

**Final Report
for Interim Removal Activities at
Underground Storage Tank 61
Facility ID #9-089074
Building 1161
Fort Stewart, Georgia**

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
CLP	Contract Laboratory Program
DNR	Department of Natural Resources
DRO	diesel range organic
EPA	U.S. Environmental Protection Agency
ft	foot/feet
GA	Georgia
GRO	gasoline range organic
GUST	Georgia Division of Underground Storage Tanks
IDW	investigation derived waste
IRA	interim removal activity
J	estimated value
LCS	laboratory control sample
MS	matrix spike
MTBE	methyl tertbutyl ether
NA	not applicable
NL	not listed
NRC	no regulatory criteria
ORC [®]	Oxygen Release Compound [®]
PAH	polynuclear aromatic hydrocarbon
ppm	parts per million
psi	pounds per square-inch
QC	quality control
RPD	relative percent difference
SAIC	Science Applications International Corporation
STEP	Solutions To Environmental Problems, Inc.
STL	soil threshold level
TPH	total petroleum hydrocarbons
U	not detected
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

Solutions To Environmental Problems, Inc. (STEP), under contract with the U. S. Army Corps of Engineers, Savannah District, has completed the interim removal activities (IRAs) at Underground Storage Tank (UST) 61 (Facility ID #9-089104, Building 1161), Fort Stewart, Georgia. This work was accomplished in accordance with *Final Work Plan for Interim Removal Activities at Underground Storage Tank 61, Facility ID #9-089104, Building 1161, Fort Stewart, Georgia* (STEP, July 2006), hereinafter referred to as the work plan.

Former UST 61 was near Building 1161. The UST was removed in August 1995; however, subsequent groundwater monitoring of wells at the site has indicated that free-phase product is present on the groundwater at well 22-07 and requires remediation. The scope of work for this project included removal of well 22-07 at the UST 61 site, removal of contaminated soil/free product around the well, and installation of a new pre-packed well to replace the well removed. After excavation was complete, soil samples were obtained, Oxygen Release Compound[®] was applied to the excavation floor and sidewalls, and a new 4-inch diameter pre-packed well was installed to replace well 22-07, which was removed. The excavation was backfilled using aggregate stone to provide a porous media to promote infiltration of groundwater and any free product into the new well. All investigation derived waste was properly disposed in accordance with state and federal regulations.

As stated previously, soil samples were obtained from the bottom and the sidewalls of the excavation. These samples were shipped to Empirical Laboratory in Nashville, Tennessee where they were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl tertbutyl ether; polynuclear aromatic hydrocarbons; total petroleum hydrocarbons (TPH) diesel range organics, and TPH gasoline range organics. DataChek, LLC validated the analytical results in accordance with the approved work plan. The validation report stated that, overall, the data were of good quality, and all measurements required to satisfy the project quality control objectives (precision, accuracy, representativeness, comparability, and completeness) were met.

The analytical results for the samples were compared to the estimated laboratory detection limits contained in *Underground Storage Tank (UST) Closure Guidance Document, Petroleum Releases* (GDNR, November 2001) (See Table 2, “Laboratory Estimated Quantitation Limits for Soil and Groundwater Samples”), hereinafter GUST-9, and the soil threshold levels contained in *Rules of Georgia Department of Natural Resources, Environmental Protection Division* Chapter 391-3-15.09(3)(d),

“Release Response and Corrective Action for UST Systems Containing Petroleum, Amended,” [See Table A, Column 2 (Average or Higher Groundwater Pollution Susceptibility Area)]. Review of the analytical data and the results of this screening showed that, although the potential free-product layer surrounding the well has been removed, there are concentrations of contaminants in the soil exceeding acceptable levels. Specifically,

- Benzene was estimated in the primary sample from the excavation bottom (Sample 61-01) with an estimated concentration of 62 µg/kg, which exceeded the Georgia soil threshold level, but benzene was not detected in the duplicate sample from the same location;
- Sample 61-03 (east sidewall) reported concentrations of naphthalene, phenanthrene, and pyrene that exceeded the GUST-9 estimated laboratory detection limits; and
- all of the samples reported concentrations of TPH above the GUST-9 estimated laboratory detection limits.

As required in the approved work plan, STEP will collect one groundwater sample from each of the three wells at UST 61 on a semiannual basis for a period of one year (two sampling events). Within six months of completion of the IRAs at UST 61, STEP will develop the newly installed monitoring well (Well 22-07R) and begin semiannual monitoring of the groundwater at UST 61. Groundwater samples will be collected from the newly installed well (22-07R) and from the two other groundwater monitoring wells (22-08 and 22-09) at the site. These groundwater samples will be analyzed for BTEX. The second sampling event will be conducted approximately six months after the first sampling event is completed. Upon completion of the semiannual monitoring, STEP will prepare an annual progress report.

1. INTRODUCTION

Solutions To Environmental Problems, Inc. (STEP), under contract with the U. S. Army Corps of Engineers (USACE), Savannah District, has completed the interim removal activity (IRA) at Underground Storage Tank (UST) 61 (Facility ID #9-089104, Building 1161), Fort Stewart, Georgia. This work was accomplished in accordance with *Final Work Plan for Interim Removal Activities at Underground Storage Tank 61, Facility ID #9-089104, Building 1161, Fort Stewart, Georgia* (STEP, July 2006), hereinafter referred to as the work plan.

2. SITE BACKGROUND

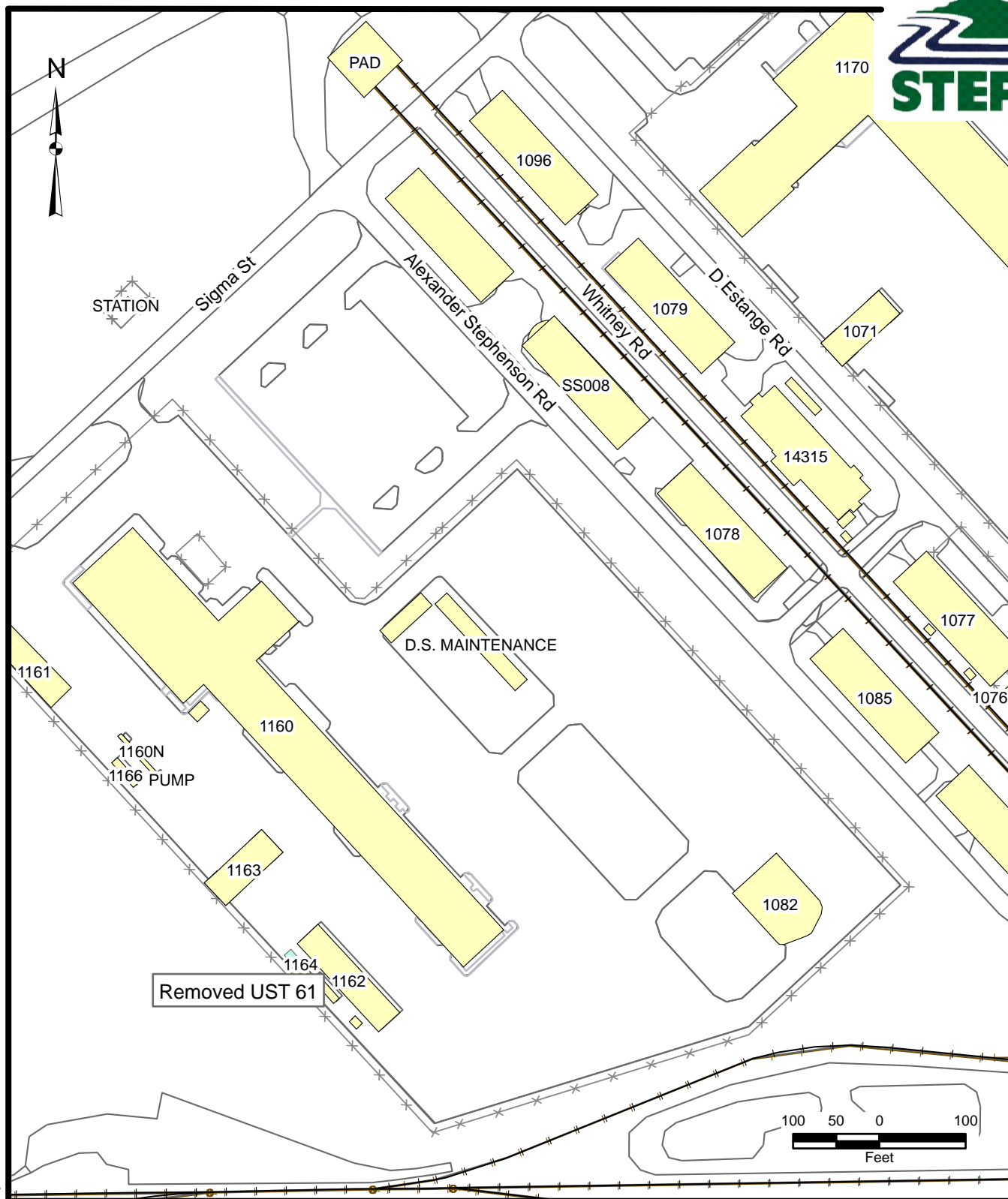
Fort Stewart is located in Liberty County, Georgia, approximately 40 miles southwest of Savannah, Georgia. The nearest city is Hinesville, approximately 1½ miles to the south. Former UST 61 (Georgia UST Facility ID #9-089104) was near Building 1161 at Fort Stewart, Georgia. The UST was removed in August 1995; however, subsequent groundwater monitoring of wells at the site has indicated that free-phase product is present on the groundwater and requires remediation.

