LIMITED PHASE II
ENVIRONMENTAL SITE ASSESSMENT REPORT

(FINAL)

MEMORIAL DRIVE PAVING
HOUSTON, HARRIS COUNTY, TEXAS
CSJ NO. 0912-70-082

PREPARED FOR:

CIVILTECH ENGINEERING

BY:

BERG♦OLIVER ASSOCIATES, INC.
HOUSTON, TEXAS

REPORT NO: 7312H-P2 (Rev 1)
SEPTEMBER 2014

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September 11, 2014

CivilTech Engineering
Attn: Michael D. Lacy, PE
11821 Telge Road
Cypress, Texas 77429

RE: Limited Phase II Environmental Site Assessment (ESA) Report
Memorial Drive Paving Project
Houston, Harris County, Texas
CSJ No. 0912-70-082

BOA Project No.: 7312H-P2

Dear Mr. Lacy:

EXECUTIVE SUMMARY

Berg◆Oliver Associates, Inc. is pleased to present our report summarizing the findings and conclusions of the Limited Phase II ESA conducted on the Memorial Drive Paving Project in Houston, Harris County, Texas. The following provides a brief summary of the Phase II ESA:

Field activities were conducted on July 2, 3, 8, 9 and 10, 2014 by BOA representative Sasha Ross. The scope of work proposed included up to twenty-nine (29) soil borings and up to nine groundwater samples, however two (2) previously planned soil borings (SB-1 & SB-17) were cancelled due to the presence of many underground structures. The depths that borings were completed to were contingent on the depth of proposed utility excavation along the two-mile stretch of Memorial Drive and vary along the project alignment. The City of Houston (COH) Chapter 11 requirements include an additional five feet in depth added to those utility excavation depths. In all, twenty-seven (27) soil borings were completed to varying depths of 14-25 feet below ground surface (bgs) at the sites of *Recognized Environmental Conditions* (RECs) identified in the previously completed Phase I ESA (Phase I ESA, *BOA, PN 7312H-P1*, November 2013). The REC sites include nine (9) Leaking Petroleum Storage Tank (LPST) facilities, one (1) Dry Cleaning (DRYC) facility, and three (3) historical known or potential fueling station facilities. The proposed boring locations are depicted in Figures 2 through 5. Soil and groundwater samples were obtained for laboratory analysis of chemicals of concern (COC) associated with fueling stations and/or dry-cleaning operations.

Soil Laboratory Analytical

Based on the sampling and laboratory analytical results, six (6) REC locations are considered to be Potentially Petroleum Contaminated Areas (PPCA) as defined by City of Houston (COH) Guide Specification 02105, Section 1.04-B (2005).

PID readings at all soil boring locations were insignificant with values ranging between 0-6.6 ppm. However, laboratory analysis reported detections of chemicals of concern (COC) for the following samples:

1) Groundwater Sample GW-2 (at soil boring location SB-2) (14002 Memorial Drive): Elevated MTBE value in groundwater.

   PPCA Station **109+00** to Station **111+00**

2) Soil Sample SB-4 (14360 Memorial Drive): Elevated MTBE value at 21-22 ft bgs.

   PPCA Station **76+50** to Station **77+50**

3) Soil Sample SB-10 (14557 Memorial Drive): Elevated TPH values at 16-17 ft. bgs and J-values for acetone, 1,2-Dichloroethane, and chloroform.

   PPCA Station **59+00** to Station **61+00**

4) Soil Sample SB-11 (14557/14565 Memorial Drive): Elevated TPH values 16-17 ft. bgs.

   PPCA Station **59+00** to Station **61+00**

5) Soil Sample SB-14 (14603 Memorial Drive): J-values for TPH at 23-24 ft. bgs.

   PPCA Station **56+00** to Station **57+00**

6) Soil Sample SB-26 (14754 Memorial Drive): J-values for Benzene at 13-14 ft.t bgs.

   PPCA Station **40+30** to Station **41+20**

7) Soil Sample SB-27 (14803 Memorial Drive): J-values for TPH at 17-18 ft. bgs.

   PPCA Station **33+50** to Station **34+50**

Groundwater

Groundwater samples were proposed to be collected at nine (9) sample locations (SLs) along the project alignment. An attempt was made to obtain one groundwater sample in the nine (9) sample location (SL) groupings (see *Appendix D table*); however, ground water samples were not collected in every SL grouping due to depth of completion with no presence of groundwater or a groundwater sample already taken for that grouping. During the Phase II ESA, groundwater was collected at six (6) soil boring locations in depths between 17 to 25 ft. bgs, the remaining four (4) locations either did not exhibit groundwater in the soil boring or was in a SL already sampled. All groundwater samples were reported by the laboratory as non-detect with the exception of GW-2 (at soil boring location SB-2) which reported a MTBE concentration of 0.0036mg/kg. Although this resultant value is lower than the TCEQ Tier 1 Groundwater PCLs, the presence of the contaminant makes this location a PPCA. Additional details are presented in *Section 5.3*.

Recommendations

Based on the laboratory analytical results and field observations of the Limited Phase II Environmental Site Assessment for the Memorial Drive Paving Project in Houston, Harris County, Texas, the following is noted:

The laboratory analytical results indicate that the soil is not significantly hydrocarbon-affected and is not a concern to construction workers; however, these locations may impact design considerations in regards to PPCAs as described in the COH Guide Specifications 02105 and 02120.

No further investigation appears necessary at this time.

If you have any questions or comments, please contact me at 281-589-0898.

Regards,

Sasha Ross,
Project Manager

Ben Price, PG
Vice President

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1.0 INTRODUCTION

Select subsurface utility replacement and road repaving are proposed for a two-mile portion of Memorial Drive. The limits of the project are from Eldridge Parkway to North Kirkwood Road. Location maps of the investigated areas of the project alignment (Key Map©® and United States Geological Survey Topographic Map), Figure 1A and 1B define the project area and are presented in the Figures attachments of this report. The project area will typically be referred to as the "project alignment" in this document.

2.0 SCOPE-OF-WORK

Berg♦Oliver Associates, Inc. (BOA) was retained by CivilTech Engineering, Inc. to evaluate whether the project alignment has been impacted by thirteen (13) previously reported RECs which include nine (9) leaking petroleum storage tank (LPST) facilities, three (3) potential ghost fueling stations, and one (1) historical dry cleaner facility listed on the Dry Cleaning Remediation Program (DCRP) along the project alignment. The scope of work is based on the ASTM guidelines for Phase II environmental Site Assessment ASTM E 1903-11 and the City of Houston Chapter 11 Geotechnical and Environmental guidelines. The facilities previously identified as RECs are as follows:

1) **14002 Memorial Drive**- Map ID# 1- Shell Retail/TPG 225 05/ Star Enterprises, LPST facility.
2) **14360 Memorial Drive**- Map ID# 25- Diamond Shamrock 527, LPST facility.
3) **14403 Memorial Drive**- Map ID# 13- Texaco Service Station/ Sammy's Memorial Texaco, LPST facility.
4) **14565 Memorial Drive**- Map ID# 3- Former Conoco Station, LPST facility.
5) **14602 Memorial Drive**- Map ID# 19- Exxon Mobil 62899/ Westside Memorial 66, LPST facility.
6) **14603 Memorial Drive**- Map ID# 18- Mobil 12BLX/ 12BLX/ Mobil Oil 00BLX/ Mobil Oil Corporation, LPST facility.
7) **14732 Memorial Drive**- Map ID# 24- Mr. Pride Car Wash/ Bubbles Hand Car Wash, LPST facility.
8) **14754 Memorial Drive**- Map ID# 10- Texaco Station/ Texaco/ Memorial Citgo, LPST facility.
9) **14803 Memorial Drive**- Map ID# 20- Chevron 60107979/ Chevron, LPST facility.
10) **14557 Memorial Drive**- Map ID# 7- Love Dry Cleaners/ Your Valet Cleaners, is on the DCRP list.

11) **14702 Memorial Drive: Grochett's Texaco Service (1972)**
The facility is considered a ghost facility as it was not reported in the regulatory database, and does not currently exist in this location but was reported in the 1972 city directories.

12) **14556 Memorial Drive: Conoco Car Wash (1972, 1980)**
This facility appears to have an address discrepancy as it is listed twice in the regulatory database. The second listing is listed as 14565 Memorial Drive which is previously mentioned above and appears to be the correct address. *(Duplicate facility)*

13) **14477 Memorial Drive: Seven- Eleven (1972)**
The facility is considered a ghost facility as it was not reported in the regulatory database, and does not currently exist in this location but was reported in 1972 city directories.

Sampling and analysis was conducted to determine whether contamination is present and the potential concentrations of the contaminant(s) in the soil and/or groundwater at the project alignment. The Phase II ESA consisted of the following:

- Conducted an investigation of facilities with the potential for environmental conditions as identified in a previously conducted Phase I ESA for the project alignment.
- Completed a Texas Excavation Safety (Texas 811) notification.
- Placing soil borings for soil sampling at equidistant locations to provide adequate coverage of the investigated facilities or area and to depths based on proposed construction activities. Submitted soil samples for laboratory analytical testing based upon field observations (visual and olfactory) and field screening.
- Conducted continuous field screening of soil cores at 2.0-foot intervals utilizing a photo-ionization detector (PID) calibrated to 100 ppm isobutylene standard.
- Completed twenty-seven (27) soil borings along the project alignment.
- Submitted soil samples for laboratory analyses of Volatile Organic Compounds (VOCs), Methyl Tert-Butyl Ether/Benzene, Toluene, Ethyl-benzene and total Xylenes (MTBE/BTEX) and/or Total Petroleum Hydrocarbons (TPH).
- Detailed site assessment activities, reviewed laboratory analytical results and presented the results and conclusions in a Limited Phase II ESA investigation report.

A thorough attempt has been made to identify soil and groundwater contamination at the proposed locations; however, there is a possibility that contamination may have escaped detection due to the limitations of this study, or the presence of undetected or unreported environmental releases. BOA reserves the right to alter our conclusions and recommendations based on our review of any information obtained after the date of this report. Our professional services have been performed

using the degree of care and skill ordinarily exercised, under similar conditions by environmental consultants practicing in this or similar localities. No warranty, express or implied is made as to the professional information included in this report.

3.0 PHASE II ESA ACTIVITIES

On July 2, 3, 8, 9, and 10, 2014, BOA completed twenty-seven (27) of the twenty-nine (29) proposed soil borings. Samples SB-1 through SB-29 were collected at thirteen (13) REC locations (one (1) duplicate facility) to determine if TCEQ reported leaks have affected the project alignment. Soil borings SB-1 and SB-17 were not completed due to the presence of multiple underground structures. The depths that borings were completed to were contingent on the depth of proposed utility excavation along the two-mile stretch of Memorial Drive and vary along the project alignment. The City of Houston (COH) Chapter 11 requirements include an additional five feet in depth added to those utility excavation depths. The location and depth of the borings were based on proposed construction activities and requirements as described in the City of Houston Chapter 11 Design Manual. Following the COH requirements, soil borings along the project alignment were completed to depths varying between 14-25 feet bgs. Design plans include excavations on both the north and the south side of Memorial Drive.

Cores were pre-cut from the project alignment before drilling could commence due to the thickness of the roadway which was found to be up to 14" in depth including the stabilizing shell or sand layer. Soil borings were advanced utilizing direct push technologies inclusive of a truck-mounted hydraulically-driven sampling device consisting of a 2-inch diameter, 4-foot long stainless steel sampling spoon. Soil samples were continuously collected at 2-foot intervals and field screened utilizing a photo-ionization detector (PID). PID readings ranged between 0-6.6 ppm at the REC locations. Geologic stratigraphy (lithology) and subsurface characteristics were recorded by the field geologist. Soil Boring Locations and Data Summary in Appendix D provide site details. Soil boring locations are presented in Figures 6-10. Soil boring logs are presented in Appendix A.

Prior to the initial soil boring and between each 4-foot advancement, all sampling devices were thoroughly cleaned and decontaminated using a hospital grade detergent, water and distilled water. Soil samples were obtained by personnel utilizing appropriate sampling tools and wearing clean, disposable gloves. Disposable nitrile gloves were changed between each sample collection. As instructed by the COH Chapter 11 Design Manual, samples were to be obtained by the zone exhibiting the highest PID/OVA reading. If the highest PID/OVA readings are non-detect, the sample shall be collected from the soil-groundwater interface. If no saturated zone exists, then the sample shall be collected from the bottom of the boring. PID readings included samples of the soil boring collected from each 2-foot interval and placed in a disposable bag for head space screening. Soil samples were then collected based on the previously mentioned requirements, and placed into two separate 4-ounce sterile glass containers equipped with Teflon-lined lids and submitted to the laboratory for testing. Each container was filled to capacity with soil to limit the amount of headspace present. All samples were labeled in

the field and stored at approximately 4°C prior to submission to Accutest Laboratories in Houston, Texas for laboratory analyses. Chain-of-custody documentation accompanied the samples in accordance with standard quality assurance and quality control measures. Boreholes were plugged with bentonite plugging material and surface patched using appropriate material such as asphalt or no shrink concrete if the boring was taken within the road surface in accordance with standard drilling practice.

3.1 SOIL SAMPLING

Engineering plans show that excavation is proposed on the northern and southern side of the road in most locations; therefore, some soil borings were taken on both sides of Memorial Drive from the designated REC facility. Soils were classified using the Unified Soil Classification System (USCS). The subsurface soils in general, appeared to consist of clayey silt, silty clay, and clay. Specific soil descriptions and field observations for the soil borings are included on the boring logs contained in Appendix A. Soil classifications presented on the boring logs are based on visual field classification and have not been verified by geotechnical laboratory tests. Actual soil conditions may differ from those presented in the boring logs. PID values for all soil borings ranged between 0.0-6.6 ppm, which is an insignificant value and may have been attributed to vehicle exhaust of the drill rig and passing vehicles; therefore, samples were taken at the soil-groundwater interface near the bottom of the boring as described by COH's Chapter 11, Geotechnical and Environmental requirements.

Photographs of field activities are presented in Appendix C, Soil Boring Location Maps are presented in Figures 3-7, and a Soil Boring Locations and Data Summary table is presented in Appendix D.

1) **14002 Memorial Drive-** Map ID# 1- Shell Retail/TPG 225 05/Star Enterprises

   - Soil boring SB-1 was proposed to be drilled on Kirkwood Road, adjoining the eastern boundary of this facility. Underground structures prevented the boring from being completed at this location.
   - Soil borings SB-2 and SB-3 were completed to 23.0 ft. bgs on the southern boundary of this facility. PID readings ranged between 0.1-3.1 ppm at these locations. Groundwater was encountered between 17.5-20.0 ft. bgs on sample SB-2, and at 15.0 ft. bgs on sample SB-3. Soil samples were taken at this soil-groundwater interface.
   - Groundwater sample GW-2 was taken at boring location SB-2. See Section 3.1 and 5.3 for additional details.

2) **14360 Memorial Drive**- Map ID# 25- Diamond Shamrock 527, currently Valero fueling station

   - Soil borings SB-4 and SB-5 were completed to 22.0 ft. bgs on the

northern boundary of this facility. PID readings were non-detect (0.0 ppm) at these locations. Groundwater was not encountered to 23.0 ft. bgs. Soil samples were taken at the bottom of the boring.

- A third boring, SB-6 overlaps with Sammy's Memorial Texaco south of this facility at 14403 Memorial Drive.

3) **14403 Memorial Drive-** Map ID# 13- Texaco Service Station/ Sammy's Memorial Texaco

- Soil boring SB-6 was proposed to be completed to 22.0 ft. bgs, but met refusal at 20.5 ft. bgs south of the facility across Memorial Drive. PID readings ranged between 0.4-0.9 ppm at this location. Groundwater was not encountered to 20.5 ft. bgs. Soil samples were taken near the bottom of the boring at 19.5-20.5 ft. bgs.
- Two borings, SB-4 and SB-5 overlap with the Valero fueling station north of this facility at 14360 Memorial Drive.

4) **14477 Memorial Drive**- Seven- Eleven (1972), currently a business plaza.

- Soil borings SB-7 and SB-8 were completed to 18.0 ft. bgs on the northern boundary of this facility. PID readings were non-detect (0.0 ppm) at these locations. Groundwater was encountered between 12.0-13.0 ft. bgs on sample SB-7 and a soil sample was taken at this soil-groundwater interface. Groundwater was not encountered on sample SB-8 to 18 ft. bgs; therefore the sample was taken at the bottom of the boring.
- Soil boring SB-9 was completed to 18.0 ft. bgs across Memorial Drive from the northern boundary of this facility. PID readings were non-detect (0.0 ppm) at this location. Groundwater was not encountered to 18 ft. bgs; therefore the sample was taken at the bottom of the boring.
- Groundwater sample GW-6 was taken at boring location SB-7. See Section 3.1 and 5.3 for additional details.

5) **14557 Memorial Drive**- Map ID# 7- Love Dry Cleaners/ Your Valet Cleaners

- Soil borings SB-10 and SB-11 were completed to 17.0 ft. bgs on the northern boundary of this facility. PID readings ranged between 0.0-1.1 ppm at these locations. Groundwater was encountered between 9.0-17.0 ft. bgs on sample SB-10 and a soil sample was taken at the soil-groundwater interface at 9.0-10.0 ft. bgs. Groundwater was not encountered on sample SB-11 to 17.0 ft. bgs; therefore the sample was taken at the bottom of the boring.
- One boring, SB-12 overlaps with the former Conoco fueling station west of this facility at 14565 Memorial Drive.

- Groundwater sample GW-5 was taken at boring location SB-10. See Section 3.1 and 5.3 for additional details.

6) **14565 Memorial Drive**- Map ID# 3- Former Conoco Station (Recently closed and demolished facility)

- Soil borings SB-12 and SB-13 were completed to 17.0 ft. bgs on the northern boundary of this facility. PID readings ranged between 0.5-1.0 ppm at these locations. Groundwater was not encountered to 17.0 ft. bgs; therefore the samples were taken near the bottom of the borings.
- One boring, SB-11 overlaps with the former Love/Your Valet dry cleaning east of this facility at 14557 Memorial Drive.
- 14556 Memorial Drive- Conoco Car Wash (1972, 1980)
  This facility is assumed to have an address discrepancy as it is listed twice in the regulatory database with an address of 14565 Memorial Drive and appears to be the same facility.

7) **14602 Memorial Drive**- Map ID# 19- Exxon Mobil 62899/ Westside Memorial 66 (Currently, Phillips 66 fueling station)

- Soil boring SB-15 was completed to 25.0 ft. bgs on the southern boundary of this facility. PID readings ranged between 1.4-6.6 ppm at this location. Groundwater was encountered between 22.0-23.0 ft. bgs and a soil sample was taken at this soil-groundwater interface.
- Soil borings SB-14 and SB-16 overlaps with the former Mobil fueling station previously located at 14603 Memorial Drive, south of this facility.
- Groundwater sample GW-1 was taken at boring location SB-15. See Section 3.1 and 5.3 for additional details.

8) **14603 Memorial Drive**- Map ID# 18- Mobil 12BLX/ 12BLX/ Mobil Oil 00BLX/ Mobil Oil Corporation (Currently, Taco Bell and Starbucks)

- Soil borings SB-14 and SB-16 were completed to 25.0 ft. bgs on the northern boundary of this facility. PID readings ranged between 0.3-2.8 ppm at this location. Groundwater was encountered between 23.0-24.0 ft. bgs on boring SB-14 and a soil sample was taken at this soil-groundwater interface. Groundwater was not encountered to 25.0 ft. bgs on boring SB-16; therefore the sample was taken near the bottom of the boring.
- Soil boring SB-15 overlaps with the former Mobil fueling station previously located at 14603 Memorial Drive, south of this facility.
- Soil boring SB-17 was proposed to be drilled on the northern boundary of the Starbucks coffee facility, adjoining the western

boundary of Taco Bell. Underground and overhead structures prevented the boring from being completed at this location as options on boring re-location were limited.

9) **14702 Memorial Drive-** Grochett's Texaco Service (1972) (Ghost facility, possibly in the current Walgreens location in a shopping plaza)

This facility appears to have been a fueling station reported in the City Directories possibly located at/or adjoining east of Hungry's Restaurant based on surrounding address locations, but exact location is unknown. This facility was not reported in the regulatory database, and does not currently exist in this location. Secondary possible location is at 14754 Memorial at the former Citgo location, borings SB-24 through SB-26, which is also being tested.

- Soil borings SB-18 and SB-19 were completed to 23.0 ft. bgs on the southern boundary of this facility. PID readings ranged between 0.1-1.0 ppm at this location. Groundwater was not encountered to 23.0 feet bgs on boring SB-18; therefore the sample was taken near the bottom of the boring. Groundwater was encountered between 18.0-19.0 ft. bgs on boring SB-19 and a soil sample was taken at this soil-groundwater interface.
- Soil boring SB-20 was completed south across Memorial Drive from this facility. PID readings ranged between 0.3-1.2 ppm at this location. Groundwater was not encountered to 23.0 ft. bgs, and a soil sample was taken near the bottom of the boring.
- Groundwater sample GW-3 was taken at boring location SB-19. See Section 3.1 and 5.3 for additional details.

10) **14732 Memorial Drive**- Map ID# 24- Mr. Pride Car Wash/ Bubbles Hand Car Wash

- Soil borings SB-21 and SB-23 were completed to 23.0 ft. bgs on the southern boundary of this facility. PID readings ranged between 0.3-1.1 ppm at these locations. Groundwater was not encountered to 23.0 ft. bgs, and soil samples were taken near the bottom of the borings.
- Soil boring SB-22 was completed south across Memorial Drive from this facility. PID readings were 0.1 ppm at all boring depths at this location. Groundwater was encountered between 16.0-24.0 ft. bgs, and a soil sample was taken at this soil-groundwater interface.
- Groundwater sample GW-4 was taken at boring location SB-22. See Section 3.1 and 5.3 for additional details.

11) **14754 Memorial Drive**- Map ID# 10- Texaco Station/ Texaco/ Memorial Citgo (recently demolished)

- Soil boring SB-24 was completed to 14.0 ft. bgs east of this facility across Thickett Lane. PID readings were non-detect (0.0 ppm) at this location. Groundwater was not encountered to 14.0 ft. bgs, and the soil sample was taken near the bottom of the boring.
- Soil borings SB-25 and SB-26 were completed to 14.0 ft. bgs south across Memorial Drive from this facility. PID readings ranged between 0.0-0.3 ppm at these locations. Groundwater was not encountered to 14.0 ft. bgs, and the soil sample was taken near the bottom of the boring.

12) **14803 Memorial Drive**- Map ID# 20- Chevron 60107979/ Chevron (Currently, Carmello's Italian restaurant mobile office building and employee parking)

- Soil borings SB-27, SB-28, and SB-29 were completed to 20.0 ft. bgs on the northern boundary of this facility. PID readings ranged between 0.1-1.7 ppm at these locations. Groundwater was not encountered to 20.0 ft. bgs and the soil samples were taken near the bottom of the borings.

3.1 GROUNDWATER SAMPLING

Due to the multiple locations of the REC facilities and their close proximity to each other, nine (9) groundwater sample locations (SLs) were designated to cover multiple facilities. Of the nine (9) SLs, six (6) SLs were sampled. The remaining four (4) locations did not exhibit groundwater in the soil boring or was in a SL already sampled. Groundwater sampling was conducted at soil borings exhibiting a soil-groundwater interface to determine the presence or absence of Chemicals of Concern (COC) in groundwater at the investigated REC sites. Temporary piezometer wells were installed in selected borings as follows: GW-1 (SB-15), GW-2 (SB-2), GW-3 (SB-19), GW-4 (SB-22), GW-5 (SB-10), and GW-6 (SB-7). A low-flow pump with adjustable flow-rate was utilized to collect samples and purge sediment before collections. Three (3) Forty (40) milliliter (mL) vials of groundwater, preserved with hydrochloric acid (HCL), were collected for each COC as related to each REC site such as benzene, toluene, ethyl-benzene and total xylenes (BTEX), methyl tert-butyl ether (MTBE), volatile organic compounds (VOCs), and/or total petroleum hydrocarbons (TPH). The samples were stored on ice until submitted to laboratory.

See Soil Boring Locations and Data Summary Table in Appendix D for additional details.

4.0 REGULATORY FRAMEWORK

The Texas Commission on Environmental Quality (TCEQ) administers the Environmental Protection Agency (EPA) regulations and enforcement in Texas. It has additionally established its own standards for environmental compliance. The Texas Risk

Reduction Program (TRRP) administered by TCEQ, as provided for in 30 TAC Chapter 350, addresses levels of regulated compounds and allowable levels of such contaminants to protect human health, safety, and the environment. The TCEQ TRRP applies to closures, corrective actions, and remediation efforts subject to the jurisdiction of the TCEQ. The TRRP, whether residential or commercial, contains provisions for Remedy Standard A (no physical controls required) or Remedy Standard B (physical controls required). Implementation of Remedy Standard A or Remedy Standard B is a tiered process, as described in general terms below:

- Tier 1 is a risk-based analysis to derive non site-specific protective concentration limits (PCLs) for complete or reasonably anticipated to be complete exposure pathways. Tier 1 is based on default exposure factors and affected property parameters, and assumes exposure occurs at, above, or below the source area (i.e., no lateral transport) (TCEQ Subchapter D Section 350.75 (b)).
- Tier 2 is a risk-based analysis to derive site-specific PCLs for complete or reasonably anticipated to be completed exposure pathways utilizing site-specific exposure factors, as allowable, and/or affected property parameters and Tier 1 equations. Tier 2 PCLs may also include lateral transport considerations (TCEQ, Subchapter D Section 350.75 (c)).
- Tier 3 is a risk-based analysis to derive site-specific PCLs for complete or reasonably anticipated to be completed exposure pathways. Tier 3 PCLs are based on measured natural attenuation factors and/or natural attenuation factor models/equations other than those provided for Tier 1 or 2; and may also include site-specific exposure factors, as allowable, and/or affected property parameters (TCEQ, Subchapter D Section 350.75 (d)).

The below provided soil PCLs are concentrations which are protective of human health and the environment:

* $^{GW}Soil_{Ing}$ * Groundwater Soil Ingestion ($^{GW}Soil_{Ing}$) is the groundwater protection standard for either residential or commercial use. Concentration in soil is assumed protective of groundwater considering cross-medial contamination of groundwater from contaminated soil. This is the critical PCL for special handling practices of the soil for the project.

* $^{Tot}Soil_{Comb}$ * The Total Soil Combined ($^{Tot}Soil_{Comb}$) PCLs are a combined exposure standard for residential use. The PCL considers cross-media contamination of human ingestion, inhalation and dermal pathways. This is the critical PCL for construction worker exposure concentrations.

*	$^{GW}GW_{Ing}$	*	The groundwater ingestion pathway ($^{GW}GW_{Ing}$) PCL is the groundwater protection standard for either residential or commercial use. The $^{GW}GW_{Ing}$ PCLs are the same as the Federal Drinking Water Standards Maximum Concentration Limits (MCLs). This will be utilized to determine whether the groundwater is acceptable for surface discharge.

Values that do not meet or exceed the TCEQ TRRP PCLs are not a concern to construction workers; however soil borings with detections (including J-values) are defined as Potentially Petroleum Contaminated Areas (PPCA) as defined in the City of Houston (COH) Guide Specification document 02105 and will require action levels as described in the COH Guide Specification documents 02105 and 02120.

5.0 SOIL LABORATORY ANALYTICAL

A total of twenty-seven (27) soil samples were collected from the twenty-seven (27) soil borings and were submitted to a certified laboratory for analyses. The soil samples were analyzed for total petroleum hydrocarbons (TPH) by Texas Commission on Environmental Quality (TCEQ) Texas Method 1005, volatile organic compounds (VOCs) and/or methyl tert-butyl ether/benzene, toluene, ethyl-benzene and total xylenes (MTBE/BTEX) by EPA Method SW846-8260. The following details the laboratory methodology:

5.1 LABORATORY ANALYTICAL METHODS

Methyl tert-butyl ether/benzene, toluene, ethyl-benzene, and xylene (MTBE/BTEX) and/or VOCs by SW-846 EPA Method 8260: This laboratory analysis employs a gas chromatograph (GC) equipped with a Mass Spectrometer (MS) detector to detect and quantify certain regulated, volatile organic compounds in a soil or water sample. Compounds on this list include certain chlorinated solvents used in dry cleaning and printing processes, refined petroleum products such as gasoline and diesel, and others. This method can also be used to test for BTEX compounds, which are a portion of the entire VOC list. These compounds are common components of most formulated gasolines, and their presence is a reliable indicator that a gasoline release has occurred.

Total petroleum hydrocarbons (TPH) by TCEQ Method 1005: This laboratory analysis utilizes a GC equipped with a flame ionization detector (FID) to quantify levels of petroleum compounds or derivatives in the range from C6 to C28, in a soil or groundwater medium. Results are reported in two to three distinct ranges, from C6 to C12, >C12 to C28 and >C28 to C35. This allows some interpretation as to the possible source of the release, based upon the indicated carbon range. Petroleum hydrocarbons are not necessarily hazardous or toxic. The analysis is designed to determine if TPH is present, and to quantify the level of petroleum hydrocarbons. This analysis is especially useful as a broad category

procedure, and may indicate additional testing for the specific hazardous or toxic constituents which may be present and contribute to the TPH levels assessed. Some constituents of petroleum hydrocarbons may be hazardous or toxic, high levels of TPH require additional testing of the sample area.

5.2 SOIL LABORATORY ANALYTICAL RESULTS

Soil samples SB-1 through SB-29, were submitted for analysis of TPH and MTBE/BTEX for LPST facilities with the exception of samples SB-10 and SB-11 which were additionally tested for TPH and VOCs for dry cleaning facilities and samples SB-1 and SB-17 which were cancelled due to various structures underground. The resulting laboratory analytical data was compared to the TCEQ TRRP Tier 1 Protective Concentration Limits (PCLs). Due to the limited number of soil sample collected along the project alignment, the PPCA station ranges are approximate. Lab Analysis reports are presented in Appendix B.

All soil samples are reported to be below TCEQ TRRP Tier 1 PCLs and are reported as non-detect (U) with the exception of:

1) Sample SB-4 (14360 Memorial Drive):
    - An elevated MTBE value of 0.0075 mg/kg is reported for the sample taken at 21-22 ft bgs. This reported level is below the TCEQ action level with a groundwater value of 0.24 mg/L.
    - The approximate station range is from 76+30 to 77+40.
2) SB-10 (14557 Memorial Drive):
    - Elevated TPH values are reported for the sample taken at 16-17 ft. bgs with values of C_{12}-C_{28}= 54.7 mg/kg, C_{28}-C_{35}=92.3 mg/kg, for a total C_6-C_{35}= 147 mg/kg. J-values are reported for acetone at 0.0266 mg/kg J, 1,2-Dichloroethane at 0.0014 mg/kg J, and chloroform at 0.00923 mg/kg J.
    - Acetone is an analyte that is typically laboratory introduced (related to sample preparation-solvents used to extract the analyzed substrate); therefore the detection is not a recognized environmental condition to the project and additional discussion is not warranted. A "J" value is an estimated concentration between the method detection limit (MDL) and practical quantitation limit (PQL).
    - The approximate station range is from 60+00 to 61+00.
3) SB-11 (14557/14565 Memorial Drive):
    - Elevated TPH values are reported for the sample taken at 16-17 ft. bgs with values of C_{28}-C_{35}=30.8 mg/kg, for a total C_6-C_{35}= 30.8 mg/kg.

- The approximate station range is from 59+00 to 60+00.

4) SB-14 (14602 Memorial Drive):

- J-values for TPH are reported for the sample taken at 23-24 ft. bgs with values of C_{12}-C_{28}= 18.1 mg/kg J, for a total C_6-C_{35}= 18.1 mg/kg J.
- A "J" value is an estimated concentration between the method detection limit (MDL) and practical quantitation limit (PQL).
- The approximate station range is from 56+20 to 57+30.

5) SB-26 (14754 Memorial Drive):

- J-values for benzene are reported for the sample taken at 13-14 ft. bgs with a value of 0.0012 mg/kg J.
- A "J" value is an estimated concentration between the method detection limit (MDL) and practical quantitation limit (PQL).
- The approximate station range is from 40+30 to 41+20.

6) SB-27 (14803 Memorial Drive):

- J-values for TPH are reported for the sample taken at 17-18 ft. bgs with values of C_{12}-C_{28}= 16.0 mg/kg J, C_{28}-C_{35}=69.7 mg/kg J, for a total C_6-C_{35}= 85.7 mg/kg J.
- A "J" value is an estimated concentration between the method detection limit (MDL) and practical quantitation limit (PQL).
- The approximate station range is from 33+50 to 34+50.

5.3 GROUNDWATER LABORATORY ANALYTICAL RESULTS

Groundwater samples GW-1 through GW-6, were submitted for analysis of TPH and MTBE/BTEX for LPST facilities, with the exception of sample GW-5 which was also tested for TPH and VOCs for dry cleaning facilities. The resulting laboratory analytical data was compared to the TCEQ TRRP Tier 1 Groundwater PCLs.

All groundwater samples are reported to be below TCEQ TRRP Tier 1 PCLs and are reported as non-detect (U) with the exception of:

1) GW-2 (Soil Boring SB-2 14002 Memorial Drive):

- Reported MTBE concentration of 0.0036mg/kg. Although this resultant value is lower than the Groundwater PCL of $^{GW}GW_{Ing}$ 0.24 mg/kg, the presence of the contaminant makes this location a PPCA based on COH requirements.
- The approximate station range is from 109+00 to 111+00.

Lab Analysis Results are presented in Appendix B.

6.0 AIR MONITORING/WASTE MANAGEMENT PRACTICES

Based on the results of the Phase II ESA, the soil is not significantly hydrocarbon-affected and is not a concern to construction workers; however, the results in these locations may impact design considerations and it is recommended that the City of Houston (COH) Guide Specifications 02105 and 02120 are followed in regards to PPCA.

7.0 INVESTIGATION DERIVED WASTE

Two (2) composite soil samples of investigative derived waste (IDW) were collected from the contents of the 55-gallon drum of soil cores generated from the sampling activities. The composite soil sample was analyzed for MTBE/BTEX, VOC, and TPH. Based on the laboratory analytical results, sample IDW-1 reported a J-value of benzene at 0.00092 mg/kg J. This value is far below the TCEQ TRRP Tier 1 PCLs of 0.026 mg/kg; therefore the soil will be disposed of as general waste. A copy of the Lab Analysis Results is presented in APPENDIX B.

8.0 CONCLUSIONS

The purpose of the assessment was to determine the absence or presence and the concentration levels of contaminants associated with petroleum hydrocarbons and/or dry cleaning practices in soil and/or groundwater. We conclude that COCs do not meet or exceed the TCEQ TRRP PCLs for MTBE/BTEX, TPH, or VOCs in any soil or groundwater sample; however there are six (6) PPCAs that may impact construction design and activities.

9.0 RECOMMENDATIONS

Based on the laboratory analytical results and field observations of the Limited Phase II Environmental Site Assessment for the two-mile Memorial Drive paving project in Houston, Harris County, Texas, the soil is not significantly hydrocarbon-affected and is not a concern to construction workers; however, the results in these locations may impact design considerations and it is recommended that the City of Houston (COH) Guide Specifications 02105 and 02120 are followed in regards to PPCA.

The PPCAs and corresponding centerline stations are as follows:

1) Groundwater Sample GW-2 (at soil boring location SB-2) (14002 Memorial Drive): Elevated MTBE value in groundwater.

   PPCA Station **109+00** to Station **111+00**

2) Soil Sample SB-4 (14360 Memorial Drive): Elevated MTBE value at 21-22 ft bgs.

   PPCA Station **76+50** to Station **77+50**

3) Soil Sample SB-10 (14557 Memorial Drive): Elevated TPH values at 16-17 ft. bgs and J-values for acetone, 1,2-Dichloroethane, and chloroform.

   PPCA Station **59+00** to Station **61+00**

4) Soil Sample SB-11 (14557 Memorial Drive): Elevated TPH values 16-17 ft. bgs.

   PPCA Station **59+00** to Station **61+00**

5) Soil Sample SB-14 (14603 Memorial Drive): J-values for TPH at 23-24 ft. bgs.

   PPCA Station **56+00** to Station **57+00**

6) Soil Sample SB-26 (14754 Memorial Drive): J-values for Benzene at 13-14 ft.t bgs. PPCA Station **40+30** to Station **41+20**

7) Soil Sample SB-27 (14803 Memorial Drive): J-values for TPH at 17-18 ft. bgs.

   PPCA Station **33+50** to Station **34+50**

No further studies are recommended for the project alignment.

10.0 REFERENCES

1. Phase I Environmental Assessment Memorial Drive Paving Project: North Eldridge Parkway to North Kirkwood Road, BOA Project No. 7312H-P1, November 2013.

2. ASTM Standard Practice E1903 - 11 "Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process."

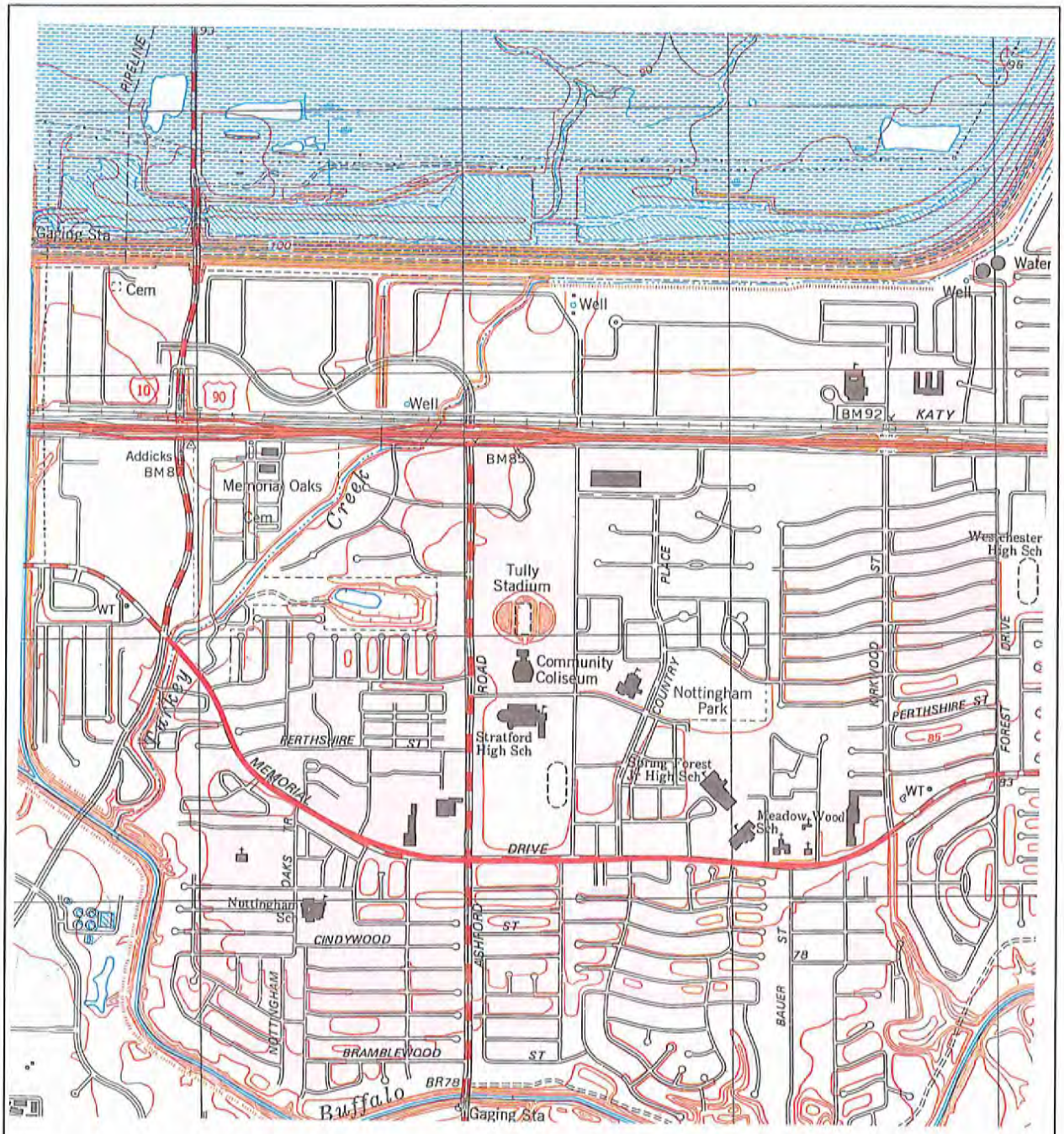
3. City of Houston, Department of Public Works and Engineering Infrastructure Design Manual Chapter 11 "Geotechnical and Environmental Requirements."

