

## **Soil and Groundwater Assessment**

Former Texaco Bulk Plant  
Dayton, Washington

*for*  
**Washington State Department of Ecology**

June 14, 2017



**GEOENGINEERS**   
Earth Science + Technology

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File No. 0504-133-00

June 14, 2017

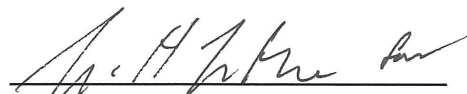
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## 1.0 INTRODUCTION

This report describes a limited soil and groundwater assessment conducted in April 2017 at the former Texaco Bulk Plant located at 606 Wagon Road, Dayton, Washington (referred to as the “site”). The approximate site location is shown in the attached Vicinity Map, Figure 1.

The site is currently included in the confirmed and suspected contaminated site list managed by the Washington State Department of Ecology (Ecology). At the request of Ecology, GeoEngineers’ conducted site assessment activities under Contract No. C1100145 and Work Assignment C11145D9. This report describes field activities, observations and chemical analytical results associated with soil and groundwater samples collected at the site. The purpose of the assessment was to investigate the presence of remnant contamination associated with a former underground storage tank (UST) at the site.

## 2.0 SITE DESCRIPTION AND BACKGROUND

The site is located at 606 Wagon Road, Dayton, Washington and previously operated as a Texaco bulk petroleum facility, until it was sold in 2006. The site currently is owned and operated by Mark Lewis and Columbia Pulp, LLC. In March 1992, Texaco removed a 6,000-gallon UST, which was used to store unleaded gasoline. The base of the tank reportedly was installed about 8½ feet below ground surface (bgs) and groundwater was observed approximately 6½ feet bgs.

The tank was visually inspected after removal and had areas of slight rusting and pitting below the water line, but no perforations were observed. Limited soil discoloration observed around the fill port was attributed to minor spillage during filling. No other soil contamination, odor or discoloration, was observed in the excavation (Chen-Northern 1992).

Groundwater in the tank excavation had a minor petroleum sheen. Two soil samples collected above the groundwater table (from the northeast and southeast excavation walls) indicated gasoline-range petroleum hydrocarbon (GRPH) and benzene concentrations were less than Model Toxics Control Act (MTCA) Method A cleanup levels. Chemical analysis of a groundwater sample collected from water in the excavation indicated GRPH and benzene concentrations were greater than MTCA Method A cleanup levels. A building has since been constructed over the tank excavation.

## 3.0 SCOPE AND SERVICES

Assessment services included developing a work plan, advancing soil borings, collecting grab groundwater samples, installing three monitoring wells, collecting groundwater samples from the installed wells and decommissioning the wells. The scope of services included the following:

### 3.1. Prepared Work Plan

1. Prepared a Work Plan for Soil and Groundwater Assessment (GeoEngineers 2017) (Work Plan) that included a Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASp). The Work Plan was reviewed and finalized with Ecology’s comments.

### 3.2. Site Assessment and Laboratory Analyses

1. Coordinated underground utility locating using the one-call system and Advanced Underground Utility Locating. Per state regulations, boring locations were marked prior to initiating the locate request.
2. Coordinated and contracted with subcontractors (Environmental West Exploration [EW], TestAmerica Laboratories, Inc. [TestAmerica] and Advanced Underground Utility Locating).
3. Conducted field assessment activities including:
  - a. Drilled seven soil borings (B-1 through B-4 and MW-1 through MW-3) ranging in depth from about 10½ to 16½ feet bgs using hollow-stem auger (HSA) drilling techniques. Soil samples were collected using a standard penetration test (SPT) sampler at approximately 2½-foot intervals. Three of the borings were finished as groundwater monitoring wells.
  - b. Observed and documented subsurface soil conditions. One soil sample was retained from each sampler for field screening and potential chemical analysis. Where possible, a soil sample was collected directly above the groundwater interface. Field screening consisted of visual observation, water sheen testing and headspace vapor measurements using a photoionization detector (PID).
  - c. Submitted one soil sample for chemical analysis from each soil boring. Samples were selected for analysis based on: (1) field screening indications of contamination; (2) the sample collected at the soil/groundwater interface; or (3) the deepest sample.

Soil samples were submitted to TestAmerica for:

- i. GRPH analysis using Northwest Method NWTPH-Gx;
  - ii. Benzene, toluene, ethyl-benzene and total xylenes (BTEX) using Environmental Protection Agency (EPA) Method 8260C;
  - iii. Methyl tert-butyl ether (MTBE) using EPA Method 8260C;
  - iv. 1,2-Dibromoethane (EDB) using EPA Method 8011;
  - v. 1,2-Dichloroethane (EDC) using EPA Method 8260C; and
  - vi. Total lead using EPA Method 6010C.
- d. Collected one grab groundwater sample for chemical analysis from each soil boring from temporary well points (screened polyvinyl chloride [PVC]) installed in the open borings. Groundwater was purged from the temporary wells and grab groundwater samples were collected and analyzed for the same parameters listed above. Water quality parameters (pH, temperature, oxidation-reduction potential [ORP], turbidity, dissolved oxygen [DO] and conductivity) were measured and documented while purging the boring.
  - e. Installed monitoring wells MW-1 through MW-3. The monitoring well locations were reviewed with Ecology and spaced to estimate groundwater gradient and flow direction. Wells were flush-mounted and screened from approximately 5 to 15 feet bgs. Each monitoring well was developed by surging and pumping.
  - f. Measured depth to groundwater and calculated groundwater elevations to estimate groundwater flow direction and gradient. Coffman Engineers, a licensed surveyor, surveyed the elevations and locations of the monitoring wells.

- g. Conducted a groundwater monitoring event on April 11, 2017. Groundwater samples were collected using low-flow sampling methods. Groundwater samples were analyzed for the same parameters referenced above. Groundwater samples were purged from each well for about 30 minutes before collecting the sample. The water quality parameters listed above were measured and documented while purging the well. A duplicate groundwater sample was collected from well MW-1.
- h. Drummed and labeled investigation-derived waste (IDW). After chemical analysis results were received, the IDW was removed from the drums and placed onto the ground surface at the site.
- i. After reviewing the analytical results, the groundwater monitoring wells were decommissioned at the request of Ecology. The wells were decommissioned by jackhammering out the flush mount monuments and filling the groundwater well casings with bentonite.

### **3.3. Reporting**

1. Entered analytical data into Ecology's Environmental Information Management (EIM) database.
2. Submitted this assessment report for Ecology.

## **4.0 FIELD ACTIVITIES**

The following sections describe field activities conducted as part of the assessment. The four borings and three groundwater monitoring wells were installed between April 6 and 7, 2017. Groundwater sampling was conducted on April 11, 2017 and the groundwater wells were abandoned on May 17, 2017.

### **4.1. Subsurface Explorations**

The seven borings were advanced on April 6 and 7, 2017. Site utilities, located near the boring locations, were identified and marked by Advanced Underground Utility Locating prior to drilling. EW advanced the seven borings (B-1 through B-4 and MW-1 through MW-3) using hollow-stem drilling methods. Soil samples were collected at approximately 2½-foot intervals from each boring using a SPT sampler. Grab groundwater samples were collected from each boring. Borings B-1 through B-4 were backfilled with bentonite, after the target termination depth (approximately 10 feet) was achieved and grab groundwater samples were collected. Borings MW-1 through MW-3 were finished as groundwater monitoring wells. Boring and monitoring well locations are depicted in Site Plan, Figure 2. Boring logs are included in Appendix A. Excess soil cuttings, decontamination water, and the purge water were placed in 55-gallon steel drums, labeled, and stored on-site.

