8310

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

J - Indicates an estimated value

IR Site 10 NASJRB, PA

Blanks Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10FB01052003 0305L457 5/20/2003 ug/L	10RB01052003 0305L457 5/20/2003 ug/L
Metals		
Aluminum	35.5 B	45.2 B
Antimony	<2.2	<2.2
Arsenic	<3.3	<3.3
Barium	0.42	0.55
Beryllium	0.28 B	0.32 B
Cadmium	<0.4	<0.4
Calcium	45.6 B	75.3 B
Chromium	<1	<1
Cobalt	<1	<1
Copper	<0.6	<0.6
Iron	<25.8	53.6
Lead	<2.3	<2.3
Magnesium	9.8	17.9
Manganese	1.2 B	0.47 B
Mercury	<0.1 L	<0.1 L
Nickel	<1.3	<1.3
Potassium	<40	<40
Selenium	<4.2	<4.2
Silver	<1.2	<1.2
Sodium	45.4 B	136
Thallium	<4.5	<4.5
Vanadium	0.25 B	<0.1
Zinc	2.9 J	2.4 J

Notes:

- < - Indicates that the parameter was not detected at or above the reported limit.
The associated numerical value is the sample detection limit.
- B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the the Contract Required Detection Limit (CRDL).
- L- Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- J- Estimated value.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW01 (NFFW-1) 0402L909 2/24/2004 ug/L	10MW2R (NFFW-2R) 0402L857 2/19/2004 ug/L	10MW03 (NFFW-3) 0402L883 2/20/2004 ug/L	10MW04 (NFFW-4) 0402L890 2/23/2004 ug/L	10MW05 (NFFW-5) 0402L890 2/23/2004 ug/L	10MW06 (NFFW-6) 0402L890 2/23/2004 ug/L	10MW07 (NFFW-7) 0402L909 2/24/2004 ug/L	10MW08 (NFFW-8) 0402L909 2/24/2004 ug/L	10MW09 (NFFW-9) 0402L917 2/25/2004 ug/L	10MW10 (NFFW-10) 0402L909 2/24/2004 ug/L	10MW12 (NFFW-12) 0402L857 2/19/2004 ug/L	10MW14 (NFFW-14) 0402L857 2/19/2004 ug/L	10MW15 (NFFW-15) 0402L909 2/24/2004 ug/L	10MW16 (NFFW-16) 0402L857 2/19/2004 ug/L
VOC	*MSC													
Chloromethane	3 H	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bromomethane	10 H	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl Chloride	2 M	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	900 G	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Methylane Chloride	5 M	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Acetone	10,000 G	<5	<5	<5	<5	<5	0.4 B	<2	<2	<2	<2	<2	<2	<2
Carbon Disulfide	4,100 N	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	7 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	110 N	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethene (total)	**70 M/100 M	<1	<1	<1	0.3 J	<1	<1	<1	<1	0.3 J	<1	<1	<1	<1
Chloroform	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Butanone	5,800 N	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	200 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	26 G	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.2 J	<1
1,1,2-Trichloroethane	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	5 M	0.7 J	0.7 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	26 G	<1	<1	<1	<1	0.2 J	0.2 J	0.5 J	0.1 J	<1	0.5 J	0.5 J	<1	0.5 J
Bromoform	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-Methyl-2-pentanone	410 N	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	5 M	<1	<1	<1	<1	<1	<1	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	0.3 H	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene	1,000 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	700 M	0.2 J	0.8 J	<1	<1	<1	<1	<1	0.3 J	<1	<1	<1	<1	<1
Styrene	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	4
Xylene (total)	10,000 M	<1	0.4 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane	0.05 M	<0.019	<0.019	<0.019	<0.019	<0.019	<0.020	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Isopropylbenzene	2,300N	0.8 J	6	<1	<1	<1	3	2	17J	3	<1	<1	<1	31
1,3,5-Trimethylbenzene	35 N	<1	3	<1	<1	<1	<1	0.1 J	<1	<1	<1	0.8 J	<1	<1
1,2,4-Trimethylbenzene	35 N	<1	4	<1	<1	<1	<1	2	0.9 J	<1	<1	2	<1	1

Notes:
 *MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS < 2500 mg/L.
 MSC H- Lifetime health advisory level
 MSC M- Maximum Contaminant Level
 MSC G- Ingestion
 MSC N- Inhalation
 **70- cis and 100-trans
 <- Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.
 NA- Not Analyzed
 NC- No Criteria
 J- Indicates an estimated value.
 K- Analyte present. Reported value may be biased high. Actual value is expected to be lower.
 B- This flag is used when the analyte is found in the associated blank as well as in the sample.
 It indicates possible/probable blank contamination.
 R- Unusable results. Analyte may or may not be present in sample.
 Concentrations above calculated MSC are bolded and shaded.

EA Engineering, Science, and Technology, Inc.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW17 (NFFW-17) 0402L909 2/24/2004 ug/L	10MW18 (NFFW-18) 0402L909 2/24/2004 ug/L	10MW19 (NFFW-19) 0402L890 2/23/2004 ug/L	10MW20 (NFFW-20) 0402L925 2/27/2004 ug/L	10MW21 (NFFW-21) 0402L909 2/24/2004 ug/L	10MW24 0402L857 2/19/2004 ug/L	10MW25 0402L925 2/27/2004 ug/L	10MW26 0402L909 2/24/2004 ug/L	10MW27 0402L925 2/27/2004 ug/L	10MWDUP (10MW27) 0402L883 2/20/2004 ug/L	10MW28 0402L883 2/20/2004 ug/L
VOC	*MSC										
Chloromethane	3 H	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bromomethane	10 H	<2J	<2	<2	<2	<2J	<2	<2J	<2JJ	<2	<2
Vinyl Chloride	2 M	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	900 G	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Methylane Chloride	5 M	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Acetone	10,000 G	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Disulfide	4,100 N	<5	<5	<5	<5	6B	<5	<5	<5	<5	<5
1,1-Dichloroethene	7 M	<1	<1	<1	<1	0.3 J	<1	<1	<1	<1	<1
1,1-Dichloroethane	110 N	<1	<1	<1	<1	<1	0.1 J	<1	4	3	0.1 J
1,2-Dichloroethene (total)	**70 M/100 M	<1	<1	<1	<1	<1	1	<1	0.7 J	0.8 J	0.2 J
Chloroform	100 M	<1	<1	<1	<1	0.2 J	<1	<1	0.2 J	0.1 J	0.2 J
1,2-Dichloroethane	5 M	<1	<1	<1	<1	<1	<1	0.4 J	0.2 J	0.1 J	0.2 J
2-Butanone	5,800 N	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	200 M	<1	<1	<1	<1	<1	<5	<5	<5	<5	<5
Carbon Tetrachloride	5 M	<1	<1	<1	<1	<1	<1	<1	8	5	0.5 J
Bromodichloromethane	100 M	<1	<1	<1	<1	<1	<1	0.1 J	<1	0.2 J	<1
1,2-Dichloropropane	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	26 G	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5 M	<1	<1	<1	<1	<1	<1	<1	0.2 J	0.1 J	<1
Dibromochloromethane	NC	<1	<1	<1	<1	<1	<1	0.4 J	<1	<1	2
1,1,2-Trichloroethane	5 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	5 M	0.3 J	<1	<1	0.1 J	<1	5J	<1	<1	<1	<1
Trans-1,3-Dichloropropene	26 G	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-Methyl-2-pentanone	410 N	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	5 M	<1	<1	<1	<1	<1	<1	0.4 J	<1	<1	3
1,1,2,2-Tetrachloroethane	0.3 H	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene	1,000 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	100 M	0.1 J	<1	<1	0.1 J	<1	0.3 J	<1	<1	<1	<1
Ethylbenzene	700 M	<1	<1	<1	0.5 J	<1	2J	<1	<1	<1	<1
Styrene	100 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene (total)	10,000 M	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane	0.05 M	<0.019	<0.019	<0.019	<0.020	<0.019	<0.019	<0.019	<0.019	<0.020	<0.020
Isopropylbenzene	2,300N	11	<1	0.3 J	1	<1	0.8 J	<1	<1	<1	<1
1,3,5-Trimethylbenzene	35 N	<1	<1	<1	<1	<1	5J	<1	<1	<1	<1
1,2,4-Trimethylbenzene	35 N	<1	<1	<1	2	<1	<1	<1	<1	<1	<1