4. City of Houston Guide Specifications 02105 and 02120.

FIGURES 1-10

HARRIS COUNTY
TEXAS
KEY MAP
SITE
HOUSTON
HARRIS COUNTY
PASADENA
DEER PARK
LA PORTE
BAYTOWN
GALVESTON BAY
BEACH CITY
SEABROOK
KEMAH
MORGANS POINT
LEAGUE CITY
FRIENDSWOOD
PEARLAND
BROOKSIDE VILLG
SHOREACRES
JACINTO CITY
GALENA PARK
HUNTERS CREEK VILLAGE
JERSEY VILLAGE
HEDWIG VILLAGE
HUNTSVILLE
MONTGOMERY CO
BRAZORIA COUNTY
FORT BEND COUNTY
HOBBY AIRPORT
HOOKS AIRPORT
SUGAR LAND AIRPORT
ELLINGTON FIELD
BAKER RESERVOIR
LAKE HOUSTON
BUFFALO BAYOU
HUFFMAN - CLEVELAND
CROSBY EASTGATE
HUMBLE
KINGWOOD
ATASCOCITA
NORTH FWY
EAST FWY
SOUTH FWY
WEST FWY
SAM HOUSTON PKWY
BELTWAY 8
SPENCER HWY
PASADENA FWY
GULF FWY
HARDY TOLL RD
HARDY RD
GRANT
TOMBALL
STAGE COACH
ADDICKS
FAIRBANKS
BRIDGELAND
CYPRESS
KATY
KATY HOCKLEY
WALLER
MAYER
BETKA RD
SPRING CREEK
MONTGOMERY
ROSENBERG
BEASLEY
RICHMOND
MISSOURI CITY
STAFFORD
SUGAR LAND
THOMPSONS
ROSHARON
ALVIN
PEARLAND
LAKE JACKSON
ANGLETON
CLUTE
LAKE ROAD
BAY AREA BLVD
NASA PKWY
GENOA
CROSBY
HUFFMAN
HUMBLE
KINGWOOD
ATASCOCITA
CLEVELAND
PORTER
SPLENDORA
NEW CANEY
DAYTON
LIBERTY COUNTY
MONTGOMERY CO
WALLER
FORT BEND COUNTY
BRAZORIA COUNTY
GALVESTON BAY
BEACH CITY
SEABROOK
KEMAH
MORGANS POINT
LEAGUE CITY
FRIENDSWOOD
PEARLAND
BROOKSIDE VILLG
SHOREACRES
JACINTO CITY
GALENA PARK
HUNTERS CREEK VILLAGE
JERSEY VILLAGE
HEDWIG VILLAGE
HUNTSVILLE
MONTGOMERY CO
BRAZORIA COUNTY
FORT BEND COUNTY
HOBBY AIRPORT
HOOKS AIRPORT
SUGAR LAND AIRPORT
ELLINGTON FIELD
BAKER RESERVOIR
LAKE HOUSTON
BUFFALO BAYOU

FIGURE 1A



U.S. DEPARTMENT OF INTERIOR GEOLOGICAL SURVEY

HEDWIG VILLAGE QUADRANGLE

HARRIS COUNTY, TEXAS

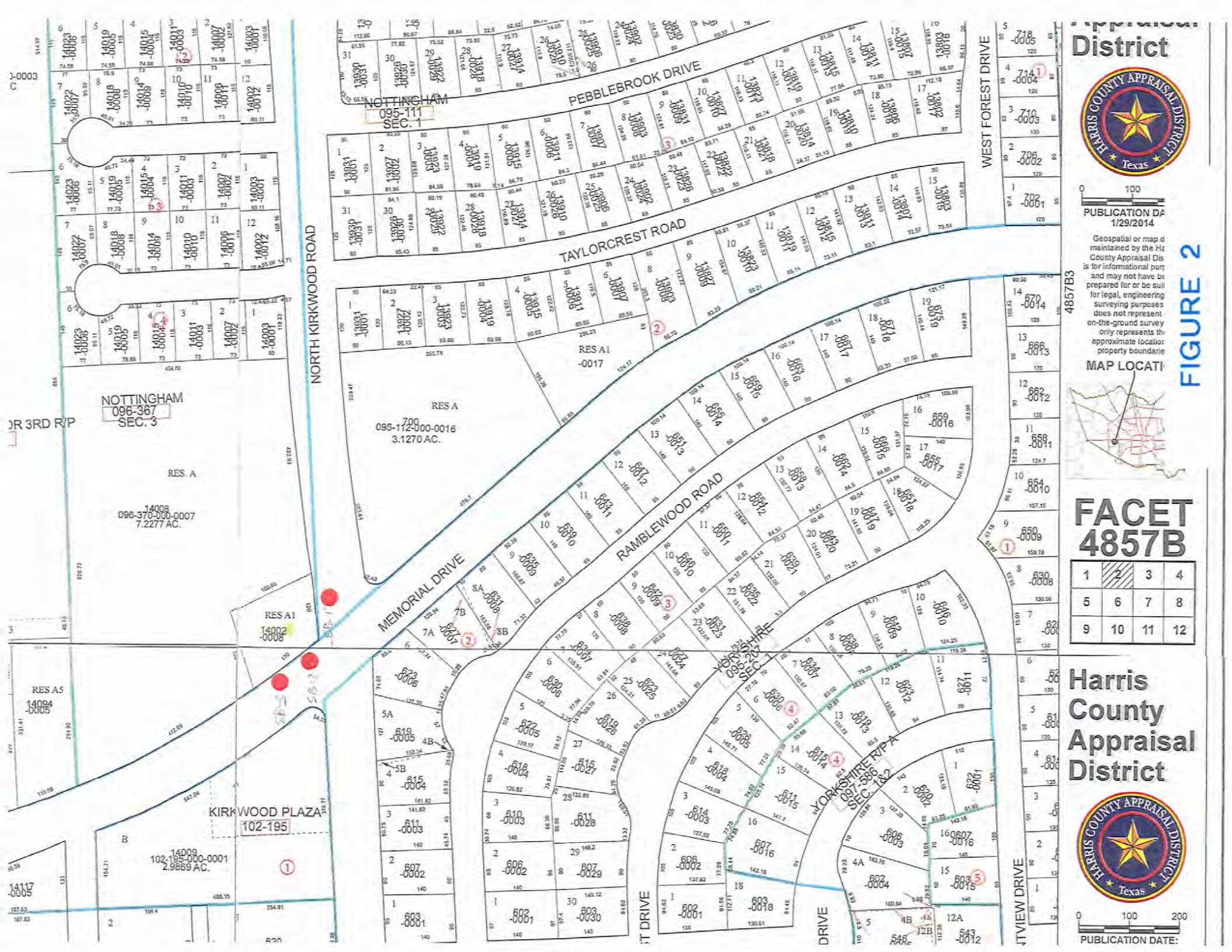
7.5 MINUTE SERIES (TOPOGRAPHIC)

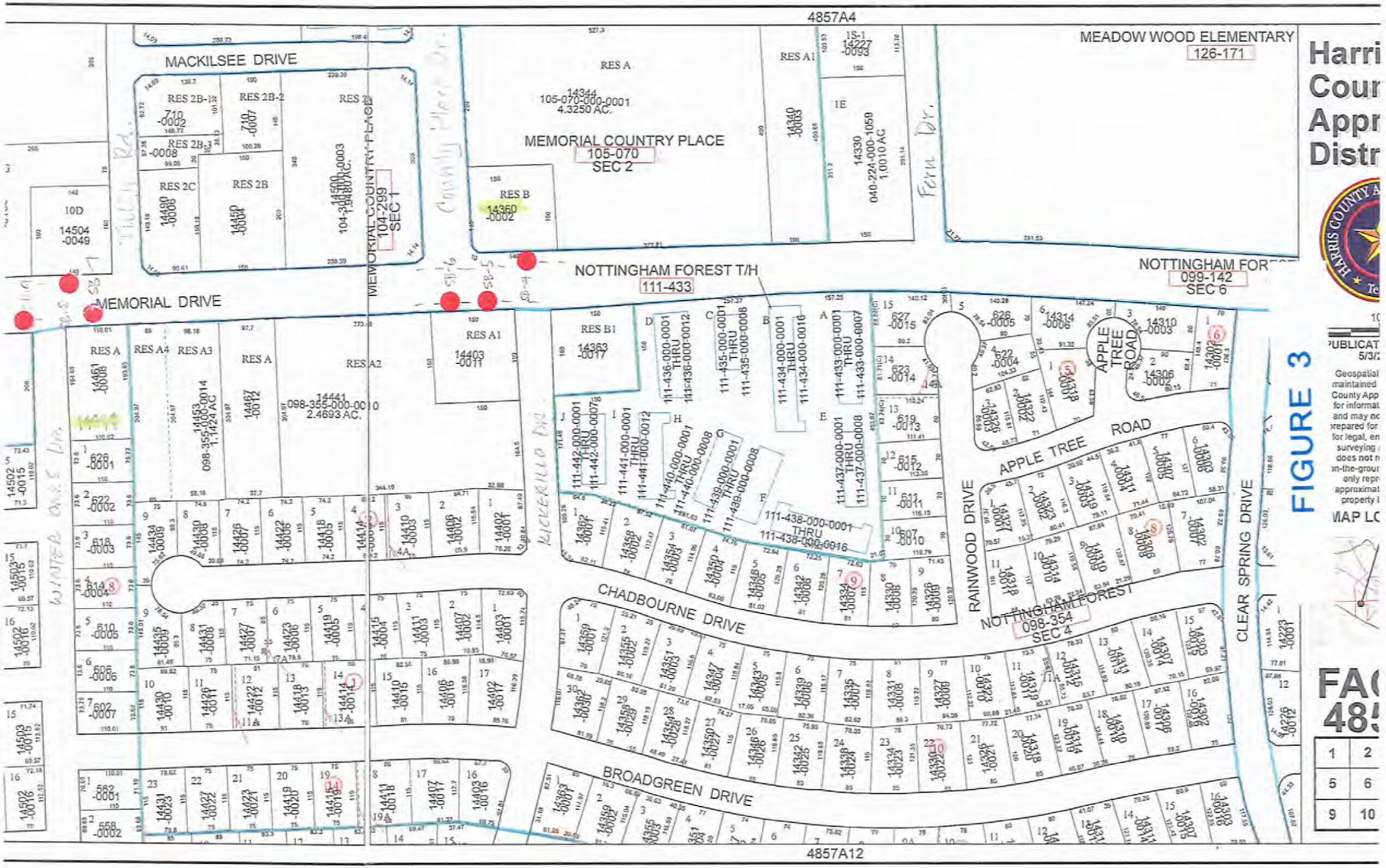
BOA Project Number #7312H

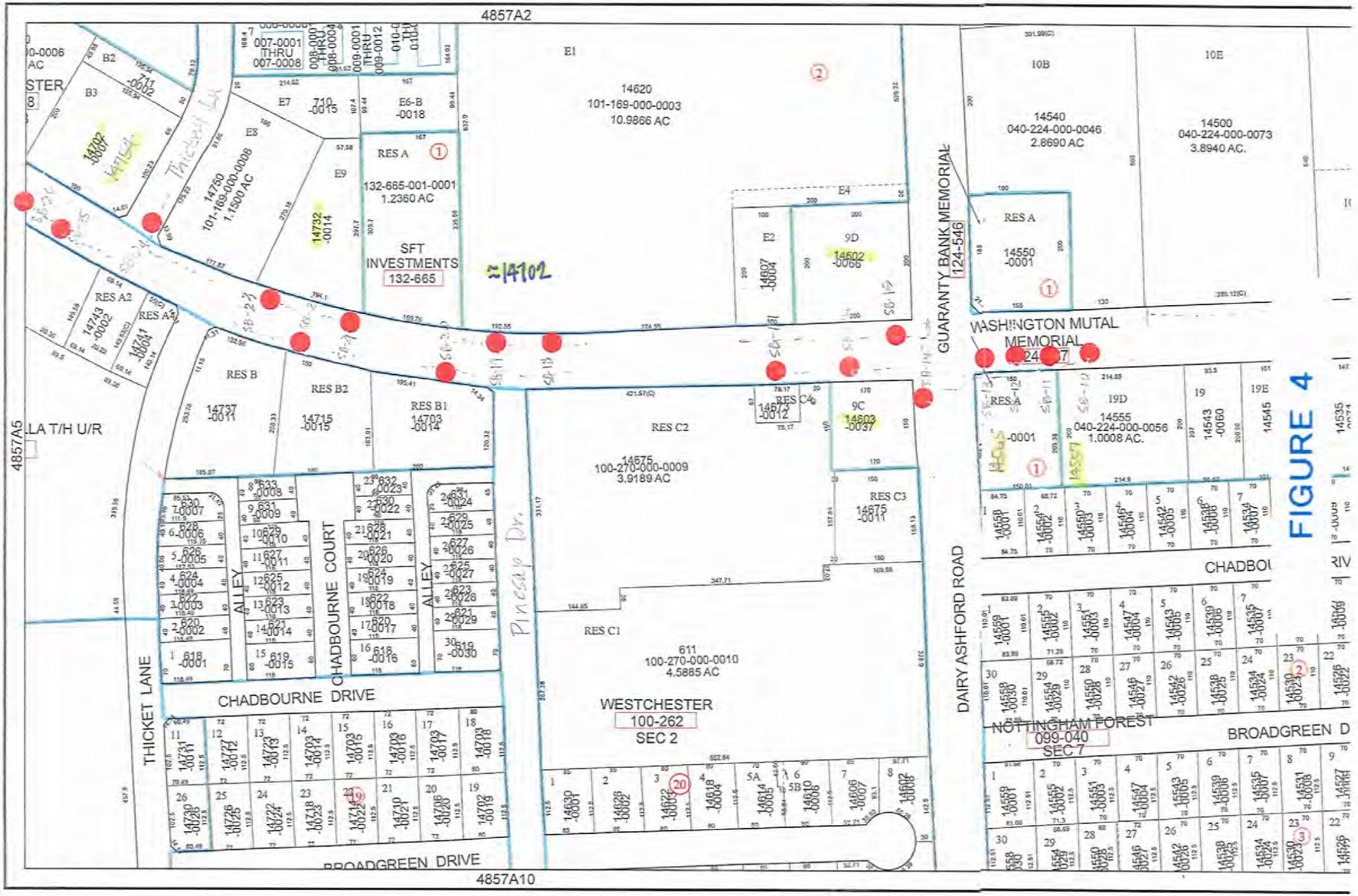
FIGURE 1B

LIVER ASSOCIATES, INC.

1995


PEBBLEBROOK DRIVE
TAYLORCREST ROAD
WEST FOREST DRIVE
NORTH KIRKWOOD ROAD
MEMORIAL DRIVE
RAMBLEWOOD ROAD
YORKSHIRE R/P A
KIRKWOOD PLAZA
102-195
NOTTINGHAM
095-111
SEC. 1
NOTTINGHAM
096-367
SEC. 3
YORKSHIRE
095-207
SEC. 1
YORKSHIRE R/P A
097-586
SEC. 1&2
RES A
095-112-000-0016
3.1270 AC.
RES A1
-0017
RES A
14008
096-370-000-0007
7.2277 AC.
RES A1
14002
-0008
RES A5
14094
-0005
14009
102-195-000-0001
2.9869 AC.
Harris County Appraisal District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
PUBLICATION DA
1/29/2014
MAP LOCATI
FIGURE 2
FACET
4857B
4857B3
PUBLICATION DATE:


4857A4
MACKILSEE DRIVE
MEADOW WOOD ELEMENTARY
126-171
RES A
14344
105-070-000-0001
4.3250 AC.
MEMORIAL COUNTRY PLACE
105-070
SEC 2
RES A1
RES B
14360
-0002
MEMORIAL COUNTRY PLACE
104-299
SEC 1
NOTTINGHAM FOREST T/H
111-433
NOTTINGHAM FOR
099-142
SEC 6
MEMORIAL DRIVE
RES A
RES A4
RES A3
RES A2
RES A1
14403
-0011
14441
098-355-000-0010
2.4693 AC.
RES B1
14363
-0017
APPLE TREE ROAD
RAINWOOD DRIVE
CLEAR SPRING DRIVE
CHADBOURNE DRIVE
BROADGREEN DRIVE
NOTTINGHAM FOREST
098-354
SEC 4
FIGURE 3
4857A12


4857A2
4857A5
4857A10
THICKET LANE
CHADBOURNE COURT
ALLEY
ALLEY
CHADBOURNE DRIVE
BROADGREEN DRIVE
PINEHILL Dr.
DAIRY ASHFORD ROAD
GUARANTY BANK MEMORIAL
124-546
WASHINGTON MUTAL
MEMORIAL
CHADBOU
NOTTINGHAM FOREST
BROADGREEN D
LA T/H U/R
14620
101-169-000-0003
10.9866 AC
14750
101-169-000-0008
1.1500 AC
14732
-0014
RES A
132-665-001-0001
1.2360 AC
SFT
INVESTMENTS
132-665
14702
14675
100-270-000-0009
3.9189 AC
611
100-270-000-0010
4.5885 AC
WESTCHESTER
100-262
SEC 2
099-040
SEC 7
14540
040-224-000-0046
2.8690 AC
14500
040-224-000-0073
3.8940 AC.
14555
040-224-000-0056
1.0008 AC.
FIGURE 4

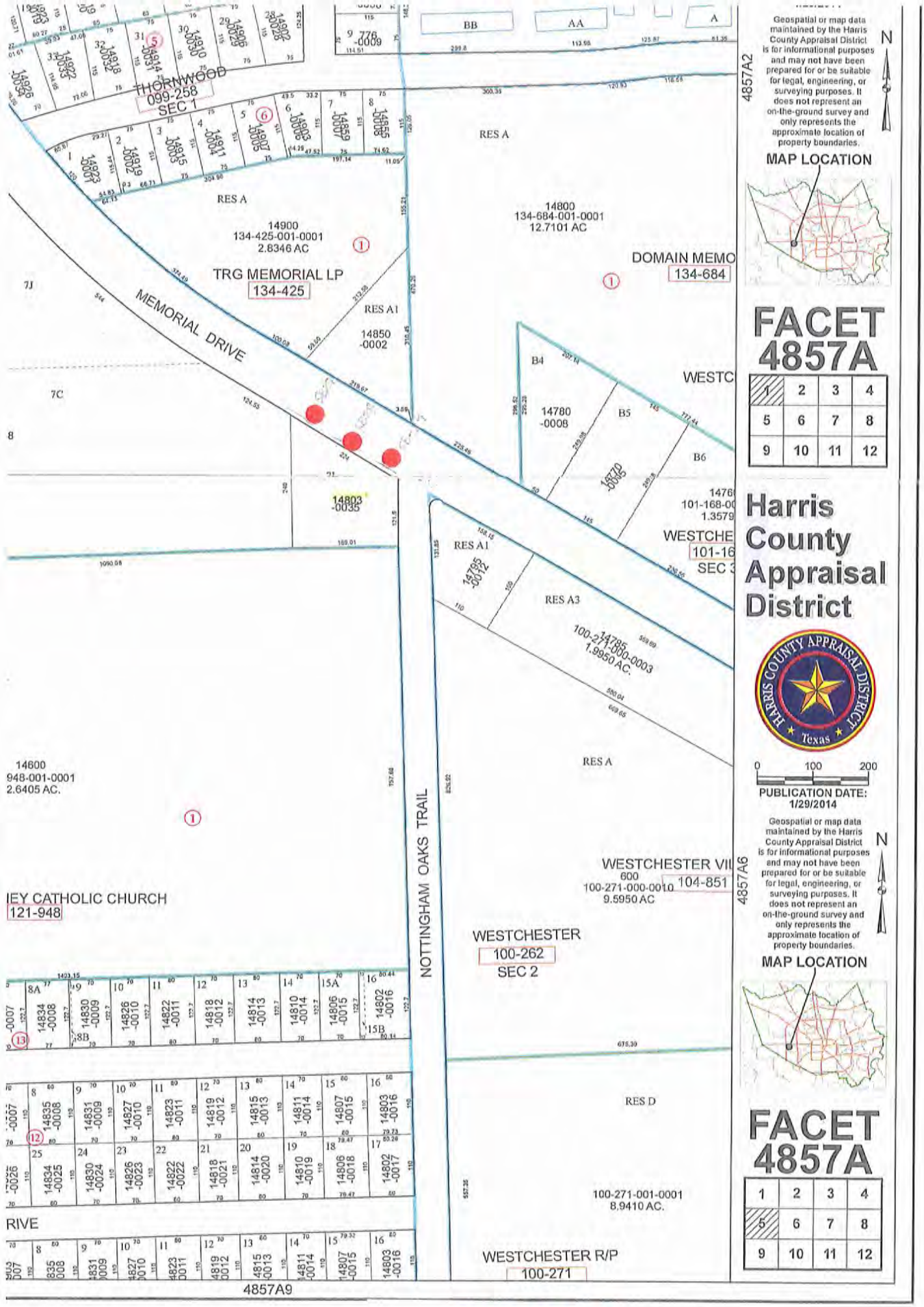

THORNWOOD
099-258
SEC 1
RES A
14900
134-425-001-0001
2.8346 AC
TRG MEMORIAL LP
134-425
MEMORIAL DRIVE
RES A1
14850
-0002
14800
134-684-001-0001
12.7101 AC
DOMAIN MEMO
134-684
WESTC
B4
B5
B6
14780
-0008
14770
-0005
14803
-0035
14776
101-168-00
1.3579
WESTCHE
101-16
SEC 3
RES A1
14795
-0012
RES A3
100-271-000-0003
1.9950 AC.
RES A
14600
948-001-0001
2.6405 AC.
NOTTINGHAM OAKS TRAIL
WESTCHESTER VII
600
100-271-000-0010
9.5950 AC
104-851
IEY CATHOLIC CHURCH
121-948
WESTCHESTER
100-262
SEC 2
RES D
100-271-001-0001
8.9410 AC.
WESTCHESTER R/P
100-271
4857A9
4857A2
4857A6
N
MAP LOCATION
FACET
4857A
1 2 3 4
5 6 7 8
9 10 11 12
Harris
County
Appraisal
District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
0 100 200
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.

FIGURE 5

FIGURE 6


Turkey Trail Crt.
Perthshire Rd.
Memorial Dr.
23+00
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00
38+00
39+00
sb-29
sb-28
sb-27
14803 Memorial
Nottingham Oaks Trl.
N
Sheet 3
LEGEND
Soil Boring Location (sb) / Groundwater Well (gw)
Soil Boring Location (sb) / Groundwater Well (gw) (Hydrocarbons Detected)
Soil Boring Location (sb) - Cancelled
Existing ROW
Proposed ROW
0 50 100 200
Feet


N
Sheet 4
LEGEND
Soil Boring Location (sb) / Groundwater Well (gw)
Soil Boring Location (sb) / Groundwater Well (gw) (Hydrocarbons Detected)
Soil Boring Location (sb) - Cancelled
Existing ROW
Proposed ROW
0 50 100 200 Feet
Memorial Dr.
Thicket Ln.
Pinesap Dr.
14754 Memorial
14732 Memorial
14702 Memorial
sb-24
sb-25
sb-26
sb-23
sb-21
sb-22/gw-4
sb-19/gw-3
sb-18
sb-20
sb-17
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
46+00
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00

FIGURE 7

FIGURE 8


N
14602 Memorial
sb-15/gw-1
sb-7/gw-6
Memorial Dr.
54+00
55+00
56+00
57+00
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
sb-9
sb-17
sb-16
sb-13
sb-12
sb-11
sb-10/gw-5
sb-14
14603 Memorial
14565 Memorial
14557 Memorial
14477 Memorial
Daisy Ashford St.
Winter Oaks Dr.
Sheet 5
LEGEND
Soil Boring Location (sb) / Groundwater Well (gw)
Soil Boring Location (sb) / Groundwater Well (gw) (Hydrocarbons Detected)
Soil Boring Location (sb) - Cancelled
Existing ROW
Proposed ROW
0 50 100 200
Feet


N
Tully Rd.
Country Place Dr.
14360
Memorial
sb-7/gw-6
sb-5
sb-4
69+00
70+00
71+00
72+00
73+00
74+00
75+00
76+00
77+00
78+00
79+00
80+00
81+00
82+00
83+00
84+00
Memorial Dr.
sb-9
sb-8
sb-6
14477
Memorial
Kickerillo Dr.
Rainwood Dr.
Sheet 6
LEGEND
Soil Boring Location (sb) / Groundwater Well (gw)
Soil Boring Location (sb) / Groundwater Well (gw) (Hydrocarbons Detected)
Soil Boring Location (sb) - Cancelled
Existing ROW
Proposed ROW
0 50 100 200
Feet

FIGURE 9

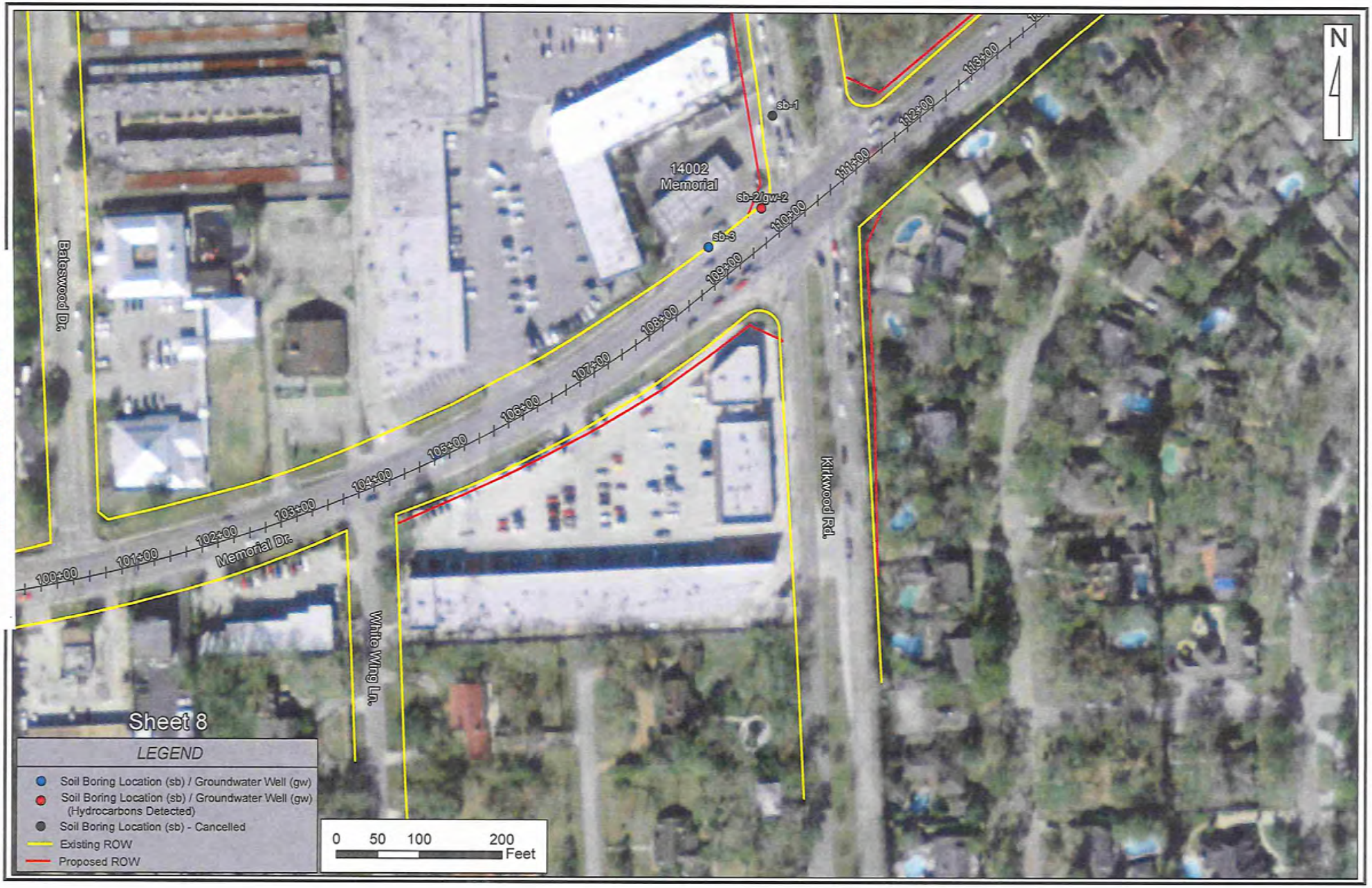

N
14002
Memorial
sb-1
sb-2/gw-2
sb-3
Bateswood Dr.
Memorial Dr.
White Wing Ln.
Kirkwood Rd.
100+00
101+00
102+00
103+00
104+00
105+00
106+00
107+00
108+00
109+00
110+00
111+00
112+00
113+00
Sheet 8
LEGEND
Soil Boring Location (sb) / Groundwater Well (gw)
Soil Boring Location (sb) / Groundwater Well (gw) (Hydrocarbons Detected)
Soil Boring Location (sb) - Cancelled
Existing ROW
Proposed ROW
0 50 100 200
Feet

FIGURE 10

APPENDIX A

Soil Boring Logs

PROJECT NO: 7312H-P2

SITE NAME: Shell Fueling Station

FACILITY ADDRESS: 14002 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-1 TEMP. WELL NUMBER :

DATE: (START / FINISH) 7/03/2014 9:10 am

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		8" Concrete Core	
5						
10					- Boring Location cancelled due to various underground structures drilling did not commence, probing indicated structures so no cores taken	
15					- Relocation of boring attempted onto nearby greenspace with no success	
20						
25						
30						
35						
40					Total Depth = _____ft	
45					Note: Groundwater was not encountered to ___ feet bgs.	

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: _____

SEAL MATERIAL: (TYPE/INTERVAL) _____

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Shell Fueling Station

☒ BOREHOLE ☒ MONITOR WELL

BORING NUMBER SB-2 TEMP. WELL NUMBER : GW-2

FACILITY ADDRESS: 14002 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon DATE: (START / FINISH) 7/03/2014 9:30am

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		14"= 9" Asphalt Core with 5" cement stabilized sand base	
0	0.8			CL	Tan silty clay w/ Fe streaks, Mg nodules, and calcareous deposits	
	0.5					
5	0.5					
	3.1					
	2.9					
10	2.1					
	2.3			CH	Grey to red silty clay with significant Fe streaks and abundant calcareous deposits	
15	1.3					
17	1.2		▼			
	1.2					
20	1.2					
	1.2					
25						
30						
35						
40						
45					Total Depth = 23 ft Note: Groundwater encountered at 17.5-22 feet bgs. Sample: 17.5-18.5 feet bgs	

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 23'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Shell Fueling Station

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-3 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14002 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon

DATE: (START / FINISH) 7/03/2014 10:36 am

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0					11" Asphalt Core	
	0.3					
	0.3				Tan silty clay w/ Fe streaks, Mg nodules occasional calcareous nodules	
5	0.3			CL		
	0.4					
	0.4					
10	0.1					
	0.1				Grey and red silty clay with significant Fe streaks and abundant calcareous deposits- (moisture at 15')	
15	0.1		▼	CH		
	0.1					
	0.1					
20	0.1				Red firm clay w/ calcareous nodules	
	0.1					
25						
30						
35						
40					Total Depth = 22 ft Note: Groundwater encountered at 17-19 feet bgs. Sample: 18-19 feet bgs	
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 22'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Sammy's Memorial Texaco/Former Diamond Shamrock

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-4 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14403/14360 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon DATE: (START / FINISH) 7/03/2014 11:28 am

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		14"= 8" Asphalt core with 6" cement stabilizing shell base	
0	0.0			CL	Brown to tan silty clay w/ Fe mottling and Mg nodules	
5	0.0					
	0.0					
10	0.0					
	0.0					
15	0.0			CL	Tan clay with abundant Fe streaks and occasional calcareous deposits	
	0.0					
20	0.0					
					Total Depth = 22 ft Note: No groundwater encountered to 22 feet bgs. Sample: 21-22 feet bgs	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 22'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Sammy's Memorial Texaco/Former Diamond Shamrock

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-5 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14403/14360 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon

DATE: (START / FINISH) 7/03/2014 1:05 pm

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		14"= 6" Asphalt core with 8" cement stabilizing shell base	
0	0.0					
	0.0					
5	0.0			CL	Dark grey to tan silty clay w/ occasional Fe streaks and occasional Mg nodules	
	0.0					
10	0.0					
	0.0					
15	0.0					
	0.0			CL	Tan clay with abundant Fe streaks and occasional to moderate calcarous deposits	
20	0.0					
					Total Depth = 22 ft Note: No groundwater encountered to 22 feet bgs. Sample: 21-22 feet bgs	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 22'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Sammy's Memorial Texaco/Former Diamond Shamrock

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-6 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14403/14360 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/10/2014 11:40 am

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0					8" Concrete core	
	0.9			CL	Dark grey to grey clay w/ Fe streaks and calcareous deposits	
	0.8					
5	0.3					
	0.5					
	0.4					
10	0.4					
	0.4					
15	0.4					
	0.5			CH	Bluish grey and Orange clay w/ calcareous deposits	
	0.4					
20	0.4					
25						
30						
35						
40						
45					Total Depth = 22 ft Note: No groundwater encountered to 22 feet bgs. Sample: 19.5-20.5 feet bgs	

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 22'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Strip Mall- Former Seven-Eleven

FACILITY ADDRESS: 14477 Memorial Drive

☒ BOREHOLE ☒ MONITOR WELL

BORING NUMBER : SB-7 TEMP. WELL NUMBER GW-6

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/10/2014 10:50 am

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0			CL	Silty clay w/orange Fe streaks and Mg nodules	
5	0.0					
	0.0					
	0.0					
10	0.0		▼			
	0.0			CH	Grey and red clay, wet	
15	0.0					
	0.0					
20						
25						
30						
35						
40						
45						

Total Depth = 18 feet bgs
Note: Groundwater encountered at 12-13 feet bgs.
Sample: 12.0-13.0 feet bgs

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 18'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Strip Mall- Former Seven-Eleven

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-8 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14477 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno DATE: (START / FINISH) 7/10/2014 10:30 am

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		15"= 6" Asphalt with 9" cement shell layer	
0	0.0			CL	Silty clay w/Fe streaks	
	0.0					
5	0.0					
	0.0			CH	Grey and red clay w/ calcareous deposits	
10	0.0					
	0.0					
15	0.0					
	0.0					
20						
25						
30						
35						
40						
45					Total Depth = 18 feet bgs Note: No groundwater encountered to18 feet bgs. Sample: 17.0-18.0 feet bgs	

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 18'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Strip Mall- Former Seven-Eleven

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER: : SB-9 TEMP. WELL NUMBER: ____

FACILITY ADDRESS: 14477 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno DATE: (START / FINISH) 7/10/2014 10:05 am

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		14.5"= 6" Asphalt with 8.5" cement stabilizing shell layer	
0	0.0					
	0.0			CL	Clay w/ Fe streaks, calcareous deposits, and Mg nodules	
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0					
15	0.0			CH	Grey and red clay w/ calcareous deposits	
	0.0					
20						
25						
30						
35						
40						
45					Total Depth = 18 feet bgs Note: No groundwater encountered to18 feet bgs. Sample: 17.0-18.0 feet bgs	

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 18'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Plaza Mall- Former Love/Your Valet Dry Cleaning Facility

☒ BOREHOLE ☒ MONITOR WELL

BORING NUMBER : SB-10 TEMP. WELL NUMBER : GW-5

FACILITY ADDRESS: 14557 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno DATE: (START / FINISH) 7/09/2014 3:40pm

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.1			CL	Grey silty clay w/red Fe streaks	
	0.2					
5	0.3					
	0.3					
	0.2			CH	Grey clay, with Fe streaks Saturated 9-16 feet bgs	
10	0.1					
	0.1					
15	0.0					
	0.0				Total Depth = 17 feet bgs Note: Groundwater encountered at 9-16 feet bgs. Sample: 9.0-10.0 feet bgs	
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH 17'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

7312H-P2

SITE NAME: Plaza Mall- Former Conoco & Love/Your Valet Dry Cleaning Facility

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER SB-11 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14557/14565 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/09/2014 3:20 pm

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	1.1		Ground Surface			
5	1.1			CL	Silty clay w/ Fe streaks, and calcareous deposits	
10	1.1					
15	1.1					
20	1.1					
25						
30						
35						
40					Total Depth = 17 feet bgs Note: No groundwater encountered to 17 feet bgs. Sample: 16.0-17.0 feet bgs	
45						

▨ FILTER SAND ▨ BENTONITE SEAL ▩ GROUT / CONCRETE/ASPHALT SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 17'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Chase Bank- Former Conoco Fueling station

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-12 TEMP. WELL NUMBER

FACILITY ADDRESS: 14565 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon DATE: (START / FINISH) 7/02/2014 3:13 pm

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		10" Concrete core	
0	0.8			CH	Tan clay w/ Fe streaks, and Mg and calcareous nodules	
	0.8					
5	0.8					
	0.8					
	0.8					
10	0.8			CL	Dark grey loamy clay, slight moisture, slight odor	Odor
	0.8			CH	Grey and red clay with calcareous deposits	
15	0.8					
	0.8					
20						
25						
30						
35						
40					Total Depth = 17 feet bgs Note: No groundwater encountered to 17 feet bgs. Sample: 11.0-12.0 feet bgs	
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 17'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Chase Bank- Former Conoco Fueling station

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-13 TEMP. WELL NUMBER : _____

FACILITY ADDRESS: 14565 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon DATE: (START / FINISH) 7/02/2014 2:39pm

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0					7" Concrete core	
	1.0				Tan clay w/ Fe streaks and calcareous nodules	
	0.9					
5	0.8			CH		
	0.8					
	0.6					
10	0.5					
	0.5			CL	Dark grey loamy clay, slight moisture, slight odor	Odor
	0.5			CH	Grey and red clay with calcareous deposits	
15	0.5					
	0.5					
20						
25						
30						
35						
40						
45						

Total Depth = needed 17 ft, drilled to 20 feet
Note: No groundwater encountered to 17feet bgs.
Sample: 12.0-13.0 feet bgs

▨ FILTER SAND ▨ BENTONITE SEAL ▨ GROUT / CONCRETE/ASPHALT SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 17'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Taco Bell/Former Werstside Memorial 66/Former Mobil

FACILITY ADDRESS: 14602/14603 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-14 TEMP. WELL NUMBER :

DATE: (START / FINISH) 7/02/2014 1:38pm

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	2.8	0.3'		CL	Tan to grey loamy clay with Fe streaks, calcareous deposits and and Mg nodules	
5	1.2					
	1.0					
	1.0					
	0.7					
10	0.7					
	0.4			CH	Grey and red clay with calcareous deposits and Mg nodules Moisture at 23-24 feet bgs	
15	0.4					
	0.5					
	0.3					
20	0.3		▼			
	0.3					
25	0.3				Total Depth = 25 ft Note: Groundwater encountered at 23-24 feet bgs. Sample: 23-24 feet bgs	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg • Oliver Associates, Inc.