### **4.2. Subsurface Conditions**

According to Division of Geology and Earth Resources – Washington Geological Survey, Subsurface Geology Information system, 1:100,000 scale (WDNR 2017), the area is soil generally consist of Quaternary alluvium, which is generally unconsolidated silt, sand and gravel valley fill with some clay. Observed soil conditions generally agreed with geologic mapping and subsurface soil generally consisted of 3 to 8 feet of brown silt overlying a brown gravel and sand layer with varying amounts of cobbles and silt to the boring termination depth (approximately 16½ feet bgs). Groundwater was encountered in each soil boring. Groundwater and saturated soil was encountered at approximately 7 to 9 feet bgs.



Depth to groundwater measurements at the site indicated a northwestern groundwater flow direction towards the Touchet River. Groundwater elevations differ by about 2 feet between MW-1 and MW-2.

### 4.3. Field Screening and Sampling

Soil samples were field-screened for the potential presence of petroleum contamination by visual examination, headspace vapor monitoring with a PID, and water-sheen testing. A portion of the sample was then placed in laboratory supplied containers for chemical analysis. Field screening procedures are described in Appendix A. Field screening results are summarized below.

- Boring B-1 was advanced just south of the former UST excavation. A slight sheen was detected at the 2½- to 4-foot-depth and the 7½- to 9-foot-depth intervals. A soil sample was collected from 2½ to 3 feet bgs for chemical analysis. The PID measurement was 28.0 part per million (ppm).
- Monitoring well MW-1 was advanced and installed northeast of the former UST excavation. The PID measurement was 58.8 ppm approximately 5 feet bgs. This was the highest PID reading during the investigation. A sample was collected from 5 to 5½ feet bgs for chemical analysis.

Field screening did not indicate petroleum contamination in the other locations. One soil sample from each boring was submitted for chemical analysis. Chemical analytical results are discussed in “Section 5.0.”

### 4.4. Grab Groundwater Sampling

To collect the grab groundwater samples, temporary well casings were lowered into each boring after the target depth was reached. Before purging, depth to groundwater, relative to the top of the temporary well casing, was measured to the nearest 0.01 foot using an electronic water level indicator. Groundwater was sampled in seven borings (B-1 through B-4 and MW-1 through MW-3) by installing temporary well screens consisting of 2-inch-diameter, 0.01-slot screened PVC. Groundwater samples were collected using a low-flow groundwater sampling procedure included in Appendix A. Depth to groundwater and water quality parameters are summarized in Summary of Groundwater Elevations and Field Parameters, Table 1.

During well purging, the well screens easily clogged and it was difficult to purge more than a gallon of water from each boring. Silts and fine sand above the gravel layer in addition to disturbance from drilling activities most likely caused the screen to clog and elevated turbidity readings.

Groundwater samples were submitted to TestAmerica for chemical analysis using the methods described in “Section 3.2” and chemical analytical results are discussed in “Section 5.0.” Purge water generated during groundwater sampling was drummed, labeled and stored on-site. After the analytical results were reviewed, the water was placed onto the ground surface with the other IDW.

### 4.5. Monitoring Well Installation

GeoEngineers installed three groundwater monitoring wells (MW-1 through MW-3) on April 6 and 7, 2017. The wells were installed using 2-inch-diameter, schedule 40 PVC pipe and 10 feet of well screen. The wells were finished with flush mount monuments. Detailed well installation logs are provided in Appendix A.

Wells were packed with silica-sand up to 2 feet above the screen, sealed with bentonite chips to 2 feet bgs and then capped with concrete and a metal well monument for the remaining 2 feet. EW developed the wells by surging and bailing the wells using a submersible pump system. Water was bailed from the wells



until it appeared free of sediment. Decontamination/development water was placed in 55-gallon steel drums, labeled, and stored in the designated areas. After the analytical results were reviewed, the water was placed onto the ground surface with the other IDW.

The three new groundwater monitoring wells installed at the site were surveyed on April 11, 2017 by Coffman Engineers. The north edge of the top of the PVC casing, were surveyed for horizontal and vertical coordinates relative to North American Datum of 1983 (NAD83) Washington South Zone and North American Vertical Datum of 1988 (NAVD88), respectively. Well survey information is provided in Appendix C.

#### **4.6. Groundwater Sampling**

Groundwater samples were collected from monitoring wells MW-1 through MW-3 on April 11, 2017. Depth to groundwater, measured from the top of the PVC well casings, ranged from approximately 7.19 feet (MW-1) to 8.35 feet (MW-3) and are reported in Table 1. Groundwater elevations ranged from approximately 1,575.58 feet in monitoring well MW-2 to 1577.59 feet in monitoring well MW-1. Based on groundwater elevations measured on April 11, 2017, groundwater flow generally was toward the northwest, as depicted in Figure 2. The estimated hydraulic groundwater gradient across the site was about 0.01 feet per foot (about 53 feet per mile). Groundwater elevation contours provided on Figure 2 were based on depth to water measurements, surveyed elevations of well casings, Surfer Version 1.2 modeling, and our hydrogeological interpretation.

The monitoring wells MW-1 through MW-3 were purged and sampled using low-flow sampling techniques. A peristaltic pump equipped with disposable tubing was used to purge and sample each well. Groundwater quality parameters generally were measured at 3-minute intervals during well purging. Groundwater samples were collected when each water quality parameter had stabilized or reached a maximum purge time of 30 minutes. Groundwater field parameters are summarized in Table 1. Field methods are described in Appendix A. A duplicate sample was collected from monitoring well MW-1.

Groundwater samples were submitted to TestAmerica for chemical analysis using the methods described in “Section 3.0” and chemical analytical results are discussed in “Section 5.0.”

Purge water generated during groundwater sampling was drummed with the water generated during well development.

#### **4.7. Monitoring Well Decommissioning and IDW Disposal**

On May 17, 2017, a Washington State licensed driller and assistant employed by GeoEngineers decommissioned monitoring wells MW-1 through MW-3. Flush monuments were removed by jackhammering the concrete from the ground until the metal monument could be manually extracted. Bentonite chips were then poured into the PVC well casings and hydrated with water. The remaining depression where the well monument previously existed was filled in with nearby on-site soil. The concrete and monuments were then disposed in a dumpster at the site.

IDW was disposed at the site at locations designated by Jeremy Nichols (owner’s representative) after the analytical results were received. The water was poured out of the drum over a grassy area south of the IDW storage area. The four soil drums were rolled to the access road and a fork lift was used to move the drums to an area northwest of IDW storage area, between the two buildings. The drums of soil were then tipped

over and the soil was spread out over the ground surface. The empty drums were placed south of the IDW storage area next to the building at a location designated by the owner's representative.

## **5.0 CHEMICAL ANALYTICAL RESULTS**

The following sections summarize the laboratory chemical analysis results for the soil and groundwater samples collected during the field investigation. Soil analytical results are summarized and compared to MTCA Method A cleanup levels (CULs) for unrestricted land use in Soil Chemical Analytical Results – NWTPH-Gx, Lead and VOCs, Table 2. Groundwater analytical results are summarized and compared to MTCA Method A unrestricted land use in Groundwater Chemical Analytical Results – NWTPH-Gx, Lead and VOCs, Table 3. Laboratory reports and a data validation summary are provided in Appendix B.

### **5.1. Soil Chemical Analytical Results**

A soil sample from each boring (B-1 through B-4 and MW-1 through MW-3) was submitted for chemical analyses described in Section 3.0. GRPH was detected in boring B-1 at a concentration less than MTCA Method A cleanup levels for unrestricted land use when benzene is not present. None of the other analytes were detected.

