December 2, 2011 J019146.01

Mr. Chadwick Howell
St. Louis Development Corporation
1015 Locust Street, Suite 1200
St. Louis, Missouri 63101

Reference: Environmental Sampling and Testing
Former Spotless Car Wash
1954-1956 Utah Street (aka 3300 Wisconsin Avenue)
St. Louis, Missouri
ST0021172

Dear Mr. Howell:

In general accordance with our confirming proposal P019146.01B dated November 10, 2011, Geotechnology, Inc. (Geotechnology) is pleased to submit the results of our environmental sampling and testing for the referenced site. The subject property consists of the former Spotless Car Wash and service station located at 1954-1956 Utah Street (3300 Wisconsin Avenue) in St. Louis, Missouri. A site location map is included as Plate 1.

1.0 INTRODUCTION AND BACKGROUND

The subject property, located at the southeast corner of Utah Street and Wisconsin Avenue in St. Louis, Missouri, consists of a former service station building situated on an approximately 0.18 acre tract. According to the City of St. Louis property database, the physical address of the subject property is 3300 Wisconsin Avenue. The vacant parcel immediately south of the subject tract is 3306 Wisconsin Avenue. Both parcels are currently owned by Land Reutilization Authority (LRA). Underground storage tank (UST) pits are situated on the east and west sides of the single-story brick former service station building. Based on the number of fill ports at the surface, it is assumed that four USTs exist in each pit. A former pump/dispenser island is situated north of the former service station building. The site was previously registered with the Missouri Department of Natural Resources (MDNR) and has been assigned site ID #ST0021172.

Geotechnology reviewed a client-supplied partial Phase I Environmental Site Assessment (ESA) of the subject property conducted by PSC Industrial Outsourcing, LP in February 2011[1]. Based on the Phase I ESA findings, the following Recognized Environmental Conditions (RECs) were identified:

[1] *Phase I Environmental Site Assessment, 3300 Wisconsin Avenue, St. Louis, Missouri*; Prepared for St. Louis Development Corporation, dated February 16, 2011.

- The subject property was occupied by a service station since the 1950s. Up to eight USTs were permanently closed in place on the site in the 1970s.

- Based on a review of the MDNR files, several complaints of hydrocarbon odors and leaking from UST fill ports and a waste oil aboveground storage tank (AST) were reported. Additionally, a neighbor in a building located downgradient of the site complained of gasoline vapors in their basement.

- A hydraulic lift exists in the subject building's service garage.

The purpose of the limited environmental sampling and testing was to assess the potential for subsurface contamination associated with these identified REC's. Our limited environmental sampling and testing services were conducted in general accordance with the ASTM E 1903-11 "Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process" document for initial screening purposes to assess if a reportable release had occurred. Additionally, our limited environmental sampling and testing activities were conducted in general accordance with the MDNR Leaking Petroleum Storage Tanks (LPST) Site-Specific Quality Assurance Project Plan Addendum (SSQA) included in Appendix A.

2.0 FIELD SAMPLING

Prior to subsurface exploration activities, public utilities were located through Missouri One-Call. On November 17, 2011, Geotechnology advanced five environmental borings (EB-1 through -5) on the site (3300 Wisconsin Avenue) and on the vacant grass-covered parcel to the south (3306 Wisconsin Avenue). The approximate boring locations are illustrated on Plate 2.

The environmental borings were advanced to depths ranging between 11.5 and 20 feet below land surface (bls) using a truck-mounted drill rig. Soil samples were collected from the borings using direct push technology (DPT). Sampler refusal was encountered at depths ranging between 11.5 and 17 feet bls in Borings EB-1 through EB-4. Boring EB-5 was terminated at a depth of 20 feet bls. Subsurface materials encountered in the borings generally consisted of fill material (brown silty clay and silt intermixed with brick fragments) underlain by silty clay, clay and gravelly clay. Upon retrieval, soil samples were screened in the field for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). The PID was calibrated to an isobutylene standard of 100 parts per million (ppm) prior to use. The PID field screening results are presented on the boring logs included in Appendix B.

Temporary groundwater monitoring wells were subsequently constructed in the five soil borings to facilitate the collection of groundwater samples. The temporary wells consisted of 10 feet of 1-inch diameter 0.010-inch slotted PVC and riser to the surface. On November 18,

2011, Geotechnology gauged each of the five temporary wells using a decontaminated water-level indicator. Based on the gauging observations, water was not present in the five wells. As a result, water samples were not able to be collected from the temporary wells.

The sampling equipment was decontaminated between borings with a non-phosphate detergent wash and potable water rinse of the sampling components.

The soil samples were packed into laboratory-supplied containers, labeled and placed on ice in a cooler for subsequent analytical testing. The samples were submitted to Teklab, Inc. of Collinsville, Illinois for analytical testing of:

- Benzene, toluene, ethylbenzene and total xylenes (BTEX), naphthalene, oxygenates and total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) per USEPA Method 5035/8260B.

- TPH as oil and diesel range organics (ORO/DRO).

- Polycyclic aromatic hydrocarbons (PAHs) per USEPA Method 8270C (*Soil sample collected from EB-2 only*).

Upon completion of sampling activities, the temporary wells were removed and the borings were backfilled with bentonite and patched at the surface. The borings were registered with MDNR per Wellhead Protection guidelines.

3.0 RESULTS

A summary of the analytical testing results for the soil samples is presented in Table 1. A copy of the laboratory analytical report is included in Appendix C. The analytical testing results were compared to the MDNR Missouri Risk-Based Corrective Action (MRBCA) Default Target Levels (DTLs) and Tier 1 Risk-Based Target Levels (RBTLs) for Residential Land Use – Soil Type 1. The DTLs represent the most conservative cleanup scenario for sites within the MDNR Brownfields/Voluntary Cleanup Program (i.e. for pursuing unrestricted land use). Tier 1 RBTLs are the risk-based cleanup guidelines used by MDNR for sites pursuing unrestricted or restricted site use closure through the B/VCP using the risk assessment process. For the Tier 1 RBTLs, the indoor inhalation of vapors exposure pathway was used.

With the exception of Benzo(a)pyrene, petroleum hydrocarbon constituents were either not detected, or were detected at concentrations below the MDNR MRBCA DTLs in soil samples collected from Borings EB-1 through EB-5. Benzo(a)pyrene, a PAH, was detected at a concentration of 0.439 parts per million (ppm), which is above the DTL of 0.19 ppm, but below the Tier 1 Residential (Soil Type 1) RBTL of 144,000 ppm.

FINDINGS AND CONCLUSIONS

Geotechnology has conducted limited environmental sampling and testing of soil on the subject property at 1954-1956 Utah Street (3300-3306 Wisconsin Avenue) in St. Louis, Missouri. The limited environmental sampling and testing was conducted to assess for the potential presence of petroleum hydrocarbons, VOCs and PAHs in soil and groundwater at the site related to previously identified RECs, and to assess whether a release of petroleum hydrocarbons had occurred.

With the exception of Benzo(a)pyrene in the soil sample collected from Boring EB-2, petroleum hydrocarbon constituents were either not detected, or were detected at concentrations below the MDNR MRBCA DTLs in soil samples collected from Borings EB-1 through EB-5. The Benzo(a)pyrene concentration was below the Tier 1 Residential RBTL for Soil Type 1. Due to the absence of groundwater in the five temporary monitoring wells, groundwater samples were not able to be collected for subsequent analysis.

Geotechnology recommends that the USTs and associated product lines be removed in accordance with the MRBCA Process for Petroleum Storage Tank guidance document.

