C3-056-03017-8.1

PRELIMINARY ASSESSMENT
FORBES (EX) ATLAS MISSILE SITE S-5, ALLEN, KANSAS
CERCLIS ID No. KSSFN0703129

Superfund Technical Assessment and Response Team (START) 3

Contract No. EP-S7-06-01, Task Order No. 0002.001.002

Prepared For:

FINAL

U.S. Environmental Protection Agency
Region 7
901 North 5th Street
Kansas City, Kansas 66101

July 6, 2007

Prepared By:

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TETRA TECH

July 6, 2007

Mr. Roy Crossland
START Project Officer
U.S. Environmental Protection Agency, Region 7
901 North 5th Street
Kansas City, Kansas 66101

Subject: **Preliminary Assessment**
Forbes (ex) Atlas Missile Site S-5, Allen, Kansas
EPA ID: KSSFN0703129
U.S. EPA Region 7 START 3, Contract No. EP-S7-06-01
Task Order No. 0002.001.002
Task Monitor: Paul Roemerman, EPA Site Assessment Manager

Dear Mr. Crossland:

Tetra Tech EM Inc. is submitting the enclosed Preliminary Assessment report for the above-referenced facility. A Hazard Ranking System scoring memorandum will be submitted separately. If you have any questions or comments regarding this submittal, please contact the project manager at (913) 495-3971 or Stephanie Luebbering at (913) 495-3920.

Sincerely,

for Robert E. Monnig, PE
START Project Manager

Ted Faile, PG, CHMM
START Program Manager

Enclosures

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA), Region 7, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), tasked Tetra Tech EM, Inc. (Tetra Tech) to conduct a preliminary assessment (PA) of the Forbes (ex) Atlas Missile S-5 (Atlas S-5) in Allen, Lyon County, Kansas, under Superfund Technical Assessment and Response Team (START) 3 Contract Number EP-S7-06-01, Task Order Number 0002.001.002.

The purpose of this PA is to review existing information on Atlas S-5 and its environs; to assess the threat(s), if any, posed to public health, welfare, or the environment; and to determine if further investigation under CERCLA/SARA is warranted. The scope of the PA includes the review of information available from federal, state, and local agencies, performance of an on-site reconnaissance, and sampling.

Using these sources of existing information and sampling data, the facility is then evaluated using the EPA Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies facilities at which the EPA may conduct remedial response actions. This report summarizes the findings of these preliminary investigative activities.

Atlas S-5 was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on May 4, 1993 (KSSFN0703129) (EPA 2007a).

Apparent Problem

The operational history of the facility is described in Section 2.3. Historical processes at Atlas S-5, a formerly used defense site (FUDS), likely used fuels, hydraulic fluids, solvents, oils, and lubricants. Possible sources for contamination include hydraulic systems, underground storage tanks (UST), water treatment systems, transformers containing polychlorinated biphenyls (PCB), surface impoundments, and maintenance activity areas. Previous investigations have documented chlorinated solvents in soil and groundwater at the facility (U.S. Army Corps of Engineers [USACE] 2004). The use of materials containing perchlorate at the facility is unknown, but perchlorate is a common FUDS contaminant.

2.0 SITE DESCRIPTION

The facility location, description, operational history, waste characteristics, and previous investigations of Atlas S-5 are discussed below.

2.1 SITE LOCATION

The former Atlas S-5 facility is located in Lyon County, Kansas, approximately 8 miles west-northwest of Allen, Kansas. The site is located in the southeast quarter of Section 4 in Township 16 North, Range 10 East (see Appendix A, Figure 1). The approximate geographic coordinates for the central portion of the site are 38° 41′ 13″ north latitude and 96° 18′ 12″ west longitude.

2.2 SITE DESCRIPTION

The former missile facility occupies approximately 25 acres and includes a buried, horizontal concrete vault, with launch doors located at ground surface. Additional improvements at Atlas S-5 included a launch operations building, a missile maintenance building, a cooling tower, a launch and services building, a water supply building, a septic system, a fuel storage system, sewage lagoons, and a tunnel. Structures remaining at the facility include the horizontal concrete vault (missile coffin), underground launch operation rooms, concrete pads, and sewage lagoons (see Appendix A, Figure 2).

2.3 OPERATIONAL HISTORY

The Department of Defense (DoD) acquired 25 acres in fee and 236 acres in easements between 1960 and 1963 to house an Atlas E-Type Intercontinental Ballistic Missile (ICBM) in connection with the Forbes Air Force Base in Topeka, Kansas. The facility operated from 1961 until 1965, when it was decommissioned. In 1965, the facility was reported as excess and was subsequently sold (USACE 1993). The facility is currently privately owned and the facility is not apparently being used for any purpose. No person(s) are currently residing on the former missile facility.

2.4 REGULATORY INVOLVEMENT

Requests for information were made to agencies possibly involved with Atlas S-5. A summary of involvement by these agencies is as follows.

2.4.1 U.S. Army Corps of Engineers

The USACE conducted a site visit on November 18, 1992, and concluded that hazardous conditions existed at the Atlas S-5 facility, and that the facility was eligible for cleanup under the Defense Environmental Restoration Program for FUDS (USACE 1993).

2.4.2 U.S. Environmental Protection Agency

Atlas S-5 was not listed in the Resource Conservation and Recovery Information System (RCRIS) database, as of May 2, 2007 (EPA 2007b).

3.0 INVESTIGATIVE EFFORTS

Section 3.0 discusses historical investigations, as well as the current PA field sampling and associated quality assurance (QA)/quality control (QC) activities at Atlas S-5.

3.1 PREVIOUS SAMPLING

Previous sampling was conducted at Atlas S-5 by the USACE. In 1991, the USACE completed a confirmation study (CS) at Atlas S-5. Trichloroethene was detected at 0.010 milligrams per kilogram (mg/kg) in soil and 85 parts per billion (ppb) in groundwater at the facility. 1,2-Dichloroethene was detected at 104 ppb in groundwater. Heavy metals were detected in the soils at concentrations exceeding background levels (EPA 1997). Based on the CS, the USACE recommended further action; however, at the time, access to the site was denied by the property owner (USACE 2004).

3.2 PA SAMPLING

The general objective of the PA was to determine whether any threats to human health or the environment exist as a result of releases to soil and groundwater. A site reconnaissance was conducted in September 2006 at which time photographs were taken and historical information about the site was collected. START Team Members (STM) Robert Monnig, Dean Williams, and Quan Do conducted PA sampling activities during the week of January 14, 2007.

Field activities included collection of soil, sediment, and groundwater samples on the facility and groundwater samples from nearby private wells. A site-specific Quality Assurance Project Plan (QAPP) in support of PA activities, developed by START, had been submitted and approved by EPA on January 11, 2007 (Tetra Tech 2006). Field activities were conducted in accordance with the approved QAPP, except where noted in this report. Photographs documenting field activities are included in Appendix B.

Sampling related activities were recorded in a logbook, a copy of which is included in Appendix C. Samples for analytical services request (ASR) 3324 were delivered to the EPA Region 7 laboratory in two shipments—the first shipment was delivered via Federal Express on January 17, 2007, and the second shipment was hand-delivered by Tetra Tech on January 18, 2007. Field sheets and chain-of-custody records are included in Appendix D, and analytical results are included in Appendix E. The data were validated by EPA Region 7 QA personnel. Sampling methodologies, locations, analysis, and analytical results for the PA activities are summarized below.

3.2.1 Soil Sampling

Based on previous investigations, site reconnaissance observations, and background information about the facility, a biased or judgmental sampling scheme was followed to select source sampling locations at Atlas S-5. Sampling locations are illustrated on Figure 2 (see Appendix A). Between January 16 and 18, 2007, START sampled 11 boreholes using a Geoprobe® direct-push apparatus, focusing on the locations of government improvements. One soil sample was collected by hand from a soil stockpile located on the facility. A background sample was collected from a borehole located upgradient of Atlas S-5, to the north of the facility at the end of Road D. At each boring, soil samples were collected from a shallow interval—ranging from 0 to 4 feet below ground surface (bgs)—and, except when shallow probe refusal was encountered, from a second, deeper interval ranging from 4 to 18 feet bgs. Sample locations are summarized in Table 1.

Shallow probe refusal was encountered due to hard clay or stones at each of the soil boring locations; therefore, collection of deep soil samples to a depth of 30 feet bgs, as specified in the QAPP, was not possible.

Nineteen soil samples were submitted to the EPA Region 7 laboratory to be analyzed for metals, perchlorate, PCBs, total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOC), and volatile organic compounds (VOC). A trip blank and two extra volume samples for matrix spike and matrix spike duplicate (MS/MSD) analysis were collected for quality control purposes. For each sample to be analyzed for VOCs, 5 grams of soil was placed into two 40-milliliter (mL) vials preserved with sodium bisulfate. Four additional 40-mL vials were filled for purgeable TPH and percent solids analysis. In addition, three 8-ounce (oz) jars were filled and submitted for analysis of extractable TPH, perchlorate, metals, SVOCs, and PCBs. Samples were placed into a cooler containing ice, where they were stored at a temperature at or below 4 degrees Celsius (°C) pending submittal to the EPA Region 7 laboratory.

TABLE 1

SOIL SAMPLE SUMMARY
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

EPA Sample Number	Location	Depth (ft bgs)	Sample Date	Sample Time
3324-1	Within facility, near control center and bend in road.	0-2	01/15/2007	14:15
3324-2		16-18		15:14
3324-3	Within facility, west of missile coffin.	0-2	01/15/2007	16:00
3324-4	Within facility, along west fence-line.	2-4	01/15/2007	16:46
3324-5	Within facility, southwest of missile coffin.	0-2	01/15/2007	17:20
3324-6		8-10		17:44
3324-7	Within facility, near south section of fence adjacent to drainage features.	0-2	01/16/2007	09:50
3324-8		9-11		10:13
3324-9	Within facility, east of missile coffin.	0-2	01/16/2007	10:42
3324-10		10-12		11:11
3324-11	Within facility, near east concrete pad.	0-2	01/16/07	14:03
3324-12		6-8		14:20
3324-13	Within facility, near west concrete pad.	0-2	01/16/2007	14:43
3324-14		10-12		15:03
3324-15	Near south former lagoon.	0-2	01/16/2007	15:20
3324-16	Southeast (downgradient) of facility structures on west side of Road D.	0-2	01/16/2007	16:00
3324-17		4-6		16:18
3324-18	North (upgradient) of facility at end of Road D (background sample).	2-4	01/16/2007	16:50
3324-19	From soil pile near missile coffin.	0-1	01/18/2007	12:40
3324-25	Soil trip blank.	-	01/18/2007	11:47

Notes:

EPA U.S. Environmental Protection Agency
ft bgs Feet below ground surface

Analytical Data Summary

Perchlorate, PCBs, and SVOCs were not detected in the soil samples. TPH was detected in the field blank sample, but was not detected in any soil samples collected at Atlas S-5. Table 2 (for shallow soil samples) and Table 3 (for deep soil samples) present a summary of the metals and VOCs detected.

Several metals were detected in the soil samples; however, no metal was detected at a concentration exceeding three times its concentration in the background sample. Except arsenic, no metals were detected at concentrations exceeding their respective Superfund Chemical Data Matrix (SCDM) cancer

risk screening concentrations. Arsenic was detected in all but one of the soil samples collected, including the background sample 3224-18, at concentrations ranging from 1.93 to 22.1 mg/kg. These concentrations exceed arsenic's cancer risk screening concentration of 0.43 mg/kg. The highest arsenic concentration detected was in the background soil sample (3324-18). According to the U.S. Geological Survey (USGS), the mean concentration of arsenic in Lyon County, Kansas, is 8.407 mg/kg (USGS 2006). Therefore, the concentrations of arsenic identified in the soil samples at the facility are within three times the mean concentration for the County, and are assumed to be representative of naturally occurring levels.

Several organic constituents were detected in the soil samples; however, none of these constituents were detected at concentrations exceeding their respective SCDM health-based benchmarks. Of the organic constituents detected, only benzene and isomers of xylene appear to be attributable to past operations at Atlas S-5. Both benzene and xylene are commonly associated with releases of petroleum hydrocarbons. Benzene was detected in one soil sample (3324-1) at an estimated concentration of 6.4 µg/kg. Isomers of xylene, including m and/or p-xylene and o-xylene, were detected in three soil samples (3324-1, 3324-10, and 3324-11) at estimated concentrations ranging from 6.3 to 19 µg/kg.

Acetone, 2-butanone, and methyl cyclohexane were detected in multiple soil samples. Although acetone and 2-butanone acetone were not detected in the background sample (3324-18) or field blank (3324-25), low-level detections of these constituents are often attributed to laboratory contamination. Bis(2-ethylhexyl) phthalate was detected in three soil samples and the field blank (3324-25). Phthalates are commonly used as plasticizers for polyvinylchloride (PVC) and other polymers including rubber, cellulose, and styrene (EPA 2006); therefore, the detection of bis(2-ethylhexyl)phthalate does not necessarily appear attributable to past facility operations. Methylene chloride was detected only in the field blank (3324-25), and therefore, does not appear attributable to past facility operations. Carbon disulfide was detected one soil sample (3324-7) at a concentration of 10 µg/kg. In small amounts, carbon disulfide is released into the environment from natural processes (Agency for Toxic Substance and Disease Registry [ATSDR] 2007), and therefore, does not necessarily appear attributable to past facility operations.

TABLE 2

ANALYTICAL DATA SUMMARY FOR SHALLOW SOIL SAMPLES
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

Analyte	Benchmarks			Sample ID (ft bgs) and Results												
	RfD	CR	Three Times Background Concentration	3324-1 (0-2)	3324-3 (0-2)	3324-4 (2-4)	3324-5 (2-4)	3324-7 (0-2)	3324-9 (0-2)	3324-11 (0-2)	3324-13 (0-2)	3324-15 (0-2)	3324-16 (0-2)	3324-18 (2-4) BKG	3324-19 (0-1)	3324-25 FB
Metals (mg/kg)																
Arsenic	23	0.43	66.3	6.51 J	4.96 J	5.95 J	5.18 J	6.23 J	5.74 J	4.90 J	4.56 J	7.56 J	2.39 J	22.1 J	6.87 J	NA
Barium	5,500	NE	567	169	136	178	129	218	124	202	169	229	161	189	134	NA
Beryllium	160	NE	2.46	0.800 J	0.616 UJ	0.811 J	0.728 J	0.821 J	0.623 J	0.754 J	0.710 J	0.805 J	0.729 J	0.820 J	0.718 U	NA
Chromium	230	NE	85.2	21.3	16.2	21.4	25.0	19.2	19.6	17.4	19.6	19.4	20.8	28.4	20.7	NA
Copper	NE	NE	27.66	16.6	8.12	12.0	17.5	12.8	15.0	9.87	10.7	11.5	15.0	9.22	14.6	NA
Lead	NE	NE	50.4	12.5 J	24.6 J	14.0 J	7.73 J	24.9 J	16.0 J	12.9 J	8.82 J	23.3 J	5.73 J	16.8 J	12.7 J	NA
Zinc	23,000	NE	88.2	49.3	40.9	43.5	48.2	46.8	53.0	31.4	30.2	32.1	33.7	29.4	40.7	NA
VOCs (µg/kg)																
bis(2-ethylhexyl)phthalate	1,600,000	46,000	> 240	210 U	210 U	200 U	200 U	220 U	200 U	240 U	230	290	210 U	240 U	250 U	88
2-Butanone	NE	NE	> 14	16 J	20	12 U	11 U	12 U	10 U	15 U	14 U	13 U	15	14 U	29 U	5.0 U
Acetone	70,000,000	NE	> 14	52 J	140	46	14	60	10 U	58	32	30	100	14 U	66	5.0 U
Benzene	340,000	12,000	> 7.0	6.4 J	6.6 U	6.0 U	5.5 U	5.9 U	5.1 U	7.5 U	7.2 U	6.7 U	6.0 U	7.0 U	15 U	5.0 U
Carbon disulfide	7,800,000	NE	> 7.0	N/A R	6.6 U	6.0 U	5.5 U	10	5.1 U	7.5 U	7.2 U	6.7 U	6.0 U	7.0 U	15 U	5.0 U
m and/or p-Xylene	16,000,000	NE	> 7.0	19 J	6.6 U	6.0 U	5.5 U	15 J	5.1 U	13	7.2 U	6.7 U	6.0 U	7.0 U	15 U	5.0 U
Methylcyclohexane	NE	NE	> 7.0	N/A R	6.6 U	6.0 U	5.5 U	5.9 U	5.1 U	7.5 U	7.2 U	6.7 U	6.0 U	7.0 U	15 U	5.0 U
Methylene chloride	4,700,000	85,000	> 7.0	N/A R	6.6 U	6.0 U	5.5 U	5.9 U	5.1 U	7.5 U	7.2 U	6.7 U	6.0 U	7.0 U	15 U	88
o-Xylene	16,000,000	NE	> 7.0	6.3 J	6.6 U	6.0 U	5.5 U	5.9 U	5.1 U	7.5 U	7.2 U	6.7 U	6.0 U	7.0 U	15 U	10 U

Notes:

Bold value indicates a concentration that exceeds a benchmark value.
Shaded cell indicates a concentration that exceeds three times the background concentration or the background sample detection limit.

BKG	Background sample location	N/A R	Not analyzed, internal standards had an unacceptable response
CR	Cancer Risk Screening Concentration from SCDM	NE	Not established
FB	Field blank	RfD	Reference Dose Screening Concentration from SCDM
ft bgs	Feet below ground surface	SCDM	Superfund Chemical Data Matrix (EPA 2004)
ID	Identification	U	The analyte was not detected at or above the reporting limit
J	The identification of the analyte is acceptable; reported value is an estimate.	UJ	The analyte was not detected at or above the reporting limit. The reporting limit is an estimate
mg/kg	Milligrams per kilogram		
µg/kg	Micrograms per kilogram	VOC	Volatile organic compound

TABLE 3

ANALYTICAL DATA SUMMARY FOR DEEP SOIL SAMPLES
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

Analyte	Benchmarks			Sample ID (ft bgs) and Results								
	RfD	CR	Three Times Background Concentration	3324-2 (16-18)	3324-6 (8-10)	3324-8 (9-11)	3324-10 (10-12)	3324-12 (6-8)	3324-14 (10-12)	3324-17 (4-6)	3324-18 (2-4') BKG	3324-25 FB
Metals (mg/kg)												
Arsenic	23	0.43	66.3	**1.93 J**	**8.24 J**	**4.72 J**	**14.7 J**	**7.03 J**	**7.51 J**	1.14 UJ	**22.1 J**	NA
Barium	5,500	NE	567	40.5	85.8	73.0	149	93.6	174	84.3	189	NA
Beryllium	160	NE	2.46	0.511 UJ	0.583 UJ	0.614 J	1.06 J	0.644 UJ	0.783 J	0.763 J	0.820 J	NA
Chromium	230	NE	85.2	2.67	22.2	23.6	35.6	30.2	31.2	21.5	28.4	NA
Copper	NE	NE	27.66	2.55 U	19.1	14.9	16.1	7.38	18.4	15.2	9.22	NA
Lead	NE	NE	50.4	2.22 UJ	19.3 J	4.79 J	30.3 J	9.59 J	8.39 J	5.17 J	16.8 J	NA
Zinc	23,000	NE	88.2	7.34	33.9	38.8	30.8	21.0	40.0	36.9	29.4	NA
VOCs (µg/kg)												
Bis(2-ethylhexyl)phthalate	1,600,000	46,000	> 240	180 U	210 U	190 U	240 U	310	270 U	230 U	240 U	88
2-Butanone	NE	NE	> 14	23 U	12 U	12 U	46	12 U	14 U	29	14 U	5.0 U
Acetone	70,000,000	NE	> 14	23 U	12 U	12 U	140	15	14 U	170	14 U	5.0 U
Benzene	310,000	12,000	> 7.0	11 U	6.2 U	6.2 U	6.1 U	6.0 U	7.2 U	7.2 U	7.0 U	5.0 U
Carbon disulfide	7,800,000	NE	> 7.0	11 U	6.2 U	6.2 U	6.1 U	6.0 U	7.2 U	7.2 U	7.0 U	5.0 U
m and/or p-Xylene	16,000,000	NE	> 7.0	11 U	6.2 U	6.2 U	15	6.0 U	7.2 U	7.2 U	7.0 U	5.0 U
Methylcyclohexane	NE	NE	> 7.0	11 U	6.2 U	6.2 U	6.1 U	6.0 U	18 J	7.2 U	7.0 U	5.0 U
Methylene chloride	4,700,000	85,000	> 7.0	11 U	6.2 U	6.2 U	6.1 U	6.0 U	7.2 U	7.2 U	7.0 U	88
o-Xylene	16,000,000	NE	> 7.0	11 U	6.2 U	6.2 U	6.1 U	6.0 U	7.2 U	7.2 U	7.0 U	10 U

Notes:
Bold value indicates a concentration that exceeds a benchmark value.
Shaded cell indicates a concentration that exceeds three times the background concentration or the background sample detection limit.

BKG	Background sample location	NA	Not analyzed
CR	Cancer Risk Screening Concentration from SCDM	NE	Not established
FB	Field blank	RfD	Reference Dose Screening Concentration from SCDM
ft bgs	Feet below ground surface	SCDM	Superfund Chemical Data Matrix (EPA 2004)
ID	Identification	U	The analyte was not detected at or above the reporting limit
J	The identification of the analyte is acceptable; reported value is an estimate.	UJ	The analyte was not detected at or above the reporting limit. The reporting limit is an estimate
mg/kg	Milligrams per kilogram		
µg/kg	Micrograms per kilogram	VOC	Volatile organic compound

3.2.2 Sediment Sampling

Based on site reconnaissance observations, a biased or judgmental sampling scheme was followed to select sediment sampling locations at Atlas S-5. Sampling locations are illustrated on Figures 2 and 3 (see Appendix A). On January 17, 2007, START collected three sediment samples from drainage features that appeared to receive stormwater runoff from the facility. In addition, START collected one background sediment sample collected from a tributary of Bluff Creek at a location upgradient of the facility. The sediment samples were collected using hand tools from a shallow interval—approximately 0 to 6 inches bgs. At the time of sampling, no surface water was present in the drainage features; therefore, no surface water samples were collected. Sample locations are summarized in Table 4.

The following deviations from the QAPP occurred: (1) sampling locations and numbers were revised, based on field conditions, and (2) no surface water was present during the sampling event; therefore, no surface water samples were collected.

Four sediment samples were submitted to the EPA Region 7 laboratory to be analyzed for metals, perchlorate, PCBs, TPH, SVOCs, and VOCs. A trip blank and one extra volume sample for MS/MSD analysis were collected for quality control purposes. For each sample, four 40-mL vials were filled with sediment for VOC and TPH analysis. In addition, three 8-ounce (oz) jars were filled and submitted for analysis of extractable TPH, perchlorate, metals, SVOCs, and PCBs. Samples were placed into a cooler containing ice, where they were stored at a temperature at or below 4 degrees °C pending submittal to the EPA Region 7 laboratory.

Analytical Data Summary

Perchlorate, PCBs, and SVOCs were not detected in the sediment samples. Table 5 presents a summary of the metals, TPH, and VOCs detected.

Except arsenic, no metals were detected in the sediment samples at concentrations exceeding their respective health-based benchmarks. Arsenic was detected in each of the sediment samples collected, including the background sample (3224-29), at concentrations ranging from 4.72 to 8.71 mg/kg. The background sediment sample (3324-29) exhibited the highest arsenic concentration of 8.71 mg/kg. These concentrations exceed arsenic's screening concentration of 0.43 mg/kg. According to the USGS, the mean concentration of arsenic in Lyon County, Kansas is 8.407 mg/kg (USGS 2006). Therefore, the concentrations of arsenic identified in the sediment samples at the facility are within three times the mean concentration for the County, and thus are assumed to be representative of naturally occurring levels.

Beryllium in sample 3324-27 and cadmium in sample 3324-28 were detected at concentrations exceeding three times their concentrations in the background sample (3324-29). Mercury was detected in sample 3324-28 at a concentration of 0.416 mg/kg, which exceeds three times its concentration in the background sample and mercury's reported mean concentration in Lyon County of 0.019 mg/kg (USGS 2006). Copper was detected in sample 3324-28 at a concentration of 65.3 mg/kg, which exceeds three times its concentration in the background sample and copper's reported mean concentration in Lyon County of 14.189 mg/kg (USGS 2006). Zinc was detected in sample 3324-28 at a concentration of 646 mg/kg, which exceeds three times its concentration in the background sample and zinc's reported mean concentration in Lyon County of 55.512 mg/kg (USGS 2006).