The purpose of this scope of work was to remove well 22-07 at the UST 61 site. The work scope also included removal of contaminated soil/free product around the well and installation of a new pre-packed well to replace the well removed. Soil samples were obtained once excavation was complete, and then Oxygen Release Compound® (ORC®) was applied to the excavation floor and sidewalls. The excavation was backfilled using aggregate stone to provide a porous media to promote infiltration of groundwater and any free product into the new well.

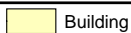
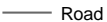
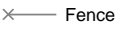

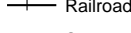

3. SITE DESCRIPTION

3.1 FORMER UST 61

UST 61, a 500 gallon used oil tank, was located near Building 1161 as shown on Figure 3-1. UST 61 was excavated and removed from the site in August 1995. A Corrective Action Plan (CAP) Part A investigation (1996-1997) and a CAP Part B investigation (2000) were conducted to determine the extent of petroleum contamination at the site.



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LEGEND	
	Building
	Road
	Fence
	Railroad
	Sidewalk
	Underground Storage Tank

Source: FT Stewart GIS
Job Title: UST 61
Fort Stewart, Liberty County
Georgia

Figure 3-1 Site Location Map - Removed UST 61

Three monitoring wells and six soil borings were installed and samples were collected and analyzed during these investigations. The CAP B report recommended annual sampling of three monitoring wells (22-07, 22-08, and 22-09) for a period of one year to ensure the benzene concentration remained below the in-stream water quality standard of 71.28 µg/L. Fort Stewart has continued monitoring the water level and free product measurements in these wells. Sampling events conducted in 2000 and 2001 found no free product in any of these wells; however, during renewed sampling in 2005, free product was found in well 22-07, and heavy waste oil continues to seep into monitoring well 22-07 in small quantities. The Second Annual Monitoring Only Report dated November 2005 recommended that the monthly change out of absorbent socks and product level measurements be continued to remove the small amount of heavy waste oil that continues to seep into the well (USACE Savannah District, January 2006).

4. INTERIM REMOVAL ACTIVITIES

During the IRA at the former UST 61 site, STEP:

- removed monitoring well 22-07 and surrounding contaminated soil;
- sampled the excavation floor and each sidewall;
- applied ORC[®] the excavation floor and sidewalls;
- installed a new, pre-packed, groundwater monitoring well (22-07R) at the location of the removed well; and
- backfilled the excavation with aggregate rock.

Before excavation began, Fort Stewart personnel obtained utility clearances for the site. Figure 4-1 shows the excavation area.

4.1 IRA AT UST SITE 61

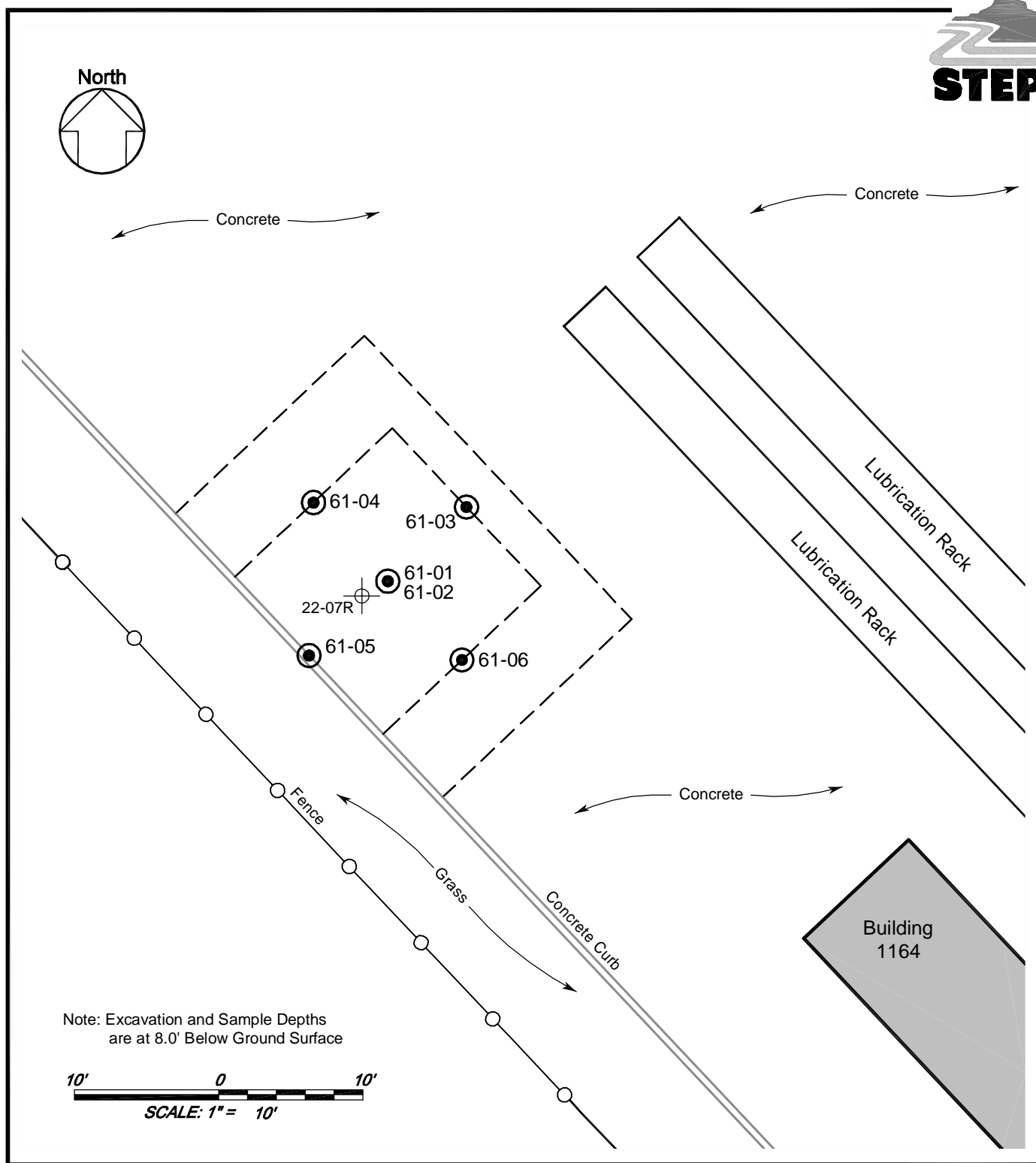
STEP conducted IRA field activities at UST Site 61 from July 18 through August 24, 2006. This IRA centered on well 22-07, which has consistently reported free product. Before excavation and removal activities began, STEP personnel used an interface probe to measure the depth of free product and the water level in the 1-inch diameter well. The depth measurement for the free product was 0.75 feet, and water level was measured to be 5.80 feet below ground surface (bgs). STEP personnel used a peristaltic pump to remove the free product, however, only a few ounces of black oily water were removed before only clear water was observed in the peristaltic pump's tubing. This product was absorbed using paper towels and disposed with personal protective equipment (gloves, etc.).

Well 22-07 was in a developed area covered with concrete. In accordance with the work plan, an 18-ft x 27-ft area centered on the well was measured, marked, and saw-cut. The concrete was sized and then removed with a backhoe and skid steer loader. Concrete debris was placed in nearby roll-off containers and then transported to and disposed at Sand Dollar Recycling in Savannah, Georgia.