* * * * * *

The following are made part of and complete this report:

Table 1	-	Summary of Analytical Testing Results for Soil
Plate 1	-	Site Location and Topography
Plate 2	-	Aerial Photograph of Site and Boring Locations
Appendix A	-	MDNR LPST SSQA
Appendix B	-	Boring Logs
Appendix B	-	Laboratory Analytical Reports
Appendix C	-	Limitations of Report

* * * * * *

We appreciate the opportunity to provide this service to St. Louis Development Corporation. If you have any questions or require additional information, please contact the undersigned at (314) 997-7440.

Very truly yours,

GEOTECHNOLOGY, INC.

Michael S. Roark, RG, LEED AP
Senior Project Manager

MSR/DTK:msr/her

Copies Submitted: 2 hard copies + PDF on CD

TABLE 1

SUMMARY OF ANALYTICAL TESTING RESULTS FOR SOIL
1954 UTAH STREET
ST. LOUIS, MISSOURI
ST0021172

	Analyte	Boring ID and Depth (Feet)					MRBCA Comparison Values
		EB-1 (0 - 2)	EB-2 (10 - 11.5)	EB-3 (4 - 8)	EB-4 (4 - 6)	EB-5 (4 - 6)	MRBCA DTLs[1]
BTEXN, Oxygenates, TPH-GRO (Method 8260B)	Benzene	<0.0011	<0.0009	<0.0008	<0.0009	<0.001	0.0561
	Diisopropyl ether (DIPE)	<0.0056	<0.0043	<0.0042	<0.0047	<0.0052	7.96
	Ethylbenzene	<0.0056	<0.0043	<0.0042	<0.0047	<0.0052	39.9
	Ethyl-tert-butyl ether (ETBE)	<0.0056	<0.0043	<0.0042	<0.0047	<0.0052	0.11
	Methyl tert-butyl ether (MTBE)	<0.0022	<0.0017	<0.0017	<0.0019	<0.0021	0.453
	Naphthalene	<0.0111	<0.0086	<0.0084	<0.0094	<0.0103	1.06
	tert-Amyl methyl ether (TAME)	<0.0056	<0.0043	<0.0042	<0.0047	<0.0052	5.11
	tert-Butyl alchohol (TBA)	<0.0555	<0.0431	<0.0422	<0.0472	<0.0516	0.563
	Toluene	<0.0056	<0.0043	<0.0042	<0.0047	<0.0052	29.8
	Total Xylenes	<0.0056	<0.0043	<0.0042	0.0022 J	<0.0052	170
	TPH-GRO	0.39 J	<0.431	<0.422	<0.472	<0.516	383
TPH-DRO/ORO and PAHs (Method 8270C)	TPH - DRO	<727	13.0 J	8.0 J	7.6 J	8.0 J	4,140
	TPH - ORO	<727	26	<14.4	<14.6	9.2 J	50,800
	Acenaphthene	NT	0.115	NT			209
	Anthracene		0.273				3,140
	Benzo(a)anthracene		0.503				1.84
	Benzo(a)pyrene		**0.439** [2]				0.19
	Benzo(b)fluoranthene		0.55				1.84
	Benzo(k)fluoranthene		0.199				18.4
	Chrysene		0.491				183
	Dibenzo(a,h)anthracene		0.0884				0.184
	Fluoranthene		1.22				1,190
	Fluorene		0.105				271
	Pyrene		1.12				751

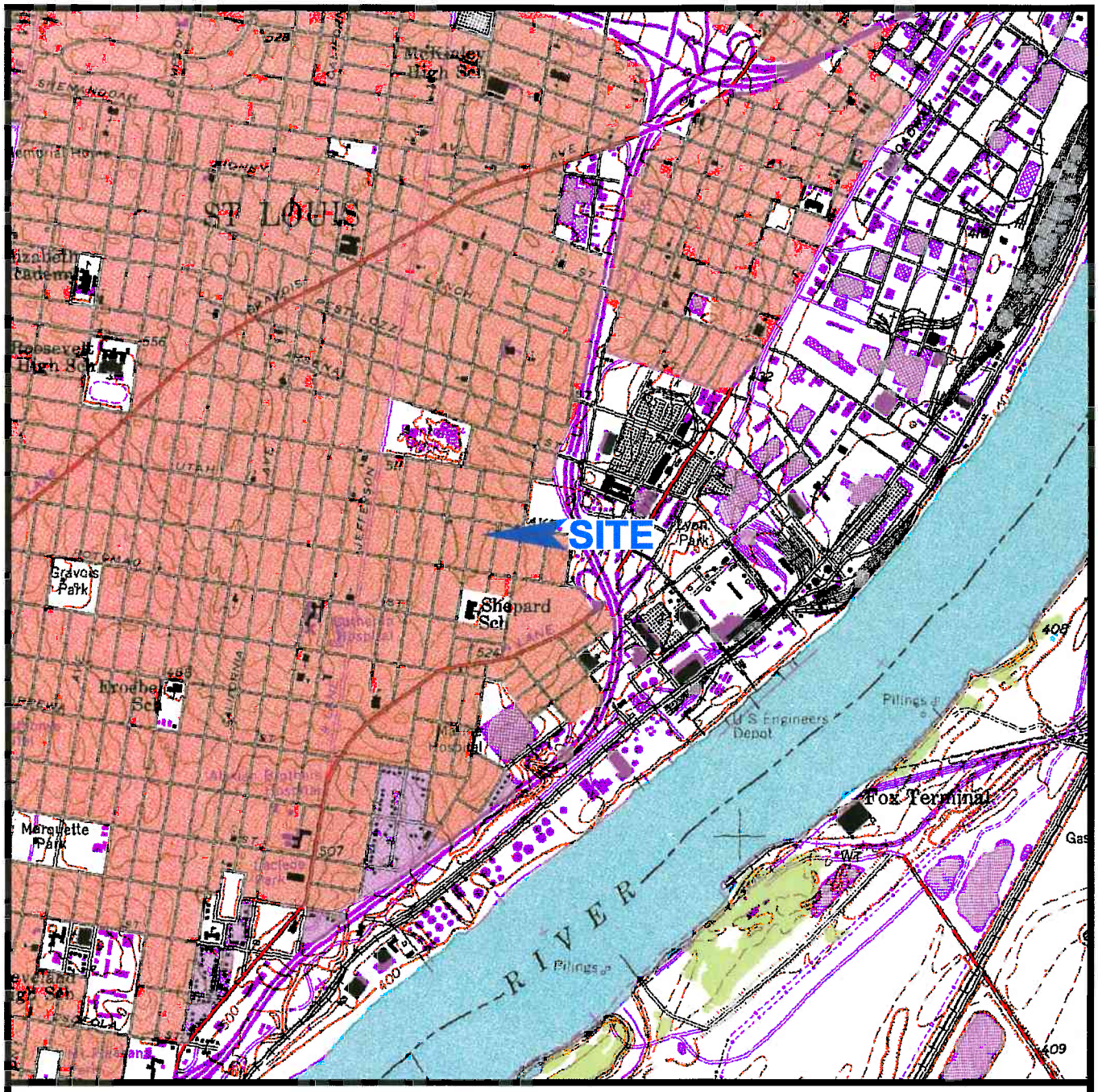
Analysis conducted using testing procedures for individual analytes using applicable USEPA SW-846 Methods.
Results reported in parts per million (mg/kg)

[1]Missouri Department of Natural Resources, Missouri Risk-Based Corrective Action Departmental Guidance Document; Table 3-1 Default Target Levels - March 2005.