Several organic constituents were detected in the sediment samples; however, none of these detected constituents were reported at concentrations exceeding their respective health-based benchmarks. TPH (extractable) was detected in sediment sample 3324-28 at a concentration of 306 µg/kg; note that TPH (purgeable) was detected in the field blank at a concentration of 11 µg/kg. Acetone was detected in sediment sample 3324-28 at a concentration of 26 µg/kg. Although acetone was not detected in the background sediment sample (3224-29) or field blank (3324-25), low-level detections of acetone are often attributed to laboratory contamination. Methylene chloride was detected in one sediment sample (3324-28) and in the field blank (3324-25). Because methylene chloride was detected in the field blank, the methylene chloride detections do not necessarily appear attributable to past facility operations. Xylene isomers (m and/or p-xylene) were detected in one sediment soil sample (3324-26) at an estimated concentration of 19 µg/kg.

TABLE 4

SEDIMENT SAMPLE SUMMARY
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

EPA Sample Number	Location	Depth (ft bgs)	Sample Date	Sample Time
3324-27	From drainage feature located adjacent to Road D, which receives runoff from east portion of site.	0-1	01/17/2007	10:12
3324-28	From drainage feature located at southwest corner of the facility.	0-1	01/17/2007	10:47
3324-29	From tributary of Bluff Creek (background sample).	0-1	01/17/2007	12:26
3324-30	From drainage feature east of lagoons.	0-1	01/17/2007	09:45

Notes:

EPA U.S. Environmental Protection Agency
ft bgs Feet below ground surface

TABLE 5

ANALYTICAL DATA SUMMARY FOR SEDIMENT SAMPLES
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

Analyte	Benchmarks			Sample ID and Results				
	RfD	CR	Three Times Background Concentration	3324-26	3324-27	3324-28	3324-29 BKG	3324-25 FB
Metals (mg/kg)								
Arsenic	23	0.43	**26.13**	**4.72 J**	**6.43 J**	**4.73 J**	**8.71 J**	NA
Barium	5,500	NE	714	236	195	186	238	NA
Beryllium	160	NE	> 1.10	0.964 U	1.11	0.673 U	1.10 U	NA
Cadmium	39	NE	> 1.10	0.731 U	0.784 U	1.80	1.10 U	NA
Chromium	230	NE	69.3	22.8	23.5	20.7	23.1	NA
Copper	NE	NE	45	17.5	18.8	65.3	15.0	NA
Lead	NE	NE	73.5	17.7 J	24.6 J	71.3 J	24.5 J	NA
Mercury	23	NE	> 0.220	0.143 U	0.152 U	0.416	0.220 U	NA
Zinc	23,000	NE	141.3	58.8	57.2	646	47.1	NA
VOCs (µg/kg)								
Acetone	70,000,000	NE	> 15	14 U	15 U	26	15 U	5.0 U
m and/or p-xylene	16,000,000	NE	> 7.5	19 J	7.3 U	6.4 U	7.5 U	5.0 U
Methylene chloride	4,700,000	85,000	> 7.5	7.2 U	7.3 U	6.6	7.5 U	88
TPH (µg/kg)								
Extractable TPH	NE	NE	> 99.9	97.4 U	98.5 U	306	99.9 U	10 U
Purgeable TPH	NE	NE	> 104	50 U	50 U	50 U	104 U	11

Notes:
Bold value indicates a concentration that exceeds a benchmark value.
Shaded cell indicates a concentration that exceeds three times the background concentration or the background sample detection limit.

BKG Background sample location
CR Cancer Risk Screening Concentration from SCDM
FB Field blank
ID Identification
J The identification of the analyte is acceptable; reported value is an estimate
mg/kg Milligrams per kilogram
µg/kg Micrograms per kilogram
NA Not analyzed
NE Not established
RfD Reference Dose Screening Concentration from SCDM
SCDM Superfund Chemical Data Matrix (EPA 2004)
TPH Total petroleum hydrocarbons
U The analyte was not detected at or above the reporting limit
VOC Volatile organic compound

3.2.3 Groundwater Sampling

Table 6 shows a summary of the groundwater samples collected during the PA. Sampling locations are illustrated on Figures 2 and 3 (see Appendix A).

TABLE 6

GROUNDWATER SAMPLE SUMMARY
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

Sample ID	Approximate Location	Sample Date / Time
Monitoring Wells		
3324-101	Unsecured, permanent monitoring well located at the facility, east of the missile coffin	01/17/2007 12:20
Private Wells		
3324-201	Private well located approximately 1.7 miles north-northwest (upgradient) of Atlas S-5	01/17/2007 15:40
3324-202	Private well located approximately 1.8 mile south-southwest (downgradient) of Atlas S-5	01/18/2007 10:35
QA/QC Samples		
3324-110-FB	Groundwater field blank sample	01/16/2007 17:15
3324-209-FB	Trip blank sample	01/18/2007 11:57

Notes:

FB	Field blank	QA	Quality assurance
ID	Identification	QC	Quality control

On January 17 and 18, 2007, groundwater samples were collected from two private water wells. The groundwater samples were collected from taps/spigots located nearest the well heads, prior to any in-home treatment systems. The well lines were purged for approximately 5 minutes before the samples were collected. A groundwater sample was also collected from an unsecured permanent monitoring well located east of the missile coffin. Prior to sampling the well, START obtained depth to water and total well depth measurements (from the top of the well housing) and documented measurements of 20.41 and 23.24 feet, respectively. Approximately 2 gallons of water was purged from the well using a disposable bailer and string before sampling the well. Because the recharge rate of the well was slow, the groundwater sample was collected over a period of approximately 24 hours.

Three deviations from the QAPP were noted. (1) No groundwater samples were collected from temporary Geoprobe® wells because groundwater was not present at or above the maximum achievable boring depth of 18 feet. (2) No rinsate blank was collected because no temporary Geoprobe® wells were

installed. (3) A groundwater sample was collected from the monitoring well located east of the missile coffin; START was not aware of this well before the sampling trip, and sampling of the well had not been included in the scope of the QAPP.

Three groundwater samples (plus two field banks) were submitted to EPA Region 7 laboratory to be analyzed for total metals, perchlorate, PCBs, TPH, SVOCs, and VOCs. Extra volume for MS/MSD analysis was collected for quality control purposes. Separate field blanks were submitted with the private well samples and the monitoring well sample. Groundwater samples collected for analysis of VOCs were collected into four 40-mL vials preserved with hydrochloric acid (HCl). The TPH-purgeables samples were collected in two unpreserved 40-mL vials. Water samples to be analyzed for PCBs, SVOCs, and TPH were collected in 128-ounce amber glass jugs (two per sample). Samples to be analyzed for perchlorate were collected in 1-liter cubitainers (one per sample). Water samples to be analyzed for metals (total) were collected in 1-liter cubitainers and preserved with nitric acid (HNO_3) to a pH <2. The groundwater sample collected from the facility monitoring well (3324-101)—to be analyzed for dissolved metals—was filtered in the field, collected in a 1-liter cubitainer, and preserved with HNO_3 to a pH <2. All water samples were stored in coolers maintained at or below 4° C pending submittal to the EPA Region 7 laboratory.

Analytical Data Summary

Perchlorate, PCBs, SVOCs, and TPH were not detected in the groundwater samples collected from the private wells or the monitoring well. Table 7 presents a summary of the metals and VOCs detected in the groundwater samples.

Antimony, arsenic, and thallium were detected in the downgradient private well sample (3323-202) at concentrations exceeding their respective health-based benchmarks. These metals were not detected in groundwater collected from the upgradient background private well (3324-201) or from the monitoring well located on the facility (3324-101). Antimony was in sample 3323-202 at a concentration of 12.7 micrograms per liter (µg/L), which exceeds its maximum contaminant level (MCL) of 6.0 µg/L. Arsenic was detected in sample 3324-202 at a concentration of 5.32 µg/L, which exceeds its SCDM cancer risk screening concentration of 0.057 µg/L, but is below its MCL of 10.0 µg/L. Thallium was detected in downgradient private well sample 3324-202 at a concentration of 3.21 µg/L, which exceeds its MCL of 2.0 µg/L.

Cadmium, chromium, copper, lead, selenium, and silver were detected in private well sample 3324-202 at concentrations exceeding three times their respective concentrations in the background sample; however,

these metals were not detected at concentrations exceeding health-based benchmarks. Additional metals (including barium, beryllium, and zinc) were detected in the groundwater samples, but at concentrations that did not exceed their respective MCLs or SCDM health-based benchmarks.

Several organic constituents were detected in the groundwater samples. *Cis*-1,2-dichloroethene was detected in monitoring well sample 3324-101 at a concentration of 57 µg/L, which does not exceed its MCL or SCDM screening benchmarks. Trichloroethene was detected in the monitoring well sample at a concentration of 87 µg/L, which exceeds its MCL of 5.0 µg/L, its SCDM cancer risk screening concentration of 7.7 µg/L, and reference dose screening concentration of 11 µg/L. Methylene chloride was detected in the groundwater field blank sample 3324-110, but was not detected in any other groundwater sample; therefore, the presence of methylene chloride does not appear attributable to past facility operations.

4.0 HAZARD RANKING SYSTEM FACTORS

This section discusses the sources of contamination and the contaminant migration pathways evaluated under the HRS.

4.1 SOURCES OF CONTAMINATION

The operational history of the facility is described in Section 2.3. Historical processes at Atlas S-5 likely used fuels, hydraulic fluids, solvents, oils, and lubricants. Possible sources for contamination include hydraulic systems, USTs, water treatment systems, transformers containing PCBs, surface impoundments, and maintenance activity areas. Previous USACE investigations have documented chlorinated solvents in soil and groundwater at the facility (USACE 2004). During the PA, soil, sediment, and groundwater samples were collected around the facility to assess whether a release of contaminants had occurred at Atlas S-5.

4.2 GROUNDWATER PATHWAY

This section discusses the groundwater pathway.

TABLE 7

ANALYTICAL DATA SUMMARY FOR GROUNDWATER SAMPLES
FORMER ATLAS S-5, LYON COUNTY, KANSAS
JANUARY 2007

Analyte	Benchmark Values (µg/L)				Sample ID and Results (µg/L)				
	MCL	RfD	CR	Three Times Background Concentration	3324-201 (Background Private Well Sample)	3324-202 (Private Well Sample)	3324-110 (FB)	3324-209 (FB)	3324-101 (Monitoring Well Sample)
Total Metals / [Dissolved Metals]									
Antimony	6.0	15	NE	> 6.00	2.00 U	**12.7**	2.00 U	NA	2.00 U [2.00 U]
Arsenic	10	11	0.057	> 3.00	1.00 U	**5.32**	1.00 U	NA	1.00 U [1.00 U]
Barium	2,000	2,600	NE	312	104	10.0 U	10.0 U	NA	57.9 [187 J]
Beryllium	4.0	73	NE	> 3.00	1.00 U	2.88	1.00 U	NA	1.00 U [1.00 U]
Cadmium	5.0	18	NE	> 3.00	1.00 U	3.18	1.00 U	NA	1.00 U [1.00 U]
Chromium	100	110	NE	> 6.00	2.00 U	6.33	2.00 U	NA	2.00 U [2.00 U]
Copper	1,300	NE	NE	> 14.31	4.77 U	28.8	2.00 U	NA	3.71 U [2.45 U]
Lead	15	NE	NE	> 3.00	1.00 U	7.96	1.00 U	NA	3.63 U [14.1]
Selenium	50	180	NE	> 15.00	5.00 U	15.2	5.00 U	NA	5.00 U [5.00 U]
Silver	NE	180	NE	> 3.00	1.00 U	3.12	1.00 U	NA	1.00 U [1.00 U]
Thallium	0.50	NE	NE	> 3.00	1.00 UJ	**3.21**	1.00 UJ	NA	1.00 UJ [1.00UJ]
Zinc	NE	11,000	NE	63.3	21.1 J	16.8 J	2.00 UJ	NA	199 J [2.66 UJ]
VOCs									
cis-1,2-Dichloroethene	70	360	NE	> 1.5	0.50 U	0.50 U	1.0 U	0.50 U	57
Methylene chloride	5.0	22,000	11	> 1.5	0.50 U	0.50 U	**5.3**	0.50 U	1.0 U
Trichloroethene	5.0	11	0.21	> 1.5	0.50 U	0.50 U	1.0 U	0.50 U	**87**

Notes:

Bold value indicates a concentration that exceeds a benchmark value.
Shaded cell indicates a concentration that exceeds three times the background concentration or the background sample detection limit.

[value]	Bracketed values indicates a dissolved metal concentration	NE	Not established
CR	Cancer Risk Screening Concentration from SCDM	RfD	Reference Dose Screening Concentration from SCDM
FB	Field blank	SCDM	Superfund Chemical Data Matrix (EPA 2004)
ID	Identification	U	The analyte was not detected at or above the reporting limit
J	The identification of the analyte is acceptable; reported value is an estimate	UJ	The analyte was not detected at or above the reporting limit. The reporting limit is an estimate
µg/L	Micrograms per liter		
NA	Not analyzed	VOC	Volatile organic compound

4.2.1 Hydrogeological Setting

The U.S. Department of Agriculture (USDA) has classified the soil in the area of the Atlas S-5 facility as the Tully-Florence Association. This soil type consists of deep, gently sloping and strongly sloping, well-drained soils on uplands that have a dominantly silty clay or cherty clay subsoil. The underlying formation consists of cherty limestone (USDA 1981). Depth to groundwater has reportedly been encountered at the site at 18 feet bgs (EPA 1997). Private wells in the vicinity of the facility likely draw groundwater from perched or alluvial valley aquifers. Review of topographic maps indicates that the general topographic gradient in the area of the facility is toward the south; therefore, groundwater may flow south (USGS 1971).

4.2.2 Groundwater Targets

Review of aerial photography indicates that the facility is situated in a rural agricultural area. The closest residence appears to be located 0.8 mile from Atlas S-5 (USGS 1991). According to the 2000 Census data, approximately three people live within 0.5 mile of the facility (Missouri Census Data Center 2000). The population within 4 miles of the facility is approximately 86 people. According to the Kansas Geological Society (KGS), five domestic wells and one well with an unspecified use are registered within 4 miles of the facility. The registered well identified closest to the facility is located approximately 0.75 mile southeast of the site (Figure 4, Appendix A) (KGS 2007). (This well was not sampled during the PA and is considered to be cross-gradient relative to groundwater flow from the site.) Note that starting in the mid-1970s, wells had to be registered with the State of Kansas (Kansas Department of Health and Environment [KDHE] 2007); therefore, unregistered wells constructed prior to the mid-1970s could be located within 4 miles of the facility. According to the EPA Safe Drinking Water Information System (SDWIS), the primary source of water for Lyon County's rural water districts is purchased surface water (EPA 2007c). The owner of the downgradient private well that was sampled during the PA indicated that water from the private well is rarely used for drinking water. The owner indicated that his residence is served by the local rural water district.

4.2.3 Groundwater Pathway Conclusions

Antimony, arsenic, and thallium were detected in the groundwater sample (3324-202) collected from a private well located downgradient of the facility. Antimony was detected at a concentration of 12.7 µg/L, which exceeds its MCL of 6.0 µg/L; arsenic was detected at a concentration of 5.32 µg/L, which exceeds its SCDM cancer risk concentration of 0.057 µg/L; and thallium was detected at 3.21 µg/L, which exceeds its MCL of 2.0 µg/L. Although these metals were not detected in the other groundwater samples

collected (including the background groundwater sample), the presence of these metals in sample 3324-202 may be attributable to naturally occurring conditions. The owner of the private well, where groundwater sample 3324-202 was collected, indicated that this well was rarely used as a drinking water source.

Perchlorate, PCBs, SVOCs, and TPH were not detected in the groundwater samples collected from the private wells or the monitoring well. *Cis*-1,2-dichloroethene and trichloroethene were detected in a groundwater sample (3324-101) collected from a permanent monitoring well located on the facility, east of the missile coffin. Detections of *cis*-1,2-dichloroethene and trichlorethene in the groundwater sample are likely associated with a past release of chlorinated solvents at the facility. Previous groundwater sampling conducted by the USACE also identified both trichloroethene and 1,2-dichloroethene in groundwater samples collected from the facility (EPA 1997). No VOCs were detected in the groundwater samples collected from private wells located upgradient and downgradient of the facility. Although the PA did not detect VOCs in samples from two private wells, groundwater downgradient of the site is vulnerable to VOC contamination from the former DoD activities.

4.3 SURFACE WATER PATHWAY

Stormwater runoff from the facility appears to enter two intermittent streams located approximately 0.25 mile south of the site and 0.25 mile east-northeast of the site. These intermittent streams drain to the south and join Bluff Creek at a point approximately 1 mile south of the site. Further downstream, Bluff Creek drains into Rock Creek (USGS 1971). The KDHE has classified Bluff Creek and Rock Creek as general purpose streams with designated use for food procurement (KDHE 2004). These streams have not been designated for use as a domestic water supply. No known drinking water intakes, fisheries, or sensitive environments are known to occur within 15 miles downstream of the facility.

During the January 2007 PA sampling event, no surface water was visible on or near the facility, and therefore no surface water sampling was conducted. However, three sediment samples collected from facility drainage features and one background sediment sample were collected during the January 2007 sampling event. Low levels of VOCs and TPH were detected in the sediment samples; however, the detected concentrations were below health-based benchmarks. Several metals were detected in the sediment samples; however, except for arsenic, the detected concentrations were below health-based benchmarks. Based on the background sample results, the arsenic detections appear to be naturally occurring. Because of dilution effects, it is unlikely that the low levels of VOCs, TPH, and metals in

sediment near the facility could impact unidentified drinking water intakes, fisheries, or sensitive environments located downstream of the facility.

4.4 SOIL EXPOSURE AND AIR PATHWAYS

The fenced missile compound is not currently used for any purpose, and the remainder of the site is used for pasture land. Concrete structures from former DoD activities still exist on site. No one lives or works at the site, and access to the site is restricted. Population near the site is sparse. No sensitive terrestrial environments are known to occur at the site. Arsenic was detected in all but one of the soil samples collected during the January 2007 sampling event at levels exceeding its SCDM cancer risk screening concentration. However, when compared to average concentrations of arsenic for Lyon County, Kansas, the values identified are believed to be naturally occurring (USGS 2006). Low levels of VOCs (including benzene and xylene isomers) and TPH were detected in soils samples collected from the facility; however, none of these constituents were detected at concentrations exceeding its respective health-based benchmarks. Based on the results of soil samples collected from the site, on-site soil contamination found during the PA presents a minimal threat to the soil and air exposure pathways.

5.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40 CFR 300.415(b) (2)] authorizes the EPA to consider emergency response actions at those facilities that pose an imminent threat to human health or the environment. For the following reasons, a referral to EPA Region 7 for emergency response activities does not appear necessary:

- Although *cis*-1,2-dichloroethene and trichloroethene were detected in a groundwater sample (3324-101) that was collected from a permanent monitoring well located on the facility, no VOCs were detected in the groundwater samples collected from private wells located in the vicinity of the facility. Furthermore, based on interviews with the owners of the sampled private wells and based on the EPA SDWIS database, groundwater in the vicinity of the facility is not generally used for drinking water.

- Arsenic was detected in soil and sediment samples at levels that exceeded health-based benchmarks. Other metals were detected in soil and sediment samples, but at levels that did not exceed health-based benchmarks. Although various metals were detected in soil and sediment samples, the metals concentrations identified in the soil and sediment samples were all similar to background concentrations.

- Benzene and isomers of xylene were detected in soil and sediment samples collected from the facility at concentrations that did not exceed health-based benchmarks. These contaminants are commonly associated with releases of petroleum hydrocarbons.

- Antimony, arsenic, and thallium were detected in the groundwater sample (3324-202) collected from a private well located downgradient of the facility at concentrations that exceed health-based benchmarks; however, these detections may be naturally occurring. The owner of the private well indicated that this well was rarely used as a drinking water source.

Although emergency response actions do not appear warranted, additional sampling is recommended for EPA consideration. The detection of *cis*-1,2-dichloroethene and trichloroethene in groundwater during the PA sampling may warrant additional groundwater sampling to ensure that these contaminants are not persisting in the aquifer and potentially impacting nearby private water wells.

6.0 SUMMARY

The former Atlas S-5 facility is located in Lyon County, Kansas, approximately 8 miles west-northwest of Allen, Kansas. The facility is situated in a rural agricultural area. The DoD acquired 25 acres in fee and 236 acres in easements between 1960 and 1963 to house an Atlas E-Type ICBM in connection with the Forbes Air Force Base in Topeka, Kansas. The facility operated from 1961 until 1965, when it was decommissioned. In 1965, the facility was reported as excess and was subsequently sold (USACE 1993). Previous USACE investigations have documented chlorinated solvents in soil and groundwater at the facility (USACE 2004).

Analytical results from samples collected during the PA sampling event indicate that an observed release of contaminants associated with Atlas S-5 had occurred. Low levels of benzene were detected in soil samples and low levels of xylene isomers were detected in sediment samples collected from the facility. These contaminants are commonly associated with releases of petroleum hydrocarbons. The detection of *cis*-1,2-dichloroethene and trichloroethene in a groundwater sample from the site indicate that a release of chlorinated solvents at the facility likely occurred. Other contaminants were detected in samples collected during the PA; however, these contaminants do not necessarily appear attributable to past operations at Atlas S-5.

The pertinent HRS factors associated with Atlas S-5 are as follows:

- A release of contaminants from Atlas S-5 has been established based on the results of the January 2007 PA sampling effort. The detection of *cis*-1,2-dichloroethene and trichloroethene in groundwater and the detection of benzene and xylene in soil and sediment samples from the facility appear attributable to past operations at Atlas S-5. Of these compounds, only trichloroethene was detected at a concentration exceeding health-based benchmarks.

- Although *cis*-1,2-dichloroetehene and trichloroethene were detected in a groundwater sample (3324-101) that was collected from a permanent monitoring well located on the facility, no VOCs were detected in the groundwater samples collected from private wells located in the vicinity of the facility.

- Arsenic was detected in soil and sediment samples at levels that exceeded health-based benchmarks. The arsenic levels detected in the soil and sediment samples were similar to average arsenic levels reported for Lyon County by USGS. Other metals were detected in soil and sediment samples, but at levels that did not exceed health-based benchmarks. Although various metals were detected in soil and sediment samples, the metals concentrations identified in the soil and sediment samples were all similar to naturally occurring levels.

- Antimony, arsenic, and thallium were detected in the groundwater sample (3324-202) collected from a private well located downgradient of the facility at concentrations that exceeded health-based benchmarks; however, these detections may be naturally occurring. The owner of the private well indicated that this well was rarely used as a drinking water source.

- No fisheries or sensitive environments associated with the surface water pathway are within 15 miles downstream of the facility.

- None of the soil samples exceeded a SVOC, VOC, PCB, TPH or perchlorate health-based benchmark.