IR Site 10 NASJRB

Final Report, Request for No Further Action

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW01 (NFFW-1) 0402L909 2/23/2004 ug/L	10MW01 (NFFW-1) 0402L923 2/19/2004 ug/L	10MW2R (NFFW-2R) 0402L857 2/23/2004 ug/L	10MW03 (NFFW-3) 0402L883 2/23/2004 ug/L	10MW04 (NFFW-4) 0402L890 2/23/2004 ug/L	10MW05 (NFFW-5) 0402L890 2/23/2004 ug/L	10MW06 (NFFW-6) 0402L890 2/23/2004 ug/L	10MW07 (NFFW-7) 0402L909 2/23/2004 ug/L	10MW08 (NFFW-8) 0402L909 2/23/2004 ug/L	10MW09 (NFFW-9) 0402L917 2/23/2004 ug/L	10MW10 (NFFW-10) 0402L909 2/23/2004 ug/L	10MW12 (NFFW-12) 0402L857 2/19/2004 ug/L	10MW14 (NFFW-14) 0402L857 2/19/2004 ug/L	10MW15 (NFFW-15) 0402L909 2/23/2004 ug/L	10MW16 (NFFW-16) 0402L857 2/19/2004 ug/L	10MW17 (NFFW-17) 0402L909 2/23/2004 ug/L
SVOC	*MSC															
Phenol	4.000 H	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
**bis(2-Chloroethyl)ether	0.55 N	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chlorophenol	40 H	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	600 H	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	75 M	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	600 M	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Naphthol	5100 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,2'-oxybis[1-Chloropropane]	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Methylphenol	510 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
**N-Nitroso-di-n-propylamine	0.37 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachloroethane	1 H	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrobenzene	51 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isophorone	100 H	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Nitrophenol	820 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	2000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol	20 H	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	70 M	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	100 H	<10	NA	1 J	<10	<10	<10	4 J	<10	<10	<10	<10	0.6 J	<10	79	2 J
4-Chloroaniline	410 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	1 H	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
4-Chloro-3-methylphenol	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	2000 G	<10	NA	0.5 JB	<10	<10	<10	7 J	<10	<10	<10	<10	<10	<10	88	1 J
Hexachlorocyclopentadiene	50 M	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol	31 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	10,000 G	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Chloronaphthalene	8200 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
**2-Nitroaniline	5.8 G	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Dimethylphthalate	NC	<10	NA	<10	<10	0.7 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acenaphthylene	3800 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	100 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
**3-Nitroaniline	5.8 G	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Acenaphthene	3800 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrophenol	41 N	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
4-Nitrophenol	60 H	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Dibenzofuran	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	0.5 J	<10	<10	0.6 J	<10
**2,4-Dinitrotoluene	8.4 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dinitrophenol	5000 H	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluorene	1900 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
**4-Nitroaniline	5.8 G	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
4,6-Dinitro-2-methylphenol	NC	<25	NA	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
N-Nitrosodiphenylamine (1)	530 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl ether	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	1 M	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Pentachlorophenol	1 M	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	1100 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Anthracene	66 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbazole	130G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	5 J	<10
Di-n-butylphthalate	10,000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluoranthene	260 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pyrene	130 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	2700 S	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
**1,3-Dichlorobenzidine	5.8 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	3.6 G	<3.54	NA	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54
Chrysene	1.9 S	<1.90	NA	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90
bis(2-Ethylhexyl)phthalate	6 M	<6	NA	1 J	0.7 J	<6	<6	0.7 J	1 J	<6	<6	<6	<6	<6	0.9 J	1 J
Di-n-octylphthalate	2000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	1.2 S	<1.20	NA	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20
**Benzo(k)fluoranthene	0.55 S	<0.55	NA	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55
Benzo(a)pyrene	0.2 M	<0.20	NA	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	3.6 G	<3.54	NA	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54
**Benzo(g,h)anthracene	0.35 G	<0.35	NA	<0.35</												

IR Site 10, NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW18 (NFFW-18) 0402L909 2/24/2004 ug/L	10MW18 (NFFW-18) 0402L925 2/27/2004 ug/L	10MW19 (NFFW-19) 0402L890 2/23/2004 ug/L	10MW20 (NFFW-20) 0402L925 2/27/2004 ug/L	10MW21(NFFW-21) 0402L909 2/24/2004 ug/L	10MW24 0402L857 2/19/2004 ug/L	10MW25 0402L925 2/27/2004 ug/L	10MW26 0402L909 2/24/2004 ug/L	10MW27 0402L925 2/27/2004 ug/L	10MW28 0402L883 2/26/2004 ug/L
SVOC	*MSC									
Phenol	4.000 H	<10	NA	<10	<10	<10	2 J	<10	<10	<10
**bis(2-Chloroethyl)ether	0.55 N	<10	NA	<10	<10	<10	<10	<10	<10	<10
2-Chlorophenol	40 H	<10	NA	<10	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	600 H	<10	NA	<10	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	75 M	<10	NA	<10	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	600 M	<10	NA	<10	<10	<10	<10	<10	<10	<10
2-Methylphenol	5100 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,2'-oxybis[1-Chloropropane]	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
4-Methylphenol	510 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
**N-Nitroso-di-n-propylamine	0.37 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Hexachloroethane	1 H	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrobenzene	51 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Isophorene	100 H	<10	NA	<10	<10	<10	<10	<10	<10	<10
2-Nitrophenol	820 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	2000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol	20 H	<10	NA	<10	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	70 M	<10	NA	<10	<10	<10	<10	<10	<10	<10
Naphthalene	100 H	<10	NA	<10	<10	<10	<10	<10	<10	<10
4-Chloroaniline	410 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	1 H	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
4-Chloro-3-methylphenol	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	2000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene	50 M	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol	31 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	10,000 G	<25	NA	<25	<25	<25	<25	<25	<25	<25
2-Chloronaphthalene	8200 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
**2-Nitroaniline	5.8 G	<25	NA	<25	<25	<25	<25	<25	<25	<25
Dimethylphthalate	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
Acenaphthylene	3800 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,5-Dinitrotoluene	100 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
**3-Nitroaniline	5.8 G	<25	NA	<25	<25	<25	<25	<25	<25	<25
Acenaphthene	3800 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrophenol	41 N	<25	NA	<25	<25	<25	<25	<25	<25	<25
4-Nitrophenol	60 H	<25	NA	<25	<25	<25	<25	<25	<25	<25
Obenzofuran	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
**2,4-Dinitrotoluene	8.4 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Diethylphthalate	5000 H	<10	NA	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenyl-phenylether	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
Fluorene	1900 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
**4-Nitroaniline	5.8 G	<25	NA	<25	<25	<25	<25	<25	<25	<25
4,6-Dinitro-2-methylphenol	NC	<25	NA	<25	<25	<25	<25	<25	<25	<25
N-Nitrosodiphenylamine (1)	530 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
4-Bromophenyl-phenylether	NC	<10	NA	<10	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	1 M	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Pentachlorophenol	1 M	NA	<0.91	<0.91 UL	<0.91	<0.91	<0.91	<0.91	<0.91	<0.91
Phenanthrene	1100 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
Anthracene	66 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
Carbazole	130G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	10,000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Fluoranthene	260 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
Pyrene	130 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	2700 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
**3,3'-Dichlorobenzidine	5.8 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	3.8 G	<3.54	NA	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54
Chrysene	1.9 S	<1.90	NA	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90
bis(2-Ethylhexyl)phthalate	6 M	<6	NA	<6	<6	<6	<6	<6	<6	<6
Di-n-octyl phthalate	2000 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	1.2 S	<1.20	NA	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20
**Benzo(f)fluoranthene	0.55 S	<10	NA	<10	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	0.2 M	<0.20	NA	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	3.8 G	<3.54	NA	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54	<3.54
**Dibenz(a,h)anthracene	0.38 G	<10	NA	<10	<10	<10	<10	<10	<10	<10
Benzo(a,h)perylene	0.25 G	<0.25	NA	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25