After the concrete was removed, a backhoe was used to completely excavate and remove the remaining well components; thereby abandoning the well. Following removal of the well, the surrounding soil was examined. An approximately 5-foot thick layer of a red-brown sandy soil with pieces of debris (plastic sheeting, wood, cloth sand bags, tree limbs, roots, metal cans, reinforcing steel, and plastic piping) was found directly beneath the concrete. The next soil layer was dark gray, blackish, sandy soil with a petroleum odor that extended to a depth of 8 feet bgs. At this depth the soil was moist, and, at 8.3 feet bgs, the soil was a light gray sandy soil that was very moist, indicative of groundwater. Examination of the sidewalls revealed the dark gray zone was still present in all four sidewalls. Excavation ceased at 8.3 feet bgs, and approximately 69 cubic yards of soil were removed. Dimensions of the final excavation were 15 ft x 15 ft x 8.3-ft deep. All excavated soil material was placed in plastic-lined, construction debris roll-off containers with the well materials. This material was considered investigation derived waste (IDW) and was characterized and disposed accordingly. After excavation activities were completed, STEP sampled the four walls and the bottom of the excavation at the locations and depths shown on Figure 4-1.

After the samples had been obtained, STEP used a backhoe to excavate a sump near the center of the pit for installation of a new 4-inch diameter well, well 22-07R (well location is shown on Figure 4-1). The well, constructed with a 10-foot long pre-packed well screen and riser pipe, was positioned inside the excavation using suitable supports, and gravel backfill (#57 stone) was carefully placed around the well to above the well screen. The remaining backfill, also #57 stone, was placed using the backhoe, and the backfill was compacted using the bucket of the backhoe. The top 12 inches of the excavation were filled with 4,000 psi strength concrete, reinforced with #5 reinforcing steel placed at 24 inches on-center each-way. The #5 rebar was also doveled into the surrounding concrete surface to a depth of 6 inches and glued with epoxy. Concrete was placed using a vibratory screed to remove the entrained air and achieve full placement around the reinforcing steel. Finally, the concrete was brush-finished to provide a surface to blend with the surrounding concrete.

Appendix A contains photographic documentation of the IRA activities at UST Site 61.



Legend



61-01 Sample



Existing Monitoring Well

Prepared For: USACE
Savannah District

Source: Fort Stewart GIS
Job Title: Interim Removal Activities at
Underground Storage Tank 61
Facility ID #9-089104
Building 1161
Fort Stewart, Georgia

Figure 4-1 Site Map for Removed UST 61

R:\113\113-131-012\graphics\Fig 4-1 UST 61.dwg(08/31/06)

The newly installed well (22-07R) had a total depth of 11.08 feet below the top of the concrete surface with a bottom cap and 10 feet of screen and 0.58 feet of riser. The top of the well was an expandable locking cap, and the surface was finished with a flush-mount cover and bolted lid. The well was checked on 24 August 2006; depth to water was 5.7 feet bgs with no free product.

4.2 DISPOSAL OF INVESTIGATION DERIVED WASTE

All IDW was properly disposed in accordance with state and federal regulations. The soil IDW was stored in two, plastic-lined, roll-off containers. The containers were covered with tarps, and each container was properly labeled. A sample was taken from both containers and composited. The sample (designated as 61 TCLP) was shipped to the analytical laboratory for analyses to determine whether it was hazardous or not. It was determined the soil in each container was not hazardous; therefore, the containers were manifested by Public Works Business Center personnel, transported to Superior Landfill in Savannah, Georgia, and disposed. Copies of the waste manifests and waste characterization Form 1s are provided in Appendix B.

4.3 SAMPLING EFFORTS

As stated previously, the bottom of the excavation and the excavation sidewalls were sampled. The samples were field screened using a photoionization detector. The results of the field screening are presented in Table 4-1.

Table 4-1 Field Screening Results

Sample	Depth (ft-bgs)	Location	Field Screening Result Total VOCs (ppm)
61-01	8.3	Pit bottom	40
*61-02	8.3	Pit bottom	40
61-03	7.8	East sidewall	95
61-04	7.8	North sidewall	385
61-05	7.8	West sidewall	5
61-06	7.8	South sidewall	5

*Sample 61-02 was a duplicate sample of sample 61-01.

bgs = below ground surface
ft = feet

ppm = parts per million
VOC = volatile organic compound

As stated previously, the bottom of the excavation and the excavation sidewalls were sampled, and the samples were shipped to Empirical Laboratory in Nashville, Tennessee for analysis. These samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertbutyl ether (MTBE), polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH) diesel range organics, and TPH gasoline range organics.

4.4 RESULTS OF CONFIRMATORY SAMPLING

4.4.1 Data Validation

DataChek, LLC validated the analytical results in accordance with the approved work plan. The following discussion summarizes the findings of their validation report.

The sample data were validated following the logic identified in *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA, October 1999) for all areas. For those analytical methods not addressed by the Contract Laboratory Program (CLP) guidelines, the validation was based on the method requirements and technical judgment, following the logic of the CLP validation guidelines.

This data validation report reflects the data validation findings for samples associated with UST 61. The validated data set consisted of 6 soil samples and was validated at Level III. Overall the data was of good quality, and all measurements required to satisfy the project quality control objectives (precision, accuracy, representativeness, comparability, and completeness) were met. Each of these measures and specific data qualifications are discussed below.

Precision: Precision is a measure of the agreement between duplicate sample measurements of the same quantity and is reflected in the relative percent difference (RPD) between spikes and the RPD for the field duplicate analysis. Precision for UST 61 was measured at 89.1 percent. The low precision is associated with the large inherent variability in the results obtained from analyzing duplicate soil samples.

Accuracy: Accuracy is measured by the results from the recovery of known amounts of compounds or elements from laboratory control samples (LCS), matrix spikes (MS), and surrogate recoveries. The overall measure of accuracy for UST 61 was calculated by comparing the number of spike recoveries that

exceeded the laboratory limits by the total number of LCS, MS and surrogate spikes. For all analyte groups, accuracy was measured at 100.0 percent.

Representativeness: The measures of representativeness – sample handling, analytical blank analysis, field blanks – were met for all sites. Some blank contamination was noted and the appropriate compounds were qualified as “U.” Designated analytical protocols were followed. Holding times were met for all analyses. Overall, no major problems were identified resulting from analytical failure.

Comparability: All data were analyzed using appropriate approved methods of analysis. All data results were reported correctly and in standard units

Completeness: Completeness is the amount of valid data compared to the planned amount and is expressed as a percent of the usable data points divided by the total number of analytes for each parameter analyzed. Out of a total of 138 data points, no data points were rejected, resulting in a completeness of 100 percent.

Several sample results for the organic compounds were assigned “J” qualifiers by the laboratory, which is standard practice for these methods, because they were quantitated between the method detection limit and the reporting limit. Due to the uncertainty associated with this region of quantification, the validation reviewer retained the “J” qualifiers assigned by the laboratory to indicate an estimated quantity.

The data validation qualifiers (Table 4-2) applied by the reviewer were recorded in a column adjacent and to the right of the laboratory results, as shown on the validated laboratory Form 1s in Appendix C.

Table 4-2 Data Qualifier Definitions

Qualifier	Definition
B	Indicates that the analyte is found in the associated method blank as well as the sample at above the QC level.
U	The analyte was analyzed for, but was not detected above the reported sample quantification limit or the reported analyte value was not detected above 5x or 10x the level reported in laboratory or field blanks.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

QC = quality control

A data validation reason code was also added to each of the reviewer's qualifiers to provide the user with a means to identify which results were qualified and the reason for the qualifiers. A reason code of "6A" is assigned "due to the method or preparation blank," and a reason code of "17" is assigned "due to field duplicate relative percent difference criteria being exceeded."

4.4.2 Validated Analytical Results

The results of the BTEX/MTBE, PAH, and TPH analyses are presented in Tables 4-3, 4-4, and 4-5, respectively.