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APPENDIX A

FIGURES

Source: Lyon County, KS USGS 7.5 Minute Topographic County Mosaic

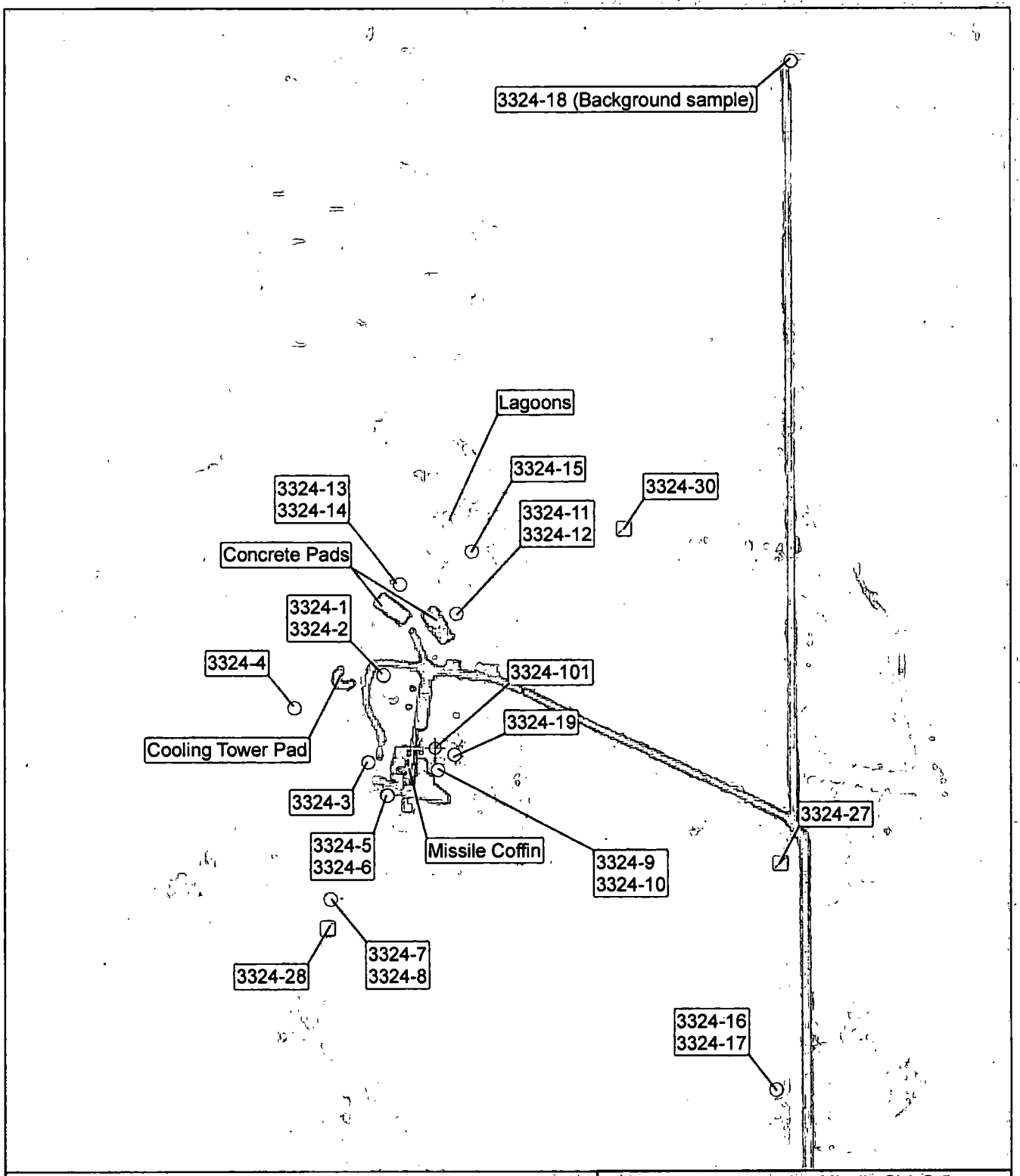
Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

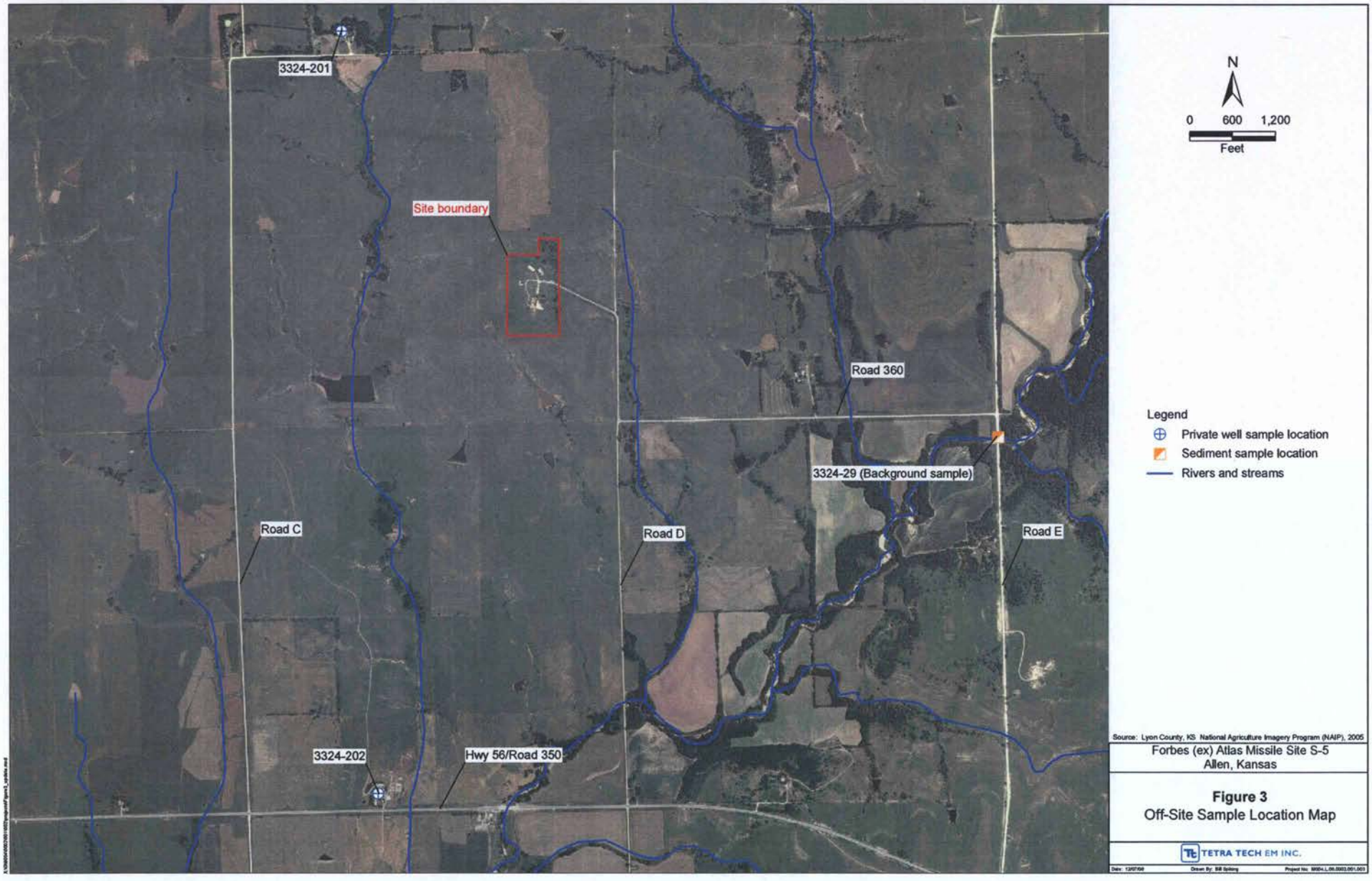
Figure 1
Facility Location Map

TETRA TECH EM INC.

Date: 12/06/06 Drawn By: Bill Spiking Project No: 19004.L.06.0002.001.002

X:\G\19004\0002\001\002\projects\Figure1.mxd


3324-18 (Background sample)
Lagoons
3324-15
3324-30
3324-13
3324-14
3324-11
3324-12
Concrete Pads
3324-1
3324-2
3324-4
3324-101
3324-19
Cooling Tower Pad
3324-3
3324-27
3324-5
3324-6
Missile Coffin
3324-9
3324-10
3324-28
3324-7
3324-8
3324-16
3324-17
Legend
Soil sample location
Sediment sample location
Monitoring well sample location
N
0
200
400
Feet
Source: Lyon County, KS National Agriculture Imagery Program (NAIP), 2005
Forbes (ex) Atlas Missile Site S-5
Allen, Kansas
Figure 2
Sample Location Map
TETRA TECH EM INC.
Date: 04/24/07
Drawn By: Bill Spilding
Project No: 9004.1.06.0002.001.002

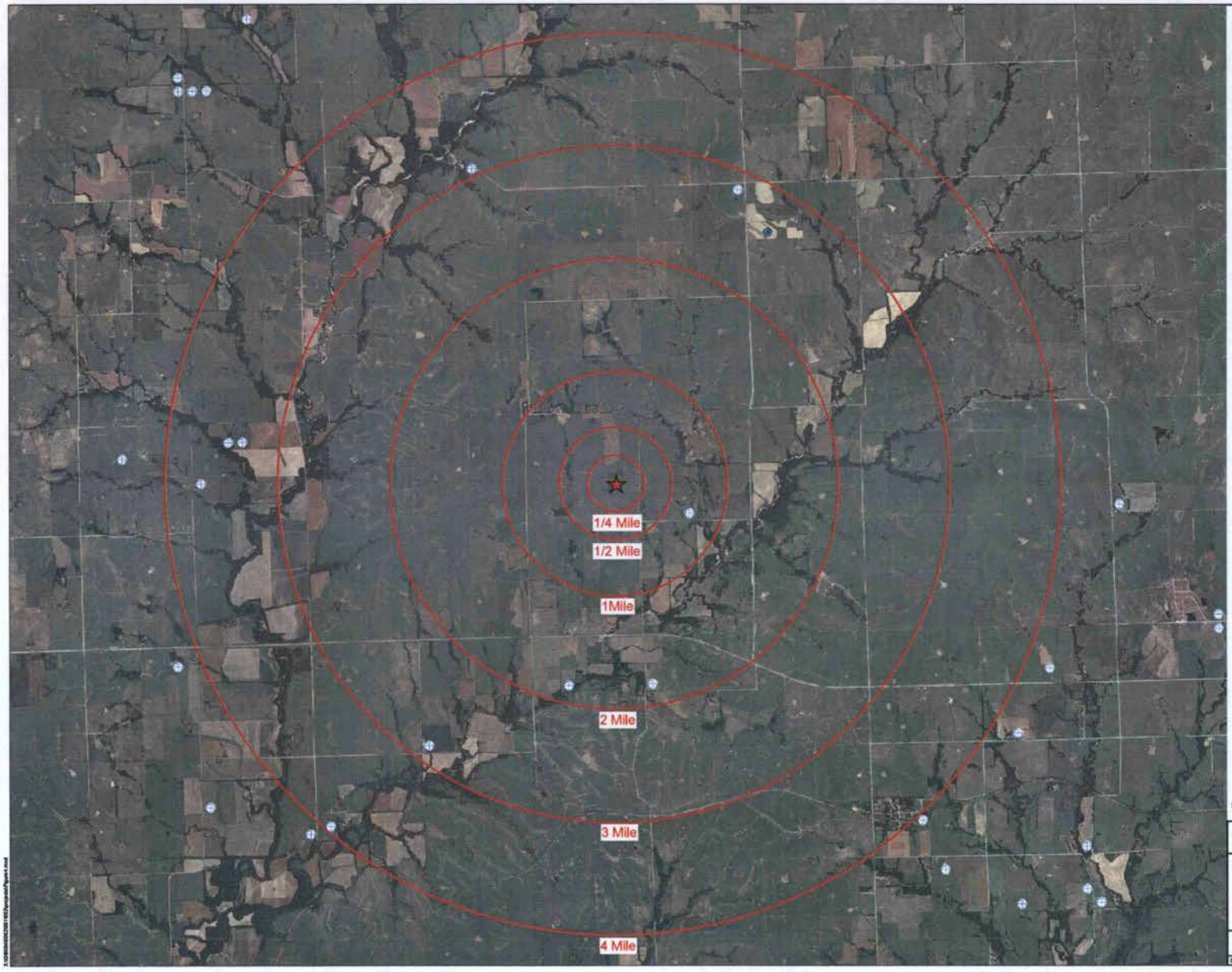


Source: Lyon County, KS National Agriculture Imagery Program (NAIP), 2005

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

Figure 3
Off-Site Sample Location Map

TETRA TECH EM INC.



N

0 2,250 4,500

Feet

Legend

- Registered domestic well location
- Other well location
- Site location
- Radius ring

Source: Lyon County, KS National Agriculture Imagery Program (NAIP), 2005
KGS Registered Well Database, 2007

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

Figure 4
4-Mile Radius Map

TETRA TECH EM INC.

APPENDIX B

PHOTOGRAPHIC LOG

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-1 and 3324-2.	1
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: Southeast	PHOTOGRAPHER	Robert Monnig	

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-3.	2
	CLIENT	U.S. Environmental Protection Agency	DATE 1/30/2007
Direction: East	PHOTOGRAPHER	Robert Monnig	

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-5 and 3324-6.	3
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: East	PHOTOGRAPHER	Robert Monnig	

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-7 and 3324-8.	4
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction:Northeast	PHOTOGRAPHER	Robert Monnig	

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-9 and 3324-10.	5
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: West	PHOTOGRAPHER	Robert Monnig	

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-13 and 3324-14.	6
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: North	PHOTOGRAPHER	Robert Monnig	

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-15.	7
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: West	PHOTOGRAPHER	Robert Monnig	

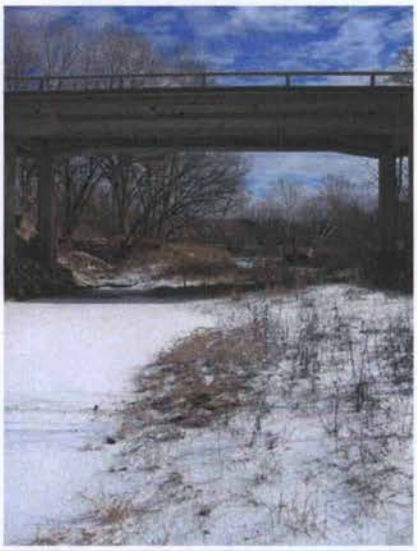
TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-18 (background).	8
	CLIENT	U.S. Environmental Protection Agency	DATE 1/16/2007
Direction: North	PHOTOGRAPHER	Robert Monnig	

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-27.	9
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: West	PHOTOGRAPHER	Robert Monnig	

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-28.	10
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: South	PHOTOGRAPHER	Robert Monnig	

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas



TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-29 (background).	11
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: East	PHOTOGRAPHER	Robert Monnig	

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-30.	12
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: West	PHOTOGRAPHER	Robert Monnig	

Forbes (ex) Atlas Missile Site S-5
Allen, Kansas

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-101.	11
	CLIENT	U.S. Environmental Protection Agency	DATE 1/17/2007
Direction: West	PHOTOGRAPHER	Robert Monnig	

TETRA TECH PROJECT NO. X9004.06.0002.001.002	DESCRIPTION	This photograph shows the sampling location of 3324-19.	12
	CLIENT	U.S. Environmental Protection Agency	DATE 1/18/2007
Direction: South	PHOTOGRAPHER	Robert Monnig	

APPENDIX C

FIELD LOGBOOK

KS807

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

LEVEL

All-Weather Notebook
No. 311

Forbes (Ex) Atlas Missile Site S-5
PA Sampling

4 5/8" x 7" - 48 Numbered Pages

01/15/07 Forbes Atlas

0900 R. Manning, O. Williams, and Q. Do (START) leave Geneva office for site.

1130 Arrive onsite and go over health and safety plan.

1200 Break for lunch.

1300 Setup for first boring.

1340 Begin boring SB-01

1400 Collect soil sample 3324-1 from SB-01 at 0-2 ft. SB-01 is near control counter at sand in road.

1514 Collect soil sample 3324-2 from SB-01 at 16-18'. Geoprobe hits refusal on hard clay at 18' bgs.

1545 Move to location SB-02 located west of coffin.

1600 Collect soil sample 3324-3 from SB-02 at 0-2'. Geoprobe hit refusal on rock at 6' bgs. No deep sample collected.

1637 Move to location SB-03 located along west fenceline.

1646 Collect soil sample 3324-4 from SB-03 at 2-4' bgs. Probe hits refusal at 4' bgs.

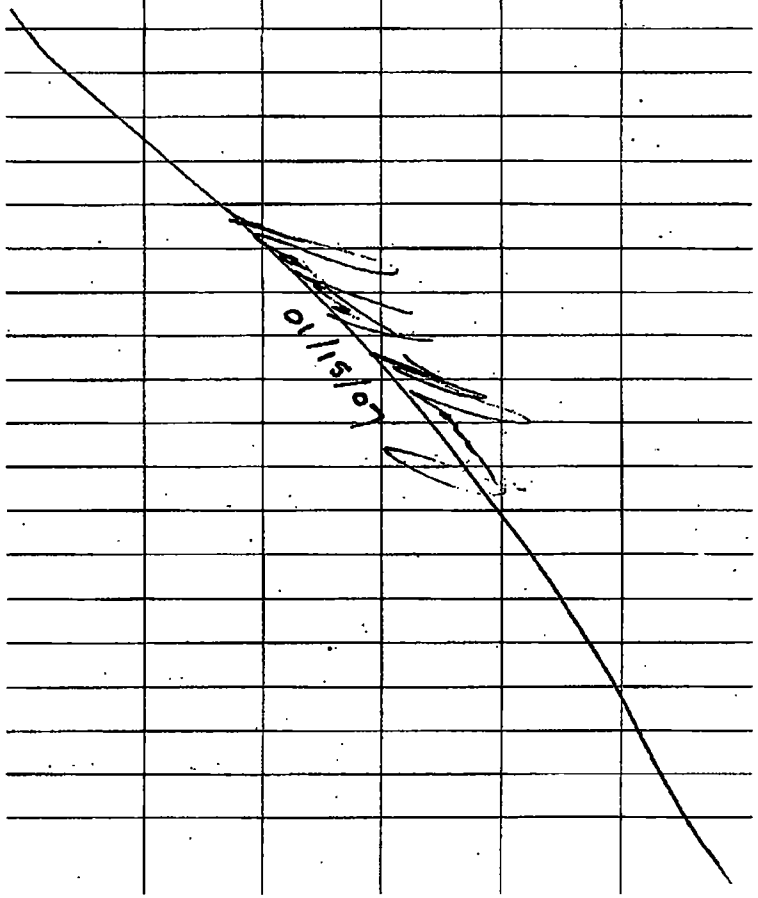
1710 Move to location SB-04 located southwest of missile coffin.

01/15/07 Forbes Atlas

1720 Collect soil sample 3324-5 at SB-04 from 0-2' bgs.

1744 Collect soil sample 3324-6 at SB-04 from 4-10' bgs. Probe hits refusal at 10' bgs.

1825 Finish packing samples and leave site.



01/16/07 Forbes Atlas

0800 Leave hotel for site.

0920 Arrive at site. Setup Geoprobe on location SB-05 at south fence near drainage feature.

0950 Collect soil sample 3324-7 at SB-05 from 0-2' bgs.

1013 Collect soil sample 3324-8 at SB-05 from 9-11' bgs. Probe hits refusal at 11' bgs.

1031 Move to location SB-06 located east of missile coffin.

1042 Collect soil sample 3324-9 at SB-06 from 0-2' bgs.

1111 Collect soil sample 3324-10 at SB-06 from 10-12' bgs. Probe hits refusal at 12' bgs.

1140 Leave site to ship samples.

1200 Pack samples for shipment.

1300 Ship samples via FedEx.

1300 Eat lunch

1330 Return to site. Scope out sediment sample locations.

1345 ~~Leave site~~ Collect samples 3324-11 through 3324-18 (See field sheets). 1700 Leave site.

01/16/07

01/17/07 Forbes Atlas

0800 Leave hotel for site. Quan Do returns to Lenexa.

0845 Arrive on site. Begin locating sediment locations.

0945 Collect sediment sample 3324-30 from location SED-01 located within drainage feature east of lagoons. Drainage feature is dry.

1012 Collect sediment sample 3324-27 from location SED-02 located within drainage feature the receives runoff from east portion of site. Drainage feature is dry.

1047 Collect sediment sample 3324-28 from location SED-03 located within drainage feature at southwest corner of site.

1100 Pack sediment samples collected.

1200 An unsecured permanent monitoring well located east of the missile coffin. Depth to water is 20.41 ft (From top of well housing). Total depth is 23.24 ft. Purged approximately 2 gallons before sampling the well. Well casing is 2" PVC.

1220 Collected 3 amber from well. Could not collect more due to slow recharge.

01/17/07 Forbes Atlas

1220 Well is left to recharge.

1226 Collect sediment sample 3324-29 from location SED-04.

1240 Leave for lunch. On way to lunch stop at Davis and Triemer residences to get access to sample water. Neither residence is home.

1400 Return from lunch and drive by and knock on door of Davis and Triemer residence. Neither is home.

1415 Pack samples which have been collected today.

1500 Arrive at Buller residence to collect background groundwater sample. Elizabeth Buller, home owner, gives permission to sample well. Mailing address is 328 Road 37a, Council Grove, KS 66846.

1540 Collect groundwater (drinking water) sample 3324-201 from owner's private well. Collected from spigot near barn.

1620 Leave Buller residence for hotel.

01/18/07

01/18/07 Forbes Atlas

0830 Leave hotel for site.

1025 Arrive at Triemer residence. Norman Triemer gives permission to collect drinking water sample. Address is 334 Highway 56, Council Grove, KS 66846. Well was installed around 1985, is approximately 25 ft deep and is located south of residence near creek. Water from well is rarely used for drinking. House is connected to rural water.

1030 After letting water run for 5 minutes analyzed water with KSI Meter. Temp = 7.08°C, Cond = 607, pH = 7.9 ORP = 4.2

1035 Collect drinking water sample 3324-202.

1050 Leave Triemer residence.

1052 Arrive at Davis residence. Owner does not want us to sample. Leave Davis residence.

1105 Return to site to collect more water from onsite monitoring well.

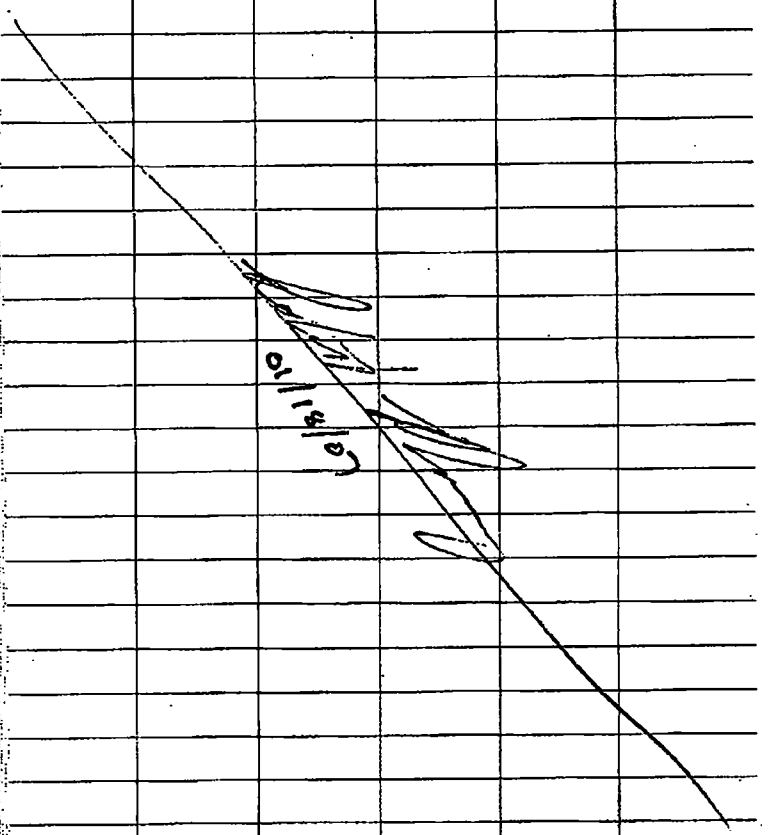
1147 Pack soil field blank 3324-25-FB

1157 Collect water field blank. Package all samples.

oct 13/07 Forbes Atlas

Collect soil sample 332H-89 from location SB-12. Soil pile near missile coffin. Collected from north side of pile. Collected extra volume for laboratory.

1300 Leave site for Lenexa.



APPENDIX D

FIELD SHEETS AND CHAIN-OF-CUSTODY RECORDS

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 1 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-1-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-01 0-2 ft

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/15/07 14:15
Longitude: ___ ___ ___ **End:** 01/15/07 14:53

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial Packed	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil ~~and Perchlorate~~ PCBs
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID and Perchlorate
2 - 40 mL VOA Packed	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Near control center and bend in road. Sampled from 0-2' bgs.
Collected extra volume

Depth	Description
0-2	Lt gray clay, with some darker soil
2-18	Lt. gray hard clay

Geoprobe refused on hard clay/rock.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 2 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-2-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-01 16-18'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/15/07 15:14
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and PCBs
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 - 2-40mL VOA	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Collocated with 3324-1. Near control center and bend in road. Sampled from 16-18' bgs. Geoprobe hit refusal on hard clay at 18' bgs.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 3 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-3-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-02 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/15/07 16:00

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and PCBs
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0-2 - 40 mL VOA	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

West of Missile coffin. Sampled from 0-2 ft bgs. Geoprobe hit refusal at 6 ft bgs on rock. Did not sample at 4-6 ft bgs due to insignificant difference in depth and similar lithology.