[2]The MRBCA Tier 1 Risk-Based Target Level for Residential Use (Sandy Soil) is 144,000 ppm

J = Analyte detected below quantitation limits (Estimated value)

NT = Not tested



NOTES

Plan adapted from a 7.5 minute U.S.G.S. map for Cahokia, Missouri Quadrangle, last revised in 1993.

0 2,000 4,000

SCALE IN FEET

N

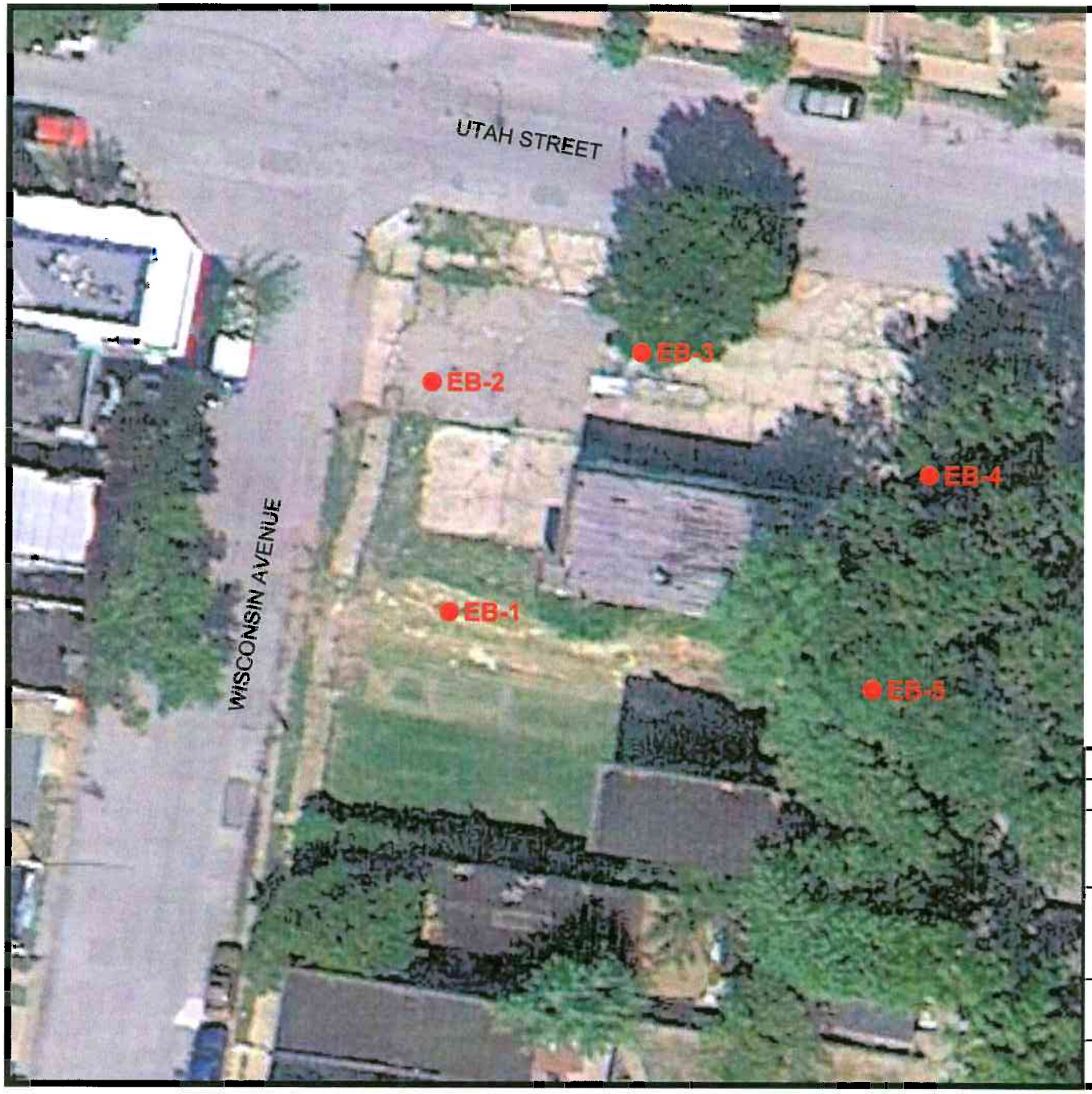
Drawn By: SLC	Ck'd By: MSR	App'vd By: MSR
Date: 12-01-11	Date: 12/1/11	Date: 12/1/11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Limited Environmental Sampling & Testing
1954 Utah Street
St. Louis, Missouri

SITE LOCATION AND TOPOGRAPHY

Project Number J019146.01	PLATE 1



NOTES

1. Plan adapted from an aerial photograph courtesy of Google Earth Pro.

2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

● Boring Location

N

0 30 60

SCALE IN FEET

Drawn By: SLC	Ck'd By: MSR	App'vd By: MSR
Date: 12-01-11	Date: 12/1/11	Date: 12/1/11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Limited Environmental Sampling & Testing
1954 Utah Street
St. Louis, Missouri

AERIAL PHOTOGRAPH OF SITE AND BORING LOCATIONS

Project Number J019146.01	PLATE 2

APPENDIX A

MDNR
LEAKING PETROLEUM STORAGE TANKS (LPST)
SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN ADDENDUM (SSQA)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
AIR AND LAND PROTECTION DIVISION
HAZARDOUS WASTE PROGRAM / TANKS SECTION
LEAKING PETROLEUM STORAGE TANKS (LPST)
SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN ADDENDUM (SSQA)

I. SITE NAME AND LOCATION:

SITE NAME: Former Spotless Car Wash (MDNR Facility ID# ST0021172)

ADDRESS OR OTHER LOCATION IDENTIFIER: 1954/1956 Utah Street

CITY: St. Louis **COUNTY:** St. Louis **STATE:** MO **ZIP:** 63118

II. PROJECT MANAGEMENT INFORMATION:

CONTRACTOR: Geotechnology, Inc. (Michael Roark, RG) **E-MAIL:** m_roark@geotechnology.com

ADDRESS: 11816 Lackland Road, Suite 150

PHONE: (314) 997-7440 **FAX:** (314) 997-2067

DISTRIBUTION LIST (Check as appropriate):

X MDNR Project Manager: To be determined
☐ PSTIF Project Manager:
☐ Consultant/Contractor Director:
X Consultant/Contractor Project Manager: Michael S. Roark, RG (Geotechnology, Inc.)
☐ Consultant/Contractor Project Field Superintendent:
☐ Consultant/Contractor Laboratory Personnel:
☐ Technicians (Specify all):
☐ Other (Specify):

PROJECT TYPE (Check as appropriate):

☐ Tank Removal X Site Investigation/Characterization ☐ Remedial Action ☐ Other

PROJECT DESCRIPTION: (Note: This SSQA supplements the Generic QAPP for Leaking Petroleum Storage Tanks (LPST), and includes documentation only for the specific site as indicated above.)

This project involves an initial site assessment for screening purposes. The scope of work involves advancing 5 direct push borings at the site to a depth of 20 feet in the vicinity of the USTs and former pump island. Temporary wells will be constructed in the 5 borings. Soil and groundwater samples will be submitted to a lab for analytical testing of BTEXN, GRO, Oxygenates (5035/8260B), and DRO/ORO/PAHs (8270C). The environmental sampling and testing results will be used to determine if a release has occurred at the site (per MRBCA guidelines).

