PHASE II ENVIRONMENTAL SITE ASSESSMENT
WATER LINE REPLACEMENT
IN SHARPSTOWN II AREA
WBS NO. S-000035-0194-4
HOUSTON, TEXAS

Reported to:

AMANI ENGINEERING, INC.

Houston, Texas

Submitted by:

GEOTEST ENGINEERING, INC.

Houston, Texas

REPORT NO. 1130018201, dated September 20, 2013

Key Map No. 530 L & R

GEOTEST ENGINEERING, INC.

Geotechnical Engineers & Materials Testing

5600 Bintliff Drive Houston, Texas 77036 Telephone: (713) 266-0588
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Report No. 1130018201
September 20, 2013

Mr. H. Prasad Kolluru, P.E.
Amani Engineering, Inc.
8313 Southwest Freeway, Suite 350
Houston, Texas 77074

Reference: Phase II Environmental Site Assessment (ESA)
Water Line Replacement in Sharpstown II Area
WBS NO. S-000035-0194-4
Houston, Texas

Dear Mr. Kolluru:

We are pleased to submit the Phase II Environmental Site Assessment final report for the referenced project. A draft report was submitted to you on September 6, 2013. This final report supersedes all previously submitted reports, transmittals, etc. for the referenced project. This study was authorized by Authorization to proceed letter dated July 25, 2013 by accepting our proposal No. 1130027999 dated June 19, 2013.

We appreciate the opportunity to be of service to you. If we can be of further assistance, please call us.

Sincerely,
GEOTEST ENGINEERING, INC.
TBPE Registration No. F-410

Naresh Kolli, P.E.
Assistant Project Manager

NK\ego
Copies submitted: (2+1-pdf)
PC38\Environmental\30018201F.DOC

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1.0 EXECUTIVE SUMMARY

A Phase II Environmental Site Assessment (the study) was conducted for Amani Engineering, Inc. for the Water Line Replacement project in Sharpstown II Area in Houston, Texas. The project calls for design and construction of water line replacement in Sharpstown II Area in Houston, Texas. The proposed water line will be constructed by pipe augering method in general.

As per the Phase I ESA study performed by Geotest Engineering, Inc., Report No. 1130017201 dated April 3, 2013; one (1) Recognized Environmental Condition (REC) was identified along the project alignment.

This study was based on the ASTM guidelines for Phase II Environmental Site Assessment, designation ASTM 1903-11 (2011) and modified by City of Houston Department of Public Works and Engineering Design Manual, Chapter 11 – Geotechnical and Environmental Requirements Subsection, Phase II Environmental Requirements, dated July 1, 2012. This study included drilling and continuous sampling of six (6) environmental borings, each to a depth of 15 feet, performing analytical tests on soil and groundwater samples (if encountered) to evaluate the presence or absence of soil and/or groundwater contamination and preparation of a Phase II ESA report.

The principal findings and conclusions developed from this study are summarized below:

- The measured values of organic vapors in the field ranged from 0.0 ppm to 14.2 ppm.

- Six (6) selected soil samples with available highest Photo-Ionization Detector (PID) readings were tested for BTEX (Benzene, Toulene, Ethyl Benzene and Xylene)/MTBE (Methyl Tertiary Butyl Ether) and TPH (Total Petroleum Hydrocarbon). The results of these tests indicated that the chemicals of concern (COC) BTEX and TPH were detected in borings EB-1, EB-2, EB-4, EB-5 and EB-6 and were above the Texas Commission on Environmental Quality (TCEQ), Texas Risk Remediation Program (TRRP), TIER 1,

Protective Concentration Levels (PCLs) for residential guidelines (based on TIER 1 PCLs on 0.5 acre source area and $^{GW}soil_{ing}$ exposure pathway) in borings EB-5 and EB-6. **Hence, the planned construction of water line replacement along Fonvilla Street between Stations 0+50 to 3+50 and water line replacement along Tanager Street between Stations 10+00 to 13+00 is identified as potentially petroleum contaminated area (PPCA).**

It is recommended that the Occupational Safety and Health Administration (OSHA) requirements (29 CFR 1926) and COH Guide Specifications 02105 and 02120 should be followed for workers safety during excavations and handling of the site soils in aforementioned area.

- Activities that related to excavation and handling of site soils are regulated under the OSHA Construction Standard 29 CFR 1910 Subpart H.

2.0 INTRODUCTION

2.1 General

A Phase II Environmental Site Assessment (the study) was conducted for Amani Engineering, Inc. for the Water Line Replacement project in Sharpstown II Area in Houston, Texas. The project calls for design and construction of water line replacement in Sharpstown II Area in Houston, Texas. The proposed water line will be constructed by pipe augering. The project location map is shown on Figure 1.

In our previous study, "Phase I Environmental Site Assessment (ESA), for Water Line Replacement in Sharpstown II Area, WBS No. S- 000035-0194-3," Geotest Report No. 1130017201 dated April 3, 2013 (Reference 1), one (1) Leaking Petroleum Storage Tank (LPST) site along the proposed water line was identified as REC. The LPST site is listed below.

- Amigo Market 8203 Fondren Rd (LPST ID 115904).

To evaluate the migration of the contaminants in soil and groundwater (if encountered) along the alignment in the project area, a Phase II Environmental Site Assessment was recommended.

This study was authorized by Authorization to proceed letter dated July 25, 2013 by accepting our proposal No. 1130027999 dated June 19, 2013.

2.2 Objectives

The objectives of this study are to evaluate the presence of soil and ground water (if encountered) contamination from the LPST site along the proposed water line alignment and to identify the potential impacts on the proposed construction. This study was performed in general accordance with ASTM guidelines for Phase II Environmental Site Assessment, designation ASTM 1903-11 (2011) (Reference 2) and modified by City of Houston Department of Public Works and

Engineering Infrastructure Design Manual, Chapter 11 – Geotechnical and Environmental Requirements Subsection, Phase II Environmental Requirements, dated July 1, 2012 (Reference 3).

2.3 Scope of the Study

The scope of work is generally based on the ASTM guidelines for Phase II Environmental Site Assessment, designation ASTM E 1903-11 (2011) Standard. The scope will consist of the following:

- Coring existing concrete pavement to access the subsurface soils at six (6) locations;
- Drilling and continuously sampling six (6) environmental borings utilizing Geoprobe each to a depth of 15 feet;
- screen each soil sample in the field for the presence volatile compounds using a photoionization detector (PID);
- develop 1-inch diameter temporary monitoring wells for groundwater (if encountered) sampling and then plug and abandon;
- conduct analytical tests on six (6) soil sample and two (2) ground water samples (if encountered);
- prepare a Phase II environmental report documenting the field investigation and analytical test results in accordance with ASTM Practice E 1903 as modified by City of Houston Infrastructure Design Manual, Chapter 11, Environmental Requirements Section 11.26.

2.4 Special Terms and Conditions

There were no special terms or conditions.

2.5 Limitations and Exceptions of Assessment

The scope of this Phase II ESA is limited to matters expressly described herein. In preparing this report, Geotest has relied upon the information derived from secondary sources. All recommendations, findings and conclusions stated in this report are based upon the facts and circumstances as they existed at the time this report was prepared (e.g., Federal, State and Local Laws, Rules, Regulations and other matters that Geotest deemed relevant). A change in any facts or circumstances upon which this report was based may affect the findings, conclusions and validity of our recommendations expressed herein.

The subsurface conditions described in this report and the results of analytical tests are based on six (6) completed borings drilled at specific locations. However, variation in soil conditions and level of contamination, if any, may occur between the completed borings. The depth of the groundwater level may vary with changes in environmental conditions such as frequency and magnitude of rainfall.

2.6 Limiting Conditions and Methodology Used

This Phase II ESA is limited to the data derived from the soil borings and the laboratory tests performed on the samples recovered from the project site. Following this section of the report, Section 3 provides a subsurface investigation; Section 4 describes the laboratory analytical program, Section 5 describes the data evaluation, Section 6 contains conclusions and Section 7 contains references.

3.0 SUBSURFACE INVESTIGATION

3.1 Field Investigation Methodologies

The field investigation methodology takes into consideration the potential distribution of contaminants with respect to the properties, behavior and transportation characteristics. The sampling plan was designed to provide for the collection of potentially contaminated environmental media, if they occur, at locations and depths where the highest concentrations are likely to occur.

These investigation methodologies were developed in general accordance with ASTM Standard D 5730: Guide to Site Characteristics for Environmental Purposes with Emphasis on Soil, Rock, The Vadose Zone and Groundwater (Reference 4).

Personal health and safety precautions were followed in accordance with applicable federal and state laws or local equivalents and any requirements imposed by the owner, occupant or field personnel.

No test pits were excavated as part of this Phase II ESA study.

The field investigation includes drill and continuously sample six (6) environmental borings (designated as EB-1 through EB-6) along the proposed water line alignment at LPST site for this study. All the boring locations including LPST site are shown on Figure 2, Plan of Borings.