EA Engineering, Science, and Technology, Inc.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW01 (NFFW-1) 0402L909 2/24/2004 ug/L	10MW2R (NFFW-2R) 0402L857 2/19/2004 ug/L	10MW03 (NFFW-3) 0402L883 2/20/2004 ug/L	10MW04 (NFFW-4) 0402L890 2/23/2004 ug/L	10MW05 (NFFW-5) 0402L890 2/23/2004 ug/L	10MW06 (NFFW-6) 0402L890 2/23/2004 ug/L	10MW07 (NFFW-7) 0402L909 2/24/2004 ug/L	10MW08 (NFFW-8) 0402L909 2/24/2004 ug/L	10MW09 (NFFW-9) 0402L817 2/25/2004 ug/L	10MW10 (NFFW-10) 0402L909 2/24/2004 ug/L	10MW12 (NFFW-12) 0402L857 2/19/2004 ug/L	10MW14 (NFFW-14) 0402L857 2/19/2004 ug/L	10MW15 (NFFW-15) 0402L909 2/24/2004 ug/L	10MW16 (NFFW-16) 0402L857 2/19/2004 ug/L	10MW17 (NFFW-17) 0402L909 2/24/2004 ug/L	
Metals	*MSC															
Aluminum	**200	48.4 B	40.3B	35.2	26.3 B	30.8 B	38.0 B	37.7 B	44.4 B	27.5	36.9 B	28.5B	30.0B	40.6 B	30.6B	43.1 B
Antimony	8 M	<0.68	1.2K	1.4	1.2	1.4	0.70	<0.68	0.75	<0.68	0.99	0.90K	0.79K	<0.68	1.6	<0.68
Arsenic	50 M	0.9 B	<0.85	<0.85	<0.85	<0.85	2.2 B	<0.85	9.1	2.2B	<0.85	3.0B	<0.85	<0.85	5.4B	1.5 B
Barium	2,000 M	1,000	1,180	306	281	374	665	391	1,240	900	292	1,040	539	365	1,590	823
Beryllium	4 M	0.14	<0.05	<0.05	0.11	0.07	0.08	0.07	0.07	<0.05	0.09	<0.05	0.06K	0.08	<0.05	0.07
Cadmium	5 M	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	0.13	<0.10	0.11	<0.10
Calcium	NC	51,800	40,300	38,100	44,500	67,400	54,900	71,700	34,800	58,100	48,400	39,800	50,300	25,100	47,400	28,700
Chromium	***100 M	<0.12	<0.12	0.76	0.90 B	0.56 B	0.99 B	1.4 B	19.3	0.44B	1.1 B	1.8	<0.12	0.79 B	<0.12	<0.12
Cobalt	2,000 G	11.3	<0.15	<0.15	<0.15	<0.15	0.29 B	1.4 B	8.9	7.6	<0.15	0.40	1.7	<0.15	<0.15	<0.15
Copper	1,000 M	0.71 B	1.2	1.0	1.8 B	0.91 B	0.82 B	0.91 B	1.2	<0.30	1.8	1.6	0.51 B	0.84	0.60 B	
Iron	**300	5,930	18,000	24.3	11.3 B	11.3 B	16,200	4,000	7,580	20,500	8.4 B	23,900	3,300	13.8 B	25,500	14,900
Lead	5 M	1.8 B	<0.50	<0.50	<0.50	<0.50	1.3	5.8 B	1.5 B	0.62	<0.50	2.0	4.6	<0.50	3.3	1.8 B
Magnesium	NC	23,600	20,300	17,900	18,300	14,800	32,500	21,100	12,500	25,300	20,200	25,100	18,100	11,400	26,000	13,100
Manganese	**50	22,000	11,700	9.3	2.1	1.5	13,800	680	11,700	20,900	1.3	16,600	23,300	1.8	11,800	14,800
Mercury	2 M	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nickel	100 H	2.0	0.36K	1.1	2.3	0.72 B	1.1 B	1.1	14.0	2.5	4.2	0.52	0.28K	1.6	0.62	<0.25
Potassium	NC	1360 J	6,640	6,850	2,510 J	4,590 J	4,720 J	2,840 J	1,640 J	1,920 J	1,920 J	1,960	3,230	2,800 J	2,930	1,530 J
Selenium	50 M	1.5	<0.85	2.1	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	1.6	<0.85	<0.85	<0.85	<0.85
Silver	100 H	0.32	0.25K	0.16 K	<0.15	<0.15	0.27 K	<0.15	0.16 K	0.81	<0.15	0.37	0.84K	<0.15	0.27K	<0.15
Sodium	NC	13,800	18,300	33,500	24,400	8420	10,400	6,830	18,400	33,800	40,600	28,600	16,200	21,100	13,400	13,000
Thallium	2 M	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	720 G	<0.12	<0.12	<0.12	<0.12	0.27	<0.12	0.53	0.14	0.13	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Zinc	2,000 H	8.4 J	119	145	96.1 J	114 J	69.9 J	13.9 J	112 J	93.1	168 J	105	28.3B	121 J	148	47.5 J

Notes:
 *MSC-calculated Medium-Specific Concentrations for Groundwater, Non-residential, Used Aquifer with TDS <= 2500 mg/L
 MSC H- Lifetime health advisory level
 MSC M- Maximum Contaminant Level
 MSC G- ingestion
 **- Secondary Maximum Contaminant Level (SMCL)
 ***- Total Chromium MSC
 ****- Duplicate analysis not within control limits.
 <- Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.
 E- The reported value is estimated because of the presence of interference.
 B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the the Contract Required Detection Limit (CRDL).
 J- Estimated value.
 K- Analyte present. Reported value may be biased high. Actual value is expected to be lower.
 L- Analyte present. Reported value may be biased low. Actual value is expected to be higher.
 N-spiked sample recovery is not within control limits.
 NC- No Criteria
 Concentrations above calculated MSC and/or SMCL are bolded and shaded.

IR Site 10 NASJRB

Final Report, Request for No Further Action

EA Engineering, Science, and Technology, Inc.