DATA QUALITY OBJECTIVES AND CRITERIA:

Detection Limits:	X According to Generic Site Assessment QAPP	☐ Identified in attached table
Accuracy:	X According to Generic Site Assessment QAPP	☐ Identified in attached table
Precision:	X According to Generic Site Assessment QAPP	☐ Identified in attached table
Representativeness:	X According to Generic Site Assessment QAPP	☐ Identified in attached table
Comparability:	X According to Generic Site Assessment QAPP	☐ Identified in attached table
Completeness:	X According to Generic Site Assessment QAPP	☐ Identified in attached table

SPECIAL TRAINING/CERTIFICATION REQUIREMENTS:

X OSHA 40-hour (HAZWOPER) ☐ Geoprobe Operator X Drill Rig Operator ☐ Other (specify):

DOCUMENTATION AND RECORDS (Check appropriate boxes):

☐ Field Analytical Sheets
X Site Maps/Figures
☐ Environmental Records Report
☐ Property Ownership Records
X Log Book
X Chain-of-Custody
X Utility Clearance Forms
X Photos
X Lab Analytical Reports
☐ Health and Safety Plan

Other Documentation (Specify): Boring logs with observed PID readings, stratigraphy and depth to groundwater information will be included in the final report.

SAMPLING PROCESS DESIGN:

A. General Sampling Approach (Check appropriate boxes):

X Judgmental Sampling
☐ Random Sampling
☐ Systematic Grid
☐ Stratified Random Sampling
☐ Systematic Random Sampling

B. Screening/Definitive Sampling (Check appropriate boxes):

X Screening without Definitive Confirmation
☐ Screening With Definitive Confirmation
NOTE: Minimum Confirmation Rate of ___ % for All Field Analytical Screening Samples Collected
☐ Definitive Sampling

SAMPLING METHODS (Specify all to be utilized):

Matrix:	SOPs/Guidance:	Sampling Equipment Proposed:
Soil	Standard Geotechnology SOP	Direct Push/acetate liners (continuously)
Groundwater	Standard Geotechnology SOP	1" temp wells/dedicated Teflon bailers and string

SAMPLE HANDLING AND CUSTODY (Check appropriate box):

X In accordance with Generic QAPP and SOPs
☐ Other (specify):

ANALYTICAL METHODS (Check appropriate box):

X In accordance with Generic QAPP and SOPs
☐ Identified in Attached Table
☐ Identified Below:

QUALITY CONTROL (Check appropriate box):

☐ Not Applicable
X In accordance with Generic QAPP
☐ Specific requirements (state):

Describe Field QC Samples to be collected: No duplicates or split samples will be collected during this initial assessment

LPST SITE-SPECIFIC QAPP ADDENDUM FORM

INSTRUMENT/EQUIPMENT TESTING, INSPECTION, CALIBRATION/FREQUENCY AND MAINTENANCE (Check appropriate box):

☐ **Not Applicable** X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

Describe instrument/equipment, etc. proposed for use in this project subject to the above requirements: Photoionization detector will be calibrated to a 100 ppm isobutylene standard prior to soil sampling.

INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES (Check appropriate box):

☐ **Not Applicable** X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

NON-DIRECT MEASUREMENTS (Check appropriate box):

☐ **Not Applicable** X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

DATA MANAGEMENT (Check appropriate box):

X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

ASSESSMENT AND RESPONSE ACTIONS (Check appropriate box):

X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

REPORTS TO MANAGEMENT (Check appropriate box):

X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

DATA VALIDATION AND USABILITY (Check appropriate box):

X **Data review and verification will be performed by the contractor or delegate in accordance with Generic QAPP, with data validation conducted according to USEPA guidance and Generic QAPP**

☐ **Data review, validation and verification will be performed as follows, with data validation conducted according to alternate methods (describe):**

Field analysis utilized? Yes ____ No X (If yes, memorandum, field analytical sheets, etc. from field analyst should be reviewed by the contractor after completion of field analysis).

RECONCILIATION WITH USER REQUIREMENTS (Check appropriate box):

X **In accordance with Generic QAPP** ☐ **Specific requirements:** _____

LPST SITE-SPECIFIC QAPP ADDENDUM FORM

APPROVALS:

MDNR Project Manager Name	**Signature**	**Date**
Contractor Director Name Duane T. Kreuger, RG (Geotechnology, Inc.)	**Signature**	**Date** November 15, 2011
Contractor Project Manager Name Michael S. Roark, RG, (Geotechnology, Inc.)	**Signature**	**Date** November 15, 2011
Contractor Field Superintendent Name Dan C. Wischmeyer (Geotechnology, Inc.)	**Signature** FOR DCW	**Date** November 15, 2011

APPENDIX B

BORING LOGS

Surface Elevation: _____ Completion Date: 11/17/11

Datum _____

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	PID READINGS (ppm)	SAMPLES
	FILL: dark brown silt with brick and other debris			*2.7	DP1
				--	
5				--	DP2
	Brown, silty CLAY - CL			1.1	DP3
10				1.1	
				1.2	DP4
				1.3	
15				1.2	DP5
	Auger refusal at 16 feet.				
20					
25					
30					
35					

SHEAR STRENGTH, tsf

Δ - UU/2 O - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

▲ N-VALUE (BLOWS PER FOOT)

(ASTM D 1586)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

DIRECT PUSH AUGER ___ HOLLOW STEM

WASHBORING FROM ___ FEET

___ DRILLER DCW LOGGER

___ DRILL RIG

HAMMER TYPE Auto

REMARKS: *Sample submitted for analytical testing. --No recovery

Drawn by: KA	Checked by: MSR	App'vd. by: MSR
Date: 11/23/11	Date: 12/1/11	Date: 12/1/11

GEOTECHNOLOGY INC
FROM THE GROUND UP

1954-1956 Utah
St. Louis, MO

LOG OF BORING: EB-1

Project No. J019146.01

Surface Elevation: _____ Completion Date: 11/17/11

Datum _____

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	PID READINGS (ppm)	SAMPLES
	CONCRETE - 3.5 inches				
	FILL: brown, silty clay with brick			1.2	HA1
				1.5	HA2
				1.3	HA3
5	Brown CLAY - CH			1.1	DP4
10	Brownish-black CLAY, some sand - CH			*1.9	DP5
	Auger refusal at 11.5 feet.				
15					
20					
25					
30					
35					

SHEAR STRENGTH, tsf

Δ - UU/2 O - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

▲ N-VALUE (BLOWS PER FOOT) (ASTM D 1586)

WATER CONTENT, %

PL ● LL

10 20 30 40 50

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

DIRECT PUSH AUGER ___ HOLLOW STEM

WASHBORING FROM ___ FEET

___ DRILLER DCW LOGGER

___ DRILL RIG

HAMMER TYPE Auto

REMARKS: *Sample submitted for analytical testing. --No recovery

Drawn by: KA	Checked by: MSR	App'vd. by: MSR
Date: 11/23/11	Date: 12/1/11	Date: 12/1/11

GEOTECHNOLOGY INC
FROM THE GROUND UP

1954-1956 Utah
St. Louis, MO

LOG OF BORING: EB-2

Project No. J019146.01

Surface Elevation: _____ Completion Date: 11/17/11

Datum _____

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	PID READINGS (ppm)	SAMPLES
	Brown and gray mottled, silty CLAY - CL			2.5	HA1
				3.0	HA2
5	Brown, silty CLAY - CL			*3.6	DP3
				1.5	
				1.3	DP4
10				1.1	
				1.5	DP5
15	Brown, gravelly CLAY - GC			1.1	
				1.6	DP6
	Auger refusal at 17 feet.				
20					
25					
30					
35					