In each boring, geoprobe tubes were pushed to collect samples. At the starting of each boring, all sampling tools were decontaminated with a phosphate-free Liquid-Nox detergent, followed by a Freon rinse and a final deionized water rinse to reduce possible sample cross-contamination. The sampling tools, however, were decontaminated after every sample recovery. After extrusion, the soil samples were placed in EPA-approved laboratory-provided glass jars. All samples were then placed in a cooler with ice.

Geotest's representative visually field-classified the recovered soil samples. Notations of soil type, color and odor, if present, were recorded on the soil boring logs. Soil classifications presented on the log of borings are based on visual field classification and have not been verified by geotechnical laboratory soil testing. All the borings were grouted with cement-bentonite grout at the end of drilling.

The environmental boring logs are presented on Figures A-1 through A-6 in Appendix A. A key to symbols and terms used on the boring logs is presented on Figure A-7 in Appendix A.

During the field investigation, field screening for organic vapor concentrations was performed on all soil samples recovered from the borings. The measurements were made in the field with a benzene-calibrated, HNU DL-101 Photo-Ionization Detector (PID) equipped with a 10.2 eV lamp. Results of the field PID screening are summarized as "Field Screening – Organic Vapor" on the boring logs presented on Figures A-1 through A-6 in Appendix A.

Since no groundwater was encountered during drilling, temporary monitoring wells were not installed in the borings for this study.

3.2 Selected Sites

In our previous study, "Phase I Environmental Site Assessment (ESA), for Water Line Replacement in Sharpstown II Area, WBS No. S-000035-0194-3," Geotest Report No. 1130017201 dated April 3, 2013 (Reference 1), one (1) Leaking Petroleum Storage Tank (LPST) site along the proposed project alignment was identified as a Recognized Environmental Condition (REC). The LPST site is listed below.

- Amigo Market located at 8203 Fondren Rd.

4.0 LABORATORY ANALYTICAL PROGRAM

4.1 Chemical Testing Plan

All soil samples were screened in the field for organic vapors with a Photo-Ionization Detector (PID). Six (6) soil samples with the highest PID readings were selected for the analytical testing. The analytical testing includes BTEX (Benzene, Toulene, Ethyl Benzene and Xylene)/MTBE (Methyl Tertiary Butyl Eather) and TPH (Total Petroleum Hydrocarbon).

4.2 Sampling and Chemical Analyses and Methods

4.2.1 Soil. Soil samples were obtained by pushing a geoprobe tube. After extrusion, the soil samples were collected and placed in EPA-approved laboratory-provided glass jars and then placed in a portable ice cooler with ice. Based on the field screening for organic vapor, one soil sample from each boring with highest PID reading or near invert depth whichever is applicable was selected for analytical testing. The samples selected for analytical testing are given below.

Boring No.	Sample No	Depth, ft
EB-1	S-7	12-14
EB-2	S-6	10-12
EB-3	S-5	8-10
EB-4	S-6	10-12
EB-5	S-8	14-15
EB-6	S-8	14-15

4.2.2 Groundwater. No groundwater was encountered in the borings performed for this study and hence no testing was performed.

The analytical tests and corresponding test methods are listed below.

- BTEX/MTBE SW 8260
- TPH TX 1005

The samples were transported along with the chain-of-custody documentation to XENCO Laboratories in Houston, Texas for analytical testing.

5.0 DATA EVALUATION

5.1 Subsurface Conditions

5.1.1 Geologic Setting. Based on the Geologic Atlas of Texas - Houston Sheet, the project area is in the Beaumont Formation. The clays and sands of this formation are overconsolidated as a result of desiccation or frequent raising and lowering of the sea level and subsequently the groundwater table. Consequently, clays of this formation have moderate to high shear strength and relatively low compressibility. Sands of the Beaumont Formation are typically very fine and often silty. Further there is evidence in the Houston area of the occurrence of cemented material (sandstone and siltstone) deposits within the Beaumont Formation.

5.1.2 Hydrogeologic Conditions. There are three major water-producing components in the region; Chicot (shallowest), Evangeline and Jasper (deepest) aquifers. The Chicot and Evangeline aquifers have base altitudes as deep as 600 and 1,500 feet below mean sea level, respectively. Most of the groundwater usage in the region is supplied by the Chicot and Evangeline aquifers. The permeability of the subsurface soils ranges from low permeable sandy lean clay and lean clay to very low permeable fat clay. The general groundwater flow in the area is typically from northwest to southeast.

5.1.3 Verification of Conceptual Site Model. The conceptual site model and sampling plan developed for the site were verified during the Phase II ESA assessment activities. The Quality Assurance (QA)/Quality Control (QC) procedures described in the chemical testing plan were adequate to verify the data acceptability.

5.2 Analytical Data

5.2.1 Soil. Based on the results of analytical testing, the chemicals of concern (COC), BTEX and TPH were above the TCEQ, TRRP, TIER 1, PCLs for residential guidelines (based on TIER 1 PCLs on 0.5 acre source area and $^{GW}soil_{ing}$ exposure pathway) in borings EB-5 and EB-6. The BTEX and TPH levels detected in laboratory tests in other borings EB-1 through EB-4 were below the

TCEQ-TRRP TIER 1 PCLs for residential guidelines (based on Tier 1 Residential Soil PCLs on 0.5-acre source area and $^{GW}soil_{ing}$ exposure pathway). A summary of analytical test results and the TIER 1 PCLs are presented in Table 1.

Soil contamination levels were based on TCEQ RG-366/TRRP-23, revised on June 29, 2012 regulatory guidance document that includes TIER 1 PCLs for residential guidelines (using 0.5-acre source area and $^{GW}soil_{ing}$ exposure pathway) (Reference 5). Details of analytical test results are presented in Appendix B.

5.2.2 Groundwater. Groundwater was not encountered during or after completion of drilling in the borings performed for this study. Hence, no testing was performed.

6.0 CONCLUSIONS

6.1 Summary of the Investigation Results

The measured values of organic vapor for the soil samples in the field ranged from 0.0 to 14.2 ppm.

The Analytical testing results indicated that the chemicals of concern (COC) BTEX and TPH were above the TCEQ, TRRP, TIER 1, PCLs for residential guidelines (based on TIER 1 PCLs on 0.5 acre source area and $^{GW}soil_{ing}$ exposure pathway) in borings EB-5 and EB-6.

6.2 Impact on Planned Construction

The results of these tests indicated that the chemicals of concern (COC) BTEX and TPH were detected in borings EB-1, EB-2, EB-4, EB-5 and EB-6 and were above the Texas Commission on Environmental Quality (TCEQ), Texas Risk Remediation Program (TRRP), TIER 1, Protective Concentration Levels (PCLs) for residential guidelines (based on TIER 1 PCLs on 0.5 acre source area and $^{GW}soil_{ing}$ exposure pathway) in borings EB-5 and EB-6. **Hence, the planned construction of water line replacement along Fonvilla Street between Stations 0+50 to 3+50 and water line replacements along Tanager Street between Stations 10+00 to 13+00 is identified as potentially petroleum contaminated area (PPCA).**

It is recommended that the Occupational Safety and Health Administration (OSHA) requirements (29 CFR 1926) and COH Guide Specifications 02105 and 02120 should be followed for workers safety during excavations and handling of the site soils in aforementioned area.

Activities that related to excavation and handling of site soils are regulated under the OSHA Construction Standard 29 CFR 1910 Subpart H (Reference 6).

7.0 REFERENCES

1. Phase I Environmental Site Assessment (ESA), for Water Line Replacement in Shepherd Forest Area, WBS No. S-000035-0194-3," Geotest Report No. 1130017201 dated April 3, 2013

2. ASTM E 1903-11, ASTM Guidelines for Phase II Environmental Site Assessment, ASTM E1903-11

3. City of Houston Department of Public Works and Engineering Infrastructure Design Manual, Chapter 11 – Geotechnical and Environmental Requirements, Subsection Phase II Environmental Requirements, dated July 1, 2012.

4. ASTM Standard D 5730 Guide to Site Characteristics for Environmental Purposes with Emphasis on Soil, Rock, the Vadose Zone and Groundwater.