IR Site 10 NASJRB, PA

Groundwater Analytical Summary

Sample ID Lab Batch Number Sample Date Units	10MW18 (NFFW-18) 0402L909 2/24/2004 ug/L	10MW19 (NFFW-19) 0402L890 2/23/2004 ug/L	10MW20 (NFFW-20) 0402L925 2/27/2004 ug/L	10MW21 (NFFW-21) 0402L909 2/24/2004 ug/L	10MW24 04021857 2/19/2004 ug/L	10MW25 0402L925 2/27/2004 ug/L	10MW26 0402L909 2/24/2004 ug/L	10MW27 0402L925 2/27/2004 ug/L	10MWDUP (10MW27) 0402L883 2/20/2004 ug/L	10MW28 0402L883 2/20/2004 ug/L
Metals	*MSC									
Aluminum	**200	45.0 B	24.2 B	9.1	35.0 B	2,710	22.6	43.8 B	<8.6	19.1
Antimony	6 M	0.72	<0.68	0.94	1.1	1.8	<0.68	0.84	0.98	0.87 K
Arsenic	50 M	1.1 B	2.0 B	0.94 B	<0.85	<0.85	<0.85	<0.85	<0.85	1.1 B
Barium	2,000 M	594	546	761	382	341	444	505	387	217
Beryllium	4 M	0.09	0.10	<0.05	0.07	<0.05	<0.05	0.06	<0.05	0.18
Cadmium	5 M	<0.10	0.11 B	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10
Calcium	NC	43,000	42,400	45,600	39,700	30,300	67,300	67,800	23,100	25,800
Chromium	***100 M	<0.12	0.40 B	0.52 B	1.1 B	23.3	0.46 B	0.79 B	1.3	1.5
Cobalt	2,000 G	19.4	2.8	<0.15	<0.15	1.7	0.37	<0.15	<0.15	<0.15
Copper	1,000 M	0.44 B	0.74 B	0.80	0.51 B	4.6	0.47 K	<0.30	0.61	1.6
Iron	**300	4,040	6,890	10,400	7.0 B	33.3	68.1	17.5 B	14.6 B	23.6
Lead	5 M	1.1 B	<0.50	2.6	<0.50	4.4	<0.50	<0.50	<0.50	<0.50
Magnesium	NC	18,400	14,900	18,700	19,200	66.4	13,600	20,100	8,740	9,380
Manganese	**50	12,100	10,600	15,400	0.63	0.62B	71.8	3.4	8.3	8.2
Mercury	2 M	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nickel	100 H	13.0	2.6	<0.25	0.89	3.2	1.1	0.93	4.9	5.2
Potassium	NC	1,830 J	2,270 J	3,720 J	5,760 J	44,800	1,460 J	2,360 J	1,490 J	1,650
Selenium	50 M	<0.85	<0.85	<0.85	2.1	<0.85	<0.85	1.4	<0.85	1.2
Silver	100 H	<0.15	0.19 K	0.37	<0.15	0.20K	<0.15	<0.15	<0.15	<0.15
Sodium	NC	23,900	20,900	17,200	34,200	86,800	19,200	19,500	21,800	21,900
Thallium	2 M	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	720 G	<0.12	<0.12	0.29	<0.12	2.4	0.41	0.46	<0.12	<0.12
Zinc	2,000 H	102 J	9.6 J	46.4	188 J	14.8B	108	123 J	187	52.9

IR Site 10 NASJRB

Final Report, Request for No Further Action

IR Site 10 NASJRB, PA

Blanks Analytical Summary

Sample ID Lab Batch Number Sample Date Units	TB-021904 0402L857 - ug/L	FB-021904 0402L857 2/19/2004 ug/L	TB-022004 0402L883 - ug/L	TB-022304 402L870 - ug/L	TB-022404 0402L909 - ug/L	TB-022504 0402L917 - ug/L	TB-022704 0402L925 - ug/L	RB-022704 0402L925 2/27/2004 ug/L
VOC								
Chloromethane	<2	<2	<2	<2	<2	<2	<2	<2
Bromomethane	<2	<2	<2	<2	<2	<2	<2 J	<2 J
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	<2	<2	<2	<2	<2	<2	<2	<2
Methylene Chloride	9	<2	7	8	7	8	9 J	<2
Acetone	<5	11	<5	<5	<5	<5	<5	<5
Carbon Disulfide	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethene (total)	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	<1	1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
2-Butanone	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	<1	<1	<1	<1	<1	<1	<1	<1
4-Methyl-2-pentanone	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	<1	<1	<1	<1	<1	<1	<1	<1
Xylene (total)	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1

Notes:

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

R- Unusable result. Analyte may or may not be present in the sample.

J- Indicates an estimated value.

B- This flag is used when the analyte is found in the associated blank as well as in the sample.
It indicates possible/probable blank contamination.

IR Site 10 NASJRB, PA

Blanks Analytical Summary

Sample ID Lab Batch Number Sample Date Units	FB-021904 0402L857 2/19/2004 ug/L	RB-022704 0402L925 2/27/2004 ug/L
SVOC		
Phenol	<10	<10
bis(2-Chloroethyl)ether	<10	<10
2-Chlorophenol	<10	<10
1,3-Dichlorobenzene	<10	<10
1,4-Dichlorobenzene	<10	<10
1,2-Dichlorobenzene	<10	<10
2-Methylphenol	<10	<10
2,2'-oxybis(1-Chloropropane)	<10	<10
4-Methylphenol	<10	<10
N-Nitroso-di-n-propylamine	<10	<10
Hexachloroethane	<0.050	<0.050
Nitrobenzene	<10	<10
Isophorone	<10	<10
2-Nitrophenol	<10	<10
2,4-Dimethylphenol	<10	<10
bis(2-Chloroethoxy)methane	<10	<10
2,4-Dichlorophenol	<10	<10
1,2,4-Trichlorobenzene	<10	<10
Naphthalene	<10	<10
4-Chloroaniline	<10	<10
Hexachlorobutadiene	<0.050	<0.050
4-Chloro-3-methylphenol	<10	<10
2-Methylnaphthalene	<10	<10
Hexachlorocyclopentadiene	<10	<10
2,4,6-Trichlorophenol	<10	<10
2,4,5-Trichlorophenol	<25	<26
2-Chloronaphthalene	<10	<10
2-Nitroaniline	<25	<26
Dimethylphthalate	<10	<10
Acenaphthylene	<10	<10
2,6-Dinitrotoluene	<10	<10
3-Nitroaniline	<25	<26
Acenaphthene	<10	<10
2,4-Dinitrophenol	<25	<26
4-Nitrophenol	<25	<26
Dibenzofuran	<10	<10
2,4-Dinitrotoluene	<10	<10
Diethylphthalate	<10	<10
4-Chlorophenyl-phenylether	<10	<10
Fluorene	<10	<10
4-Nitroaniline	<25	<26
4,6-Dinitro-2-methylphenol	<25	<26
N-Nitrosodiphenylamine (1)	<10	<10
4-Bromophenyl-phenylether	<10	<10
Hexachlorobenzene	<0.050	<0.050
Pentachlorophenol	<0.91	<0.91
Phenanthrene	<10	<10
Anthracene	<10	<10
Carbazole	<10	<10
Di-n-butylphthalate	<10	<10
Fluoranthene	<10	<10
Pyrene	<10	<10
Butylbenzylphthalate	<10	<10
3,3'-Dichlorobenzidine	<10	<10
Benzo(a)anthracene	<3.54	<3.54
Chrysene	<1.90	<1.90
bis(2-Ethylhexyl)phthalate	<6	9 B
Di-n-octyl phthalate	<10	<10
Benzo(b)fluoranthene	<1.20	<1.20
Benzo(k)fluoranthene	<10	<10
Benzo(a)pyrene	<0.20	<0.20
Indeno(1,2,3-cd) pyrene	<3.54	<3.54
Dibenz(a,h)anthracene	<10	<10
Benzo(g,h,i)perylene	<0.25	<0.25

Notes:

- < - Indicates that the parameter was not detected at or above the reported limit.
The associated numerical value is the sample detection limit.
- B- This flag is used when the analyte is found in the associated blank as well as in the sample.
It indicates possible/probable blank contamination.
- J- Indicates an estimated value.