Table 4-3 Analytical Results for BTEX and MTBE Analyses, UST 61

Analyte	61-01	61-02	61-03	61-04	61-05	61-06	GUST Estimated Laboratory Detection Limits ¹	GA STL ²
Benzene	62J	240U	290U	270U	0.91J	6.2U	5	8
Toluene	230U	240U	290U	70U	5.3U	6.2U	5	6,000
Ethylbenzene	920J	220J	260J	340	5.3U	6.2U	5	10,000
Xylenes (total)	3,300J	730J	260J	1,500	5.3U	6.2U	5	700,000
MTBE	230U	240U	290U	270U	5.3U	6.2U	NL	NL

*Sample 61-02 was a duplicate sample of sample 61-01

¹Estimated laboratory detection limits are from Table 2, "Laboratory Estimated Quantitation Limits for Soil and Groundwater Samples" of GUST-9 (GDNR, November 2001)

²Soil threshold levels from Table A, Column 2 (Average or Higher Groundwater Pollution Susceptibility Area) of Rules of Georgia Department of Natural Resources Environmental Protection Division, Chapter 391-3-15—Underground Storage Tank Management, Section 391-3-15.09, "Release Response and Corrective Action for UST Systems Containing Petroleum, Amended." (GA DNR, October 2001)

Units are micrograms per kilogram (µg/kg).

BTEX = benzene, toluene, ethylbenzene, and xylenes

DNR = Department of Natural Resources

GA = Georgia

GUST = Georgia Underground Storage Tank

J = estimated due to quality control criteria

MTBE = methyl tertbutyl ether

NL = not listed

STL = soil threshold levels

U = not detected at reporting limit shown

Benzene was the only analyte detected at a concentration above the Georgia soil threshold level. Benzene was estimated in the primary sample from the excavation bottom (Sample 61-01) with an estimated concentration of 62 µg/kg, but benzene was not detected in the duplicate sample from the same location. The remaining analytes are below the Georgia soil threshold levels. The samples from the excavation sidewalls show all the analytes are at concentrations below the Georgia soil threshold levels.

Table 4-4 Analytical Results for PAH Analyses, UST 61

Analyte	61-01	61-02	61-03	61-04	61-05	61-06	GUST Estimated Laboratory Detection Limits ¹	GA STL ²
Acenaphthene	55U	55U	56U	53U	52U	63U	660	NA
Acenaphthylene	55U	55U	56U	53U	52U	63U	660	NA
Anthracene	55U	55U	56U	53U	52U	63U	660	NA
Benzo(a)anthracene	55U	55U	56U	53U	52U	63U	660	NA
Benzo(b)fluoranthene	55U	55U	56U	53U	52U	63U	660	NA
Benzo(k)fluoranthene	55U	55U	56U	53U	52U	63U	660	NA
Benzo(g,h,i)perylene	55U	55U	56U	53U	52U	63U	660	NA
Benzo(a)pyrene	55U	55U	56U	53U	52U	63U	660	NA
Chrysene	55U	55U	56U	53U	52U	63U	660	NA
Dibenz(a,h)anthracene	55UJ	55UJ	56UJ	53UJ	52UJ	63UJ	660	NA
Fluoranthene	55U	55U	56U	53U	52U	63U	660	NA
Fluorene	55U	55U	56U	53U	52U	63U	660	NA
Indeno(1,2,3-cd)pyrene	55U	55U	56U	53U	52U	63U	660	NA
Naphthalene	260J	520J	1,200	280	52U	63U	660	NA
Phenanthrene	310J	540J	2,600	310	52U	63U	660	NA
Pyrene	55U	120	710	82	52U	63U	660	NA

*Sample 61-02 was a duplicate sample of sample 61-01

¹Estimated laboratory detection limits are from Table 2, "Laboratory Estimated Quantitation Limits for Soil and Groundwater Samples" of GUST-9 (GA DNR, November 2001)

²Soil threshold levels from Table A, Column 2 (Average or Higher Groundwater Pollution Susceptibility Area) of Rules of Georgia Department of Natural Resources Environmental Protection Division, Chapter 391-3-15—Underground Storage Tank Management, Section 391-3-15.09, "Release Response and Corrective Action for UST Systems Containing Petroleum, Amended." (GA DNR, October 2001)

Units are micrograms per kilogram (µg/kg).

DNR = Department of Natural Resources

GA = Georgia

GUST = Georgia Underground Storage Tank

NA = Not applicable. The health-based threshold level exceeds the expected soil concentration under free product conditions.

J = estimated due to quality control criteria

PAH = polynuclear aromatic hydrocarbon

STL = soil threshold level

U = not detected at reporting limit shown

As Table 4-4 shows, naphthalene, phenanthrene, and pyrene in Sample 61-03 (east sidewall) had concentrations that exceeded the estimated laboratory detection limits as shown in *Underground Storage Tank (UST) Closure Guidance Document, Petroleum Releases* (GDNR, November 2001), hereinafter referred to as GUST-9. The remaining analytes in Sample 61-03, along with the remaining samples were all either not detected or had concentrations less than the GUST-9 estimated laboratory detection limits.

Table 4-5 Analytical Results for TPH Analyses, UST 61

Analyte	61-01	61-02	61-03	61-04	61-05	61-06	GUST Estimated Laboratory Detection Limits ¹	GA STL ²
TPH-DRO	800	1,100	3,500	2,300	8.0	4.9U	10	NRC
TPH-GRO	43J	13J	31	25	5.7	8.0J	10	NRC
Total TPH	843	1,113	3,531	2,325	13.7	12.9UJ	10	NRC

*Sample 61-02 was a duplicate sample of sample 61-01

¹Estimated laboratory detection limits are from Table 2, “Laboratory Estimated Quantitation Limits for Soil and Groundwater Samples” of GUST-9 (GA DNR, November 2001)

²Soil threshold levels from Table A, Column 2 (Average or Higher Groundwater Pollution Susceptibility Area) of Rules of Georgia Department of Natural Resources Environmental Protection Division, Chapter 391-3-15—Underground Storage Tank Management, Section 391-3-15.09, “Release Response and Corrective Action for UST Systems Containing Petroleum, amended.” (GA DNR, October 2001)

Units are milligrams per kilogram (mg/kg).

DRO = diesel range organics

GA = Georgia

GRO = gasoline range organic

GUST = Georgia underground storage tank

J = estimated due to quality control criteria

NRC = no regulatory criteria

STL = soil threshold level

TPH = total petroleum hydrocarbon

U = not detected at reporting limit shown

As Table 4-5 shows, all samples reported concentrations of TPH above the GUST-9 estimated laboratory detection limits.

5. CONCLUSIONS

The potential free-product layer surrounding well 22-07 has been removed; however, soil samples collected after the removal effort was complete reported concentrations of contaminants in the soil exceeding acceptable levels. Specifically,

- Benzene was estimated in the primary sample from the excavation bottom (Sample 61-01) with an estimated concentration of 62 µg/kg, which exceeded the Georgia soil threshold level, but benzene was not detected in the duplicate sample from the same location;
- Sample 61-03 (east sidewall) reported concentrations of naphthalene, phenanthrene, and pyrene that exceeded the GUST-9 estimated laboratory detection limits; and
- all of the samples reported concentrations of TPH above the GUST-9 estimated laboratory detection limits.

As required in the approved work plan, STEP will collect one groundwater sample from each of the three wells at UST 61 on a semiannual basis for a period of one year (two sampling events). Within six months

of completion of the IRAs at UST 61, STEP will develop the newly installed monitoring well (Well 22-07R) and begin semiannual monitoring of the groundwater at UST 61. Groundwater samples will be collected from the newly installed well (22-07R) and from the two other groundwater monitoring wells (22-08 and 22-09) at the site. These groundwater samples will be analyzed for BTEX. The second sampling event will be conducted approximately six months after the first sampling event is completed. Upon completion of the semiannual monitoring, STEP will prepare an annual progress report.

6. REFERENCES

EPA (U.S. Environmental Protection Agency), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*.

GDNR (Georgia Department of Natural Resources, Environmental Protection Division), November 2001. *Underground Storage Tank (UST) Closure Guidance Document, Petroleum Releases*.

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SAIC, July 1998. *Corrective Action Plan-Part A Addendum for Tank #61*.

SAIC, May 2001. *First Annual Monitoring Only Report for UST 61*.

STEP (Solutions To Environmental Problems, Inc.), July 2006. *Final Work Plan for Interim Removal Activities at Underground Storage Tank 61 Facility ID #9-089104 Building 1161 Fort Stewart, Georgia*.

USACE (U.S. Army Corps of Engineers) Savannah District, January 2006. *Scope of Work, Interim Removal Activities at Underground Storage Tank 61, Facility ID #9-089104, Building 1161 and Underground Storage Tank 82, Facility ID #9-089029, Building 1281, and SWMU 39, Underground Storage Tanks 59 & 60 at Fort Stewart Georgia*.