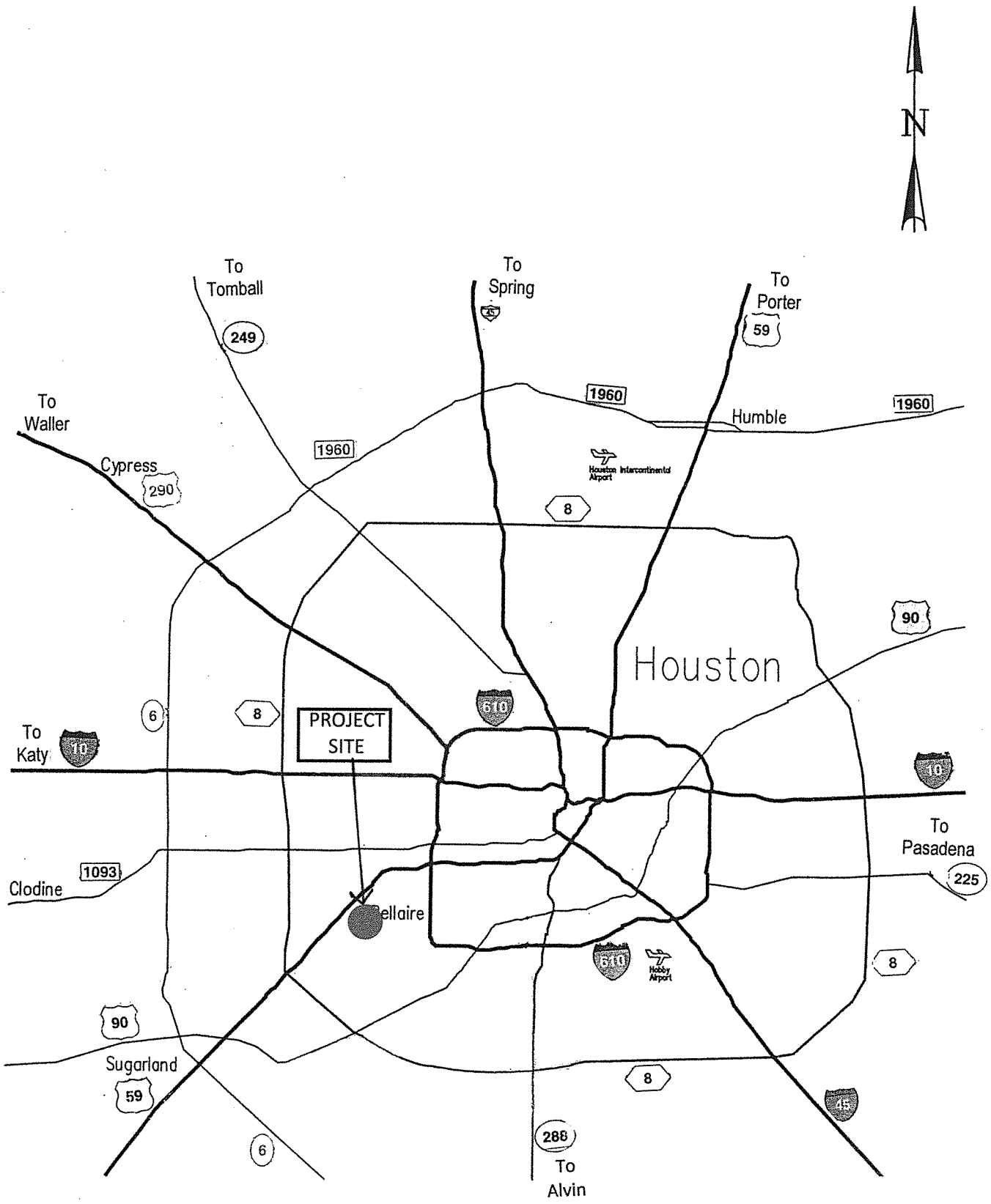
5. TCEQ (TNRCC) Regulatory Guidance-Remediation Division-RG-366/TRRP- Tier 1 PCL Tables June 19, 2012.

6. OSHA Regulations (Standards – 29 CFR)

ILLUSTRATIONS

	Figure
Project Location Map	1
Plan of Borings and LPST Site	2

Job No. 1130018201



VICINITY MAP

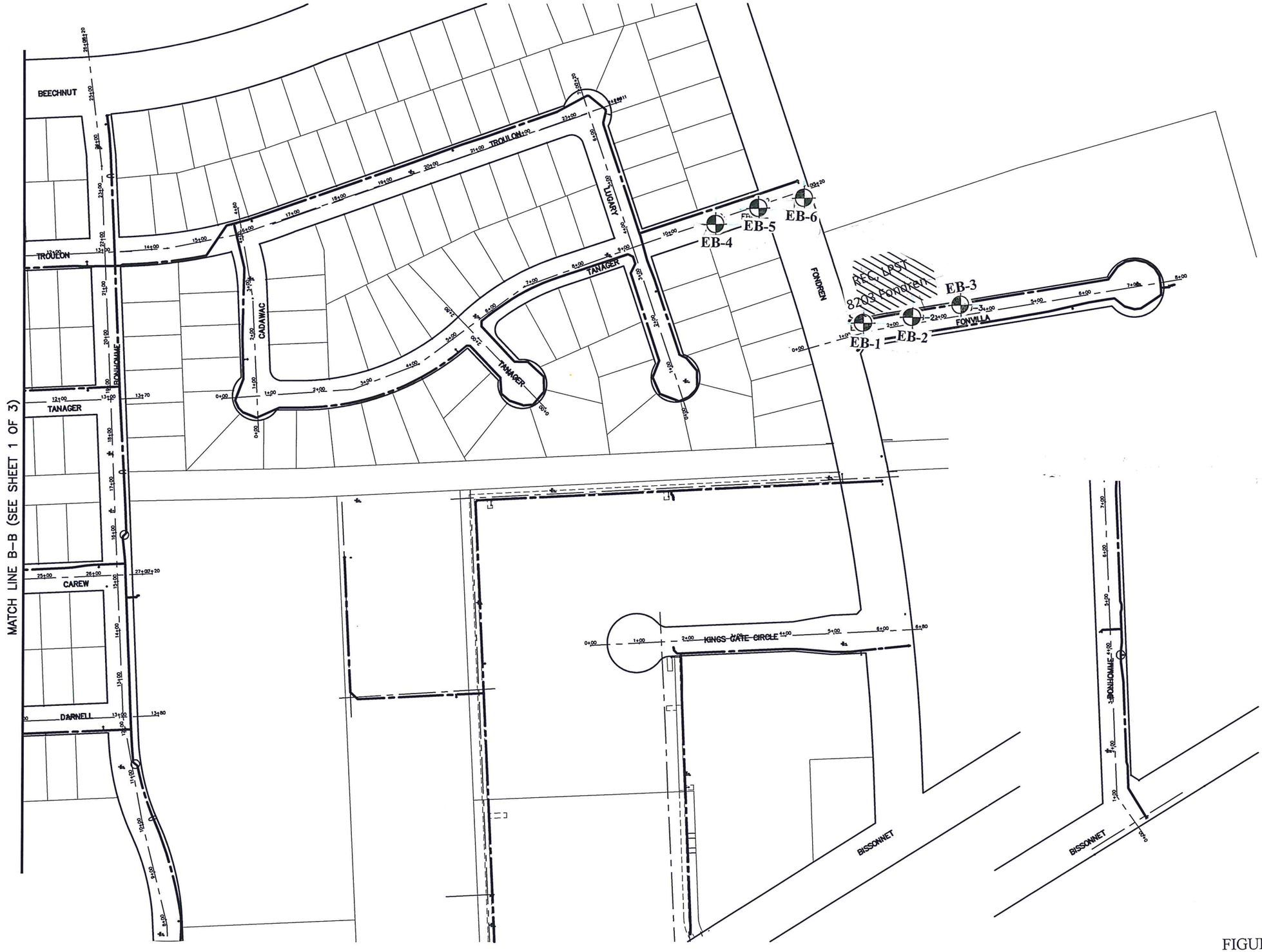
(NOT TO SCALE)

Geotest Engineering, Inc.

FIGURE 1

Job No. : 1130018201

KEY MAP NO.: 530 K, L, P, Q &R



LEGEND

Environmental Boring

AMANI ENGINEERING, INC. 8313 SOUTHWEST FREEWAY SUITE 350 HOUSTON, TEXAS 77074 TEL: (713) 270-5700 TBPE REG. NO.: F-4528	SEAL
SURVEYED BY: AMANI FB NO. P-5778	

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER LINE REPLACEMENT IN SHARPSTOWN II AREA

PLAN OF BORINGS

WBS NO. S-000035-0194-3	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON, PM	
MUMTAZ BAIG, P.E.	
SHEET NO. XX OF 170	

FIGURE 2

V:\Code\2013\13001 COH-Sharpstown-2 WLR\Geotech\Overall Layout-3.dwg

FILE NAME:

TABLE

	Table
Summary of Analytical Test Results (Soil)	1

TABLE 1

SUMMARY OF ANALYTICAL TEST RESULTS (Soil)

LOCATION (See Figure 2)		TCEQ TRRP TIER 1 Soil PCLs (mg/kg)	BTEX (mg/kg)				TPH (mg/kg)	MTBE (mg/kg)
			Benzene	Toluene	Ethyl Benzene	Total Xylenes		
Boring No.	**Sample Depth, ft**	**Residential** [(1)]	*0.026*	*8.2*	*7.6*	*120*	*65*	*0.62*
EB-1	12-14		<0.00248	0.00728	<0.605	<0.605	<62.0	<0.577
EB-2	10-12		<0.00248	0.00360	<0.605	<0.605	<62.0	<0.577
EB-3	8-10		<0.00248	<0.605	<0.605	<0.605	<62.0	<0.577
EB-4	10-12		<0.00248	0.0166	0.00990	0.0399	<62.0	<0.577
EB-5	14-15		**0.277**	**12.9**	**30.5**	**130**	**863**	<0.577
EB-6	14-15		**2.75**	**121**	**51.5**	**246**	**1490**	<0.577

Note: Value in **BOLD** shows exceeds the TCEQ TRRP TIER 1 PCLs
Details of these tests are provided in Appendix B.