IR Site 10 NASJRB, PA

Blanks Analytical Summary

Sample ID Lab Batch Number Sample Date Units	FB-021904 0402L857 2/19/2004 ug/L	RB-022704 0402L925 2/27/2004 ug/L
Metals		
Aluminum	12.4 K	<8.6
Antimony	<0.68	<0.68
Arsenic	<0.85	<0.85
Barium	0.27 B	0.12 B
Beryllium	<0.05	<0.05
Cadmium	<0.10	<0.10
Calcium	46.4	26.0
Chromium	0.20 B	0.27
Cobalt	<0.15	<0.15
Copper	<0.30	<0.30
Iron	2.8	6.4
Lead	<0.50	<0.50
Magnesium	9.9 B	3.5 B
Manganese	0.42	0.08 B
Mercury	<0.10	<0.10
Nickel	<0.25	<0.25
Potassium	11.2	17.8 B
Selenium	<0.85	<0.85
Silver	<0.15	<0.15
Sodium	87.7 B	133
Thallium	<1.0	<1.0
Vanadium	<0.12	<0.12
Zinc	5.9	3.0 B

Notes:

*- Duplicate analysis not within control limits.

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the the Contract Required Detection Limit (CRDL).

K- Analyte present. Reported value may be biased high. Actual value is expected to be lower.

J- Estimated value.

IR Site 10 NASJRB, PA

Surface Soil Analytical Summary

Sample ID Lab Batch Number Sample Date Units	mg/kg	10SB270105 0305L388 5/9/2003 mg/kg	10SB280105 0305L388 5/9/2003 mg/kg
VOC	*MSC		
Chloromethane	0.3	<0.013	<0.014
Bromomethane	1	<0.013	<0.014
Vinyl Chloride	0.2	<0.013	<0.014
Chloroethane	90	<0.013	<0.014
Methylene Chloride	0.5	<0.006	<0.007
Acetone	1000	0.044	0.021
Carbon Disulfide	410	<0.006	<0.007
1,1-Dichloroethene	0.7	<0.006	<0.007
1,1-Dichloroethane	11	<0.006	<0.007
1,2-Dichloroethene (total)	**7/10	<0.006	<0.007
Chloroform	10	<0.006	<0.007
1,2-Dichloroethane	0.5	<0.006	<0.007
2-Butanone	580	<0.013	<0.014
1,1,1-Trichloroethane	20	<0.006	<0.007
Carbon Tetrachloride	0.5	<0.006	<0.007
Bromodichloromethane	10	<0.006	<0.007
1,2-Dichloropropane	0.5	<0.006	<0.007
cis-1,3-Dichloropropene	2.6	<0.006	<0.007
Trichloroethene	0.5	<0.006	<0.007
Dibromochloromethane	NC	<0.006	<0.007
1,1,2-Trichloroethane	0.5	<0.006	<0.007
Benzene	0.5	<0.006	<0.007
Trans-1,3-Dichloropropene	2.6	<0.006	<0.007
Bromoform	10	<0.006	<0.007
4-Methyl-2-pentanone	41	<0.013	<0.014
2-Hexanone	NC	<0.013	<0.014
Tetrachloroethene	0.5	<0.006	<0.007
1,1,2,2-Tetrachloroethane	0.03	<0.006	<0.007
Toluene	100	<0.006	<0.007
Chlorobenzene	10	<0.006	<0.007
Ethylbenzene	70	<0.006	<0.007
Styrene	24 E	<0.006	<0.007
Xylene (total)	1,000	<0.006	<0.007
1,2-Dibromoethane	0.005	<0.006	<0.007
Isopropylbenzene	1,600 E	<0.006	<0.007

Notes:

***MSC**-calculated Medium-Specific Concentrations; Direct Contact Numeric Values for Non-Residential Surface Soil or Soil to Groundwater Numeric Values for Non-Residential Used Aquifers with TDS less than or equal to 2500 for either 100 X Groundwater MSC or Generic Value

**7- cis and 10-trans

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

NC- No Criteria

E- Number calculated by the soil to groundwater equation in Section 250.308

Concentrations above calculated MSC are bolded and shaded

IR Site 10 NASJRB, PA

Subsurface Soil Analytical Summary

Sample ID Lab Batch Number Sample Date Units	mg/kg	10SB240204 0305L323 5/1/2003 mg/kg	10SB241214 0305L323 5/1/2003 mg/kg	10SB250204 0305L337 5/2/2003 mg/kg	10SB250608 0305L337 5/2/2003 mg/kg	10DUP01 (10SB250608) 0305L337 5/2/2003 mg/kg	10SB260204 0305L337 5/2/2003 mg/kg	10SB261416 0305L337 5/2/2003 mg/kg	10SB270810 0305L388 5/9/2003 mg/kg	10SB280608 0305L388 5/9/2003 mg/kg
VOC	*MSC									
Chloromethane	0.3	<0.011	<0.014	<0.011	<0.011	<0.014	<0.011	<0.012	<0.013	<0.014
Bromomethane	1	<0.011	<0.014	<0.011	<0.011	<0.014	<0.011	<0.012	<0.013	<0.014
Vinyl Chloride	0.2	<0.011	<0.014	<0.011	<0.011	<0.014	<0.011	<0.012	<0.013	<0.014
Chloroethane	90	<0.011	<0.014	<0.011	<0.011	<0.014	<0.011	<0.012	<0.013	<0.014
Methylene Chloride	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	0.002 B	<0.006	<0.007
Acetone	1000	0.016	0.039	<0.011	0.033	0.056	<0.011	<0.012	0.038	0.010 J
Carbon Disulfide	410	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,1-Dichloroethene	0.7	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,1-Dichloroethane	11	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,2-Dichloroethene (total)	**7/10	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Chloroform	10	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,2-Dichloroethane	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
2-Butanone	580	<0.011	<0.014	<0.011	0.004 J	<0.014	<0.011	<0.012	<0.013	<0.014
1,1,1-Trichloroethane	20	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Carbon Tetrachloride	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Bromodichloromethane	10	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,2-Dichloropropane	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
cis-1,3-Dichloropropene	2.6	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Trichloroethene	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Dibromochloromethane	NC	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,1,2-Trichloroethane	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Benzene	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Trans-1,3-Dichloropropene	2.6	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Bromoform	10	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
4-Methyl-2-pentanone	41	<0.011	<0.014	<0.011	<0.011	<0.014	<0.011	<0.012	<0.013	<0.014
2-Hexanone	NC	<0.011	<0.014	<0.011	0.011	<0.014	<0.011	<0.012	<0.013	<0.014
Tetrachloroethene	0.5	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,1,2,2-Tetrachloroethane	0.03	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Toluene	100	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Chlorobenzene	10	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Ethylbenzene	70	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Styrene	24 E	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Xylene (total)	1,000	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
1,2-Dibromoethane	0.005	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007
Isopropylbenzene	1,600 E	<0.006	<0.007	<0.006	<0.006	<0.007	<0.006	<0.006	<0.006	<0.007

Notes:
MSC-calculated Medium-Specific Concentrations; Direct Contact Numeric Values for Non-Residential Subsurface Soil or Soil to Groundwater Numeric Values for Non-Residential Used Aquifers with TDS less than or equal to 2500 for either 100 X Groundwater MSC or Generic Value

**7- cis and 10-trans

- Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.