SHEAR STRENGTH, tsf

Δ - UU/2 O - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

▲ N-VALUE (BLOWS PER FOOT) (ASTM D 1586)

WATER CONTENT, %

PL ● LL

10 20 30 40 50

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

DIRECT PUSH AUGER ___ HOLLOW STEM

WASHBORING FROM ___ FEET

___ DRILLER DCW LOGGER

___ DRILL RIG

HAMMER TYPE Auto

REMARKS: *Sample submitted for analytical testing

Drawn by: KA	Checked by: MSR	App'vd. by: MSR
Date: 11/23/11	Date: 12/1/11	Date: 12/1/11

GEOTECHNOLOGY INC
FROM THE GROUND UP

1954-1956 Utah
St. Louis, MO

LOG OF BORING: EB-4

Project No. J019146.01

APPENDIX C

LABORATORY ANALYTICAL REPORTS

November 22, 2011

Mike Roark
Geotechnology, Inc.
11816 Lackland Road
St. Louis, MO 63146
TEL: (314) 997-7440
FAX: (314) 997-2067

RE: 1954 Utah Street J019146.01 **WorkOrder:** 11110856

Dear Mike Roark:

TEKLAB, INC received 5 samples on 11/18/2011 1:30:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

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

Sincerely,

Shelly A Hennessy

Shelly A. Hennessy
Project Manager
(618)344-1004 ex 36
SHennessy@teklabinc.com

Report Contents

Client: Geotechnology, Inc.
Client Project: 1954 Utah Street J019146.01

Work Order: 11110856
Report Date: 22-Nov-11

This reporting package includes the following:

Cover Letter	1
Report Contents	2
Definitions	3
Case Narrative	4
Laboratory Results	5
Quality Control Results	10
Receiving Check List	15
Chain of Custody	Appended

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
E -	Value above quantitation range	H -	Holding times exceeded
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	X -	Value exceeds Maximum Contaminant Level

Client: Geotechnology, Inc.

Client Project: 1954 Utah Street J019146.01

Work Order: 11110856

Report Date: 22-Nov-11

Cooler Receipt Temp: 3.6 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2012	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2012	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

Lab ID: 11110856-001 **Client Sample ID:** EB-1 (0-2)

Matrix: SOLID **Collection Date:** 11/17/2011 14:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA SW846 3550C, 5035A, ASTM D2974								
Percent Moisture		0.1		**17.7**	%	1	11/21/2011 9:53	R156986
SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
TPH-DRO (C10 - C21)		727		**ND**	mg/Kg-dry	10	11/21/2011 10:33	73048
TPH-ORO (C21 - C35)		727		**ND**	mg/Kg-dry	10	11/21/2011 10:33	73048
Surr: 2-Fluorobiphenyl		12-133		**69.1**	%REC	10	11/21/2011 10:33	73048
Surr: Nitrobenzene-d5		30.9-115		**78.2**	%REC	10	11/21/2011 10:33	73048
Surr: p-Terphenyl-d14		31.5-137		**85.0**	%REC	10	11/21/2011 10:33	73048
Elevated reporting limit(s) due to sample extract composition (black, oily).								
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Diisopropyl ether		5.6		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Ethylbenzene	NELAP	5.6		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Ethyl-tert-butyl ether		5.6		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Methyl tert-butyl ether	NELAP	2.2		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Naphthalene	NELAP	11.1		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
tert-Amyl methyl ether		5.6		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
tert-Butyl alcohol		55.5		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Toluene	NELAP	5.6		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
TPH - GRO (C6 - C10)		555	J	**390**	µg/Kg-dry	1	11/19/2011 16:20	73102
Xylenes, Total	NELAP	5.6		**ND**	µg/Kg-dry	1	11/19/2011 16:20	73102
Surr: 1,2-Dichloroethane-d4		72.2-131		**89.9**	%REC	1	11/19/2011 16:20	73102
Surr: 4-Bromofluorobenzene		82.1-116		**90.5**	%REC	1	11/19/2011 16:20	73102
Surr: Toluene-d8		86-116		**103.0**	%REC	1	11/19/2011 16:20	73102

Laboratory Results

http://www.teklabinc.com/

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

Lab ID: 11110856-002 **Client Sample ID:** EB-2 (10-11.5)

Matrix: SOLID **Collection Date:** 11/17/2011 15:40

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA SW846 3550C, 5035A, ASTM D2974								
Percent Moisture		0.1		**20.0**	%	1	11/21/2011 9:54	R156986
SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.0423		**0.115**	mg/Kg-dry	1	11/21/2011 10:02	73048
Anthracene	NELAP	0.0423		**0.273**	mg/Kg-dry	1	11/21/2011 10:02	73048
Benzo(a)anthracene	NELAP	0.0423		**0.503**	mg/Kg-dry	1	11/21/2011 10:02	73048
Benzo(a)pyrene	NELAP	0.0423		**0.439**	mg/Kg-dry	1	11/21/2011 10:02	73048
Benzo(b)fluoranthene	NELAP	0.0423		**0.550**	mg/Kg-dry	1	11/21/2011 10:02	73048
Benzo(k)fluoranthene	NELAP	0.0423		**0.199**	mg/Kg-dry	1	11/21/2011 10:02	73048
Chrysene	NELAP	0.0423		**0.491**	mg/Kg-dry	1	11/21/2011 10:02	73048
Dibenzo(a,h)anthracene	NELAP	0.0423		**0.0884**	mg/Kg-dry	1	11/21/2011 10:02	73048
Fluoranthene	NELAP	0.0423		**1.22**	mg/Kg-dry	1	11/21/2011 10:02	73048
Fluorene	NELAP	0.0423		**0.105**	mg/Kg-dry	1	11/21/2011 10:02	73048
Pyrene	NELAP	0.0423		**1.12**	mg/Kg-dry	1	11/21/2011 10:02	73048
TPH-DRO (C10 - C21)		14.9	J	**13**	mg/Kg-dry	1	11/21/2011 10:02	73048
TPH-ORO (C21 - C35)		14.9		**26.0**	mg/Kg-dry	1	11/21/2011 10:02	73048
Surr: 2-Fluorobiphenyl		12-133		**35.6**	%REC	1	11/21/2011 10:02	73048
Surr: Nitrobenzene-d5		30.9-115		**63.9**	%REC	1	11/21/2011 10:02	73048
Surr: p-Terphenyl-d14		31.5-137		**86.2**	%REC	1	11/21/2011 10:02	73048
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Diisopropyl ether		4.3		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Ethylbenzene	NELAP	4.3		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Ethyl-tert-butyl ether		4.3		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Methyl tert-butyl ether	NELAP	1.7		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Naphthalene	NELAP	8.6		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
tert-Amyl methyl ether		4.3		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
tert-Butyl alcohol		43.1		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Toluene	NELAP	4.3		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
TPH - GRO (C6 - C10)		431		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Xylenes, Total	NELAP	4.3		**ND**	µg/Kg-dry	1	11/19/2011 16:52	73102
Surr: 1,2-Dichloroethane-d4		72.2-131		**97.9**	%REC	1	11/19/2011 16:52	73102
Surr: 4-Bromofluorobenzene		82.1-116		**99.2**	%REC	1	11/19/2011 16:52	73102
Surr: Toluene-d8		86-116		**98.6**	%REC	1	11/19/2011 16:52	73102

Laboratory Results

http://www.teklabinc.com/

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

Lab ID: 11110856-003 **Client Sample ID:** EB-3 (4-8)