(1) TCEQ TRRP TIER 1 PCLS For 0.5 acre source area and $^{GW}soil_{ing}$ exposure pathway

APPENDIX A

Log of Borings and Symbols Used

LOG OF BORING NO. EB-1

PROJECT : Phase II Environmental Site Assessment
Water Line Replacement in Sharpstown II Area
WBS No. S-000035-0194-4; Houston, Texas

PROJECT NO. : 1130018201

LOCATION : Fonville; Sta. 1+41.88, 20.94' LT
See Plan of Borings (Figure 2)

COMPLETION DEPTH : 15.0 FT.

SURFACE ELEVATION : 59.60 FT.

DATE : 08-05-2013

SAMPLER : Shelby Tube/Split Spoon
DRY AUGER : .0 TO 15.0 FT.
WASH BORE : -- TO -- FT.

DEPTH, FEET	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SPT N-VALUE, BLOWS PER FOOT	HAND PENETROMETER READING, TSF	FIELD SCREENING - ORGANIC VAPOR, ppm	TOTAL PETROLEUM HYDROCARBONS, mg/kg	BTEX, mg/kg				TOTAL BTEX, mg/kg	POLYCYLIC AROMATIC HYDROCARBONS, mg/kg	VOLATILE ORGANIC COMPOUNDS, mg/kg	TOTAL LEAD, mg/kg
								BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENE				
0			6.5" Concrete												
			Gray SANDY CLAY (CL) w/calcareous and ferrous nodules -yellow and gray 2'-4'			1.1									
						1.0									
5						0.1									
						0.2									
10			- w/vertical sand seams 10'-14'			0.2									
						0.2									
			Gray SAND (SM)			0.2	ND	ND	0.01	ND	ND	0.01			
15						0.2									
20															
25															
30															
35															

NOTE :
ND - Not Detected

DEPTH TO WATER IN BORING :
No groundwater encountered during drilling.

Geotest Engineering, Inc.

FIGURE A-1

LOG OF BORING NO. EB-2

PROJECT : Phase II Environmental Site Assessment
Water Line Replacement in Sharpstown II Area
WBS No. S-000035-0194-4; Houston, Texas

PROJECT NO. : 1130018201

LOCATION : Fonvilla; Sta. 2+42.73, 15.29' LT
See Plan of Borings (Figure 2)

COMPLETION DEPTH : 15.0 FT.

SURFACE ELEVATION : 59.20 FT.

DATE : 08-05-2013

SAMPLER : Shelby Tube/Split Spoon
DRY AUGER : .0 TO 15.0 FT.
WASH BORE : -- TO -- FT.

DEPTH, FEET	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SPT N-VALUE, BLOWS PER FOOT	HAND PENETROMETER READING, TSF	FIELD SCREENING - ORGANIC VAPOR, ppm	TOTAL PETROLEUM HYDROCARBONS, mg/kg	BTEX, mg/kg				TOTAL BTEX, mg/kg	POLYCYLIC AROMATIC HYDROCARBONS, mg/kg	VOLATILE ORGANIC COMPOUNDS, mg/kg	TOTAL LEAD, mg/kg
								BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENE				
0			6.5" Concrete												
			Dark gray SANDY CLAY (CL) w/ferrous nodules and ferrous stains			0.0									
			-yellow and gray 6'-8'			0.0									
5			-w/calcareous nodules 6'-12'			0.0									
						0.0									
10						0.0									
						0.0	ND	ND	0.00	ND	ND	0.00			
						0.0									
15			Gray SAND (SM)			0.0									
			NOTE : ND - Not Detected												
20															
25															
30															
35															

DEPTH TO WATER IN BORING :
No groundwater encountered during drilling.

Geotest Engineering, Inc.

FIGURE A-2

LOG OF BORING NO. EB-3

PROJECT : Phase II Environmental Site Assessment
Water Line Replacement in Sharpstown II Area
WBS No. S-000035-0194-4; Houston, Texas

PROJECT NO. : 1130018201

LOCATION : Fonvilla; Sta. 3+44.18, 21.44' LT
See Plan of Borings (Figure 2)

COMPLETION DEPTH : 15.0 FT.

SURFACE ELEVATION : 59.10 FT.

DATE : 08-05-2013

SAMPLER : Shelby Tube/Split Spoon
DRY AUGER : .0 TO 15.0 FT.
WASH BORE : -- TO -- FT.

DEPTH, FEET	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SPT N-VALUE, BLOWS PER FOOT	HAND PENETROMETER READING, TSF	FIELD SCREENING - ORGANIC VAPOR, ppm	TOTAL PETROLEUM HYDROCARBONS, mg/kg	BTEX, mg/kg				TOTAL BTEX, mg/kg	POLYCYLIC AROMATIC HYDROCARBONS, mg/kg	VOLATILE ORGANIC COMPOUNDS, mg/kg	TOTAL LEAD, mg/kg
								BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENE				
0			6.5" Concrete												
			Gray SANDY CLAY (CL) w/calcareous and ferrous nodules			0.0									
			-yellow and gray 2'-4'			0.0									
5						0.0									
						0.0									
						0.0	ND	ND	ND	ND	ND	ND			
10						0.0									
						0.0									
			-gray sand 14'-15'			0.0									
15						0.0									
20															
25															
30															
35															

NOTE :
ND - Not Detected

DEPTH TO WATER IN BORING :
No groundwater encountered during drilling.

Geotest Engineering, Inc.

FIGURE A-3

LOG OF BORING NO. EB-4

PROJECT : Phase II Environmental Site Assessment
Water Line Replacement in Sharpstown II Area
WBS No. S-000035-0194-4; Houston, Texas

PROJECT NO. : 1130018201

LOCATION : Tanager East; Sta. 10+91.76, 6.91' RT
See Plan of Borings (Figure 2)

COMPLETION DEPTH : 15.0 FT.

SURFACE ELEVATION : 57.80 FT.

DATE : 08-05-2013

SAMPLER : Shelby Tube/Split Spoon
DRY AUGER : .0 TO 15.0 FT.
WASH BORE : -- TO -- FT.

DEPTH, FEET	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SPT N-VALUE, BLOWS PER FOOT	HAND PENETROMETER READING, TSF	FIELD SCREENING - ORGANIC VAPOR, ppm	TOTAL PETROLEUM HYDROCARBONS, mg/kg	BTEX, mg/kg				TOTAL BTEX, mg/kg	POLYCYLIC AROMATIC HYDROCARBONS, mg/kg	VOLATILE ORGANIC COMPOUNDS, mg/kg	TOTAL LEAD, mg/kg
								BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENE				
0			7" Concrete												
			Yellow and gray SANDY CLAY (CL) w/calcareous and ferrous nodules			0.0									
						0.0									
5						0.1									
						0.1									
						0.1									
10			Gray SAND (SM)			0.1	ND	ND	0.02	0.01	0.04	0.07			
			Gray and red SANDY CLAY (CL)			0.1									
			Reddish brown and gray SAND (SM)			0.1									
15															
20															
25															
30															
35															

NOTE :
ND - Not Detected

DEPTH TO WATER IN BORING :
No groundwater encountered during drilling.

Geotest Engineering, Inc.

FIGURE A-4

LOG OF BORING NO. EB-5

PROJECT : Phase II Environmental Site Assessment
Water Line Replacement in Sharpstown II Area
WBS No. S-000035-0194-4; Houston, Texas

PROJECT NO. : 1130018201

LOCATION : Tanager East; Sta. 11+87.74, 8.08' RT
See Plan of Borings (Figure 2)

COMPLETION DEPTH : 15.0 FT.

SURFACE ELEVATION : 57.60 FT.

DATE : 08-05-2013

SAMPLER : Shelby Tube/Split Spoon
DRY AUGER : .0 TO 15.0 FT.
WASH BORE : -- TO -- FT.

DEPTH, FEET	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SPT N-VALUE, BLOWS PER FOOT	HAND PENETROMETER READING, TSF	FIELD SCREENING - ORGANIC VAPOR, ppm	TOTAL PETROLEUM HYDROCARBONS, mg/kg	BTEX, mg/kg				TOTAL BTEX, mg/kg	POLYCYLIC AROMATIC HYDROCARBONS, mg/kg	VOLATILE ORGANIC COMPOUNDS, mg/kg	TOTAL LEAD, mg/kg
								BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENE				
0			10.5" Concrete												
			Yellow and gray SANDY CLAY (CL) w/calcareous and ferrous nodules and ferrous stains			0.0									
						0.1									
5						0.1									
						0.1									
						0.7									
10						13.0									
						6.2									
			Gray SAND (SM)			14.2	863	0.28	12.9	30.5	130	173			
15															
20															
25															
30															
35															

DEPTH TO WATER IN BORING :
No groundwater encountered during drilling.