NC- No Criteria

J- Indicates an estimated value

E- Number calculated by the soil to groundwater equation in Section 250.308

B- Analyte is found in the associated blank as well as in the sample.

Concentrations above calculated MSC are bolded and shaded

IR Site 10 NASJRB, PA

Surface Soil Analytical Summary

Sample ID Lab Batch Number Sample Date Units	mg/kg	10SB270105 0305L388 5/9/2003 mg/kg	10SB280105 0305L388 5/9/2003 mg/kg
SVOC	*MSC		
Phenol	400	<0.41	<0.41
bis(2-Chloroethyl)ether	0.055	<0.41	<0.41
2-Chlorophenol	4.4 E	<0.41	<0.41
1,3-Dichlorobenzene	61 E	<0.41	<0.41
1,4-Dichlorobenzene	10 E	<0.41	<0.41
1,2-Dichlorobenzene	60	<0.41	<0.41
2-Methylphenol	510	<0.41	<0.41
2,2'-oxybis(1-Chloropropane)	NC	<0.41	<0.41
4-Methylphenol	51	<0.41	<0.41
N-Nitroso-di-n-propylamine	0.037	<0.41	<0.41
Hexachloroethane	0.56 E	<0.41	<0.41
Nitrobenzene	5.1	<0.41	<0.41
Isophorone	10	<0.41	<0.41
2-Nitrophenol	82	<0.41	<0.41
2,4-Dimethylphenol	200	<0.41	<0.41
bis(2-Chloroethoxy)methane	NC	<0.41	<0.41
2,4-Dichlorophenol	2	<0.41	<0.41
1,2,4-Trichlorobenzene	27 E	<0.41	<0.41
Naphthalene	25 E	<0.41	<0.41
4-Chloroaniline	52 E	<0.41	<0.41
Hexachlorobutadiene	1.2 E	<0.41	<0.41
4-Chloro-3-methylphenol	NC	<0.41	<0.41
2-Methylnaphthalene	8,000 E	<0.41	<0.41
Hexachlorocyclopentadiene	91 E	<0.41	<0.41
2,4,6-Trichlorophenol	8.9 E	<0.41	<0.41
2,4,5-Trichlorophenol	6,100 E	<1	<1
2-Chloronaphthalene	18,000 E	<0.41	<0.41
2-Nitroaniline	0.58	<1	<1
Dimethylphthalate	NC	<0.41	<0.41
Acenaphthylene	6,900 E	<0.41	<0.41
2,6-Dinitrotoluene	10	<0.41	<0.41
3-Nitroaniline	0.58	<1	<1
Acenaphthene	4,700 E	<0.41	<0.41
2,4-Dinitrophenol	4.1	<1	<1
4-Nitrophenol	6	<1	<1
Dibenzofuran	NC	<0.41	<0.41
2,4-Dinitrotoluene	0.84	<0.41	<0.41
Diethylphthalate	500	<0.41	<0.41
4-Chlorophenyl-phenylether	NC	<0.41	<0.41
Fluorene	3,800 E	<0.41	<0.41
4-Nitroaniline	0.58	<1	<1
4,6-Dinitro-2-methylphenol	NC	<1	<1
N-Nitrosodiphenylamine (1)	83 E	<0.41	<0.41
4-Bromophenyl-phenylether	NC	<0.41	<0.41
Hexachlorobenzene	0.96 E	<0.41	<0.41
Pentachlorophenol	5 E	<1	<1
Phenanthrene	10,000 E	<0.41	<0.41
Anthracene	350 E	<0.41	<0.41
Carbazole	83 E	<0.41	<0.41
Di-n-butylphthalate	4,100 E	<0.41	<0.41
Fluoranthene	3,200 E	0.024 J	<0.41
Pyrene	2,200 E	0.023 J	<0.41
Butylbenzylphthalate	10,000 C	<0.41	<0.41
3,3'-Dichlorobenzidine	32 E	<0.41	<0.41
Benzo(a)anthracene	110 G	<0.41	<0.41
Chrysene	230 E	<0.41	<0.41
bis(2-Ethylhexyl)phthalate	130 E	0.037 J	<0.41
Di-n-octyl phthalate	10,000 C	<0.41	<0.41
Benzo(b)fluoranthene	110 G	<0.41	<0.41
Benzo(k)fluoranthene	610 E	<0.41	<0.41
Benzo(a)pyrene	11G	<0.41	<0.41
Indeno(1,2,3-cd) pyrene	110 G	<0.41	<0.41
Dibenz(a,h)anthracene	11 G	<0.41	<0.41
Benzo(g,h,i)perylene	180 E	<0.41	<0.41

*MSC-calculated Medium-Specific Concentrations; Direct Contact Numeric Values for Non-Residential Surface Soil or Soil to Groundwater Numeric Values for Non-Residential Used Aquifers with TDS less than or equal to 2500 for either 100 X Groundwater MSC or Generic Value

< - Indicates that the parameter was not detected at or above the reported limit.
The associated numerical value is the sample detection limit.

NC- No Criteria

C- Cap

E- Number calculated by the soil to groundwater equation in Section 250.308

G- Ingestion

J- Indicates an estimated value

Concentrations above calculated *MSC are bolded and shaded.

IR Site 10 NASJRB, PA

Subsurface Soil Analytical Summary

Sample ID Lab Batch Number Sample Date Units	mg/kg	10SB240204 0305L323 5/1/2003 mg/kg	10SB241214 0305L323 5/1/2003 mg/kg	10SB250204 0305L337 5/2/2003 mg/kg	10SB250608 0305L337 5/2/2003 mg/kg	10DUP01 (10SB250608) 0305L337 5/2/2003 mg/kg	10SB260204 0305L337 5/2/2003 mg/kg	10SB261416 0305L337 5/2/2003 mg/kg	10SB270810 0305L388 5/9/2003 mg/kg	10SB280608 0305L388 5/9/2003 mg/kg
SVOC	*MSC									
Phenol	400	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
bis(2-Chloroethyl)ether	0.055	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2-Chlorophenol	4.4 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
1,3-Dichlorobenzene	61 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
1,4-Dichlorobenzene	10 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
1,2-Dichlorobenzene	60	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2-Methylphenol	510	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,2'-oxybis(1-Chloropropane)	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
4-Methylphenol	51	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
N-Nitroso-di-n-propylamine	0.037	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Hexachloroethane	0.56 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Nitrobenzene	5.1	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Isophorone	10	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2-Nitrophenol	82	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,4-Dimethylphenol	200	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
bis(2-Chloroethoxy)methane	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,4-Dichlorophenol	2	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
1,2,4-Trichlorobenzene	27 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Naphthalene	25 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
4-Chloroaniline	52 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Hexachlorobutadiene	1.2 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
4-Chloro-3-methylphenol	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2-Methylnaphthalene	8,000 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Hexachlorocyclopentadiene	91 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,4,6-Trichlorophenol	8.9 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,4,5-Trichlorophenol	6,100 E	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
2-Chloronaphthalene	18,000 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2-Nitroaniline	0.58	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
Dimethylphthalate	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Acenaphthylene	6,900 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,6-Dinitrotoluene	10	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
3-Nitroaniline	0.58	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
Acenaphthene	4,700 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,4-Dinitrophenol	4.1	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
4-Nitrophenol	6	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
Dibenzofuran	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
2,4-Dinitrotoluene	0.84	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Diethylphthalate	500	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	0.022 B	<0.41	<0.37
4-Chlorophenyl-phenylether	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Fluorene	3,800 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
4-Nitroaniline	0.58	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
4,6-Dinitro-2-methylphenol	NC	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
N-Nitrosodiphenylamine (1)	83 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
4-Bromophenyl-phenylether	NC	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Hexachlorobenzene	0.96 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Pentachlorophenol	5 E	<1	<0.98	<0.94	<0.99	<1	<0.94	<1	<1	<0.92
Phenanthrene	10,000 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Anthracene	350 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Carbazole	83 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Di-n-butylphthalate	4,100 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Fluoranthene	3,200 E	<0.4	<0.39	<0.38	0.037 J	0.031 J	0.031 J	<0.4	<0.41	<0.37
Pyrene	2,200 E	<0.4	<0.39	<0.38	0.027 J	0.029 J	0.031 J	<0.4	<0.41	<0.37
Butylbenzylphthalate	10,000 C	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
3,3'-Dichlorobenzidine	32 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Banzo(a)anthracene	320 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Chrysene	230 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
bis(2-Ethylhexyl)phthalate	130 E	0.021 J	<0.39	0.019 J	<0.4	0.038 J	0.04 J	<0.4	0.068 J	<0.37
Di-n-octyl phthalate	10,000 C	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Benzo(b)fluoranthene	170 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Benzo(k)fluoranthene	610 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Benzo(a)pyrene	46 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Indeno(1,2,3-cd) pyrene	28,000 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Dibenz(a,h)anthracene	160 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37
Benzo(g,h,i)perylene	180 E	<0.4	<0.39	<0.38	<0.4	<0.4	<0.38	<0.4	<0.41	<0.37