TOTAL DEPTH: 25'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Phillips 66/Former Werstside Memorial 66/Former Mobil

FACILITY ADDRESS: 14602/14603 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon

LOGGED BY: S. Ross

☒ BOREHOLE ☒ MONITOR WELL

BORING NUMBER: SB-15 TEMP. WELL NUMBER: GW-1

DATE: (START / FINISH) 7/02/2014 1:00pm

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		15"= 11" Concrete Core with 4" cement stabilizing shell layer	
0	4.0			CL	Loamy Clay w/ Fe streaks, Mg nodules, and occasional calcareous deposits	
	6.6					
5	5.1					
	1.8					
	1.8					
10	1.8					
	1.8			CH	Orange and grey clay with pockets of calcareous deposits Moisture at 22-23 feet bgs	
15	1.6					
	1.6					
	1.6					
20	1.4					
	1.4					
25	1.4				Total Depth = 25 ft Note: Groundwater encountered at 22-23 feet bgs. Sample: 22.0-23.0 feet bgs	
30						
35						
40						
45						

FILTER SAND ▨ BENTONITE SEAL ▨ GROUT / CONCRETE/ASPHALT SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 25'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Taco Bell/Former Werstside Memorial 66/Former Mobil

FACILITY ADDRESS: 14602/14603 Memorial Drive

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-16 TEMP. WELL NUMBER :

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/09/2014 2:15 pm

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0					7" Concrete Core	
	0.9			CL	Silty clay w/Fe streaks, Mg nodules, and calcareous deposits	
	0.9					
5	0.9					
	0.9					
	0.8					
10	0.7					
	0.7			CL	Grey and Orange clay w/ calcareous deposits	
15	0.5					
	0.2					
	0.2					
20	0.5					
	0.5					
	0.5					
25					Total Depth = 25 ft Note: No groundwater encountered to 25 feet bgs. Sample: 24.0-25.0 feet bgs	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 25'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 7312H-P2

SITE NAME: Starbucks/Former Werstside Memorial 66/Former Mobil

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-17 TEMP. WELL NUMBER : _____

FACILITY ADDRESS: 14602/14603 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/09/2014 1:45pm

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
	1.2				Cancelled	
	2.2				Underground structures prevented drilling in cored location.	
5	248				Overhead powerline prevented relocating boring	
	200					
	625					
10	340					
	337					
15	80					
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg • Oliver Associates, Inc.

TOTAL DEPTH: _____

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 7312H-P2

SITE NAME: Former Grochett's Texaco (Ghost)

FACILITY ADDRESS: 14702 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS 9610 truck-mounted

DRILLER: Brandon

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-18 TEMP. WELL NUMBER : ____

DATE: (START / FINISH) 7/03/2014 3:11 pm

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0					9" Asphalt Core	
	0.4			CL	Silty clay loam w/ Fe streaks and Mg nodules	
	0.2					
5	0.4					
	0.4					
	0.2					
10	0.4			CH	Grey and red clay w/ calcareous deposits	
	0.4					
	0.4					
15	0.4					
	0.4					
	0.4					
20	0.4					
	0.4					
25					Total Depth = 23 ft Note: No groundwater encountered to 23 feet bgs. Sample: 22.0-23.0 feet bgs	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 23'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Former Grochett's Texaco (Ghost)

FACILITY ADDRESS: 14702 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☒ MONITOR WELL

BORING NUMBER : SB-19 TEMP. WELL NUMBER : GW-3

DATE: (START / FINISH) 7/08/2014 9:30 am

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0					9" Asphalt Core	
	1.0			CL	Brown and tan silty clay w/ Fe streaks and calcareous deposits	
	0.9					
5	0.9					
	0.9		▼			
	0.5			SC	Brown fine sandy clay, very wet	
10	0.7					
	0.2					
15	0.2					
	0.2			CL	Grey and Red silty clay w/ calcareous deposits	
				SC	Tan sandy clay, very moist	
	0.3					
20	0.1			CH	Grey and red clay	
	0.3					
25						
30						
35						
40						
45						

Total Depth = 23 ft
Note: Groundwater encountered at 8-18 feet bgs.
Sample: 18.0-19.0 feet bgs

FILTER SAND ▨ BENTONITE SEAL ▨ GROUT / CONCRETE/ASPHALT SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 23'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Former Grochett's Texaco (Ghost)

FACILITY ADDRESS: 14702 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-20 TEMP. WELL NUMBER : ____

DATE: (START / FINISH) 7/09/2014 1:34 pm

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	1.2			CL	Grey silty clay w/ Fe streaks	
5	0.4					
	0.4					
	0.4					
10	0.4			CH	Orange and Grey clay w/ Fe streaks and Mg nodules	
	0.4					
15	0.3					
	0.3					
	0.3					
20	0.3					
	0.3					
25					Total Depth = 23 ft Note: No groundwater encountered to 23 feet bgs. Sample: 22.0-23.0 feet bgs	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 23'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Mr. Pride Car Wash/Bubbles Hand Car Wash

FACILITY ADDRESS: 14732 Memorial Drive

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER: SB-21 TEMP. WELL NUMBER:

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno DATE: (START / FINISH) 7/08/2014 10:30 pm

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	1.1			CH	Tan and grey silty clay w/ Fe streaks, Mg nodules, and calcareous deposits	
	1.1					
5	0.3					
	0.7					
	0.7			ML	Tan clayey silt	
10	0.7			CL	Tan clay with Fe streaks and calcareous deposits	
	0.3					
15	0.3					
	0.3					
	0.3				Refusal at 20 feet bgs- possible koleche hard spot	
20						
25						
30						
35						
40					Total Depth = 20 feet bgs, planned to drill to 23 feet ft Note: No groundwater encountered to 20 feet bgs. Sample: 9.5-10.5 feet bgs	
45						

▨ FILTER SAND ▨ BENTONITE SEAL ▩ GROUT / CONCRETE/ASPHALT SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Mr. Pride Car Wash/Bubbles Hand Car Wash

FACILITY ADDRESS: 14732 Memorial Drive

☒ BOREHOLE ☒ MONITOR WELL

BORING NUMBER: SB-22 TEMP. WELL NUMBER: GW-4

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/09/2014 10:45 am

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.1			CL	Silty clay w/ Fe streaks and calcareous deposits	
5	0.1					
10	0.1					
15	0.1		▼			
20	0.1			SC	Grey and orange clayey sand, saturated	
	0.1			CH	Grey clay w/ Fe streaks	
25						
30						
35						
40					Total Depth = 23 ft Note: Groundwater encountered at 16-24 feet bgs. Sample: 21-22 feet bgs	
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 23'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Mr. Pride Car Wash/ Bubbles Hand Car Wash

FACILITY ADDRESS: 14732 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-23 TEMP. WELL NUMBER :

DATE: (START / FINISH) 7/08/2014 11:00 am

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.1			CL	Silty clay w/ Fe streaks and calcareous deposits	
5	0.1					
	0.1					
	0.1					
10	0.1					
	0.1			CL	Clay w/Fe streaks and calcareous deposits- not plastic	
15	0.1					
	0.1					
	0.1					
20					Refusal at 20 feet bgs	
25						
30						
35						
40					Total Depth = 20 ft (met refusal), boring was planned to 23 feet Note: No groundwater encountered to 22 feet bgs. Sample: 19.0-20.5 feet bgs	
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 16'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Former Memorial Citgo (Recently demolished)

FACILITY ADDRESS: 14754 Memorial Drive

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER: SB-24 TEMP. WELL NUMBER: ____

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno DATE: (START / FINISH) 7/08/2014 11:30 am

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0			CL	Tan silty clay w/ Fe streaks and calcareous deposits	
5	0.0					
	0.0					
	0.0					
10	0.0			CL	Tan clay w/ moderate Fe streaks, occasional Mg nodules and calcareous deposits- not plastic	
	0.0					
15						
20						
25						
30						
35						
40						
45					Total Depth = 14 ft Note: No groundwater encountered to 14 feet bgs. Sample: 13.0-14.0 feet bgs	

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 14'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Former Memorial Citgo (Recently demolished)

FACILITY ADDRESS: 14754 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER: SB-25 TEMP. WELL NUMBER: _____

DATE: (START / FINISH) 7/09/2014 11:30 am

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.5			CL	Tan silty clay w/ Fe streaks	
5	0.4			CL	Grey clay w/ Fe streaks and Mg nodules	
	0.4					
10	0.3					
	0.3					
	0.3					
15						
20						
25						
30						
35						
40					Total Depth = 14 ft Note: No groundwater encountered to 14 feet bgs. Sample: 13-14 feet bgs	
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 14'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Former Memorial Citgo (Recently demolished)

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-26 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14754 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno DATE: (START / FINISH) 7/09/2014 11:50 am

LOGGED BY: S. Ross TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0			CL	Silty clay w/ Fe streaks	
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0			CH	Grey clay w/ Fe streaks and Mg nodules	
15						
20						
25						
30						
35						
40						
45						

Total Depth = 14 ft
Note: No groundwater encountered to 14 feet bgs.
Sample: 13.0-14.0 feet bgs

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 14'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Carmello's Italian Restaurant Parking (Former Chevron)

FACILITY ADDRESS: 14803 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-27 TEMP. WELL NUMBER :

DATE: (START / FINISH) 7/09/2014 10:00 am

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	1.0			CL	Grey silty clay w/ Fe streaks	
	1.7					
5	0.7					
	0.5					
	0.5			CH	Grey clay w/Fe streaks and Mg nodules	
10	0.5					
	0.5			CL	Brown clayey loam w/ Fe streaks, slight moisture present	
	0.5			CH	Grey and red clay with calcareous deposit layer	
15	0.5				Moisture at 16-17.5 feet bgs	
	0.5					
20					Total Depth = 20 ft Note: No groundwater encountered to 20 feet bgs. Slight moisture at 12-13 & 17-18. Not enough to take GW Sample: 17.0-18.0 feet bgs	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Carmello's Italian Restaurant Parking (Former Chevron)

FACILITY ADDRESS: 14803 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

LOGGED BY: S. Ross

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER: SB-28 TEMP. WELL NUMBER: ____

DATE: (START / FINISH) 7/08/2014 1:35 pm

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		5" concrete boring	
0	0.1			CL	Silty clay w/ Fe streaks with calcareous deposits	
5	0.1					
10	0.1					
15	0.1					
20	0.1				Total Depth = 20 ft Note: No groundwater encountered to 20 feet bgs. Sample: 17.0-18.0 feet bgs	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE/ASPHALT SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 7312H-P2

SITE NAME: Carmello's Italian Restaurant Parking (Former Chevron)

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-29 TEMP. WELL NUMBER :

FACILITY ADDRESS: 14803 Memorial Drive

DRILLING COMPANY / METHOD / RIG: Envirotech Drilling Services/Direct Push/ AMS SK-9300 probe/auger combo unit

DRILLER: Burno

DATE: (START / FINISH) 7/03/2014 1:15 pm

LOGGED BY: S. Ross

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface		11' boring= 3" concrete core with approx. 8" cementing shell layer	
0	1.4			CL	Dark grey silty clay w/ Fe streaks	
5	1.3					
	1.1					
	1.0			CH	Tan to grey clay w/ Fe streaks and calcareous deposits	
10	1.0					
	0.7					
	0.7					
15	0.7					
	0.6					
	0.5			CL	Silty clay w/ Fe streaks	
20					Total Depth = 20 ft Note: No groundwater encountered to 20 feet bgs. Sample: 19.0-20.0 feet bgs	
25						
30						
35						
40						
45						

FILTER SAND ▨ BENTONITE SEAL ▩ GROUT / CONCRETE/ASPHALT SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

APPENDIX B

Laboratory Analytical Results

Accutest Laboratories Gulf Coast, Inc.					Jul 10, 2014 16:25 pm
Job Number:	TC50925				
Account:	Berg Oliver Associates				
Project:	Memorial Drive, Houston, TX/7312-H-P2				
Project Number:					
				Legend:	Hit
Client Sample ID:		GW-1			
Lab Sample ID:		TC50925-5			
Date Sampled:		07/02/2014			
Matrix:		Ground Water			
GC/MS Volatiles (SW846 8260C)					
Benzene	mg/l	0.00034 U			
Toluene	mg/l	0.00033 U			
Ethylbenzene	mg/l	0.00032 U			
Xylene (total)	mg/l	0.00087 U			
Methyl Tert Butyl Ether	mg/l	0.00030 U			
GC Semi-volatiles (TNRCC 1005)					
TPH (C6-C12)	mg/l	0.57 U			
TPH (>C12-C28)	mg/l	0.83 U			
TPH (>C28-C35)	mg/l	0.83 U			
TPH (C6-C35)	mg/l	0.57 U			
Client Sample ID:		SB-12	SB-13	SB-14	SB-15
Lab Sample ID:		TC50925-4	TC50925-3	TC50925-2	TC50925-1
Date Sampled:		07/02/2014	07/02/2014	07/02/2014	07/02/2014
Matrix:		Soil	Soil	Soil	Soil
GC/MS Volatiles (SW846 8260C)					
Benzene	mg/kg	0.00079 U	0.00075 U	0.00074 U	0.00085 U
Toluene	mg/kg	0.0012 U	0.0011 U	0.0011 U	0.0013 U
Ethylbenzene	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0012 U
Xylene (total)	mg/kg	0.0033 U	0.0031 U	0.0031 U	0.0035 U
Methyl Tert Butyl Ether	mg/kg	0.00060 U	0.00056 U	0.00056 U	0.00064 U
GC Semi-volatiles (TNRCC 1005)					
TPH (C6-C12)	mg/kg	13 U	13 U	13 U	14 U
TPH (>C12-C28)	mg/kg	16 U	16 U	18.1 J	17 U
TPH (>C28-C35)	mg/kg	16 U	16 U	16 U	17 U
TPH (C6-C35)	mg/kg	13 U	13 U	18.1 J	14 U
General Chemistry					
Solids, Percent	%	84.7	83.6	83.2	79

Tot Soil 1600 2000 2300

Gw Soil 65 200 200

Sample Receipt Confirmation

Berg Oliver Associates

Job No: TC50925

Memorial Drive / 7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time	By	Received	TA	Matrix Code	Matrix Type	Client Sample ID
TC50925-1	07/02/14	13:00		07/03/14	7	SO	Soil	SB-15
TC50925-2	07/02/14	13:38		07/03/14	7	SO	Soil	SB-14
TC50925-3	07/02/14	14:39		07/03/14	7	SO	Soil	SB-13
TC50925-4	07/02/14	15:13		07/03/14	7	SO	Soil	SB-12
Tests: %SOL, BTX1005TPHR3, V8260BTXM								
TC50925-5	07/02/14	16:20		07/03/14	7	AQ	Ground Water	GW-1
Tests: BTX1005TPHR3, V8260BTXM								

Tests are displayed after the samples to which they apply.

Gulf Coast ACCUTEST LABORATORIES

07/10/14

Technical Report for

Berg Oliver Associates

Memorial Drive, Houston, TX/7312-H-P2

7312-H-P2

Accutest Job Number: TC50925

Sampling Date: 07/02/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
sross@bergoliver.com

ATTN: Sasha Ross

Total number of pages in report: 39

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

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Sample Summary

Berg Oliver Associates

Job No: TC50925

Memorial Drive, Houston, TX/7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC50925-1	07/02/14	13:00	SR	07/03/14	SO	Soil	SB-15
TC50925-2	07/02/14	13:38	SR	07/03/14	SO	Soil	SB-14
TC50925-3	07/02/14	14:39	SR	07/03/14	SO	Soil	SB-13
TC50925-4	07/02/14	15:13	SR	07/03/14	SO	Soil	SB-12
TC50925-5	07/02/14	16:20	SR	07/03/14	AQ	Ground Water	GW-1

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Berg Oliver Associates **Job No** TC50925

Site: Memorial Drive, Houston, TX/7312-H-P2 **Report Date** 7/10/2014 4:22:01 PM

5 Samples were collected on 07/02/2014 and received intact at Accutest on 07/03/2014 and properly preserved in 1 cooler at 4 Deg C. These Samples received an Accutest job number of TC50925. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix AQ **Batch ID:** VE1519

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51210-2MS, TC51210-2MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** VR775

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50948-1MS, TC50948-1MSD were used as the QC samples indicated.

Extractables by GC By Method TNRCC 1005

Matrix AQ **Batch ID:** OP33119

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50998-17MS, TC50998-17MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** OP33113

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50925-1MS, TC50925-1MSD were used as the QC samples indicated.

Wet Chemistry By Method SM 2540 G

Matrix SO **Batch ID:** GN59559

- Sample(s) TC50874-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC50925
Account: Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2
Collected: 07/02/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC50925-1	**SB-15**					
No hits reported in this sample.						
TC50925-2	**SB-14**					
TPH (> C12-C28)		18.1 J	30	16	mg/kg	TNRCC 1005
TPH (C6-C35)		18.1 J	30	13	mg/kg	TNRCC 1005
TC50925-3	**SB-13**					
No hits reported in this sample.						
TC50925-4	**SB-12**					
No hits reported in this sample.						
TC50925-5	**GW-1**					
No hits reported in this sample.						

Gulf Coast ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-15		
Lab Sample ID:	TC50925-1	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	79.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023555.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00085 U	0.0050	0.00085	mg/kg	
108-88-3	Toluene	0.0013 U	0.0050	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0050	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0035 U	0.015	0.0035	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00064 U	0.0050	0.00064	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	84%		63-138%
17060-07-0	1,2-Dichloroethane-D4	64%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-15		
Lab Sample ID:	TC50925-1	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	79.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101562.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	31	14	mg/kg	
	TPH (> C12-C28)	17 U	31	17	mg/kg	
	TPH (> C28-C35)	17 U	31	17	mg/kg	
	TPH (C6-C35)	14 U	31	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		70-130%
98-08-8	aaa-Trifluorotoluene	104%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-14		
Lab Sample ID:	TC50925-2	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	83.2
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023556.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.48 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00074 U	0.0044	0.00074	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	83%		63-138%
17060-07-0	1,2-Dichloroethane-D4	67%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-14		
Lab Sample ID:	TC50925-2	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	83.2
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101615.D	1	07/08/14	ZL	07/07/14	OP33113	GLB1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	30	13	mg/kg	
	TPH (> C12-C28)	18.1	30	16	mg/kg	J
	TPH (> C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	18.1	30	13	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		70-130%
98-08-8	aaa-Trifluorotoluene	98%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-13		
Lab Sample ID:	TC50925-3	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	83.6
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023557.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.40 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0044	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		59-126%
2037-26-5	Toluene-D8	101%		70-139%
460-00-4	4-Bromofluorobenzene	89%		63-138%
17060-07-0	1,2-Dichloroethane-D4	64%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-13		
Lab Sample ID:	TC50925-3	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	83.6
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101616.D	1	07/08/14	ZL	07/07/14	OP33113	GLF1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (> C12-C28)	16 U	29	16	mg/kg	
	TPH (> C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		70-130%
98-08-8	aaa-Trifluorotoluene	106%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-12		
Lab Sample ID:	TC50925-4	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	84.7
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023558.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00060 U	0.0047	0.00060	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	84%		63-138%
17060-07-0	1,2-Dichloroethane-D4	66%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-12		
Lab Sample ID:	TC50925-4	**Date Sampled:**	07/02/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	84.7
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101617.D	1	07/08/14	ZL	07/07/14	OP33113	GLB1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (> C12-C28)	16 U	29	16	mg/kg	
	TPH (> C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		70-130%
98-08-8	aaa-Trifluorotoluene	93%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-1		
Lab Sample ID:	TC50925-5	**Date Sampled:**	07/02/14
Matrix:	AQ - Ground Water	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0033495.D	1	07/10/14	SC	n/a	n/a	VE1519
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.00030 U	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		72-122%
17060-07-0	1,2-Dichloroethane-D4	94%		68-124%
2037-26-5	Toluene-D8	96%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-1		
Lab Sample ID:	TC50925-5	**Date Sampled:**	07/02/14
Matrix:	AQ - Ground Water	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101704.D	1	07/09/14	ZL	07/08/14	OP33119	GLF1506
Run #2							

	Initial Volume	Final Volume
Run #1	30.9 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	0.57 U	2.4	0.57	mg/l	
	TPH (> C12-C28)	0.83 U	2.4	0.83	mg/l	
	TPH (> C28-C35)	0.83 U	2.4	0.83	mg/l	
	TPH (C6-C35)	0.57 U	2.4	0.57	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		70-130%
98-08-8	aaa-Trifluorotoluene	102%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST Laboratories

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: TC50925

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston State: TX Zip: 77079
Project Contact: Sasha Ross E-mail:
Phone #: 281-589-0898 Fax #:
Sampler(s) Name(s): SASHA Ross 832.5995001 Phone #:

Project Information

Project Name: Memorial Drive
Street:
City: Houston State: Tx
Project #: 7312H-P2
Client Purchase Order #:
Project Manager: SASHA Ross

Billing Information (If different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analyses

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	Na2SO4	ENCORE	OTHER	BTEX/MTBE (8260)	VOA (8260)	TPHTX1005	LAB USE ONLY
1	SB-15	7/2/14	1:00	SR	So	2												1	✓		✓	
2	SB-14		1:38	SR	So	2												1	✓		✓	
3	SB-13		2:39	SR	So	2												1	✓		✓	
4	SB-12		3:13	SR	So	2												1	✓		✓	
5	GW-1		4:20p	SR	GW	6	✓											1	✓		✓	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - OI; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labfink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [x] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

(3) extra 40mL GW-1 use in case of breakage, of GW-1 sampl otherwise dispose

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Sasha Ross	7/3/14	1	2	7-3-14 / 0:58	2
3	Relinquished by Sampler:	Date Time: 10:40	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not Intact	Preserved where applicable / On Ice / Cooler Temp. 4.0

TC50925: Chain of Custody
Page 1 of 4

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC50925 **Client:** BERG OLIVER **Project:** MEMORIAL DRIVE

Date / Time Received: 7/3/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (4/4);

Cooler Security	Y or N		Y or N
1. Custody Seals Present:	☑ ☐	3. COC Present:	☑ ☐
2. Custody Seals Intact:	☑ ☐	4. Smpl Dates/Time OK	☑ ☐

Cooler Temperature	Y or N
1. Temp criteria achieved:	☑ ☐
2. Cooler temp verification:	
3. Cooler media:	Ice (Bag)

Quality Control Preservation	Y or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑ ☐	☐	☑	☐
2. Trip Blank listed on COC:	☑ ☐	☐		
3. Samples preserved properly:	☑ ☐			
4. VOCs headspace free:	☑ ☐	☐		

Sample Integrity - Documentation	Y or N
1. Sample labels present on bottles:	☑ ☐
2. Container labeling complete:	☑ ☐
3. Sample container label / COC agree:	☑ ☐

Sample Integrity - Condition	Y or N
1. Sample recvd within HT:	☑ ☐
2. All containers accounted for:	☑ ☐
3. Condition of sample:	Intact

Sample Integrity - Instructions	Y or N	N/A
1. Analysis requested is clear:	☑ ☐	
2. Bottles received for unspecified tests	☐ ☑	
3. Sufficient volume recvd for analysis:	☑ ☐	
4. Compositing instructions clear:	☐ ☐	☑
5. Filtering instructions clear:	☐ ☐	☑

Comments -Received 1-set of Trip Blanks not written on chain. Added to end of job

Accutest Laboratories
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10165 Harwin Drive
F: 713.271.4770

Houston, TX 77036
www/accutest.com

ACCUTEST LABORATORIES

Problem Resolution

Accutest Job Number: TC50925

CSR: _____ **Response Date:** _____

Response:

5

TC50925: Chain of Custody
Page 3 of 4

ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC50925 **Date / Time Received:** 7/3/2014 **Initials:** re

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC50925-1	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-1	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-2	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-2	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-3	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-3	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-4	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-4	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	4	0	4
1	TC50925-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-5	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4
1	TC50925-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	4	0	4

Appendix A Laboratory Data Package Cover Page

TC50925 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/10/2014

5.2
5

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/10/2014
Project Name:	Memorial Drive, Houston, TX/7312-H-P2	Laboratory Project Number:	TC50925
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59559, OP33113, OP33119, VE1519, VR775

#[1]	A[2]	DESCRIPTION	YES	NO	NA[3]	NR[4]	ER #[5]
R1	OI	**CHAIN-OF-CUSTODY (C-O-C):**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?	X				
		If required for the project, are TIC's reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations <MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	X				
		Were the MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X			2
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/10/2014				
Project Name:		Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC50925				
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GN59559, OP33113, OP33119, VE1519, VR775				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/10/2014
Project Name:	Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC50925
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59559, OP33113, OP33119, VE1519, VR775

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR775-MB	R023545.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50925-1, TC50925-2, TC50925-3, TC50925-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.6	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	3.6	0.88	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.6	0.46	ug/kg	
108-88-3	Toluene	ND	3.6	0.93	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.6	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	87%	59-126%
2037-26-5	Toluene-D8	97%	70-139%
460-00-4	4-Bromofluorobenzene	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

Method Blank Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1519-MB	E0033488.D	1	07/10/14	SC	n/a	n/a	VE1519

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50925-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	96%	68-124%
2037-26-5	Toluene-D8	93%	80-119%
460-00-4	4-Bromofluorobenzene	96%	72-126%

Blank Spike Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR775-BS	R023543.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50925-1, TC50925-2, TC50925-3, TC50925-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.9	47.2	96	58-124
100-41-4	Ethylbenzene	48.9	49.2	101	57-124
1634-04-4	Methyl Tert Butyl Ether	48.9	46.9	96	65-119
108-88-3	Toluene	48.9	49.7	102	67-119
1330-20-7	Xylene (total)	147	153	104	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	59-126%
2037-26-5	Toluene-D8	101%	70-139%
460-00-4	4-Bromofluorobenzene	87%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1519-BS	E0033486.D	1	07/10/14	SC	n/a	n/a	VE1519

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50925-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	68-119
100-41-4	Ethylbenzene	25	25.2	101	71-117
1634-04-4	Methyl Tert Butyl Ether	25	22.3	89	65-119
108-88-3	Toluene	25	24.6	98	73-119
1330-20-7	Xylene (total)	75	79.3	106	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50948-1MS	R023551.D	1	07/07/14	FI	n/a	n/a	VR775
TC50948-1MSD	R023552.D	1	07/07/14	FI	n/a	n/a	VR775
TC50948-1	R023548.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50925-1, TC50925-2, TC50925-3, TC50925-4

CAS No.	Compound	TC50948-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		55	50.6	92	55.8	49.7	89	2	58-124/26
100-41-4	Ethylbenzene	ND		55	53.1	97	55.8	52.4	94	1	57-124/29
1634-04-4	Methyl Tert Butyl Ether	ND		55	44.0	80	55.8	45.7	82	4	65-119/29
108-88-3	Toluene	ND		55	53.8	98	55.8	53.5	96	1	67-119/28
1330-20-7	Xylene (total)	ND		165	164	99	168	163	97	1	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50948-1	Limits
1868-53-7	Dibromofluoromethane	89%	88%	86%	59-126%
2037-26-5	Toluene-D8	98%	99%	98%	70-139%
460-00-4	4-Bromofluorobenzene	85%	83%	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	64%	62%	65%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51210-2MS	E0033493.D	10	07/10/14	SC	n/a	n/a	VE1519
TC51210-2MSD	E0033494.D	10	07/10/14	SC	n/a	n/a	VE1519
TC51210-2	E0033490.D	1	07/10/14	SC	n/a	n/a	VE1519
TC51210-2	E0033492.D	10	07/10/14	SC	n/a	n/a	VE1519

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50925-5

CAS No.	Compound	TC51210-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	661 [a]		250	876	86	250	872	84	0	68-119/12
100-41-4	Ethylbenzene	ND		250	261	104	250	246	98	6	71-117/12
1634-04-4	Methyl Tert Butyl Ether	ND		250	221	88	250	210	84	5	65-119/13
108-88-3	Toluene	ND		250	252	101	250	239	96	5	73-119/13
1330-20-7	Xylene (total)	ND		750	824	110	750	778	104	6	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC51210-2	TC51210-2	Limits
1868-53-7	Dibromofluoromethane	95%	93%	96%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	92%	96%	89%	95%	68-124%
2037-26-5	Toluene-D8	98%	98%	99%	97%	80-119%
460-00-4	4-Bromofluorobenzene	96%	96%	101%	97%	72-126%

(a) Result is from Run #2.

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33113-MB	LB101561.D	1	07/07/14	ZL	07/07/14	OP33113	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50925-1, TC50925-2, TC50925-3, TC50925-4

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (> C12-C28)	ND	25	14	mg/kg	
	TPH (> C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	83%	70-130%
98-08-8	aaa-Trifluorotoluene	94%	70-130%

Method Blank Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33119-MB	LB101631.D	1	07/08/14	ZL	07/08/14	OP33119	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50925-5

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (> C12-C28)	ND	2.5	0.85	mg/l	
	TPH (> C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	92%	70-130%
98-08-8	aaa-Trifluorotoluene	98%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33113-BS	LB101563.D	1	07/07/14	ZL	07/07/14	OP33113	GLB1506
OP33113-BSD	LB101565.D	1	07/07/14	ZL	07/07/14	OP33113	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50925-1, TC50925-2, TC50925-3, TC50925-4

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	210	84	222	89	6	75-125/20
	TPH (> C12-C28)	250	210	84	215	86	2	75-125/20
	TPH (C6-C35)	500	420	84	437	87	4	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	83%	89%	70-130%
98-08-8	aaa-Trifluorotoluene	89%	99%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33119-BS	LB101633.D	1	07/08/14	ZL	07/08/14	OP33119	GLB1506
OP33119-BSD	LB101635.D	1	07/08/14	ZL	07/08/14	OP33119	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50925-5

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	44.7	89	46.3	93	4	75-125/20
	TPH (> C12-C28)	50	39.3	79	46.3	93	16	75-125/20
	TPH (C6-C35)	100	84.0	84	93.4	93	11	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	96%	93%	70-130%
98-08-8	aaa-Trifluorotoluene	100%	100%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33113-MS	LF101564.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506
OP33113-MSD	LF101566.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506
TC50925-1	LF101562.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50925-1, TC50925-2, TC50925-3, TC50925-4

CAS No.	Compound	TC50925-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	31	U	313	320	102	312	327	105	2	75-125/20
	TPH (> C12-C28)	31	U	313	333	106	312	309	99	7	75-125/20
	TPH (C6-C35)	31	U	627	653	104	625	636	102	3	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50925-1	Limits
84-15-1	o-Terphenyl	111%	103%	102%	70-130%
98-08-8	aaa-Trifluorotoluene	99%	105%	104%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50925
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33119-MS	LF101634.D	1	07/08/14	ZL	07/08/14	OP33119	GLF1506
OP33119-MSD	LF101636.D	1	07/08/14	ZL	07/08/14	OP33119	GLF1506
TC50998-17	LF101736.D	1	07/09/14	ZL	07/08/14	OP33119	GLF1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50925-5

CAS No.	Compound	TC50998-17 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	2.4 U		48.5	44.9	93	48.9	49.1	100	9	75-125/20
	TPH (> C12-C28)	2.4 U		48.5	40.1	83	48.9	47.8	98	18	75-125/20
	TPH (C6-C35)	2.4 U		96.9	85.0	88	97.8	96.9	99	13	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50998-17	Limits
84-15-1	o-Terphenyl	84%	104%	104%	70-130%
98-08-8	aaa-Trifluorotoluene	91%	115%	96%	70-130%

* = Outside of Control Limits.

Accutest Laboratories Gulf Coast, Inc.					Jul 10, 2014 16:40 pm	
Job Number:	TC50980					
Account:	Berg Oliver Associates					
Project:	Memorial Drive, Houston, TX/7312-H-P2					
Project Number:	7312-H-P2					
					Legend:	Hit
Client Sample ID:		GW-2				
Lab Sample ID:		TC50980-6				
Date Sampled:		07/03/2014				
Matrix:		Ground Water				
GC/MS Volatiles (SW846 8260C)						
Benzene	mg/l	0.00034 U				
Toluene	mg/l	0.00033 U				
Ethylbenzene	mg/l	0.00032 U				
Xylene (total)	mg/l	0.00087 U				
Methyl Tert Butyl Ether	mg/l	0.0036				
GC Semi-volatiles (TNRCC 1005)						
TPH (C6-C12)	mg/l	0.58 U				
TPH (>C12-C28)	mg/l	0.85 U				
TPH (>C28-C35)	mg/l	0.85 U				
TPH (C6-C35)	mg/l	0.58 U				
Client Sample ID:		SB-18	SB-2	SB-3	SB-4	SB-5
Lab Sample ID:		TC50980-1	TC50980-5	TC50980-4	TC50980-3	TC50980-2
Date Sampled:		07/03/2014	07/03/2014	07/03/2014	07/03/2014	07/03/2014
Matrix:		Soil	Soil	Soil	Soil	Soil
GC/MS Volatiles (SW846 8260C)						
Benzene	mg/kg	0.00086 U	0.00078 U	0.00079 U	0.00079 U	0.00083 U
Toluene	mg/kg	0.0013 U	0.0012 U	0.0012 U	0.0012 U	0.0013 U
Ethylbenzene	mg/kg	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U
Xylene (total)	mg/kg	0.0036 U	0.0032 U	0.0033 U	0.0033 U	0.0034 U
Methyl Tert Butyl Ether	mg/kg	0.00065 U	0.00059 U	0.00060 U	0.0075	0.00062 U
GC Semi-volatiles (TNRCC 1005)						
TPH (C6-C12)	mg/kg	14 U	14 U	14 U	14 U	14 U
TPH (>C12-C28)	mg/kg	17 U	17 U	17 U	16 U	17 U
TPH (>C28-C35)	mg/kg	17 U	17 U	17 U	16 U	17 U
TPH (C6-C35)	mg/kg	14 U	14 U	14 U	14 U	14 U
General Chemistry						
Solids, Percent	%	77.2	81	79.2	82.9	79.7

Sample Receipt Confirmation

Berg Oliver Associates

Job No: TC50980

Memorial Drive / 7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time	By	Received	TA	Matrix Code	Matrix Type	Client Sample ID
TC50980-1	07/03/14	15:11		07/03/14	7	SO	Soil	SB-18
TC50980-2	07/03/14	13:05		07/03/14	7	SO	Soil	SB-5
TC50980-3	07/03/14	11:28		07/03/14	7	SO	Soil	SB-4
TC50980-4	07/03/14	10:36		07/03/14	7	SO	Soil	SB-3
TC50980-5	07/03/14	09:30		07/03/14	7	SO	Soil	SB-2
Tests: %SOL, BTX1005TPHR3, V8260BTXM								
TC50980-6	07/03/14	10:46		07/03/14	7	AQ	Ground Water	GW-2
Tests: BTX1005TPHR3, V8260BTXM								
TC50980-7	07/03/14	00:00		07/03/14	7	AQ	Trip Blank Water	TRIP BLANK
Tests: HOLD								

Tests are displayed after the samples to which they apply.

Gulf Coast ACCUTEST LABORATORIES

07/10/14

Technical Report for

Berg Oliver Associates

Memorial Drive, Houston, TX/7312-H-P2

7312-H-P2

Accutest Job Number: TC50980

Sampling Date: 07/03/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
sross@bergoliver.com

ATTN: Sasha Ross

Total number of pages in report: 44

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

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Sample Summary

Berg Oliver Associates

Job No: TC50980

Memorial Drive, Houston, TX/7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC50980-1	07/03/14	15:11	SR	07/03/14	SO	Soil	SB-18
TC50980-2	07/03/14	13:05	SR	07/03/14	SO	Soil	SB-5
TC50980-3	07/03/14	11:28	SR	07/03/14	SO	Soil	SB-4
TC50980-4	07/03/14	10:36	SR	07/03/14	SO	Soil	SB-3
TC50980-5	07/03/14	09:30	SR	07/03/14	SO	Soil	SB-2
TC50980-6	07/03/14	10:46	SR	07/03/14	AQ	Ground Water	GW-2
TC50980-7	07/03/14	00:00	SR	07/03/14	AQ	Trip Blank Water	TRIP BLANK

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Berg Oliver Associates	**Job No**	TC50980
Site:	Memorial Drive, Houston, TX/7312-H-P2	**Report Date**	7/10/2014 4:37:36 PM

6 Samples were collected on 07/03/2014 and received intact at Accutest on 07/03/2014 and properly preserved in 1 cooler at 2 Deg C. These Samples received an Accutest job number of TC50980. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix AQ **Batch ID:** VE1519

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51210-2MS, TC51210-2MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** VR775

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50948-1MS, TC50948-1MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** VR776

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50980-5MS, TC50980-5MSD were used as the QC samples indicated.