Geotest Engineering, Inc.

FIGURE A-5

LOG OF BORING NO. EB-6

PROJECT : Phase II Environmental Site Assessment
Water Line Replacement in Sharpstown II Area
WBS No. S-000035-0194-4; Houston, Texas

PROJECT NO. : 1130018201

LOCATION : Tanager East; Sta. 12+81.28, 13.42' RT
See Plan of Borings (Figure 2)

COMPLETION DEPTH : 15.0 FT.

SURFACE ELEVATION : 57.50 FT.

DATE : 08-05-2013

SAMPLER : Shelby Tube/Split Spoon
DRY AUGER : .0 TO 15.0 FT.
WASH BORE : -- TO -- FT.

DEPTH, FEET	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SPT N-VALUE, BLOWS PER FOOT	HAND PENETROMETER READING, TSF	FIELD SCREENING - ORGANIC VAPOR, ppm	TOTAL PETROLEUM HYDROCARBONS, mg/kg	BTEX, mg/kg				TOTAL BTEX, mg/kg	POLYCYLIC AROMATIC HYDROCARBONS, mg/kg	VOLATILE ORGANIC COMPOUNDS, mg/kg	TOTAL LEAD, mg/kg
								BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENE				
0			7" Concrete												
			Gray SANDY CLAY (CL) w/calcareous and ferrous nodules and ferrous stains			0.1									
						0.1									
5						0.1									
						2.0									
10						2.0									
						13.0									
			Red and gray SANDY CLAY (CL) -gray sand 14'-15'			7.3									
15						14.1	1490	2.75	121	51.5	246	421			
20															
25															
30															
35															

DEPTH TO WATER IN BORING :
No groundwater encountered during drilling.

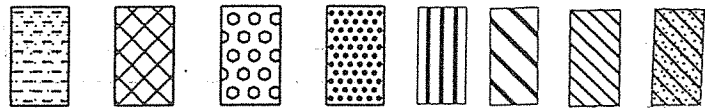
Geotest Engineering, Inc.

FIGURE A-6

Job No. 1130018201

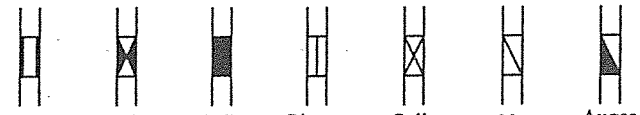
SYMBOLS AND TERMS USED ON BORING LOGS

SOIL TYPES
(SHOWN IN SYMBOL COLUMN)



Predominant type shown heavy

SAMPLER TYPES
(SHOWN IN SAMPLES COLUMN)



TERMS DESCRIBING CONSISTENCY OR CONDITION

Basic Soil Type	Density or Consistency	Standard Penetration Resistance, (1) Blows/ft.	Unconfined Compressive Strength (q_u), (2) Tons/sq. ft.
Cohesionless	Very loose	Less than 4	Not applicable
	Loose	4 to <10	Not applicable
	Medium dense	10 to <30	Not applicable
	Dense	30 to <50	Not applicable
	Very dense	50 or greater	Not applicable
Cohesive	Very soft	Less than 2	Less than 0.25
	Soft	2 to <4	0.25 to <0.5
	Firm/Medium stiff	4 to <8	0.5 to <1.0
	Stiff	8 to <15	1.0 to <2.0
	Very stiff	15 to <30	2.0 to <4.0
	Hard	30 or greater	4 or greater

(1) Number of blows from 140-lb. weight falling 30-in. to drive 2-in. OD, 1-3/8-in. ID, split barrel sampler (ASTM D1586)

(2) q_u may also be approximated using a pocket penetrometer

TERMS CHARACTERIZING SOIL STRUCTURE

Parting: -paper thin in size Seam: -1/8" to 3" thick Layer: -greater than 3"

Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	- composed of thin layers of varying color and texture.
Interbedded	- composed of alternate layers of different soil types.
Calcareous	- containing appreciable quantities of calcium carbonate.
Well graded	- having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
Poorly graded	- predominantly of one grain size, or having a range of sizes with some intermediate size missing.
Flocculated	- pertaining to cohesive soils that exhibit a loose knit or flakey structure.

APPENDIX B

LABORATORY REPORT WITH
QUALITY CONTROL INFORMATION

Analytical Report 468230

for

Geotest Engineering, Inc.

Project Manager: Naresh Kolli

Water Line Replacement Sharpstown II Area

1130018201

29-AUG-13

Collected By: Client

4143 Greenbriar Dr., Stafford, TX 77477

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-13-14-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

29-AUG-13

Project Manager: **Naresh Kolli**
Geotest Engineering, Inc.
5600 Bintliff
Houston, TX 77036

Reference: XENCO Report No(s): **468230**
Water Line Replacement Sharpstown II Area
Project Address:

Naresh Kolli:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 468230. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 468230 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Debbie Simmons

Debbie Simmons
Project Manager

Sample Cross Reference 468230

Geotest Engineering, Inc., Houston, TX

Water Line Replacement Sharpstown II Area

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
EB-1 S-7	S	08-05-13 00:00	12 - 14	468230-001
EB-2 S-6	S	08-05-13 00:00	10 - 12	468230-002
EB-3 S-5	S	08-05-13 00:00	8 - 10	468230-003
EB-4 S-6	S	08-05-13 00:00	10 - 12	468230-004
EB-5 S-8	S	08-05-13 00:00	14 - 15	468230-005
EB-6 S-8	S	08-05-13 00:00	14 - 15	468230-006
Trip Blank	W	08-05-13 00:00		Not Analyzed

CASE NARRATIVE

Client Name: Geotest Engineering, Inc.

Project Name: Water Line Replacement Sharpstown II Area

Project ID: *1130018201*
Work Order Number(s): *468230*

Report Date: *29-AUG-13*
Date Received: *08/08/2013*

Sample receipt non conformances and comments:

No time listed on COC or jars

Received one set voa vials marked trip blank, logged in as 468230-007

Report being revised 8/29/13 for samples EB-5 and EB-6 reporting MDL as the final reporting limit for MTBE only.

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-920605 BTEX-MTBE by SW 8260B
Dilution required due to sample matrix.

Certificate of Analysis Summary 468230

Geotest Engineering, Inc., Houston, TX

Project Name: Water Line Replacement Sharpstown II Area

Project Id: 1130018201
Contact: Naresh Kolli
Project Location:

Date Received in Lab: Thu Aug-08-13 04:30 pm
Report Date: 29-AUG-13
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	468230-001		468230-002		468230-003		468230-004		468230-005		468230-006	
	Field Id:	EB-1 S-7		EB-2 S-6		EB-3 S-5		EB-4 S-6		EB-5 S-8		EB-6 S-8	
	Depth:	12-14		10-12		8-10		10-12		14-15		14-15	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-05-13 00:00		Aug-05-13 00:00		Aug-05-13 00:00		Aug-05-13 00:00		Aug-05-13 00:00		Aug-05-13 00:00	
BTEX-MTBE by SW 8260B	*Extracted:*	Aug-13-13 18:04		Aug-13-13 18:06		Aug-13-13 18:08		Aug-13-13 18:10		Aug-14-13 19:00		Aug-14-13 15:34	
	Analyzed:	Aug-13-13 20:17		Aug-13-13 20:43		Aug-13-13 21:09		Aug-13-13 21:34		Aug-14-13 21:50		Aug-14-13 16:42	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
MTBE		BRL	0.0117	BRL	0.0113	BRL	0.0115	BRL	0.0124	BRL	0.228	BRL	0.577
Benzene		BRL	0.00234	BRL	0.00227	BRL	0.00230	BRL	0.00248	0.277	0.239	2.75	0.605
Toluene		0.00728	0.00234	0.00360	0.00227	BRL	0.00230	0.0166	0.00248	12.9	0.239	121	0.605
Ethylbenzene		BRL	0.00234	BRL	0.00227	BRL	0.00230	0.00990	0.00248	30.5	0.239	51.5	0.605
m,p-Xylenes		BRL	0.00468	BRL	0.00453	BRL	0.00459	0.0276	0.00496	95.5	0.477	182	1.21
o-Xylene		BRL	0.00234	BRL	0.00227	BRL	0.00230	0.0123	0.00248	34.0	0.239	63.9	0.605
Total Xylenes		BRL	0.00234	BRL	0.00227	BRL	0.00230	0.0399	0.00248	130	0.239	246	0.605
Total BTEX		0.00728	0.00234	0.00360	0.00227	BRL	0.00230	0.0664	0.00248	173	0.239	421	0.605
Percent Moisture	*Extracted:*												
	Analyzed:	Aug-12-13 17:21		Aug-12-13 17:21		Aug-12-13 17:21		Aug-12-13 17:21		Aug-12-13 17:21		Aug-12-13 17:21	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		14.6	1.00	11.7	1.00	12.9	1.00	19.4	1.00	16.8	1.00	17.6	1.00
TPH by Texas1005	*Extracted:*	Aug-12-13 14:09		Aug-12-13 14:18		Aug-12-13 14:21		Aug-12-13 14:24		Aug-12-13 14:27		Aug-12-13 14:30	
	Analyzed:	Aug-13-13 03:25		Aug-13-13 05:13		Aug-13-13 05:35		Aug-13-13 05:57		Aug-13-13 06:18		Aug-13-13 06:40	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		BRL	58.3	BRL	56.4	BRL	57.1	BRL	62.0	863	59.7	1250	60.6
C12 - C28 Diesel Range Hydrocarbons		BRL	58.3	BRL	56.4	BRL	57.1	BRL	62.0	BRL	59.7	241	60.6
C28-C35 Oil Range Hydrocarbons		BRL	58.3	BRL	56.4	BRL	57.1	BRL	62.0	BRL	59.7	BRL	60.6
Total TPH 1005		BRL	58.3	BRL	56.4	BRL	57.1	BRL	62.0	863	59.7	1490	60.6

Debbie Simmons
Project Manager

XENCO Laboratories
CHRONOLOGY OF HOLDING TIMES

Analytical Method : Percent Moisture
Client : Geotest Engineering, Inc.