Laboratory reporting limits for benzene were greater than the CUL by 0.004 to 0.006 milligrams per kilogram (mg/kg) for two soil samples (B-4 and MW-3). The elevated reporting limits were the result of soil moisture content. Moisture content for samples B-4 and MW-3 were 28.9 and 27.6 percent respectively. As soil moisture content increases, the amount of solids available for analysis is reduced which reduces the certainty of the analytical method. Because of the sampling method, a fixed volume of solids is available for analysis that is collected using a terra core sampler and pre-preserved sample container. Benzene is not likely to be present at the site at concentrations greater than the CULs because benzene was not detected at other locations, including location B-1 where GRPH was detected.

### **5.2. Groundwater Chemical Analytical Results**

Seven grab groundwater samples were submitted from borings B-1 through B-4 and monitoring wells MW-1 through MW-3 to TestAmerica for the chemical analyses described in "Section 3.0." Three subsequent groundwater samples were collected from MW-1 through MW-3 after the wells were installed and developed. Groundwater samples were submitted for the chemical analyses described in "Section 3.0." Lead was detected in the grab groundwater samples from borings B-2 and B-4, but at concentrations less than the MTCA Method A cleanup level. None of the other analytes were detected.

Laboratory reporting limits for EDB were greater than the CUL by 0.003 to 0.005 micrograms per liter (µg/L) for two grab groundwater samples (B-2 and B-4). The elevated laboratory reporting limits were a result of the solids in the grab water samples, which reduces the water volume available for analysis. Because the water samples were collected from temporary wells without filter packs, water extracted from the temporary wells was turbid as discussed in Section 4.4. The solids then occupy a volume in the pre-preserved sample container that reduces volume of water available for analysis and therefore increases the laboratory reporting limits.

EDB is not likely to be present at the site at concentrations greater than the CULs because EDB or GRPH were not detected in groundwater or at other locations. EDB was also not detected in soil at the site.

## 6.0 SUMMARY AND CONCLUSIONS

Seven soil borings (B-1 through B-4 and MW-1 through MW-3) were advanced using HSA drilling techniques on April 6 and 7, 2017, at the former Texaco Bulk Plant located at 606 Wagon Road, Dayton, Washington. Three of the borings were finished as monitoring wells. Soil samples from each boring were submitted for GRPH, BTEX, MTBE, EDB, EDC and lead (contaminants of concern [COCs]) analysis. COC concentrations in soil were less than laboratory reporting limits, except GRPH in boring B-1. The measured GRPH concentration in boring B-1 was less than MTCA Method A for unrestricted land use.

Grab groundwater samples were collected from each soil boring and analyzed for site COCs. Lead was detected in the samples collected borings B-2 and B-4, but at concentrations less than the MTCA Method A cleanup level. Other site COCs were less than reporting limits.

Monitoring wells were installed in three of the boring locations (MW-1 through MW-3) to depths of 15 feet bgs. On April 11, 2017, GeoEngineers conducted a groundwater monitoring event and submitted three groundwater samples for site COCs. COC concentrations were less than laboratory reporting limits.

Based on soil and water analytical results and under direction from Ecology, monitoring wells MW-1 through MW-3 were decommissioned on May 17, 2017. As a result of this site investigation, site COCs appear to be less than applicable MTCA Method A cleanup levels and therefore no further action at the site is recommended.

## 7.0 LIMITATIONS

We have prepared this report for the exclusive use of Ecology and their authorized agents.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments should be considered a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to "Report Limitations and Guidelines for Use," Appendix D, for additional information pertaining to use of this report.

## 8.0 REFERENCES

Chen-Northern. 1992. "Underground Storage Tank Site Assessment, Texaco Bulk Facility, 520 North Main, Dayton, Washington." Job # 192-1951, CNI2016R.EN. May 1992.

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**Table 1**  
**Summary of Groundwater Elevations and Field Parameters**  
 Texaco Bulk Plant  
 Dayton, Washington

Boring ID	Date Measured	Depth to Water from TOC (feet)	Top of Casing Elevation (feet) <sup>1</sup>	Groundwater Elevation <sup>2</sup> (feet)	PID <sup>3</sup> (ppm)	pH (pH units)	Specific Conductivity (µS/cm)	Redox Potential (millivolts)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Temperature (degrees C)
<b>Temporary Wells</b>											
B-1	4/6/2017	7.35	NA	NA	NA	6.48	488.4	109.1	9.09	3,500	12.5
B-2	4/6/2017	7.77	NA	NA	NA	6.67	485.8	102.7	7.46	328	14.1
B-3	4/7/2017	7.50	NA	NA	NA	6.30	495.9	186.0	7.91	32.9	12.0
B-4	4/7/2017	8.65	NA	NA	NA	6.83	1,009	116.8	6.62	730	14.4
MW-1	4/6/2017	7.20	NA	NA	NA	6.41	488.1	107.0	8.41	230	13.8
MW-2	4/7/2017	7.77	NA	NA	NA	6.42	477.3	196.9	8.50	340	12.6
MW-3	4/7/2017	8.68	NA	NA	NA	6.37	649.0	143.1	8.35	87	13.9
<b>Groundwater Monitoring Wells</b>											
MW-1	4/11/2017	7.19	1584.78	1577.59	0.0	6.37	464.3	180.1	8.28	9.8	11.8
MW-2	4/11/2017	7.63	1583.21	1575.58	0.2	6.16	460.7	177.7	8.60	15.6	11.7
MW-3	4/11/2017	8.35	1585.18	1576.83	0.0	6.32	613.0	171.3	7.85	8.4	11.8

**Notes:**

<sup>1</sup> Elevations relative to North American Vertical Datum of 1988, as surveyed by Coffman Engineers. Depths measured relative to the north side of the top of the PVC well casing.

<sup>2</sup> Groundwater elevations calculated using the formula: Groundwater Elevation = Top of Casing Elevation - Depth to Water

<sup>3</sup> Headspace vapor measurements collected upon opening the well casing using a PID.

ppm = parts per million; µS/cm = microsiemens per centimeter; mg/L = milligrams per liter; NTU = nephelometric turbidity units; TOC = top of casing

**Table 2**  
**Soil Chemical Analytical Results - NWTPH-Gx, Lead and VOCs<sup>1</sup>**  
 Texaco Bulk Plant  
 Dayton, Washington

Analytical Group	Analyte	Units	MTCA Method A Cleanup Levels <sup>2</sup>	Sample Location, Date and Depth Interval						
				B-1 4/6/2017 2.5-3 feet	B-2 4/6/2017 7.5-8 feet	B-3 4/7/2017 7.5-8 feet	B-4 4/7/2017 5-5.5 feet	MW-1 4/6/2017 5-5.5 feet	MW-2 4/7/2017 7.5-8 feet	MW-3 4/7/2017 7.5-8 feet
TPH <sup>3</sup>	GRPH	mg/kg	30/100 <sup>4</sup>	<b>40</b>	6.0 U	6.3 U	8.9 U	7.0 U	5.1 U	8.5 U
Metals <sup>5</sup>	Lead	mg/kg	250	5.2 U	5.8 U	5.3 U	6.8 U	4.5 U	3.9 U	6.0 U
VOCs <sup>6</sup>	1,2-Dibromoethane (EDB)	mg/kg	0.005	0.00010 U	0.000092 U	0.000099 U	0.00011 U	0.000087 U	0.000091 U	0.00011 U
	1,2-Dichloroethane (EDC)	mg/kg	NE	0.14 U	0.12 U	0.13 U	0.18 U	0.14 U	0.10 U	0.17 U
	Benzene	mg/kg	0.03	0.028 U	0.024 U	0.025 U	0.036 U	0.028 U	0.020 U	0.034 U
	Ethylbenzene	mg/kg	6	0.14 U	0.12 U	0.13 U	0.18 U	0.14 U	0.10 U	0.17 U
	Methyl t-butyl ether (MTBE)	mg/kg	0.1	0.069 U	0.060 U	0.063 U	0.089 U	0.070 U	0.051 U	0.085 U
	Toluene	mg/kg	7	0.14 U	0.12 U	0.13 U	0.18 U	0.14 U	0.10 U	0.17 U
	Xylene, m-,p-	mg/kg	NE	0.55 U	0.48 U	0.50 U	0.71 U	0.56 U	0.41 U	0.68 U
	Xylene, o-	mg/kg	NE	0.28 U	0.24 U	0.25 U	0.36 U	0.28 U	0.20 U	0.34 U
	Total Xylenes	mg/kg	9 <sup>7</sup>	0.83 U	0.72 U	0.75 U	1.1 U	0.84 U	0.61 U	1.0 U

**Notes:**

<sup>1</sup>Samples analyzed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

<sup>2</sup>Model Toxics Control Act (MTCA) Method A unrestricted land use cleanup levels (CUL).