APPENDIX A

Photographs

FORT STEWART

UST Site 61



Cutting concrete for removal



Excavating soil (note sand bag debris)

FORT STEWART

UST Site 61



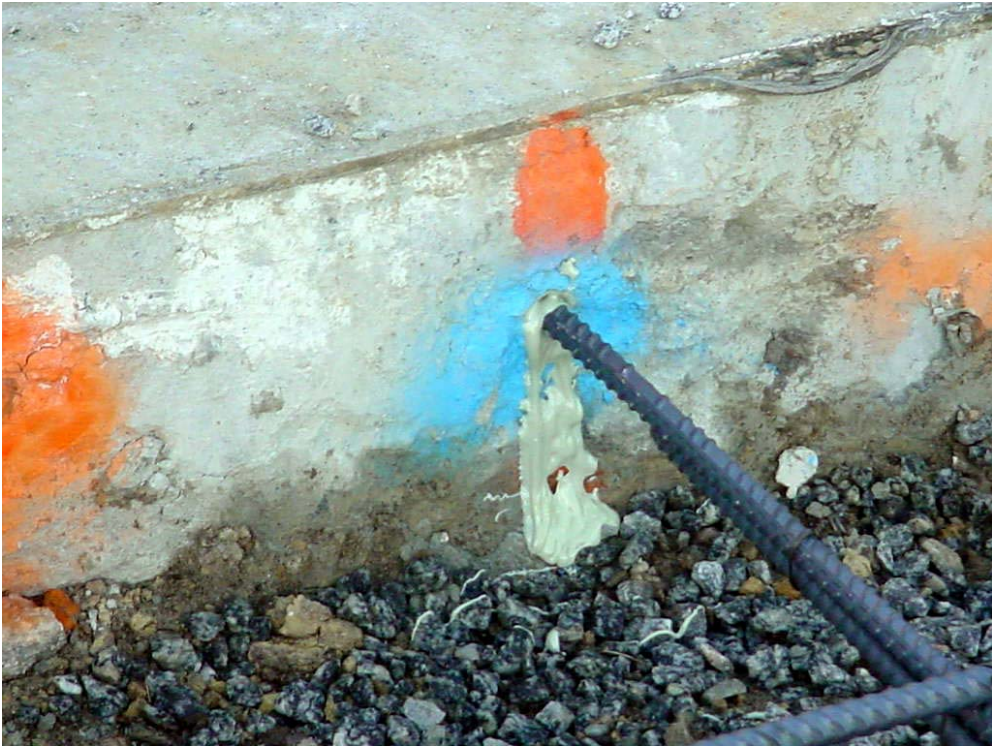
Side wall (with debris)



ORC® applied to walls and bottom of excavation

FORT STEWART

UST Site 61



Rebar doweled into concrete



Reinforcement steel

FORT STEWART

UST Site 61



Pouring concrete



Placing and finishing concrete

FORT STEWART

UST Site 61



Completed well



Curbing and concrete finished, site restored

APPENDIX B

Waste Characterization and Waste Manifests



Empirical Laboratories

CLIENT: STEP, Inc.

DATE RECEIVED: 07/26/06

DATE REPORTED: 08/04/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0607216-08
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					61 TCLP 7/25/06 12:00:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Barium-TCLP	100	0.050	1311/6010B	mg/L	0.223
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	<0.010
Chromium-TCLP	5.0	0.020	1311/6010B	mg/L	<0.020
Lead-TCLP	5.0	0.020	1311/6010B	mg/L	<0.020
Mercury-TCLP	0.20	0.00080	7470A	mg/L	<0.00080
Selenium-TCLP	1.0	0.030	1311/6010B	mg/L	<0.030
Silver-TCLP	5.0	0.010	1311/6010B	mg/L	<0.010
Initial pH - TCLP	NA	NA	1311	Units	7.0
Final pH - TCLP	NA	NA	1311	Units	4.9
Cyanide	250	0.13	9012A	mg/kg (as Rec'd)	<0.13
Ignitability	<140	NA	1010	°F	>158
pH- Laboratory (1)	<2/>12.5	NA	9045B	Units	6.7@ 18°C
Reactive Sulfide	500	19	Chap.7.3.4.2	mg/kg (as Rec'd)	<19

See attached page for definitions of terms and qualifiers.

EMPIRICAL LABORATORIES

D. Rick Davis
Vice President





NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: Atlantic Waste Services US EPA ID#: _____
Billing Address: 125 B Pine Meadow Lane
Site Address: 1550 Frank Cochran Dr. Ft. Stewart, GA
County of Origin: Liberty Phone: _____

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Contaminated Soil	1	RC8415287	20	DRUM

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

RANAY Powell-Jones Ranay Powell-Jones
Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services DOT#: 995413
Address: 105 B Pine Meadow Dr. Pooler, GA 31322 Truck Number: 101
James F. Edwards James F. Edwards
Name of Authorized Agent Signature Date Delivered 8-24-06

DISPOSAL FACILITY

Site Name: Superior Landfill
Address: 3001 Little Lake Rd. W. GA 31417
I hereby acknowledge receipt of the above described materials.
P. CARPENTIER P. Carpentier
Name of Authorized Agent Signature Date Received 8/24/06

12700185 W 0110831



NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: Atlantic Waste Services US EPA ID#: _____

Billing Address: 125 B Pine Meadow Drive

Site Address: 1550 Frank Cochran Drive Ft. Stewart, GA

County of Origin: Liberty Phone: _____

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
<u>Contaminated Soil</u>	<u>1</u>	<u>RC845287</u>	<u>20</u>	<u>EOC</u>

Special Handling Instructions _____

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Randy Powell-Jones [Signature]
Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services DOT#: 995413

Address: 125 B Pine Meadow Dr Truck Number: 101

James F. Edwards [Signature]
Name of Authorized Agent Signature Date Delivered

DISPOSAL FACILITY

Site Name: Superior Landfill

Address: 3001 Little Neck Rd

I hereby acknowledge receipt of the above described materials.

C. BARTINO [Signature] [Signature]
Name of Authorized Agent Signature Date Received

113201585 W8116831



Atlantic
waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: Atlantic Waste Services

US EPA ID#: _____

Billing Address: 125 B Pine Meadow Drive

Site Address: 1550 Frank Cochran Drive Ft. Stewart, GA

County of Origin: Liberty

Phone: _____

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Contaminated Soil	1	RC845289	30	ROL

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

BANDY POWELL-JONES
Generator Authorized Agent Name

Bandy Powell-Jones
Signature

Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services
125 B Pine Meadow Dr.

DOT#: _____

Address: Poder, GA 31322

Truck Number: _____

ANTHONY B. MOORE
Name of Authorized Agent

Anthony B. Moore
Signature

8/24/06
Date Delivered

DISPOSAL FACILITY

Site Name: Superior Landfill
3001 Little Neck Rd
Address: Sav GA 31419

I hereby acknowledge receipt of the above described materials.

Christopher Moore
Name of Authorized Agent

Christopher Moore
Signature

8/24/06
Date Received

N3201585 W811604

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61 TCLP

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.V07216

Matrix: (soil/water) WATER Lab Sample ID: 0607216-08

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0721608T

Level: (low/med) LOW Date Sampled: 07/25/06 12:00

% Moisture: not dec. Date Analyzed: 07/28/06 13:46

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
71-43-2-----	Benzene	0.010	0.50	<0.010	U
78-93-3-----	2-Butanone	0.10	200	<0.10	U
56-23-5-----	Carbon tetrachloride	0.010	0.50	<0.010	U
108-90-7-----	Chlorobenzene	0.010	100	<0.010	U
67-66-3-----	Chloroform	0.010	6.0	<0.010	U
106-46-7-----	1,4-Dichlorobenzene	0.010	7.5	<0.010	U
107-06-2-----	1,2-Dichloroethane	0.010	0.50	<0.010	U
75-35-4-----	1,1-Dichloroethene	0.010	0.70	<0.010	U
127-18-4-----	Tetrachloroethene	0.010	0.70	<0.010	U
79-01-6-----	Trichloroethene	0.010	0.50	<0.010	U
75-01-4-----	Vinyl chloride	0.020	0.20	<0.020	U