Depth	Description
0-2	Brn, clay, with rock
2-4	Lt. brown clay with rock, Geoprobe hit refusal on rock.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 4 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-4-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-03 2-4'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/15/07 14:46
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and PCBs
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
~~0~~ 2 - 40mL VOAs	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Along west fenceline. Geoprobe hit refusal at 4 ft bgs.
Sample collected from 2-4 ftbgs.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 5 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-5-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-04 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/13/07 17:20

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Southwest of missile coffin. Probe hit refusal at 10 ft bgs on rock.

Depth	Description
0-2	Clay with crushed rock, possibly fill
2-4	Lt gray clay with rocks
4-6	↓
6-8	
8-10	

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 6 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-6-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-04 8-10'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/15/07 17:44

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Colocated with 3324-5. Sampled from 8-10' intival. Southwest of missile coffin.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 7 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-7-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-05 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 09:50
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Near South section of fence adjacent to drainage feature.
Sampled at 0-2 ft.

Depth	Description
0-2	Lt. gray to black clay with crushed rock, fill
2-4	Lt gray, hard clay with rock
4-6	↓
6-8	↓
8-10	↓
10-11	Refusal on hard clay/rock

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 8 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-8-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: S8-05 9-11'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 10:13
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Colocated with 3324-7. Sampled from 9-11 ft bgs.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 9 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-9-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-06 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 10:42

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

East of missile coffin. Sampled from 0-2'.

Depth	Description
0-2	Crushed Rock, fill
2-4	Dark Brown Clay with rock
4-6	Lt Gray Clay, hard, with rock.
6-8	↓
8-10	Geoprobe Refusal on hard clay/rock
10-12	

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 10 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-10-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-06 10-12'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 11:11

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Colocated with 3324-9. Sampled from 10-12'.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 11 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-11-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-07 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 14:03
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Near east concrete pad.

Depth	Description
0-2	Dark brown soil
2-4	Dark brown clay, hard
4-6	↓
6-8	

Geoprobe refusal on rock.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 12 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-12-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-07 6-8'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 14:20

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Colocated with 3324-11.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 13 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-13-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-08 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 14:43
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Near west concrete pad.

Depth	Description
0-2	Dark brown clay with rock
2-4	↓
4-6	↓
6-8	↓
8-10	↓
10-12	Geoprobe hit refusal on rock.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 14 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-14-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-08 10-12'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 15:03

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
? - 40mL VOA vial eserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
. - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Colocated with 3324-13.

ample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 15 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-15-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-09 0-2'

Expected Conc: (or Circle One: Low Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ . **Sample Collection: Start:** 01/10/07 15:20

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C	14 Days	1 TPH Volatiles in Soil by GC/MS
40mL VOA vial reserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14 Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28 Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180 Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28 Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14 Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14 Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14 Days	1 TPH Semi-Volatile in Soil by GC/FID
0 -	4 Deg C	0 Days	1 Percent Solid

Sample Comments:

(N/A) South lagoon.

Depth	Description
0-2	Dark clay
2-4	Lt. gray clay with rock
4-6	Crushed rock

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 16 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-16-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-10 0-2'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 16:00
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
- 40mL VOA vial :served/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
1 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Southeast of site on west side of Road D.

Depth	Description
0-2	Dark brown clay
2-4	↓
4-6	Lt. gray clay with rock

Geoprobe hit refusal on rock at 6' bgs.

mple Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 17 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-17-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-10 4-6'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 16:18

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C	14 Days	1 TPH Volatiles in Soil by GC/MS
40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14 Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28 Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180 Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28 Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14 Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14 Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14 Days	1 TPH Semi-Volatile in Soil by GC/FID
1 -	4 Deg C	0 Days	1 Percent Solid

Sample Comments:

(N/A)

Colocated with 3324-16. Note: two boreholes were required to get to 6 ft bgs.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 18 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-18-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-11 2-4'

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 16:50

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
1 - 8 oz glass	4 Deg C	28	Days	1 Mercury in Soil or Sediment
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP
1 - 8 oz glass	4 Deg C	28	Days	1 Perchlorate in Soil by IC
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil
1 - 8 oz glass	4 Deg C	14	Days	1 PCBs in Soil by GC/EC
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
1 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Background location. North of site at end of Road D.

Depth	Description
0-2	Crushed Rock
2-4	Brown clay with rock

Geoprobe hit refusal on rock at 4' bgs.

mple Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 19 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-19-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil sample

External Sample Number: SB-12

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/18/07 12:40

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

	Container	Preservative	Holding Time		Analysis
4	2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
4	3 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
	~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
	1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
	~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
	1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and PCB
	~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
	1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
4	~~2~~ - 40mL VOA	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Collected soil sample from soil pile near Missile Coffin. Collected from north side of pile. Collected extra volume.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 25 **QC Code:** FB **Matrix:** Solid **Tag ID:** 3324-25-FB

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Soil 5035/TPH VOA Trip blank sample

External Sample Number: _____

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/18/07 11:47

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (preserved/tared)	4 Deg C, H2O + sodium bisulfate (in vial)	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~2-40mL VOA~~	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A)

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 27 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-27-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Sediment sample

External Sample Number: SED-02

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/17/07 10:12

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial ~~(preserved/tared)~~	4 Deg C, H2O ~~+sodium bisulfate (in vial)~~	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and PCB
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile In Soil by GC/FID
~~2~~ 2 - 40 mL VOA	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Collected sediment sample from drainage feature that receives runoff from east portion of site. Sample location is adjacent to Road D. Drainage feature is dry.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 28 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-28-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Sediment sample

External Sample Number: SED-03

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/17/07 15:47

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial (~~preserved~~)	4 Deg C, ~~H2SO4 sodium bisulfate (in vial)~~	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and ~~Perchlorate~~ PCBs
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID and Perchlorate
0 -	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Collected sediment sample from drainage way at southwest corner of site.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 29 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-29-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Sediment sample

External Sample Number: SED-04

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/17/07 12:26

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C	14 Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial	4 Deg C, ~~H2O + sodium bisulfate (in vial)~~ (preserved/Encore)	14 Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28 Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180 Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28 Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14 Days	1 Semi-Volatile Organic Compounds in Soil and PCB
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14 Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14 Days	1 TPH Semi-Volatile in Soil by GC/FID and Perchlorate
0 -	4 Deg C	0 Days	1 Percent Solid

Sample Comments:

(N/A)

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 30 **QC Code:** __ **Matrix:** Solid **Tag ID:** 3324-[redacted]-26

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Sediment sample

External Sample Number: SED-01

Expected Conc: (or Circle One: (Low) Medium High)

Latitude: ___ ___ ___
Longitude: ___ ___ ___

	Date	Time(24 hr)
Sample Collection: Start:	01/17/07	09:45
End:	__/__/__	__:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in Soil by GC/MS
2 - 40mL VOA vial ~~(preserved/acidified)~~	4 Deg C, ~~H2SO4 Sodium Bisulfate (solid)~~	14	Days	1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury in Soil or Sediment~~
1 - 8 oz glass	4 Deg C	180	Days	1 Metals in Solids by ICP and Mercury
~~1 - 8 oz glass~~	~~4 Deg C~~	~~28~~	~~Days~~	~~1 Perchlorate in Soil by IC~~
1 - 8 oz glass	4 Deg C	14	Days	1 Semi-Volatile Organic Compounds in Soil and PCB
~~1 - 8 oz glass~~	~~4 Deg C~~	~~14~~	~~Days~~	~~1 PCBs in Soil by GC/EC~~
1 - 8 oz glass	4 Deg C	14	Days	1 TPH Semi-Volatile in Soil by GC/FID
0 - 2 - 40mL VOA	4 Deg C	0	Days	1 Percent Solid

Sample Comments:

(N/A) Sediment sample from drainage feature east of lagoons.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 101 **QC Code:** __ **Matrix:** Water **Tag ID:** 3324-101-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: ~~Temp~~ GW sample

External Sample Number: MW-01

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/17/07 12:20
Longitude: ___ ___ ___ **End:** 01/18/07 12:45

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
1 - 1 Liter Cubitainer	4 Deg C	28	Days	1 Perchlorate in Water by IC
~~1 - 1 Liter Cubitainer~~	~~5 mL of HNO3/L to pH<2~~	~~28~~	~~Days~~	~~1 Mercury in Water~~
~~1 - 1 Liter Cubitainer~~	~~HNO3 acidify, 4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury - Dissolved, in Water~~
1 - 1 Liter Cubitainer	HNO3 to pH<2	180	Days	1 Metals in Water by ICP/MS and Hg
1 - 1 Liter Cubitainer	HNO3 to pH<2	180	Days	1 Metals - Dissolved, in Water by ICP/MS and Hg
2 - 128oz amber glass	4 Deg C	7	Days	1 Semi-Volatile Organic Compounds in Water and TPH
1 - 128oz amber glass	4 Deg C	7	Days	1 Pesticides in Water by GC/EC
~~1 - 128oz amber glass~~	~~4 Deg C~~	~~7~~	~~Days~~	~~1 TPH Semi-volatile in Water by GC/FID~~ STET
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in water by GC/MS
4 - 40mL VOA vial	4 Deg C, HCL to pH<2	14	Days	1 VOCs in Water by GC/MS for Low Detection Limits

Sample Comments:

(N/A)

Collected from an unmanned permanent monitoring well located east of the missile Coffin. Depth to water 20.41 ft (from top of well housing). Total depth 23.24 ft from top of well housing. Purged approximately 2 gallons before sampling. Well casing is 2" PVC.

* Could only collect 3 ambers due to slow well recharge

Sample Collected By: RM

Kansas City, KS

SR Number: 3324 **Sample Number:** 110 **QC Code:** FB **Matrix:** Water **Tag ID:** 3324-110-FB

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: Temp. GW Field Blank sample

External Sample Number: _____

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/16/07 17:15

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
1 - 1 Liter Cubitainer	4 Deg C	28	Days	1 Perchlorate in Water by IC
~~1 - 1 Liter Cubitainer~~	~~5 mL of HNO3/L to pH<2~~	~~28~~	~~Days~~	~~1 Mercury in Water~~
~~1 - 1 Liter Cubitainer~~	~~HNO3 acidify; 4 Deg C~~	~~28~~	~~Days~~	~~1 Mercury - Dissolved, in Water~~
1 - 1 Liter Cubitainer	HNO3 to pH<2	180	Days	1 Metals in Water by ICP/MS and Hg
~~1 - 1 Liter Cubitainer~~	~~HNO3 to pH<2~~	~~180~~	~~Days~~	~~1 Metals - Dissolved, in Water by ICP/MS and Hg~~
3 - 128oz amber glass	4 Deg C	7	Days	1 Semi-Volatile Organic Compounds in Water
128oz amber glass	4 Deg C	7	Days	1 Pesticides in Water by GC/EC
1 - 128oz amber glass	4 Deg C	7	Days	1 TPH Semi-volatile in Water by GC/FID
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in water by GC/MS
4 - 40mL VOA vial	4 Deg C, HCL to pH<2	14	Days	1 VOCs in Water by GC/MS for Low Detection Limits

Sample Comments:

(N/A)

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 201 **QC Code:** __ **Matrix:** Water **Tag ID:** 3324-201-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: DW sample

External Sample Number: DW-01

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/17/07 15:40
Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
1 - 1 Liter Cubitainer	4 Deg C	28	Days	1 Perchlorate in Water by IC
~~1 - 1 Liter Cubitainer~~	~~5 mL of HNO3/L to pH<2~~	~~28~~	~~Days~~	~~1 Mercury in Water~~
1 - 1 Liter Cubitainer	HNO3 to pH<2	180	Days	1 Metals in Water by ICP/MS Mercury
2 - 128oz amber glass	4 Deg C	7	Days	2 Semi-Volatile Organic Compounds in Water
1 - 128oz amber glass	4 Deg C	7	Days	1 Pesticides in Water by GC/EC and PCB
1 - 128oz amber glass	4 Deg C	7	Days	1 TPH Semi-volatile in Water by GC/FID and PAH
~~1 - 128oz amber glass~~	~~4 Deg C~~	~~7~~	~~Days~~	~~1 PAH's in Water by GC/MS-SIM~~
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in water by GC/MS
4 - 40mL VOA vial	4 Deg C, HCL to pH<2	14	Days	1 VOCs in Drinking Water by GC/MS

Sample Comments:

(N/A)

Owner
Elizabeth Buller
328 Road 370
Council Grove, KS 66846

Water Quality
T = 8.37
Cond = 761
pH = 7.27
ORP = 32.2

Collected sample from owner's private well.
Sample collected from spigot near barn.

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 202 **QC Code:** __ **Matrix:** Water **Tag ID:** 3324-202-__

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: DW sample

External Sample Number: DW-02

Expected Conc: (or Circle One: (Low) Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/18/07 10:35

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time		Analysis
1 - 1 Liter Cubitainer	4 Deg C	28	Days	1 Perchlorate in Water by IC
~~1 - 1 Liter Cubitainer~~	~~5 mL of HNO3/L to pH<2~~	~~28~~	~~Days~~	~~1 Mercury in Water~~
1 - 1 Liter Cubitainer	HNO3 to pH<2	180	Days	1 Metals in Water by ICP/MS and Mercury
1 - 128oz amber glass	4 Deg C	7	Days	2 Semi-Volatile Organic Compounds in Water
1 - 128oz amber glass	4 Deg C	7	Days	1 Pesticides in Water by GC/EC and PCB
1 - 128oz amber glass	4 Deg C	7	Days	1 TPH Semi-volatile in Water by GC/FID and PAH
~~1 - 128oz amber glass~~	~~4 Deg C~~	~~7~~	Days	~~1 PAH's in Water by GC/MS-SIM~~
2 - 40mL VOA vial	4 Deg C	14	Days	1 TPH Volatiles in water by GC/MS
4 - 40mL VOA vial	4 Deg C, HCL to pH<2	14	Days	1 VOCs in Drinking Water by GC/MS

Sample Comments:

(N/A)

Owner
Norman Triemer
334 Highway 56
Council Grove, KS 66846

Well is about 25 ft deep. Well is south of house close to creek. Well was installed ~1985. Well is rarely used for drinking. House is connected to rural water

Water Quality: T= 7.08°C
Cond = 607
pH = 7.9
ORP = -4.2

Sample Collected By: RM

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

ASR Number: 3324 **Sample Number:** 209 **QC Code:** FB **Matrix:** Water **Tag ID:** 3324-209-FB

Project ID: PRFEXAMS5 **Project Manager:** Paul Roemerman
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
City: Allen **State:** Kansas
Program: Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00

Location Desc: DW/TPH VOA (OA-1) Trip Blank sample

External Sample Number: _____

Expected Conc: (or Circle One: Low Medium High) **Date** **Time(24 hr)**

Latitude: ___ ___ ___ **Sample Collection: Start:** 01/18/07 11:57

Longitude: ___ ___ ___ **End:** __/__/__ __:__

Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C	14 Days	1 TPH Volatiles In water by GC/MS
4 - 40mL VOA vial	4 Deg C, HCL to pH<2	14 Days	1 VOCs in Drinking Water by GC/MS

Sample Comments:

(N/A)

Some trip blank containers broke. Not enough containers to do a temp monitoring well trip blank.

Sample Collected By: RM

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print)	NAME OF SURVEY OR ACTIVITY	DATE OF COLLECTION (DAY / MONTH / YEAR)	SHEET
Paul Roemerman	Forbes Atlas 3-5	18 / 01 / 07	1 of 1

CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS: 1 Liter CUBITAINER	8oz BOTTLE	12 oz BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	SAMPLED MEDIA: water	soil	sediment	dust	other	RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
3324-26		3			6			X			
3324-27		3			6			X			
3324-28		3			6			X			
3324-29		3			6			X			
3324-101	3		3		6	X					
3324-201	2		4		12	X					Extra volume
3324-202	2		4		6	X					
3324-209-FB					6	X					
3324-25-FB					6		X				
3324-19		3			12						Extra volume.

DESCRIPTION OF SHIPMENT

____ PIECE(S) CONSISTING OF ____ BOX(ES)

4 ICE CHEST(S): OTHER ____

MODE OF SHIPMENT

____ COMMERCIAL CARRIER: ____

____ COURIER

____ SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
SEALED UNSEALED X	01/18/07	1603	RDWiggam SEALED UNSEALED X	Drop off at USEPA Lab
RELINQUISHED BY SEALED UNSEALED	DATE	TIME	RECEIVED BY SEALED UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY SEALED UNSEALED	DATE	TIME	RECEIVED BY SEALED UNSEALED	REASON FOR CHANGE OF CUSTODY

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print)	NAME OF SURVEY OR ACTIVITY	DATE OF COLLECTION (DAY / MONTH / YEAR)	SHEET
Paul Rosenmann	Forbes Ex Atlas S-5	15-16 / 01 / 2007	1 of 1

CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS: CUBITAINER	BOTTLE (807)	BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	SAMPLED MEDIA: water	soil	sediment	dust	other	RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
3324-1		3			12		X				Extra volume.
3324-2		3			6		X				
3324-3		3			6		X				
3324-4		3			6		X				
3324-5		3			6		X				
3324-6		3			6		X				
3324-7		3			6		X				
3324-8		3			6		X				
3324-9		3			6		X				
3324-10		3			6		X				

DESCRIPTION OF SHIPMENT

____ PIECE(S) CONSISTING OF ____ BOX(ES)

2 ICE CHEST(S); OTHER ____

MODE OF SHIPMENT

X COMMERCIAL CARRIER: FedEx

____ COURIER

____ SAMPLER CONVEYED ____ (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
[signature] SEALED / UNSEALED	01/16/07	1300	FedEx SEALED / UNSEALED	Ship to Lab
RELINQUISHED BY SEALED / UNSEALED	DATE	TIME	RECEIVED BY SEALED / UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY SEALED / UNSEALED	DATE	TIME	RECEIVED BY SEALED / UNSEALED	REASON FOR CHANGE OF CUSTODY

*U.S. GPO: 2002-756-917/40053

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print)	NAME OF SURVEY OR ACTIVITY	DATE OF COLLECTION (DAY / MONTH / YEAR)	SHEET
Paul Reerman	Forbes Ex Atlas 5-5	15-16 01 2007	1 of 1

CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS: CUBITAINER	BOT BOTTLE	BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	SAMPLED MEDIA: water	soil	sediment	dust	other	RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
3324-1		3			12		X				Extra volume.
3324-2		3			6		X				
3324-3		3			6		X				
3324-4		3			6		X				
3324-5		3			6		X				
3324-6		3			6		X				
3324-7		3			6		X				
3324-8		3			6		X				
3324-9		3			6		X				
3324-10		3			6		X				

DESCRIPTION OF SHIPMENT

____ PIECE(S) CONSISTING OF ____ BOX(ES)

2 ICE CHEST(S): OTHER ____

MODE OF SHIPMENT

X COMMERCIAL CARRIER: FedEx

____ COURIER

____ SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER) ____

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
[signature] ☐ SEALED ☐ UNSEALED	01/16/07	1300	FedEx ☐ SEALED ☐ UNSEALED	Ship to Lab
RELINQUISHED BY ☐ SEALED ☐ UNSEALED	DATE	TIME	RECEIVED BY ☐ SEALED ☐ UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY ☐ SEALED ☐ UNSEALED	DATE	TIME	RECEIVED BY ☐ SEALED ☐ UNSEALED	REASON FOR CHANGE OF CUSTODY

*U.S. GPO: 2002-756-917/40053

APPENDIX E

ANALYTICAL RESULTS

United States Environmental Protection Agency
Region 7
901 N. 5th Street
Kansas City, KS 66101

Date: 02/23/2007

Subject: Transmittal of Sample Analysis Results for ASR #: 3324

Project ID: PRFEXAMS5

Project Description: Forbes (EX) Atlas Missile Site S-5 - PA sampling

From: Dale I. Bates, Director
Regional Laboratory, Environmental Services Division

To: Paul Roemerman
SUPR/MOKS

Enclosed are the analytical data for the above-referenced Analytical Services Request (ASR) and Project. The Regional Laboratory has reviewed and verified the results in accordance with procedures described in our Quality Manual (QM). In addition to all of the analytical results, this transmittal contains pertinent information that may have influenced the reported results and documents any deviations from the established requirements of the QM.

Please contact us within 14 days of receipt of this package if you determine there is a need for any changes. Please complete the enclosed Customer Satisfaction Survey and Data Disposition/Sample Release memo for this ASR as soon as possible. The process of disposing of the samples for this ASR will be initiated 30 days from the date of this transmittal unless an alternate release date is specified on the Data Disposition/Sample Release memo.

If you have any questions or concerns relating to this data package, contact our customer service line at 913-551-5295.

Enclosures

cc: Analytical Data File.

Project Manager: Paul Roemerman **Org:** SUPR/MOKS **Phone:** 913-551-7694
Project ID: PRFEXAMS5
Project Desc: Forbes (EX) Atlas Missile Site S-5 - PA sampling
Location: Allen **State:** Kansas **Program:** Superfund
Site Name: Multi-Site - General **Site ID:** 07ZZ **Site OU:** 00
Purpose: Site Characterization **GPRA PRC:** 302DD2C

CERCLIS ID: KSN000703129

Explanation of Codes, Units and Qualifiers used on this report

Sample QC Codes: QC Codes identify the type of sample for quality control purpose.

__ = Field Sample
FB = Field Blank

Units: Specific units in which results are reported.

% = Percent
mg/L = Milligrams per Liter
mg/kg = Milligrams per Kilogram
ug/L = Micrograms per Liter
ug/kg = Micrograms per Kilogram

Data Qualifiers: Specific codes used in conjunction with data values to provide additional information on the quality of reported results, or used to explain the absence of a specific value.

(Blank)= Values have been reviewed and found acceptable for use.
J = The identification of the analyte is acceptable; the reported value is an estimate.
R = The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable.
U = The analyte was not detected at or above the reporting limit.
UJ = The analyte was not detected at or above the reporting limit. The reporting limit is an estimate.