Extractables by GC By Method TNRCC 1005

Matrix AQ **Batch ID:** OP33119

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50998-17MS, TC50998-17MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** OP33113

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50925-1MS, TC50925-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM 2540 G

Matrix SO **Batch ID:** GN59558

- Sample(s) TC50862-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC50980
Account: Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2
Collected: 07/03/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC50980-1	**SB-18**					
No hits reported in this sample.						
TC50980-2	**SB-5**					
No hits reported in this sample.						
TC50980-3	**SB-4**					
Methyl Tert Butyl Ether		0.0075	0.0047	0.00059	mg/kg	SW846 8260C
TC50980-4	**SB-3**					
No hits reported in this sample.						
TC50980-5	**SB-2**					
No hits reported in this sample.						
TC50980-6	**GW-2**					
Methyl Tert Butyl Ether		0.0036	0.0010	0.00030	mg/l	SW846 8260C

Gulf Coast ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-18		
Lab Sample ID:	TC50980-1	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	77.2
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023559.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.10 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00086 U	0.0051	0.00086	mg/kg	
108-88-3	Toluene	0.0013 U	0.0051	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0051	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0036 U	0.015	0.0036	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00065 U	0.0051	0.00065	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	85%		63-138%
17060-07-0	1,2-Dichloroethane-D4	69%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-18		
Lab Sample ID:	TC50980-1	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	77.2
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101630.D	1	07/08/14	ZL	07/07/14	OP33113	GLF1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	31	14	mg/kg	
	TPH (> C12-C28)	17 U	31	17	mg/kg	
	TPH (> C28-C35)	17 U	31	17	mg/kg	
	TPH (C6-C35)	14 U	31	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	108%		70-130%
98-08-8	aaa-Trifluorotoluene	129%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-5		
Lab Sample ID:	TC50980-2	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	79.7
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023560.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.11 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00083 U	0.0049	0.00083	mg/kg	
108-88-3	Toluene	0.0013 U	0.0049	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0049	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0034 U	0.015	0.0034	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00062 U	0.0049	0.00062	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	85%		63-138%
17060-07-0	1,2-Dichloroethane-D4	66%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-5		
Lab Sample ID:	TC50980-2	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	79.7
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101647.D	1	07/08/14	ZL	07/07/14	OP33113	GLB1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (> C12-C28)	17 U	30	17	mg/kg	
	TPH (> C28-C35)	17 U	30	17	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		70-130%
98-08-8	aaa-Trifluorotoluene	101%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-4		
Lab Sample ID:	TC50980-3	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	82.9
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023561.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.16 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0075	0.0047	0.00059	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	85%		63-138%
17060-07-0	1,2-Dichloroethane-D4	64%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-4		
Lab Sample ID:	TC50980-3	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	82.9
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101774.D	1	07/09/14	ZL	07/07/14	OP33113	GLF1507
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (> C12-C28)	16 U	30	16	mg/kg	
	TPH (> C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		70-130%
98-08-8	aaa-Trifluorotoluene	100%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-3		
Lab Sample ID:	TC50980-4	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	79.2
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023562.D	1	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume
Run #1	5.37 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00060 U	0.0047	0.00060	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		59-126%
2037-26-5	Toluene-D8	97%		70-139%
460-00-4	4-Bromofluorobenzene	83%		63-138%
17060-07-0	1,2-Dichloroethane-D4	61%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-3		
Lab Sample ID:	TC50980-4	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	79.2
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101781.D	1	07/09/14	ZL	07/07/14	OP33113	GLB1507
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (> C12-C28)	17 U	30	17	mg/kg	
	TPH (> C28-C35)	17 U	30	17	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		70-130%
98-08-8	aaa-Trifluorotoluene	102%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-2		
Lab Sample ID:	TC50980-5	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	81.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023569.D	1	07/08/14	FI	n/a	n/a	VR776
Run #2							

	Initial Weight	Final Volume
Run #1	5.35 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00078 U	0.0046	0.00078	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0046	0.00059	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	83%		63-138%
17060-07-0	1,2-Dichloroethane-D4	64%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-2		
Lab Sample ID:	TC50980-5	**Date Sampled:**	07/03/14
Matrix:	SO - Soil	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	81.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101651.D	1	07/08/14	ZL	07/07/14	OP33113	GLB1506
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	31	14	mg/kg	
	TPH (> C12-C28)	17 U	31	17	mg/kg	
	TPH (> C28-C35)	17 U	31	17	mg/kg	
	TPH (C6-C35)	14 U	31	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		70-130%
98-08-8	aaa-Trifluorotoluene	97%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-2		
Lab Sample ID:	TC50980-6	**Date Sampled:**	07/03/14
Matrix:	AQ - Ground Water	**Date Received:**	07/03/14
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0033496.D	1	07/10/14	SC	n/a	n/a	VE1519
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.0036	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	95%		68-124%
2037-26-5	Toluene-D8	94%		80-119%
460-00-4	4-Bromofluorobenzene	96%		72-126%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-2		
Lab Sample ID:	TC50980-6	**Date Sampled:**	07/03/14
Matrix:	AQ - Ground Water	**Date Received:**	07/03/14
Method:	TNRCC 1005 TX1005	**Percent Solids:**	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101705.D	1	07/09/14	ZL	07/08/14	OP33119	GLB1506
Run #2							

	Initial Volume	Final Volume
Run #1	30.1 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	0.58 U	2.5	0.58	mg/l	
	TPH (> C12-C28)	0.85 U	2.5	0.85	mg/l	
	TPH (> C28-C35)	0.85 U	2.5	0.85	mg/l	
	TPH (C6-C35)	0.58 U	2.5	0.58	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		70-130%
98-08-8	aaa-Trifluorotoluene	98%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

CHAIN OF CUSTODY

ACCUTEST Laboratories

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC50980

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston State: TX Zip: 77079
Project Contact: Sasha Ross E-mail: sross@bergoliver.com
Phone #: 281-589-0898 Fax #:
Sampler(s) Name(s): Sasha Ross Phone #: 832-595-5001

Project Information

Project Name: Memorial Drive
Street:
City: State:
Project #: 73124-P2
Client Purchase Order #:
Project Manager: Sasha Ross

Billing Information (If different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analyses

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	BTEXM (8260)	VOA (8260)	TPHTX1005	LAB USE ONLY
1	SB-18	7/3	3:11	SR	SO	2													✓		✓	
2	SB-5	"	1:05	"	SO	2													✓		✓	
3	SB-4	"	11:28	"	SO	2													✓		✓	
4	SB-3	"	10:36	"	SO	2													✓		✓	
5	SB-2	"	9:30	"	SO	2													✓		✓	
6	GW-2	↓	10:46	↓	GW	6													✓		✓	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - OI; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA LabLink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [x] TRRP
- [ ] Commercial "B" (Level 2)
- [ ] EDD Format
- [ ] FULT1 (Level 3+4)
- [ ] Other
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		7/3/2014 15:50	1	2	7-3-14/17:40	2
3	Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not Intact	Preserved where applicable: On Ice: Cooler Temp. 2.0

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TC50980: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC50980 **Client:** BERG OLIVER **Project:** MEMORIAL DRIVE

Date / Time Received: 7/3/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2/2);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☐	☐	☑		

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments -Received 1-set of Trip Blanks not written on chain. Added to end of job.

Accutest Laboratories
V:713.271.4700

10165 Harwin Drive
F: 713.271.4770

Houston, TX 77036
www.accutest.com

TC50980: Chain of Custody
Page 2 of 3

Sample Receipt Log

Job #: TC50980 **Date / Time Received:** 7/3/2014 5:40:00 PM **Initials:** RE

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC50980-1	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-1	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-2	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-2	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-3	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-3	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-4	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-4	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-5	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-5	4oz	2	2-96	N/P	Note #2 - Preservative check not applicable.	IR-5	2	0	2
1	TC50980-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2	0	2
1	TC50980-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2	0	2
1	TC50980-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2	0	2
1	TC50980-6	40ml	4	4V	HCL	pH < 2	IR-5	2	0	2
1	TC50980-6	40ml	5	4V	HCL	pH < 2	IR-5	2	0	2
1	TC50980-6	40ml	6	4V	HCL	pH < 2	IR-5	2	0	2

5.1

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TC50980: Chain of Custody
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Appendix A Laboratory Data Package Cover Page

TC50980 This data package consists of

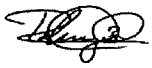
- [ ] This signature page, the laboratory review checklist, and the following reportable data:
- [ ] R1 Field chain-of-custody documentation;
- [ ] R2 Sample identification cross-reference;
- [ ] R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- [ ] R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- [ ] R5 Test reports/summary forms for blank samples;
- [ ] R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- [ ] R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- [ ] R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- [ ] R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- [ ] R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/10/2014

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LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/10/2014
Project Name:	Memorial Drive, Houston, TX/7312-H-P2	Laboratory Project Number:	TC50980
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59558, OP33113, OP33119, VE1519, VR775, VR776

#[1]	A[2]	DESCRIPTION	YES	NO	NA[3]	NR[4]	ER #[5]
R1	OI	**CHAIN-OF-CUSTODY (C-O-C):**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?	X				
		If required for the project, are TIC's reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations <MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	X				
		Were the MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X			2
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/10/2014				
Project Name:		Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC50980				
Reviewer Name:		Anita Patel	Prep Batch Number(s):	GN59558, OP33113, OP33119, VE1519, VR775, VR776				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/10/2014
Project Name:	Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC50980
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59558, OP33113, OP33119, VE1519, VR775, VR776

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR775-MB	R023545.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-1, TC50980-2, TC50980-3, TC50980-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.6	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	3.6	0.88	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.6	0.46	ug/kg	
108-88-3	Toluene	ND	3.6	0.93	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.6	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	87%	59-126%
2037-26-5	Toluene-D8	97%	70-139%
460-00-4	4-Bromofluorobenzene	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

Method Blank Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR776-MB	R023568.D	1	07/08/14	FI	n/a	n/a	VR776

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	0.63	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	0.91	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.8	0.48	ug/kg	
108-88-3	Toluene	ND	3.8	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.6	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	88%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	85%	63-138%
17060-07-0	1,2-Dichloroethane-D4	67%	54-123%

Method Blank Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1519-MB	E0033488.D	1	07/10/14	SC	n/a	n/a	VE1519

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	96%	68-124%
2037-26-5	Toluene-D8	93%	80-119%
460-00-4	4-Bromofluorobenzene	96%	72-126%

Blank Spike Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR775-BS	R023543.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-1, TC50980-2, TC50980-3, TC50980-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.9	47.2	96	58-124
100-41-4	Ethylbenzene	48.9	49.2	101	57-124
1634-04-4	Methyl Tert Butyl Ether	48.9	46.9	96	65-119
108-88-3	Toluene	48.9	49.7	102	67-119
1330-20-7	Xylene (total)	147	153	104	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	59-126%
2037-26-5	Toluene-D8	101%	70-139%
460-00-4	4-Bromofluorobenzene	87%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR776-BS	R023566.D	1	07/08/14	FI	n/a	n/a	VR776

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	46.1	44.1	96	58-124
100-41-4	Ethylbenzene	46.1	46.4	101	57-124
1634-04-4	Methyl Tert Butyl Ether	46.1	43.0	93	65-119
108-88-3	Toluene	46.1	46.6	101	67-119
1330-20-7	Xylene (total)	138	143	103	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	86%	63-138%
17060-07-0	1,2-Dichloroethane-D4	66%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1519-BS	E0033486.D	1	07/10/14	SC	n/a	n/a	VE1519

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	68-119
100-41-4	Ethylbenzene	25	25.2	101	71-117
1634-04-4	Methyl Tert Butyl Ether	25	22.3	89	65-119
108-88-3	Toluene	25	24.6	98	73-119
1330-20-7	Xylene (total)	75	79.3	106	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50948-1MS	R023551.D	1	07/07/14	FI	n/a	n/a	VR775
TC50948-1MSD	R023552.D	1	07/07/14	FI	n/a	n/a	VR775
TC50948-1	R023548.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-1, TC50980-2, TC50980-3, TC50980-4

CAS No.	Compound	TC50948-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		55	50.6	92	55.8	49.7	89	2	58-124/26
100-41-4	Ethylbenzene	ND		55	53.1	97	55.8	52.4	94	1	57-124/29
1634-04-4	Methyl Tert Butyl Ether	ND		55	44.0	80	55.8	45.7	82	4	65-119/29
108-88-3	Toluene	ND		55	53.8	98	55.8	53.5	96	1	67-119/28
1330-20-7	Xylene (total)	ND		165	164	99	168	163	97	1	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50948-1	Limits
1868-53-7	Dibromofluoromethane	89%	88%	86%	59-126%
2037-26-5	Toluene-D8	98%	99%	98%	70-139%
460-00-4	4-Bromofluorobenzene	85%	83%	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	64%	62%	65%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50980-5MS	R023573.D	1	07/08/14	FI	n/a	n/a	VR776
TC50980-5MSD	R023574.D	1	07/08/14	FI	n/a	n/a	VR776
TC50980-5	R023569.D	1	07/08/14	FI	n/a	n/a	VR776

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-5

CAS No.	Compound	TC50980-5 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.6 U		60.6	57.5	95	56.3	52.3	93	9	58-124/26
100-41-4	Ethylbenzene	4.6 U		60.6	63.0	104	56.3	56.7	101	11	57-124/29
1634-04-4	Methyl Tert Butyl Ether	4.6 U		60.6	50.4	83	56.3	51.2	91	2	65-119/29
108-88-3	Toluene	4.6 U		60.6	62.5	103	56.3	56.9	101	9	67-119/28
1330-20-7	Xylene (total)	14 U		182	193	106	169	174	103	10	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50980-5	Limits
1868-53-7	Dibromofluoromethane	88%	92%	85%	59-126%
2037-26-5	Toluene-D8	100%	102%	98%	70-139%
460-00-4	4-Bromofluorobenzene	85%	88%	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	60%	61%	64%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51210-2MS	E0033493.D	10	07/10/14	SC	n/a	n/a	VE1519
TC51210-2MSD	E0033494.D	10	07/10/14	SC	n/a	n/a	VE1519
TC51210-2	E0033490.D	1	07/10/14	SC	n/a	n/a	VE1519
TC51210-2	E0033492.D	10	07/10/14	SC	n/a	n/a	VE1519

The QC reported here applies to the following samples: **Method:** SW846 8260C

TC50980-6

CAS No.	Compound	TC51210-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	661 [a]		250	876	86	250	872	84	0	68-119/12
100-41-4	Ethylbenzene	ND		250	261	104	250	246	98	6	71-117/12
1634-04-4	Methyl Tert Butyl Ether	ND		250	221	88	250	210	84	5	65-119/13
108-88-3	Toluene	ND		250	252	101	250	239	96	5	73-119/13
1330-20-7	Xylene (total)	ND		750	824	110	750	778	104	6	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC51210-2	TC51210-2	Limits
1868-53-7	Dibromofluoromethane	95%	93%	96%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	92%	96%	89%	95%	68-124%
2037-26-5	Toluene-D8	98%	98%	99%	97%	80-119%
460-00-4	4-Bromofluorobenzene	96%	96%	101%	97%	72-126%

(a) Result is from Run #2.

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33113-MB	LB101561.D	1	07/07/14	ZL	07/07/14	OP33113	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50980-1, TC50980-2, TC50980-3, TC50980-4, TC50980-5

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (> C12-C28)	ND	25	14	mg/kg	
	TPH (> C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	83%	70-130%
98-08-8	aaa-Trifluorotoluene	94%	70-130%

Method Blank Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33119-MB	LB101631.D	1	07/08/14	ZL	07/08/14	OP33119	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50980-6

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (> C12-C28)	ND	2.5	0.85	mg/l	
	TPH (> C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	92%	70-130%
98-08-8	aaa-Trifluorotoluene	98%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33113-BS	LB101563.D	1	07/07/14	ZL	07/07/14	OP33113	GLB1506
OP33113-BSD	LB101565.D	1	07/07/14	ZL	07/07/14	OP33113	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50980-1, TC50980-2, TC50980-3, TC50980-4, TC50980-5

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	210	84	222	89	6	75-125/20
	TPH (> C12-C28)	250	210	84	215	86	2	75-125/20
	TPH (C6-C35)	500	420	84	437	87	4	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	83%	89%	70-130%
98-08-8	aaa-Trifluorotoluene	89%	99%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33119-BS	LB101633.D	1	07/08/14	ZL	07/08/14	OP33119	GLB1506
OP33119-BSD	LB101635.D	1	07/08/14	ZL	07/08/14	OP33119	GLB1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50980-6

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	44.7	89	46.3	93	4	75-125/20
	TPH (> C12-C28)	50	39.3	79	46.3	93	16	75-125/20
	TPH (C6-C35)	100	84.0	84	93.4	93	11	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	96%	93%	70-130%
98-08-8	aaa-Trifluorotoluene	100%	100%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33113-MS	LF101564.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506
OP33113-MSD	LF101566.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506
TC50925-1	LF101562.D	1	07/07/14	ZL	07/07/14	OP33113	GLF1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50980-1, TC50980-2, TC50980-3, TC50980-4, TC50980-5

CAS No.	Compound	TC50925-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	31	U	313	320	102	312	327	105	2	75-125/20
	TPH (> C12-C28)	31	U	313	333	106	312	309	99	7	75-125/20
	TPH (C6-C35)	31	U	627	653	104	625	636	102	3	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50925-1	Limits
84-15-1	o-Terphenyl	111%	103%	102%	70-130%
98-08-8	aaa-Trifluorotoluene	99%	105%	104%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50980
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33119-MS	LF101634.D	1	07/08/14	ZL	07/08/14	OP33119	GLF1506
OP33119-MSD	LF101636.D	1	07/08/14	ZL	07/08/14	OP33119	GLF1506
TC50998-17	LF101736.D	1	07/09/14	ZL	07/08/14	OP33119	GLF1506

The QC reported here applies to the following samples: **Method:** TNRCC 1005

TC50980-6

CAS No.	Compound	TC50998-17 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	2.4 U		48.5	44.9	93	48.9	49.1	100	9	75-125/20
	TPH (> C12-C28)	2.4 U		48.5	40.1	83	48.9	47.8	98	18	75-125/20
	TPH (C6-C35)	2.4 U		96.9	85.0	88	97.8	96.9	99	13	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50998-17	Limits
84-15-1	o-Terphenyl	84%	104%	104%	70-130%
98-08-8	aaa-Trifluorotoluene	91%	115%	96%	70-130%

* = Outside of Control Limits.

Accutest Laboratories Gulf Coast, Inc.							Jul 15, 2014 13:59 pm
Job Number:	TC51149						
Account:	Berg Oliver Associates						
Project:	Memorial Drive, Houston, TX/7312-H-P2						
Project Number:	7312-H-P2						
						Legend:	Hit
Client Sample ID:		GW-3					
Lab Sample ID:		TC51149-1					
Date Sampled:		07/08/2014					
Matrix:		Ground Water					
GC/MS Volatiles (SW846 8260C)							
Benzene	mg/l	0.00034 U					
Toluene	mg/l	0.00033 U					
Ethylbenzene	mg/l	0.00032 U					
Xylene (total)	mg/l	0.00087 U					
Methyl Tert Butyl Ether	mg/l	0.00030 U					
GC Semi-volatiles (TNRCC 1005)							
TPH (C6-C12)	mg/l	0.60 U					
TPH (>C12-C28)	mg/l	0.87 U					
TPH (>C28-C35)	mg/l	0.87 U					
TPH (C6-C35)	mg/l	0.60 U					
Client Sample ID:		SB-19	SB-21	SB-23	SB-24	SB-28	SB-29
Lab Sample ID:		TC51149-2	TC51149-3	TC51149-5	TC51149-6	TC51149-7	TC51149-4
Date Sampled:		07/08/2014	07/08/2014	07/08/2014	07/08/2014	07/08/2014	07/08/2014
Matrix:		Soil	Soil	Soil	Soil	Soil	Soil
GC/MS Volatiles (SW846 8260C)							
Benzene	mg/kg	0.00089 U	0.00073 U	0.00079 U	0.00079 U	0.00076 U	0.00083 U
Toluene	mg/kg	0.0013 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0013 U
Ethylbenzene	mg/kg	0.0013 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U
Xylene (total)	mg/kg	0.0037 U	0.0030 U	0.0033 U	0.0033 U	0.0032 U	0.0034 U
Methyl Tert Butyl Ether	mg/kg	0.00067 U	0.00055 U	0.00059 U	0.00059 U	0.00058 U	0.00062 U
GC Semi-volatiles (TNRCC 1005)							
TPH (C6-C12)	mg/kg	15 U	14 U	13 U	14 U	13 U	13 U
TPH (>C12-C28)	mg/kg	18 U	16 U	16 U	17 U	16 U	16 U
TPH (>C28-C35)	mg/kg	18 U	16 U	16 U	17 U	16 U	16 U
TPH (C6-C35)	mg/kg	15 U	14 U	13 U	14 U	13 U	13 U
General Chemistry							
Solids, Percent	%	74	81.4	83.6	78.8	85.4	81

Gulf Coast ACCUTEST LABORATORIES

07/15/14

Technical Report for

Berg Oliver Associates

Memorial Drive, Houston, TX/7312-H-P2

7312-H-P2

Accutest Job Number: TC51149

Sampling Date: 07/08/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
sross@bergoliver.com

ATTN: Sasha Ross

Total number of pages in report: 47

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

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Sample Summary

Berg Oliver Associates

Job No: TC51149

Memorial Drive, Houston, TX/7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TC51149-1	07/08/14	14:30	07/08/14	AQ	Ground Water	GW-3
TC51149-2	07/08/14	09:30	07/08/14	SO	Soil	SB-19
TC51149-3	07/08/14	10:30	07/08/14	SO	Soil	SB-21
TC51149-4	07/08/14	13:15	07/08/14	SO	Soil	SB-29
TC51149-5	07/08/14	11:00	07/08/14	SO	Soil	SB-23
TC51149-6	07/08/14	11:30	07/08/14	SO	Soil	SB-24
TC51149-7	07/08/14	13:35	07/08/14	SO	Soil	SB-28
TC51149-8	07/08/14	00:00	07/08/14	AQ	Trip Blank Water	TRIP BLANK

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Berg Oliver Associates **Job No** TC51149

Site: Memorial Drive, Houston, TX/7312-H-P2 **Report Date** 7/15/2014 1:51:17 PM

7 Samples were collected on 07/08/2014 and received intact at Accutest on 07/08/2014 and properly preserved in 1 cooler at 4 Deg C. These Samples received an Accutest job number of TC51149. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix AQ **Batch ID:** VZ4350

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50647-15MS, TC50647-15MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** VY3679

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51188-1MS, TC51188-1MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** VY3680

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51149-4MS, TC51149-4MSD were used as the QC samples indicated.

Extractables by GC By Method TNRCC 1005

Matrix AQ **Batch ID:** OP33164

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51207-3MS, TC51207-3MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** OP33148

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC51149-5MS, TC51149-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM 2540 G

Matrix SO **Batch ID:** GN59618

- Sample(s) TC51105-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC51149
Account: Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2
Collected: 07/08/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method

TC51149-1 GW-3

No hits reported in this sample.

TC51149-2 SB-19

No hits reported in this sample.

TC51149-3 SB-21

No hits reported in this sample.

TC51149-4 SB-29

No hits reported in this sample.

TC51149-5 SB-23

No hits reported in this sample.

TC51149-6 SB-24

No hits reported in this sample.

TC51149-7 SB-28

No hits reported in this sample.

Gulf Coast ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-3		
Lab Sample ID:	TC51149-1	Date Sampled:	07/08/14
Matrix:	AQ - Ground Water	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z042753.D	1	07/11/14	EM	n/a	n/a	VZ4350
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.00030 U	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		72-122%
17060-07-0	1,2-Dichloroethane-D4	91%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	82%		72-126%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-3		
Lab Sample ID:	TC51149-1	Date Sampled:	07/08/14
Matrix:	AQ - Ground Water	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	JB57855.D	1	07/11/14	RV	07/10/14	OP33164	GJB924
Run #2							

	Initial Volume	Final Volume
Run #1	29.3 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	0.60 U	2.6	0.60	mg/l	
	TPH (>C12-C28)	0.87 U	2.6	0.87	mg/l	
	TPH (>C28-C35)	0.87 U	2.6	0.87	mg/l	
	TPH (C6-C35)	0.60 U	2.6	0.60	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		70-130%
98-08-8	aaa-Trifluorotoluene	91%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-19		
Lab Sample ID:	TC51149-2	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	74.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1069179.D	1	07/11/14	FI	n/a	n/a	VY3679
Run #2							

	Initial Weight	Final Volume
Run #1	5.12 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00089 U	0.0053	0.00089	mg/kg	
108-88-3	Toluene	0.0013 U	0.0053	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0013 U	0.0053	0.0013	mg/kg	
1330-20-7	Xylene (total)	0.0037 U	0.016	0.0037	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00067 U	0.0053	0.00067	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		59-126%
2037-26-5	Toluene-D8	93%		70-139%
460-00-4	4-Bromofluorobenzene	81%		63-138%
17060-07-0	1,2-Dichloroethane-D4	81%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-19		
Lab Sample ID:	TC51149-2	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	74.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VB13649.D	1	07/10/14	RV	07/09/14	OP33148	GVB316
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	15 U	32	15	mg/kg	
	TPH (>C12-C28)	18 U	32	18	mg/kg	
	TPH (>C28-C35)	18 U	32	18	mg/kg	
	TPH (C6-C35)	15 U	32	15	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		70-130%
98-08-8	aaa-Trifluorotoluene	115%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-21		
Lab Sample ID:	TC51149-3	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	81.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1069180.D	1	07/11/14	FI	n/a	n/a	VY3679
Run #2							

	Initial Weight	Final Volume
Run #1	5.65 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00073 U	0.0043	0.00073	mg/kg	
108-88-3	Toluene	0.0011 U	0.0043	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0043	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00055 U	0.0043	0.00055	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		59-126%
2037-26-5	Toluene-D8	94%		70-139%
460-00-4	4-Bromofluorobenzene	81%		63-138%
17060-07-0	1,2-Dichloroethane-D4	81%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-21		
Lab Sample ID:	TC51149-3	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	81.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VB13651.D	1	07/10/14	RV	07/09/14	OP33148	GVB316
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	16 U	30	16	mg/kg	
	TPH (>C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		70-130%
98-08-8	aaa-Trifluorotoluene	106%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-29		
Lab Sample ID:	TC51149-4	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	81.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1069189.D	1	07/11/14	FI	n/a	n/a	VY3680
Run #2							

	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00083 U	0.0049	0.00083	mg/kg	
108-88-3	Toluene	0.0013 U	0.0049	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0049	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0034 U	0.015	0.0034	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00062 U	0.0049	0.00062	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%		59-126%
2037-26-5	Toluene-D8	94%		70-139%
460-00-4	4-Bromofluorobenzene	80%		63-138%
17060-07-0	1,2-Dichloroethane-D4	83%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-29		
Lab Sample ID:	TC51149-4	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	81.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VF13652.D	1	07/10/14	RV	07/09/14	OP33148	GVF316
Run #2							

	Initial Weight	Final Volume
Run #1	10.7 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		70-130%
98-08-8	aaa-Trifluorotoluene	98%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-23		
Lab Sample ID:	TC51149-5	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	83.6
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1069192.D	1	07/11/14	FI	n/a	n/a	VY3680
Run #2							

	Initial Weight	Final Volume
Run #1	5.13 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0047	0.00059	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		59-126%
2037-26-5	Toluene-D8	95%		70-139%
460-00-4	4-Bromofluorobenzene	80%		63-138%
17060-07-0	1,2-Dichloroethane-D4	83%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-23		
Lab Sample ID:	TC51149-5	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	83.6
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VB13617.D	1	07/09/14	RV	07/09/14	OP33148	GVB315
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		70-130%
98-08-8	aaa-Trifluorotoluene	106%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-24		
Lab Sample ID:	TC51149-6	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	78.8
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1069193.D	1	07/11/14	FI	n/a	n/a	VY3680
Run #2							

	Initial Weight	Final Volume
Run #1	5.42 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0047	0.00059	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		59-126%
2037-26-5	Toluene-D8	92%		70-139%
460-00-4	4-Bromofluorobenzene	80%		63-138%
17060-07-0	1,2-Dichloroethane-D4	85%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-24		
Lab Sample ID:	TC51149-6	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	78.8
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VB13653.D	1	07/10/14	RV	07/09/14	OP33148	GVB316
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	31	14	mg/kg	
	TPH (>C12-C28)	17 U	31	17	mg/kg	
	TPH (>C28-C35)	17 U	31	17	mg/kg	
	TPH (C6-C35)	14 U	31	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		70-130%
98-08-8	aaa-Trifluorotoluene	112%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-28		
Lab Sample ID:	TC51149-7	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	SW846 8260C	Percent Solids:	85.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y1069194.D	1	07/11/14	FI	n/a	n/a	VY3680
Run #2							

	Initial Weight	Final Volume
Run #1	5.17 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00076 U	0.0045	0.00076	mg/kg	
108-88-3	Toluene	0.0012 U	0.0045	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0045	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		59-126%
2037-26-5	Toluene-D8	92%		70-139%
460-00-4	4-Bromofluorobenzene	81%		63-138%
17060-07-0	1,2-Dichloroethane-D4	84%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-28		
Lab Sample ID:	TC51149-7	Date Sampled:	07/08/14
Matrix:	SO - Soil	Date Received:	07/08/14
Method:	TNRCC 1005 TX1005	Percent Solids:	85.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VF13654.D	1	07/10/14	RV	07/09/14	OP33148	GVF316
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		70-130%
98-08-8	aaa-Trifluorotoluene	88%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST Laboratories

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL 713-271-4700 · FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: TC51149

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston State: TX Zip: 77079
Project Contact: Sasha Ross E-mail: sross@bergoliver.com
Phone #: 281-589-0898 Fax #:
Sampler(s) Name(s): Sasha Phone #: 832-539-5001

Project Information

Project Name: Memorial Dr
Street:
City: Houston State: TX
Project #: 7512H-P2
Client Purchase Order #:
Project Manager: Sasha Ross

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analyses

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	BTEXN (8260) BTEX/MTBE	VOA (8260)	TPHTX1005	LAB USE ONLY
1	GW-3	7/8/14	2:30p	SR	GW	6	✓												✓		✓	
2	SB-19	"	9:30		SO	2													✓		✓	
3	SB-21		10:30		SO	2													✓		✓	
4	SB-19		1:15p		SO	2													✓		✓	
5	SB-23		11:00p		SO	2													✓		✓	
6	SB-24		11:30		SO	2													✓		✓	
7	SB-28	↓	1:35p	↓	SO	1													✓		✓	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA LabLink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [x] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery. 1538

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Sasha Ross	3:05 PM	1	2	7-8-14	2
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3	16:32	3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	☐ Intact ☐ Not Intact	Preserved where applicable ☐	On Ice ☐	Cooler Temp.
5	7-8-14	5					

TC51149: Chain of Custody
Page 1 of 4

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC51149 **Client:** BERG OLIVER **Project:** MEMORIAL DR

Date / Time Received: 7/8/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR6; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (4/4);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑		☐	☐	☐	☐
2. Trip Blank listed on COC:	☑		☐	☐		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☑		☐	☐		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments Received trip blanks not listed on chain.

Accutest Laboratories
V:713.271.4700

10165 Harwin Drive
F: 713.271.4770

Houston, TX 77036
www.accutest.com

5.1

5

TC51149: Chain of Custody
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ACCUTEST LABORATORIES

Problem Resolution

Accutest Job Number: TC51149

CSR: _____ **Response Date:** _____

Response:

5.1

5

TC51149: Chain of Custody
Page 3 of 4

ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC51149 **Date / Time Received:** 7/8/2014 4:25:00 PM **Initials:** BG

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC51149-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51149-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51149-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51149-1	40ml	4	4V	HCL	pH < 2	IR6	4	0	4
1	TC51149-1	40ml	5	4V	HCL	pH < 2	IR6	4	0	4
1	TC51149-1	40ml	6	4V	HCL	pH < 2	IR6	4	0	4
	TC51149-2	4oz	1	2-102	N/P	Note #2 - Preservative check not applicable.				
	TC51149-2	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TC51149-3	4oz	1	2-102	N/P	Note #2 - Preservative check not applicable.				
	TC51149-3	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TC51149-4	4oz	1	2-102	N/P	Note #2 - Preservative check not applicable.				
	TC51149-4	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TC51149-5	4oz	1	2-102	N/P	Note #2 - Preservative check not applicable.				
	TC51149-5	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TC51149-6	4oz	1	2-102	N/P	Note #2 - Preservative check not applicable.				
	TC51149-6	4oz	2	VR	N/P	Note #2 - Preservative check not applicable.				
	TC51149-7	4oz	1	2-102	N/P	Note #2 - Preservative check not applicable.				
	TC51149-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TC51149-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

TC51149: Chain of Custody
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Appendix A Laboratory Data Package Cover Page

TC51149 This data package consists of

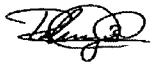
- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/15/2014

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/15/2014
Project Name:	Memorial Drive, Houston, TX/7312-H-P2	Laboratory Project Number:	TC51149
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59618, OP33148, OP33164, VY3679, VY3680, VZ4350

#[1]	A[2]	DESCRIPTION	YES	NO	NA[3]	NR[4]	ER #[5]
R1	OI	**CHAIN-OF-CUSTODY (C-O-C):**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?	X				
		If required for the project, are TIC's reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations <MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	X				
		Were the MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X			2
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/15/2014				
Project Name:		Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC51149				
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GN59618, OP33148, OP33164, VY3679, VY3680, VZ4350				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/15/2014
Project Name:	Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC51149
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59618, OP33148, OP33164, VY3679, VY3680, VZ4350

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY3679-MB	Y1069161.D	1	07/11/14	FI	n/a	n/a	VY3679

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-2, TC51149-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.9	0.66	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	0.94	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.9	0.50	ug/kg	
108-88-3	Toluene	ND	3.9	0.99	ug/kg	
1330-20-7	Xylene (total)	ND	12	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	59-126%
2037-26-5	Toluene-D8	94%	70-139%
460-00-4	4-Bromofluorobenzene	81%	63-138%
17060-07-0	1,2-Dichloroethane-D4	84%	54-123%

Method Blank Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4350-MB	Z042736.D	1	07/11/14	EM	n/a	n/a	VZ4350

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	89%	72-122%
17060-07-0	1,2-Dichloroethane-D4	86%	68-124%
2037-26-5	Toluene-D8	92%	80-119%
460-00-4	4-Bromofluorobenzene	81%	72-126%

Method Blank Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY3680-MB	Y1069188.D	1	07/11/14	FI	n/a	n/a	VY3680

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-4, TC51149-5, TC51149-6, TC51149-7

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	0.64	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	0.92	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.8	0.48	ug/kg	
108-88-3	Toluene	ND	3.8	0.97	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	91%	59-126%
2037-26-5	Toluene-D8	93%	70-139%
460-00-4	4-Bromofluorobenzene	80%	63-138%
17060-07-0	1,2-Dichloroethane-D4	83%	54-123%

Blank Spike Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY3679-BS	Y1069159.D	1	07/11/14	FI	n/a	n/a	VY3679

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-2, TC51149-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.9	37.4	76	58-124
100-41-4	Ethylbenzene	48.9	38.1	78	57-124
1634-04-4	Methyl Tert Butyl Ether	48.9	38.2	78	65-119
108-88-3	Toluene	48.9	37.3	76	67-119
1330-20-7	Xylene (total)	147	120	82	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	87%	59-126%
2037-26-5	Toluene-D8	91%	70-139%
460-00-4	4-Bromofluorobenzene	86%	63-138%
17060-07-0	1,2-Dichloroethane-D4	85%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4350-BS	Z042734.D	1	07/11/14	EM	n/a	n/a	VZ4350

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.4	98	68-119
100-41-4	Ethylbenzene	25	24.6	98	71-117
1634-04-4	Methyl Tert Butyl Ether	25	24.0	96	65-119
108-88-3	Toluene	25	25.6	102	73-119
1330-20-7	Xylene (total)	75	77.7	104	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	87%	72-122%
17060-07-0	1,2-Dichloroethane-D4	83%	68-124%
2037-26-5	Toluene-D8	93%	80-119%
460-00-4	4-Bromofluorobenzene	78%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY3680-BS	Y1069186.D	1	07/11/14	FI	n/a	n/a	VY3680

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-4, TC51149-5, TC51149-6, TC51149-7

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.8	40.5	83	58-124
100-41-4	Ethylbenzene	48.8	39.9	82	57-124
1634-04-4	Methyl Tert Butyl Ether	48.8	40.5	83	65-119
108-88-3	Toluene	48.8	39.2	80	67-119
1330-20-7	Xylene (total)	146	124	85	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	91%	59-126%
2037-26-5	Toluene-D8	93%	70-139%
460-00-4	4-Bromofluorobenzene	87%	63-138%
17060-07-0	1,2-Dichloroethane-D4	84%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51188-1MS	Y1069164.D	1	07/11/14	FI	n/a	n/a	VY3679
TC51188-1MSD	Y1069165.D	1	07/11/14	FI	n/a	n/a	VY3679
TC51188-1	Y1069162.D	1	07/11/14	FI	n/a	n/a	VY3679
TC51188-1	Y1069163.D	1	07/11/14	FI	n/a	n/a	VY3679

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-2, TC51149-3

CAS No.	Compound	TC51188-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.1 U		2470	2160	87	2470	2150	87	0	58-124/26
100-41-4	Ethylbenzene	183		2470	2580	88	2470	2550	87	1	57-124/29
1634-04-4	Methyl Tert Butyl Ether	200 U [a]		2470	2170	88	2470	2100	85	3	65-119/29
108-88-3	Toluene	60.5		2470	2290	89	2470	2220	86	3	67-119/28
1330-20-7	Xylene (total)	1960 [a]		7420	8670	90	7420	8610	90	1	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC51188-1	TC51188-1	Limits
1868-53-7	Dibromofluoromethane	87%	82%	94%	87%	59-126%
2037-26-5	Toluene-D8	95%	94%	105%	97%	70-139%
460-00-4	4-Bromofluorobenzene	87%	84%	96%	85%	63-138%
17060-07-0	1,2-Dichloroethane-D4	80%	82%	86%	80%	54-123%

(a) Result is from Run #2.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50647-15MS	Z042740.D	100	07/11/14	EM	n/a	n/a	VZ4350
TC50647-15MSD	Z042741.D	100	07/11/14	EM	n/a	n/a	VZ4350
TC50647-15	Z042738.D	100	07/11/14	EM	n/a	n/a	VZ4350

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-1

CAS No.	Compound	TC50647-15 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1480		2500	3920	98	2500	3640	86	7	68-119/12
100-41-4	Ethylbenzene	ND		2500	2430	97	2500	2260	90	7	71-117/12
1634-04-4	Methyl Tert Butyl Ether	6070		2500	8320	90	2500	8060	80	3	65-119/13
108-88-3	Toluene	ND		2500	2440	98	2500	2330	93	5	73-119/13
1330-20-7	Xylene (total)	ND		7500	7600	101	7500	7190	96	6	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC50647-15	Limits
1868-53-7	Dibromofluoromethane	88%	89%	91%	72-122%
17060-07-0	1,2-Dichloroethane-D4	85%	85%	87%	68-124%
2037-26-5	Toluene-D8	92%	94%	92%	80-119%
460-00-4	4-Bromofluorobenzene	82%	79%	80%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51149-4MS	Y1069190.D	1	07/11/14	FI	n/a	n/a	VY3680
TC51149-4MSD	Y1069191.D	1	07/11/14	FI	n/a	n/a	VY3680
TC51149-4	Y1069189.D	1	07/11/14	FI	n/a	n/a	VY3680

The QC reported here applies to the following samples: Method: SW846 8260C

TC51149-4, TC51149-5, TC51149-6, TC51149-7

CAS No.	Compound	TC51149-4 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.9 U		59.6	44.2	74	57.3	42.5	74	4	58-124/26
100-41-4	Ethylbenzene	4.9 U		59.6	44.2	74	57.3	41.4	72	7	57-124/29
1634-04-4	Methyl Tert Butyl Ether	4.9 U		59.6	39.6	66	57.3	38.5	67	3	65-119/29
108-88-3	Toluene	4.9 U		59.6	43.9	74	57.3	41.0	72	7	67-119/28
1330-20-7	Xylene (total)	15 U		179	136	76	172	126	73	8	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC51149-4	Limits
1868-53-7	Dibromofluoromethane	88%	85%	91%	59-126%
2037-26-5	Toluene-D8	93%	92%	94%	70-139%
460-00-4	4-Bromofluorobenzene	86%	86%	80%	63-138%
17060-07-0	1,2-Dichloroethane-D4	83%	86%	83%	54-123%

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33148-MB	VB13647.D	1	07/10/14	RV	07/09/14	OP33148	GVB316

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51149-2, TC51149-3, TC51149-4, TC51149-5, TC51149-6, TC51149-7

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (>C12-C28)	ND	25	14	mg/kg	
	TPH (>C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	89%	70-130%
98-08-8	aaa-Trifluorotoluene	112%	70-130%

Method Blank Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33164-MB	JF57842.D	1	07/11/14	RV	07/10/14	OP33164	GJF924

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51149-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (>C12-C28)	ND	2.5	0.85	mg/l	
	TPH (>C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	91%	70-130%
98-08-8	aaa-Trifluorotoluene	86%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33148-BS	VF13618.D	1	07/09/14	RV	07/09/14	OP33148	GVF315
OP33148-BSD	VF13620.D	1	07/09/14	RV	07/09/14	OP33148	GVF315

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51149-2, TC51149-3, TC51149-4, TC51149-5, TC51149-6, TC51149-7

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	260	104	277	111	6	75-125/20
	TPH (>C12-C28)	250	263	105	278	111	6	75-125/20
	TPH (C6-C35)	500	522	104	554	111	6	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	115%	122%	70-130%
98-08-8	aaa-Trifluorotoluene	110%	115%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33164-BS	JF57844.D	1	07/11/14	RV	07/10/14	OP33164	GJF924
OP33164-BSD	JF57846.D	1	07/11/14	RV	07/10/14	OP33164	GJF924

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51149-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	43.6	87	44.7	89	2	75-125/20
	TPH (>C12-C28)	50	44.8	90	49.6	99	10	75-125/20
	TPH (C6-C35)	100	88.4	88	94.3	94	6	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	87%	98%	70-130%
98-08-8	aaa-Trifluorotoluene	87%	89%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33148-MS	VB13619.D	1	07/09/14	RV	07/09/14	OP33148	GVB315
OP33148-MSD	VB13621.D	1	07/09/14	RV	07/09/14	OP33148	GVB315
TC51149-5	VB13617.D	1	07/09/14	RV	07/09/14	OP33148	GVB315

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51149-2, TC51149-3, TC51149-4, TC51149-5, TC51149-6, TC51149-7

CAS No.	Compound	TC51149-5 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	29	U	287	282	98	284	248	87	13	75-125/20
	TPH (>C12-C28)	29	U	287	259	90	284	223	79	15	75-125/20
	TPH (C6-C35)	29	U	575	541	94	567	471	83	14	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51149-5	Limits
84-15-1	o-Terphenyl	102%	86%	95%	70-130%
98-08-8	aaa-Trifluorotoluene	107%	94%	106%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51149
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33164-MS	JB57843.D	1	07/11/14	RV	07/10/14	OP33164	GJB924
OP33164-MSD	JB57845.D	1	07/11/14	RV	07/10/14	OP33164	GJB924
TC51207-3	JB57841.D	1	07/11/14	RV	07/10/14	OP33164	GJB924

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51149-1

CAS No.	Compound	TC51207-3 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	0.791	J	48.6	42.5	86	49.3	41.2	82	3	75-125/20
	TPH (>C12-C28)	2.4 U		48.6	49.2	101	49.3	47.1	96	4	75-125/20
	TPH (C6-C35)	0.791	J	97.2	91.6	93	98.6	88.3	88	4	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51207-3	Limits
84-15-1	o-Terphenyl	96%	96%	98%	70-130%
98-08-8	aaa-Trifluorotoluene	89%	84%	91%	70-130%

* = Outside of Control Limits.