Matrix: SOLID **Collection Date:** 11/17/2011 10:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA SW846 3550C, 5035A, ASTM D2974								
Percent Moisture		0.1		**16.0**	%	1	11/21/2011 9:54	R156986
SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
TPH-DRO (C10 - C21)		14.4	J	**8.0**	mg/Kg-dry	1	11/21/2011 8:30	73048
TPH-ORO (C21 - C35)		14.4		**ND**	mg/Kg-dry	1	11/21/2011 8:30	73048
Surr: 2-Fluorobiphenyl		12-133		**54.1**	%REC	1	11/21/2011 8:30	73048
Surr: Nitrobenzene-d5		30.9-115		**66.6**	%REC	1	11/21/2011 8:30	73048
Surr: p-Terphenyl-d14		31.5-137		**78.7**	%REC	1	11/21/2011 8:30	73048
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Diisopropyl ether		4.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Ethylbenzene	NELAP	4.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Ethyl-tert-butyl ether		4.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Methyl tert-butyl ether	NELAP	1.7		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Naphthalene	NELAP	8.4		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
tert-Amyl methyl ether		4.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
tert-Butyl alcohol		42.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Toluene	NELAP	4.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
TPH - GRO (C6 - C10)		422		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Xylenes, Total	NELAP	4.2		**ND**	µg/Kg-dry	1	11/19/2011 17:24	73102
Surr: 1,2-Dichloroethane-d4		72.2-131		**92.7**	%REC	1	11/19/2011 17:24	73102
Surr: 4-Bromofluorobenzene		82.1-116		**98.0**	%REC	1	11/19/2011 17:24	73102
Surr: Toluene-d8		86-116		**100.4**	%REC	1	11/19/2011 17:24	73102

Laboratory Results

http://www.teklabinc.com/

Client: Geotechnology, Inc.
Work Order: 11110856
Client Project: 1954 Utah Street J019146.01
Report Date: 22-Nov-11
Lab ID: 11110856-004
Client Sample ID: EB-4 (4-6)
Matrix: SOLID
Collection Date: 11/17/2011 11:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA SW846 3550C, 5035A, ASTM D2974								
Percent Moisture		0.1		**17.8**	%	1	11/21/2011 9:54	R156986
SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
TPH-DRO (C10 - C21)		14.6	J	**7.6**	mg/Kg-dry	1	11/21/2011 9:00	73048
TPH-ORO (C21 - C35)		14.6		**ND**	mg/Kg-dry	1	11/21/2011 9:00	73048
Surr: 2-Fluorobiphenyl		12-133		**59.2**	%REC	1	11/21/2011 9:00	73048
Surr: Nitrobenzene-d5		30.9-115		**71.1**	%REC	1	11/21/2011 9:00	73048
Surr: p-Terphenyl-d14		31.5-137		**75.1**	%REC	1	11/21/2011 9:00	73048
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Diisopropyl ether		4.7		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Ethylbenzene	NELAP	4.7		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Ethyl-tert-butyl ether		4.7		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Methyl tert-butyl ether	NELAP	1.9		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Naphthalene	NELAP	9.4		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
tert-Amyl methyl ether		4.7		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
tert-Butyl alcohol		47.2		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Toluene	NELAP	4.7		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
TPH - GRO (C6 - C10)		472		**ND**	µg/Kg-dry	1	11/19/2011 17:55	73102
Xylenes, Total	NELAP	4.7	J	**2.2**	µg/Kg-dry	1	11/19/2011 17:55	73102
Surr: 1,2-Dichloroethane-d4		72.2-131		**92.1**	%REC	1	11/19/2011 17:55	73102
Surr: 4-Bromofluorobenzene		82.1-116		**97.4**	%REC	1	11/19/2011 17:55	73102
Surr: Toluene-d8		86-116		**101.7**	%REC	1	11/19/2011 17:55	73102

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

Lab ID: 11110856-005 **Client Sample ID:** EB-5 (4-6)

Matrix: SOLID **Collection Date:** 11/17/2011 15:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA SW846 3550C, 5035A, ASTM D2974								
Percent Moisture		0.1		**14.8**	%	1	11/21/2011 9:55	R156986
SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
TPH-DRO (C10 - C21)		14.0	J	**8.0**	mg/Kg-dry	1	11/21/2011 9:31	73048
TPH-ORO (C21 - C35)		14.0	J	**9.2**	mg/Kg-dry	1	11/21/2011 9:31	73048
Surr: 2-Fluorobiphenyl		12-133		**59.1**	%REC	1	11/21/2011 9:31	73048
Surr: Nitrobenzene-d5		30.9-115		**73.9**	%REC	1	11/21/2011 9:31	73048
Surr: p-Terphenyl-d14		31.5-137		**76.6**	%REC	1	11/21/2011 9:31	73048
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.0		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Diisopropyl ether		5.2		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Ethylbenzene	NELAP	5.2		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Ethyl-tert-butyl ether		5.2		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Methyl tert-butyl ether	NELAP	2.1		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Naphthalene	NELAP	10.3		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
tert-Amyl methyl ether		5.2		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
tert-Butyl alcohol		51.6		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Toluene	NELAP	5.2		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
TPH - GRO (C6 - C10)		516		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Xylenes, Total	NELAP	5.2		**ND**	µg/Kg-dry	1	11/19/2011 18:27	73102
Surr: 1,2-Dichloroethane-d4		72.2-131		**96.6**	%REC	1	11/19/2011 18:27	73102
Surr: 4-Bromofluorobenzene		82.1-116		**97.5**	%REC	1	11/19/2011 18:27	73102
Surr: Toluene-d8		86-116		**99.4**	%REC	1	11/19/2011 18:27	73102

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

EPA SW846 3550C, 5035A, ASTM D2974

Batch R156986 **SampType:** LCS Units %
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Percent Moisture	0.1	S	**91.2**	99.0	0	92.1	99.9	100.1	11/21/2011

Batch R156986 **SampType:** LCSQC Units %
SampID: LCSQC

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Percent Moisture	0.1		**99.0**	99.0	0	100	99.9	100.1	11/21/2011

Batch R156986 **SampType:** DUP Units % RPD Limit **15**
SampID: 11110856-001A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Percent Moisture	0.1		**19.2**				17.70	8.08	11/21/2011

Batch R156986 **SampType:** DUP Units % RPD Limit **15**
SampID: 11110746-020A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Percent Moisture	0.1		**14.9**				14.73	0.88	11/21/2011

Batch R156986 **SampType:** DUP Units % RPD Limit **15**
SampID: 11110789-001A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Percent Moisture	0.1	R	**17.4**				7.350	81.26	11/21/2011

Batch R156986 **SampType:** DUP Units % RPD Limit **15**
SampID: 11110789-012A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Percent Moisture	0.1		**11.5**				10.73	7.01	11/21/2011

Batch R156986 **SampType:** DUP Units % RPD Limit **15**
SampID: 11110832-001A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Percent Moisture	0.1		**20.5**				20.49	0.05	11/21/2011

Batch R156986 **SampType:** DUP Units % RPD Limit **15**
SampID: 11110881-005A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Percent Moisture	0.1		**21.0**				20.87	0.62	11/21/2011