ASR Number: 3324 **Sample Information Summary** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Sample No	QC Code	Matrix	Location Description	External Sample No	Start Date	Start Time	End Date	End Time	Receipt Date
1 - __		Solid	Soil sample (SB-01, 0-2')		01/15/2007	14:15	01/15/2007	14:53	01/17/2007
2 - __		Solid	Soil sample (SB-01, 16-18')		01/15/2007	15:14			01/17/2007
3 - __		Solid	Soil sample (SB-02, 0-2')		01/15/2007	16:00			01/17/2007
4 - __		Solid	Soil sample (SB-03, 2-4')		01/15/2007	16:46			01/17/2007
5 - __		Solid	Soil sample (SB-04, 0-2')		01/15/2007	17:20			01/17/2007
6 - __		Solid	Soil sample (SB-04, 8-10')		01/15/2007	17:44			01/17/2007
7 - __		Solid	Soil sample (SB-05, 0-2')		01/16/2007	09:50			01/17/2007
8 - __		Solid	Soil sample (SB-05, 9-11')		01/16/2007	10:13			01/17/2007
9 - __		Solid	Soil sample (SB-06, 0-2')		01/16/2007	10:42			01/17/2007
10 - __		Solid	Soil sample (SB-06, 10-12')		01/16/2007	11:11			01/17/2007
11 - __		Solid	Soil sample (SB-07, 0-2')		01/16/2007	14:03			01/17/2007
12 - __		Solid	Soil sample (SB-07, 6-8')		01/16/2007	14:20			01/17/2007
13 - __		Solid	Soil sample (SB-08, 0-2')		01/16/2007	14:43			01/17/2007
14 - __		Solid	Soil sample (SB-08, 10-12')		01/16/2007	15:03			01/17/2007
15 - __		Solid	Soil sample (SB-09, 0-2')		01/16/2007	15:20			01/17/2007
16 - __		Solid	Soil sample (SB-10, 0-2')		01/16/2007	16:00			01/17/2007
17 - __		Solid	Soil sample (SB-10, 4-6')		01/16/2007	16:18			01/17/2007
18 - __		Solid	Soil sample (SB-11, 2-4')		01/16/2007	16:50			01/17/2007
19 - __		Solid	Soil sample (SB-12)		01/18/2007	12:40			01/19/2007
25 - FB		Solid	Soil 5035/TPH VOA Trip blank sample		01/18/2007	11:47			01/19/2007
26 - __		Solid	Sediment sample (SED-01)		01/17/2007	09:45			01/19/2007
27 - __		Solid	Sediment sample (SED-02)		01/17/2007	10:12			01/19/2007
28 - __		Solid	Sediment sample (SED-03)		01/17/2007	10:47			01/19/2007
29 - __		Solid	Sediment sample (SED-04)		01/19/2007	12:26			01/19/2007
101 - __		Water	GW sample (MW-01)		01/17/2007	12:20	01/18/2007	12:45	01/19/2007
110 - FB		Water	Temp. GW Field Blank sample		01/16/2007	17:15			01/17/2007
201 - __		Water	DW sample (01) private well from spigot near barn		01/17/2007	15:40			01/19/2007
202 - __		Water	DW sample (02) - South of house close to creek		01/18/2007	10:35			01/19/2007
209 - FB		Water	DW/TPH VOA (OA-1) Trip Blank sample		01/18/2007	11:57			01/19/2007

Analysis **Comments About Results For This Analysis**

1 Mercury in Soil or Sediment

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 26-__ 27-__
28-__ 29-__

Comments:
(N/A)

1 Metals in Solids by ICP

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 26-__ 27-__
28-__ 29-__

Comments:
Slight beryllium and lead contamination were found in the preparation and/or calibration blanks. Only samples containing these analytes at a level greater than ten times the contamination level of the blank are reported without being qualified. All samples that contained these analytes but at a level less than ten times the contamination in the blank have the result U-coded indicating that the reporting limits have been raised to the levels found in the samples. Samples affected were: beryllum in -19, -26, and -28 and lead in -2.

Selenium in samples -1 through -19 and -26 through -29 and beryllium in samples -2, -3, -6, and -12 were UJ-coded and beryllium in samples -1, -4, -5, -7 through -11, and -13 through -18 was J-coded. Positive results were J-coded and non-detect results were UJ-coded due to negative recoveries of these analytes in the interference check samples (ICS) which were not present in the ICS solution but whose absolute values were greater than the method detection limits (MDL), therefore, a possibility of false negatives exists. The actual reporting limits may be higher than the reported values.

Antimony and selenium in samples -1 through -18, antimony in samples -19 through -29, and arsenic in sample -17 were UJ-coded. These analytes were not found in the samples at or above the reporting limits, however, the reporting limits are an estimate (UJ-coded) due to low recoveries of these analytes in the laboratory matrix spike. The actual reporting limits for these analytes may be higher than the reported values.

Arsenic in samples -1 through -16 and -18, lead in samples -19 through -29, and manganese in samples -1 through -18 were J-coded. Although the analytes in question have been positively identified in the samples, the quantitations are an estimate (J-coded) due to low recoveries of these analytes in the laboratory matrix spike. The actual concentrations for these analytes may be higher than the reported values.

Analysis **Comments About Results For This Analysis**

Calcium in samples -1 through -18 and arsenic, iron, and vanadium in samples -19 through -29 were J-coded. Although the analytes in question have been positively identified in the samples, the quantitations are an estimate (J-coded) due to poor precision obtained for these analytes in the laboratory duplicate samples.

Lead in samples -1 and -3 through -18 was J-coded and lead in sample -2 was UJ-coded. Positive results were J-coded and non-detect results were UJ-coded due to the serial dilution percent differences being above the control limits. The actual concentrations for lead may be higher than the reported values.

1 PCBs in Soil by GC/EC

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 26-__ 27-__
28-__ 29-__

Comments:
Aroclor 1248 was UJ-coded in samples -1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15, -16, -17, and -18. This analyte was not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of this analyte in the PE sample. The actual reporting limit for this analyte may be higher than the reported value.

1 Percent Solid

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3142.9D

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 25-FB 26-__
27-__ 28-__ 29-__

Comments:
(N/A)

1 Perchlorate in Soil by IC

Lab: REAP Contract Lab (Out-Source)

Method: Similar to EPA Region 7 RLAB Method 3135.9B (see comments)

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 26-__ 27-__
28-__ 29-__

Comments:

Analysis **Comments About Results For This Analysis**

1 Semi-Volatile Organic Compounds in Soil

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 26-__ 27-__
28-__ 29-__

Comments:
Benzo(a)anthracene, chrysene, fluoranthene, and pyrene in samples -1, -4, and -11 and benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoroanthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene in samples -1, -2, -4, -8, -11, and -14 were UJ-coded. These analytes were not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of the surrogate analytes. The actual reporting limit for these analytes may be higher than the reported value.

Pyrene was UJ-coded in sample -3. This analyte was not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of this analyte in the laboratory matrix spike. The actual reporting limit for this analyte may be higher than the reported value.

1 TPH Semi-Volatile in Soil by GC/FID

Lab: REAP Contract Lab (Out-Source)

Method: Similar to EPA Region 7 RLAB Method 3270.1C (see comments)

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 26-__ 27-__
28-__ 29-__

Comments:
All soil samples except 3324-8 and 3324-28 exhibited a weathered pattern. The pattern observed in the samples did not exactly match that of any target fuel used in calibration. However, #6 fuel oil was the analyte that most closely resembled the pattern seen in the field samples and were quantitated as such.

1 TPH Volatiles in Soil by GC/MS

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3230.19A

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__ 17-__ 18-__ 19-__ 25-FB 26-__
27-__ 28-__ 29-__

Analysis **Comments About Results For This Analysis**

Comments:
The reporting limit for sample 29 was raised due to the sample weight and the percent moisture (all data is reported on a dry weight basis).

Sample 8 did not contain the gasoline pattern. However, there was a diesel/motor oil type of pattern present. The analytes that are common to both the gasoline and diesel/motor oil patterns, were below the reporting limit.

1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap
Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples:	1-__	2-__	3-__	4-__	5-__	6-__	7-__
	8-__	9-__	10-__	11-__	12-__	13-__	14-__
	15-__	16-__	17-__	18-__	19-__	25-FB	26-__
	27-__	28-__	29-__				

Comments:
m,p-Xylene was J-coded in samples -7 and -26. Although the analyte in question has been positively identified in the samples, the quantitation is an estimate (J-coded) due to high recovery of a surrogate analyte in these samples. The actual concentration for this analytes may be lower than the reported value.

Acetone, benzene, 2-butanone, m,p-xylene, and o-xylene were J-coded in sample -1. Although the analytes in question has been positively identified in the sample, the quantitation is an estimate (J-coded) due to low internal standard response. The actual concentration for these analytes may be lower than the reported value.

Internal standards in sample -1 had unacceptable response indicating that is was not possible to obtain valid results for non-detect analytes. Results of 'N/A' were reported with R-codes for these analytes.

Internal standards in samples -19, -26, -28, and -29 had unacceptable response indicating that is was not possible to obtain valid results for bromoform, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene. Results of 'N/A' were reported with R-codes for these analytes.

Benzene was J-coded in sample -1. Although the analyte in question has been positively identified in the sample, the quantitation is an estimate (J-coded) due to high recovery of this analyte in the laboratory matrix spike. The actual concentration for this analyte may be lower than the reported value.

Benzene in sample -1 and methylcyclohexane in sample -14 were J-coded. Although the analytes in question has been positively identified in the samples, the quantitation is an estimate (J-coded) due to high recovery of these analytes in the performance evaluation sample. The actual concentration for these analytes may be lower than the reported value.

Analysis	Comments About Results For This Analysis

1 Mercury - Dissolved, in Water

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 101-__

Comments:
(N/A)

1 Mercury in Water

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 101-__ 110-FB 201-__ 202-__

Comments:
(N/A)

1 Metals - Dissolved, in Water by ICP/MS

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 101-__

Comments:
Slight copper and zinc contamination were found in the preparation blank. Only samples containing these analytes at a level greater than ten times the contamination level of the blank are reported without being qualified. All samples that contained these analytes but at a level less than ten times the contamination in the blank have the result U-coded indicating that the reporting limits have been raised to the levels found in the samples. Samples affected were: copper and zinc in -101.

Thallium in sample -101 was UJ-coded. This analyte was not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to negative recovery of this analyte in the interference check samples (ICS) which was not present in the ICS solution but whose absolute value was greater than the method detection limit (MDL), therefore, a possibility of false negatives exists. The actual reporting limit may be higher than the reported value.

Zinc was UJ-coded in sample -101. This analyte was not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to poor precision obtained for this analyte in the laboratory duplicate sample. The actual reporting limit for this analyte may be higher than the reported value.

Barium and manganese in sample -101 were J-coded. Although the analytes in question have been positively identified in these samples, the quantitations are an estimate (J-coded) due to the serial dilution percent differences being above the control limits. The actual concentrations for barium and manganese may be higher than the reported values.

ASR Number:3324 **RLAB Approved Analysis Comments** **02/23/2007**

Project ID:PRFEXAMS5 **Project Desc** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis	Comments About Results For This Analysis

1 Metals in Water by ICP/MS

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 101-__ 110-FB 201-__ 202-__

Comments:

Slight copper and lead contamination were found in the preparation blank. Only samples containing these analytes at a level greater than ten times the contamination level of the blank are reported without being qualified. All samples that contained these analytes but at a level less than ten times the contamination in the blank have the result U-coded indicating that the reporting limits have been raised to the levels found in the samples. Samples affected were: copper in -101 and -201 and lead in -101.

Thallium in samples -101, -110FB, and -201 was UJ-coded. This analyte was not found in the samples at or above the reporting limits, however, the reporting limits are an estimate (UJ-coded) due to negative recovery of this analyte in the interference check samples (ICS) which was not present in the ICS solution but whose absolute value was greater than the method detection limit (MDL), therefore, a possibility of false negatives exists. The actual reporting limits may be higher than the reported values.

Zinc was UJ-coded in sample -110FB. This analyte was not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to poor precision obtained for this analyte in the laboratory duplicate sample. The actual reporting limit for this analyte may be higher than the reported value.

Zinc was J-coded in samples -101, -201, and -202. Although the analyte in question has been positively identified in the sample, the quantitation is an estimate (J-coded) due to poor precision obtained for this analyte in the laboratory duplicate sample.

1 PAH's in Water by GC/MS-SIM

Lab: REAP Contract Lab (Out-Source)

Method: Similar to EPA SW846 Method 8270D using SIM (see comments)

Samples: 201-__ 202-__

Comments:

(N/A)

1 Perchlorate in Water by IC

Lab: REAP Contract Lab (Out-Source)

Method: Similar to EPA Region 7 RLAB Method 3135.9B (see comments)

Samples: 101-__ 110-FB 201-__ 202-__

Comments:

1 Pesticides in Water by GC/EC

Analysis	Comments About Results For This Analysis

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 101-__ 110-FB 201-__ 202-__

Comments:
(N/A)

1 Semi-Volatile Organic Compounds in Water

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 101-__ 110-FB

Comments:

2 Semi-Volatile Organic Compounds in Water

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 201-__ 202-__

Comments:

1 TPH Semi-volatile in Water by GC/FID

Lab: REAP Contract Lab (Out-Source)

Method: Similar to EPA Region 7 RLAB Method 3270.1C (see comments)

Samples: 101-__ 110-FB 201-__ 202-__

Comments:
(N/A)

1 TPH Volatiles in water by GC/MS

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3230.19A

Samples: 101-__ 110-FB 201-__ 202-__ 209-FB

Comments:

1 VOCs in Drinking Water by GC/MS

Lab: Region 7 EPA Laboratory - Kansas City, Ks.

Method: EPA Region 7 RLAB Method 3230.9C

Samples: 201-__ 202-__ 209-FB

Analysis **Comments About Results For This Analysis**

Comments:

Dichlorodifluoromethane was UJ-coded in samples 201, 202, and 209-fb. This analyte was not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to the continuing calibration check not meeting accuracy specifications. The actual reporting limit for this analyte may be higher than the reported value.

Carbon Disulfide was UJ-coded in sample 202. This analyte was not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of this analyte in the laboratory matrix spike. The actual reporting limit for this analyte may be higher than the reported value.

1 VOCs in Water by GC/MS for Low Detection Limits

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3230.13C

Samples: 101-__ 110-FB

Comments:

Dichlorodifluoromethane, Chloromethane, and Acetone were UJ-coded in samples 101 and 110-FB. These analytes were not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to the continuing calibration check not meeting accuracy specifications. The actual reporting limit for these analytes may be higher than the reported value.

Bromoform, Chlorobenzene, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, trans-1,3-Dichloropropene, 2-Hexanone, 4-Methyl-2-Pentanone, Naphthalene, and 1,1,2,2-Tetrachloroethane were UJ-coded in sample 101. These analytes were not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to poor precision obtained for these analytes in the laboratory matrix spike and matrix spike duplicate. The actual reporting limit for these analytes may be higher than the reported value.

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
1 Mercury in Soil or Sediment					
Mercury	mg/kg	0.123 U	0.102 U	0.131 U	0.135 U
1 Metals in Solids by ICP					
Aluminum	mg/kg	18300	1250	12500	17700
Antimony	mg/kg	7.39 UJ	6.13 UJ	7.39 UJ	7.07 UJ
Arsenic	mg/kg	6.51 J	1.93 J	4.96 J	5.95 J
Barium	mg/kg	169	40.5	136	178
Beryllium	mg/kg	0.800 J	0.511 UJ	0.616 UJ	0.811 J
Cadmium	mg/kg	0.616 U	0.511 U	0.616 U	0.589 U
Calcium	mg/kg	29700 J	5280 J	8250 J	3760 J
Chromium	mg/kg	21.3	2.67	16.2	21.4
Cobalt	mg/kg	9.73	5.11 U	6.16 U	5.89 U
Copper	mg/kg	16.6	2.55 U	8.12	12.0
Iron	mg/kg	20200	2940	11300	16600
Lead	mg/kg	12.5 J	2.22 UJ	24.6 J	14.0 J
Magnesium	mg/kg	5270	511 U	2010	2340
Manganese	mg/kg	452 J	84.5 J	210 J	329 J
Nickel	mg/kg	22.6	4.09 U	12.5	14.4
Potassium	mg/kg	2760	511 U	1390	1730
Selenium	mg/kg	4.31 UJ	3.58 UJ	4.31 UJ	4.12 UJ
Silver	mg/kg	1.23 U	1.02 U	1.23 U	1.18 U
Sodium	mg/kg	616 U	511 U	616 U	589 U
Thallium	mg/kg	3.08 U	2.55 U	3.08 U	2.94 U
Vanadium	mg/kg	32.4	7.64	23.7	38.5
Zinc	mg/kg	49.3	7.34	40.9	43.5
1 PCBs in Soil by GC/EC					
Aroclor 1016	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1221	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1232	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1242	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1248	ug/kg	39 UJ	34 UJ	44 UJ	43 UJ
Aroclor 1254	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1260	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1262	ug/kg	39 U	34 U	44 U	43 U
Aroclor 1268	ug/kg	39 U	34 U	44 U	43 U
1 Percent Solid					
Solids, percent	%	79.5	97.9	79.1	78.3
1 Perchlorate in Soil by IC					
Perchlorate	mg/kg	0.39 U	0.29 U	0.42 U	0.4 U
1 Semi-Volatile Organic Compounds in Soil					
Acenaphthene	ug/kg	210 U	180 U	210 U	200 U
Acenaphthylene	ug/kg	210 U	180 U	210 U	200 U
Acetophenone	ug/kg	210 U	180 U	210 U	200 U
Anthracene	ug/kg	210 U	180 U	210 U	200 U
Atrazine	ug/kg	210 U	180 U	210 U	200 U
Benzaldehyde	ug/kg	210 U	180 U	210 U	200 U

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
Benzo(a)anthracene	ug/kg	210 UJ	180 U	210 U	200 UJ
Benzo(a)pyrene	ug/kg	210 UJ	180 UJ	210 U	200 UJ
Benzo(b)fluoranthene	ug/kg	210 UJ	180 UJ	210 U	200 UJ
Benzo(g,h,i)perylene	ug/kg	210 U	180 U	210 U	200 U
Benzo(k)fluoranthene	ug/kg	210 UJ	180 UJ	210 U	200 UJ
Biphenyl	ug/kg	210 U	180 U	210 U	200 U
bis(2-Chloroethoxy)methane	ug/kg	210 U	180 U	210 U	200 U
bis(2-Chloroethyl)ether	ug/kg	210 U	180 U	210 U	200 U
bis(2-Chloroisopropyl)ether	ug/kg	210 U	180 U	210 U	200 U
bis(2-Ethylhexyl)phthalate	ug/kg	210 U	180 U	210 U	200 U
4-Bromophenyl-phenylether	ug/kg	210 U	180 U	210 U	200 U
Butylbenzylphthalate	ug/kg	210 U	180 U	210 U	200 U
Caprolactam	ug/kg	210 U	180 U	210 U	200 U
Carbazole	ug/kg	210 U	180 U	210 U	200 U
4-Chloro-3-methylphenol	ug/kg	210 U	180 U	210 U	200 U
4-Chloroaniline	ug/kg	210 U	180 U	210 U	200 U
2-Chloronaphthalene	ug/kg	210 U	180 U	210 U	200 U
2-Chlorophenol	ug/kg	210 U	180 U	210 U	200 U
4-Chlorophenyl-phenylether	ug/kg	210 U	180 U	210 U	200 U
Chrysene	ug/kg	210 UJ	180 U	210 U	200 UJ
Di-n-butylphthalate	ug/kg	210 U	180 U	210 U	200 U
Di-n-octylphthalate	ug/kg	210 U	180 U	210 U	200 U
Dibenz(a,h)anthracene	ug/kg	210 UJ	180 UJ	210 U	200 UJ
Dibenzofuran	ug/kg	210 U	180 U	210 U	200 U
3,3'-Dichlorobenzidine	ug/kg	210 U	180 U	210 U	200 U
2,4-Dichlorophenol	ug/kg	210 U	180 U	210 U	200 U
Diethylphthalate	ug/kg	210 U	180 U	210 U	200 U
2,4-Dimethylphenol	ug/kg	210 U	180 U	210 U	200 U
Dimethylphthalate	ug/kg	210 U	180 U	210 U	200 U
4,6-Dinitro-2-methylphenol	ug/kg	410 U	340 U	410 U	400 U
2,4-Dinitrophenol	ug/kg	410 U	340 U	410 U	400 U
2,4-Dinitrotoluene	ug/kg	210 U	180 U	210 U	200 U
2,6-Dinitrotoluene	ug/kg	210 U	180 U	210 U	200 U
Fluoranthene	ug/kg	210 UJ	180 U	210 U	200 UJ
Fluorene	ug/kg	210 U	180 U	210 U	200 U
Hexachlorobenzene	ug/kg	210 U	180 U	210 U	200 U
Hexachlorobutadiene	ug/kg	210 U	180 U	210 U	200 U
Hexachlorocyclopentadiene	ug/kg	210 U	180 U	210 U	200 U
Hexachloroethane	ug/kg	210 U	180 U	210 U	200 U
Indeno(1,2,3-cd)pyrene	ug/kg	210 UJ	180 UJ	210 U	200 UJ
Isophorone	ug/kg	210 U	180 U	210 U	200 U
2-Methylnaphthalene	ug/kg	210 U	180 U	210 U	200 U
2-Methylphenol	ug/kg	210 U	180 U	210 U	200 U
4-Methylphenol	ug/kg	210 U	180 U	210 U	200 U
Naphthalene	ug/kg	210 U	180 U	210 U	200 U