FORM I VOA

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61 TCLP

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.B07216

Matrix: (soil/water) TCLP Lab Sample ID: 0607216-08

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 0721608

% Moisture: _____ decanted: (Y/N) _____ Date Sampled: 07/25/06 12:00

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/31/06

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 08/03/06 00:25

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
121-14-2-----	2,4-Dinitrotoluene	0.050	0.13	<0.050	U
118-74-1-----	Hexachlorobenzene	0.050	0.13	<0.050	U
87-68-3-----	Hexachlorobutadiene	0.050	0.50	<0.050	U
67-72-1-----	Hexachloroethane	0.050	3.0	<0.050	U
106-44-5-----	4-Methylphenol	0.050	200	<0.050	U
95-48-7-----	2-Methylphenol	0.050	200	<0.050	U
98-95-3-----	Nitrobenzene	0.050	2.0	<0.050	U
87-86-5-----	Pentachlorophenol	0.20	100	<0.20	U
110-86-1-----	Pyridine	0.20	5.0	<0.20	U
95-95-4-----	2,4,5-Trichlorophenol	0.050	400	<0.050	U
88-06-2-----	2,4,6-Trichlorophenol	0.050	2.0	<0.050	U

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61 TCLP

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: Case No.: SAS No.: NA SDG No.: STE.P07216

Matrix: (soil/water) TCLP Lab Sample ID: 0607216-08

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 015F1501

% Moisture: _____ decanted: (Y/N) _____ Date Sampled: 07/25/06 12:00

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/31/06

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 08/02/06 17:02

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
12789-03-6----	Chlordane	0.00050	0.030	<0.00050	U
72-20-8-----	Endrin	0.00010	0.020	<0.00010	U
58-89-9-----	Gamma-BHC	0.00010	0.40	<0.00010	U
76-44-8-----	Heptachlor	0.00010	0.0080	<0.00010	U
1024-57-3-----	Heptachlor Epoxide	0.00010	0.0080	<0.00010	U
72-43-5-----	Methoxychlor	0.00010	10	<0.00010	U
8001-35-2-----	Toxaphene	0.010	0.50	<0.010	U

FORM 1
HERB ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61 TCLP

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: Case No.: SAS No.: NA SDG No.: STE.H07216

Matrix: (soil/water) TCLP Lab Sample ID: 0607216-08

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 022R0101

% Moisture: _____ decanted: (Y/N) _____ Date Sampled: 07/25/06 12:00

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/31/06

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 08/03/06 20:28

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP	CONC	Q
			Regulatory Limit		
94-75-7-----2,4-D		0.0050	10	<0.0050	U
93-72-1-----2,4,5-TP (Silvex)		0.00050	1.0	<0.00050	U

APPENDIX C

Confirmatory Sampling, Analytical Form 1s



**EMPIRICAL
LABORATORIES, LLC**
227 French Landing Drive
Suite 550
Nashville, TN 37228
Attn: Analytical Laboratory
(615) 345-1115 (phone)
(615) 846-5426 (fax)

Send Results to:

Name DOUG HAWN
Company STEP INC
Address 10016 Floyd Lister Ct
City/State/Zip OKM RD, OK 73130
Phone 865-671-7837
Fax 865-481-0290
E-mail D.HAWN@STEPINC.COM

Send Invoice To:

Name SARVE
Company _____
Address _____
City/State/Zip _____
Phone _____
Purchase Order _____
E-mail _____

Details:

Page 1 of 1
Cooler No. 1
Date Shipped 7-25-06
Shipped By UPS
Turnaround STANDARD
(Std. Turn unless noted otherwise. / There may be a surcharge for RUSH contact lab)

Project No./Name	Lab Use Only	Date Sampled	Time	Comp/Grab	Sample Location/Description	Sample Matrix	Samplers (Signature)*			ANALYSIS REQUIRED	No. of Bottles	Lab Use Only
	Lab #						Field pH/Temp	Field Cond.				Containers/Pres.
7216-01					TAP BLANK YORD	WATER				VERA	2	25-HCL
02	7-25-06	1040		GRAB	61-01	Soil	N/A	N/A		BTEX, MYBE, PAN GRO, DRO	5	30-2-1
03	7-25-06	1045		GRAB	61-02	Soil	N/A	N/A		BTEX MYBE PAN GRO DRO	5	30-2-1
04	7-25-06	1055		GRAB	61-03	Soil	N/A	N/A		BTEX MYBE PAN GRO DRO	5	
05	7-25-06	1105		GRAB	61-04	Soil	N/A	N/A		BTEX MYBE PAN GRO DRO	5	
06	7-25-06	1110		GRAB	61-05	Soil	N/A	N/A		BTEX MYBE PAN GRO DRO	5	
07	7-25-06	1125		GRAB	61-06	Soil	N/A	N/A		BTEX MYBE PAN GRO DRO	5	
↓	7-25-06	1125		GRAB	61-06 MSD	Soil	N/A	N/A		BTEX MYBE PAN GRO DRO	8	90 4-2
07	7-25-06	1200		Comp	61 TCU P	Soil	N/A	N/A		Full TCU P ROI	4	4-2-1

Sample #11 Date/Time 7-10-2006 11:26 Signature [Signature]	Received By: (Signature) Received By: (Signature) Received By: (Signature)	REMARKS *Signature required to ensure validity LEVEL III DATA Package CALL DOUG HAWN UPON Receipt	Lab Use Only VOA Headspace Field Filtered Corroset Containers Discrepancies Cust. Seals intact Containers Intact Y N NA Y N NA Y N NA Y N NA Y N NA Y N NA
Received for Laboratory by: (Signature) [Signature]	Date/Time 7-26-06 5:00 PM	Airbill # <u>UPS</u> CAR #	

Distribution: Original and yellow copies accompany sample shipment to laboratory. Pink retained by samplers.

00005

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-01

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELARN Case No.: NA SAS No.: NA SDG No.: STE.V07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-02

Sample wt/vol: 6.1 (g/mL) G Lab File ID: 0721602M

Level: (low/med) MED Date Sampled: 07/25/06 10:40

% Moisture: not dec. 12 Date Analyzed: 07/28/06 21:29

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		UG/KG	0.001	0.01	0.1	1	10	100	1000
		MDL	RL								
71-43-2	Benzene	22	230	62	J	1	1	1	1	1	1
100-41-4	Ethylbenzene	35	230	920	U	1	1	1	1	1	1
1634-04-4	MTBE	15	230		U	1	1	1	1	1	1
108-88-3	Toluene	40	230	230	150	230	230	230	230	230	230
1330-20-7	Xylene (total)	33	230	3300	4	1	1	1	1	1	1

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-02

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.V07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-03

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 0721603M

Level: (low/med) MED Date Sampled: 07/25/06 10:40

% Moisture: not dec. 10 Date Analyzed: 07/31/06 12:40

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG
MDL RL CONC

CAS NO.	COMPOUND	MDL	RL	CONC	UG/KG	Q Raw
71-43-2	Benzene	23	240		U	U
100-41-4	Ethylbenzene	37	240	220	J	J 17
1634-04-4	MTBE	16	240	240	JB	U 62
108-88-3	Toluene	42	240		U	U
1330-20-7	Xylene (Total)	34	240	730	J	J 17

FORM I VQA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-03

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE V07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-04

Sample wt/vol: 5.1 (g/mL) G

Lab File ID: 0721604M

Level: (low/med) MED

Date Sampled: 07/25/06 10:55

% Moisture: not dec. 15

Date Analyzed: 07/31/06 13:17

GC Column: DB-VRX ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 5000 (uL)

Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:			UG/KG	Q _{RW}	Q _{net}
		MDL	(ug/L or ug/Kg)	RL CONC			
71-43-2	Benzene	27	290		U	4	
100-41-4	Ethylbenzene	43	290	260	J	J	
1634-04-4	MTBE	18	290		U	4	
108-88-3	Toluene	50	290		U	4	
1330-20-7	Xylene (total)	40	290	260	J	J	

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-04

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.V07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-05

Sample wt/vol: 4.9 (g/mL) G

Lab File ID: 0721605M

Level: (low/med) MED

Date Sampled: 07/25/06 11:05

% Moisture: not dec. 7

Date Analyzed: 07/31/06 13:54

GC Column: DB-VRX ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 5000 (uL)

Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG			Q _{rw} Q _{nd}
		MDL	RL	CONC	
71-43-2-----	Benzene	26	270		U u
100-41-4-----	Ethylbenzene	41	270	340	U u
1634-04-4-----	MIBK	18	270		U u
108-88-3-----	Toluene	47	270		U u
1330-20-7-----	Xylene (total)	38	270	1500	