*MSC-calculated Medium-Specific Concentrations; Direct Contact Numeric Values for Non-Residential Subsurface Soil or Soil to Groundwater Numeric Values for Non-Residential Used Aquifers with TDS less than or equal to 2500 for either 100 X Groundwater MSC or Generic Value

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

NC- No Criteria

C- Cap

E- Number calculated by the soil to groundwater equation in Section 250.308

B- This flag is used when the analyte is found in the associated blank as well as the sample.

It indicates possible/probable blank contamination.

J- Indicates an estimated value

Concentrations above calculated MSC are bolded and shaded.

IR Site 10 NASJRB, PA

Surface Soil Analytical Summary Report

Sample ID Lab Batch Number Sample Date Units		10SB270105 0305L388 5/9/2003 mg/kg	10SB280105 0305L388 5/9/2003 mg/kg
Metals	*MSC		
Aluminum	190,000	18,200	20,000
Antimony	27	<0.22 L	<0.26 L
Arsenic	53	4.9	4.3
Barium	8200	58.2	88.2
Beryllium	320	0.69	0.9
Cadmium	38	<0.04	<0.05
Calcium	NC	6,620	596
Chromium	**190	25.9	28.8
Cobalt	200	8.5	8.8
Copper	36,000	10.9	8.7
Iron	190,000	27,300	30,700
Lead	450	11.2	11.1
Magnesium	NC	2,370	2,020
Manganese	190,000	542	530
Mercury	10	<0.02 L	<0.02 L
Nickel	650	14.1	14.8
Potassium	NC	1,320	1,220
Selenium	26	<0.43	<0.5
Silver	84	<0.12	<0.14
Sodium	NC	105	94.8
Thallium	14	<0.46	<0.54
Vanadium	20,000	41.4	43.4
Zinc	12,000	32.5	29.7

Notes:

*MSC-calculated Medium-Specific Concentrations; Direct Contact Numeric Values for Non-Residential Surface Soil or Soil to Groundwater Numeric Values for Non-Residential Used Aquifers with TDS less than or equal to 2500 for either 100 X Groundwater MSC or Generic Value

NC- No Criteria

**- Chromium IV calculated MSC

< - Indicates that the parameter was not detected at or above the reported limit.
 The associated numerical value is the sample detection limit.

B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL)

J- Indicates an estimated value.

K- Biased high

L- Biased low

Concentrations above calculated MSC are bolded and shaded

IR Site 10 NASJRB, PA

Subsurface Soil Analytical Summary

Sample ID Lab Batch Number Sample Date Units	mg/kg	10SB240204 0305L323 5/1/2003 mg/kg	10SB241214 0305L323 5/1/2003 mg/kg	10SB250204 0305L337 5/2/2003 mg/kg	10SB250608 0305L337 5/2/2003 mg/kg	10DUP01 (10SB250608) 0305L337 5/2/2003	10SB260204 0305L337 5/2/2003 mg/kg	10SB261416 0305L337 5/2/2003 mg/kg	10SB270810 0305L388 5/9/2003 mg/kg	10SB280608 0305L388. 5/9/2003 mg/kg
Metals	*MSC									
Aluminum	190,000	16,400	10,500	15,300	18,800	23,100	17,700	15,000	20,700	7,930
Antimony	27	<0.29 L	<0.29 L	<0.27 L	<0.28 L	0.28 L	<0.28 L	<0.29 L	<0.25 L	<0.23 L
Arsenic	150	4.8	1.9	3.9	6.3	5	4.7	5.9	2.2	0.9
Barium	8,200	66	127	166	93.2	90.4	69	294	210	46.6
Beryllium	320	0.87 J	1.1 J	1.3	0.95	0.98	0.88	2.6	0.88	0.33
Cadmium	38	<0.05	<0.05	0.09 B	<0.04	<0.04	<0.04	0.06 B	<0.05	<0.04
Calcium	NC	665	528	957	906	892	1,650	1,110	726	186
Total Chromium	**190	24	27.9	26	25.7	23.8	19.8	14.6	22.4	24.5
Cobalt	200	13	9.2	11.2	11	9.5	7	15	10.7	5.5
Copper	36,000	14.3	8.5	7.6 K	14.6 K	21.7 K	15.3 K	33.4 K	3	1
Iron	190,000	26,100	24,600	34,600	27,700	26,500	22,000	27,500	24,400	19,300
Lead	450	8.7	9.4	18.3 J	14.6 J	10.9 J	43.1 J	15.2 J	7.9	4.9
Magnesium	NC	2,540	672	3,440	2,370	2070	2,170	2,400	846	404
Manganese	190,000	412	778	419	421	654	411	1,770	1,730	249
Mercury	10	<0.02	<0.02	<0.02	0.04	0.14	0.11	<0.02	<0.02 L	<0.02 L
Nickel	650	17.5	12.9	17.5	14.8	14	11.3	19.4	13.6	7.7
Potassium	NC	1,060	531	2,980	1,210	1,220	1,220	2,030	778	307
Selenium	26	<0.41 L	<0.41 L	<0.38	0.41	0.57	<0.4	<0.42	<0.48	<0.44
Silver	84	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.14	<0.12
Sodium	NC	185	120	112	83.5	87.2	87.6	88.6	96.3	127
Thallium	14	<0.41	<0.41	<0.38	<0.4	<0.39	<0.4	<0.42	<0.52	0.48 K
Vanadium	72,000	40.3	33.7	34.9	39.9	37	30.4	26.6	33	34.7
Zinc	12,000	37.4	17.5	42.2	37.9	32.3	43.5	56.2	25.5	8.7

Notes:

*MSC-calculated Medium-Specific Concentrations; Direct Contact Numeric Values for Non-Residential Subsurface Soil or Soil to Groundwater Numeric Values for Non-Residential Used Aquifers with TDS less than or equal to 2500 for either 100 X Groundwater MSC or Generic Value

NC- No Criteria

**- Chromium IV calculated MSC

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL)

J- Indicates an estimated value.