Work Order #: **468230**
Project ID: 1130018201

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed **(Days)**	Q
EB-2 S-6	Aug. 5, 2013	Aug. 8, 2013				Aug.12, 2013	45	7	P
EB-6 S-8	Aug. 5, 2013	Aug. 8, 2013				Aug.12, 2013	45	7	P
EB-4 S-6	Aug. 5, 2013	Aug. 8, 2013				Aug.12, 2013	45	7	P
EB-5 S-8	Aug. 5, 2013	Aug. 8, 2013				Aug.12, 2013	45	7	P
EB-1 S-7	Aug. 5, 2013	Aug. 8, 2013				Aug.12, 2013	45	7	P
EB-3 S-5	Aug. 5, 2013	Aug. 8, 2013				Aug.12, 2013	45	7	P

XENCO Laboratories
CHRONOLOGY OF HOLDING TIMES

Analytical Method : BTEX-MTBE by SW 8260B

Client : Geotest Engineering, Inc.

Work Order #: **468230**

Project ID: 1130018201

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed **(Days)**	Q
EB-5 S-8	Aug. 5, 2013	Aug. 8, 2013				Aug.14, 2013	14	9	P
EB-2 S-6	Aug. 5, 2013	Aug. 8, 2013				Aug.13, 2013	14	8	P
EB-3 S-5	Aug. 5, 2013	Aug. 8, 2013				Aug.13, 2013	14	8	P
EB-6 S-8	Aug. 5, 2013	Aug. 8, 2013				Aug.14, 2013	14	9	P
EB-1 S-7	Aug. 5, 2013	Aug. 8, 2013				Aug.13, 2013	14	8	P
EB-4 S-6	Aug. 5, 2013	Aug. 8, 2013				Aug.13, 2013	14	8	P

XENCO Laboratories
CHRONOLOGY OF HOLDING TIMES

Analytical Method : TPH by Texas1005 Client : Geotest Engineering, Inc.

Work Order #: **468230** Project ID: 1130018201

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed **(Days)**	Q
EB-2 S-6	Aug. 5, 2013	Aug. 8, 2013	Aug. 12, 2013	14	7	Aug.13, 2013	14	1	P
EB-1 S-7	Aug. 5, 2013	Aug. 8, 2013	Aug. 12, 2013	14	7	Aug.13, 2013	14	1	P
EB-5 S-8	Aug. 5, 2013	Aug. 8, 2013	Aug. 12, 2013	14	7	Aug.13, 2013	14	1	P
EB-4 S-6	Aug. 5, 2013	Aug. 8, 2013	Aug. 12, 2013	14	7	Aug.13, 2013	14	1	P
EB-3 S-5	Aug. 5, 2013	Aug. 8, 2013	Aug. 12, 2013	14	7	Aug.13, 2013	14	1	P
EB-6 S-8	Aug. 5, 2013	Aug. 8, 2013	Aug. 12, 2013	14	7	Aug.13, 2013	14	1	P

F = These samples were analyzed outside the recommended holding time.
P = Samples analyzed within the recommended holding time.

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantiation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Orders : 468230, 468230 **Project ID:** 1130018201

Lab Batch #: 920430 **Sample:** 468230-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 03:25

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	58.5	49.8	117	70-130	
1-Chlorooctane	103	99.6	103	70-130	

Lab Batch #: 920430 **Sample:** 468230-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 05:13

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	59.6	49.8	120	70-130	
1-Chlorooctane	99.6	99.6	100	70-130	

Lab Batch #: 920430 **Sample:** 468230-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 05:35

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	58.2	49.8	117	70-130	
1-Chlorooctane	104	99.5	105	70-130	

Lab Batch #: 920430 **Sample:** 468230-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 05:57

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	61.1	50.0	122	70-130	
1-Chlorooctane	102	99.9	102	70-130	

Lab Batch #: 920430 **Sample:** 468230-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 06:18

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	63.7	49.7	128	70-130	
1-Chlorooctane	117	99.3	118	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Orders : 468230, 468230 **Project ID:** 1130018201

Lab Batch #: 920430 **Sample:** 468230-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 06:40

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	62.3	49.9	125	70-130	
1-Chlorooctane	119	99.8	119	70-130	

Lab Batch #: 920605 **Sample:** 468230-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 20:17

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0527	0.0500	105	74-126	
1,2-Dichloroethane-D4	0.0512	0.0500	102	80-120	
Toluene-D8	0.0537	0.0500	107	73-132	
4-Bromofluorobenzene	0.0513	0.0500	103	58-152	

Lab Batch #: 920605 **Sample:** 468230-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 20:43

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0513	0.0500	103	74-126	
1,2-Dichloroethane-D4	0.0435	0.0500	87	80-120	
Toluene-D8	0.0501	0.0500	100	73-132	
4-Bromofluorobenzene	0.0522	0.0500	104	58-152	

Lab Batch #: 920605 **Sample:** 468230-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 21:09

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0554	0.0500	111	74-126	
1,2-Dichloroethane-D4	0.0501	0.0500	100	80-120	
Toluene-D8	0.0539	0.0500	108	73-132	
4-Bromofluorobenzene	0.0521	0.0500	104	58-152	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Orders : 468230, 468230 **Project ID:** 1130018201

Lab Batch #: 920605 **Sample:** 468230-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 21:34

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0497	0.0500	99	74-126	
1,2-Dichloroethane-D4	0.0458	0.0500	92	80-120	
Toluene-D8	0.0486	0.0500	97	73-132	
4-Bromofluorobenzene	0.0523	0.0500	105	58-152	

Lab Batch #: 920711 **Sample:** 468230-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/14/13 16:42

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0497	0.0500	99	74-126	
1,2-Dichloroethane-D4	0.0449	0.0500	90	80-120	
Toluene-D8	0.0514	0.0500	103	73-132	
4-Bromofluorobenzene	0.0561	0.0500	112	58-152	

Lab Batch #: 920711 **Sample:** 468230-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/14/13 21:50

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0485	0.0500	97	74-126	
1,2-Dichloroethane-D4	0.0455	0.0500	91	80-120	
Toluene-D8	0.0559	0.0500	112	73-132	
4-Bromofluorobenzene	0.0530	0.0500	106	58-152	

Lab Batch #: 920430 **Sample:** 642378-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/13/13 02:19

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	60.5	50.0	121	70-130	
1-Chlorooctane	103	100	103	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Orders : 468230, 468230 **Project ID:** 1130018201

Lab Batch #: 920605 **Sample:** 642513-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/13/13 12:08

SURROGATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0530	0.0500	106	74-126	
1,2-Dichloroethane-D4	0.0493	0.0500	99	80-120	
Toluene-D8	0.0504	0.0500	101	73-132	
4-Bromofluorobenzene	0.0534	0.0500	107	58-152	

Lab Batch #: 920711 **Sample:** 642567-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/14/13 12:42

SURROGATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0469	0.0500	94	74-126	
1,2-Dichloroethane-D4	0.0423	0.0500	85	80-120	
Toluene-D8	0.0519	0.0500	104	73-132	
4-Bromofluorobenzene	0.0516	0.0500	103	58-152	

Lab Batch #: 920430 **Sample:** 642378-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/13/13 02:41

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	55.4	50.0	111	70-130	
1-Chlorooctane	98.2	100	98	70-130	

Lab Batch #: 920605 **Sample:** 642513-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/13/13 11:18

SURROGATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0524	0.0500	105	74-126	
1,2-Dichloroethane-D4	0.0576	0.0500	115	80-120	
Toluene-D8	0.0528	0.0500	106	73-132	
4-Bromofluorobenzene	0.0528	0.0500	106	58-152	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Orders : 468230, 468230 **Project ID:** 1130018201

Lab Batch #: 920711 **Sample:** 642567-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/14/13 10:56

SURROGATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0487	0.0500	97	74-126	
1,2-Dichloroethane-D4	0.0414	0.0500	83	80-120	
Toluene-D8	0.0507	0.0500	101	73-132	
4-Bromofluorobenzene	0.0511	0.0500	102	58-152	

Lab Batch #: 920430 **Sample:** 642378-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 08/13/13 03:03

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	63.3	50.0	127	70-130	
1-Chlorooctane	101	100	101	70-130	

Lab Batch #: 920430 **Sample:** 468230-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 03:46

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	62.7	49.6	126	70-130	
1-Chlorooctane	109	99.1	110	70-130	

Lab Batch #: 920605 **Sample:** 468228-008 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 18:10

SURROGATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0478	0.0500	96	74-126	
1,2-Dichloroethane-D4	0.0412	0.0500	82	80-120	
Toluene-D8	0.0495	0.0500	99	73-132	
4-Bromofluorobenzene	0.0540	0.0500	108	58-152	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Orders : 468230, 468230 **Project ID:** 1130018201

Lab Batch #: 920711 **Sample:** 468186-003 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/14/13 17:29

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0500	0.0500	100	74-126	
1,2-Dichloroethane-D4	0.0497	0.0500	99	80-120	
Toluene-D8	0.0533	0.0500	107	73-132	
4-Bromofluorobenzene	0.0582	0.0500	116	58-152	

Lab Batch #: 920430 **Sample:** 468230-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 04:08

TPH by Texas1005 Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	58.9	49.8	118	70-130	
1-Chlorooctane	104	99.5	105	70-130	

Lab Batch #: 920605 **Sample:** 468228-008 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/13/13 18:36

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0537	0.0500	107	74-126	
1,2-Dichloroethane-D4	0.0476	0.0500	95	80-120	
Toluene-D8	0.0530	0.0500	106	73-132	
4-Bromofluorobenzene	0.0532	0.0500	106	58-152	

Lab Batch #: 920711 **Sample:** 468186-003 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 08/14/13 17:55

BTEX-MTBE by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0495	0.0500	99	74-126	
1,2-Dichloroethane-D4	0.0406	0.0500	81	80-120	
Toluene-D8	0.0554	0.0500	111	73-132	
4-Bromofluorobenzene	0.0598	0.0500	120	58-152	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Blank Spike Recovery

Project Name: Water Line Replacement Sharpstown II Area

Work Order #: 468230 **Project ID:** 1130018201

Lab Batch #: 920605 **Sample:** 642513-1-BKS **Matrix:** Solid

Date Analyzed: 08/13/2013 **Date Prepared:** 08/13/2013 **Analyst:** SAD

Reporting Units: mg/kg **Batch #:** 1 **BLANK /BLANK SPIKE RECOVERY STUDY**

BTEX-MTBE by SW 8260B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
MTBE	<0.00500	0.500	0.622	124	68-138	
Benzene	<0.00100	0.100	0.104	104	62-132	
Toluene	<0.00100	0.100	0.108	108	66-124	
Ethylbenzene	<0.00100	0.100	0.113	113	71-134	
m,p-Xylenes	<0.00200	0.200	0.223	112	69-128	
o-Xylene	<0.00100	0.100	0.106	106	72-131	

Lab Batch #: 920711 **Sample:** 642567-1-BKS **Matrix:** Solid

Date Analyzed: 08/14/2013 **Date Prepared:** 08/14/2013 **Analyst:** SAD

Reporting Units: mg/kg **Batch #:** 1 **BLANK /BLANK SPIKE RECOVERY STUDY**

BTEX-MTBE by SW 8260B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
MTBE	<0.00500	0.500	0.544	109	68-138	
Benzene	<0.00100	0.100	0.102	102	62-132	
Toluene	<0.00100	0.100	0.0966	97	66-124	
Ethylbenzene	<0.00100	0.100	0.112	112	71-134	
m,p-Xylenes	<0.00200	0.200	0.213	107	69-128	
o-Xylene	<0.00100	0.100	0.102	102	72-131	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

BS / BSD Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Order #: 468230, 468230 **Project ID:** 1130018201

Analyst: PKH **Date Prepared:** 08/12/2013 **Date Analyzed:** 08/13/2013

Lab Batch ID: 920430 **Sample:** 642378-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<50.0	1000	990	99	1000	984	98	1	70-130	30	
C12 - C28 Diesel Range Hydrocarbons	<50.0	1000	941	94	1000	907	91	4	70-130	30	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Order # : 468230 **Project ID:** 1130018201

Lab Batch ID: 920605 **QC- Sample ID:** 468228-008 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/13/2013 **Date Prepared:** 08/13/2013 **Analyst:** SAD

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
MTBE	<0.0116	1.16	1.25	108	1.16	1.38	119	10	68-138	25	
Benzene	<0.00232	0.232	0.264	114	0.232	0.244	105	8	62-132	25	
Toluene	<0.00232	0.232	0.247	106	0.232	0.249	107	1	66-124	25	
Ethylbenzene	<0.00232	0.232	0.287	124	0.232	0.257	111	11	71-134	25	
m,p-Xylenes	<0.00465	0.465	0.549	118	0.465	0.501	108	9	69-128	25	
o-Xylene	<0.00232	0.232	0.253	109	0.232	0.240	103	5	72-131	25	

Lab Batch ID: 920711 **QC- Sample ID:** 468186-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/14/2013 **Date Prepared:** 08/14/2013 **Analyst:** SAD

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX-MTBE by SW 8260B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
MTBE	<0.00627	0.627	0.675	108	0.621	0.661	106	2	68-138	25	
Benzene	<0.00125	0.125	0.124	99	0.124	0.133	107	7	62-132	25	
Toluene	0.0245	0.125	0.140	92	0.124	0.146	98	4	66-124	25	
Ethylbenzene	0.00163	0.125	0.132	104	0.124	0.146	116	10	71-134	25	
m,p-Xylenes	0.00748	0.251	0.252	97	0.248	0.293	115	15	69-128	25	
o-Xylene	0.00262	0.125	0.122	96	0.124	0.133	105	9	72-131	25	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Water Line Replacement Sharpstown II Area

Work Order # : 468230 **Project ID:** 1130018201

Lab Batch ID: 920430 **QC- Sample ID:** 468230-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/13/2013 **Date Prepared:** 08/12/2013 **Analyst:** PKH

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<58.0	1160	1120	97	1160	1090	94	3	70-130	30	
C12 - C28 Diesel Range Hydrocarbons	<58.0	1160	1030	89	1160	1030	89	0	70-130	30	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Sample Duplicate Recovery

Project Name: Water Line Replacement Sharpstown II Area

Work Order #: 468230

Lab Batch #: 920409 **Project ID:** 1130018201

Date Analyzed: 08/12/2013 17:21 **Date Prepared:** 08/12/2013 **Analyst:** ANS

QC- Sample ID: 468228-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	15.5	15.3	1	20	

Lab Batch #: 920409

Date Analyzed: 08/12/2013 17:21 **Date Prepared:** 08/12/2013 **Analyst:** ANS

QC- Sample ID: 468228-013 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	14.4	13.9	4	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

XENCO Laboratories

☐ 4143 Greenbriar Drive, Stafford, TX 77477 **281-240-4200**
☐ 5332, Blackberry Drive, San Antonio, TX 78238 **210-509-3334**
☐ 9701 Harry Hines Blvd., Dallas, TX 75220 **214-902-0300**
☐ 12600 West I-20 East, Odessa, TX 79765 **432-563-1800**

Serial #: 324253 / Page of

Company-City: GEOTEST ENGINEERING, INC **Phone:** 713 2660588.

Lab Only: 468230-U

Project Name-Location: Water line Replacement Sharpstown II Area ☐ Previously done at XENCO **Project ID:** 1130018201

TAT: ASAP 5h 12h 24h 48h 3d 5d 7d 10d 21d Standard TAT is project specific.
It is typically 5-7 Working Days for level II and 10+ Working days for level III and IV data.

Proj. State: TX AL, FL, GA, LA, MS, NC, NJ, PA, SC, TN, UT Other **Proj. Manager (PM)**

E-mail Results to ☐ PM and nkolli@geotesteng.com **Fax No:**

Invoice to ☑ Accounting ☐ Inc. Invoice with Final Report ☐ Invoice must have a P.O.
Bill to:

Quote/Pricing: **P.O. No:** ☐ Call for P.O.