<sup>3</sup>Gasoline-range petroleum hydrocarbons (GRPH) analyzed using Method NWTPH-Gx, Northwest Volatile Petroleum Products.

<sup>4</sup>GRPH cleanup level is 100 mg/kg if benzene is not present and the total of ethylbenzene, toluene and xylenes is less than 1% of the gasoline mixture. It is 30 mg/kg for all other mixtures.

<sup>5</sup>Metals analyzed using Environmental Protection Agency (EPA) Method 6010C.

<sup>6</sup>Volatile organic compounds (VOCs) analyzed using EPA Method 8260C. 1,2-Dibromoethane analyzed using EPA Method 8011.

<sup>7</sup>Cleanup level for total xylenes (o-xylene and m,p-xylene) based on protection of groundwater for drinking water use, using the procedures described in WAC-173-340-747(4). Concentrations were summed to determine compliance.

mg/kg = milligrams per kilogram; NE = not established; µg/kg = micrograms per kilogram; U = analyte was not detected greater than the laboratory reporting limit.

**Bold** indicates that the analyte was detected greater than the reporting limit.

Blue shading indicates analyte was not detected greater than the reporting limit, but the reporting limit was greater than the MTCA Method A cleanup level.



Table 3  
Groundwater Chemical Analytical Results - NWTPH-Gx, Lead and VOCs<sup>1</sup>  
Texaco Bulk Plant  
Dayton, Washington

Sample Location	Sample Name	Sample Date	TPH <sup>2</sup>	Metals <sup>3</sup>	VOCs <sup>4</sup>								
			GRPH µg/L	Lead mg/L	1,2-Dibromoethane (EDB) µg/L	1,2-Dichloroethane (EDC) µg/L	Benzene µg/L	Ethylbenzene µg/L	Methyl t-butyl ether (MTBE) µg/L	Toluene µg/L	Xylene, m-,p- µg/L	Xylene, o- µg/L	Total Xylenes µg/L
Temporary Wells													
B-1	B-1:GW:040617	04/06/17	150 U	0.70 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
B-2	B-2:GW:040617	04/06/17	750 U	1.7	0.015 U	5.0 U	2.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	15 U
B-3	B-3:GW:040717	04/07/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
B-4	B-4:GW:040717	04/07/17	750 U	0.79	0.013 U	5.0 U	2.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	15 U
MW-1	MW-1:GW:040617	04/06/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
MW-2	MW-2:GW:040717	04/07/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
MW-3	MW-3:GW:040717	04/07/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
Groundwater Monitoring Wells													
MW-1	MW-1:041117	04/11/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
MW-1	DUP:041117	04/11/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
MW-2	MW-2:041117	04/11/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
MW-3	MW-3:041117	04/11/17	150 U	0.014 U	0.010 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	3.0 U
MTCA Method A Cleanup Level <sup>5</sup>			800/1,000 <sup>6</sup>	15	0.01	5	5	700	20	1,000	NE	NE	1,000 <sup>7</sup>

Notes:

<sup>1</sup>Samples analyzed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

<sup>2</sup>Gasoline-range petroleum hydrocarbons (GRPH) analyzed using Method NWTPH-Gx, Northwest Volatile Petroleum Products.

<sup>3</sup>Metals analyzed using Environmental Protection Agency (EPA) Method 200.7.

<sup>4</sup>Volatile organic compounds (VOCs) analyzed using EPA Method 8260C. 1,2-Dibrochloroethane analyzed using EPA Method 8011.

<sup>5</sup>Model Toxics Control Act (MTCA) Method A unrestricted land use cleanup levels (CUL).

<sup>6</sup>Gasoline-range petroleum hydrocarbon cleanup level is 1,000 µg/L if benzene is not detectable in groundwater and 800 µg/L if benzene is present.

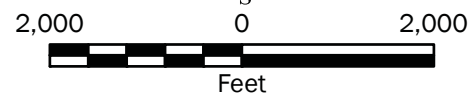
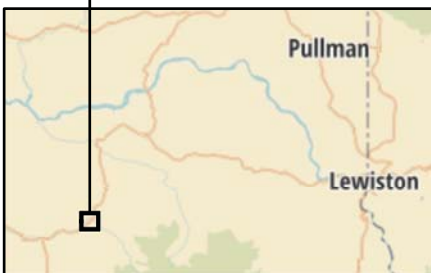
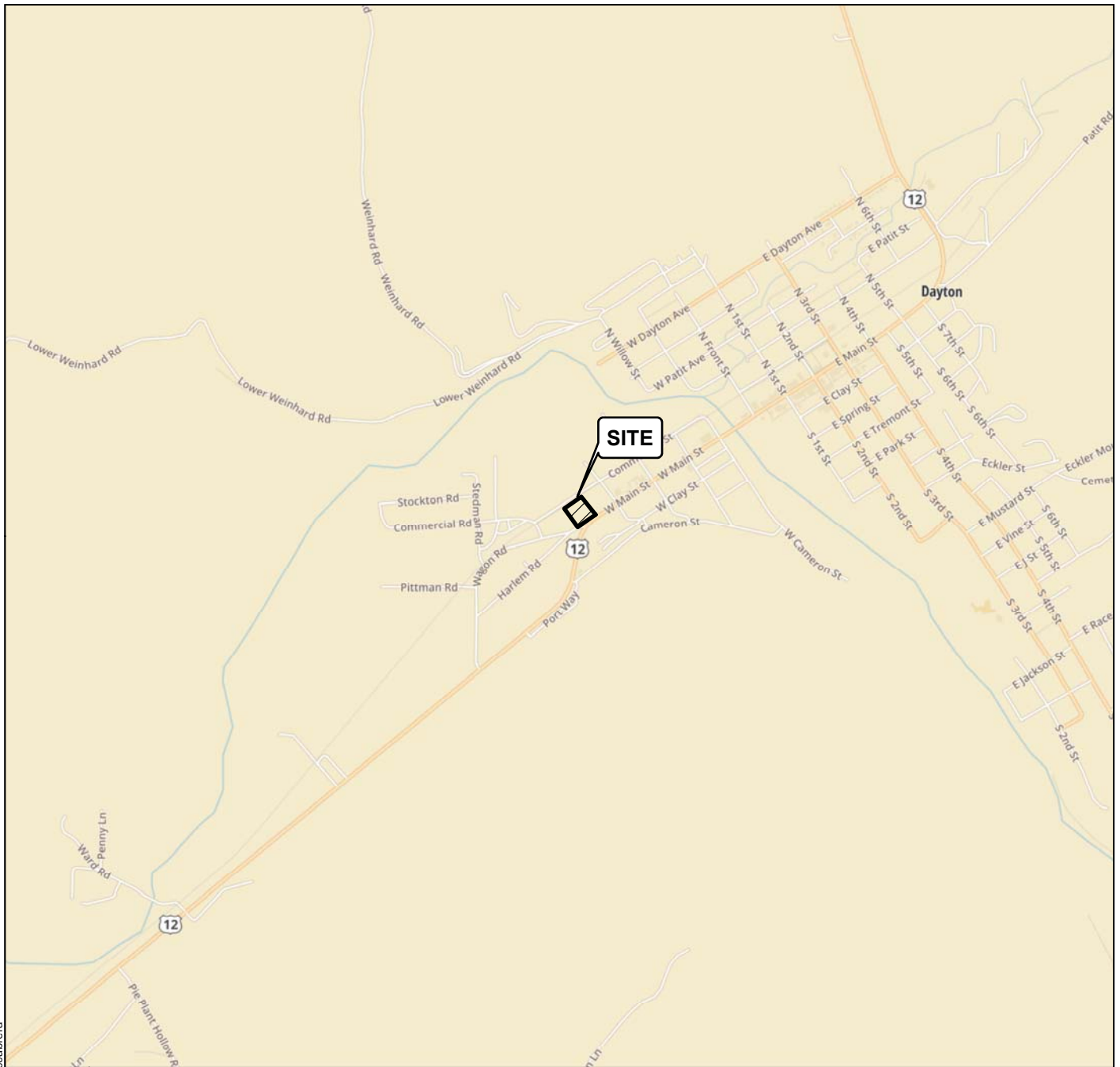
<sup>7</sup>Cleanup level for total xylenes (o-xylene and m,p-xylene) based on protection of groundwater for drinking water use, using the procedures described in WAC-173-340-747(4). Concentrations were summed to determine compliance.