Accutest Laboratories Gulf Coast, Inc.									Jul 17, 2014 16:49 pm
Job Number:	TC51322								
Account:	Berg Oliver Associates								
Project:	Memorial Drive, Houston, TX/7312-H-P2								
Project Number:	7312-H-P2								
								Legend:	Hit
Client Sample ID:		GW-4	GW-5						
Lab Sample ID:		TC51322-3	TC51322-10						
Date Sampled:		07/09/2014	07/09/2014						
Matrix:		Ground Water	Ground Water						
GC/MS Volatiles (SW846 8260C)									
Benzene	mg/l	0.00034 U	0.00034 U						
Toluene	mg/l	0.00033 U	0.00033 U						
Ethylbenzene	mg/l	0.00032 U	0.00032 U						
Xylene (total)	mg/l	0.00087 U	0.00087 U						
Methyl Tert Butyl Ether	mg/l	0.00030 U	0.00030 U						
Acetone	mg/l	-	0.010 U						
Bromobenzene	mg/l	-	0.00029 U						
Bromochloromethane	mg/l	-	0.00042 U						
Bromodichloromethane	mg/l	-	0.00034 U						
Bromoform	mg/l	-	0.00044 U						
n-Butylbenzene	mg/l	-	0.00039 U						
sec-Butylbenzene	mg/l	-	0.00045 U						
tert-Butylbenzene	mg/l	-	0.00045 U						
Chlorobenzene	mg/l	-	0.00027 U						
Chloroethane	mg/l	-	0.00072 U						
Chloroform	mg/l	-	0.00035 U						
o-Chlorotoluene	mg/l	-	0.00036 U						
p-Chlorotoluene	mg/l	-	0.00031 U						
Carbon disulfide	mg/l	-	0.00036 U						
Carbon tetrachloride	mg/l	-	0.00043 U						
1,1-Dichloroethane	mg/l	-	0.00034 U						
1,1-Dichloroethylene	mg/l	-	0.00045 U						
1,1-Dichloropropene	mg/l	-	0.00062 U						
1,2-Dibromo-3-chloropropane	mg/l	-	0.0016 U						
1,2-Dibromoethane	mg/l	-	0.00034 U						
1,2-Dichloroethane	mg/l	-	0.00035 U						
1,2-Dichloropropane	mg/l	-	0.00033 U						
1,3-Dichloropropane	mg/l	-	0.00032 U						
2,2-Dichloropropane	mg/l	-	0.00051 U						
Dibromochloromethane	mg/l	-	0.00037 U						
Dichlorodifluoromethane	mg/l	-	0.0015 U						
cis-1,2-Dichloroethylene	mg/l	-	0.00040 U						
cis-1,3-Dichloropropene	mg/l	-	0.00029 U						
m-Dichlorobenzene	mg/l	-	0.00033 U						
o-Dichlorobenzene	mg/l	-	0.00028 U						
p-Dichlorobenzene	mg/l	-	0.00032 U						
trans-1,2-Dichloroethylene	mg/l	-	0.00047 U						
trans-1,3-Dichloropropene	mg/l	-	0.00032 U						
2-Hexanone	mg/l	-	0.0026 U						
Hexachlorobutadiene	mg/l	-	0.00049 U						
Isopropylbenzene	mg/l	-	0.00040 U						
p-Isopropyltoluene	mg/l	-	0.00036 U						
4-Methyl-2-pentanone	mg/l	-	0.0022 U						
Methyl bromide	mg/l	-	0.00051 U						
Methyl chloride	mg/l	-	0.00063 U						
Methylene bromide	mg/l	-	0.00045 U						
Methylene chloride	mg/l	-	0.0016 U						
Methyl ethyl ketone	mg/l	-	0.0027 U						
Naphthalene	mg/l	-	0.0016 U						
n-Propylbenzene	mg/l	-	0.00035 U						

Styrene	mg/l	-	0.00029 U						
1,1,1,2-Tetrachloroethane	mg/l	-	0.00037 U						
1,1,1-Trichloroethane	mg/l	-	0.00043 U						
1,1,2,2-Tetrachloroethane	mg/l	-	0.00040 U						
1,1,2-Trichloroethane	mg/l	-	0.00035 U						
1,2,3-Trichlorobenzene	mg/l	-	0.00042 U						
1,2,3-Trichloropropane	mg/l	-	0.00046 U						
1,2,4-Trichlorobenzene	mg/l	-	0.00041 U						
1,2,4-Trimethylbenzene	mg/l	-	0.00032 U						
1,3,5-Trimethylbenzene	mg/l	-	0.00035 U						
Tetrachloroethylene	mg/l	-	0.00046 U						
Trichloroethylene	mg/l	-	0.00049 U						
Trichlorofluoromethane	mg/l	-	0.00075 U						
Vinyl chloride	mg/l	-	0.00079 U						
m,p-Xylene	mg/l	-	0.00059 U						
o-Xylene	mg/l	-	0.00028 U						
GC Semi-volatiles (TNRCC 1005)									
TPH (C6-C12)	mg/l	0.55 U	0.57 U						
TPH (>C12-C28)	mg/l	0.80 U	0.83 U						
TPH (>C28-C35)	mg/l	0.80 U	0.83 U						
TPH (C6-C35)	mg/l	0.55 U	0.57 U						
Client Sample ID:		**SB-10**	**SB-11**	**SB-16**	**SB-20**	**SB-22**	**SB-25**	**SB-26**	**SB-27**
Lab Sample ID:		**TC51322-9**	**TC51322-8**	**TC51322-7**	**TC51322-6**	**TC51322-2**	**TC51322-4**	**TC51322-5**	**TC51322-1**
Date Sampled:		**07/09/2014**	**07/09/2014**	**07/09/2014**	**07/09/2014**	**07/09/2014**	**07/09/2014**	**07/09/2014**	**07/09/2014**
Matrix:		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
GC/MS Volatiles (SW846 8260C)									
Benzene	mg/kg	0.00086 U	0.00073 U	0.00071 U	0.00081 U	0.00087 U	0.00075 U	0.0012 J	0.00077 U
Toluene	mg/kg	0.0013 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0013 U	0.0012 U
Ethylbenzene	mg/kg	0.0012 U	0.0011 U	0.0010 U	0.0012 U	0.0012 U	0.0011 U	0.0012 U	0.0011 U
Xylene (total)	mg/kg	0.0036 U	0.0030 U	0.0029 U	0.0034 U	0.0036 U	0.0031 U	0.0035 U	0.0032 U
Methyl Tert Butyl Ether	mg/kg	0.00065 U	0.00055 U	0.00053 U	0.00061 U	0.00065 U	0.00057 U	0.00064 U	0.00058 U
Acetone	mg/kg	0.0266 J	0.011 U	-	-	-	-	-	-
Bromobenzene	mg/kg	0.00051 U	0.00044 U	-	-	-	-	-	-
Bromochloromethane	mg/kg	0.0014 U	0.0012 U	-	-	-	-	-	-
Bromodichloromethane	mg/kg	0.00057 U	0.00049 U	-	-	-	-	-	-
Bromoform	mg/kg	0.00096 U	0.00082 U	-	-	-	-	-	-
n-Butylbenzene	mg/kg	0.00056 U	0.00048 U	-	-	-	-	-	-
sec-Butylbenzene	mg/kg	0.0011 U	0.00095 U	-	-	-	-	-	-
tert-Butylbenzene	mg/kg	0.00099 U	0.00085 U	-	-	-	-	-	-
Chlorobenzene	mg/kg	0.0012 U	0.0010 U	-	-	-	-	-	-
Chloroethane	mg/kg	0.0020 U	0.0017 U	-	-	-	-	-	-
Chloroform	mg/kg	0.00092 J	0.00047 U	-	-	-	-	-	-
o-Chlorotoluene	mg/kg	0.00061 U	0.00052 U	-	-	-	-	-	-
p-Chlorotoluene	mg/kg	0.00052 U	0.00045 U	-	-	-	-	-	-
Carbon disulfide	mg/kg	0.00074 U	0.00063 U	-	-	-	-	-	-
Carbon tetrachloride	mg/kg	0.0011 U	0.00094 U	-	-	-	-	-	-
1,1-Dichloroethane	mg/kg	0.00052 U	0.00045 U	-	-	-	-	-	-
1,1-Dichloroethylene	mg/kg	0.00053 U	0.00045 U	-	-	-	-	-	-
1,1-Dichloropropene	mg/kg	0.00057 U	0.00049 U	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	mg/kg	0.0040 U	0.0034 U	-	-	-	-	-	-
1,2-Dibromoethane	mg/kg	0.00054 U	0.00046 U	-	-	-	-	-	-
1,2-Dichloroethane	mg/kg	0.0014 J	0.00052 U	-	-	-	-	-	-
1,2-Dichloropropane	mg/kg	0.00074 U	0.00063 U	-	-	-	-	-	-
1,3-Dichloropropane	mg/kg	0.0013 U	0.0011 U	-	-	-	-	-	-
2,2-Dichloropropane	mg/kg	0.00069 U	0.00059 U	-	-	-	-	-	-
Dibromochloromethane	mg/kg	0.0012 U	0.00099 U	-	-	-	-	-	-
Dichlorodifluoromethane	mg/kg	0.0014 U	0.0012 U	-	-	-	-	-	-
cis-1,2-Dichloroethylene	mg/kg	0.00058 U	0.00050 U	-	-	-	-	-	-
cis-1,3-Dichloropropene	mg/kg	0.00057 U	0.00049 U	-	-	-	-	-	-
m-Dichlorobenzene	mg/kg	0.00079 U	0.00068 U	-	-	-	-	-	-

o-Dichlorobenzene	mg/kg	0.0012 U	0.0011 U	-	-	-	-	-	-
p-Dichlorobenzene	mg/kg	0.0011 U	0.00094 U	-	-	-	-	-	-
trans-1,2-Dichloroethylene	mg/kg	0.00056 U	0.00048 U	-	-	-	-	-	-
trans-1,3-Dichloropropene	mg/kg	0.00065 U	0.00056 U	-	-	-	-	-	-
2-Hexanone	mg/kg	0.0094 U	0.0081 U	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.00088 U	0.00075 U	-	-	-	-	-	-
Isopropylbenzene	mg/kg	0.0014 U	0.0012 U	-	-	-	-	-	-
p-Isopropyltoluene	mg/kg	0.0017 U	0.0014 U	-	-	-	-	-	-
4-Methyl-2-pentanone	mg/kg	0.0080 U	0.0069 U	-	-	-	-	-	-
Methyl bromide	mg/kg	0.0024 U	0.0020 U	-	-	-	-	-	-
Methyl chloride	mg/kg	0.00098 U	0.00083 U	-	-	-	-	-	-
Methylene bromide	mg/kg	0.00082 U	0.00070 U	-	-	-	-	-	-
Methylene chloride	mg/kg	0.0032 U	0.0027 U	-	-	-	-	-	-
Methyl ethyl ketone	mg/kg	0.0064 U	0.0054 U	-	-	-	-	-	-
Naphthalene	mg/kg	0.0025 U	0.0022 U	-	-	-	-	-	-
n-Propylbenzene	mg/kg	0.0013 U	0.0011 U	-	-	-	-	-	-
Styrene	mg/kg	0.0012 U	0.0010 U	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	mg/kg	0.00064 U	0.00055 U	-	-	-	-	-	-
1,1,1-Trichloroethane	mg/kg	0.00080 U	0.00068 U	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg	0.00086 U	0.00073 U	-	-	-	-	-	-
1,1,2-Trichloroethane	mg/kg	0.00085 U	0.00073 U	-	-	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg	0.00067 U	0.00057 U	-	-	-	-	-	-
1,2,3-Trichloropropane	mg/kg	0.0012 U	0.00099 U	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.00063 U	0.00054 U	-	-	-	-	-	-
1,2,4-Trimethylbenzene	mg/kg	0.00052 U	0.00044 U	-	-	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg	0.0012 U	0.0010 U	-	-	-	-	-	-
Tetrachloroethylene	mg/kg	0.0013 U	0.0011 U	-	-	-	-	-	-
Trichloroethylene	mg/kg	0.00059 U	0.00051 U	-	-	-	-	-	-
Trichlorofluoromethane	mg/kg	0.00080 U	0.00068 U	-	-	-	-	-	-
Vinyl chloride	mg/kg	0.00074 U	0.00063 U	-	-	-	-	-	-
m,p-Xylene	mg/kg	0.0023 U	0.0019 U	-	-	-	-	-	-
o-Xylene	mg/kg	0.0013 U	0.0011 U	-	-	-	-	-	-
GC Semi-volatiles (TNRCC 1005)									
		SB-10	SB-11	SB-16	SB-20	SB-22	SB-25	SB-26	SB-27
TPH (C6-C12)	mg/kg	15 U	13 U	12 U	13 U	14 U	13 U	15 U	13 U
TPH (>C12-C28)	mg/kg	54.7	16 U	14 U	15 U	17 U	15 U	18 U	16.0 J
TPH (>C28-C35)	mg/kg	92.3	30.8	14 U	15 U	17 U	15 U	18 U	69.7
TPH (C6-C35)	mg/kg	147	30.8	12 U	13 U	14 U	13 U	15 U	85.7
General Chemistry									
Solids, Percent	%	70.3	84	87.8	82.7	76.8	86.1	73.3	82.4

TPH Soil 1600 2300 2300
GW Soil 65 200 200

Gulf Coast ACCUTEST LABORATORIES

07/17/14

Technical Report for

Berg Oliver Associates

Memorial Drive, Houston, TX/7312-H-P2

7312-H-P2

Accutest Job Number: TC51322

Sampling Date: 07/09/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
sross@bergoliver.com

ATTN: Sasha Ross

Total number of pages in report: 75

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

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Sample Summary

Berg Oliver Associates

Job No: TC51322

Memorial Drive, Houston, TX/7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC51322-1	07/09/14	10:00		07/10/14	SO	Soil	SB-27
TC51322-2	07/09/14	10:45		07/10/14	SO	Soil	SB-22
TC51322-3	07/09/14	13:05		07/10/14	AQ	Ground Water	GW-4
TC51322-4	07/09/14	11:30		07/10/14	SO	Soil	SB-25
TC51322-5	07/09/14	11:50		07/10/14	SO	Soil	SB-26
TC51322-6	07/09/14	13:34		07/10/14	SO	Soil	SB-20
TC51322-7	07/09/14	14:15		07/10/14	SO	Soil	SB-16
TC51322-8	07/09/14	15:20		07/10/14	SO	Soil	SB-11
TC51322-9	07/09/14	15:40		07/10/14	SO	Soil	SB-10
TC51322-10	07/09/14	16:00		07/10/14	AQ	Ground Water	GW-5

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Berg Oliver Associates	**Job No**	TC51322
Site:	Memorial Drive, Houston, TX/7312-H-P2	**Report Date**	7/17/2014 4:43:10 PM

10 Samples were collected on 07/09/2014 and received intact at Accutest on 07/10/2014 and properly preserved in 1 cooler at 4 Deg C. These Samples received an Accutest job number of TC51322. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix AQ **Batch ID:** VG1385

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50998-2MS, TC50998-2MSD were used as the QC samples indicated.
- Matrix Spike/Matrix Spike Duplicate Recovery(s) for 1,1-Dichloroethylene are outside control limits. Probable cause due to matrix interference.

Matrix AQ **Batch ID:** VZ4352

- All samples were analyzed within the recommended method holding time.
- Sample(s) TC51346-3MS, TC51346-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO **Batch ID:** VX2265

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51422-5MS, TC51422-5MSD were used as the QC samples indicated.
- Matrix Spike/Matrix Spike Duplicate Recovery(s) for Chloroethane, Methyl bromide are outside control limits. Probable cause due to matrix interference.

Matrix SO **Batch ID:** VX2266

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51152-17MS, TC51152-17MSD were used as the QC samples indicated.

Extractables by GC By Method TNRCC 1005

Matrix AQ	Batch ID: OP33179

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC51305-1MS, TC51305-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO	Batch ID: OP33184

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC51387-1MS, TC51387-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) OP33184-MS have surrogates outside control limits. Probable cause due to matrix interference.

Wet Chemistry By Method SM 2540 G

Matrix SO	Batch ID: GN59728

- Sample(s) TC51322-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC51322
Account: Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2
Collected: 07/09/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC51322-1	SB-27					
TPH (>C12-C28)		16.0 J	28	15	mg/kg	TNRCC 1005
TPH (>C28-C35)		69.7	28	15	mg/kg	TNRCC 1005
TPH (C6-C35)		85.7	28	13	mg/kg	TNRCC 1005
TC51322-2	SB-22					
No hits reported in this sample.						
TC51322-3	GW-4					
No hits reported in this sample.						
TC51322-4	SB-25					
No hits reported in this sample.						
TC51322-5	SB-26					
Benzene		0.0012 J	0.0051	0.00085	mg/kg	SW846 8260C
TC51322-6	SB-20					
No hits reported in this sample.						
TC51322-7	SB-16					
No hits reported in this sample.						
TC51322-8	SB-11					
TPH (>C28-C35)		30.8	28	16	mg/kg	TNRCC 1005
TPH (C6-C35)		30.8	28	13	mg/kg	TNRCC 1005
TC51322-9	SB-10					
Acetone		0.0266 J	0.051	0.013	mg/kg	SW846 8260C
Chloroform		0.00092 J	0.0051	0.00055	mg/kg	SW846 8260C
1,2-Dichloroethane		0.0014 J	0.0051	0.00060	mg/kg	SW846 8260C
TPH (>C12-C28)		54.7	33	18	mg/kg	TNRCC 1005
TPH (>C28-C35)		92.3	33	18	mg/kg	TNRCC 1005
TPH (C6-C35)		147	33	15	mg/kg	TNRCC 1005

Summary of Hits

Job Number: TC51322
Account: Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2
Collected: 07/09/14

Lab Sample ID	Client Sample ID	Result/				
Analyte		Qual	MQL	SDL	Units	Method
TC51322-10	GW-5					

No hits reported in this sample.

Gulf Coast ACCUTEST LABORATORIES

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Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-27		
Lab Sample ID:	TC51322-1	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	82.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100869.D	1	07/17/14	CF	07/15/14 11:26	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.32 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00077 U	0.0046	0.00077	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0046	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		59-126%
2037-26-5	Toluene-D8	95%		70-139%
460-00-4	4-Bromofluorobenzene	93%		63-138%
17060-07-0	1,2-Dichloroethane-D4	90%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-27		
Lab Sample ID:	TC51322-1	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	82.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102138.D	1	07/16/14	ZL	07/14/14	OP33184	GLF1510
Run #2							

	Initial Weight	Final Volume
Run #1	11.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	16.0	28	15	mg/kg	J
	TPH (>C28-C35)	69.7	28	15	mg/kg	
	TPH (C6-C35)	85.7	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		70-130%
98-08-8	aaa-Trifluorotoluene	92%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-22		
Lab Sample ID:	TC51322-2	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	76.8
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100870.D	1	07/17/14	CF	07/15/14 11:32	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.08 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00087 U	0.0051	0.00087	mg/kg	
108-88-3	Toluene	0.0013 U	0.0051	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0051	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0036 U	0.015	0.0036	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00065 U	0.0051	0.00065	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		59-126%
2037-26-5	Toluene-D8	93%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%
17060-07-0	1,2-Dichloroethane-D4	90%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-22		
Lab Sample ID:	TC51322-2	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	76.8
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102064.D	1	07/15/14	ZL	07/14/14	OP33184	GLF1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.8 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	17 U	30	17	mg/kg	
	TPH (>C28-C35)	17 U	30	17	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		70-130%
98-08-8	aaa-Trifluorotoluene	101%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-4		
Lab Sample ID:	TC51322-3	Date Sampled:	07/09/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z042806.D	1	07/14/14	EM	n/a	n/a	VZ4352
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.00030 U	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		72-122%
17060-07-0	1,2-Dichloroethane-D4	88%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	82%		72-126%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-4		
Lab Sample ID:	TC51322-3	Date Sampled:	07/09/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VB13749.D	1	07/15/14	RV	07/12/14	OP33179	GVB318
Run #2							

	Initial Volume	Final Volume
Run #1	32.1 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	0.55 U	2.3	0.55	mg/l	
	TPH (>C12-C28)	0.80 U	2.3	0.80	mg/l	
	TPH (>C28-C35)	0.80 U	2.3	0.80	mg/l	
	TPH (C6-C35)	0.55 U	2.3	0.55	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	106%		70-130%
98-08-8	aaa-Trifluorotoluene	114%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-25		
Lab Sample ID:	TC51322-4	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.1
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100871.D	1	07/17/14	CF	07/15/14 11:39	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.20 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0045	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		59-126%
2037-26-5	Toluene-D8	93%		70-139%
460-00-4	4-Bromofluorobenzene	93%		63-138%
17060-07-0	1,2-Dichloroethane-D4	94%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-25		
Lab Sample ID:	TC51322-4	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.1
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB102187.D	1	07/16/14	ZL	07/14/14	OP33184	GLB1511
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	15 U	28	15	mg/kg	
	TPH (>C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		70-130%
98-08-8	aaa-Trifluorotoluene	88%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-26		
Lab Sample ID:	TC51322-5	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	73.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100872.D	1	07/17/14	CF	07/15/14 11:44	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.40 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.0012	0.0051	0.00085	mg/kg	J
108-88-3	Toluene	0.0013 U	0.0051	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0051	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0035 U	0.015	0.0035	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00064 U	0.0051	0.00064	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		59-126%
2037-26-5	Toluene-D8	96%		70-139%
460-00-4	4-Bromofluorobenzene	95%		63-138%
17060-07-0	1,2-Dichloroethane-D4	89%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-26		
Lab Sample ID:	TC51322-5	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	73.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102066.D	1	07/15/14	ZL	07/14/14	OP33184	GLF1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	15 U	33	15	mg/kg	
	TPH (>C12-C28)	18 U	33	18	mg/kg	
	TPH (>C28-C35)	18 U	33	18	mg/kg	
	TPH (C6-C35)	15 U	33	15	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		70-130%
98-08-8	aaa-Trifluorotoluene	100%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-20		
Lab Sample ID:	TC51322-6	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	82.7
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100873.D	1	07/17/14	CF	07/15/14 11:52	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00081 U	0.0048	0.00081	mg/kg	
108-88-3	Toluene	0.0012 U	0.0048	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0048	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0034 U	0.014	0.0034	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00061 U	0.0048	0.00061	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		59-126%
2037-26-5	Toluene-D8	95%		70-139%
460-00-4	4-Bromofluorobenzene	93%		63-138%
17060-07-0	1,2-Dichloroethane-D4	88%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-20		
Lab Sample ID:	TC51322-6	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	82.7
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102188.D	1	07/16/14	ZL	07/14/14	OP33184	GLF1511
Run #2							

	Initial Weight	Final Volume
Run #1	10.7 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	15 U	28	15	mg/kg	
	TPH (>C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		70-130%
98-08-8	aaa-Trifluorotoluene	91%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-16		
Lab Sample ID:	TC51322-7	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	87.8
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100874.D	1	07/17/14	CF	07/15/14 12:00	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.43 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00071 U	0.0042	0.00071	mg/kg	
108-88-3	Toluene	0.0011 U	0.0042	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0010 U	0.0042	0.0010	mg/kg	
1330-20-7	Xylene (total)	0.0029 U	0.013	0.0029	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00053 U	0.0042	0.00053	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		59-126%
2037-26-5	Toluene-D8	93%		70-139%
460-00-4	4-Bromofluorobenzene	92%		63-138%
17060-07-0	1,2-Dichloroethane-D4	86%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-16		
Lab Sample ID:	TC51322-7	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	87.8
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102206.D	1	07/16/14	ZL	07/14/14	OP33184	GLF1511
Run #2							

	Initial Weight	Final Volume
Run #1	10.8 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	12 U	26	12	mg/kg	
	TPH (>C12-C28)	14 U	26	14	mg/kg	
	TPH (>C28-C35)	14 U	26	14	mg/kg	
	TPH (C6-C35)	12 U	26	12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		70-130%
98-08-8	aaa-Trifluorotoluene	94%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-11		
Lab Sample ID:	TC51322-8	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100851.D	1	07/16/14	CF	07/15/14 12:05	n/a	VX2265
Run #2							

	Initial Weight	Final Volume
Run #1	5.47 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.011 U	0.044	0.011	mg/kg	
71-43-2	Benzene	0.00073 U	0.0044	0.00073	mg/kg	
108-86-1	Bromobenzene	0.00044 U	0.0044	0.00044	mg/kg	
74-97-5	Bromochloromethane	0.0012 U	0.0044	0.0012	mg/kg	
75-27-4	Bromodichloromethane	0.00049 U	0.0044	0.00049	mg/kg	
75-25-2	Bromoform	0.00082 U	0.0044	0.00082	mg/kg	
104-51-8	n-Butylbenzene	0.00048 U	0.0044	0.00048	mg/kg	
135-98-8	sec-Butylbenzene	0.00095 U	0.0044	0.00095	mg/kg	
98-06-6	tert-Butylbenzene	0.00085 U	0.0044	0.00085	mg/kg	
108-90-7	Chlorobenzene	0.0010 U	0.0044	0.0010	mg/kg	
75-00-3	Chloroethane	0.0017 U	0.0044	0.0017	mg/kg	
67-66-3	Chloroform	0.00047 U	0.0044	0.00047	mg/kg	
95-49-8	o-Chlorotoluene	0.00052 U	0.0044	0.00052	mg/kg	
106-43-4	p-Chlorotoluene	0.00045 U	0.0044	0.00045	mg/kg	
75-15-0	Carbon disulfide	0.00063 U	0.0044	0.00063	mg/kg	
56-23-5	Carbon tetrachloride	0.00094 U	0.0044	0.00094	mg/kg	
75-34-3	1,1-Dichloroethane	0.00045 U	0.0044	0.00045	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00045 U	0.0044	0.00045	mg/kg	
563-58-6	1,1-Dichloropropene	0.00049 U	0.0044	0.00049	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0034 U	0.0044	0.0034	mg/kg	
106-93-4	1,2-Dibromoethane	0.00046 U	0.0044	0.00046	mg/kg	
107-06-2	1,2-Dichloroethane	0.00052 U	0.0044	0.00052	mg/kg	
78-87-5	1,2-Dichloropropane	0.00063 U	0.0044	0.00063	mg/kg	
142-28-9	1,3-Dichloropropane	0.0011 U	0.0044	0.0011	mg/kg	
594-20-7	2,2-Dichloropropane	0.00059 U	0.0044	0.00059	mg/kg	
124-48-1	Dibromochloromethane	0.00099 U	0.0044	0.00099	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0012 U	0.0044	0.0012	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00050 U	0.0044	0.00050	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00049 U	0.0044	0.00049	mg/kg	
541-73-1	m-Dichlorobenzene	0.00068 U	0.0044	0.00068	mg/kg	
95-50-1	o-Dichlorobenzene	0.0011 U	0.0044	0.0011	mg/kg	
106-46-7	p-Dichlorobenzene	0.00094 U	0.0044	0.00094	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-11		
Lab Sample ID:	TC51322-8	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00048 U	0.0044	0.00048	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00056 U	0.0044	0.00056	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
591-78-6	2-Hexanone	0.0081 U	0.044	0.0081	mg/kg	
87-68-3	Hexachlorobutadiene	0.00075 U	0.0044	0.00075	mg/kg	
98-82-8	Isopropylbenzene	0.0012 U	0.0044	0.0012	mg/kg	
99-87-6	p-Isopropyltoluene	0.0014 U	0.0044	0.0014	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0069 U	0.044	0.0069	mg/kg	
74-83-9	Methyl bromide	0.0020 U	0.0044	0.0020	mg/kg	
74-87-3	Methyl chloride	0.00083 U	0.0044	0.00083	mg/kg	
74-95-3	Methylene bromide	0.00070 U	0.0044	0.00070	mg/kg	
75-09-2	Methylene chloride	0.0027 U	0.011	0.0027	mg/kg	
78-93-3	Methyl ethyl ketone	0.0054 U	0.044	0.0054	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00055 U	0.0044	0.00055	mg/kg	
91-20-3	Naphthalene	0.0022 U	0.0044	0.0022	mg/kg	
103-65-1	n-Propylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
100-42-5	Styrene	0.0010 U	0.0044	0.0010	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00055 U	0.0044	0.00055	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00068 U	0.0044	0.00068	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00073 U	0.0044	0.00073	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00073 U	0.0044	0.00073	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00057 U	0.0044	0.00057	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.00099 U	0.0044	0.00099	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00054 U	0.0044	0.00054	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00044 U	0.0044	0.00044	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0010 U	0.0044	0.0010	mg/kg	
127-18-4	Tetrachloroethylene	0.0011 U	0.0044	0.0011	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
79-01-6	Trichloroethylene	0.00051 U	0.0044	0.00051	mg/kg	
75-69-4	Trichlorofluoromethane	0.00068 U	0.0044	0.00068	mg/kg	
75-01-4	Vinyl chloride	0.00063 U	0.0044	0.00063	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
	m,p-Xylene	0.0019 U	0.0087	0.0019	mg/kg	
95-47-6	o-Xylene	0.0011 U	0.0044	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		59-126%
2037-26-5	Toluene-D8	94%		70-139%
460-00-4	4-Bromofluorobenzene	95%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-11		
Lab Sample ID:	TC51322-8	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	90%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-11		
Lab Sample ID:	TC51322-8	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	84.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102134.D	1	07/15/14	ZL	07/14/14	OP33184	GLF1510
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	16 U	28	16	mg/kg	
	TPH (>C28-C35)	30.8	28	16	mg/kg	
	TPH (C6-C35)	30.8	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	109%		70-130%
98-08-8	aaa-Trifluorotoluene	105%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-10		
Lab Sample ID:	TC51322-9	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	70.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100852.D	1	07/16/14	CF	07/15/14 12:08	n/a	VX2265
Run #2							

	Initial Weight	Final Volume
Run #1	5.59 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.0266	0.051	0.013	mg/kg	J
71-43-2	Benzene	0.00086 U	0.0051	0.00086	mg/kg	
108-86-1	Bromobenzene	0.00051 U	0.0051	0.00051	mg/kg	
74-97-5	Bromochloromethane	0.0014 U	0.0051	0.0014	mg/kg	
75-27-4	Bromodichloromethane	0.00057 U	0.0051	0.00057	mg/kg	
75-25-2	Bromoform	0.00096 U	0.0051	0.00096	mg/kg	
104-51-8	n-Butylbenzene	0.00056 U	0.0051	0.00056	mg/kg	
135-98-8	sec-Butylbenzene	0.0011 U	0.0051	0.0011	mg/kg	
98-06-6	tert-Butylbenzene	0.00099 U	0.0051	0.00099	mg/kg	
108-90-7	Chlorobenzene	0.0012 U	0.0051	0.0012	mg/kg	
75-00-3	Chloroethane	0.0020 U	0.0051	0.0020	mg/kg	
67-66-3	Chloroform	0.00092	0.0051	0.00055	mg/kg	J
95-49-8	o-Chlorotoluene	0.00061 U	0.0051	0.00061	mg/kg	
106-43-4	p-Chlorotoluene	0.00052 U	0.0051	0.00052	mg/kg	
75-15-0	Carbon disulfide	0.00074 U	0.0051	0.00074	mg/kg	
56-23-5	Carbon tetrachloride	0.0011 U	0.0051	0.0011	mg/kg	
75-34-3	1,1-Dichloroethane	0.00052 U	0.0051	0.00052	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00053 U	0.0051	0.00053	mg/kg	
563-58-6	1,1-Dichloropropene	0.00057 U	0.0051	0.00057	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0040 U	0.0051	0.0040	mg/kg	
106-93-4	1,2-Dibromoethane	0.00054 U	0.0051	0.00054	mg/kg	
107-06-2	1,2-Dichloroethane	0.0014	0.0051	0.00060	mg/kg	J
78-87-5	1,2-Dichloropropane	0.00074 U	0.0051	0.00074	mg/kg	
142-28-9	1,3-Dichloropropane	0.0013 U	0.0051	0.0013	mg/kg	
594-20-7	2,2-Dichloropropane	0.00069 U	0.0051	0.00069	mg/kg	
124-48-1	Dibromochloromethane	0.0012 U	0.0051	0.0012	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0014 U	0.0051	0.0014	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00058 U	0.0051	0.00058	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00057 U	0.0051	0.00057	mg/kg	
541-73-1	m-Dichlorobenzene	0.00079 U	0.0051	0.00079	mg/kg	
95-50-1	o-Dichlorobenzene	0.0012 U	0.0051	0.0012	mg/kg	
106-46-7	p-Dichlorobenzene	0.0011 U	0.0051	0.0011	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-10		
Lab Sample ID:	TC51322-9	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	70.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00056 U	0.0051	0.00056	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00065 U	0.0051	0.00065	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0051	0.0012	mg/kg	
591-78-6	2-Hexanone	0.0094 U	0.051	0.0094	mg/kg	
87-68-3	Hexachlorobutadiene	0.00088 U	0.0051	0.00088	mg/kg	
98-82-8	Isopropylbenzene	0.0014 U	0.0051	0.0014	mg/kg	
99-87-6	p-Isopropyltoluene	0.0017 U	0.0051	0.0017	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0080 U	0.051	0.0080	mg/kg	
74-83-9	Methyl bromide	0.0024 U	0.0051	0.0024	mg/kg	
74-87-3	Methyl chloride	0.00098 U	0.0051	0.00098	mg/kg	
74-95-3	Methylene bromide	0.00082 U	0.0051	0.00082	mg/kg	
75-09-2	Methylene chloride	0.0032 U	0.013	0.0032	mg/kg	
78-93-3	Methyl ethyl ketone	0.0064 U	0.051	0.0064	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00065 U	0.0051	0.00065	mg/kg	
91-20-3	Naphthalene	0.0025 U	0.0051	0.0025	mg/kg	
103-65-1	n-Propylbenzene	0.0013 U	0.0051	0.0013	mg/kg	
100-42-5	Styrene	0.0012 U	0.0051	0.0012	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00064 U	0.0051	0.00064	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00080 U	0.0051	0.00080	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00086 U	0.0051	0.00086	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00085 U	0.0051	0.00085	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00067 U	0.0051	0.00067	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.0012 U	0.0051	0.0012	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00063 U	0.0051	0.00063	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00052 U	0.0051	0.00052	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0012 U	0.0051	0.0012	mg/kg	
127-18-4	Tetrachloroethylene	0.0013 U	0.0051	0.0013	mg/kg	
108-88-3	Toluene	0.0013 U	0.0051	0.0013	mg/kg	
79-01-6	Trichloroethylene	0.00059 U	0.0051	0.00059	mg/kg	
75-69-4	Trichlorofluoromethane	0.00080 U	0.0051	0.00080	mg/kg	
75-01-4	Vinyl chloride	0.00074 U	0.0051	0.00074	mg/kg	
1330-20-7	Xylene (total)	0.0036 U	0.015	0.0036	mg/kg	
	m,p-Xylene	0.0023 U	0.010	0.0023	mg/kg	
95-47-6	o-Xylene	0.0013 U	0.0051	0.0013	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	96%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-10		
Lab Sample ID:	TC51322-9	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	70.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	85%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-10		
Lab Sample ID:	TC51322-9	Date Sampled:	07/09/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	70.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102132.D	1	07/15/14	ZL	07/14/14	OP33184	GLF1510
Run #2							

	Initial Weight	Final Volume
Run #1	10.7 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	15 U	33	15	mg/kg	
	TPH (>C12-C28)	54.7	33	18	mg/kg	
	TPH (>C28-C35)	92.3	33	18	mg/kg	
	TPH (C6-C35)	147	33	15	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		70-130%
98-08-8	aaa-Trifluorotoluene	106%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-5		
Lab Sample ID:	TC51322-10	Date Sampled:	07/09/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0251708.D	1	07/14/14	SC	n/a	n/a	VG1385
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.010 U	0.050	0.010	mg/l	
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-86-1	Bromobenzene	0.00029 U	0.0010	0.00029	mg/l	
74-97-5	Bromochloromethane	0.00042 U	0.0010	0.00042	mg/l	
75-27-4	Bromodichloromethane	0.00034 U	0.0010	0.00034	mg/l	
75-25-2	Bromoform	0.00044 U	0.0010	0.00044	mg/l	
104-51-8	n-Butylbenzene	0.00039 U	0.0010	0.00039	mg/l	
135-98-8	sec-Butylbenzene	0.00045 U	0.0010	0.00045	mg/l	
98-06-6	tert-Butylbenzene	0.00045 U	0.0010	0.00045	mg/l	
108-90-7	Chlorobenzene	0.00027 U	0.0010	0.00027	mg/l	
75-00-3	Chloroethane	0.00072 U	0.0010	0.00072	mg/l	
67-66-3	Chloroform	0.00035 U	0.0010	0.00035	mg/l	
95-49-8	o-Chlorotoluene	0.00036 U	0.0010	0.00036	mg/l	
106-43-4	p-Chlorotoluene	0.00031 U	0.0010	0.00031	mg/l	
75-15-0	Carbon disulfide	0.00036 U	0.0010	0.00036	mg/l	
56-23-5	Carbon tetrachloride	0.00043 U	0.0010	0.00043	mg/l	
75-34-3	1,1-Dichloroethane	0.00034 U	0.0010	0.00034	mg/l	
75-35-4	1,1-Dichloroethylene	0.00045 U	0.0010	0.00045	mg/l	
563-58-6	1,1-Dichloropropene	0.00062 U	0.0010	0.00062	mg/l	
96-12-8	1,2-Dibromo-3-chloropropane	0.0016 U	0.0020	0.0016	mg/l	
106-93-4	1,2-Dibromoethane	0.00034 U	0.0010	0.00034	mg/l	
107-06-2	1,2-Dichloroethane	0.00035 U	0.0010	0.00035	mg/l	
78-87-5	1,2-Dichloropropane	0.00033 U	0.0010	0.00033	mg/l	
142-28-9	1,3-Dichloropropane	0.00032 U	0.0010	0.00032	mg/l	
594-20-7	2,2-Dichloropropane	0.00051 U	0.0010	0.00051	mg/l	
124-48-1	Dibromochloromethane	0.00037 U	0.0010	0.00037	mg/l	
75-71-8	Dichlorodifluoromethane	0.0015 U	0.0020	0.0015	mg/l	
156-59-2	cis-1,2-Dichloroethylene	0.00040 U	0.0010	0.00040	mg/l	
10061-01-5	cis-1,3-Dichloropropene	0.00029 U	0.0010	0.00029	mg/l	
541-73-1	m-Dichlorobenzene	0.00033 U	0.0010	0.00033	mg/l	
95-50-1	o-Dichlorobenzene	0.00028 U	0.0010	0.00028	mg/l	
106-46-7	p-Dichlorobenzene	0.00032 U	0.0010	0.00032	mg/l	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-5		
Lab Sample ID:	TC51322-10	Date Sampled:	07/09/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00047 U	0.0010	0.00047	mg/l	
10061-02-6	trans-1,3-Dichloropropene	0.00032 U	0.0010	0.00032	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
591-78-6	2-Hexanone	0.0026 U	0.010	0.0026	mg/l	
87-68-3	Hexachlorobutadiene	0.00049 U	0.0010	0.00049	mg/l	
98-82-8	Isopropylbenzene	0.00040 U	0.0010	0.00040	mg/l	
99-87-6	p-Isopropyltoluene	0.00036 U	0.0010	0.00036	mg/l	
108-10-1	4-Methyl-2-pentanone	0.0022 U	0.010	0.0022	mg/l	
74-83-9	Methyl bromide	0.00051 U	0.0010	0.00051	mg/l	
74-87-3	Methyl chloride	0.00063 U	0.0010	0.00063	mg/l	
74-95-3	Methylene bromide	0.00045 U	0.0010	0.00045	mg/l	
75-09-2	Methylene chloride	0.0016 U	0.0050	0.0016	mg/l	
78-93-3	Methyl ethyl ketone	0.0027 U	0.010	0.0027	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.00030 U	0.0010	0.00030	mg/l	
91-20-3	Naphthalene	0.0016 U	0.0050	0.0016	mg/l	
103-65-1	n-Propylbenzene	0.00035 U	0.0010	0.00035	mg/l	
100-42-5	Styrene	0.00029 U	0.0010	0.00029	mg/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.00037 U	0.0010	0.00037	mg/l	
71-55-6	1,1,1-Trichloroethane	0.00043 U	0.0010	0.00043	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.00040 U	0.0010	0.00040	mg/l	
79-00-5	1,1,2-Trichloroethane	0.00035 U	0.0010	0.00035	mg/l	
87-61-6	1,2,3-Trichlorobenzene	0.00042 U	0.0010	0.00042	mg/l	
96-18-4	1,2,3-Trichloropropane	0.00046 U	0.0010	0.00046	mg/l	
120-82-1	1,2,4-Trichlorobenzene	0.00041 U	0.0010	0.00041	mg/l	
95-63-6	1,2,4-Trimethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
108-67-8	1,3,5-Trimethylbenzene	0.00035 U	0.0010	0.00035	mg/l	
127-18-4	Tetrachloroethylene	0.00046 U	0.0010	0.00046	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
79-01-6	Trichloroethylene	0.00049 U	0.0010	0.00049	mg/l	
75-69-4	Trichlorofluoromethane	0.00075 U	0.0010	0.00075	mg/l	
75-01-4	Vinyl chloride	0.00079 U	0.0010	0.00079	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
	m,p-Xylene	0.00059 U	0.0020	0.00059	mg/l	
95-47-6	o-Xylene	0.00028 U	0.0010	0.00028	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		72-122%
17060-07-0	1,2-Dichloroethane-D4	88%		68-124%
2037-26-5	Toluene-D8	89%		80-119%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-5		
Lab Sample ID:	TC51322-10	Date Sampled:	07/09/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	86%		72-126%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-5		
Lab Sample ID:	TC51322-10	Date Sampled:	07/09/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VF13750.D	1	07/15/14	RV	07/12/14	OP33179	GVF318
Run #2							

	Initial Volume	Final Volume
Run #1	30.7 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	0.57 U	2.4	0.57	mg/l	
	TPH (>C12-C28)	0.83 U	2.4	0.83	mg/l	
	TPH (>C28-C35)	0.83 U	2.4	0.83	mg/l	
	TPH (C6-C35)	0.57 U	2.4	0.57	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	104%		70-130%
98-08-8	aaa-Trifluorotoluene	96%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST Laboratories

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC51322

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston | State: TX | Zip: 77079
Project Contact: Sasha Ross | E-mail: sross@bergoliver.
Phone #: 281-589-0898 | Fax #:
Sampler(s) Name(s): SASHA | Phone #: 8325935001

Project Information

Project Name: Memorial Drive
Street:
City: | State:
Project #: 7312H-P2
Client Purchase Order #:
Project Manager: Sasha Ross
Attention:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: | State: | Zip:

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAcNaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	BTEXIN (8260)	VOA (8260)	TPHTX1005	LAB USE ONLY
1	SB-21	7/9	10:00a	SR	SO	1													✓		✓	
2	SB-22		10:45a	SR	SO	1													✓		✓	
3	GW-4		13:05	SR	GW	6													✓		✓	
4	SB-25		11:30	SR	SO	1													✓		✓	
5	SB-26		11:50	SR	SO	1													✓		✓	
6	SB-10		13:34	SR	SO	1													✓		✓	
7	SB-16		2:15	SR	SO	1													✓		✓	
8	SB-11		3:20	SR	SO	1														✓	✓	
9	SB-10		3:40	SR	SO	1														✓	✓	
10	GW-4 GW-5		4:04p	SR	GW	6														✓	✓	

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labtrk

Approved By (Accutest PM) / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [x] TRRP
- [ ] Commercial "B" (Level 2)
- [ ] EDD Format
- [ ] FULT1 (Level 3+4)
- [ ] Other
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery. 1050

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		7/10 8:57		2	7-10-14	2
3	Relinquished by Sampler:	Date Time: 7/10 8:57	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time: 7-10-14	Received By: 5	Custody Seal #	☐ Intact ☐ Not Intact	Preserved where applicable ☐	On Ice ☐	Cooler Temp.