FORM 1 VOA



Empirical Laboratories

000011

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-05

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.V07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-06

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 0721606B

Level: (low/med) LOW Date Sampled: 07/25/06 11:10

% Moisture: not dec. 9 Date Analyzed: 07/31/06 11:25

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:			UG/KG
		MDL	RL	CONC	
71-43-2	Benzene	0.50	5.3	0.91	J
100-41-4	Ethylbenzene	0.79	5.3		U
1634-04-4	MIBK	0.34	5.3		U
108-88-3	Toluene	0.91	5.3		U
1330-20-7	Xylene (total)	0.74	5.3		U

FORM 1 VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-06

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.V07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-07

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 0721607B

Level: (low/med) LOW Date Sampled: 07/25/06 11:25

% Moisture: not dec. 21 Date Analyzed: 07/31/06 10:48

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		UG/KG	
		MDL	RL		
71-43-2	Benzene	0.58	6.2	U	↓
100-41-4	Ethylbenzene	0.93	6.2	U	
1634-04-4	MTBE	0.40	6.2	U	
108-88-3	Toluene	1.1	6.2	U	
1330-20-7	Xylene (total)	0.86	6.2	U	

FORM 1 VOA

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-01

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.B07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-02

Sample wt/vol: 15.5 (g/mL) G

Lab File ID: 0721602

% Moisture: 12 decanted: (Y/N) N

Date Sampled: 07/25/06 10:40

Extraction: (SepF/Cont/Sonc/Sorh) SOXH

Date Extracted: 07/27/06

Concentrated Extract Volume: 500.0 (uL)

Date Analyzed: 08/03/06 04:43

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CAS NO.	COMPOUND	CONCENTRATION UNITS:		UG/KG	
		MDL	(ug/L or ug/Kg) RL CONC		
83-32-9	Acenaphthene	22	55	U	<div> <div>0.17</div> <div>17</div> </div>
208-96-8	Acenaphthylene	22	55	U	
120-12-7	Anthracene	22	55	U	
56-55-3	Benzo(a)anthracene	22	55	U	
205-99-2	Benzo(b)fluoranthene	22	55	U	
207-08-9	Benzo(k)fluoranthene	22	55	U	
191-24-2	Benzo(g,h,i)perylene	22	55	U	
50-32-8	Benzo(a)pyrene	22	55	U	
218-01-9	Chrysene	22	55	U	
53-70-3	Dibenz(a,h)anthracene	22	55	UY	
206-44-0	Fluoranthene	22	55	U	
86-73-7	Fluorene	22	55	U	
193-39-5	Indeno(1,2,3-cd)pyrene	22	55	U	
91-20-3	Naphthalene	22	55	260	
85-01-8	Phenanthrene	22	55	310	
129-00-0	Pyrene	22	55	U	

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-02

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.B07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-03

Sample wt/vol: 15.3 (g/mL) G

Lab File ID: 0721603

% Moisture: 10 decanted: (Y/N) N

Date Sampled: 07/25/06 10:40

Extraction: (SepF/Cont/Sonic/Soxh) SOXH

Date Extracted: 07/27/06

Concentrated Extract Volume: 500.0 (uL)

Date Analyzed: 08/03/06 05:18

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CAS NO.	COMPOUND	CONCENTRATION UNITS:			UG/KG	Re
		MDL	(ug/L or ug/Kg) RL	CONC		
83-32-9	Acenaphthene	22	55		U	4
208-96-8	Acenaphthylene	22	55		U	
120-12-7	Anthracene	22	55		U	
56-55-3	Benzo(a)anthracene	22	55		U	
205-99-2	Benzo(b)fluoranthene	22	55		U	
207-08-9	Benzo(k)fluoranthene	22	55		U	
191-24-2	Benzo(g,h,i)perylene	22	55		U	
50-32-8	Benzo(a)pyrene	22	55		U	
218-01-9	Chrysene	22	55		U	
53-70-3	Dibenz(a,h)anthracene	22	55		UY	5
206-44-0	Fluoranthene	22	55		U	
86-73-7	Fluorene	22	55		U	
193-39-5	Indeno(1,2,3-cd)pyrene	22	55		U	
91-20-3	Naphthalene	22	55	520		17
85-01-8	Phenanthrene	22	55	540		17
129-00-0	Pyrene	22	55	120		

FORM 1 SV

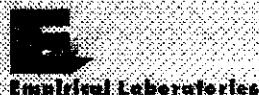
CLIENT SAMPLE NO.

67-03

CAS NO.	COMPOUND	MDL	CONCENTRATION UNITS:	(ug/L or ug/Kg)	UG/KG
			RL	CONC	<i>Pw</i>
					<i>Dad</i>

83-32-9	Acenaphthene	22	56	680	U	
208-96-8	Acenaphthylene	22	56		U	
120-12-7	Anthracene	22	56		U	
56-55-3	Benzo (a) anthracene	22	56		U	
205-99-2	Benzo (b) fluoranthene	22	56		U	
207-08-9	Benzo (k) fluoranthene	22	56		U	
191-24-2	Benzo (g, h, i) perylene	22	56		U	
50-32-8	Benzo (a) pyrene	22	56		U	
218-01-9	Chrysene	22	56		U	
53-70-3	Dibenz (a, h) anthracene	22	56		UY	
206-44-0	Fluoranthene	22	56		U	
86-73-7	Fluorene	22	56		U	
193-39-5	Indeno (1, 2, 3-cd) pyrene	22	56		U	
91-20-3	Naphthalene	22	56	1200		
85-01-8	Phenanthrene	22	56	2600		
129-00-0	Pyrene	22	56	710		

FORM I SV



000085

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-04

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.B07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-05

Sample wt/vol: 15.3 (g/mL) G

Lab File ID: 0721605

% Moisture: 7 decanted: (Y/N) N

Date Sampled: 07/25/06 11:05

Extraction: (SepF/Cont/Sonc/Soxh) SOXH

Date Extracted: 07/27/06

Concentrated Extract Volume: 500.0 (uL)

Date Analyzed: 08/03/06 06:27

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CAS NO.	COMPOUND	CONCENTRATION UNITS:		UG/KG	RE
		MDL	(ug/L or ug/Kg) RE CONC		
83-32-9	Acenaphthene	21	53	U	4
208-96-8	Acenaphthylene	21	53	U	
120-12-7	Anthracene	21	53	U	
56-55-3	Benzo (a) anthracene	21	53	U	
205-99-2	Benzo (b) fluoranthene	21	53	U	
207-08-9	Benzo (k) fluoranthene	21	53	U	
191-24-2	Benzo (g, h, i) perylene	21	53	U	
50-32-8	Benzo (a) pyrene	21	53	U	
218-01-9	Chrysene	21	53	U	
53-70-3	Dibenz (a, h) anthracene	21	53	UY	45
206-44-0	Fluoranthene	21	53	U	
86-73-7	Fluorene	21	53	U	
193-39-5	Indeno (1, 2, 3-cd) pyrene	21	53	U	
91-20-3	Naphthalene	21	53	280	
85-01-8	Phenanthrene	21	53	310	
129-00-0	Pyrene	21	53	82	

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-05

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.B07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-06

Sample wt/vol: 15.7 (g/mL) G

Lab File ID: 0721606

% Moisture: 9 decanted: (Y/N) N

Date Sampled: 07/25/06 11:10

Extraction: (SepF/Cont/Sonc/Soxh) SOXH

Date Extracted: 07/27/06

Concentrated Extract Volume: 500.0 (uL)

Date Analyzed: 08/03/06 07:01

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CAS NO.	COMPOUND	CONCENTRATION UNITS:		UG/KG	R _W
		MDL	(ug/L or ug/Kg) RL CONC		
83-32-9	Acenaphthene	21	52	U	u
208-96-8	Acenaphthylene	21	52	U	
120-12-7	Anthracene	21	52	U	
56-55-3	Benzo (a) anthracene	21	52	U	
205-99-2	Benzo (b) fluoranthene	21	52	U	
207-08-9	Benzo (k) fluoranthene	21	52	U	
191-24-2	Benzo (g, h, i) perylene	21	52	U	
50-32-8	Benzo (a) pyrene	21	52	U	
218-01-9	Chrysene	21	52	U	
53-70-3	Dibenz (a, h) anthracene	21	52	U	
206-44-0	Fluoranthene	21	52	U	
86-73-7	Fluorene	21	52	U	
193-39-5	Indeno (1, 2, 3-cd) pyrene	21	52	U	
91-20-3	Naphthalene	21	52	U	
85-01-8	Phenanthrene	21	52	U	
129-00-0	Pyrene	21	52	U	