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
2-Nitroaniline	ug/kg	410 U	340 U	410 U	400 U
3-Nitroaniline	ug/kg	410 U	340 U	410 U	400 U
4-Nitroaniline	ug/kg	410 U	340 U	410 U	400 U
Nitrobenzene	ug/kg	210 U	180 U	210 U	200 U
2-Nitrophenol	ug/kg	210 U	180 U	210 U	200 U
4-Nitrophenol	ug/kg	410 U	340 U	410 U	400 U
N-nitroso-di-n-propylamine	ug/kg	210 U	180 U	210 U	200 U
N-nitrosodiphenylamine	ug/kg	210 U	180 U	210 U	200 U
Pentachlorophenol	ug/kg	410 U	340 U	410 U	400 U
Phenanthrene	ug/kg	210 U	180 U	210 U	200 U
Phenol	ug/kg	210 U	180 U	210 U	200 U
Pyrene	ug/kg	210 UJ	180 U	210 UJ	200 UJ
2,4,5-Trichlorophenol	ug/kg	210 U	180 U	210 U	200 U
2,4,6-Trichlorophenol	ug/kg	210 U	180 U	210 U	200 U
1 TPH Semi-Volatile in Soil by GC/FID					
Extractable TPH	mg/kg	82 U	68.6 U	83.1 U	82 U
1 TPH Volatiles in Soil by GC/MS					
Purgeable TPH	ug/kg	50 U	50 U	50 U	50 U
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	52 J	23 U	140	46
Benzene	ug/kg	6.4 J	11 U	6.6 U	6.0 U
Bromodichloromethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Bromoform	ug/kg	N/A R	11 U	6.6 U	6.0 U
Bromomethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
2-Butanone	ug/kg	16 J	23 U	20	12 U
Carbon Disulfide	ug/kg	N/A R	11 U	6.6 U	6.0 U
Carbon Tetrachloride	ug/kg	N/A R	11 U	6.6 U	6.0 U
Chlorobenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
Chloroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Chloroform	ug/kg	N/A R	11 U	6.6 U	6.0 U
Chloromethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Cyclohexane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2-Dibromo-3-Chloropropane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Dibromochloromethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2-Dibromoethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2-Dichlorobenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,3-Dichlorobenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,4-Dichlorobenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
Dichlorodifluoromethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,1-Dichloroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2-Dichloroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,1-Dichloroethene	ug/kg	N/A R	11 U	6.6 U	6.0 U
cis-1,2-Dichloroethene	ug/kg	N/A R	11 U	6.6 U	6.0 U
trans-1,2-Dichloroethene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2-Dichloropropane	ug/kg	N/A R	11 U	6.6 U	6.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
cis-1,3-Dichloropropene	ug/kg	N/A R	11 U	6.6 U	6.0 U
trans-1,3-Dichloropropene	ug/kg	N/A R	11 U	6.6 U	6.0 U
Ethyl Benzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
2-Hexanone	ug/kg	N/A R	23 U	13 U	12 U
Isopropylbenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
Methyl Acetate	ug/kg	N/A R	11 U	6.6 U	6.0 U
Methyl tert-butyl ether	ug/kg	N/A R	11 U	6.6 U	6.0 U
Methylcyclohexane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Methylene Chloride	ug/kg	N/A R	11 U	6.6 U	6.0 U
4-Methyl-2-Pentanone	ug/kg	N/A R	23 U	13 U	12 U
Styrene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,1,2,2-Tetrachloroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Tetrachloroethene	ug/kg	N/A R	11 U	6.6 U	6.0 U
Toluene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2,3-Trichlorobenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,2,4-Trichlorobenzene	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,1,1-Trichloroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,1,2-Trichloroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Trichloroethene	ug/kg	N/A R	11 U	6.6 U	6.0 U
Trichlorofluoromethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
1,1,2-Trichlorotrifluoroethane	ug/kg	N/A R	11 U	6.6 U	6.0 U
Vinyl Chloride	ug/kg	N/A R	11 U	6.6 U	6.0 U
m and/or p-Xylene	ug/kg	19 J	11 U	6.6 U	6.0 U
o-Xylene	ug/kg	6.3 J	11 U	6.6 U	6.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
1 Mercury in Soil or Sediment					
Mercury	mg/kg	0.124 U	0.127 U	0.140 U	0.107 U
1 Metals in Solids by ICP					
Aluminum	mg/kg	16600	11700	17800	14300
Antimony	mg/kg	6.97 UJ	7.00 UJ	7.60 UJ	6.76 UJ
Arsenic	mg/kg	5.18 J	8.24 J	6.23 J	4.72 J
Barium	mg/kg	129	85.8	218	73.0
Beryllium	mg/kg	0.728 J	0.583 UJ	0.821 J	0.614 J
Cadmium	mg/kg	0.581 U	0.583 U	0.633 U	0.564 U
Calcium	mg/kg	41800 J	118000 J	13800 J	107000 J
Chromium	mg/kg	25.0	22.2	19.2	23.6
Cobalt	mg/kg	11.4	7.63	9.46	10.2
Copper	mg/kg	17.5	19.1	12.8	14.9
Iron	mg/kg	19700	14400	16800	19100
Lead	mg/kg	7.73 J	19.3 J	24.9 J	4.79 J
Magnesium	mg/kg	8650	5200	2610	8040
Manganese	mg/kg	340 J	278 J	579 J	352 J
Nickel	mg/kg	29.6	27.7	16.3	28.0
Potassium	mg/kg	3560	3620	2020	3420
Selenium	mg/kg	4.07 UJ	4.08 UJ	4.43 UJ	3.95 UJ
Silver	mg/kg	1.16 U	1.17 U	1.27 U	1.13 U
Sodium	mg/kg	581 U	583 U	633 U	564 U
Thallium	mg/kg	2.91 U	2.92 U	3.17 U	2.82 U
Vanadium	mg/kg	26.3	20.0	37.2	21.3
Zinc	mg/kg	48.2	33.9	46.8	38.8
1 PCBs in Soil by GC/EC					
Aroclor 1016	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1221	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1232	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1242	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1248	ug/kg	39 UJ	40 UJ	41 UJ	37 UJ
Aroclor 1254	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1260	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1262	ug/kg	39 U	40 U	41 U	37 U
Aroclor 1268	ug/kg	39 U	40 U	41 U	37 U
1 Percent Solid					
Solids, percent	%	85.9	89.3	76.3	86.3
1 Perchlorate in Soil by IC					
Perchlorate	mg/kg	0.37 U	0.36 U	0.44 U	0.33 U
1 Semi-Volatile Organic Compounds in Soil					
Acenaphthene	ug/kg	200 U	210 U	220 U	190 U
Acenaphthylene	ug/kg	200 U	210 U	220 U	190 U
Acetophenone	ug/kg	200 U	210 U	220 U	190 U
Anthracene	ug/kg	200 U	210 U	220 U	190 U
Atrazine	ug/kg	200 U	210 U	220 U	190 U
Benzaldehyde	ug/kg	200 U	210 U	220 U	190 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
Benzo(a)anthracene	ug/kg	200 U	210 U	220 U	190 U
Benzo(a)pyrene	ug/kg	200 U	210 U	220 U	190 UJ
Benzo(b)fluoranthene	ug/kg	200 U	210 U	220 U	190 UJ
Benzo(g,h,i)perylene	ug/kg	200 U	210 U	220 U	190 U
Benzo(k)fluoranthene	ug/kg	200 U	210 U	220 U	190 UJ
Biphenyl	ug/kg	200 U	210 U	220 U	190 U
bis(2-Chloroethoxy)methane	ug/kg	200 U	210 U	220 U	190 U
bis(2-Chloroethyl)ether	ug/kg	200 U	210 U	220 U	190 U
bis(2-Chloroisopropyl)ether	ug/kg	200 U	210 U	220 U	190 U
bis(2-Ethylhexyl)phthalate	ug/kg	200 U	210 U	220 U	190 U
4-Bromophenyl-phenylether	ug/kg	200 U	210 U	220 U	190 U
Butylbenzylphthalate	ug/kg	200 U	210 U	220 U	190 U
Caprolactam	ug/kg	200 U	210 U	220 U	190 U
Carbazole	ug/kg	200 U	210 U	220 U	190 U
4-Chloro-3-methylphenol	ug/kg	200 U	210 U	220 U	190 U
4-Chloroaniline	ug/kg	200 U	210 U	220 U	190 U
2-Chloronaphthalene	ug/kg	200 U	210 U	220 U	190 U
2-Chlorophenol	ug/kg	200 U	210 U	220 U	190 U
4-Chlorophenyl-phenylether	ug/kg	200 U	210 U	220 U	190 U
Chrysene	ug/kg	200 U	210 U	220 U	190 U
Di-n-butylphthalate	ug/kg	200 U	210 U	220 U	190 U
Di-n-octylphthalate	ug/kg	200 U	210 U	220 U	190 U
Dibenz(a,h)anthracene	ug/kg	200 U	210 U	220 U	190 UJ
Dibenzofuran	ug/kg	200 U	210 U	220 U	190 U
3,3'-Dichlorobenzidine	ug/kg	200 U	210 U	220 U	190 U
2,4-Dichlorophenol	ug/kg	200 U	210 U	220 U	190 U
Diethylphthalate	ug/kg	200 U	210 U	220 U	190 U
2,4-Dimethylphenol	ug/kg	200 U	210 U	220 U	190 U
Dimethylphthalate	ug/kg	200 U	210 U	220 U	190 U
4,6-Dinitro-2-methylphenol	ug/kg	390 U	400 U	420 U	380 U
2,4-Dinitrophenol	ug/kg	390 U	400 U	420 U	380 U
2,4-Dinitrotoluene	ug/kg	200 U	210 U	220 U	190 U
2,6-Dinitrotoluene	ug/kg	200 U	210 U	220 U	190 U
Fluoranthene	ug/kg	200 U	210 U	220 U	190 U
Fluorene	ug/kg	200 U	210 U	220 U	190 U
Hexachlorobenzene	ug/kg	200 U	210 U	220 U	190 U
Hexachlorobutadiene	ug/kg	200 U	210 U	220 U	190 U
Hexachlorocyclopentadiene	ug/kg	200 U	210 U	220 U	190 U
Hexachloroethane	ug/kg	200 U	210 U	220 U	190 U
Indeno(1,2,3-cd)pyrene	ug/kg	200 U	210 U	220 U	190 UJ
Isophorone	ug/kg	200 U	210 U	220 U	190 U
2-Methylnaphthalene	ug/kg	200 U	210 U	220 U	190 U
2-Methylphenol	ug/kg	200 U	210 U	220 U	190 U
4-Methylphenol	ug/kg	200 U	210 U	220 U	190 U
Naphthalene	ug/kg	200 U	210 U	220 U	190 U

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
2-Nitroaniline	ug/kg	390 U	400 U	420 U	380 U
3-Nitroaniline	ug/kg	390 U	400 U	420 U	380 U
4-Nitroaniline	ug/kg	390 U	400 U	420 U	380 U
Nitrobenzene	ug/kg	200 U	210 U	220 U	190 U
2-Nitrophenol	ug/kg	200 U	210 U	220 U	190 U
4-Nitrophenol	ug/kg	390 U	400 U	420 U	380 U
N-nitroso-di-n-propylamine	ug/kg	200 U	210 U	220 U	190 U
N-nitrosodiphenylamine	ug/kg	200 U	210 U	220 U	190 U
Pentachlorophenol	ug/kg	390 U	400 U	420 U	380 U
Phenanthrene	ug/kg	200 U	210 U	220 U	190 U
Phenol	ug/kg	200 U	210 U	220 U	190 U
Pyrene	ug/kg	200 U	210 U	220 U	190 U
2,4,5-Trichlorophenol	ug/kg	200 U	210 U	220 U	190 U
2,4,6-Trichlorophenol	ug/kg	200 U	210 U	220 U	190 U
1 TPH Semi-Volatile in Soil by GC/FID					
Extractable TPH	mg/kg	76.6 U	79.5 U	87.1 U	76.7 U
1 TPH Volatiles in Soil by GC/MS					
Purgeable TPH	ug/kg	50 U	50 U	50 U	50 U
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	14	12 U	60	12 U
Benzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Bromodichloromethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Bromoform	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Bromomethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
2-Butanone	ug/kg	11 U	12 U	12 U	12 U
Carbon Disulfide	ug/kg	5.5 U	6.2 U	10	6.2 U
Carbon Tetrachloride	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Chlorobenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Chloroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Chloroform	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Chloromethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Cyclohexane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Dibromochloromethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2-Dibromoethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2-Dichlorobenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,3-Dichlorobenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,4-Dichlorobenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Dichlorodifluoromethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,1-Dichloroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2-Dichloroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,1-Dichloroethene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
cis-1,2-Dichloroethene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
trans-1,2-Dichloroethene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2-Dichloropropane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
cis-1,3-Dichloropropene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
trans-1,3-Dichloropropene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Ethyl Benzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
2-Hexanone	ug/kg	11 U	12 U	12 U	12 U
Isopropylbenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Methyl Acetate	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Methyl tert-butyl ether	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Methylcyclohexane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Methylene Chloride	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
4-Methyl-2-Pentanone	ug/kg	11 U	12 U	12 U	12 U
Styrene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,1,2,2-Tetrachloroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Tetrachloroethene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Toluene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2,3-Trichlorobenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,2,4-Trichlorobenzene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,1,1-Trichloroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,1,2-Trichloroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Trichloroethene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Trichlorofluoromethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
Vinyl Chloride	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U
m and/or p-Xylene	ug/kg	5.5 U	6.2 U	15 J	6.2 U
o-Xylene	ug/kg	5.5 U	6.2 U	5.9 U	6.2 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	9-__	10-__	11-__	12-__
1 Mercury in Soil or Sediment					
Mercury	mg/kg	0.118 U	0.134 U	0.121 U	0.136 U
1 Metals in Solids by ICP					
Aluminum	mg/kg	14500	20600	16100	11600
Antimony	mg/kg	7.44 UJ	8.04 UJ	7.53 UJ	7.72 UJ
Arsenic	mg/kg	5.74 J	14.7 J	4.90 J	7.03 J
Barium	mg/kg	124	149	202	93.6
Beryllium	mg/kg	0.623 J	1.06 J	0.754 J	0.644 UJ
Cadmium	mg/kg	0.620 U	0.670 U	0.627 U	0.644 U
Calcium	mg/kg	59300 J	5530 J	5180 J	2580 J
Chromium	mg/kg	19.6	35.6	17.4	30.2
Cobalt	mg/kg	7.60	7.01	8.07	6.46
Copper	mg/kg	15.0	16.1	9.87	7.38
Iron	mg/kg	16300	29200	15100	18200
Lead	mg/kg	16.0 J	30.3 J	12.9 J	9.59 J
Magnesium	mg/kg	5280	3390	2050	1340
Manganese	mg/kg	352 J	369 J	491 J	322 J
Nickel	mg/kg	22.7	25.6	14.3	14.3
Potassium	mg/kg	2990	1830	1790	1020
Selenium	mg/kg	4.34 UJ	4.69 UJ	4.39 UJ	4.50 UJ
Silver	mg/kg	1.24 U	1.34 U	1.25 U	1.29 U
Sodium	mg/kg	620 U	670 U	627 U	644 U
Thallium	mg/kg	3.10 U	3.35 U	3.14 U	3.22 U
Vanadium	mg/kg	26.3	61.1	33.5	49.4
Zinc	mg/kg	53.0	30.8	31.4	21.0
1 PCBs in Soil by GC/EC					
Aroclor 1016	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1221	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1232	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1242	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1248	ug/kg	40 UJ	45 UJ	45 UJ	45 UJ
Aroclor 1254	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1260	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1262	ug/kg	40 U	45 U	45 U	45 U
Aroclor 1268	ug/kg	40 U	45 U	45 U	45 U
1 Percent Solid					
Solids, percent	%	82.4	72.6	78.9	78.9
1 Perchlorate in Soil by IC					
Perchlorate	mg/kg	0.42 U	0.43 U	0.43 U	0.38 U
1 Semi-Volatile Organic Compounds in Soil					
Acenaphthene	ug/kg	200 U	240 U	240 U	220 U
Acenaphthylene	ug/kg	200 U	240 U	240 U	220 U
Acetophenone	ug/kg	200 U	240 U	240 U	220 U
Anthracene	ug/kg	200 U	240 U	240 U	220 U
Atrazine	ug/kg	200 U	240 U	240 U	220 U
Benzaldehyde	ug/kg	200 U	240 U	240 U	220 U

Analysis/ Analyte	Units	9-__	10-__	11-__	12-__
Benzo(a)anthracene	ug/kg	200 U	240 U	240 UJ	220 U
Benzo(a)pyrene	ug/kg	200 U	240 U	240 UJ	220 U
Benzo(b)fluoranthene	ug/kg	200 U	240 U	240 UJ	220 U
Benzo(g,h,i)perylene	ug/kg	200 U	240 U	240 U	220 U
Benzo(k)fluoranthene	ug/kg	200 U	240 U	240 UJ	220 U
Biphenyl	ug/kg	200 U	240 U	240 U	220 U
bis(2-Chloroethoxy)methane	ug/kg	200 U	240 U	240 U	220 U
bis(2-Chloroethyl)ether	ug/kg	200 U	240 U	240 U	220 U
bis(2-Chloroisopropyl)ether	ug/kg	200 U	240 U	240 U	220 U
bis(2-Ethylhexyl)phthalate	ug/kg	200 U	240 U	240 U	310
4-Bromophenyl-phenylether	ug/kg	200 U	240 U	240 U	220 U
Butylbenzylphthalate	ug/kg	200 U	240 U	240 U	220 U
Caprolactam	ug/kg	200 U	240 U	240 U	220 U
Carbazole	ug/kg	200 U	240 U	240 U	220 U
4-Chloro-3-methylphenol	ug/kg	200 U	240 U	240 U	220 U
4-Chloroaniline	ug/kg	200 U	240 U	240 U	220 U
2-Chloronaphthalene	ug/kg	200 U	240 U	240 U	220 U
2-Chlorophenol	ug/kg	200 U	240 U	240 U	220 U
4-Chlorophenyl-phenylether	ug/kg	200 U	240 U	240 U	220 U
Chrysene	ug/kg	200 U	240 U	240 UJ	220 U
Di-n-butylphthalate	ug/kg	200 U	240 U	240 U	220 U
Di-n-octylphthalate	ug/kg	200 U	240 U	240 U	220 U
Dibenz(a,h)anthracene	ug/kg	200 U	240 U	240 UJ	220 U
Dibenzofuran	ug/kg	200 U	240 U	240 U	220 U
3,3'-Dichlorobenzidine	ug/kg	200 U	240 U	240 U	220 U
2,4-Dichlorophenol	ug/kg	200 U	240 U	240 U	220 U
Diethylphthalate	ug/kg	200 U	240 U	240 U	220 U
2,4-Dimethylphenol	ug/kg	200 U	240 U	240 U	220 U
Dimethylphthalate	ug/kg	200 U	240 U	240 U	220 U
4,6-Dinitro-2-methylphenol	ug/kg	380 U	470 U	470 U	430 U
2,4-Dinitrophenol	ug/kg	380 U	470 U	470 U	430 U
2,4-Dinitrotoluene	ug/kg	200 U	240 U	240 U	220 U
2,6-Dinitrotoluene	ug/kg	200 U	240 U	240 U	220 U
Fluoranthene	ug/kg	200 U	240 U	240 UJ	220 U
Fluorene	ug/kg	200 U	240 U	240 U	220 U
Hexachlorobenzene	ug/kg	200 U	240 U	240 U	220 U
Hexachlorobutadiene	ug/kg	200 U	240 U	240 U	220 U
Hexachlorocyclopentadiene	ug/kg	200 U	240 U	240 U	220 U
Hexachloroethane	ug/kg	200 U	240 U	240 U	220 U
Indeno(1,2,3-cd)pyrene	ug/kg	200 U	240 U	240 UJ	220 U
Isophorone	ug/kg	200 U	240 U	240 U	220 U
2-Methylnaphthalene	ug/kg	200 U	240 U	240 U	220 U
2-Methylphenol	ug/kg	200 U	240 U	240 U	220 U
4-Methylphenol	ug/kg	200 U	240 U	240 U	220 U
Naphthalene	ug/kg	200 U	240 U	240 U	220 U

Analysis/ Analyte	Units	9-__	10-__	11-__	12-__
2-Nitroaniline	ug/kg	380 U	470 U	470 U	430 U
3-Nitroaniline	ug/kg	380 U	470 U	470 U	430 U
4-Nitroaniline	ug/kg	380 U	470 U	470 U	430 U
Nitrobenzene	ug/kg	200 U	240 U	240 U	220 U
2-Nitrophenol	ug/kg	200 U	240 U	240 U	220 U
4-Nitrophenol	ug/kg	380 U	470 U	470 U	430 U
N-nitroso-di-n-propylamine	ug/kg	200 U	240 U	240 U	220 U
N-nitrosodiphenylamine	ug/kg	200 U	240 U	240 U	220 U
Pentachlorophenol	ug/kg	380 U	470 U	470 U	430 U
Phenanthrene	ug/kg	200 U	240 U	240 U	220 U
Phenol	ug/kg	200 U	240 U	240 U	220 U
Pyrene	ug/kg	200 U	240 U	240 UJ	220 U
2,4,5-Trichlorophenol	ug/kg	200 U	240 U	240 U	220 U
2,4,6-Trichlorophenol	ug/kg	200 U	240 U	240 U	220 U
1 TPH Semi-Volatile in Soil by GC/FID					
Extractable TPH	mg/kg	83.8 U	88.4 U	85.9 U	87.5 U
1 TPH Volatiles in Soil by GC/MS					
Purgeable TPH	ug/kg	50 U	50 U	50 U	50 U
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	10 U	140	58	15
Benzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Bromodichloromethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Bromoform	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Bromomethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
2-Butanone	ug/kg	10 U	46	15 U	12 U
Carbon Disulfide	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Carbon Tetrachloride	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Chlorobenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Chloroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Chloroform	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Chloromethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Cyclohexane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Dibromochloromethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2-Dibromoethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2-Dichlorobenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,3-Dichlorobenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,4-Dichlorobenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Dichlorodifluoromethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,1-Dichloroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2-Dichloroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,1-Dichloroethene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
cis-1,2-Dichloroethene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
trans-1,2-Dichloroethene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2-Dichloropropane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	9-__	10-__	11-__	12-__
cis-1,3-Dichloropropene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
trans-1,3-Dichloropropene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Ethyl Benzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
2-Hexanone	ug/kg	10 U	12 U	15 U	12 U
Isopropylbenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Methyl Acetate	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Methyl tert-butyl ether	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Methylcyclohexane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Methylene Chloride	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
4-Methyl-2-Pentanone	ug/kg	10 U	12 U	15 U	12 U
Styrene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,1,2,2-Tetrachloroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Tetrachloroethene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Toluene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2,3-Trichlorobenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,2,4-Trichlorobenzene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,1,1-Trichloroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,1,2-Trichloroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Trichloroethene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Trichlorofluoromethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
Vinyl Chloride	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U
m and/or p-Xylene	ug/kg	5.1 U	15	13	6.0 U
o-Xylene	ug/kg	5.1 U	6.1 U	7.5 U	6.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	13-__	14-__	15-__	16-__
1 Mercury in Soil or Sediment					
Mercury	mg/kg	0.129 U	0.128 U	0.131 U	0.132 U
1 Metals in Solids by ICP					
Aluminum	mg/kg	15200	17900	14300	18800
Antimony	mg/kg	7.81 UJ	6.95 UJ	7.40 UJ	7.44 UJ
Arsenic	mg/kg	4.56 J	7.51 J	7.56 J	2.39 J
Barium	mg/kg	169	174	229	161
Beryllium	mg/kg	0.710 J	0.783 J	0.805 J	0.729 J
Cadmium	mg/kg	0.651 U	0.579 U	0.617 U	0.620 U
Calcium	mg/kg	4150 J	40800 J	4770 J	4400 J
Chromium	mg/kg	19.6	31.2	19.4	20.8
Cobalt	mg/kg	6.51 U	12.2	16.9	7.68
Copper	mg/kg	10.7	18.4	11.5	15.0
Iron	mg/kg	15600	21500	17900	16000
Lead	mg/kg	8.82 J	8.39 J	23.3 J	5.73 J
Magnesium	mg/kg	2340	7550	2140	4920
Manganese	mg/kg	103 J	591 J	841 J	506 J
Nickel	mg/kg	16.1	34.3	16.5	23.3
Potassium	mg/kg	1260	2450	1380	2140
Selenium	mg/kg	4.55 UJ	4.06 UJ	4.32 UJ	4.34 UJ
Silver	mg/kg	1.30 U	1.16 U	1.23 U	1.24 U
Sodium	mg/kg	651 U	579	617 U	620 U
Thallium	mg/kg	3.25 U	2.90 U	3.08 U	3.10 U
Vanadium	mg/kg	29.6	32.0	48.9	20.0
Zinc	mg/kg	30.2	40.0	32.1	33.7
1 PCBs in Soil by GC/EC					
Aroclor 1016	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1221	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1232	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1242	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1248	ug/kg	42 UJ	45 UJ	41 UJ	43 UJ
Aroclor 1254	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1260	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1262	ug/kg	42 U	45 U	41 U	43 U
Aroclor 1268	ug/kg	42 U	45 U	41 U	43 U
1 Percent Solid					
Solids, percent	%	77.7	79.2	83.5	89.6
1 Perchlorate in Soil by IC					
Perchlorate	mg/kg	0.42 U	0.4 U	0.39 U	0.38 U
1 Semi-Volatile Organic Compounds in Soil					
Acenaphthene	ug/kg	220 U	270 U	210 U	210 U
Acenaphthylene	ug/kg	220 U	270 U	210 U	210 U
Acetophenone	ug/kg	220 U	270 U	210 U	210 U
Anthracene	ug/kg	220 U	270 U	210 U	210 U
Atrazine	ug/kg	220 U	270 U	210 U	210 U
Benzaldehyde	ug/kg	220 U	270 U	210 U	210 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	13-__	14-__	15-__	16-__
Benzo(a)anthracene	ug/kg	220 U	270 U	210 U	210 U
Benzo(a)pyrene	ug/kg	220 U	270 UJ	210 U	210 U
Benzo(b)fluoranthene	ug/kg	220 U	270 UJ	210 U	210 U
Benzo(g,h,i)perylene	ug/kg	220 U	270 U	210 U	210 U
Benzo(k)fluoranthene	ug/kg	220 U	270 UJ	210 U	210 U
Biphenyl	ug/kg	220 U	270 U	210 U	210 U
bis(2-Chloroethoxy)methane	ug/kg	220 U	270 U	210 U	210 U
bis(2-Chloroethyl)ether	ug/kg	220 U	270 U	210 U	210 U
bis(2-Chloroisopropyl)ether	ug/kg	220 U	270 U	210 U	210 U
bis(2-Ethylhexyl)phthalate	ug/kg	230	270 U	290	210 U
4-Bromophenyl-phenylether	ug/kg	220 U	270 U	210 U	210 U
Butylbenzylphthalate	ug/kg	220 U	270 U	210 U	210 U
Caprolactam	ug/kg	220 U	270 U	210 U	210 U
Carbazole	ug/kg	220 U	270 U	210 U	210 U
4-Chloro-3-methylphenol	ug/kg	220 U	270 U	210 U	210 U
4-Chloroaniline	ug/kg	220 U	270 U	210 U	210 U
2-Chloronaphthalene	ug/kg	220 U	270 U	210 U	210 U
2-Chlorophenol	ug/kg	220 U	270 U	210 U	210 U
4-Chlorophenyl-phenylether	ug/kg	220 U	270 U	210 U	210 U
Chrysene	ug/kg	220 U	270 U	210 U	210 U
Di-n-butylphthalate	ug/kg	220 U	270 U	210 U	210 U
Di-n-octylphthalate	ug/kg	220 U	270 U	210 U	210 U
Dibenz(a,h)anthracene	ug/kg	220 U	270 UJ	210 U	210 U
Dibenzofuran	ug/kg	220 U	270 U	210 U	210 U
3,3'-Dichlorobenzidine	ug/kg	220 U	270 U	210 U	210 U
2,4-Dichlorophenol	ug/kg	220 U	270 U	210 U	210 U
Diethylphthalate	ug/kg	220 U	270 U	210 U	210 U
2,4-Dimethylphenol	ug/kg	220 U	270 U	210 U	210 U
Dimethylphthalate	ug/kg	220 U	270 U	210 U	210 U
4,6-Dinitro-2-methylphenol	ug/kg	420 U	530 U	400 U	410 U
2,4-Dinitrophenol	ug/kg	420 U	530 U	400 U	410 U
2,4-Dinitrotoluene	ug/kg	220 U	270 U	210 U	210 U
2,6-Dinitrotoluene	ug/kg	220 U	270 U	210 U	210 U
Fluoranthene	ug/kg	220 U	270 U	210 U	210 U
Fluorene	ug/kg	220 U	270 U	210 U	210 U
Hexachlorobenzene	ug/kg	220 U	270 U	210 U	210 U
Hexachlorobutadiene	ug/kg	220 U	270 U	210 U	210 U
Hexachlorocyclopentadiene	ug/kg	220 U	270 U	210 U	210 U
Hexachloroethane	ug/kg	220 U	270 U	210 U	210 U
Indeno(1,2,3-cd)pyrene	ug/kg	220 U	270 UJ	210 U	210 U
Isophorone	ug/kg	220 U	270 U	210 U	210 U
2-Methylnaphthalene	ug/kg	220 U	270 U	210 U	210 U
2-Methylphenol	ug/kg	220 U	270 U	210 U	210 U
4-Methylphenol	ug/kg	220 U	270 U	210 U	210 U
Naphthalene	ug/kg	220 U	270 U	210 U	210 U