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS

Batch 73048 **SampType:** MBLK Units **mg/Kg**

SampID: MB-73048

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Acenaphthene	0.0340		**ND**						11/18/2011
Anthracene	0.0340		**ND**						11/18/2011
Benzo(a)anthracene	0.0340		**ND**						11/18/2011
Benzo(a)pyrene	0.0340		**ND**						11/18/2011
Benzo(b)fluoranthene	0.0340		**ND**						11/18/2011
Benzo(k)fluoranthene	0.0340		**ND**						11/18/2011
Chrysene	0.0340		**ND**						11/18/2011
Dibenzo(a,h)anthracene	0.0340		**ND**						11/18/2011
Fluoranthene	0.0340		**ND**						11/18/2011
Fluorene	0.0340		**ND**						11/18/2011
Pyrene	0.0340		**ND**						11/18/2011
TPH-DRO (C10 - C21)	12.0	J	**7.2**						11/18/2011
TPH-ORO (C21 - C35)	12.0		**ND**						11/18/2011
Surr: 2-Fluorobiphenyl			**0.530**	0.835		63.5	46.3	106	11/18/2011
Surr: Nitrobenzene-d5			**0.627**	0.835		75.0	42.4	99.2	11/18/2011
Surr: p-Terphenyl-d14			**0.685**	0.835		82.0	45.5	115	11/18/2011

Batch 73048 **SampType:** LCS Units **mg/Kg**

SampID: LCS-73048

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Acenaphthene	0.0340		**1.13**	1.67	0	67.6	50.8	113	11/18/2011
Anthracene	0.0340		**1.06**	1.67	0	63.6	53.3	115	11/18/2011
Benzo(a)anthracene	0.0340		**1.09**	1.67	0	65.3	62.3	110	11/18/2011
Benzo(a)pyrene	0.0340		**1.10**	1.67	0	65.7	58.2	109	11/18/2011
Benzo(b)fluoranthene	0.0340		**1.02**	1.67	0	60.8	51.8	107	11/18/2011
Benzo(k)fluoranthene	0.0340		**1.17**	1.67	0	70.2	63.1	129	11/18/2011
Chrysene	0.0340		**1.15**	1.67	0	68.7	58.4	115	11/18/2011
Dibenzo(a,h)anthracene	0.0340		**1.15**	1.67	0	69.1	54.9	120	11/18/2011
Fluoranthene	0.0340		**1.19**	1.67	0	71.1	61.6	113	11/18/2011
Fluorene	0.0340		**1.13**	1.67	0	67.8	52.2	116	11/18/2011
Pyrene	0.0340		**1.24**	1.67	0	74.2	60.7	115	11/18/2011
Surr: 2-Fluorobiphenyl			**0.563**	0.835		67.5	46.3	106	11/18/2011
Surr: Nitrobenzene-d5			**0.653**	0.835		78.3	42.4	99.2	11/18/2011
Surr: p-Terphenyl-d14			**0.668**	0.835		80.0	45.5	115	11/18/2011

Batch 73048 **SampType:** LCS Units **mg/Kg**

SampID: LCSDRO-73048

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
TPH-DRO (C10 - C21)	12.0		**16.8**	16.7	0	100.8	17.2	146	11/18/2011
Surr: 2-Fluorobiphenyl			**0.559**	0.835		67.0	46.3	106	11/18/2011
Surr: Nitrobenzene-d5			**0.633**	0.835		75.8	42.4	99.2	11/18/2011
Surr: p-Terphenyl-d14			**0.677**	0.835		81.1	45.5	115	11/18/2011

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

SW-846 3550B, 8270C SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS

Batch 73048 **SampType:** MS Units **mg/Kg-dry**

SampID: 11110788-002AMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
TPH-DRO (C10 - C21)	16.8		**25.0**	23.4	10.51	62.2	34.5	160	11/18/2011
Surr: 2-Fluorobiphenyl			**0.661**	1.17		56.6	12	133	11/18/2011
Surr: Nitrobenzene-d5			**0.820**	1.17		70.3	30.9	115	11/18/2011
Surr: p-Terphenyl-d14			**0.893**	1.17		76.5	31.5	137	11/18/2011

Batch 73048 **SampType:** MSD Units **mg/Kg-dry** RPD Limit **30**

SampID: 11110788-002AMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
TPH-DRO (C10 - C21)	16.7		**26.1**	23.3	10.51	67.0	25.03	4.30	11/18/2011
Surr: 2-Fluorobiphenyl			**0.610**	1.16		52.4			11/18/2011
Surr: Nitrobenzene-d5			**0.802**	1.16		68.8			11/18/2011
Surr: p-Terphenyl-d14			**0.883**	1.16		75.8			11/18/2011

Batch 73048 **SampType:** MS Units **mg/Kg-dry**

SampID: 11110789-008AMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
TPH-DRO (C10 - C21)	146	J	**99**	20.4	86.63	59.8	34.5	160	11/18/2011
Surr: 2-Fluorobiphenyl			**0.792**	1.02		77.7	12	133	11/18/2011
Surr: Nitrobenzene-d5			**0.835**	1.02		81.9	30.9	115	11/18/2011
Surr: p-Terphenyl-d14			**0.899**	1.02		88.2	31.5	137	11/18/2011

Batch 73048 **SampType:** MSD Units **mg/Kg-dry** RPD Limit **30**

SampID: 11110789-008AMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
TPH-DRO (C10 - C21)	146	JS	**87**	20.4	86.63	2.7	98.82	0.00	11/18/2011
Surr: 2-Fluorobiphenyl			**0.785**	1.02		77.1			11/18/2011
Surr: Nitrobenzene-d5			**0.782**	1.02		76.8			11/18/2011
Surr: p-Terphenyl-d14			**0.913**	1.02		89.7			11/18/2011

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS

Batch 73102 **SampType:** MBLK Units **µg/Kg**

SampID: MBLK-F111119-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Benzene	1.0		**ND**						11/19/2011
Diisopropyl ether	5.0		**ND**						11/19/2011
Ethylbenzene	5.0		**ND**						11/19/2011
Ethyl-tert-butyl ether	5.0		**ND**						11/19/2011
Methyl tert-butyl ether	2.0		**ND**						11/19/2011
Naphthalene	10		**ND**						11/19/2011
tert-Amyl methyl ether	5.0		**ND**						11/19/2011
tert-Butyl alcohol	50.0		**ND**						11/19/2011
Toluene	5.0		**ND**						11/19/2011
Xylenes, Total	5.0		**ND**						11/19/2011
TPH - GRO (C6 - C10)	500		**ND**						11/19/2011
Surr: 1,2-Dichloroethane-d4			**48.6**	50.0		97.2	72.2	131	11/19/2011
Surr: 4-Bromofluorobenzene			**49.5**	50.0		98.9	82.1	116	11/19/2011
Surr: Toluene-d8			**50.2**	50.0		100.5	86	116	11/19/2011

Batch 73102 **SampType:** LCSD Units **µg/Kg** RPD Limit **40**

SampID: LCSD-F111119-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Benzene	1.0		**48.8**	50.0	0	97.7	50.58	3.52	11/19/2011
Diisopropyl ether	5.0		**48.6**	50.0	0	97.1	49.73	2.40	11/19/2011
Ethylbenzene	5.0		**48.6**	50.0	0	97.1	48.75	0.41	11/19/2011
Ethyl-tert-butyl ether	5.0		**48.1**	50.0	0	96.2	48.36	0.56	11/19/2011
Methyl tert-butyl ether	2.0		**48.0**	50.0	0	96.0	48.37	0.79	11/19/2011
Naphthalene	10		**48.9**	50.0	0	97.9	49.50	1.14	11/19/2011
tert-Amyl methyl ether	5.0		**48.0**	50.0	0	96.0	49.02	2.14	11/19/2011
tert-Butyl alcohol	50.0		**224**	250	0	89.6	233.5	4.17	11/19/2011
Toluene	5.0		**47.3**	50.0	0	94.6	48.68	2.88	11/19/2011
Xylenes, Total	5.0		**145**	150	0	96.5	148.7	2.73	11/19/2011
Surr: 1,2-Dichloroethane-d4			**45.7**	50.0		91.4			11/19/2011
Surr: 4-Bromofluorobenzene			**50.5**	50.0		101.1			11/19/2011
Surr: Toluene-d8			**48.4**	50.0		96.7			11/19/2011