5.1

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC51322 **Client:** BERG OLIVER ASSOCIATES **Project:** MEMORIAL DRIVE

Date / Time Received: 7/10/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR6; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (4/4);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (bag)	

Quality Control Preservation	Y	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☐	☐	☑		

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments Sample chain says GW-4 but bottle read GW-3.

5.1

5

TC51322: Chain of Custody
Page 2 of 4

ACCUTEST LABORATORIES

Problem Resolution

Accutest Job Number: TC51322

CSR: Sylvia Garza **Response Date:** 7/14/2014

Response: Chain is correct with GW-4, collected on 7-9 at 13:05.

5.1

5

TC51322: Chain of Custody
Page 3 of 4

ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC51322 **Date / Time Received:** 7/10/2014 1:45:00 PM **Initials:** BH

Client: BERG OLIVER ASSOCIATES

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC51322-1	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-2	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-3	40ml	4	4ZZ	HCL	pH < 2	IR6	4	0	4
1	TC51322-3	40ml	5	4ZZ	HCL	pH < 2	IR6	4	0	4
1	TC51322-3	40ml	6	4ZZ	HCL	pH < 2	IR6	4	0	4
1	TC51322-4	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-5	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-6	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-7	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-8	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-9	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	4	0	4
1	TC51322-10	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-10	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-10	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-10	40ml	4	4ZZ	HCL	pH < 2	IR6	4	0	4
1	TC51322-10	40ml	5	4ZZ	HCL	pH < 2	IR6	4	0	4
1	TC51322-10	40ml	6	4ZZ	HCL	pH < 2	IR6	4	0	4
1	TC51322-11	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4
1	TC51322-11	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	4	0	4

TC51322: Chain of Custody
Page 4 of 4

Appendix A Laboratory Data Package Cover Page

TC51322 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/17/2014

5.2
5

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/17/2014
Project Name:	Memorial Drive, Houston, TX/7312-H-P2	Laboratory Project Number:	TC51322
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59728, OP33179, OP33184, VG1385, VX2265, VX2266, VZ4352

#[1]	A[2]	DESCRIPTION	YES	NO	NA[3]	NR[4]	ER #[5]
R1	OI	**CHAIN-OF-CUSTODY (C-O-C):**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?	X				
		If required for the project, are TIC's reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			4
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations <MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?		X			4
		Were the MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X			2
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/17/2014
Project Name:	Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC51322
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59728, OP33179, OP33184, VG1385, VX2265, VX2266, VZ4352

#[1]	A[2]	DESCRIPTION	YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?			X		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/17/2014
Project Name:	Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC51322
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59728, OP33179, OP33184, VG1385, VX2265, VX2266, VZ4352

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.
4	All anomalies are discussed in the case narrative.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4352-MB	Z042792.D	1	07/14/14	EM	n/a	n/a	VZ4352

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	90%	68-124%
2037-26-5	Toluene-D8	95%	80-119%
460-00-4	4-Bromofluorobenzene	80%	72-126%

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG1385-MB	G0251695.D	1	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.34	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.29	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.44	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.39	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.45	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.45	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.27	ug/l	
75-00-3	Chloroethane	ND	1.0	0.72	ug/l	
67-66-3	Chloroform	ND	1.0	0.35	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.36	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.31	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.36	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.43	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.45	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.62	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.6	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.35	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.32	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.51	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.37	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.5	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.40	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.33	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.28	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.32	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
591-78-6	2-Hexanone	ND	10	2.6	ug/l	

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG1385-MB	G0251695.D	1	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.40	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.36	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.2	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.51	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.63	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.45	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.6	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.7	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	1.6	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.35	ug/l	
100-42-5	Styrene	ND	1.0	0.29	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.35	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.42	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.46	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.41	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.35	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.46	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.49	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.75	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
	m,p-Xylene	ND	2.0	0.59	ug/l	
95-47-6	o-Xylene	ND	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	91%	72-122%
17060-07-0	1,2-Dichloroethane-D4	88%	68-124%

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG1385-MB	G0251695.D	1	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	90%	80-119%
460-00-4	4-Bromofluorobenzene	84%	72-126%

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2265-MB	X0100832.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	39	9.7	ug/kg	
71-43-2	Benzene	ND	3.9	0.65	ug/kg	
108-86-1	Bromobenzene	ND	3.9	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	3.9	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	3.9	0.43	ug/kg	
75-25-2	Bromoform	ND	3.9	0.73	ug/kg	
104-51-8	n-Butylbenzene	ND	3.9	0.42	ug/kg	
135-98-8	sec-Butylbenzene	ND	3.9	0.84	ug/kg	
98-06-6	tert-Butylbenzene	ND	3.9	0.76	ug/kg	
108-90-7	Chlorobenzene	ND	3.9	0.90	ug/kg	
75-00-3	Chloroethane	ND	3.9	1.5	ug/kg	
67-66-3	Chloroform	ND	3.9	0.42	ug/kg	
95-49-8	o-Chlorotoluene	ND	3.9	0.46	ug/kg	
106-43-4	p-Chlorotoluene	ND	3.9	0.40	ug/kg	
75-15-0	Carbon disulfide	ND	3.9	0.56	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.9	0.83	ug/kg	
75-34-3	1,1-Dichloroethane	ND	3.9	0.40	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	3.9	0.40	ug/kg	
563-58-6	1,1-Dichloropropene	ND	3.9	0.43	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.9	3.1	ug/kg	
106-93-4	1,2-Dibromoethane	ND	3.9	0.41	ug/kg	
107-06-2	1,2-Dichloroethane	ND	3.9	0.46	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.9	0.56	ug/kg	
142-28-9	1,3-Dichloropropane	ND	3.9	0.99	ug/kg	
594-20-7	2,2-Dichloropropane	ND	3.9	0.52	ug/kg	
124-48-1	Dibromochloromethane	ND	3.9	0.88	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	3.9	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	3.9	0.44	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.9	0.44	ug/kg	
541-73-1	m-Dichlorobenzene	ND	3.9	0.60	ug/kg	
95-50-1	o-Dichlorobenzene	ND	3.9	0.94	ug/kg	
106-46-7	p-Dichlorobenzene	ND	3.9	0.83	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	3.9	0.42	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.9	0.50	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	0.94	ug/kg	
591-78-6	2-Hexanone	ND	39	7.2	ug/kg	

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2265-MB	X0100832.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	3.9	0.67	ug/kg	
98-82-8	Isopropylbenzene	ND	3.9	1.1	ug/kg	
99-87-6	p-Isopropyltoluene	ND	3.9	1.3	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	39	6.1	ug/kg	
74-83-9	Methyl bromide	ND	3.9	1.8	ug/kg	
74-87-3	Methyl chloride	ND	3.9	0.74	ug/kg	
74-95-3	Methylene bromide	ND	3.9	0.62	ug/kg	
75-09-2	Methylene chloride	ND	9.7	2.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	39	4.8	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.9	0.49	ug/kg	
91-20-3	Naphthalene	ND	3.9	1.9	ug/kg	
103-65-1	n-Propylbenzene	ND	3.9	1.0	ug/kg	
100-42-5	Styrene	ND	3.9	0.89	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	3.9	0.49	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.9	0.61	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.9	0.65	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.9	0.65	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	3.9	0.51	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	3.9	0.88	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	3.9	0.48	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	3.9	0.39	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	3.9	0.91	ug/kg	
127-18-4	Tetrachloroethylene	ND	3.9	0.98	ug/kg	
108-88-3	Toluene	ND	3.9	0.99	ug/kg	
79-01-6	Trichloroethylene	ND	3.9	0.45	ug/kg	
75-69-4	Trichlorofluoromethane	ND	3.9	0.61	ug/kg	
75-01-4	Vinyl chloride	ND	3.9	0.56	ug/kg	
1330-20-7	Xylene (total)	ND	12	2.7	ug/kg	
	m,p-Xylene	ND	7.7	1.7	ug/kg	
95-47-6	o-Xylene	ND	3.9	0.98	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	59-126%
2037-26-5	Toluene-D8	95%	70-139%

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2265-MB	X0100832.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	90%	54-123%

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2266-MB	X0100858.D	1	07/16/14	CF	n/a	n/a	VX2266

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-1, TC51322-2, TC51322-4, TC51322-5, TC51322-6, TC51322-7

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.4	0.58	ug/kg	
100-41-4	Ethylbenzene	ND	3.4	0.83	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.4	0.43	ug/kg	
108-88-3	Toluene	ND	3.4	0.87	ug/kg	
1330-20-7	Xylene (total)	ND	10	2.4	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	59-126%
2037-26-5	Toluene-D8	94%	70-139%
460-00-4	4-Bromofluorobenzene	93%	63-138%
17060-07-0	1,2-Dichloroethane-D4	88%	54-123%

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4352-BS	Z042790.D	1	07/14/14	EM	n/a	n/a	VZ4352

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	68-119
100-41-4	Ethylbenzene	25	24.0	96	71-117
1634-04-4	Methyl Tert Butyl Ether	25	24.4	98	65-119
108-88-3	Toluene	25	24.3	97	73-119
1330-20-7	Xylene (total)	75	75.3	100	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	72-122%
17060-07-0	1,2-Dichloroethane-D4	90%	68-124%
2037-26-5	Toluene-D8	97%	80-119%
460-00-4	4-Bromofluorobenzene	79%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG1385-BS	G0251693.D	1	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	96.7	77	46-129
71-43-2	Benzene	25	22.3	89	68-119
108-86-1	Bromobenzene	25	21.7	87	71-119
74-97-5	Bromochloromethane	25	22.6	90	71-118
75-27-4	Bromodichloromethane	25	22.7	91	72-118
75-25-2	Bromoform	25	22.9	92	54-123
104-51-8	n-Butylbenzene	25	24.9	100	66-123
135-98-8	sec-Butylbenzene	25	27.9	112	72-123
98-06-6	tert-Butylbenzene	25	25.8	103	70-124
108-90-7	Chlorobenzene	25	24.4	98	74-120
75-00-3	Chloroethane	25	26.9	108	61-132
67-66-3	Chloroform	25	22.5	90	73-122
95-49-8	o-Chlorotoluene	25	24.6	98	71-122
106-43-4	p-Chlorotoluene	25	25.5	102	73-120
75-15-0	Carbon disulfide	25	20.4	82	55-140
56-23-5	Carbon tetrachloride	25	23.9	96	68-133
75-34-3	1,1-Dichloroethane	25	22.0	88	72-121
75-35-4	1,1-Dichloroethylene	25	23.6	94	67-140
563-58-6	1,1-Dichloropropene	25	24.1	96	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	21.6	86	47-133
106-93-4	1,2-Dibromoethane	25	22.8	91	69-121
107-06-2	1,2-Dichloroethane	25	21.8	87	68-121
78-87-5	1,2-Dichloropropane	25	22.5	90	72-116
142-28-9	1,3-Dichloropropane	25	22.2	89	70-118
594-20-7	2,2-Dichloropropane	25	23.6	94	57-141
124-48-1	Dibromochloromethane	25	22.3	89	68-119
75-71-8	Dichlorodifluoromethane	25	15.5	62	29-182
156-59-2	cis-1,2-Dichloroethylene	25	21.6	86	72-117
10061-01-5	cis-1,3-Dichloropropene	25	22.6	90	71-118
541-73-1	m-Dichlorobenzene	25	24.9	100	73-117
95-50-1	o-Dichlorobenzene	25	25.0	100	71-117
106-46-7	p-Dichlorobenzene	25	22.7	91	71-116
156-60-5	trans-1,2-Dichloroethylene	25	22.1	88	68-124
10061-02-6	trans-1,3-Dichloropropene	25	24.4	98	72-127
100-41-4	Ethylbenzene	25	23.2	93	71-117
591-78-6	2-Hexanone	125	99.6	80	49-124

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG1385-BS	G0251693.D	1	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
87-68-3	Hexachlorobutadiene	25	28.0	112	62-143
98-82-8	Isopropylbenzene	25	25.6	102	74-141
99-87-6	p-Isopropyltoluene	25	23.9	96	72-126
108-10-1	4-Methyl-2-pentanone	125	101	81	54-122
74-83-9	Methyl bromide	25	22.6	90	53-138
74-87-3	Methyl chloride	25	19.8	79	50-145
74-95-3	Methylene bromide	25	21.2	85	71-117
75-09-2	Methylene chloride	25	20.1	80	60-125
78-93-3	Methyl ethyl ketone	125	104	83	51-129
1634-04-4	Methyl Tert Butyl Ether	25	22.3	89	65-119
91-20-3	Naphthalene	25	21.8	87	43-139
103-65-1	n-Propylbenzene	25	26.4	106	72-123
100-42-5	Styrene	25	22.9	92	74-119
630-20-6	1,1,1,2-Tetrachloroethane	25	22.9	92	74-119
71-55-6	1,1,1-Trichloroethane	25	22.8	91	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.2	89	62-121
79-00-5	1,1,2-Trichloroethane	25	21.3	85	70-119
87-61-6	1,2,3-Trichlorobenzene	25	23.1	92	44-144
96-18-4	1,2,3-Trichloropropane	25	23.4	94	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.9	92	57-132
95-63-6	1,2,4-Trimethylbenzene	25	23.3	93	70-121
108-67-8	1,3,5-Trimethylbenzene	25	23.3	93	66-119
127-18-4	Tetrachloroethylene	25	24.7	99	72-132
108-88-3	Toluene	25	22.8	91	73-119
79-01-6	Trichloroethylene	25	23.3	93	73-121
75-69-4	Trichlorofluoromethane	25	22.9	92	46-152
75-01-4	Vinyl chloride	25	20.6	82	54-126
1330-20-7	Xylene (total)	75	73.5	98	74-119
	m,p-Xylene	50	48.8	98	74-119
95-47-6	o-Xylene	25	24.7	99	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	88%	72-122%
17060-07-0	1,2-Dichloroethane-D4	85%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG1385-BS	G0251693.D	1	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	90%	80-119%
460-00-4	4-Bromofluorobenzene	84%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2265-BS	X0100830.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	214	199	93	43-141
71-43-2	Benzene	42.7	43.0	101	58-124
108-86-1	Bromobenzene	42.7	44.4	104	72-110
74-97-5	Bromochloromethane	42.7	42.8	100	71-122
75-27-4	Bromodichloromethane	42.7	44.4	104	72-119
75-25-2	Bromoform	42.7	44.3	104	61-120
104-51-8	n-Butylbenzene	42.7	45.2	106	58-118
135-98-8	sec-Butylbenzene	42.7	44.2	103	63-119
98-06-6	tert-Butylbenzene	42.7	43.7	102	67-121
108-90-7	Chlorobenzene	42.7	43.6	102	74-116
75-00-3	Chloroethane	42.7	50.2	117	48-133
67-66-3	Chloroform	42.7	44.7	105	72-119
95-49-8	o-Chlorotoluene	42.7	44.0	103	65-121
106-43-4	p-Chlorotoluene	42.7	44.8	105	67-118
75-15-0	Carbon disulfide	42.7	41.0	96	45-133
56-23-5	Carbon tetrachloride	42.7	41.2	96	58-128
75-34-3	1,1-Dichloroethane	42.7	44.4	104	69-122
75-35-4	1,1-Dichloroethylene	42.7	41.4	97	60-131
563-58-6	1,1-Dichloropropene	42.7	43.8	102	66-123
96-12-8	1,2-Dibromo-3-chloropropane	42.7	46.0	108	55-125
106-93-4	1,2-Dibromoethane	42.7	44.7	105	73-120
107-06-2	1,2-Dichloroethane	42.7	43.6	102	69-121
78-87-5	1,2-Dichloropropane	42.7	44.3	104	71-121
142-28-9	1,3-Dichloropropane	42.7	45.3	106	72-117
594-20-7	2,2-Dichloropropane	42.7	46.8	110	57-129
124-48-1	Dibromochloromethane	42.7	44.2	103	71-121
75-71-8	Dichlorodifluoromethane	42.7	23.0	54	22-158
156-59-2	cis-1,2-Dichloroethylene	42.7	44.4	104	70-119
10061-01-5	cis-1,3-Dichloropropene	42.7	44.1	103	75-117
541-73-1	m-Dichlorobenzene	42.7	45.6	107	70-119
95-50-1	o-Dichlorobenzene	42.7	44.5	104	73-116
106-46-7	p-Dichlorobenzene	42.7	45.8	107	70-119
156-60-5	trans-1,2-Dichloroethylene	42.7	43.9	103	62-119
10061-02-6	trans-1,3-Dichloropropene	42.7	47.4	111	78-125
100-41-4	Ethylbenzene	42.7	45.7	107	57-124
591-78-6	2-Hexanone	214	218	102	58-124

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2265-BS	X0100830.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
87-68-3	Hexachlorobutadiene	42.7	48.3	113	57-127
98-82-8	Isopropylbenzene	42.7	44.7	105	77-135
99-87-6	p-Isopropyltoluene	42.7	46.0	108	66-120
108-10-1	4-Methyl-2-pentanone	214	227	106	60-127
74-83-9	Methyl bromide	42.7	41.2	96	47-137
74-87-3	Methyl chloride	42.7	39.2	92	46-139
74-95-3	Methylene bromide	42.7	43.9	103	72-118
75-09-2	Methylene chloride	42.7	41.5	97	50-134
78-93-3	Methyl ethyl ketone	214	226	106	60-131
1634-04-4	Methyl Tert Butyl Ether	42.7	42.2	99	65-119
91-20-3	Naphthalene	42.7	47.4	111	56-122
103-65-1	n-Propylbenzene	42.7	44.6	104	65-119
100-42-5	Styrene	42.7	45.8	107	74-117
630-20-6	1,1,1,2-Tetrachloroethane	42.7	45.0	105	74-119
71-55-6	1,1,1-Trichloroethane	42.7	44.0	103	63-126
79-34-5	1,1,2,2-Tetrachloroethane	42.7	45.2	106	65-120
79-00-5	1,1,2-Trichloroethane	42.7	44.6	104	72-119
87-61-6	1,2,3-Trichlorobenzene	42.7	48.4	113	62-116
96-18-4	1,2,3-Trichloropropane	42.7	44.0	103	68-118
120-82-1	1,2,4-Trichlorobenzene	42.7	48.0	112	58-122
95-63-6	1,2,4-Trimethylbenzene	42.7	46.0	108	61-119
108-67-8	1,3,5-Trimethylbenzene	42.7	44.9	105	53-123
127-18-4	Tetrachloroethylene	42.7	46.8	110	64-130
108-88-3	Toluene	42.7	44.2	103	67-119
79-01-6	Trichloroethylene	42.7	42.4	99	70-122
75-69-4	Trichlorofluoromethane	42.7	33.7	79	41-137
75-01-4	Vinyl chloride	42.7	38.5	90	43-120
1330-20-7	Xylene (total)	128	134	105	62-120
	m,p-Xylene	85.5	90.0	105	62-120
95-47-6	o-Xylene	42.7	44.2	103	62-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	59-126%
2037-26-5	Toluene-D8	95%	70-139%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2265-BS	X0100830.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	97%	63-138%
17060-07-0	1,2-Dichloroethane-D4	87%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2266-BS	X0100856.D	1	07/16/14	CF	n/a	n/a	VX2266

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-1, TC51322-2, TC51322-4, TC51322-5, TC51322-6, TC51322-7

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	46.9	47.0	100	58-124
100-41-4	Ethylbenzene	46.9	49.6	106	57-124
1634-04-4	Methyl Tert Butyl Ether	46.9	45.5	97	65-119
108-88-3	Toluene	46.9	47.8	102	67-119
1330-20-7	Xylene (total)	141	144	102	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	59-126%
2037-26-5	Toluene-D8	94%	70-139%
460-00-4	4-Bromofluorobenzene	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	89%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50998-2MS	G0251697.D	5	07/14/14	SC	n/a	n/a	VG1385
TC50998-2MSD	G0251698.D	5	07/14/14	SC	n/a	n/a	VG1385
TC50998-2	G0251696.D	5	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Compound	TC50998-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	250 U		625	483	77	625	479	77	1	46-129/25
71-43-2	Benzene	5.0 U		125	113	90	125	112	90	1	68-119/12
108-86-1	Bromobenzene	5.0 U		125	106	85	125	107	86	1	71-119/12
74-97-5	Bromochloromethane	5.0 U		125	113	90	125	113	90	0	71-118/13
75-27-4	Bromodichloromethane	5.0 U		125	110	88	125	109	87	1	72-118/16
75-25-2	Bromoform	5.0 U		125	97.4	78	125	91.4	73	6	54-123/17
104-51-8	n-Butylbenzene	5.0 U		125	125	100	125	126	101	1	66-123/14
135-98-8	sec-Butylbenzene	5.0 U		125	136	109	125	138	110	1	72-123/13
98-06-6	tert-Butylbenzene	5.0 U		125	128	102	125	130	104	2	70-124/15
108-90-7	Chlorobenzene	5.0 U		125	125	100	125	122	98	2	74-120/12
75-00-3	Chloroethane	5.0 U		125	132	106	125	131	105	1	61-132/16
67-66-3	Chloroform	5.0 U		125	110	88	125	109	87	1	73-122/13
95-49-8	o-Chlorotoluene	5.0 U		125	122	98	125	123	98	1	71-122/12
106-43-4	p-Chlorotoluene	5.0 U		125	124	99	125	125	100	1	73-120/12
75-15-0	Carbon disulfide	5.0 U		125	85.1	68	125	79.4	64	7	55-140/24
56-23-5	Carbon tetrachloride	5.0 U		125	118	94	125	116	93	2	68-133/20
75-34-3	1,1-Dichloroethane	7.2		125	115	86	125	117	88	2	72-121/14
75-35-4	1,1-Dichloroethylene	174		125	256	66*	125	254	64*	1	67-140/18
563-58-6	1,1-Dichloropropene	5.0 U		125	118	94	125	117	94	1	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	10 U		125	103	82	125	106	85	3	47-133/23
106-93-4	1,2-Dibromoethane	5.0 U		125	113	90	125	112	90	1	69-121/13
107-06-2	1,2-Dichloroethane	5.0 U		125	111	89	125	109	87	2	68-121/12
78-87-5	1,2-Dichloropropane	5.0 U		125	112	90	125	111	89	1	72-116/12
142-28-9	1,3-Dichloropropane	5.0 U		125	110	88	125	107	86	3	70-118/12
594-20-7	2,2-Dichloropropane	5.0 U		125	119	95	125	118	94	1	57-141/16
124-48-1	Dibromochloromethane	5.0 U		125	106	85	125	102	82	4	68-119/15
75-71-8	Dichlorodifluoromethane	10 U		125	76.8	61	125	74.8	60	3	29-182/23
156-59-2	cis-1,2-Dichloroethylene	5.0 U		125	109	87	125	107	86	2	72-117/13
10061-01-5	cis-1,3-Dichloropropene	5.0 U		125	107	86	125	102	82	5	71-118/18
541-73-1	m-Dichlorobenzene	5.0 U		125	124	99	125	125	100	1	73-117/12
95-50-1	o-Dichlorobenzene	5.0 U		125	122	98	125	125	100	2	71-117/11
106-46-7	p-Dichlorobenzene	5.0 U		125	112	90	125	112	90	0	71-116/11
156-60-5	trans-1,2-Dichloroethylene	5.0 U		125	109	87	125	106	85	3	68-124/15
10061-02-6	trans-1,3-Dichloropropene	5.0 U		125	115	92	125	110	88	4	72-127/17
100-41-4	Ethylbenzene	5.0 U		125	118	94	125	116	93	2	71-117/12
591-78-6	2-Hexanone	50 U		625	500	80	625	495	79	1	49-124/21

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50998-2MS	G0251697.D	5	07/14/14	SC	n/a	n/a	VG1385
TC50998-2MSD	G0251698.D	5	07/14/14	SC	n/a	n/a	VG1385
TC50998-2	G0251696.D	5	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Compound	TC50998-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
87-68-3	Hexachlorobutadiene	5.0 U		125	134	107	125	137	110	2	62-143/18
98-82-8	Isopropylbenzene	5.0 U		125	128	102	125	129	103	1	74-141/13
99-87-6	p-Isopropyltoluene	5.0 U		125	119	95	125	119	95	0	72-126/13
108-10-1	4-Methyl-2-pentanone	50 U		625	509	81	625	512	82	1	54-122/20
74-83-9	Methyl bromide	5.0 U		125	107	86	125	104	83	3	53-138/16
74-87-3	Methyl chloride	5.0 U		125	94.7	76	125	91.5	73	3	50-145/17
74-95-3	Methylene bromide	5.0 U		125	107	86	125	111	89	4	71-117/12
75-09-2	Methylene chloride	25 U		125	103	82	125	98.2	79	5	60-125/16
78-93-3	Methyl ethyl ketone	50 U		625	516	83	625	516	83	0	51-129/22
1634-04-4	Methyl Tert Butyl Ether	130		125	236	85	125	235	84	0	65-119/13
91-20-3	Naphthalene	25 U		125	102	82	125	107	86	5	43-139/28
103-65-1	n-Propylbenzene	5.0 U		125	131	105	125	132	106	1	72-123/13
100-42-5	Styrene	5.0 U		125	115	92	125	114	91	1	74-119/19
630-20-6	1,1,1,2-Tetrachloroethane	5.0 U		125	113	90	125	112	90	1	74-119/14
71-55-6	1,1,1-Trichloroethane	5.0 U		125	116	93	125	116	93	0	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	5.0 U		125	109	87	125	111	89	2	62-121/17
79-00-5	1,1,2-Trichloroethane	5.0 U		125	108	86	125	106	85	2	70-119/13
87-61-6	1,2,3-Trichlorobenzene	5.0 U		125	108	86	125	114	91	5	44-144/27
96-18-4	1,2,3-Trichloropropane	5.0 U		125	107	86	125	106	85	1	61-124/16
120-82-1	1,2,4-Trichlorobenzene	5.0 U		125	111	89	125	113	90	2	57-132/18
95-63-6	1,2,4-Trimethylbenzene	5.0 U		125	114	91	125	117	94	3	70-121/15
108-67-8	1,3,5-Trimethylbenzene	5.0 U		125	114	91	125	117	94	3	66-119/15
127-18-4	Tetrachloroethylene	5.0 U		125	128	102	125	124	99	3	72-132/14
108-88-3	Toluene	5.0 U		125	115	92	125	113	90	2	73-119/13
79-01-6	Trichloroethylene	5.0 U		125	115	92	125	115	92	0	73-121/13
75-69-4	Trichlorofluoromethane	5.0 U		125	111	89	125	111	89	0	46-152/25
75-01-4	Vinyl chloride	5.0 U		125	101	81	125	99.9	80	1	54-126/17
1330-20-7	Xylene (total)	15 U		375	368	98	375	364	97	1	74-119/13
	m,p-Xylene	10 U		250	245	98	250	240	96	2	74-119/13
95-47-6	o-Xylene	5.0 U		125	123	98	125	123	98	0	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TC50998-2	Limits
1868-53-7	Dibromofluoromethane	85%	86%	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	86%	85%	88%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50998-2MS	G0251697.D	5	07/14/14	SC	n/a	n/a	VG1385
TC50998-2MSD	G0251698.D	5	07/14/14	SC	n/a	n/a	VG1385
TC50998-2	G0251696.D	5	07/14/14	SC	n/a	n/a	VG1385

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-10

CAS No.	Surrogate Recoveries	MS	MSD	TC50998-2	Limits
2037-26-5	Toluene-D8	91%	90%	90%	80-119%
460-00-4	4-Bromofluorobenzene	83%	85%	86%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51346-3MS	Z042798.D	1	07/14/14	EM	n/a	n/a	VZ4352
TC51346-3MSD	Z042799.D	1	07/14/14	EM	n/a	n/a	VZ4352
TC51346-3	Z042797.D	1	07/14/14	EM	n/a	n/a	VZ4352

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-3

CAS No.	Compound	TC51346-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0	U	25	24.4	98	25	24.2	97	1	68-119/12
100-41-4	Ethylbenzene	1.0	U	25	24.8	99	25	23.9	96	4	71-117/12
1634-04-4	Methyl Tert Butyl Ether	1.0	U	25	24.8	99	25	24.7	99	0	65-119/13
108-88-3	Toluene	1.0	U	25	25.3	101	25	24.8	99	2	73-119/13
1330-20-7	Xylene (total)	3.0	U	75	77.6	103	75	75.7	101	2	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC51346-3	Limits
1868-53-7	Dibromofluoromethane	94%	94%	96%	72-122%
17060-07-0	1,2-Dichloroethane-D4	88%	89%	90%	68-124%
2037-26-5	Toluene-D8	97%	94%	95%	80-119%
460-00-4	4-Bromofluorobenzene	79%	80%	81%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51422-5MS	X0100836.D	1	07/16/14	CF	n/a	n/a	VX2265
TC51422-5MSD	X0100837.D	1	07/16/14	CF	n/a	n/a	VX2265
TC51422-5	X0100835.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Compound	TC51422-5 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	2800	U	17400	16400	94	17400	13500	78	19	43-141/33
71-43-2	Benzene	280	U	3470	3290	95	3470	3010	87	9	58-124/26
108-86-1	Bromobenzene	280	U	3470	3430	99	3470	3300	95	4	72-110/28
74-97-5	Bromochloromethane	280	U	3470	3160	91	3470	3030	87	4	71-122/25
75-27-4	Bromodichloromethane	280	U	3470	3500	101	3470	3290	95	6	72-119/25
75-25-2	Bromoform	280	U	3470	3460	100	3470	3240	93	7	61-120/27
104-51-8	n-Butylbenzene	280	U	3470	3230	93	3470	2940	85	9	58-118/32
135-98-8	sec-Butylbenzene	280	U	3470	3190	92	3470	2910	84	9	63-119/31
98-06-6	tert-Butylbenzene	280	U	3470	3220	93	3470	2880	83	11	67-121/30
108-90-7	Chlorobenzene	280	U	3470	3410	98	3470	3210	92	6	74-116/26
75-00-3	Chloroethane	280	U	3470	843	24*	3470	1110	32*	27	48-133/38
67-66-3	Chloroform	280	U	3470	3200	92	3470	3080	89	4	72-119/25
95-49-8	o-Chlorotoluene	280	U	3470	3280	94	3470	3070	88	7	65-121/30
106-43-4	p-Chlorotoluene	280	U	3470	3370	97	3470	3160	91	6	67-118/29
75-15-0	Carbon disulfide	280	U	3470	2770	80	3470	2450	71	12	45-133/34
56-23-5	Carbon tetrachloride	280	U	3470	3030	87	3470	2600	75	15	58-128/28
75-34-3	1,1-Dichloroethane	280	U	3470	3190	92	3470	3010	87	6	69-122/25
75-35-4	1,1-Dichloroethylene	2220		3470	4850	76	3470	4340	61	11	60-131/31
563-58-6	1,1-Dichloropropene	280	U	3470	3120	90	3470	2760	79	12	66-123/27
96-12-8	1,2-Dibromo-3-chloropropane	280	U	3470	3490	100	3470	3320	96	5	55-125/33
106-93-4	1,2-Dibromoethane	280	U	3470	3530	102	3470	3350	96	5	73-120/26
107-06-2	1,2-Dichloroethane	280	U	3470	3450	99	3470	3250	94	6	69-121/24
78-87-5	1,2-Dichloropropane	280	U	3470	3490	100	3470	3250	94	7	71-121/26
142-28-9	1,3-Dichloropropane	280	U	3470	3590	103	3470	3410	98	5	72-117/25
594-20-7	2,2-Dichloropropane	280	U	3470	2920	84	3470	2840	82	3	57-129/29
124-48-1	Dibromochloromethane	280	U	3470	3500	101	3470	3360	97	4	71-121/26
75-71-8	Dichlorodifluoromethane	280	U	3470	1770	51	3470	1520	44	15	22-158/38
156-59-2	cis-1,2-Dichloroethylene	280	U	3470	3170	91	3470	3030	87	5	70-119/25
10061-01-5	cis-1,3-Dichloropropene	280	U	3470	3510	101	3470	3300	95	6	75-117/27
541-73-1	m-Dichlorobenzene	280	U	3470	3420	98	3470	3270	94	4	70-119/30
95-50-1	o-Dichlorobenzene	280	U	3470	3340	96	3470	3290	95	2	73-116/30
106-46-7	p-Dichlorobenzene	280	U	3470	3450	99	3470	3360	97	3	70-119/30
156-60-5	trans-1,2-Dichloroethylene	280	U	3470	3080	89	3470	2820	81	9	62-119/29
10061-02-6	trans-1,3-Dichloropropene	280	U	3470	3760	108	3470	3610	104	4	78-125/27
100-41-4	Ethylbenzene	280	U	3470	3470	100	3470	3180	92	9	57-124/29
591-78-6	2-Hexanone	2800	U	17400	17800	102	17400	16100	93	10	58-124/32

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51422-5MS	X0100836.D	1	07/16/14	CF	n/a	n/a	VX2265
TC51422-5MSD	X0100837.D	1	07/16/14	CF	n/a	n/a	VX2265
TC51422-5	X0100835.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Compound	TC51422-5 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
87-68-3	Hexachlorobutadiene	280	U	3470	3470	100	3470	3150	91	10	57-127/33
98-82-8	Isopropylbenzene	280	U	3470	3300	95	3470	3010	87	9	77-135/29
99-87-6	p-Isopropyltoluene	280	U	3470	3330	96	3470	3030	87	9	66-120/30
108-10-1	4-Methyl-2-pentanone	2800	U	17400	18000	104	17400	16300	94	10	60-127/30
74-83-9	Methyl bromide	280	U	3470	800	23*	3470	778	22*	3	47-137/37
74-87-3	Methyl chloride	280	U	3470	2880	83	3470	2710	78	6	46-139/36
74-95-3	Methylene bromide	280	U	3470	3460	100	3470	3250	94	6	72-118/25
75-09-2	Methylene chloride	690	U	3470	3130	90	3470	3050	88	3	50-134/35
78-93-3	Methyl ethyl ketone	2800	U	17400	18000	104	17400	16500	95	9	60-131/31
1634-04-4	Methyl Tert Butyl Ether	280	U	3470	3090	89	3470	3120	90	1	65-119/29
91-20-3	Naphthalene	280	U	3470	3510	101	3470	3470	100	1	56-122/36
103-65-1	n-Propylbenzene	280	U	3470	3250	94	3470	2930	84	10	65-119/31
100-42-5	Styrene	280	U	3470	3590	103	3470	3420	98	5	74-117/28
630-20-6	1,1,1,2-Tetrachloroethane	280	U	3470	3540	102	3470	3380	97	5	74-119/27
71-55-6	1,1,1-Trichloroethane	280	U	3470	3030	87	3470	2750	79	10	63-126/27
79-34-5	1,1,2,2-Tetrachloroethane	280	U	3470	3470	100	3470	3260	94	6	65-120/31
79-00-5	1,1,2-Trichloroethane	280	U	3470	3550	102	3470	3360	97	5	72-119/27
87-61-6	1,2,3-Trichlorobenzene	280	U	3470	3610	104	3470	3600	104	0	62-116/33
96-18-4	1,2,3-Trichloropropane	280	U	3470	3330	96	3470	3180	92	5	68-118/31
120-82-1	1,2,4-Trichlorobenzene	280	U	3470	3590	103	3470	3560	102	1	58-122/34
95-63-6	1,2,4-Trimethylbenzene	280	U	3470	3400	98	3470	3190	92	6	61-119/30
108-67-8	1,3,5-Trimethylbenzene	280	U	3470	3330	96	3470	3040	88	9	53-123/30
127-18-4	Tetrachloroethylene	280	U	3470	3780	109	3470	3420	98	10	64-130/28
108-88-3	Toluene	280	U	3470	3400	98	3470	3100	89	9	67-119/28
79-01-6	Trichloroethylene	280	U	3470	3240	93	3470	2860	82	12	70-122/27
75-69-4	Trichlorofluoromethane	280	U	3470	2210	64	3470	1740	50	24	41-137/39
75-01-4	Vinyl chloride	280	U	3470	2930	84	3470	2480	71	17	43-120/38
1330-20-7	Xylene (total)	830	U	10400	10300	99	10400	9500	91	8	62-120/27
	m,p-Xylene	560	U	6950	6880	99	6950	6330	91	8	62-120/28
95-47-6	o-Xylene	280	U	3470	3400	98	3470	3170	91	7	62-121/28