mg/L = milligrams per liter; µg/L = micrograms per liter; U = analyte was not detected greater than the laboratory reporting limit, NE = not established

**Bold** indicates that the analyte was detected greater than the reporting limit.

Blue shading indicates analyte was not detected greater than the reporting limit, but the reporting limit was greater than the MTCA Method A cleanup level.





### Vicinity Map

Texaco Bulk Plant  
606 Wagon Road  
Dayton, Washington



**Figure 1**

### Notes:






1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 11N



### Legend

-  Boring Number and Approximate Location
-  Monitoring Well Number, Approximate Location, and Groundwater Elevations on April 11, 2017.
-  Interpolated Groundwater Elevation Contour (feet)
-  Former UST Approximate Location
-  Interpreted Groundwater Flow Direction

### Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Groundwater elevations are referenced to NAVD 88.

Data Source: Aerial image from ESRI Data Online.

Projection: NAD 1983 HARN StatePlane Washington South FIPS 4602 Feet

### Site Plan and Groundwater Elevations

Texaco Bulk Plant  
606 Wagon Road  
Dayton, Washington



Figure 2



## **APPENDIX A**

### **Field Procedures and Boring Logs**

## **APPENDIX A**

### **FIELD PROCEDURES AND BORING LOGS**

#### **General**

Subsurface conditions at the former Texaco Bulk Plant in Dayton, Washington were explored in April 2017, by advancing seven borings using hollow-stem auger drilling techniques. Three borings were completed as groundwater monitoring wells at the approximate locations shown on Figure 2. The borings were advanced to depths ranging from 10½ to 16½ feet bgs. Boring locations were established in the field using a site plan and measurements from onsite structures. Monitoring well locations and elevations were established by Coffman Engineers, a licensed surveyor. Consequently, exploration locations should be considered accurate to the degree implied by the method used.

Field methods generally were performed in compliance with the project Work Plan (GeoEngineers 2017).

#### **Soil Sample Collection**

Soil samples were obtained at approximately 2½-foot intervals using a SPT sampler. Soil samples were removed from the SPT sampler using clean nitrile gloves, and transferred into a laboratory prepared container, which were labeled with a waterproof pen, and placed on wet ice in a clean plastic-lined cooler.

Drilling operations were observed by GeoEngineers staff who examined and classified the soil encountered, obtained soil samples, and maintained a continuous exploration log. Soil encountered in the borings was classified in general accordance with ASTM International (ASTM) D 2488 and the classification chart listed in Key to Exploration Logs, Figure A-1. Boring logs and monitoring well construction diagrams are presented in Figures A-2 through A-8. The logs are based on field data interpretation and indicate the approximate depth at which subsurface materials or their characteristics change, although these changes might actually be gradual.

#### **Field Screening of Soil Samples**

A GeoEngineers field representative performed field screening tests on soil samples and recorded observations on the field boring log and in the field notebook. Field screening results were used to aid in the selection of soil samples for chemical analysis. The sample from each boring showing the highest likelihood of petroleum contamination based on field screening was selected for laboratory analysis. The remaining samples were submitted to the laboratory and held pending the results of the samples submitted for analysis.

Screening methods included: (1) visual examination; (2) water sheen screening; and (3) headspace vapor screening using a PID.

Visual screening consisted of inspecting the soil for discoloration indicative of the presence of petroleum-contaminated material in the sample.

Water-sheen screening involved placing soil in a pan of water and observing the water surface for signs of sheen. Sheen screening detects both volatile and nonvolatile petroleum hydrocarbons. Sheens observed are classified as follows:



No Sheen (NS)	No visible sheen on the water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly. Natural organic matter in the soil may produce a slight sheen.
Moderate Sheen (MS)	Light to heavy sheen; may have some color/iridescence; spread is irregular to flowing, may be rapid; few remaining areas of no sheen on the water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Water sheen testing equipment was decontaminated before field screening each sample using a Liquinox® soap solution with a water rinse.

Headspace vapor screening involved inserting a soil sample into a sealed plastic bag and measuring the airspace volatile organic compounds (VOC) vapor concentrations in ppm with a PID. When a soil sample was placed in a sealed plastic bag with air space, the bag was warmed and shaken to expose the soil to the air trapped in the bag. The probe of the PID, calibrated to isobutylene following the manufacturer's instructions, was inserted into a small opening in the bag seal and the measurement was collected. The PID typically is designed to quantify VOC vapor concentrations in the range between 0.1 ppm and 1,999 ppm with an accuracy of 10 percent of the reading and between 2,000 ppm and 10,000 ppm with an accuracy of 20 percent of the reading.

Field screening results are site-specific. The results vary with temperature, soil type, type of contaminant, and soil moisture content.

### **Groundwater Sampling Procedures**

Grab groundwater samples were collected from borings B-1 through B-4 and MW-1 through MW-3 on April 6 and 7, 2017. Low-flow groundwater samples were collected from monitoring wells MW-1 through MW-3 on April 11, 2017.

### **Groundwater Depths**

Depths to groundwater were measured relative to the north side of the monitoring well casing rims or drill casing using an electric water-level indicator. The probe of the water-level indicator was decontaminated between wells with a detergent wash, followed by two distilled water rinses.

### **Grab Groundwater Sampling**

Grab groundwater samples were collected by installing temporary PVC well screen into the soil boring. Tubing was then inserted into the temporary well screen and a peristaltic pump was used to extract water from the boring. A flow-through cell and water quality meter were connected to the tubing to measure field parameters. Each boring was purged for about 30 minutes and then the pump's discharge tubing was disconnected from the flow-through cell and sample containers were filled with the water. Each sample was pumped directly into sample containers supplied by the laboratory.

### **Low-Flow Sampling Procedures**

Groundwater sampling was performed consistent with the EPA's low-flow groundwater sampling procedure, as described by EPA (2010) and Puls and Barcelona (1996). Monitoring wells were purged using a

peristaltic pump equipped with disposable tubing. During purging activities, water quality parameters, including pH, conductivity, temperature, turbidity, ORP and DO, were measured using a YSI Pro multi-parameter meter equipped with a flow-through cell; measurements were recorded approximately every 3 minutes. The meter calibration was verified at the beginning of each work day consistent with manufacturer recommendations prior to purging and sampling activities.