Client: Geotechnology, Inc. **Work Order:** 11110856

Client Project: 1954 Utah Street J019146.01 **Report Date:** 22-Nov-11

SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS

Batch 73102 **SampType:** LCS Units **µg/Kg**

SampID: LCS-F111119-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Benzene	1.0		**50.6**	50.0	0	101.2	73.9	109	11/19/2011
Diisopropyl ether	5.0		**49.7**	50.0	0	99.5	80.7	126	11/19/2011
Ethylbenzene	5.0		**48.8**	50.0	0	97.5	84.1	115	11/19/2011
Ethyl-tert-butyl ether	5.0		**48.4**	50.0	0	96.7	80	121	11/19/2011
Methyl tert-butyl ether	2.0		**48.4**	50.0	0	96.7	80	128	11/19/2011
Naphthalene	10		**49.5**	50.0	0	99.0	73.1	135	11/19/2011
tert-Amyl methyl ether	5.0		**49.0**	50.0	0	98.0	82.7	125	11/19/2011
tert-Butyl alcohol	50.0		**233**	250	0	93.4	61.3	148	11/19/2011
Toluene	5.0		**48.7**	50.0	0	97.4	79.1	112	11/19/2011
Xylenes, Total	5.0		**149**	150	0	99.2	79.1	117	11/19/2011
Surr: 1,2-Dichloroethane-d4			**46.1**	50.0		92.2	72.2	131	11/19/2011
Surr: 4-Bromofluorobenzene			**50.7**	50.0		101.5	82.1	116	11/19/2011
Surr: Toluene-d8			**49.0**	50.0		98.1	86	116	11/19/2011

Batch 73102 **SampType:** LCSGD Units **µg/Kg** RPD Limit **20**

SampID: LCSGD-F111119-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
TPH - GRO (C6 - C10)	500		**2010**	2000	0	100.3	2012	0.26	11/19/2011
Surr: 1,2-Dichloroethane-d4			**46.3**	50.0		92.5			11/19/2011
Surr: 4-Bromofluorobenzene			**50.6**	50.0		101.1			11/19/2011
Surr: Toluene-d8			**48.6**	50.0		97.3			11/19/2011

Batch 73102 **SampType:** LCSG Units **µg/Kg**

SampID: LCSG-F111119-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
TPH - GRO (C6 - C10)	500		**2010**	2000	0	100.6	70	130	11/19/2011
Surr: 1,2-Dichloroethane-d4			**45.0**	50.0		90.1	61	128	11/19/2011
Surr: 4-Bromofluorobenzene			**50.1**	50.0		100.3	78.2	117	11/19/2011
Surr: Toluene-d8			**49.0**	50.0		98.1	80.1	122	11/19/2011

Receiving Check List

http://www.teklabinc.com/

Client: Geotechnology, Inc.

Client Project: 1954 Utah Street J019146.01

Work Order: 11110856

Report Date: 22-Nov-11

Carrier: Josh Cerar

Received By: TWM

Completed by: Timothy W. Mathis
On: 18-Nov-11

Reviewed by: Shelly A. Hennessy
On: 18-Nov-11

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 3.6
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials	☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers	☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐		

Any No responses must be detailed below or on the COC.

Analyze PAHs for EB-2 per Michael Roark. SAH 11/22/11

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 1110856

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Geotechnology, Inc.
Address: 11816 Lackland Road Suite 150
City / State / Zip: St. Louis, MO 63146
Contact: Mike Roark Phone: (314) 997-7440
E-Mail: M_Roark@Geotechnology.com Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 3-6 °C
Preserved in: ☒ Lab ☐ Field
FOR LAB USE ONLY
Lab Notes:
Teklab, Inc. Courier Pick Up

Comments:
Need results by Wed 11/23 (am) (MRBCA)
*Don't report PAHs until we review DRO/ORO

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☒ No

Project Name / Number: 1954 Utah Street 1019146.01
Sample Collector's Name: D. Wischmeyer
Results Requested: ☐ Standard ☐ 1-2 Day (100% Surcharge) ☐ Other_____ ☒ 3 Day (50% Surcharge)
Billing Instructions: P.O.#

3 DAY

Lab Use Only	Sample Identification	Date/Time Sampled	UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	Water	Drinking Water	Soil	Sludge	Sp. Waste	BTEXN/GRO/OXYS (8260B)	DRO/ORO/PAH (8270C)
1110856 001	EB-1 (0-2)	11/17/11 1410	2					1		2			X			X	X
002	EB-2 (10-11.5)	1540	2					1		2			X			X	X
003	EB-3 (4-8)	1000	2					1		2			X			X	X
004	EB-4 (4-6)	1110	2					1		2			X			X	X
005	EB-5 (4-6)	1500	2					1		2			X			X	X

Relinquished By	Date / Time	Received By	Date / Time
[signature]	11/18/11 1112	[signature]	11/18/11 1230
[signature]	11/18/11 1330	[signature]	11-18-11 1330

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

APPENDIX D

LIMITATIONS OF REPORT

ENVIRONMENTAL SAMPLING LIMITATIONS

1. The Report has been prepared on behalf of and for the exclusive use of the addressee, solely for use in documenting specific sample results. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party in whole or in part, without the prior written consent of Geotechnology. Unless other contractual agreements were made, the services described in the report were carried out in accordance with the Terms for Geotechnology's Services which accompanied the proposal.

2. The sampling was performed in accordance with generally accepted practices of other consultants undertaking similar projects at the same time and in the same geographical area, and Geotechnology endeavored to observe that degree of care and skill ordinarily exercised by other consultants under similar circumstances and conditions. The findings and conclusions stated herein must be considered not as scientific certainties, but rather as professional opinions concerning the significance of the limited data gathered during the course of the project. Geotechnology does not and cannot represent that the site contains no hazardous waste or material, oil (including petroleum products) or other latent condition beyond that observed by Geotechnology.

3. In the event that information is developed relative to environmental or hazardous waste or material issues at the site and not contained in this report, such information shall be brought to Geotechnology's attention. Geotechnology will evaluate such information and, based on this evaluation, may modify the conclusions stated in this Report.

4. The conclusions and recommendations contained in this Report are based in part upon the data obtained from a limited number of soil and/or groundwater samples obtained from widely spaced sampling. The identified presence of contaminated soil and/or groundwater is limited to the extent that they could be identified by color, smell, instrumentation and sampling and testing. There is a potential for contaminated soil and/or groundwater above the indicated concentrations to occur elsewhere on the site. The nature and extent of variations between these explorations may not become evident until further exploration. If variations or other latent conditions then appear evident, and/or if changes are made in regulations, it will be necessary to reevaluate the conclusions and recommendations of this report.

5. Quantitative laboratory testing was performed as part of the assessment by an outside laboratory; Geotechnology has relied upon the data provided, and has not conducted an independent evaluation of the reliability to these data.

6. Chemical analyses have been performed for specific parameters during the course of this sampling as described in the text. Do not assume that a given chemical is not present at the site simply because it was not present at the test locations. The chemical may exist on the site where tests were not performed. In addition, it should be noted that additional chemical constituents not tested for during the sampling could be present in soil and/or groundwater at the site.

Revised 02/12/04