CAS No.	Surrogate Recoveries	MS	MSD	TC51422-5	Limits
1868-53-7	Dibromofluoromethane	93%	92%	96%	59-126%
2037-26-5	Toluene-D8	97%	96%	94%	70-139%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51422-5MS	X0100836.D	1	07/16/14	CF	n/a	n/a	VX2265
TC51422-5MSD	X0100837.D	1	07/16/14	CF	n/a	n/a	VX2265
TC51422-5	X0100835.D	1	07/16/14	CF	n/a	n/a	VX2265

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-8, TC51322-9

CAS No.	Surrogate Recoveries	MS	MSD	TC51422-5	Limits
460-00-4	4-Bromofluorobenzene	97%	94%	94%	63-138%
17060-07-0	1,2-Dichloroethane-D4	89%	84%	87%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51152-17MS	X0100860.D	1	07/17/14	CF	n/a	n/a	VX2266
TC51152-17MSD	X0100861.D	1	07/17/14	CF	n/a	n/a	VX2266
TC51152-17	X0100859.D	1	07/17/14	CF	n/a	n/a	VX2266

The QC reported here applies to the following samples: Method: SW846 8260C

TC51322-1, TC51322-2, TC51322-4, TC51322-5, TC51322-6, TC51322-7

CAS No.	Compound	TC51152-17 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.1 U		70.1	66.4	95	69.3	59.2	85	11	58-124/26
100-41-4	Ethylbenzene	4.1 U		70.1	69.1	99	69.3	60.8	88	13	57-124/29
1634-04-4	Methyl Tert Butyl Ether	4.1 U		70.1	58.0	83	69.3	54.2	78	7	65-119/29
108-88-3	Toluene	4.1 U		70.1	67.3	96	69.3	60.1	87	11	67-119/28
1330-20-7	Xylene (total)	12 U		210	198	94	208	176	85	12	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC51152-17	Limits
1868-53-7	Dibromofluoromethane	94%	95%	100%	59-126%
2037-26-5	Toluene-D8	95%	96%	94%	70-139%
460-00-4	4-Bromofluorobenzene	94%	95%	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	86%	87%	94%	54-123%

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33179-MB	VF13832.D	1	07/17/14	RV	07/12/14	OP33179	GVF320

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51322-3, TC51322-10

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (>C12-C28)	ND	2.5	0.85	mg/l	
	TPH (>C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	96%	70-130%
98-08-8	aaa-Trifluorotoluene	96%	70-130%

Method Blank Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33184-MB	LB102027.D	1	07/14/14	ZL	07/14/14	OP33184	GLB1509

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51322-1, TC51322-2, TC51322-4, TC51322-5, TC51322-6, TC51322-7, TC51322-8, TC51322-9

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (> C12-C28)	ND	25	14	mg/kg	
	TPH (> C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	93%	70-130%
98-08-8	aaa-Trifluorotoluene	93%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33179-BS	VF13834.D	1	07/17/14	RV	07/12/14	OP33179	GVF320
OP33179-BSD	VF13836.D	1	07/17/14	RV	07/12/14	OP33179	GVF320

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51322-3, TC51322-10

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	44.9	90	43.8	88	2	75-125/20
	TPH (>C12-C28)	50	50.2	100	47.8	96	5	75-125/20
	TPH (C6-C35)	100	95.1	95	91.6	92	4	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	110%	105%	70-130%
98-08-8	aaa-Trifluorotoluene	96%	94%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33184-BS	LB102111.D	1	07/15/14	ZL	07/14/14	OP33184	GLB1510
OP33184-BSD	LB102113.D	1	07/15/14	ZL	07/14/14	OP33184	GLB1510

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51322-1, TC51322-2, TC51322-4, TC51322-5, TC51322-6, TC51322-7, TC51322-8, TC51322-9

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	219	88	241	96	10	75-125/20
	TPH (>C12-C28)	250	200	80	221	88	10	75-125/20
	TPH (C6-C35)	500	419	84	462	92	10	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	91%	99%	70-130%
98-08-8	aaa-Trifluorotoluene	96%	106%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33179-MS	VB13727.D	1	07/15/14	RV	07/12/14	OP33179	GVB318
OP33179-MSD	VB13729.D	1	07/15/14	RV	07/12/14	OP33179	GVB318
TC51305-1	VB13725.D	1	07/15/14	RV	07/12/14	OP33179	GVB318

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51322-3, TC51322-10

CAS No.	Compound	TC51305-1 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	2.4	U	46.9	47.8	102	47.1	47.4	101	1	75-125/20
	TPH (>C12-C28)	2.4	U	46.9	47.8	102	47.1	47.7	101	0	75-125/20
	TPH (C6-C35)	2.4	U	93.9	95.6	102	94.3	95.1	101	1	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51305-1	Limits
84-15-1	o-Terphenyl	112%	112%	102%	70-130%
98-08-8	aaa-Trifluorotoluene	108%	106%	108%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51322
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33184-MS	LB102035.D	1	07/14/14	ZL	07/14/14	OP33184	GLB1509
OP33184-MSD	LB102037.D	1	07/15/14	ZL	07/14/14	OP33184	GLB1509
TC51387-1	LB102033.D	1	07/14/14	ZL	07/14/14	OP33184	GLB1509

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51322-1, TC51322-2, TC51322-4, TC51322-5, TC51322-6, TC51322-7, TC51322-8, TC51322-9

CAS No.	Compound	TC51387-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	ND		254	206	81	263	221	84	7	75-125/20
	TPH (>C12-C28)	ND		254	199	78	263	220	84	10	75-125/20
	TPH (C6-C35)	ND		507	405	80	525	441	84	9	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51387-1	Limits
84-15-1	o-Terphenyl	77%	81%	89%	70-130%
98-08-8	aaa-Trifluorotoluene	69%*	74%	87%	70-130%

* = Outside of Control Limits.

Accutest Laboratories Gulf Coast, Inc.						Jul 17, 2014 16:50 pm	
Job Number:	TC51321						
Account:	Berg Oliver Associates						
Project:	Memorial Drive, Houston, TX/7312-H-P2						
Project Number:	7312-H-P2						
						Legend:	Hit
Client Sample ID:		GW-6					
Lab Sample ID:		TC51321-7					
Date Sampled:		07/10/2014					
Matrix:		Ground Water					
GC/MS Volatiles (SW846 8260C)							
Benzene	mg/l	0.00034 U					
Toluene	mg/l	0.00033 U					
Ethylbenzene	mg/l	0.00032 U					
Xylene (total)	mg/l	0.00087 U					
Methyl Tert Butyl Ether	mg/l	0.00030 U					
GC Semi-volatiles (TNRCC 1005)							
TPH (C6-C12)	mg/l	0.60 U					
TPH (>C12-C28)	mg/l	0.87 U					
TPH (>C28-C35)	mg/l	0.87 U					
TPH (C6-C35)	mg/l	0.60 U					
Client Sample ID:		IDW-1	IDW-2	SB-6	SB-7	SB-8	SB-9
Lab Sample ID:		TC51321-5	TC51321-6	TC51321-1	TC51321-2	TC51321-3	TC51321-4
Date Sampled:		07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014
Matrix:		Soil	Soil	Soil	Soil	Soil	Soil
GC/MS Volatiles (SW846 8260C)							
Benzene	mg/kg	0.00092 J	0.00075 U	0.00072 U	0.00086 U	0.00075 U	0.00080 U
Toluene	mg/kg	0.0012 U	0.0011 U	0.0011 U	0.0013 U	0.0011 U	0.0012 U
Ethylbenzene	mg/kg	0.0011 U	0.0011 U	0.0010 U	0.0012 U	0.0011 U	0.0011 U
Xylene (total)	mg/kg	0.0032 U	0.0031 U	0.0030 U	0.0036 U	0.0031 U	0.0033 U
Methyl Tert Butyl Ether	mg/kg	0.00058 U	0.00057 U	0.00054 U	0.00065 U	0.00057 U	0.00060 U
GC Semi-volatiles (TNRCC 1005)							
TPH (C6-C12)	mg/kg	14 U	14 U	14 U	15 U	14 U	15 U
TPH (>C12-C28)	mg/kg	17 U	17 U	17 U	18 U	16 U	18 U
TPH (>C28-C35)	mg/kg	17 U	17 U	17 U	18 U	16 U	18 U
TPH (C6-C35)	mg/kg	14 U	14 U	14 U	15 U	14 U	15 U
General Chemistry							
Solids, Percent	%	79.3	80.5	80.4	75.9	83	76.4

Gulf Coast ACCUTEST LABORATORIES

07/17/14

Technical Report for

Berg Oliver Associates

Memorial Drive, Houston, TX/7312-H-P2

7312-H-P2

Accutest Job Number: TC51321

Sampling Date: 07/10/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
sross@bergoliver.com

ATTN: Sasha Ross

Total number of pages in report: 42

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

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Accutest Laboratories

Sample Summary

Berg Oliver Associates

Job No: TC51321

Memorial Drive, Houston, TX/7312-H-P2
Project No: 7312-H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC51321-1	07/10/14	11:40		07/10/14	SO	Soil	SB-6
TC51321-2	07/10/14	10:50		07/10/14	SO	Soil	SB-7
TC51321-3	07/10/14	10:30		07/10/14	SO	Soil	SB-8
TC51321-4	07/10/14	10:05		07/10/14	SO	Soil	SB-9
TC51321-5	07/10/14	12:00		07/10/14	SO	Soil	IDW-1
TC51321-6	07/10/14	12:00		07/10/14	SO	Soil	IDW-2
TC51321-7	07/10/14	11:15		07/10/14	AQ	Ground Water	GW-6

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Berg Oliver Associates **Job No** TC51321

Site: Memorial Drive, Houston, TX/7312-H-P2 **Report Date** 7/17/2014 4:36:39 PM

7 Samples were collected on 07/10/2014 and received intact at Accutest on 07/10/2014 and properly preserved in 1 cooler at 3.8 Deg C. These Samples received an Accutest job number of TC51321. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix AQ **Batch ID:** VZ4351

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51289-1MS, TC51289-1MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** VX2266

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51152-17MS, TC51152-17MSD were used as the QC samples indicated.

Extractables by GC By Method TNRCC 1005

Matrix AQ **Batch ID:** OP33179

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51305-1MS, TC51305-1MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** OP33169

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC51163-1MS, TC51163-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for TPH (>C12-C28) are outside control limits. Probable cause due to matrix interference.

Wet Chemistry By Method SM 2540 G

Matrix SO **Batch ID:** GN59669

- Sample(s) TC51300-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC51321
Account: Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2
Collected: 07/10/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC51321-1	SB-6					
No hits reported in this sample.						
TC51321-2	SB-7					
No hits reported in this sample.						
TC51321-3	SB-8					
No hits reported in this sample.						
TC51321-4	SB-9					
No hits reported in this sample.						
TC51321-5	IDW-1					
Benzene		0.00092 J	0.0046	0.00077	mg/kg	SW846 8260C
TC51321-6	IDW-2					
No hits reported in this sample.						
TC51321-7	GW-6					
No hits reported in this sample.						

Gulf Coast ACCUTEST LABORATORIES

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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-6		
Lab Sample ID:	TC51321-1	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	80.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100863.D	1	07/17/14	CF	07/14/14 17:03	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.86 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00072 U	0.0042	0.00072	mg/kg	
108-88-3	Toluene	0.0011 U	0.0042	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0010 U	0.0042	0.0010	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00054 U	0.0042	0.00054	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		59-126%
2037-26-5	Toluene-D8	94%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%
17060-07-0	1,2-Dichloroethane-D4	92%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-6		
Lab Sample ID:	TC51321-1	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	80.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102014.D	1	07/14/14	ZL	07/11/14	OP33169	GLF1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	31	14	mg/kg	
	TPH (>C12-C28)	17 U	31	17	mg/kg	
	TPH (>C28-C35)	17 U	31	17	mg/kg	
	TPH (C6-C35)	14 U	31	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		70-130%
98-08-8	aaa-Trifluorotoluene	89%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-7		
Lab Sample ID:	TC51321-2	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	75.9
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100864.D	1	07/17/14	CF	07/14/14 17:05	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.18 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00086 U	0.0051	0.00086	mg/kg	
108-88-3	Toluene	0.0013 U	0.0051	0.0013	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0051	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0036 U	0.015	0.0036	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00065 U	0.0051	0.00065	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		59-126%
2037-26-5	Toluene-D8	96%		70-139%
460-00-4	4-Bromofluorobenzene	96%		63-138%
17060-07-0	1,2-Dichloroethane-D4	85%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-7		
Lab Sample ID:	TC51321-2	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	75.9
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB102015.D	1	07/14/14	ZL	07/11/14	OP33169	GLB1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	15 U	32	15	mg/kg	
	TPH (>C12-C28)	18 U	32	18	mg/kg	
	TPH (>C28-C35)	18 U	32	18	mg/kg	
	TPH (C6-C35)	15 U	32	15	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		70-130%
98-08-8	aaa-Trifluorotoluene	85%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-8		
Lab Sample ID:	TC51321-3	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	83.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100865.D	1	07/17/14	CF	07/14/14 17:08	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.41 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0045	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		59-126%
2037-26-5	Toluene-D8	93%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%
17060-07-0	1,2-Dichloroethane-D4	98%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-8		
Lab Sample ID:	TC51321-3	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	83.0
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102016.D	1	07/14/14	ZL	07/11/14	OP33169	GLF1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	16 U	30	16	mg/kg	
	TPH (>C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		70-130%
98-08-8	aaa-Trifluorotoluene	95%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-9		
Lab Sample ID:	TC51321-4	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	76.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100866.D	1	07/17/14	CF	07/14/14 17:11	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.52 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00080 U	0.0047	0.00080	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00060 U	0.0047	0.00060	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		59-126%
2037-26-5	Toluene-D8	93%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%
17060-07-0	1,2-Dichloroethane-D4	95%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-9		
Lab Sample ID:	TC51321-4	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	76.4
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB102023.D	1	07/14/14	ZL	07/11/14	OP33169	GLB1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	15 U	32	15	mg/kg	
	TPH (>C12-C28)	18 U	32	18	mg/kg	
	TPH (>C28-C35)	18 U	32	18	mg/kg	
	TPH (C6-C35)	15 U	32	15	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		70-130%
98-08-8	aaa-Trifluorotoluene	88%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-1		
Lab Sample ID:	TC51321-5	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	79.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100867.D	1	07/17/14	CF	07/14/14 17:15	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.51 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00092	0.0046	0.00077	mg/kg	J
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0046	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		59-126%
2037-26-5	Toluene-D8	95%		70-139%
460-00-4	4-Bromofluorobenzene	93%		63-138%
17060-07-0	1,2-Dichloroethane-D4	86%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	IDW-1		
Lab Sample ID:	TC51321-5	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	79.3
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF102024.D	1	07/14/14	ZL	07/11/14	OP33169	GLF1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	17 U	30	17	mg/kg	
	TPH (>C28-C35)	17 U	30	17	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		70-130%
98-08-8	aaa-Trifluorotoluene	101%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	IDW-2		
Lab Sample ID:	TC51321-6	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	80.5
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100868.D	1	07/17/14	CF	07/14/14 17:17	n/a	VX2266
Run #2							

	Initial Weight	Final Volume
Run #1	5.57 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0045	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		59-126%
2037-26-5	Toluene-D8	96%		70-139%
460-00-4	4-Bromofluorobenzene	96%		63-138%
17060-07-0	1,2-Dichloroethane-D4	87%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	IDW-2		
Lab Sample ID:	TC51321-6	Date Sampled:	07/10/14
Matrix:	SO - Soil	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	80.5
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB102025.D	1	07/14/14	ZL	07/11/14	OP33169	GLB1509
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	17 U	30	17	mg/kg	
	TPH (>C28-C35)	17 U	30	17	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		70-130%
98-08-8	aaa-Trifluorotoluene	98%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-6		
Lab Sample ID:	TC51321-7	Date Sampled:	07/10/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z042785.D	1	07/12/14	EM	n/a	n/a	VZ4351
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.00030 U	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	90%		68-124%
2037-26-5	Toluene-D8	96%		80-119%
460-00-4	4-Bromofluorobenzene	83%		72-126%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-6		
Lab Sample ID:	TC51321-7	Date Sampled:	07/10/14
Matrix:	AQ - Ground Water	Date Received:	07/10/14
Method:	TNRCC 1005 TX1005	Percent Solids:	n/a
Project:	Memorial Drive, Houston, TX/7312-H-P2		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	VF13748.D	1	07/15/14	RV	07/12/14	OP33179	GVF318
Run #2							

	Initial Volume	Final Volume
Run #1	29.4 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	0.60 U	2.6	0.60	mg/l	
	TPH (>C12-C28)	0.87 U	2.6	0.87	mg/l	
	TPH (>C28-C35)	0.87 U	2.6	0.87	mg/l	
	TPH (C6-C35)	0.60 U	2.6	0.60	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	108%		70-130%
98-08-8	aaa-Trifluorotoluene	99%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

ACCUTEST Laboratories

CHAIN OF CUSTODY

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC51321

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston | State: TX | Zip: 77079
Project Contact: Sasha Ross | E-mail: sross@bergoliver.com
Phone #: 281-589-0898 | Fax #:
Sampler(s) Name(s): Sasha Ross | Phone #: 8325995001

Project Information

Project Name: Memorial Drive
Street:
City: | State:
Project #: 7312492
Client Purchase Order #:
Project Manager: Sasha Ross

Billing Information (If different from Report to)

Company Name:
Street Address:
City: | State: | Zip:
Attention:

Requested Analyses

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAcNH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	BTEXM (8260)	VOA (8260)	TPHTX1005	LAB USE ONLY
1	SB-6	7/10/14	11:40a	SR	SO	1													✓		✓	
2	SB-7		10:50a	SR	SO	1													✓		✓	
3	SB-8		10:30a	SR	SO	1													✓		✓	
4	SB-9		10:05a	SR	SO	1													✓		✓	
5	IDW-1		12:00p	SR	SO	1													✓		✓	
6	IDW-2		12:00p	SR	SO	1													✓		✓	
7	GW-6		11:45a	SR	GW	6	6												✓		✓	

Turnaround Time (Business days)

- [x] Standard
- [ ] 6 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labink

Approved By (Accutest PM): / Date: 7-10-14 15:15

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [x] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery. 15:45

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		7/10 1:29p				
2					7-10-14	
3						
4						
5						

Custody Seal # | ☐ Intact ☐ Not Intact | Preserved where applicable ☐ | On Ice ☐ | Cooler Temp.

TC51321: Chain of Custody
Page 1 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC51321 **Client:** BERG OLIVER ASSOCIATES **Project:** MEMORIAL DRIVE

Date / Time Received: 7/10/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR6; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (3.8/3.8);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐		☐	☑	☐	☐
2. Trip Blank listed on COC:	☐		☐	☑		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☐		☐	☑		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

5.1

5

TC51321: Chain of Custody
Page 2 of 3

Sample Receipt Log

Job #: TC51321 **Date / Time Received:** 7/10/2014 3:45:00 PM **Initials:** BH

Client: BERG OLIVER ASSOCIATES

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC51321-1	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	3.8	0	3.8
1	TC51321-2	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	3.8	0	3.8
1	TC51321-3	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	3.8	0	3.8
1	TC51321-4	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	3.8	0	3.8
1	TC51321-5	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	3.8	0	3.8
1	TC51321-6	4oz	1	2-106	N/P	Note #2 - Preservative check not applicable.	IR6	3.8	0	3.8
1	TC51321-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.8	0	3.8
1	TC51321-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.8	0	3.8
1	TC51321-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.8	0	3.8
1	TC51321-7	40ml	4	4ZZ	HCL	pH < 2	IR6	3.8	0	3.8
1	TC51321-7	40ml	5	4ZZ	HCL	pH < 2	IR6	3.8	0	3.8
1	TC51321-7	40ml	6	4ZZ	HCL	pH < 2	IR6	3.8	0	3.8
1	TC51321-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.8	0	3.8
1	TC51321-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.8	0	3.8

TC51321: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC51321 This data package consists of

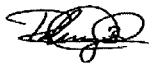
- [ ] This signature page, the laboratory review checklist, and the following reportable data:
- [ ] R1 Field chain-of-custody documentation;
- [ ] R2 Sample identification cross-reference;
- [ ] R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- [ ] R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- [ ] R5 Test reports/summary forms for blank samples;
- [ ] R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- [ ] R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- [ ] R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- [ ] R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- [ ] R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/17/2014

5.2

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LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/17/2014
Project Name:	Memorial Drive, Houston, TX/7312-H-P2	Laboratory Project Number:	TC51321
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59669, OP33169, OP33179, VX2266, VZ4351

#[1]	A[2]	DESCRIPTION	YES	NO	NA[3]	NR[4]	ER #[5]
R1	OI	**CHAIN-OF-CUSTODY (C-O-C):**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?	X				
		If required for the project, are TIC's reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations <MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?		X			4
		Were the MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X			2
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/17/2014				
Project Name:		Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC51321				
Reviewer Name:		Anita Patel	Prep Batch Number(s):	GN59669, OP33169, OP33179, VX2266, VZ4351				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/17/2014
Project Name:	Memorial Drive, Houston, TX/731	Laboratory Project Number:	TC51321
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59669, OP33169, OP33179, VX2266, VZ4351

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.
4	All anomalies are discussed in the case narrative.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4351-MB	Z042764.D	1	07/11/14	EM	n/a	n/a	VZ4351

The QC reported here applies to the following samples: Method: SW846 8260C

TC51321-7

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	72-122%
17060-07-0	1,2-Dichloroethane-D4	92%	68-124%
2037-26-5	Toluene-D8	95%	80-119%
460-00-4	4-Bromofluorobenzene	83%	72-126%

Method Blank Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2266-MB	X0100858.D	1	07/16/14	CF	n/a	n/a	VX2266

The QC reported here applies to the following samples: Method: SW846 8260C

TC51321-1, TC51321-2, TC51321-3, TC51321-4, TC51321-5, TC51321-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.4	0.58	ug/kg	
100-41-4	Ethylbenzene	ND	3.4	0.83	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.4	0.43	ug/kg	
108-88-3	Toluene	ND	3.4	0.87	ug/kg	
1330-20-7	Xylene (total)	ND	10	2.4	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	59-126%
2037-26-5	Toluene-D8	94%	70-139%
460-00-4	4-Bromofluorobenzene	93%	63-138%
17060-07-0	1,2-Dichloroethane-D4	88%	54-123%

Blank Spike Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4351-BS	Z042762.D	1	07/11/14	EM	n/a	n/a	VZ4351

The QC reported here applies to the following samples: Method: SW846 8260C

TC51321-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	68-119
100-41-4	Ethylbenzene	25	24.6	98	71-117
1634-04-4	Methyl Tert Butyl Ether	25	24.4	98	65-119
108-88-3	Toluene	25	25.2	101	73-119
1330-20-7	Xylene (total)	75	76.4	102	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	93%	72-122%
17060-07-0	1,2-Dichloroethane-D4	91%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	81%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2266-BS	X0100856.D	1	07/16/14	CF	n/a	n/a	VX2266

The QC reported here applies to the following samples: Method: SW846 8260C

TC51321-1, TC51321-2, TC51321-3, TC51321-4, TC51321-5, TC51321-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	46.9	47.0	100	58-124
100-41-4	Ethylbenzene	46.9	49.6	106	57-124
1634-04-4	Methyl Tert Butyl Ether	46.9	45.5	97	65-119
108-88-3	Toluene	46.9	47.8	102	67-119
1330-20-7	Xylene (total)	141	144	102	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	59-126%
2037-26-5	Toluene-D8	94%	70-139%
460-00-4	4-Bromofluorobenzene	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	89%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51289-1MS	Z042767.D	1	07/11/14	EM	n/a	n/a	VZ4351
TC51289-1MSD	Z042768.D	1	07/11/14	EM	n/a	n/a	VZ4351
TC51289-1	Z042765.D	1	07/11/14	EM	n/a	n/a	VZ4351

The QC reported here applies to the following samples: Method: SW846 8260C

TC51321-7

CAS No.	Compound	TC51289-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		25	25.2	101	25	24.5	98	3	68-119/12
100-41-4	Ethylbenzene	ND		25	25.4	102	25	24.5	98	4	71-117/12
1634-04-4	Methyl Tert Butyl Ether	ND		25	24.7	99	25	25.3	101	2	65-119/13
108-88-3	Toluene	ND		25	26.1	104	25	25.5	102	2	73-119/13
1330-20-7	Xylene (total)	ND		75	78.9	105	75	77.6	103	2	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC51289-1	Limits
1868-53-7	Dibromofluoromethane	92%	93%	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	89%	89%	91%	68-124%
2037-26-5	Toluene-D8	96%	96%	97%	80-119%
460-00-4	4-Bromofluorobenzene	82%	81%	83%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51152-17MS	X0100860.D	1	07/17/14	CF	n/a	n/a	VX2266
TC51152-17MSD	X0100861.D	1	07/17/14	CF	n/a	n/a	VX2266
TC51152-17	X0100859.D	1	07/17/14	CF	n/a	n/a	VX2266

The QC reported here applies to the following samples: Method: SW846 8260C

TC51321-1, TC51321-2, TC51321-3, TC51321-4, TC51321-5, TC51321-6

CAS No.	Compound	TC51152-17 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.1 U		70.1	66.4	95	69.3	59.2	85	11	58-124/26
100-41-4	Ethylbenzene	4.1 U		70.1	69.1	99	69.3	60.8	88	13	57-124/29
1634-04-4	Methyl Tert Butyl Ether	4.1 U		70.1	58.0	83	69.3	54.2	78	7	65-119/29
108-88-3	Toluene	4.1 U		70.1	67.3	96	69.3	60.1	87	11	67-119/28
1330-20-7	Xylene (total)	12 U		210	198	94	208	176	85	12	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC51152-17	Limits
1868-53-7	Dibromofluoromethane	94%	95%	100%	59-126%
2037-26-5	Toluene-D8	95%	96%	94%	70-139%
460-00-4	4-Bromofluorobenzene	94%	95%	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	86%	87%	94%	54-123%

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33169-MB	LB101937.D	1	07/11/14	ZL	07/11/14	OP33169	GLB1508

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51321-1, TC51321-2, TC51321-3, TC51321-4, TC51321-5, TC51321-6

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (>C12-C28)	ND	25	14	mg/kg	
	TPH (>C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	107%	70-130%
98-08-8	aaa-Trifluorotoluene	115%	70-130%

Method Blank Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33179-MB	VF13832.D	1	07/17/14	RV	07/12/14	OP33179	GVF320

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51321-7

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (>C12-C28)	ND	2.5	0.85	mg/l	
	TPH (>C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	96%	70-130%
98-08-8	aaa-Trifluorotoluene	96%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33169-BS	LB101939.D	1	07/11/14	ZL	07/11/14	OP33169	GLB1508
OP33169-BSD	LB101941.D	1	07/11/14	ZL	07/11/14	OP33169	GLB1508

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51321-1, TC51321-2, TC51321-3, TC51321-4, TC51321-5, TC51321-6

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	265	106	252	101	5	75-125/20
	TPH (>C12-C28)	250	266	106	247	99	7	75-125/20
	TPH (C6-C35)	500	530	106	499	100	6	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	104%	96%	70-130%
98-08-8	aaa-Trifluorotoluene	111%	105%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33179-BS	VF13834.D	1	07/17/14	RV	07/12/14	OP33179	GVF320
OP33179-BSD	VF13836.D	1	07/17/14	RV	07/12/14	OP33179	GVF320

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51321-7

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	44.9	90	43.8	88	2	75-125/20
	TPH (>C12-C28)	50	50.2	100	47.8	96	5	75-125/20
	TPH (C6-C35)	100	95.1	95	91.6	92	4	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	110%	105%	70-130%
98-08-8	aaa-Trifluorotoluene	96%	94%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33169-MS	LF101942.D	1	07/11/14	ZL	07/11/14	OP33169	GLF1508
OP33169-MSD	LF101940.D	1	07/11/14	ZL	07/11/14	OP33169	GLF1508
TC51163-1	LF101984.D	1	07/14/14	ZL	07/11/14	OP33169	GLF1509

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51321-1, TC51321-2, TC51321-3, TC51321-4, TC51321-5, TC51321-6

CAS No.	Compound	TC51163-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	25	U	256	255	100	250	266	106	4	75-125/20
	TPH (>C12-C28)	164		256	494	129*	250	437	109	12	75-125/20
	TPH (C6-C35)	336		511	941	118	500	865	106	8	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51163-1	Limits
84-15-1	o-Terphenyl	103%	103%	94%	70-130%
98-08-8	aaa-Trifluorotoluene	85%	89%	86%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51321
Account: BOATXHO Berg Oliver Associates
Project: Memorial Drive, Houston, TX/7312-H-P2

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33179-MS	VB13727.D	1	07/15/14	RV	07/12/14	OP33179	GVB318
OP33179-MSD	VB13729.D	1	07/15/14	RV	07/12/14	OP33179	GVB318
TC51305-1	VB13725.D	1	07/15/14	RV	07/12/14	OP33179	GVB318

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51321-7

CAS No.	Compound	TC51305-1 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	2.4 U		46.9	47.8	102	47.1	47.4	101	1	75-125/20
	TPH (> C12-C28)	2.4 U		46.9	47.8	102	47.1	47.7	101	0	75-125/20
	TPH (C6-C35)	2.4 U		93.9	95.6	102	94.3	95.1	101	1	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51305-1	Limits
84-15-1	o-Terphenyl	112%	112%	102%	70-130%
98-08-8	aaa-Trifluorotoluene	108%	106%	108%	70-130%

* = Outside of Control Limits.

APPENDIX C

Photographs

Typical view of coring activities.

Typical view of concrete core.

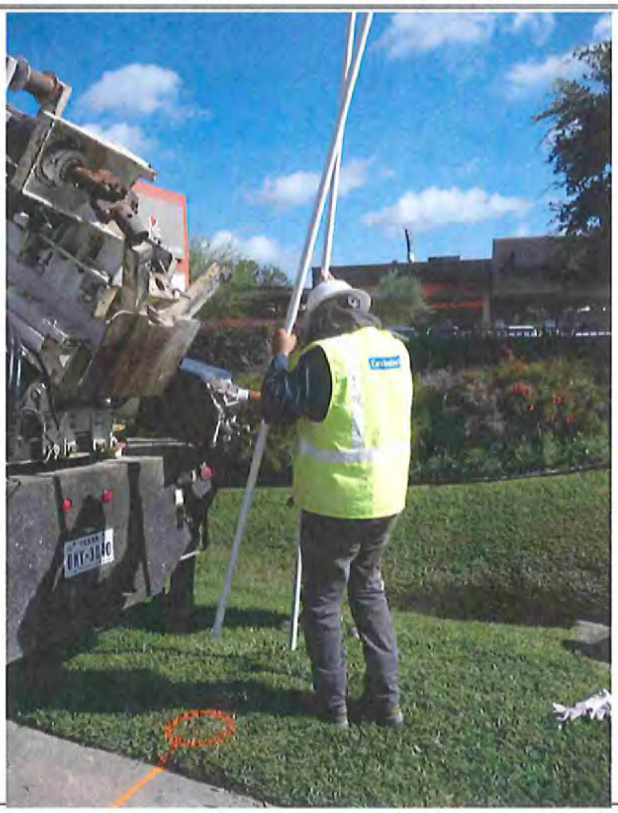
Typical view of asphalt core.

Typical view of boring activities on Memorial Drive and S. Dairy Ashford (SB-15).

Typical view of boring activities on Memorial Drive and S. Kirkwood Road (SB-1). This location was cancelled due to the various structures underground in both the roadway and within the greenspace.

Typical view of groundwater extraction on Memorial Drive and S. Kirkwood Road (SB-2, GW-2).

View of soil boring activities relocated off the roadway (SB-18).



View of installation of groundwater screens and casing (SB-19).

APPENDIX D

Soil Boring Locations and Data Summary
Proposed Utility Depths

MEMORIAL DRIVE / CSJ No. 0912-70-082/ BOA No. 7312H-P2
Soil Boring Locations and Data Summary

Item	Street Name	Sample Location (SL)	*ESA BH No. (SB)	BH Depth (+5ft)	PPCA Identified	Soil Contamination Category	Sample Depth	GW Sample
1	**Kirkwood Road (3 borings)**	SL-1	SB-1	0	No	MTBE/BTEX, TPH	CA	
2	14002 Memorial Drive (Shell Retail/TPG 2250 05/Star Enterprises)	SL-1	SB-2	23	Yes	MTBE/BTEX, TPH	17.5-20	GW-2
3	" "	SL-1	SB-3	22	No	MTBE/BTEX, TPH	18.0-19.0	
4	**County Place Drive and Kickerillo Drive (3 borings)**	SL-2	SB-4	22 ft	Yes	MTBE/BTEX, TPH	21-22	No Water
5	14360 Memorial Drive (Formerly Diamond Shamrock 527, Currently Valero Fueling station)	SL-2	SB-5	22	No	MTBE/BTEX, TPH	21.5-22.5	
6	14403 Memorial Drive (Texaco Service Station, Sammy's Memorial Texaco)	SL-2	SB-6	22	No	MTBE/BTEX, TPH	19.5-20.5	
7	**Winter Oaks Drive (3 borings)**	SL-3	SB-7	18 ft	No	MTBE/BTEX, TPH	12.0-13.0	GW-6
8	14477 Memorial Drive (Former Seven-Eleven- Ghost facility)	SL-3	SB-8	18	No	MTBE/BTEX, TPH	17.0-18.0	
9	" "	SL-3	SB-9	18	No	MTBE/BTEX, TPH	17.0-18.0	
10	**S. Dairy Ashford-East (2 borings each)**	SL-4	SB-10	17 ft	Yes	MTBE/BTEX, TPH	9.0-10.0	GW-5
11	14556/14565 Memorial Drive (Former Conoco Station, Current Chase Bank)	SL-4	SB-11	17	Yes	MTBE/BTEX, TPH	16.0-17.0	
12	14557 Memorial Drive (Love/Your Valet Dry Cleaners)	SL-4	SB-12	17	No	VOC, TPH	11.0-12.0	
13	" "	SL-4	SB-13	17	No	VOC, TPH	12.0-13.0	
14	**S. Dairy Ashford-West (4 borings)**	SL-5	SB-14	25 ft	Yes	MTBE/BTEX, TPH	23.0-24.0	
15	14602 Memorial Drive (Former Exxon Mobile 62899/Westide Memorial 66, Currently Ghost facility)	SL-5	SB-15	25	No	MTBE/BTEX, TPH	22.0-23.0	GW-1
16	14603 Memorial Drive (Former Mobil 12 BLX/12 BLX/ Mobil Oil 00BLX/Mobil Oil Corportation)	SL-5	SB-16	25	No	MTBE/BTEX, TPH	24.0-25.0	
17	" "	SL-5	SB-17	0	No	MTBE/BTEX, TPH	CA	
18	**Pinesap Drive (3 borings)**	SL-6	SB-18	23 ft	No	MTBE/BTEX, TPH	22.0-23.0	
19	14702 Memorial Drive (Former Grochetts Texaco Service,Ghost facility)	SL-6	SB-19	23	No	MTBE/BTEX, TPH	18.0-19.0	GW-3
20	" "	SL-6	SB-20	23	No	MTBE/BTEX, TPH	22.0-23.0	
21	**Thickett Lane- East (3 borings)**	SL-7	SB-21	23 ft	No	MTBE/BTEX, TPH	9.5-10.5	
22	14732 Memorial Drive (Mr. Pride Car Wash/Bubbles Hand Car Wash)	SL-7	SB-22	24	No	MTBE/BTEX, TPH	21.0-22.0	GW-4
23	" "	SL-7	SB-23	20 (R)	No	MTBE/BTEX, TPH	19.0-20.0	
24	**Thickett Lane- West (3 borings)**	SL-8	SB-24	14 ft	No	MTBE/BTEX, TPH	13.0-14.0	No Water
25	14754 Memorial Drive (Texaco Station/Texaco/Memorial Citgo)	SL-8	SB-25	14	No	MTBE/BTEX, TPH	13.0-14.0	
26	" "	SL-8	SB-26	14	Yes	MTBE/BTEX, TPH	13.0-14.0	
27	**Nottingham Oaks Trail (3 borings)**	SL-9	SB-27	20 ft	Yes	MTBE/BTEX, TPH	17.0-18.0	No Water
28	14803 Memorial Drive (Former Chevron, Currently Carmello's Italian Restaurant parking lot)	SL-9	SB-28	20	No	MTBE/BTEX, TPH	17.0-18.0	
29	" "	SL-9	SB-29	20	No	MTBE/BTEX, TPH	19.0-20.00	

Notes: R= Refusal

*Soil boring numbers may be adjusted in the field, not to exceed 29.