Groundwater samples were collected after: (1) water quality parameters had stabilized; or (2) a maximum purge time of at least 30 minutes was achieved. During purging and sampling, the purge rate was not allowed to exceed 500 milliliters per minute. Water quality parameter stabilization criteria include the following:

- Turbidity:  $\pm 10$  percent for values greater than 5 NTU;
- DO:  $\pm 10$  percent for values greater than 0.5 milligrams per liter;
- Conductivity:  $\pm 3$  percent;
- pH:  $\pm 0.1$  unit;
- Temperature:  $\pm 3$  percent; and
- ORP:  $\pm 10$  millivolts.

After groundwater quality stabilization criteria were reached, the pump's discharge tubing was disconnected from the flow-through cell and groundwater samples were collected for analysis. Each sample was pumped directly into sample containers supplied by the laboratory. A duplicate groundwater sample was collected from well MW-1. Groundwater samples collected for chemical analysis were kept cool during on-site storage and transport to the laboratory. Chain-of-custody procedures were observed during transport and delivery of the groundwater samples.

## SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS  (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS  (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

### Sampler Symbol Descriptions

	2.4-inch I.D. split barrel
	Standard Penetration Test (SPT)
	Shelby tube
	Piston
	Direct-Push
	Bulk or grab
	Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

## ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	<b>AC</b>	Asphalt Concrete
	<b>CC</b>	Cement Concrete
	<b>CR</b>	Crushed Rock/Quarry Spalls
	<b>SOD</b>	Sod/Forest Duff
	<b>TS</b>	Topsoil

### Groundwater Contact



Measured groundwater level in exploration, well, or piezometer



Measured free product in well or piezometer

### Graphic Log Contact



Distinct contact between soil strata



Approximate contact between soil strata

### Material Description Contact



Contact between geologic units



Contact between soil of the same geologic unit

### Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

### Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

## Key to Exploration Logs



Figure A-1

Drilled	Start 4/6/2017	End 4/6/2017	Total Depth (ft)	11.5	Logged By Checked By	JML JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum					Undetermined		Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop	
Easting (X) Northing (Y)					423704.94 5129564.27		System Datum		WA State Plane South, U.S. Foot NAD83	
See "Remarks" section for groundwater observed										
Notes:										

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0							GP-GM ML	Gray fine to coarse gravel with silt and fine to coarse sand (loose, moist) (fill) Brown silt with trace fine to coarse sand and trace clay (very stiff, moist)			
		8	24		B-1 (2.5-3) CA				SS	28	
5		7	54				GP-GM	Brown fine to coarse angular and rounded gravel, cobbles and with fine to coarse sand and silt (dense, moist)	NS	<1	
		8	116		B-1 (7.5-8)			Becomes wet	SS	1.3	Groundwater observed at approximately 7 feet below ground surface during drilling
10		9	81						NS	<1	

Note: See Figure A-1 for explanation of symbols.  
Coordinates Data Source: Horizontal approximated based on GIS Pro, Vertical approximated based on

### Log of Boring B-1



Project: Texaco Bulk Plant, 606 Wagon Road  
Project Location: Dayton, Washington  
Project Number: 0504-133-00

Figure A-2  
Sheet 1 of 1

Drilled	Start 4/6/2017	End 4/6/2017	Total Depth (ft)	11.5	Logged By Checked By	JML JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Hollow-stem Auger	
Surface Elevation (ft) Vertical Datum				Undetermined	Hammer Data			Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment	Mobile B-90
Easting (X) Northing (Y)		423767.66 5129592.38		System Datum		WA State Plane South, U.S. Foot NAD83			See "Remarks" section for groundwater observed		
Notes:											

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Graphic Log				
0						GP			
5		6	87				NS	<1	
		8	107	B-2 (7.5-8) CA		GP	NS	2.4	Groundwater observed at approximately 8 feet below ground surface during drilling
10		4	99				NS	<1	

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on GIS Pro, Vertical approximated based on

## Log of Boring B-2



Project: Texaco Bulk Plant, 606 Wagon Road

Project Location: Dayton, Washington


Project Number: 0504-133-00

Figure A-3  
Sheet 1 of 1

Drilled	Start 4/7/2017	End 4/7/2017	Total Depth (ft)	11	Logged By Checked By	JML JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum					Undetermined		Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop	
Easting (X) Northing (Y)					423677.33 5129573.5		System Datum		WA State Plane South, U.S. Foot NAD83	
See "Remarks" section for groundwater observed										
Notes:										

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0							ML	Brown silt with fine to coarse gravel and fine to coarse sand (hard, moist)			
5	1	69							NS	<1	
6	6	88			B-3 (7.5-8) CA		GP	Brown fine to coarse gravel with fine to coarse sand and trace silt (very dense, wet)	NS	<1	Groundwater observed at approximately 7½ feet below ground surface during drilling
10											

Note: See Figure A-1 for explanation of symbols.  
Coordinates Data Source: Horizontal approximated based on GIS Pro, Vertical approximated based on

<b>Log of Boring B-3</b>		
	Project: Texaco Bulk Plant, 606 Wagon Road Project Location: Dayton, Washington Project Number: 0504-133-00	
	Figure A-4 Sheet 1 of 1	

Spokane: Date: 6/9/17 Path: W:\PROJECTS\0504133\GINT\050413300.GPJ DBTemplate\LibTemplate\GEOENGINEERS\_DF STD\_US\_APRIL\_2017.GDT\GEI8\_ENVIRONMENTAL\_STANDARD\_NO\_GW

Drilled	Start 4/7/2017	End 4/7/2017	Total Depth (ft)	10.5	Logged By Checked By	JML JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum					Undetermined		Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop	
Easting (X) Northing (Y)					423692.99 5129532.19		System Datum		WA State Plane South, U.S. Foot NAD83	
See "Remarks" section for groundwater observed										
Notes:										

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0							ML	Brown silt with trace fine to medium sand (medium stiff, moist)			
5	10	17			B-4 (5-5.5) CA				NS	<1	
	1	62					GP-GM	Brown fine to coarse gravel with fine to coarse sand and trace silt (very dense, wet)			
10	4	100/4"			B-4 (10-10.5)				NS	<1	Groundwater observed at approximately 8.65 feet below ground surface during drilling

Note: See Figure A-1 for explanation of symbols.  
Coordinates Data Source: Horizontal approximated based on GIS Pro, Vertical approximated based on