Analysis/ Analyte	Units	13-__	14-__	15-__	16-__
2-Nitroaniline	ug/kg	420 U	530 U	400 U	410 U
3-Nitroaniline	ug/kg	420 U	530 U	400 U	410 U
4-Nitroaniline	ug/kg	420 U	530 U	400 U	410 U
Nitrobenzene	ug/kg	220 U	270 U	210 U	210 U
2-Nitrophenol	ug/kg	220 U	270 U	210 U	210 U
4-Nitrophenol	ug/kg	420 U	530 U	400 U	410 U
N-nitroso-dl-n-propylamine	ug/kg	220 U	270 U	210 U	210 U
N-nitrosodiphenylamine	ug/kg	220 U	270 U	210 U	210 U
Pentachlorophenol	ug/kg	420 U	530 U	400 U	410 U
Phenanthrene	ug/kg	220 U	270 U	210 U	210 U
Phenol	ug/kg	220 U	270 U	210 U	210 U
Pyrene	ug/kg	220 U	270 U	210 U	210 U
2,4,5-Trichlorophenol	ug/kg	220 U	270 U	210 U	210 U
2,4,6-Trichlorophenol	ug/kg	220 U	270 U	210 U	210 U
1 TPH Semi-Volatile in Soil by GC/FID					
Extractable TPH	mg/kg	85.6 U	82.9 U	82.3 U	85.4 U
1 TPH Volatiles in Soil by GC/MS					
Purgeable TPH	ug/kg	50 U	50 U	50 U	50 U
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	32	14 U	30	100
Benzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Bromodichloromethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Bromoform	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Bromomethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
2-Butanone	ug/kg	14 U	14 U	13 U	15
Carbon Disulfide	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Carbon Tetrachloride	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Chlorobenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Chloroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Chloroform	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Chloromethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Cyclohexane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2-Dibromo-3-Chloropropane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Dibromochloromethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2-Dibromoethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2-Dichlorobenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,3-Dichlorobenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,4-Dichlorobenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Dichlorodifluoromethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,1-Dichloroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2-Dichloroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,1-Dichloroethene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
cis-1,2-Dichloroethene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
trans-1,2-Dichloroethene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2-Dichloropropane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U

Analysis/ Analyte	Units	13-__	14-__	15-__	16-__
cis-1,3-Dichloropropene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
trans-1,3-Dichloropropene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Ethyl Benzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
2-Hexanone	ug/kg	14 U	14 U	13 U	12 U
Isopropylbenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Methyl Acetate	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Methyl tert-butyl ether	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Methylcyclohexane	ug/kg	7.2 U	18 J	6.7 U	6.0 U
Methylene Chloride	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
4-Methyl-2-Pentanone	ug/kg	14 U	14 U	13 U	12 U
Styrene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,1,2,2-Tetrachloroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Tetrachloroethene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Toluene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2,3-Trichlorobenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,2,4-Trichlorobenzene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,1,1-Trichloroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,1,2-Trichloroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Trichloroethene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Trichlorofluoromethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
1,1,2-Trichlorotrifluoroethane	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
Vinyl Chloride	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
m and/or p-Xylene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U
o-Xylene	ug/kg	7.2 U	7.2 U	6.7 U	6.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	17-__	18-__	19-__	25-FB
1 Mercury in Soil or Sediment					
Mercury	mg/kg	0.115 U	0.126 U	0.130 U	
1 Metals in Solids by ICP					
Aluminum	mg/kg	16200	19400	16500	
Antimony	mg/kg	6.85 UJ	7.57 UJ	7.79 UJ	
Arsenic	mg/kg	1.14 UJ	22.1 J	6.87 J	
Barium	mg/kg	84.3	189	134	
Beryllium	mg/kg	0.763 J	0.820 J	0.718 U	
Cadmium	mg/kg	0.571 U	0.631 U	0.649 U	
Calcium	mg/kg	4370 J	162000 J	54900	
Chromium	mg/kg	21.5	28.4	20.7	
Cobalt	mg/kg	9.27	8.06	7.29	
Copper	mg/kg	15.2	9.22	14.6	
Iron	mg/kg	14200	21500	17200 J	
Lead	mg/kg	5.17 J	16.8 J	12.7 J	
Magnesium	mg/kg	6580	6610	4810	
Manganese	mg/kg	135 J	322 J	349	
Nickel	mg/kg	30.1	40.8	22.5	
Potassium	mg/kg	2300	2260	3560	
Selenium	mg/kg	4.00 UJ	4.41 UJ	4.55 UJ	
Silver	mg/kg	1.14 U	1.26 U	1.30 U	
Sodium	mg/kg	571 U	631 U	649 U	
Thallium	mg/kg	2.86 U	3.15 U	3.25 U	
Vanadium	mg/kg	13.0	28.3	30.4 J	
Zinc	mg/kg	36.9	29.4	40.7	
1 PCBs in Soil by GC/EC					
Aroclor 1016	ug/kg	37 U	39 U	45 U	
Aroclor 1221	ug/kg	37 U	39 U	45 U	
Aroclor 1232	ug/kg	37 U	39 U	45 U	
Aroclor 1242	ug/kg	37 U	39 U	45 U	
Aroclor 1248	ug/kg	37 UJ	39 UJ	45 U	
Aroclor 1254	ug/kg	37 U	39 U	45 U	
Aroclor 1260	ug/kg	37 U	39 U	45 U	
Aroclor 1262	ug/kg	37 U	39 U	45 U	
Aroclor 1268	ug/kg	37 U	39 U	45 U	
1 Percent Solid					
Solids, percent	%	80.4	83.5	77.1	96.5
1 Perchlorate in Soil by IC					
Perchlorate	mg/kg	0.35 U	0.35 U	0.49 U	
1 Semi-Volatile Organic Compounds in Soil					
Acenaphthene	ug/kg	230 U	240 U	250 U	
Acenaphthylene	ug/kg	230 U	240 U	250 U	
Acetophenone	ug/kg	230 U	240 U	250 U	
Anthracene	ug/kg	230 U	240 U	250 U	
Atrazine	ug/kg	230 U	240 U	250 U	
Benzaldehyde	ug/kg	230 U	240 U	250 U	

Analysis/ Analyte	Units	17-__	18-__	19-__	25-FB
Benzo(a)anthracene	ug/kg	230 U	240 U	250 U	
Benzo(a)pyrene	ug/kg	230 U	240 U	250 U	
Benzo(b)fluoranthene	ug/kg	230 U	240 U	250 U	
Benzo(g,h,i)perylene	ug/kg	230 U	240 U	250 U	
Benzo(k)fluoranthene	ug/kg	230 U	240 U	250 U	
Biphenyl	ug/kg	230 U	240 U	250 U	
bis(2-Chloroethoxy)methane	ug/kg	230 U	240 U	250 U	
bis(2-Chloroethyl)ether	ug/kg	230 U	240 U	250 U	
bis(2-Chloroisopropyl)ether	ug/kg	230 U	240 U	250 U	
bis(2-Ethylhexyl)phthalate	ug/kg	230 U	240 U	250 U	
4-Bromophenyl-phenylether	ug/kg	230 U	240 U	250 U	
Butylbenzylphthalate	ug/kg	230 U	240 U	250 U	
Caprolactam	ug/kg	230 U	240 U	250 U	
Carbazole	ug/kg	230 U	240 U	250 U	
4-Chloro-3-methylphenol	ug/kg	230 U	240 U	250 U	
4-Chloroaniline	ug/kg	230 U	240 U	250 U	
2-Chloronaphthalene	ug/kg	230 U	240 U	250 U	
2-Chlorophenol	ug/kg	230 U	240 U	250 U	
4-Chlorophenyl-phenylether	ug/kg	230 U	240 U	250 U	
Chrysene	ug/kg	230 U	240 U	250 U	
Di-n-butylphthalate	ug/kg	230 U	240 U	250 U	
Di-n-octylphthalate	ug/kg	230 U	240 U	250 U	
Dibenz(a,h)anthracene	ug/kg	230 U	240 U	250 U	
Dibenzofuran	ug/kg	230 U	240 U	250 U	
3,3'-Dichlorobenzidine	ug/kg	230 U	240 U	250 U	
2,4-Dichlorophenol	ug/kg	230 U	240 U	250 U	
Diethylphthalate	ug/kg	230 U	240 U	250 U	
2,4-Dimethylphenol	ug/kg	230 U	240 U	250 U	
Dimethylphthalate	ug/kg	230 U	240 U	250 U	
4,6-Dinitro-2-methylphenol	ug/kg	440 U	460 U	490 U	
2,4-Dinitrophenol	ug/kg	440 U	460 U	490 U	
2,4-Dinitrotoluene	ug/kg	230 U	240 U	250 U	
2,6-Dinitrotoluene	ug/kg	230 U	240 U	250 U	
Fluoranthene	ug/kg	230 U	240 U	250 U	
Fluorene	ug/kg	230 U	240 U	250 U	
Hexachlorobenzene	ug/kg	230 U	240 U	250 U	
Hexachlorobutadiene	ug/kg	230 U	240 U	250 U	
Hexachlorocyclopentadiene	ug/kg	230 U	240 U	250 U	
Hexachloroethane	ug/kg	230 U	240 U	250 U	
Indeno(1,2,3-cd)pyrene	ug/kg	230 U	240 U	250 U	
Isophorone	ug/kg	230 U	240 U	250 U	
2-Methylnaphthalene	ug/kg	230 U	240 U	250 U	
2-Methylphenol	ug/kg	230 U	240 U	250 U	
4-Methylphenol	ug/kg	230 U	240 U	250 U	
Naphthalene	ug/kg	230 U	240 U	250 U	

Analysis/ Analyte	Units	17-__	18-__	19-__	25-FB
2-Nitroaniline	ug/kg	440 U	460 U	490 U	
3-Nitroaniline	ug/kg	440 U	460 U	490 U	
4-Nitroaniline	ug/kg	440 U	460 U	490 U	
Nitrobenzene	ug/kg	230 U	240 U	250 U	
2-Nitrophenol	ug/kg	230 U	240 U	250 U	
4-Nitrophenol	ug/kg	440 U	460 U	490 U	
N-nitroso-di-n-propylamine	ug/kg	230 U	240 U	250 U	
N-nitrosodiphenylamine	ug/kg	230 U	240 U	250 U	
Pentachlorophenol	ug/kg	440 U	460 U	490 U	
Phenanthrene	ug/kg	230 U	240 U	250 U	
Phenol	ug/kg	230 U	240 U	250 U	
Pyrene	ug/kg	230 U	240 U	250 U	
2,4,5-Trichlorophenol	ug/kg	230 U	240 U	250 U	
2,4,6-Trichlorophenol	ug/kg	230 U	240 U	250 U	
1 TPH Semi-Volatile in Soil by GC/FID					
Extractable TPH	mg/kg	79.2 U	86.5 U	87.6 U	
1 TPH Volatiles in Soil by GC/MS					
Purgeable TPH	ug/kg	50 U	50 U	50 U	88
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	170	14 U	66	11
Benzene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Bromodichloromethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Bromoform	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
Bromomethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
2-Butanone	ug/kg	29	14 U	29 U	10 U
Carbon Disulfide	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Carbon Tetrachloride	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Chlorobenzene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Chloroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Chloroform	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Chloromethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Cyclohexane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
Dibromochloromethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,2-Dibromoethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,2-Dichlorobenzene	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
1,3-Dichlorobenzene	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
1,4-Dichlorobenzene	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
Dichlorodifluoromethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,1-Dichloroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,2-Dichloroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,1-Dichloroethene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
cis-1,2-Dichloroethene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
trans-1,2-Dichloroethene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,2-Dichloropropane	ug/kg	7.2 U	7.0 U	15 U	5.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	17-__	18-__	19-__	25-FB
cis-1,3-Dichloropropene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
trans-1,3-Dichloropropene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Ethyl Benzene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
2-Hexanone	ug/kg	14 U	14 U	29 U	10 U
Isopropylbenzene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Methyl Acetate	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Methyl tert-butyl ether	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Methylcyclohexane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Methylene Chloride	ug/kg	7.2 U	7.0 U	15 U	5.0 U
4-Methyl-2-Pentanone	ug/kg	14 U	14 U	29 U	10 U
Styrene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Tetrachloroethene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Toluene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,2,3-Trichlorobenzene	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
1,2,4-Trichlorobenzene	ug/kg	7.2 U	7.0 U	N/A R	5.0 U
1,1,1-Trichloroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,1,2-Trichloroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Trichloroethene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Trichlorofluoromethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/kg	7.2 U	7.0 U	15 U	5.0 U
Vinyl Chloride	ug/kg	7.2 U	7.0 U	15 U	5.0 U
m and/or p-Xylene	ug/kg	7.2 U	7.0 U	15 U	5.0 U
o-Xylene	ug/kg	7.2 U	7.0 U	15 U	5.0 U

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	26-__	27-__	28-__	29-__
1 Mercury in Soil or Sediment					
Mercury	mg/kg	0.143 U	0.152 U	0.416	0.220 U
1 Metals in Solids by ICP					
Aluminum	mg/kg	22500	24100	15600	17400
Antimony	mg/kg	8.77 UJ	9.41 UJ	7.22 UJ	13.2 UJ
Arsenic	mg/kg	4.72 J	6.43 J	4.73 J	8.71 J
Barium	mg/kg	236	195	186	238
Beryllium	mg/kg	0.964 U	1.11	0.673 U	1.10 U
Cadmium	mg/kg	0.731 U	0.784 U	1.80	1.10 U
Calcium	mg/kg	46900	11100	42600	19400
Chromium	mg/kg	22.8	23.5	20.7	23.1
Cobalt	mg/kg	10.5	11.2	6.93	17.7
Copper	mg/kg	17.5	18.8	65.3	15.0
Iron	mg/kg	17900 J	21500 J	16600 J	20700 J
Lead	mg/kg	17.7 J	24.6 J	71.3 J	24.5 J
Magnesium	mg/kg	4250	4150	3170	4360
Manganese	mg/kg	296	390	451	1040
Nickel	mg/kg	23.3	21.0	16.0	25.8
Potassium	mg/kg	2880	3260	2120	3470
Selenium	mg/kg	5.12 UJ	5.49 UJ	4.21 UJ	7.69 UJ
Silver	mg/kg	1.46 U	1.57 U	1.20 U	2.20 U
Sodium	mg/kg	731 U	784 U	602 U	1100 U
Thallium	mg/kg	3.66 U	3.92 U	3.01 U	5.49 U
Vanadium	mg/kg	40.9 J	45.3 J	29.6 J	44.8 J
Zinc	mg/kg	58.8	57.2	646	47.1
1 PCBs in Soil by GC/EC					
Aroclor 1016	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1221	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1232	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1242	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1248	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1254	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1260	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1262	ug/kg	43 U	48 U	50 U	54 U
Aroclor 1268	ug/kg	43 U	48 U	50 U	54 U
1 Percent Solid					
Solids, percent	%	72.5	71.0	73.3	24.0
1 Perchlorate in Soil by IC					
Perchlorate	mg/kg	0.49 U	0.49 U	0.5 U	0.53 U
1 Semi-Volatile Organic Compounds in Soil					
Acenaphthene	ug/kg	250 U	250 U	240 U	260 U
Acenaphthylene	ug/kg	250 U	250 U	240 U	260 U
Acetophenone	ug/kg	250 U	250 U	240 U	260 U
Anthracene	ug/kg	250 U	250 U	240 U	260 U
Atrazine	ug/kg	250 U	250 U	240 U	260 U
Benzaldehyde	ug/kg	250 U	250 U	240 U	260 U

Analysis/ Analyte	Units	26-__	27-__	28-__	29-__
Benzo(a)anthracene	ug/kg	250 U	250 U	240 U	260 U
Benzo(a)pyrene	ug/kg	250 U	250 U	240 U	260 U
Benzo(b)fluoranthene	ug/kg	250 U	250 U	240 U	260 U
Benzo(g,h,i)perylene	ug/kg	250 U	250 U	240 U	260 U
Benzo(k)fluoranthene	ug/kg	250 U	250 U	240 U	260 U
Biphenyl	ug/kg	250 U	250 U	240 U	260 U
bis(2-Chloroethoxy)methane	ug/kg	250 U	250 U	240 U	260 U
bis(2-Chloroethyl)ether	ug/kg	250 U	250 U	240 U	260 U
bis(2-Chloroisopropyl)ether	ug/kg	250 U	250 U	240 U	260 U
bis(2-Ethylhexyl)phthalate	ug/kg	250 U	250 U	240 U	260 U
4-Bromophenyl-phenylether	ug/kg	250 U	250 U	240 U	260 U
Butylbenzylphthalate	ug/kg	250 U	250 U	240 U	260 U
Caprolactam	ug/kg	250 U	250 U	240 U	260 U
Carbazole	ug/kg	250 U	250 U	240 U	260 U
4-Chloro-3-methylphenol	ug/kg	250 U	250 U	240 U	260 U
4-Chloroaniline	ug/kg	250 U	250 U	240 U	260 U
2-Chloronaphthalene	ug/kg	250 U	250 U	240 U	260 U
2-Chlorophenol	ug/kg	250 U	250 U	240 U	260 U
4-Chlorophenyl-phenylether	ug/kg	250 U	250 U	240 U	260 U
Chrysene	ug/kg	250 U	250 U	240 U	260 U
Di-n-butylphthalate	ug/kg	250 U	250 U	240 U	260 U
Di-n-octylphthalate	ug/kg	250 U	250 U	240 U	260 U
Dibenz(a,h)anthracene	ug/kg	250 U	250 U	240 U	260 U
Dibenzofuran	ug/kg	250 U	250 U	240 U	260 U
3,3'-Dichlorobenzidine	ug/kg	250 U	250 U	240 U	260 U
2,4-Dichlorophenol	ug/kg	250 U	250 U	240 U	260 U
Diethylphthalate	ug/kg	250 U	250 U	240 U	260 U
2,4-Dimethylphenol	ug/kg	250 U	250 U	240 U	260 U
Dimethylphthalate	ug/kg	250 U	250 U	240 U	260 U
4,6-Dinitro-2-methylphenol	ug/kg	490 U	490 U	460 U	500 U
2,4-Dinitrophenol	ug/kg	490 U	490 U	460 U	500 U
2,4-Dinitrotoluene	ug/kg	250 U	250 U	240 U	260 U
2,6-Dinitrotoluene	ug/kg	250 U	250 U	240 U	260 U
Fluoranthene	ug/kg	250 U	250 U	240 U	260 U
Fluorene	ug/kg	250 U	250 U	240 U	260 U
Hexachlorobenzene	ug/kg	250 U	250 U	240 U	260 U
Hexachlorobutadiene	ug/kg	250 U	250 U	240 U	260 U
Hexachlorocyclopentadiene	ug/kg	250 U	250 U	240 U	260 U
Hexachloroethane	ug/kg	250 U	250 U	240 U	260 U
Indeno(1,2,3-cd)pyrene	ug/kg	250 U	250 U	240 U	260 U
Isophorone	ug/kg	250 U	250 U	240 U	260 U
2-Methylnaphthalene	ug/kg	250 U	250 U	240 U	260 U
2-Methylphenol	ug/kg	250 U	250 U	240 U	260 U
4-Methylphenol	ug/kg	250 U	250 U	240 U	260 U
Naphthalene	ug/kg	250 U	250 U	240 U	260 U

Analysis/ Analyte	Units	26-__	27-__	28-__	29-__
2-Nitroaniline	ug/kg	490 U	490 U	460 U	500 U
3-Nitroaniline	ug/kg	490 U	490 U	460 U	500 U
4-Nitroaniline	ug/kg	490 U	490 U	460 U	500 U
Nitrobenzene	ug/kg	250 U	250 U	240 U	260 U
2-Nitrophenol	ug/kg	250 U	250 U	240 U	260 U
4-Nitrophenol	ug/kg	490 U	490 U	460 U	500 U
N-nitroso-di-n-propylamine	ug/kg	250 U	250 U	240 U	260 U
N-nitrosodiphenylamine	ug/kg	250 U	250 U	240 U	260 U
Pentachlorophenol	ug/kg	490 U	490 U	460 U	500 U
Phenanthrene	ug/kg	250 U	250 U	240 U	260 U
Phenol	ug/kg	250 U	250 U	240 U	260 U
Pyrene	ug/kg	250 U	250 U	240 U	260 U
2,4,5-Trichlorophenol	ug/kg	250 U	250 U	240 U	260 U
2,4,6-Trichlorophenol	ug/kg	250 U	250 U	240 U	260 U
1 TPH Semi-Volatile in Soil by GC/FID					
Extractable TPH	mg/kg	97.4 U	98.5 U	306	99.9 U
1 TPH Volatiles in Soil by GC/MS					
Purgeable TPH	ug/kg	50 U	50 U	50 U	104 U
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	14 U	15 U	26	15 U
Benzene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Bromodichloromethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Bromoform	ug/kg	N/A R	7.3 U	N/A R	N/A R
Bromomethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
2-Butanone	ug/kg	14 U	15 U	13 U	7.5 U
Carbon Disulfide	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Carbon Tetrachloride	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Chlorobenzene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Chloroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Chloroform	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Chloromethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Cyclohexane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,2-Dibromo-3-Chloropropane	ug/kg	N/A R	7.3 U	N/A R	N/A R
Dibromochloromethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,2-Dibromoethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,2-Dichlorobenzene	ug/kg	N/A R	7.3 U	N/A R	N/A R
1,3-Dichlorobenzene	ug/kg	N/A R	7.3 U	N/A R	N/A R
1,4-Dichlorobenzene	ug/kg	N/A R	7.3 U	N/A R	N/A R
Dichlorodifluoromethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,1-Dichloroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,2-Dichloroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,1-Dichloroethene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
cis-1,2-Dichloroethene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
trans-1,2-Dichloroethene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,2-Dichloropropane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U

Analysis/ Analyte	Units	26-__	27-__	28-__	29-__
cis-1,3-Dichloropropene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
trans-1,3-Dichloropropene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Ethyl Benzene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
2-Hexanone	ug/kg	14 U	15 U	13 U	15 U
Isopropylbenzene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Methyl Acetate	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Methyl tert-butyl ether	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Methylcyclohexane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Methylene Chloride	ug/kg	7.2 U	7.3 U	6.6	7.5 U
4-Methyl-2-Pentanone	ug/kg	14 U	15 U	13 U	15 U
Styrene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,1,2,2-Tetrachloroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Tetrachloroethene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Toluene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,2,3-Trichlorobenzene	ug/kg	N/A R	7.3 U	N/A R	N/A R
1,2,4-Trichlorobenzene	ug/kg	N/A R	7.3 U	N/A R	N/A R
1,1,1-Trichloroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,1,2-Trichloroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Trichloroethene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Trichlorofluoromethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
1,1,2-Trichlorotrifluoroethane	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
Vinyl Chloride	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U
m and/or p-Xylene	ug/kg	19 J	7.3 U	6.4 U	7.5 U
o-Xylene	ug/kg	7.2 U	7.3 U	6.4 U	7.5 U