TBD= To Be Determined

SB=Soil Boring

BH= Bore Hole

PPCA= Potentially Petroleum Contaminated Areas

CA= Cancelled

MEMORIAL – PROPOSED UTILITY DEPTHS

Data Obtained from CivilTech Engineering

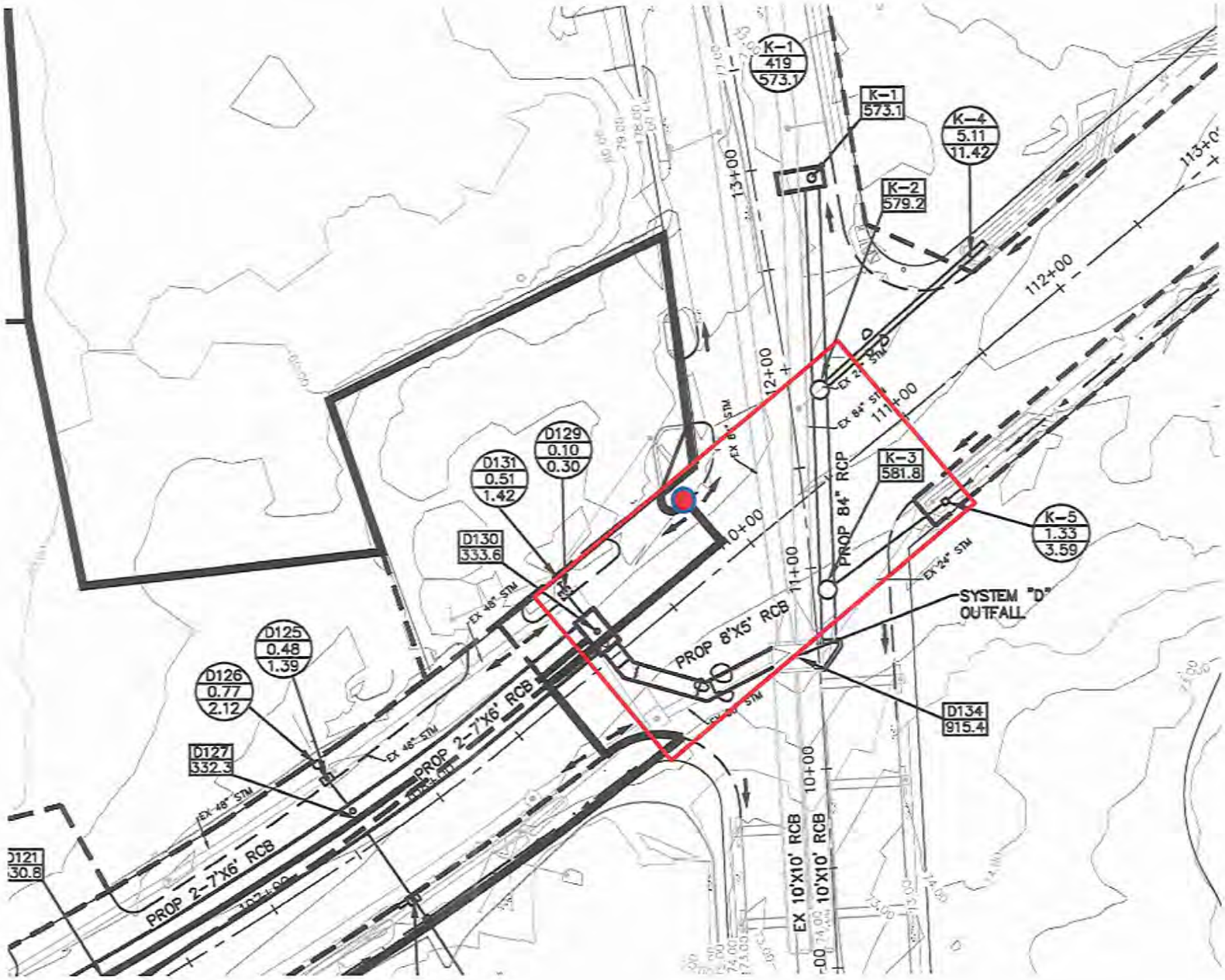
From East to West along Memorial Drive

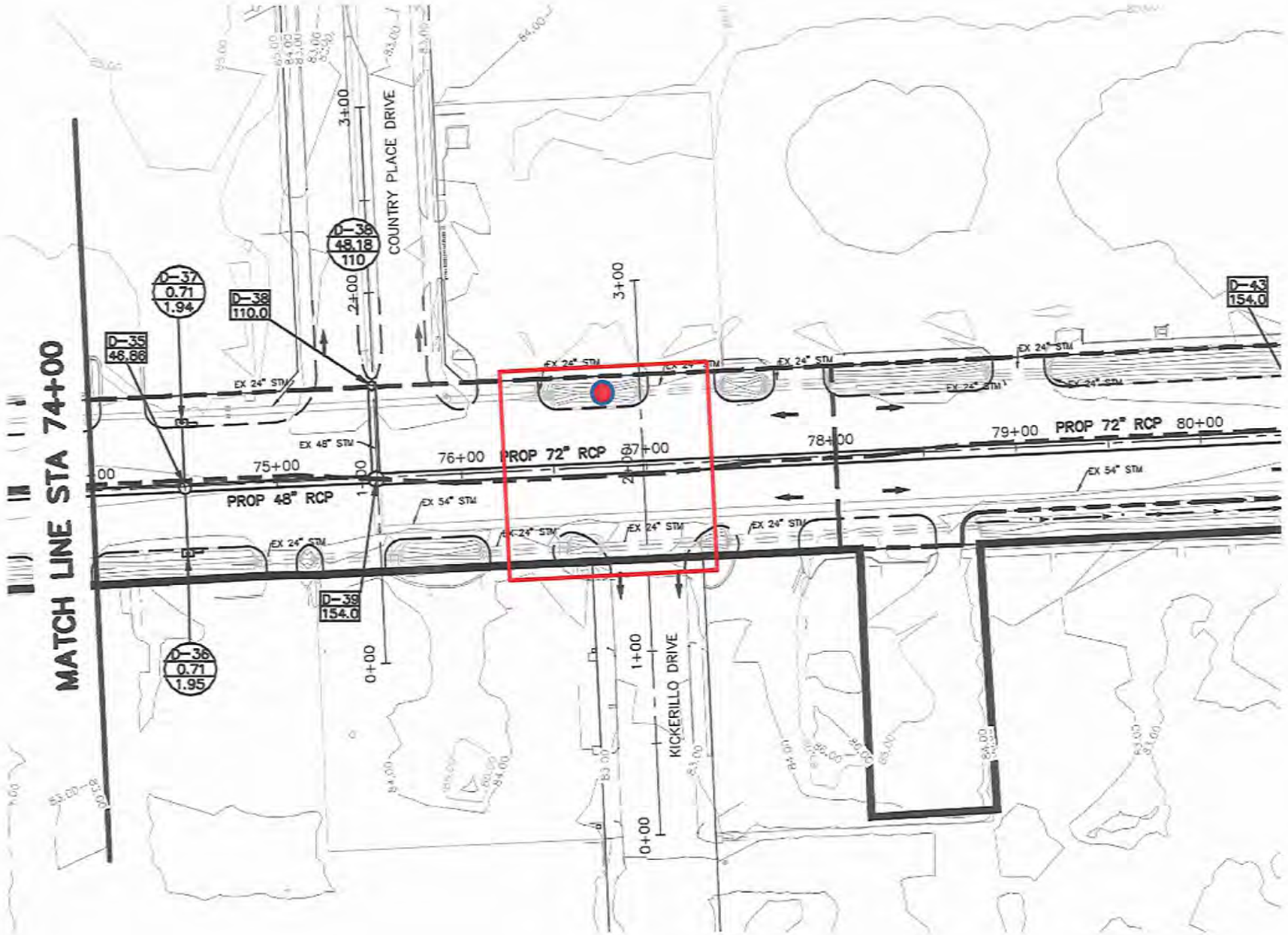
1) Kirkwood Road – 17.5 feet deep (See Sht 96-97)
2) Between Kickerillo Drive and County Place Drive - 17 feet deep (See Sht 82-83)
3) Winter Oaks Drive - 13 feet deep (See Sht 78-79)
4) East of Dairy Ashford (intersection) – 12 feet deep (See Sht. 74-75)
5) West of Dairy Ashford (intersection) – 20 feet deep (See Sht. 74-75)
6) Pinesap Drive - 18 feet deep (See Sht. 70-71)
7) Thicket Lane (North) to East of Thicket Lane (South) - 18 feet deep (See Sht. 68-69)
8) Thicket Lane (North) to West of Thicket Lane (North) - 9 feet deep (See Sht. 66-67)
9) Nottingham Oaks Trail - 16 feet deep (See Sht. 64-65)

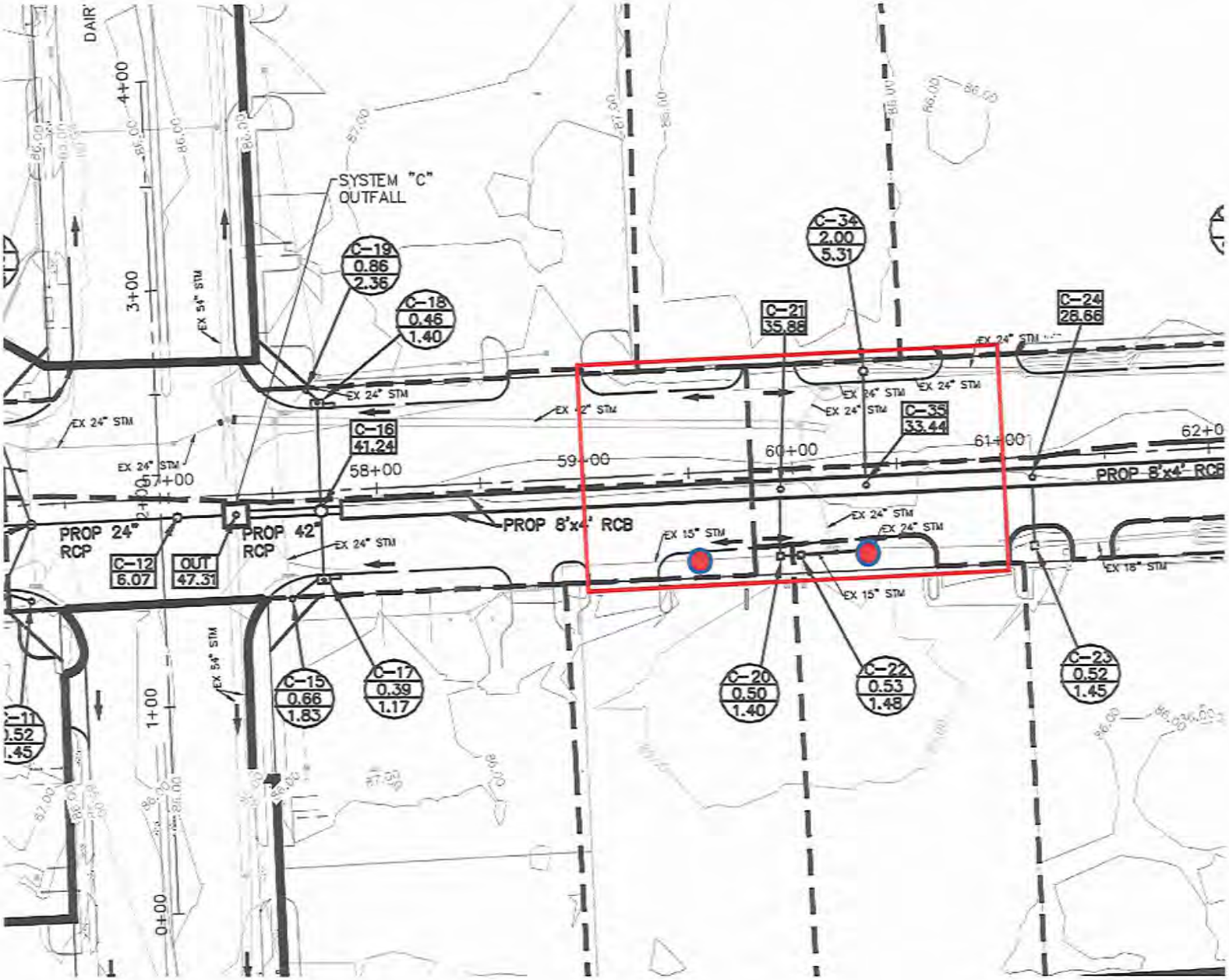
Range of depths: 9-20 feet

APPENDIX E

Maps of PPCA


K-1
419
573.1
K-1
573.1
K-4
5.11
11.42
K-2
579.2
113+00
112+00
111+00
13+00
12+00
11+00
10+00
0+00
D129
0.10
0.30
D131
0.51
1.42
D130
333.6
K-3
581.8
K-5
1.33
3.59
PROP 84" RCP
EX 84" STM
EX 8" STM
EX 24" STM
SYSTEM "D"
OUTFALL
PROP 8'X5' RCB
D125
0.48
1.39
D126
0.77
2.12
D127
332.3
D134
915.4
EX 48" STM
PROP 2-7'X6' RCB
EX 10'X10' RCB
10'X10' RCB
D121
30.8


MATCH LINE STA 74+00
COUNTRY PLACE DRIVE
KICKERILLO DRIVE
PROP 48" RCP
PROP 72" RCP
EX 24" STM
EX 48" STM
EX 54" STM
D-35 46.86
D-36 0.71 1.95
D-37 0.71 1.94
D-38 110.0
D-39 48.18 110
D-39 154.0
D-43 154.0
75+00
76+00
77+00
78+00
79+00
80+00
0+00
1+00
2+00
3+00


SYSTEM "C"
OUTFALL
C-19
0.86
2.36
C-18
0.46
1.40
C-16
41.24
C-34
2.00
5.31
C-21
35.88
C-24
28.66
C-35
33.44
C-12
6.07
OUT
47.31
C-15
0.66
1.83
C-17
0.39
1.17
C-20
0.50
1.40
C-22
0.53
1.48
C-23
0.52
1.45
PROP 24" RCP
PROP 42" RCP
PROP 8'x4' RCB
PROP 8'x4' RCB
EX 24" STM
EX 15" STM
EX 54" STM
4+00
3+00
2+00
1+00
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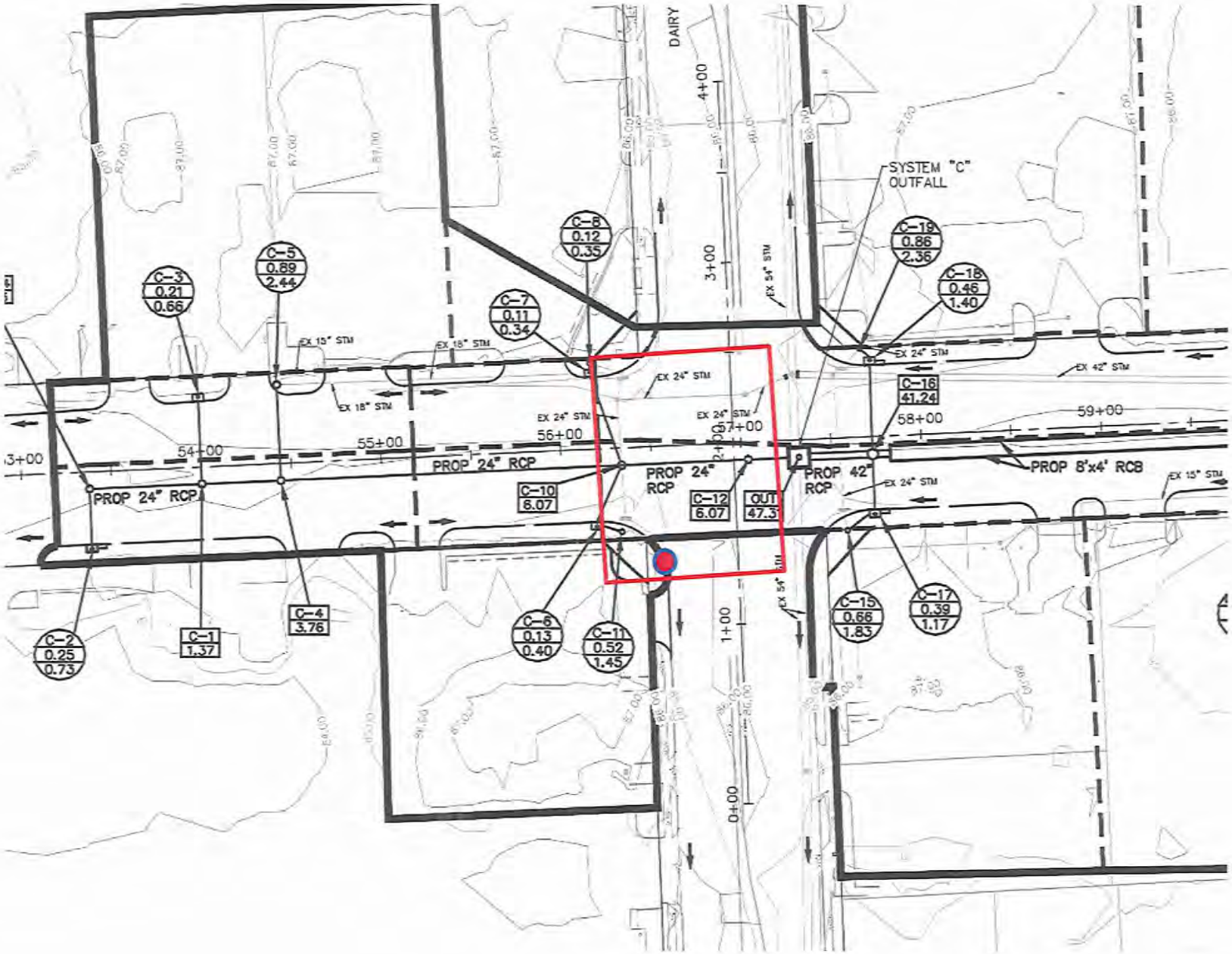
57+00
58+00
59+00
60+00
61+00
62+0


DAIRY
SYSTEM "C" OUTFALL
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C-2 0.25 0.73
C-3 0.21 0.66
C-4 3.76
C-5 0.89 2.44
C-6 0.13 0.40
C-7 0.11 0.34
C-8 0.12 0.35
C-10 6.07
C-11 0.52 1.45
C-12 6.07
C-15 0.66 1.83
C-16 41.24
C-17 0.39 1.17
C-18 0.46 1.40
C-19 0.86 2.36
OUT 47.3
EX 15" STM
EX 18" STM
EX 24" STM
EX 42" STM
EX 54" STM
PROP 24" RCP
PROP 42" RCP
PROP 8'x4' RCB
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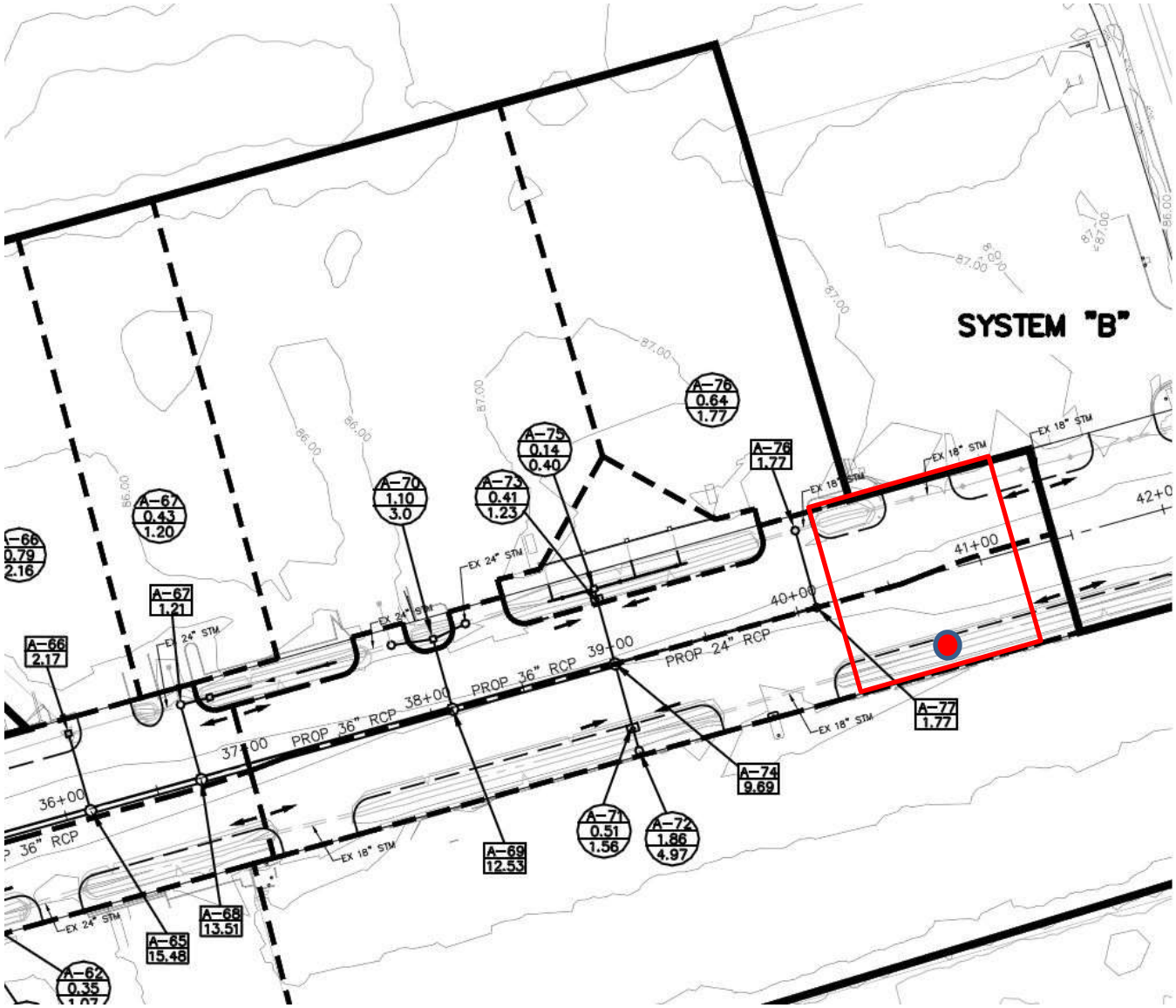
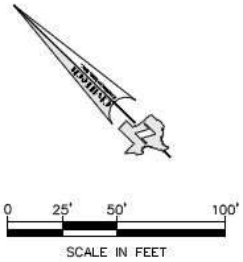
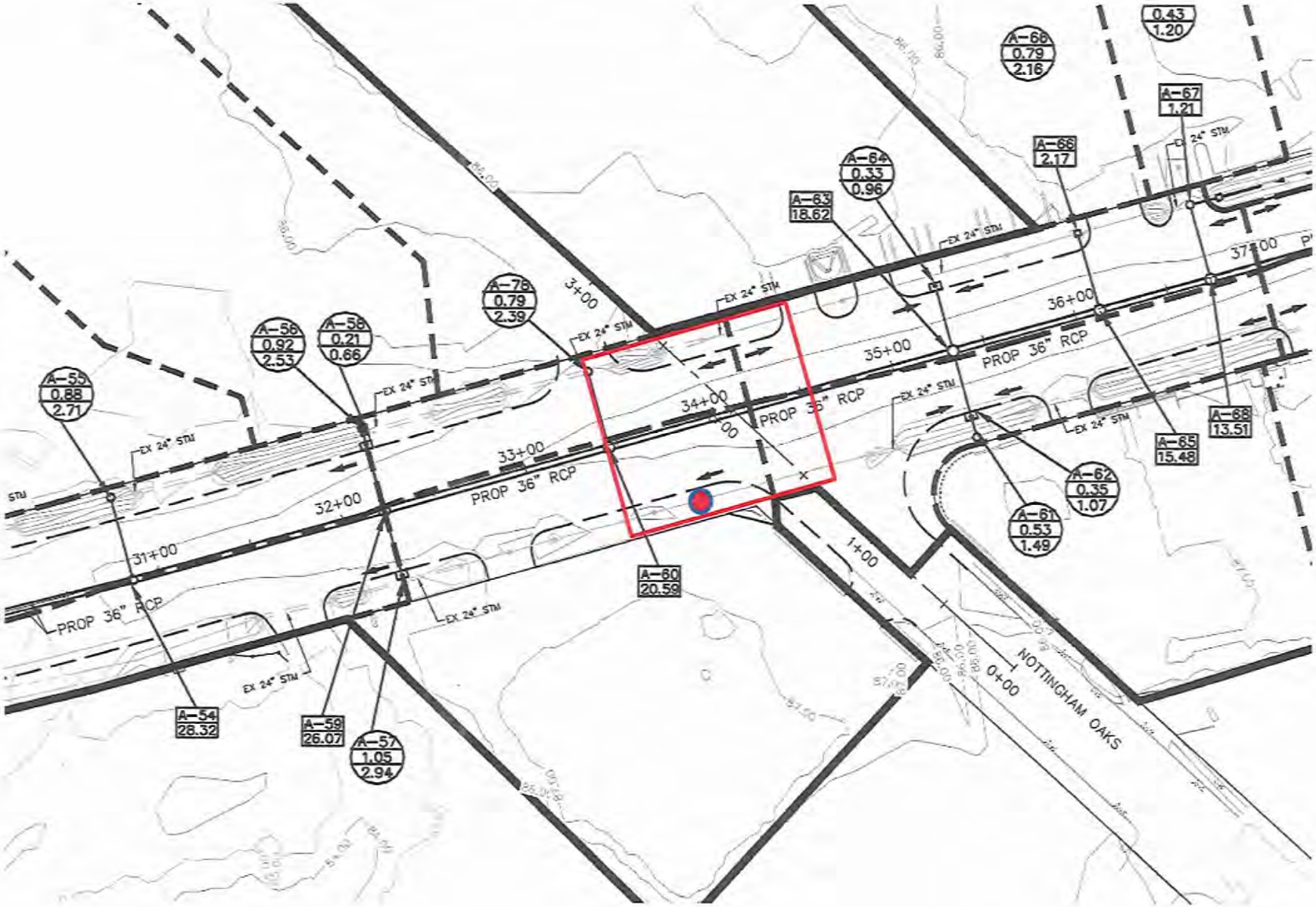
4+00
54+00
55+00
56+00
57+00
58+00
59+00





CivilTech Engineering, Inc.


A-66
0.79
2.16
0.43
1.20
A-67
1.21
A-64
0.33
0.96
A-63
18.62
A-68
2.17
A-76
0.79
2.39
A-56
0.92
2.53
A-56
0.21
0.66
A-55
0.88
2.71
3+00
EX 24" STM
36+00
35+00
PROP 36" RCP
34+00
33+00
32+00
31+00
A-68
13.51
A-65
15.48
A-62
0.35
1.07
A-61
0.53
1.49
A-60
20.59
1+00
0+00
NOTTINGHAM OAKS
A-54
28.32
A-59
26.07
A-57
1.05
2.94

APPENDIX F

Qualifications of Environmental Professionals

SASHA O. ROSS
ENVIRONMENTAL SCIENTIST
HAZARDOUS AND TOXIC WASTE DEPARTMENT

EDUCATION

Bachelor of Science in Environmental Science
Oklahoma State University, Stillwater, OK

REGISTRATION/TRAINING/ORGANIZATIONS

Gamma Theta Upsilon- International Geographic Honor Society Member

EXPERIENCE

Mrs. Ross is an Environmental Scientist with over five years of experience. Her responsibilities have included: project management, conducting soil core extractions and testing, fresh and groundwater sampling and testing, fish seining (includes capture and identification of fresh water species), macro-invertebrate collections and identification, plant surveys, data collection, analysis and management, groundwater monitoring, and storm water effluent sampling. Mrs. Ross is well versed in the ASTM 1527 Standards, having conducted and prepared Phase I site assessments, as well as managing and conducting Phase II site assessments. Mrs. Ross also uses her knowledge of the National Environmental Policy Act (NEPA), Texas Risk Reduction Plan (TRRP), Clean Water Act (CWA), and Comprehensive Environmental Response, and Compensation and Liability Act (CERCLA) among other environmental acts and regulations to provide guidance and solutions to a variety of clients.

REPRESENTATIVE EXPERIENCE

ProGEA Global Inc. Environmental Consulting: Responsible for conducting Phase I Site Assessments to ASTM E1527-05 standards for various commercial properties such as autobody shops, churches, commercial retail facilities, restaurants, warehouses, lube centers, self-storage complexes and apartment complexes. Duties included site reconnaissance, conducting interviews, taking and logging inspection photos, writing reports, executive summaries, and field notes. Mrs. Ross also performed wetlands record reviews, endangered species reviews, as well as researched historical records including national historic sites, city directories, and Sanborn Fire Maps. Her duties required her proficiency in obtaining and reviewing Environmental Data Resources Inc. reports (EDR), and Freedom of Information Act (FOIA) requests to identify potential *recognized environmental conditions (RECs)*/concerns to assist in developing solutions for project development.

Environmental Science Senior Capstone; Oklahoma State University Stillwater, OK: Determined relationships between Suspended Sediment Concentrations (SSC) and Turbidity on characterized Oklahoma soils across the state. Results reported directly to Oklahoma Department of Transportation (ODOT) in a final presentation and written report. Lead group collaborations and arranged meeting with clients, organized and defined scope of work. Participated in researching effects of suspended sediment on ecosystems and manmade conveyances, constructed the experimental design, performed suspended sediment experiments on soils from all regions in Oklahoma, manually collected soil and runoff samples from construction sites, analyzed and compared run-off data based on soil types, prepared and constructed reports, as well as presented to client results with recommendations on suspended sediment risk on specific soil types.

Department of Plant and Soil Sciences; Oklahoma State University Stillwater, OK: Collected and tested soil cores and water sample collections for macronutrients in agricultural and urban environments. All data being evaluated for Phosphorous included Murphy Riley procedures to measure phosphorous concentrations in samples using spectrophotometry. Other duties included pH and electrical conductivity (EC) testing on water samples as well as agricultural and industrial by-

products, processed samples by vacuum filtration and centrifuge, prepared stock reagents, conducted *e. coli* testing on agar plates, calculated dilutions and performed general laboratory duties.

Department of Zoology; Oklahoma State University Stillwater, OK : National Science Foundation grant recipient summer 2011. Completed research on the effect of emerging contaminants and their effects on ancient and extant genotypes of the *Daphnia pulicaria*. Performed techniques in resurrection ecology including isolation and dissection of dormant eggs, experimental hatching (a.k.a. "resurrection"), zooplankton culture and maintenance, experimental design, data collection, and data analysis.

Oklahoma Conservation Commission - Blue Thumb division; Oklahoma City, OK: Performed stream monitoring by habitat assessment, fish and benthic invertebrate identification and collection, and fish seining. Performed water quality assessment including pH, dissolved oxygen, ammonia, chloride, nitrates, and phosphorous.

Sanctuary Water Gardens; Tulsa, OK: Performed wetland reclamation effort within an abandoned coal mine site. Coordinated and monitored the planting of hydrophytic plant species to absorb specific toxins in the environment on the previous coal mining site.

United States Geological Survey (USGS); Abandoned Landfill, Oklahoma City, OK: Performed DNA filtration on leachate samples in the field, cation and anion filtration, tested for dissolved oxygen, pH, electrical conductivity, ammonium, methane, iron and chlorides. Performed 400 leachate samples from multi-level wells using peristaltic groundwater pumps to examine the redox zones of the leachate plume and its underground migration.

Northwest Technical Services/ Pipeline Design Services; ConocoPhillips, Anchorage, AK: Managed proprietary oilfield and administrative data in various media formats in a lock-down facility, provided customer service to clients which included data research and data retrieval, performed data administration tasks such as data coding/entry/archiving, quality assurance checks, and safety courses.

BENJAMIN M. PRICE, GEOLOGIST
VICE PRESIDENT AND PROJECT MANAGER
HAZARDOUS AND TOXIC WASTE DEPARTMENT

EDUCATION

Master of Science, Geology
Texas A&M University (1991)

Bachelor of Science, Geology
Florida Atlantic University (1981)

CERTIFICATIONS/AFFILIATIONS

Professional Geoscientist (TX #3423)
Certified Wetland Delineator 1997
Certified Environmental Auditor, 1997
Registered Environmental Manager (R.E.M. #10916)
Federal Energy Regulatory Commission (FERC) Training and Certification
National Environmental Policy Act (NEPA) Training and Certification
Society of Wetland Scientists
Texas Association of Environmental Professionals
National Registry of Environmental Professional
Texas Department of Transportation Certification No. 6550
TxDOT precertified in 2.3.1, 2.4.1, 2.6.1, 2.13.1

EXPERIENCE

Mr. Price is an environmental scientist with diverse experience in both business and technical aspects of the environmental industry. Utilizing his extensive background in geological and biological disciplines, he has developed expertise in environmental regulations, property assessments, hazardous waste testing and evaluation, wetland evaluation, endangered species audits, health and safety issues, and silviculture activities. Mr. Price specializes in site investigations relating to hazardous material and petroleum product contamination. His experience with the petroleum industry and contaminated site remediation allows him to effectively consult on cost efficient solutions to environmental impairment concerns. Mr. Price is involved with problem solving related to environmental and ecological issues, especially those that may hinder property transfer, land development activities, or oil and gas activities. He has developed a unique working relationship with many federal and state resource agencies responsible for project permitting and approval.

REPRESENTATIVE PROJECTS

- ***Andrau Industrial and Airpark Environmental Site Assessments,*** Private Development Project, Houston, Texas: Project Manager for the development and implementation of a work plan to assess the environmental risks posed by potential hazardous materials at the site. Tasks included sampling analytical methods, review of laboratory data for completeness and accuracy, interpretation of results, and preparation of final report.

- ***Pearland Manvel Dump Site***, Brazoria County District Attorney: Project Manager responsible for the Phase I Environmental Site Assessment and Phase II Testing. The project involved identifying portions of the site containing hazardous and radioactive liquids within the dumpsite. Groundwater monitoring and testing was conducted to evaluate potential off site transport of contaminants. Groundwater flow directions were determined for purposes of site closure. Recommendations to the PRP were made for future remediation goals to obtain state closure.

- ***Alamo Lumber Company***, Subsurface Investigation and Remediation, City of Houston, Texas: Project Manager for the Phase I, Phase II, and Phase III investigations and remediation of soil and groundwater. Contaminates of concern included Pentachlorophenol (PCP) and various Dioxins. The project required agency supervision and approvals. Closure was obtained through TCEQ.

- ***The Sprint Companies Landfill Expansion Environmental Assessment and Permitting Services***, Fort Bend County, Texas: Project Manager for the preparation of the Phase I Environmental Site Assessment for a 365-acre landfill site proposed to be expanded. The project was approved by the USACE, TCEQ, USFWS, and TPWD under a Clean Water Act Section 404 Permit with off-site mitigation banking.

- ***Houston Comprehensive Bikeway Program Environmental Assessment***, City of Houston, all locations, Environmental Assessment. Project Coordinator for the preparation of an Environmental Assessment (EA) for the comprehensive bikeways program covering 100 lineal miles and involving a TxDOT EA for ISTEA funding. The project involved the preparation of NEPA documentation and assessments of environmental issues, such as wetlands, hazardous waste, historic preservation, threatened and endangered species, air quality, noise, water quality, hydrology, and flood plains.

  - ***Little White Oak Bayou Hike & Bikeway Trail***: The proposed 0.6-mile trail begins southwest of the intersection of IH 45 and Loop 610 at Calvalcade Road and terminates along the IH 45 frontage road approximately 240 feet north of the intersection of Sylvester Road with the frontage road, in Harris County, Texas. Environmental clearance from TxDOT has been granted.

  - ***Keegans Bayou Hike & Bike Trail***: The proposed 3.9-mile trail begins on the north bank of Keegans Bayou at Kirkwood Drive and terminates on the south bank of Brays Bayou at S. Gessner Drive in southwestern Harris County, Texas.

  - ***Houston Heritage Corridor Bayou Trails (East Segment III)***: The proposed trail extends entirely on the southside of the bayou between North York Street and Lockwood Drive. The project is one segment of the multi-segment Houston Heritage Corridor System adopted by the City of Houston.

  - ***Westchase District Hike and Bike Trail***: The proposed trail would begin on Riverview Way, on the west side of the Harris County Flood Control District drainage ditch W157-00-00, and terminate at Richmond Avenue in southwestern Harris County, Texas. Environmental clearance from TxDOT has been granted.

  - ***Columbia Tap Hike and Bike Trail***: The proposed trail will begin at the on-street bicycle lane on Polk Street at the crossing of the abandoned Union Pacific (formerly Missouri-Pacific) Railroad tracks and terminate at the intersection of Bastrop Street and Texas Street in central Harris County, Texas. Environmental clearance from TxDOT has been granted.

  - ***Halls Bayou Hike and Bike Trail***: The proposed trail will begin on the north bank of Halls Bayou at Hirsch Road and terminate on the north bank of the bayou at Bretshire Road, west of the Union Pacific Railroad in central Harris County, Texas.

- ***Stafford-Staffordshire Road Expansion Environmental Assessment,*** City of Stafford, east Fort Bend County: Project Coordinator for the preparation of a TxDOT Environmental Assessment (EA) for the expansion of Stafford-Staffordshire Road through three jurisdictions (Harris County, City of Stafford, and City of Missouri City). The project involved preparation of a NEPA environmental assessment, including wetlands, hazardous waste, historic preservation, threatened and endangered species, air quality, water quality, hydrology, and flood plains.

- ***Sienna Plantation Environmental Assessment and Planning,*** Private Client, east Fort Bend County, Texas: Project Coordinator for an approximate 11,000-acre project involving current and long range environmental planning. The project involved assessment, permitting, and mitigation for many different tracts and sections of the development. Specific tasks included evaluation of existing wetlands, creation of constructed wetlands, overall project planning, and hazardous waste assessments. The project also included historic, cultural, and archaeological preservation; threatened and endangered species, coordination, land management, and contractor supervision.

- ***US 59 and Grand Parkway Limited Environmental Assessment***, Private Development Project, Fort Bend County, Texas: Project Hazards Manager for the preparation of a Limited Environmental Assessment (EA) for a 500-acre land development between the Brazos River and US 59, bisected by the Grand Parkway. The project involved assessment and documentation of environmental issues, such as wetlands, hazardous waste, historic/archaeological investigation and preservation, threatened and endangered species, surface hydrology, and flood plains.

- ***Independence Boulevard, Murphy Road Detention and Drainage Facilities Environmental Assessments,*** City of Missouri City, east Fort Bend County, Texas: Project Coordinator for the preparation of an Environmental Assessment for the extension of Murphy Road, the Environmental Assessment for the Murphy Road Detention and Drainage Improvements, and other environmental evaluations for the City of Missouri City, Texas. Projects involved preparation of Section 404 permit documentation, and assessment of environmental issues, such as wetlands, hazardous waste, historic/archaeological investigation and preservation, and threatened and endangered species.

- ***Sugarland Oil and Gas Field Assessment and Compliance Review***, Private Oil Company, northeast Fort Bend County: Project Coordinator for the environmental assessment and compliance review of a large oil field located around a salt dome structure. The property contained over 125 known oil and gas wells. Environmental evaluation included the evaluation of each currently producing and non-producing historic well site for hazardous material, toxic material, and petroleum products. Phase II site investigation and characterization is still ongoing.

- ***Dayton Rice Milling Environmental Services***, Harris County, Texas: Evaluation of agricultural pump house on Lake Houston. The project involved responding to citizen complaint of hydrocarbon contamination in Lake Houston, placing booms in lake to contain discharge, remediation of impacted soils to eliminate the source of hydrocarbon leaks and coordinate with TCEQ, COH to receive NFA from agencies.

- ***Farias Ranch Environmental Site Assessment and Phase II Testing***, PW Park 10, Inc., Maverick County, Texas: Conducted environmental site assessment and testing at a 100,000-acre ranch. The project involved performing Phase II Testing to identify potential impacts related to livestock dipping facilities located on the ranch property. The testing identified COC's, concentrations exceeding the TCEQ Texas specific background levels for certain metals and arsenic impacted soil at 3 historical cattle dipping vats. The project also involved remediation of the soils at each location, and submitting an Affected Property Assessment Report to the TCEQ and obtained state closure for these sites.

- ***Harris County Sports Authority Environmental Site Assessment and Phase II Testing***, Harris County, Texas: Conducted Environmental site assessment Phase I, Phase II Testing and Phase III of future Reliant Stadium site. Identify onsite LPST sites and ACM containing structures. Remediate and obtain closure for LPST sites through TCEQ. Perform ACM abatement of several structures and historic onsite pipeline. Perform demolition at structures. Conduct all projects simultaneously to be completed within tight time constraints for Reliant Stadium construction.

- ***AFG Properties Environmental Site Assessment and Phase II Testing***, Fort Bend County, Texas: Perform Phase I Environmental Site Assessment and Phase II Testing of the 3,000-acre historic sugarcane plantation. Discover impacted soil at two cattle dipping vat locations and oil and gas well site. Perform site clean up to residential standards for future master planned community.

- ***FM 1960 Roadway Widening***, *Harris County, Texas:* Performed environmental site assessment for TxDOT to identify potential constraints related to the widening of FM 1960. Identify multiple adjoining properties, which could impact alignment.

- ***Gosling Road***, Harris County, Texas: Project Coordinator for a Phase 1 Environmental Site Assessment for this TxDOT EA and Public Involvement for a 0.5-mile extension of Gosling Road, and its associated easements, located in northern Harris County. Project activities included a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-00 for the proposed project. Along with a visual survey of the project area, sources reviewed include the USGS Tomball quadrangle, NRCS soil surveys, FEMA maps, city directories, historical aerial photographs, reviews of standard environmental record sources (including selected agency files), and a Tobin Oil and Gas Survey Map.