## Log of Boring B-4

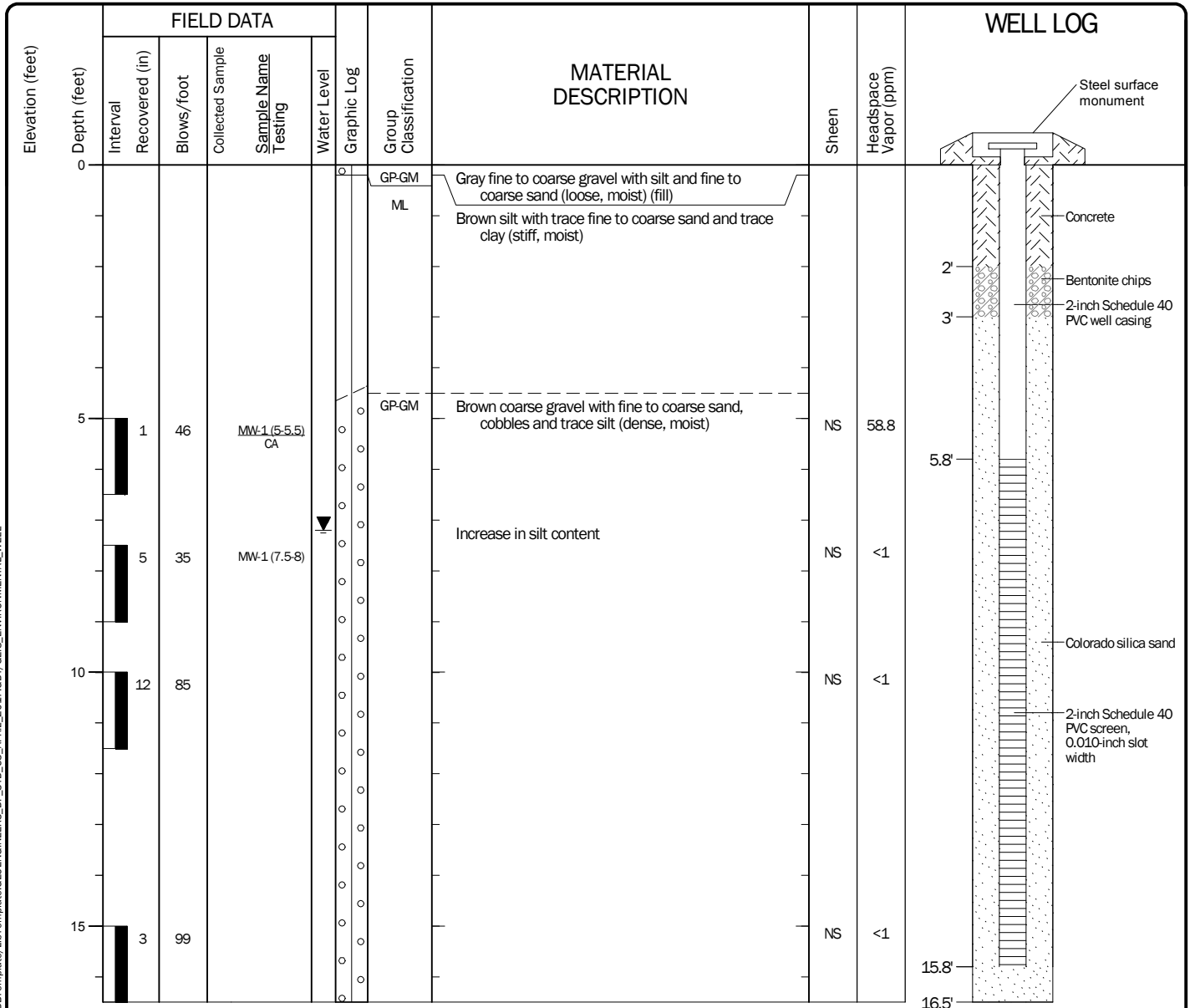


Project: Texaco Bulk Plant, 606 Wagon Road  
Project Location: Dayton, Washington  
Project Number: 0504-133-00

Figure A-5  
Sheet 1 of 1



Drilled	Start 4/6/2017	End 4/6/2017	Total Depth (ft)	16.5	Logged By Checked By	JML JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment	Mobile B-90		DOE Well I.D.: BKT-036 A 2 (in) well was installed on 4/6/2017 to a depth of 15.8 (ft).		
Surface Elevation (ft) Vertical Datum	Undetermined				Top of Casing Elevation (ft)	1584.78		Groundwater		
Easting (X) Northing (Y)	2274297.57 368209.06				Horizontal Datum	WA State Plane South, U.S. Foot NAD83		Date Measured 4/6/2017	Depth to Water (ft) 7.20	Elevation (ft)
Notes:										



Note: See Figure A-1 for explanation of symbols.  
Coordinates Data Source: Horizontal approximated based on Survey, Vertical approximated based on

### Log of Monitoring Well MW-1



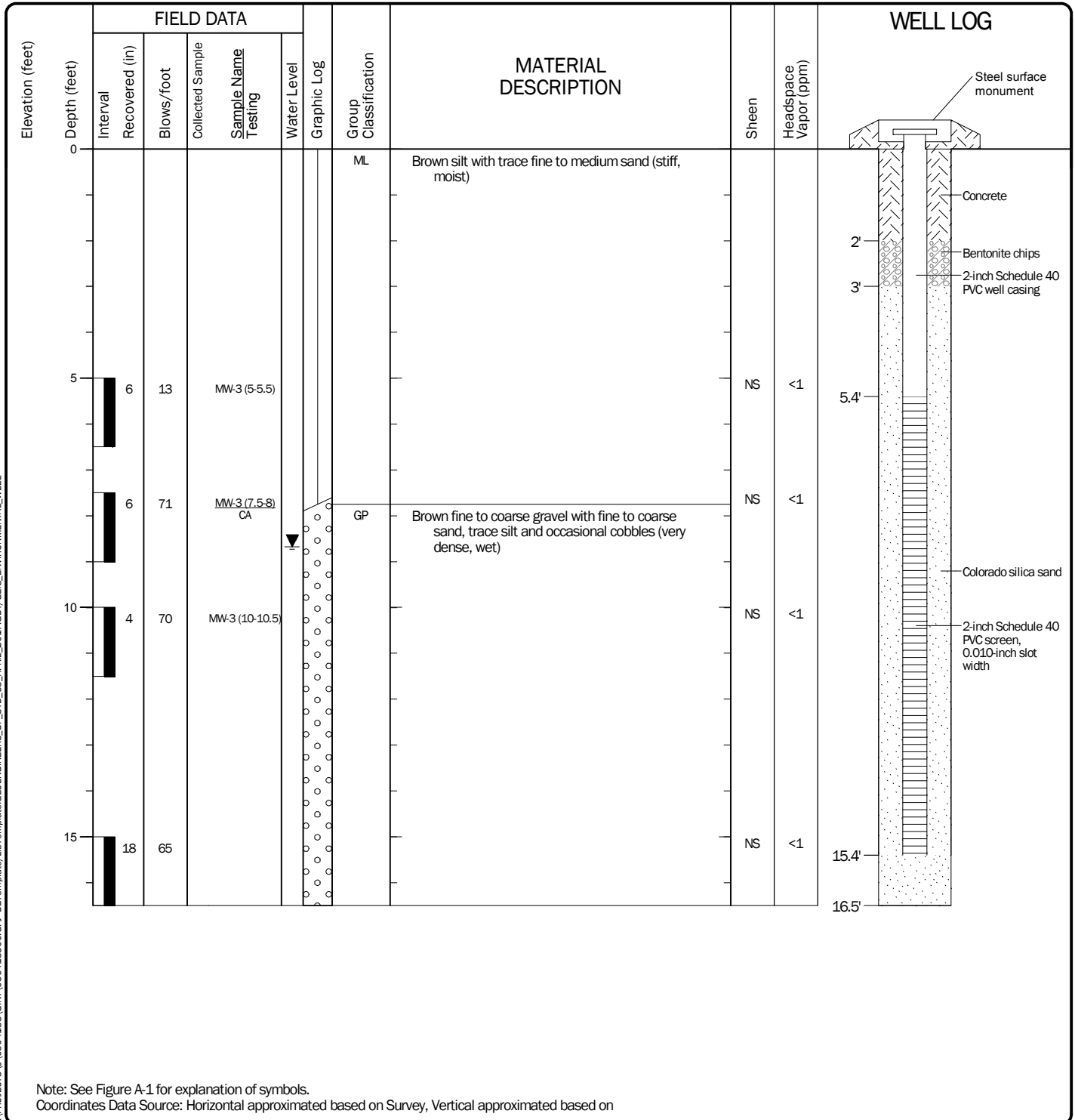
Project: Texaco Bulk Plant, 606 Wagon Road  
Project Location: Dayton, Washington  
Project Number: 0504-133-00

Figure A-6  
Sheet 1 of 1

Spokane: Date:6/5/17 Path:w:\PROJECTS\0\0504133\GINT\050413300.GPJ DBTemplate\LibTemplate\GeoENGINEERS\_DF\_STD\_US\_APRIL\_2017.GDT\GEI8\_ENVIRONMENTAL\_WELL