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
1 Mercury - Dissolved, in Water					
Mercury	ug/L	0.200 U			
1 Mercury in Water					
Mercury	ug/L	0.200 U	0.200 U	0.200 U	0.200 U
1 Metals - Dissolved, in Water by ICP/MS					
Antimony	ug/L	2.00 U			
Arsenic	ug/L	1.00 U			
Barium	ug/L	187 J			
Beryllium	ug/L	1.00 U			
Cadmium	ug/L	1.00 U			
Chromium	ug/L	2.00 U			
Cobalt	ug/L	5.49			
Copper	ug/L	2.45 U			
Lead	ug/L	14.1			
Manganese	ug/L	14.4 J			
Nickel	ug/L	25.9			
Selenium	ug/L	5.00 U			
Silver	ug/L	1.00 U			
Thallium	ug/L	1.00 UJ			
Vanadium	ug/L	1.00 U			
Zinc	ug/L	2.66 UJ			
1 Metals in Water by ICP/MS					
Antimony	ug/L	2.00 U	2.00 U	2.00 U	12.7
Arsenic	ug/L	1.00 U	1.00 U	1.00 U	5.32
Barium	ug/L	57.9	10.0 U	104	10.0 U
Beryllium	ug/L	1.00 U	1.00 U	1.00 U	2.88
Cadmium	ug/L	1.00 U	1.00 U	1.00 U	3.18
Chromium	ug/L	2.00 U	2.00 U	2.00 U	6.33
Cobalt	ug/L	1.00 U	1.00 U	1.00 U	3.23
Copper	ug/L	3.71 U	2.00 U	4.77 U	28.8
Lead	ug/L	3.63 U	1.00 U	1.00 U	7.96
Manganese	ug/L	14.6	1.00 U	9.78	7.58
Nickel	ug/L	1.51	1.00 U	1.30	3.73
Selenium	ug/L	5.00 U	5.00 U	5.00 U	15.2
Silver	ug/L	1.00 U	1.00 U	1.00 U	3.12
Thallium	ug/L	1.00 UJ	1.00 UJ	1.00 UJ	3.21
Vanadium	ug/L	1.00 U	1.00 U	1.23	4.72
Zinc	ug/L	199 J	2.00 UJ	21.1 J	16.8 J
1 PAH's in Water by GC/MS-SIM					
Acenaphthene	ug/L			0.054 U	0.054 U
Acenaphthylene	ug/L			0.06 U	0.06 U
Anthracene	ug/L			0.063 U	0.063 U
Benzo(a)anthracene	ug/L			0.048 U	0.048 U
Benzo(a)pyrene	ug/L			0.057 U	0.057 U
Benzo(b)fluoranthene	ug/L			0.06 U	0.06 U
Benzo(g,h,i)perylene	ug/L			0.063 U	0.063 U

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
Benzo(k)fluoranthene	ug/L			0.06 U	0.06 U
Chrysene	ug/L			0.059 U	0.059 U
Dibenz(a,h)anthracene	ug/L			0.051 U	0.051 U
Fluoranthene	ug/L			0.061 U	0.061 U
Fluorene	ug/L			0.05 U	0.05 U
Indeno(1,2,3-cd)pyrene	ug/L			0.057 U	0.057 U
1-Methylnaphthalene	ug/L			0.059 U	0.059 U
2-Methylnaphthalene	ug/L			0.061 U	0.061 U
Naphthalene	ug/L			0.065 U	0.065 U
Phenanthrene	ug/L			0.059 U	0.059 U
Pyrene	ug/L			0.05 U	0.05 U
1 Perchlorate in Water by IC					
Perchlorate	ug/L	4 U	4 U	4 U	4 U
1 Pesticides in Water by GC/EC					
Aroclor 1016	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1221	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1232	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1242	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1248	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1254	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1260	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1262	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1268	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1 Semi-Volatile Organic Compounds in Water					
Acenaphthene	ug/L	5.0 U	5.0 U		
Acenaphthylene	ug/L	5.0 U	5.0 U		
Acetophenone	ug/L	5.0 U	5.0 U		
Anthracene	ug/L	5.0 U	5.0 U		
Atrazine	ug/L	5.0 U	5.0 U		
Benzaldehyde	ug/L	5.0 U	5.0 U		
Benzo(a)anthracene	ug/L	5.0 U	5.0 U		
Benzo(a)pyrene	ug/L	5.0 U	5.0 U		
Benzo(b)fluoranthene	ug/L	5.0 U	5.0 U		
Benzo(g,h,i)perylene	ug/L	5.0 U	5.0 U		
Benzo(k)fluoranthene	ug/L	5.0 U	5.0 U		
Biphenyl	ug/L	5.0 U	5.0 U		
bis(2-Chloroethoxy)methane	ug/L	5.0 U	5.0 U		
bis(2-Chloroethyl)ether	ug/L	5.0 U	5.0 U		
bis(2-Chloroisopropyl)ether	ug/L	5.0 U	5.0 U		
bis(2-Ethylhexyl)phthalate	ug/L	5.0 U	5.0 U		
4-Bromophenyl-phenylether	ug/L	5.0 U	5.0 U		
Butylbenzylphthalate	ug/L	5.0 U	5.0 U		
Caprolactam	ug/L	5.0 U	5.0 U		
Carbazole	ug/L	5.0 U	5.0 U		
4-Chloro-3-methylphenol	ug/L	5.0 U	5.0 U		

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
4-Chloroaniline	ug/L	5.0 U	5.0 U		
2-Chloronaphthalene	ug/L	5.0 U	5.0 U		
2-Chlorophenol	ug/L	5.0 U	5.0 U		
4-Chlorophenyl-phenylether	ug/L	5.0 U	5.0 U		
Chrysene	ug/L	5.0 U	5.0 U		
Di-n-butylphthalate	ug/L	5.0 U	5.0 U		
Di-n-octylphthalate	ug/L	5.0 U	5.0 U		
Dibenz(a,h)anthracene	ug/L	5.0 U	5.0 U		
Dibenzofuran	ug/L	5.0 U	5.0 U		
3,3'-Dichlorobenzidine	ug/L	5.0 U	5.0 U		
2,4-Dichlorophenol	ug/L	5.0 U	5.0 U		
Diethylphthalate	ug/L	5.0 U	5.0 U		
2,4-Dimethylphenol	ug/L	5.0 U	5.0 U		
Dimethylphthalate	ug/L	5.0 U	5.0 U		
4,6-Dinitro-2-methylphenol	ug/L	10 U	10 U		
2,4-Dinitrophenol	ug/L	10 U	10 U		
2,4-Dinitrotoluene	ug/L	5.0 U	5.0 U		
2,6-Dinitrotoluene	ug/L	5.0 U	5.0 U		
Fluoranthene	ug/L	5.0 U	5.0 U		
Fluorene	ug/L	5.0 U	5.0 U		
Hexachlorobenzene	ug/L	5.0 U	5.0 U		
Hexachlorobutadiene	ug/L	5.0 U	5.0 U		
Hexachlorocyclopentadiene	ug/L	5.0 U	5.0 U		
Hexachloroethane	ug/L	5.0 U	5.0 U		
Indeno(1,2,3-cd)pyrene	ug/L	5.0 U	5.0 U		
Isophorone	ug/L	5.0 U	5.0 U		
2-Methylnaphthalene	ug/L	5.0 U	5.0 U		
2-Methylphenol	ug/L	5.0 U	5.0 U		
4-Methylphenol	ug/L	5.0 U	5.0 U		
Naphthalene	ug/L	5.0 U	5.0 U		
2-Nitroaniline	ug/L	10 U	10 U		
3-Nitroaniline	ug/L	10 U	10 U		
4-Nitroaniline	ug/L	10 U	10 U		
Nitrobenzene	ug/L	5.0 U	5.0 U		
2-Nitrophenol	ug/L	5.0 U	5.0 U		
4-Nitrophenol	ug/L	10 U	10 U		
N-nitroso-di-n-propylamine	ug/L	5.0 U	5.0 U		
N-nitrosodiphenylamine	ug/L	5.0 U	5.0 U		
Pentachlorophenol	ug/L	10 U	10 U		
Phenanthrene	ug/L	5.0 U	5.0 U		
Phenol	ug/L	5.0 U	5.0 U		
Pyrene	ug/L	5.0 U	5.0 U		
2,3,4,6-Tetrachlorophenol	ug/L	5.0 U	5.0 U		
2,4,5-Trichlorophenol	ug/L	5.0 U	5.0 U		
2,4,6-Trichlorophenol	ug/L	5.0 U	5.0 U		

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
2 Semi-Volatile Organic Compounds in Water					
Acetophenone	ug/L			5.0 U	5.0 U
Atrazine	ug/L			5.0 U	5.0 U
Benzaldehyde	ug/L			5.0 U	5.0 U
Biphenyl	ug/L			5.0 U	5.0 U
bis(2-Chloroethoxy)methane	ug/L			5.0 U	5.0 U
bis(2-Chloroethyl)ether	ug/L			5.0 U	5.0 U
bis(2-Chloroisopropyl)ether	ug/L			5.0 U	5.0 U
bis(2-Ethylhexyl)phthalate	ug/L			5.0 U	5.0 U
4-Bromophenyl-phenylether	ug/L			5.0 U	5.0 U
Butylbenzylphthalate	ug/L			5.0 U	5.0 U
Caprolactam	ug/L			5.0 U	5.0 U
Carbazole	ug/L			5.0 U	5.0 U
4-Chloro-3-methylphenol	ug/L			5.0 U	5.0 U
4-Chloroaniline	ug/L			5.0 U	5.0 U
2-Chlorophenol	ug/L			5.0 U	5.0 U
4-Chlorophenyl-phenylether	ug/L			5.0 U	5.0 U
Di-n-butylphthalate	ug/L			5.0 U	5.0 U
Di-n-octylphthalate	ug/L			5.0 U	5.0 U
Dibenzofuran	ug/L			5.0 U	5.0 U
3,3'-Dichlorobenzidine	ug/L			5.0 U	5.0 U
2,4-Dichlorophenol	ug/L			5.0 U	5.0 U
Diethylphthalate	ug/L			5.0 U	5.0 U
2,4-Dimethylphenol	ug/L			5.0 U	5.0 U
Dimethylphthalate	ug/L			5.0 U	5.0 U
4,6-Dinitro-2-methylphenol	ug/L			10 U	10 U
2,4-Dinitrophenol	ug/L			10 U	10 U
2,4-Dinitrotoluene	ug/L			5.0 U	5.0 U
2,6-Dinitrotoluene	ug/L			5.0 U	5.0 U
Hexachlorobenzene	ug/L			5.0 U	5.0 U
Hexachlorobutadiene	ug/L			5.0 U	5.0 U
Hexachlorocyclopentadiene	ug/L			5.0 U	5.0 U
Hexachloroethane	ug/L			5.0 U	5.0 U
Isophorone	ug/L			5.0 U	5.0 U
2-Methylphenol	ug/L			5.0 U	5.0 U
4-Methylphenol	ug/L			5.0 U	5.0 U
2-Nitroaniline	ug/L			10 U	10 U
3-Nitroaniline	ug/L			10 U	10 U
4-Nitroaniline	ug/L			10 U	10 U
Nitrobenzene	ug/L			5.0 U	5.0 U
2-Nitrophenol	ug/L			5.0 U	5.0 U
4-Nitrophenol	ug/L			10 U	10 U
N-nitroso-di-n-propylamine	ug/L			5.0 U	5.0 U
N-nitrosodiphenylamine	ug/L			5.0 U	5.0 U
Pentachlorophenol	ug/L			10 U	10 U
Phenol	ug/L			5.0 U	5.0 U

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
2,3,4,6-Tetrachlorophenol	ug/L			5.0 U	5.0 U
2,4,5-Trichlorophenol	ug/L			5.0 U	5.0 U
2,4,6-Trichlorophenol	ug/L			5.0 U	5.0 U
1 TPH Semi-volatile in Water by GC/FID					
Extractable TPH	mg/L	2 U	2 U	2 U	2 U
1 TPH Volatiles in water by GC/MS					
Purgeable TPH	ug/L	50 U	50 U	50 U	50 U
1 VOCs in Drinking Water by GC/MS					
Acetone	ug/L			10 U	10 U
Benzene	ug/L			0.50 U	0.50 U
Bromobenzene	ug/L			0.50 U	0.50 U
Bromochloromethane	ug/L			0.50 U	0.50 U
Bromodichloromethane	ug/L			0.50 U	0.50 U
Bromoform	ug/L			0.50 U	0.50 U
Bromomethane	ug/L			1.0 U	1.0 U
2-Butanone	ug/L			5.0 U	5.0 U
n-Butylbenzene	ug/L			0.50 U	0.50 U
sec-Butylbenzene	ug/L			0.50 U	0.50 U
tert-Butylbenzene	ug/L			0.50 U	0.50 U
Carbon Disulfide	ug/L			0.50 U	0.50 UJ
Carbon Tetrachloride	ug/L			0.50 U	0.50 U
Chlorobenzene	ug/L			0.50 U	0.50 U
Chloroethane	ug/L			0.50 U	0.50 U
Chloroform	ug/L			0.50 U	0.50 U
Chloromethane	ug/L			1.0 U	1.0 U
2-Chlorotoluene	ug/L			0.50 U	0.50 U
4-Chlorotoluene	ug/L			0.50 U	0.50 U
1,2-Dibromo-3-Chloropropane	ug/L			1.0 U	1.0 U
Dibromochloromethane	ug/L			0.50 U	0.50 U
1,2-Dibromoethane	ug/L			0.50 U	0.50 U
Dibromomethane	ug/L			0.50 U	0.50 U
1,2-Dichlorobenzene	ug/L			0.50 U	0.50 U
1,3-Dichlorobenzene	ug/L			0.50 U	0.50 U
1,4-Dichlorobenzene	ug/L			0.50 U	0.50 U
Dichlorodifluoromethane	ug/L			0.50 UJ	0.50 UJ
1,1-Dichloroethane	ug/L			0.50 U	0.50 U
1,2-Dichloroethane	ug/L			0.50 U	0.50 U
1,1-Dichloroethene	ug/L			0.50 U	0.50 U
cis-1,2-Dichloroethene	ug/L			0.50 U	0.50 U
trans-1,2-Dichloroethene	ug/L			0.50 U	0.50 U
1,2-Dichloropropane	ug/L			0.50 U	0.50 U
1,3-Dichloropropane	ug/L			1.0 U	1.0 U
2,2-Dichloropropane	ug/L			0.50 U	0.50 U
1,1-Dichloropropene	ug/L			0.50 U	0.50 U
cis-1,3-Dichloropropene	ug/L			0.50 U	0.50 U

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
trans-1,3-Dichloropropene	ug/L			0.50 U	0.50 U
Ethyl Benzene	ug/L			0.50 U	0.50 U
Hexachlorobutadiene	ug/L			0.50 U	0.50 U
2-Hexanone	ug/L			5.0 U	5.0 U
Isopropylbenzene	ug/L			0.50 U	0.50 U
p-Isopropyltoluene	ug/L			0.50 U	0.50 U
Methylene Chloride	ug/L			0.50 U	0.50 U
4-Methyl-2-Pentanone	ug/L			5.0 U	5.0 U
Naphthalene	ug/L			1.0 U	1.0 U
n-Propylbenzene	ug/L			0.50 U	0.50 U
Styrene	ug/L			0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	ug/L			0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	ug/L			1.0 U	1.0 U
Tetrachloroethene	ug/L			0.50 U	0.50 U
Toluene	ug/L			0.50 U	0.50 U
1,2,3-Trichlorobenzene	ug/L			0.50 U	0.50 U
1,2,4-Trichlorobenzene	ug/L			0.50 U	0.50 U
1,1,1-Trichloroethane	ug/L			0.50 U	0.50 U
1,1,2-Trichloroethane	ug/L			0.50 U	0.50 U
Trichloroethene	ug/L			0.50 U	0.50 U
Trichlorofluoromethane	ug/L			1.0 U	1.0 U
1,2,3-Trichloropropane	ug/L			0.50 U	0.50 U
1,2,4-Trimethylbenzene	ug/L			0.50 U	0.50 U
1,3,5-Trimethylbenzene	ug/L			0.50 U	0.50 U
Vinyl Chloride	ug/L			0.50 U	0.50 U
m and/or p-Xylene	ug/L			0.50 U	0.50 U
o-Xylene	ug/L			0.50 U	0.50 U
1 VOCs in Water by GC/MS for Low Detection Limits					
Acetone	ug/L	5.0 UJ	5.0 UJ		
Benzene	ug/L	1.0 U	1.0 U		
Bromodichloromethane	ug/L	1.0 U	1.0 U		
Bromoform	ug/L	1.0 UJ	1.0 U		
Bromomethane	ug/L	1.0 U	1.0 U		
2-Butanone	ug/L	5.0 U	5.0 U		
Carbon Disulfide	ug/L	1.0 U	1.0 U		
Carbon Tetrachloride	ug/L	1.0 U	1.0 U		
Chlorobenzene	ug/L	1.0 UJ	1.0 U		
Chloroethane	ug/L	1.0 U	1.0 U		
Chloroform	ug/L	1.0 U	1.0 U		
Chloromethane	ug/L	1.0 UJ	1.0 UJ		
Cyclohexane	ug/L	1.0 U	1.0 U		
1,2-Dibromo-3-Chloropropane	ug/L	5.0 UJ	5.0 U		
Dibromochloromethane	ug/L	1.0 U	1.0 U		
1,2-Dibromoethane	ug/L	1.0 UJ	1.0 U		
1,2-Dichlorobenzene	ug/L	1.0 UJ	1.0 U		

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	101-__	110-FB	201-__	202-__
1,3-Dichlorobenzene	ug/L	1.0 UJ	1.0 U		
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U		
Dichlorodifluoromethane	ug/L	1.0 UJ	1.0 UJ		
1,1-Dichloroethane	ug/L	1.0 U	1.0 U		
1,2-Dichloroethane	ug/L	1.0 U	1.0 U		
1,1-Dichloroethene	ug/L	1.0 U	1.0 U		
cis-1,2-Dichloroethene	ug/L	57	1.0 U		
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U		
1,2-Dichloropropane	ug/L	1.0 U	1.0 U		
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U		
trans-1,3-Dichloropropene	ug/L	1.0 UJ	1.0 U		
Ethyl Benzene	ug/L	1.0 U	1.0 U		
2-Hexanone	ug/L	2.0 UJ	2.0 U		
Isopropylbenzene	ug/L	1.0 U	1.0 U		
Methyl Acetate	ug/L	5.0 U	5.0 U		
Methyl tert-butyl ether	ug/L	1.0 U	1.0 U		
Methylcyclohexane	ug/L	1.0 U	1.0 U		
Methylene Chloride	ug/L	1.0 U	5.3		
4-Methyl-2-Pentanone	ug/L	1.0 UJ	1.0 U		
Naphthalene	ug/L	2.0 UJ	2.0 U		
Styrene	ug/L	1.0 U	1.0 U		
1,1,2,2-Tetrachloroethane	ug/L	5.0 UJ	5.0 U		
Tetrachloroethene	ug/L	1.0 U	1.0 U		
Toluene	ug/L	1.0 U	1.0 U		
1,2,3-Trichlorobenzene	ug/L	1.0 U	1.0 U		
1,2,4-Trichlorobenzene	ug/L	1.0 U	1.0 U		
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U		
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U		
Trichloroethene	ug/L	87	1.0 U		
Trichlorofluoromethane	ug/L	1.0 U	1.0 U		
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0 U		
Vinyl Chloride	ug/L	1.0 U	1.0 U		
m and/or p-Xylene	ug/L	1.0 U	1.0 U		
o-Xylene	ug/L	1.0 U	1.0 U		

ASR Number: 3324 **RLAB Approved Sample Analysis Results** **02/23/2007**

Project ID: PRFEXAMS5 **Project Desc:** Forbes (EX) Atlas Missile Site S-5 - PA sampling

Analysis/ Analyte	Units	209-FB
1 TPH Volatiles in water by GC/MS		
Purgeable TPH	ug/L	50 U
1 VOCs in Drinking Water by GC/MS		
Acetone	ug/L	10 U
Benzene	ug/L	0.50 U
Bromobenzene	ug/L	0.50 U
Bromochloromethane	ug/L	0.50 U
Bromodichloromethane	ug/L	0.50 U
Bromoform	ug/L	0.50 U
Bromomethane	ug/L	1.0 U
2-Butanone	ug/L	5.0 U
n-Butylbenzene	ug/L	0.50 U
sec-Butylbenzene	ug/L	0.50 U
tert-Butylbenzene	ug/L	0.50 U
Carbon Disulfide	ug/L	0.50 U
Carbon Tetrachloride	ug/L	0.50 U
Chlorobenzene	ug/L	0.50 U
Chloroethane	ug/L	0.50 U
Chloroform	ug/L	0.50 U
Chloromethane	ug/L	1.0 U
2-Chlorotoluene	ug/L	0.50 U
4-Chlorotoluene	ug/L	0.50 U
1,2-Dibromo-3-Chloropropane	ug/L	1.0 U
Dibromochloromethane	ug/L	0.50 U
1,2-Dibromoethane	ug/L	0.50 U
Dibromomethane	ug/L	0.50 U
1,2-Dichlorobenzene	ug/L	0.50 U
1,3-Dichlorobenzene	ug/L	0.50 U
1,4-Dichlorobenzene	ug/L	0.50 U
Dichlorodifluoromethane	ug/L	0.50 UJ
1,1-Dichloroethane	ug/L	0.50 U
1,2-Dichloroethane	ug/L	0.50 U
1,1-Dichloroethene	ug/L	0.50 U
cis-1,2-Dichloroethene	ug/L	0.50 U
trans-1,2-Dichloroethene	ug/L	0.50 U
1,2-Dichloropropane	ug/L	0.50 U
1,3-Dichloropropane	ug/L	1.0 U
2,2-Dichloropropane	ug/L	0.50 U
1,1-Dichloropropene	ug/L	0.50 U
cis-1,3-Dichloropropene	ug/L	0.50 U
trans-1,3-Dichloropropene	ug/L	0.50 U
Ethyl Benzene	ug/L	0.50 U
Hexachlorobutadiene	ug/L	0.50 U
2-Hexanone	ug/L	5.0 U
Isopropylbenzene	ug/L	0.50 U
p-Isopropyltoluene	ug/L	0.50 U

Analysis/ Analyte	Units	209-FB
Methylene Chloride	ug/L	0.50 U
4-Methyl-2-Pentanone	ug/L	5.0 U
Naphthalene	ug/L	1.0 U
n-Propylbenzene	ug/L	0.50 U
Styrene	ug/L	0.50 U
1,1,1,2-Tetrachloroethane	ug/L	0.50 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U
Tetrachloroethene	ug/L	0.50 U
Toluene	ug/L	0.50 U
1,2,3-Trichlorobenzene	ug/L	0.50 U
1,2,4-Trichlorobenzene	ug/L	0.50 U
1,1,1-Trichloroethane	ug/L	0.50 U
1,1,2-Trichloroethane	ug/L	0.50 U
Trichloroethene	ug/L	0.50 U
Trichlorofluoromethane	ug/L	1.0 U
1,2,3-Trichloropropane	ug/L	0.50 U
1,2,4-Trimethylbenzene	ug/L	0.50 U
1,3,5-Trimethylbenzene	ug/L	0.50 U
Vinyl Chloride	ug/L	0.50 U
m and/or p-Xylene	ug/L	0.50 U
o-Xylene	ug/L	0.50 U

United States Environmental Protection Agency
Region VII
901 N. 5th Street
Kansas City, KS 66101

Date: __/__/____

Subject: Data Disposition/Sample Release for ASR #: 3324
Project ID: PRFEXAMS5
Project Description: Forbes (EX) Atlas Missile Site S-5 - PA sampling

From: Paul Roemerman
SUPR/MOKS

To: Kaye Dollmann
ENSV/RLAB/CATS

I have received and reviewed the Transmittal of Sample Analysis Results for the above-referenced Analytical Services Request(ASR) and have indicated my findings below by checking one of the boxes for Data Disposition.

☐ "RELEASED" - Read-only to all Region 7 employees and contractors that have R7LIMS "Customer" account.

☐ "Project Manager Accessible" - Available on the LAN in R7LIMS for my use only.

☐ "Archived" - THIS DATA IS OF A SENSITIVE NATURE. Any future reports must be requested through the laboratory.

I have determined that the samples need to be held until _____, after which time they will be disposed of in accordance with applicable regulations. I understand that if I do not specify a "hold until" date, the process for proper disposal of the samples will be initiated 30 days after the date on the data transmittal.