Reg Program: UST DRY-CLEAN Land-Fill Waste-Disp NPDES DW **TRRP**
QAPP Per-Contract CLP AGCEE NAVY DOE DOD USACE OTHER:

Special DLs (GW DW QAPP MDLs RLs See Lab PM Included Call PM)

Sampler Name Tiffany Murray **Signature**

#	Sample ID	Sampling Date	Time	Depth ft" In" m	Matrix	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	VOA: Full-List (BTEX-MTBE) EtOH Oxyg VOHs VOAs	VOA: PP TCL DW Appdx-1 Appdx-2 CALL Other:	PAHs SIM 8310 8270	TX-1005 DRO GRO MA EPH MA VPH	SVOCs: Full-List DW BN&AE TCLP PP Appdx-2 CALL	OC Pesticides PCBs Herbicides OP Pesticides	Metals: RCRA-8 RCRA-4 Pb 13PP 23TAL Appdx 1 Appdx2	SPLP - TCLP (Metals VOCs SVOCs Pest. Herb. PCBs)	EDB / DBCP	TPH	TATASAP 5h 12h 24h 48h 3d 5d 7d 10d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold Samples (Surcharges will apply and are pre-approved)	Sample Clean-ups are pre-approved as needed	Remarks	#
1	EB-1 S-7	8-5-13		12-14	S		/	2				/									/						1
2	EB-2 S-6	8-5-13		10-12	S		/	2				/									/						2
3	EB-3 S-5	8-5-13		8-10	S		/	2				/									/						3
4	EB-4 S-6	8-5-13		10-12	S		/	2				/									/						4
5	EB-5 S-8	8-5-13		14-15	S		/	2				/									/						5
6	EB-6 S-8	8-5-13		14-15	S		/	2				/									/						6
7																											7
8																											8
9																											9
10																											10

Remarks: From: / Rcv. by: / Date / Addn:

#	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1	1) [signature]	8/8/13 10:20	2) [signature]	8-8-13 10:31
2	3)		4)	
3	5) [signature]	8-8-13 16:30	6) [signature]	8-8-13 16:30

Total Containers per COC: Cooler Temp: 3.4 °C

Otherwise agreed on writing. Reports are the Intellectual Property of XENCO until paid. Samples will be held 30 days after final report is e-mailed unless hereby requested. Rush Charges and Collection Fees are pre-approved if needed.

Preservatives: Various (**V**), HCl pH<2 (**H**), H2SO4 pH<2 (**S**), HNO3 pH<2 (**N**), Asbc Acid&NaOH (**A**), ZnAc&NaOH (**Z**), (Cool, <4C) (**C**), None (**NA**), See Label (**L**), Other (**O**)
Cont. Size: 4oz (**4**), 8oz (**8**), 32oz (**32**), 40ml VOA (**40**), 1L (**1**), 500ml (**5**), Tedlar Bag (**B**), Various (**V**), Other **Cont. Type:** Glass Amb (**A**), Glass Clear (**C**), Plastic (**P**), Various (**V**)
Matrix: Air (**A**), Product (**P**), Solid (**S**), Water (**W**), Liquid (**L**)

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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Geotest Engineering, Inc.

Date/ Time Received: 08/08/2013 04:30:00 PM

Work Order #: 468230

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R-31

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	3.4	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**No**	
#5 Custody Seals intact on sample bottles?	**No**	
#6 *Custody Seals Signed and dated?	**No**	
#7 *Chain of Custody present?	**Yes**	
#8 Sample instructions complete on Chain of Custody?	**No**	No time listed on COC or jars
#9 Any missing/extra samples?	**Yes**	Received one set voa vials marked trip blank, logged in as 468230-007
#10 Chain of Custody signed when relinquished/ received?	**Yes**	
#11 Chain of Custody agrees with sample label(s)?	**Yes**	
#12 Container label(s) legible and intact?	**Yes**	
#13 Sample matrix/ properties agree with Chain of Custody?	**Yes**	
#14 Samples in proper container/ bottle?	**Yes**	
#15 Samples properly preserved?	**Yes**	
#16 Sample container(s) intact?	**Yes**	
#17 Sufficient sample amount for indicated test(s)?	**Yes**	
#18 All samples received within hold time?	**Yes**	
#19 Subcontract of sample(s)?	**No**	
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	**N/A**	
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	**N/A**	
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: AM	PH Device/Lot#:

Checklist completed by: Angel Morales Date: 08/09/2013

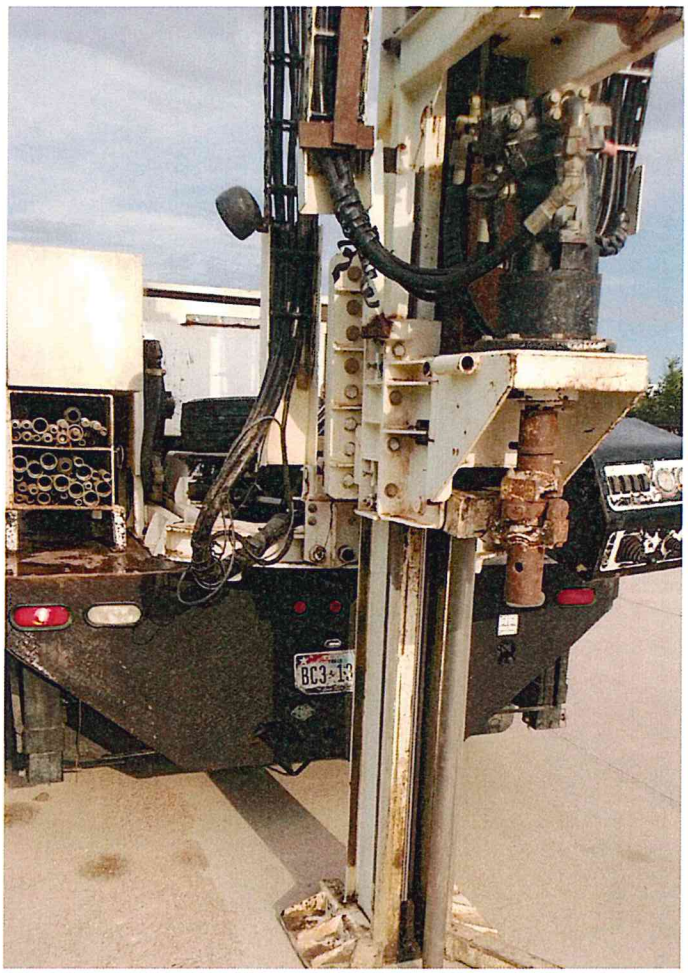
Checklist reviewed by: Debbie Simmons Date: 08/09/2013

APPENDIX C

PHOTOGRAPHS OF DRILLING ACTIVITIES

Picture 1: Soil Sample at EB-2.

Picture 2: Extruded Sample at EB-2



Picture 3: Drilling boring at EB-4.

Job No.: 1130018201 FIGURE C-2

APPENDIX D

QUALIFICATIONS OF ENVIRONMENTAL
PROFESSIONAL PARTICIPATING
IN PHASE II ESA

Naresh Kolli, P.E.
Assistant Project Manager

EDUCATION

- **Master of Engineering** in Civil Engineering (Geotechnical Engineering)
  McNeese State University, Lake Charles, LA, July 2005.
- **Bachelor of Engineering** in Civil Engineering
  Kakatiya University, India, June 2002.

PROFESSIONAL REGISTRATION

Texas 2012 Civil Engineering

RELEVANT PROJECT EXPERIENCE:

Mr. Naresh Kolli, is an Assistant Project Manager at Geotest Engineering, Inc. He has over 8 years of experience in the civil, geotechnical and environmental field and has worked on various projects involving high rise office buildings to single story commercial buildings, warehouses, schools and government projects, Phase I & II Environmental Site Assessments, site reconnaissance and geological and rock profile studies. His responsibilities include coordination of drilling and sampling of soil borings and supervision of laboratory testing, performing engineering analyses and preparation of geotechnical as well as Phase I and II Environmental Site Assessment reports.

- Phase II ESA – Reconstruction of Long Point Road – Houston, Texas
- Phase I ESA – South Point Park and Ride – Houston, Texas
- Phase I ESA – 11730 Sam Houston Parkway, Houston, Texas
- Phase I ESA – Historic Holman Street Reconstruction Project – Houston, Texas.
- Phase I ESA – 18" Waterline Loop Alignment – Pasadena, Texas
- Phase I ESA – 5107 Griggs Road – Houston, Texas
- Phase I ESA – Yale Street Detention Basin – Houston, Texas
- Phase I ESA – Astoria Boulevard – Houston, Texas
- Phase I ESA – Fourth ward Street reconstruction – Houston, Texas
- Phase I and II – 5216 Almeda Road – Houston, Texas
- Phase I ESA – Waterline Replacements Timbergrove Area – Houston, Texas
- Phase I ESA – Waterline Replacements Glenwood Forest Area – Houston, Texas
- Phase I and Phase II ESA – Waterline Replacements Fulton North Area – Houston, Texas
- Phase I ESA – Pavement & Drainage Improvements along Witter Street – Pasadena, Texas
- Phase I ESA – Craigmont Estates Detention Pond – City of Baytown, Texas
- Phase I ESA – Beltway 8 & Feeder Road Drainage Improvements – Pasadena, Texas
- Phase I ESA – Pump & Lift Station Renewal & Replacements; Fairway Lift Station – Houston, Texas
- Phase I ESA – Pump & Lift Station Renewal & Replacements; Grenshaw Lift Station – Houston, Texas
- Phase I ESA – 18" Sanitary Sewer at George Bush IAH
- Phase I ESA – Pump & Lift Station Renewal & Replacement – Post Oak #1 Lift Station – Houston, Texas