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-06

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE B07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-07

Sample wt/vol: 15.1 (g/mL) G

Lab File ID: 0721607

% Moisture: 21 decanted: (Y/N) N

Date Sampled: 07/25/06 11:25

Extraction: (SepF/Cont/Sonc/Soxh) SOXH

Date Extracted: 07/27/06

Concentrated Extract Volume: 500.0 (uL)

Date Analyzed: 08/03/06 07:36

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CAS NO.	COMPOUND	CONCENTRATION UNITS:			UG/KG
		MDL	RL	CONC	
83-32-9	Acenaphthene	25	63		U
208-96-8	Acenaphthylene	25	63		U
120-12-7	Anthracene	25	63		U
56-55-3	Benzo (a) anthracene	25	63		U
205-99-2	Benzo (b) fluoranthene	25	63		U
207-08-9	Benzo (k) fluoranthene	25	63		U
191-24-2	Benzo (g, h, i) perylene	25	63		U
50-32-8	Benzo (a) pyrene	25	63		U
218-01-9	Chrysene	25	63		U
53-70-3	Dibenz (a, h) anthracene	25	63		UY
206-44-0	Fluoranthene	25	63		U
86-73-7	Fluorene	25	63		U
193-39-5	Indeno (1, 2, 3-cd) pyrene	25	63		U
91-20-3	Naphthalene	25	63		U
85-01-8	Phenanthrene	25	63		U
129-00-0	Pyrene	25	63		U

FORM I SV

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-01

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.G07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-02

Sample wt/vol: 6.1 (g/mL) G

Lab File ID: 016F0101

Level: (low/med) HIGH

Date Sampled: 07/25/06 10:40

% Moisture: not dec. 12

Date Analyzed: 07/28/06 20:04

GC Column: RTX 502.2 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 5000(ul)

Soil Aliquot Volume: 100(ul)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG			
		MDL	RL	CONC	o Raw Dud
8006-61-9-----	Gasoline Range Organics	2.3	4.7	43	J 17

FORM 1 GRO

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-01

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELARN Case No.: NA SAS No.: NA SDG No.: STE.D07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-02

Sample wt/vol: 25.5 (g/mL) G Lab File ID: 018R0201

% Moisture: 12 decanted: (Y/N) N Date Sampled: 07/25/06 10:40

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 07/27/06

Concentrated Extract Volume: 1.0 (mL) Date Analyzed: 08/02/06 23:24

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:		(ug/L or ug/Kg)		ME/KG
		MDL	RL	CONC		
11-84-7-----	Diesel Range Organics	45	45	800	D	0.00

FORM 1 DRO

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-02

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.G07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-03

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 017F0101

Level: (low/med) HIGH Date Sampled: 07/25/06 10:40

% Moisture: not dec. 10 Date Analyzed: 07/28/06 20:41

GC Column: RTX 502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(ul) Soil Aliquot Volume: 100(ul)

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG ?
MDL RL CONC *low Qual*

8006-61-9-----Gasoline Range Organics	2.4	4.9	13	5	17
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FORM 1 GRO

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-02

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.D07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-03

Sample wt/vol: 25.7 (g/mL) G Lab File ID: 019R0201

% Moisture: 10 decanted: (Y/N) N Date Sampled: 07/25/06 10:40

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 07/27/06

Concentrated Extract Volume: 1.0 (mL) Date Analyzed: 08/03/06 00:07

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:			MG/KG
		MDL	(ug/L or ug/Kg) RL	CONC	
11-84-7-----	Diesel Range Organics	43	43	1100	D

FORM I DRO

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-03

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.G07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-04

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 018F0101

Level: (low/med) HIGH Date Sampled: 07/25/06 10:55

% Moisture: not dec. 15 Date Analyzed: 07/28/06 21:19

GC Column: RTX 502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000 (ul) Soil Aliquot Volume: 100 (ul)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG			Qual
		MDL	RL	CONC	
8006-61-9----	Gasoline Range Organics	2.9	5.8	31	

FORM I GRO

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-03

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.D07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-04

Sample wt/vol: 25.5 (g/mL) G Lab File ID: 020R0201

% Moisture: 15 decanted: (Y/N) N Date Sampled: 07/25/06 10:55

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 07/27/06

Concentrated Extract Volume: 1.0 (mL) Date Analyzed: 08/03/06 00:49

Injection Volume: 1.0 (uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG			Qual
		MDL	RL	CONC	
11-84-7-----	Diesel Range Organics	93	93	3500	D

FORM 1 DRO

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-04

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.G07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-05

Sample wt/vol: 4.9 (g/mL) G

Lab File ID: 019F0101

Level: (low/med) HIGH

Date Sampled: 07/25/06 11:05

% Moisture: not dec. 7

Date Analyzed: 07/28/06 21:56

GC Column: RTX 502.2 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 5000(ul)

Soil Aliquot Volume: 100(ul)

CAS NO.	COMPOUND	CONCENTRATION UNITS:			MG/KG
		MDL	RL	CONC	
8006-61-9-----	Gasoline Range Organics	2.7	5.5	25	

FORM 1 GRO

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-04

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.D07216

Matrix: (soil/water) SOIL

Lab Sample ID: 0607216-05

Sample wt/vol: 25.1 (g/mL) G

Lab File ID: 021R0201

% Moisture: 7 decanted: (Y/N) N

Date Sampled: 07/25/06 11:05

Extraction: (SepF/Cont/Sonc/Soxh) SONC

Date Extracted: 07/27/06

Concentrated Extract Volume: 1.0 (mL)

Date Analyzed: 08/03/06 01:32

Injection Volume: 1.0 (uL)

Dilution Factor: 20.0

GPC Cleanup: (Y/N) N

pH: NA

Sulfur Cleanup: (Y/N) N

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG
MDL RL CONC

CAS NO.	COMPOUND	MDL	RL	CONC	MG/KG
11-84-7-----	Diesel Range Organics	86	86	2300	D

FORM I DRO

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-05

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.G07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-06

Sample wt/vol: 5.3 (g/mL) G Lab File ID: 020F0101

Level: (low/med) HIGH Date Sampled: 07/25/06 11:10

% Moisture: not dec. 9 Date Analyzed: 07/28/06 22:34

GC Column: RTX 502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(ul) Soil Aliquot Volume: 100(ul)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG			o Rev Qual
		MDL	RL	CONC	
8006-61-9	Gasoline Range Organics	2.6	5.2	5.7	

FORM I GRO

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-05

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.D07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-06

Sample wt/vol: 25.4 (g/mL) G Lab File ID: 012R0201

% Moisture: 9 decanted: (Y/N) N Date Sampled: 07/25/06 11:10

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 07/27/06

Concentrated Extract Volume: 1.0 (mL) Date Analyzed: 08/02/06 19:08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:			MG/KG
		MDL	RL	CONC	
11-84-7-----	Diesel Range Organics	4.3	4.3	8.0	

FORM 1 DRO

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-06

Lab Name: EMPIRICAL LABS Contract: STEP

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: STE.G07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-07

Sample wt/vol: 3.6 (g/mL) G Lab File ID: 021F0101

Level: (low/med) HIGH Date Sampled: 07/25/06 11:25

% Moisture: not dec. 21 Date Analyzed: 07/28/06 23:12

GC Column: RTX 502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000 (ul) Soil Aliquot Volume: 100 (ul)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG			
		MDL	RL	CONC	
8006-61-9-----	Gasoline Range Organics	4.4	8.8	8.0	J J

FORM 1 GRO

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

61-06

Lab Name: EMPIRICAL LABS Contract: STEF

Lab Code: ELAEN Case No.: NA SAS No.: NA SDG No.: STE.D07216

Matrix: (soil/water) SOIL Lab Sample ID: 0607216-07

Sample wt/vol: 25.5 (g/mL) G Lab File ID: 038R0101

% Moisture: 21 decanted: (Y/N) N Date Sampled: 07/25/06 11:25

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 07/27/06

Concentrated Extract Volume: 1.0 (mL) Date Analyzed: 08/01/06 14:53

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG			
		MDL	RL	CONC	
11-84-7-----	Diesel Range Organics	4.9	4.9		U 4

FORM I DRO