K- Biased high

L- Biased low

Concentrations above calculated MSC are bolded and shaded

IR Site 10, NASJRB, PA

Blank Analytical Summary Report

Sample ID Lab Batch Number Sample Date Units	10FB01050203 0305L337 5/2/2003 ug/L	10RB01050203 0305L337 5/2/2003 ug/L	10RB02050903 0305L388 5/9/2003 ug/L	10TB02050103 0305L323 5/1/2003 ug/L	10TB01050203 0305L337 5/2/2003 ug/L	10TB03050902 0305L388 5/9/2003 ug/L
VOC						
Chloromethane	<2	<2	<2	<2	<2	<2
Bromomethane	<2	<2	<2	<2	<2	<2
Vinyl Chloride	<2	<2	<2	<2	<2	<2
Chloroethane	<2	<2	<2	<2	<2	<2
Methylene Chloride	<2	<2	<2	11 J	12 J	11
Acetone	<5	<5	<5	<5	<5	<5
Carbon Disulfide	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	<1	<1	<1	<1	<1	<1
1,2-Dichloroethene (total)	<1	<1	<1	<1	<1	<1
Chloroform	2	2	2	<1	<1	<1
1,2-Dichloroethane	<1	<1	<1	<1	<1	<1
2-Butanone	5 R	5 R	5 R	5 R	5 R	5 R
1,1,1-Trichloroethane	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	0.1 J	<1	<1	<1
1,2-Dichloropropane	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1
Trichloroethene	<1	<1	<1	<1	<1	<1
Dibromochloromethane	<1	0.2 J	0.3 J	<1	<1	<1
1,1,2-Trichloroethane	<1	<1	<1	<1	<1	<1
Benzene	<1	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1
Bromoform	<1	0.7 J	0.6 J	<1	<1	<1
4-Methyl-2-pentanone	<5	<5	<5	<5	<5	<5
2-Hexanone	5 R	5 R	5 R	5 R	5 R	5 R
Tetrachloroethene	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1
Toluene	0.2 J	<1	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1	<1
Styrene	<1	<1	<1	<1	<1	<1
Xylene (total)	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane	<1	<1	<1	<1	<1	<1
Isopropylbenzene	<1	<1	<1	<1	<1	<1
Dibenzofuran	<1	<1	<1	<1	<1	<1

Notes:

J- Indicates an estimated value.

B- This flag is used when the analyte is found in the associated blank as well as in the sample.

It indicates possible/probable blank contamination.

R- Rejected (see Data Validation Report)

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

IR Site 10, NASJRB, PA

Blank Analytical Summary Report

Sample ID	10FB01050203	10RB01050203	10RB02050903
Lab Batch Number	0305L337	0305L337	0305L388
Sample Date	5/2/2003	5/2/2003	5/9/2003
Units	ug/L	ug/L	ug/L
SVOC			
Phenol	<11	<10	<10
bis(2-Chloroethyl)ether	<11	<10	<10
2-Chlorophenol	<11	<10	<10
1,3-Dichlorobenzene	<11	<10	<10
1,4-Dichlorobenzene	<11	<10	<10
1,2-Dichlorobenzene	<11	<10	<10
2-Methylphenol	<11	<10	<10
2,2'-oxybis(1-Chloropropane)	<11	<10	<10
4-Methylphenol	<11	<10	<10
N-Nitroso-di-n-propylamine	<11	<10	<10
Hexachloroethane	<11	<10	<10
Nitrobenzene	<11	<10	<10
Isophorone	<11	<10	<10
2-Nitrophenol	<11	<10	<10
2,4-Dimethylphenol	<11	<10	<10
bis(2-Chloroethoxy)methane	<11	<10	<10
2,4-Dichlorophenol	<11	<10	<10
1,2,4-Trichlorobenzene	<11	<10	<10
Naphthalene	<11	<10	<10
4-Chloroaniline	<11	<10	<10
Hexachlorobutadiene	<11	<10	<10
4-Chloro-3-methylphenol	<11	<10	<10
2-Methylnaphthalene	<11	<10	<10
Hexachlorocyclopentadiene	<11	<10	<10
2,4,6-Trichlorophenol	<11	<10	<10
2,4,5-Trichlorophenol	<27	<26	<26
2-Chloronaphthalene	<11	<10	<10
2-Nitroaniline	<27	<26	<26
Dimethylphthalate	<11	<10	<10
Acenaphthylene	<11	<10	<10
2,6-Dinitrotoluene	<11	<10	<10
3-Nitroaniline	<27	<26	<26
Acenaphthene	<11	<10	<10
2,4-Dinitrophenol	<27	<26	<26
4-Nitrophenol	<27	<26	<26
Dibenzofuran	<11	<10	<10
2,4-Dinitrotoluene	<11	<10	<10
Diethylphthalate	<11	<10	<10
4-Chlorophenyl-phenylether	<11	<10	<10
Fluorene	<11	<10	<10
4-Nitroaniline	<27	<26	<26
4,6-Dinitro-2-methylphenol	<27	<26	<26
N-Nitrosodiphenylamine (1)	<11	<10	<10
4-Bromophenyl-phenylether	<11	<10	<10
Hexachlorobenzene	<11	<10	<10
Pentachlorophenol	<27	<26	<26
Phenanthrene	<11	<10	<10
Anthracene	<11	<10	<10
Carbazole	<11	<10	<10
Di-n-butylphthalate	0.8 B	1 B	<10
Fluoranthene	<11	<10	<10
Pyrene	<11	<10	<10
Butylbenzylphthalate	<11	<10	<10
3,3'-Dichlorobenzidine	<11	<10	<10
Benzo(a)anthracene	<11	<10	<10
Chrysene	<11	<10	<10
bis(2-Ethylhexyl)phthalate	1 B	1 B	3 B
Di-n-octyl phthalate	<11	<10	<10
Benzo(b)fluoranthene	<11	<10	<10
Benzo(k)fluoranthene	<11	<10	<10
Benzo(a)pyrene	<11	<10	<10
Indeno(1,2,3-cd) pyrene	<11	<10	<10
Dibenz(a,h)anthracene	<11	<10	<10
Benzo(g,h,i)perylene	<11	<10	<10

Notes:

- J- Indicates an estimated value.
- B- This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- < - Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

IR Site 10, NASJRB, PA

Blank Analytical Summary Report

Sample ID Lab Batch Number Sample Date Units	10FB01050203 0305L337 5/2/2003 ug/L	10RB01050203 0305L337 5/2/2003 ug/L	10RB02050903 0305L388 5/9/2003 ug/L
Metals			
Aluminum	<18.8	25.5	41.4 B
Antimony	<2.5	<2.5	<2.2 L
Arsenic	<3.5	<3.5	<3.3
Barium	0.16 B	0.21 B	0.68 B
Beryllium	<0.5	<0.5	<0.1
Cadmium	0.43 B	<0.4	<0.4
Calcium	40.9 B	24.9 B	72.9 B
Total Chromium	<0.6	<0.6	<1
Cobalt	<0.7	<0.7	<1
Copper	1.2 B	1.2 B	0.77 B
Iron	<19.7	<19.7	<25.8
Lead	<2.6	<2.6	<2.3
Magnesium	14.3 B	7.6 B	21.2 B
Manganese	<0.2	0.22 B	<0.2
Mercury	<0.1	<0.1	<0.1
Nickel	<1.8 L	<1.8 L	<1.3
Potassium	<20.8	533	88.6 B
Selenium	<3.6	<3.6	<4.2
Silver	<0.8	<0.8	<1.2
Sodium	28.6 B	40.5 B	104 B
Thallium	<3.6	<3.6	<4.5
Vanadium	<0.1	<0.1	0.74 B
Zinc	<1.4	<1.4	5.7 B

Notes:

< - Indicates that the parameter was not detected at or above the reported limit.

The associated numerical value is the sample detection limit.

B- Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL).

L- Biased low