Drilled	Start 4/7/2017	End 4/7/2017	Total Depth (ft)	16.5	Logged By Checked By	JML JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment	Mobile B-90		DOE Well I.D.: BKT-038 A 2 (in) well was installed on 4/7/2017 to a depth of 15.4 (ft).		
Surface Elevation (ft) Vertical Datum	Undetermined				Top of Casing Elevation (ft)	1585.18		Groundwater		
Easting (X) Northing (Y)	2274241.01 368084.76				Horizontal Datum	WA State Plane South, U.S. Foot NAD83		Date Measured 4/6/2017	Depth to Water (ft) 8.68	Elevation (ft)
Notes:										



Spokane: Date: 6/9/17 Path: W:\PROJECTS\0504133\GINT\050413300.GPJ DBTemplate:GEOENGINEERS\_DF STD\_US\_APRIL\_2017.GDT\GEI8\_ENVIRONMENTAL\_WELL

**APPENDIX B**  
**Chemical Analytical Laboratory Reports and  
Data Validation Summary**

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**Project:** Texaco Bulk Plant Tank Assessment - Dayton  
April 2017 Soil and Groundwater Samples

**GEI File No:** 00504-133-00

**Date:** April 19, 2017

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This report documents the results of a United States Environmental Protection Agency (EPA)-defined Stage 2A data validation (EPA Document 540-R-08-005; EPA 2009) of analytical data from the analyses of soil and groundwater samples collected as part of the April 2017 sampling event, and the associated laboratory and field quality control samples. The samples were obtained from the Texaco Bulk Plant site located at 606 Wagon Road in Dayton, Washington.

### **OBJECTIVE AND QUALITY CONTROL ELEMENTS**

GeoEngineers, Inc. (GeoEngineers) completed the data validation consistent with the EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (EPA 2008) and Inorganic Superfund Data Review (EPA 2010) (National Functional Guidelines) to determine if the laboratory analytical results meet the project objectives and are usable for their intended purpose. Data usability was assessed by determining if:

- The samples were analyzed using well-defined and acceptable methods that provide reporting limits below applicable regulatory criteria;
- The precision and accuracy of the data are well-defined and sufficient to provide defensible data; and
- The quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards.

In accordance with the Quality Assurance Project Plan (Appendix A of Soil and Groundwater Assessment Work Plan; (GeoEngineers 2017) the data validation included review of the following QC elements:

- Data Package Completeness
- Chain-of-Custody Documentation
- Holding Times and Sample Preservation
- Surrogate Recoveries
- Method Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Laboratory/Field Duplicates

### **VALIDATED SAMPLE DELIVERY GROUPS**

This data validation included review of the sample delivery groups (SDGs) listed below in Table B-1.

**TABLE B-1: SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS**

Laboratory SDG	Samples Validated
590-5873-1	B-1:GW:040617, B-2:GW:040617, B-3:GW:040717, B-4:GW:040717, MW-1:GW:040617, MW-2:GW:040717, MW-3:GW:040717
590-5875-1	B-1 (2.5-3), B-2 (7.5-8), B-3 (7.5-8), B-4(5-5.5), MW-1 (5-5.5), MW-2 (7.5-8), MW-3 (7.5-8)
590-5894-1	MW-1:041117, Dup:041117, MW-2:041117, MW-3:041117

## CHEMICAL ANALYSIS PERFORMED

TestAmerica Laboratories, Inc. (TestAmerica), located in Spokane, Washington, performed laboratory analyses on the samples using one or more of the following methods:

- Gasoline-range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method SW8260C;
- 1,2-Dibromoethane (EDB) by Method SW8011; and
- Total Metals by Methods EPA200.7, Rev 4.4/SW6010C

## DATA VALIDATION SUMMARY

The results for each of the QC elements are summarized below.

### Data Package Completeness

TestAmerica provided the required deliverables for the data validation according to the National Functional Guidelines. The laboratory followed adequate corrective action processes and the identified anomalies were discussed in the relevant laboratory case narrative.

### Chain-of-Custody Documentation

Chain-of-custody (COC) forms were provided with the laboratory analytical reports. The COCs were accurate and complete when submitted to the laboratory, with the following exceptions:

**SDG 590-5875-1:** The laboratory noted that the sample ID on the sample vial labels for Samples B-1 (2.5-3) and B-1 (7.5-8) did not match the sample ID listed on the COC. The samples were logged with the sample ID listed on the COC.

### Holding Times and Sample Preservation

The sample holding time is defined as the time that elapses between sample collection and sample analysis. Maximum holding time criteria exist for each analysis to help ensure that the analyte concentrations found at the time of analysis reflect the concentration present at the time of sample collection. Established holding times were met for each analysis. The sample coolers arrived at the laboratory within the appropriate temperatures of between 2 and 6 degrees Celsius, with the exception noted below.

**SDG 590-5894-1:** The sample cooler temperature recorded at the laboratory was 0.4 degrees Celsius. It was determined through professional judgment that since the samples were not frozen, this temperature should not affect the sample analytical results.

## Surrogate Recoveries

A surrogate compound is a compound that is chemically similar to the organic analytes of interest, but unlikely to be found in an environmental sample. Surrogates are used for organic analyses and are added to the samples, standards, and blanks to serve as an accuracy and specificity check of each analysis. The surrogates are added to the samples at a known concentration and percent recoveries are calculated following analysis. The surrogate percent recoveries for field samples were within the laboratory control limits.

## Method Blanks

Method blanks are analyzed to ensure that laboratory procedures and reagents do not introduce measurable concentrations of the analytes of interest. A method blank was analyzed with each batch of samples, at a frequency of 1 per 20 samples. For the sample batches, method blanks for the applicable methods were analyzed at the required frequency. None of the analytes of interest were detected above the reporting limits in the method blanks.

## Matrix Spikes/Matrix Spike Duplicates

Since the actual analyte concentration in an environmental sample is not known, the accuracy of a particular analysis is usually inferred by performing a matrix spike (MS) analysis on one sample from the associated batch, known as the parent sample. One aliquot of the sample is analyzed in the normal manner and then a second aliquot of the sample is spiked with a known amount of analyte concentration and analyzed. From these analyses, a percent recovery is calculated. Matrix spike duplicate (MSD) analyses are generally performed for organic analyses as a precision check and analyzed in the same sequence as a matrix spike. Using the result values from the MS and MSD, the relative percent difference (RPD) is calculated. The percent recovery control limits for MS and MSD analyses are specified in the laboratory documents, as are the RPD control limits for MS/MSD sample sets.

One MS/MSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for each analysis and the percent recovery and RPD values were within the proper control limits.

## Laboratory Control Samples/Laboratory Control Sample Duplicates

A laboratory control sample (LCS) is a blank sample that is spiked with a known amount of analyte and then analyzed. An LCS is similar to an MS, but without the possibility of matrix interference. Given that matrix interference is not an issue, the LCS/LCSD control limits for accuracy and precision are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS/LCSD analyses would apply to each sample in the associated batch, instead of just the parent sample. The percent recovery control limits for LCS and LCSD analyses are specified in the laboratory documents, as are the RPD control limits for LCS/LCSD sample sets.

One LCS/LCSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for each analytical batch and the percent recovery and RPD values were within the proper control limits.

## Laboratory Duplicates

Internal laboratory duplicate analyses are performed to monitor the precision of the analyses. Two separate aliquots of a sample are analyzed as distinct samples in the laboratory and the RPD between the two results is calculated. Duplicate analyses should be performed once per analytical batch. If one or more of the samples used has a concentration less than five times the reporting limit for that sample, the





absolute difference is used instead of the RPD. The RPD control limits are specified in the laboratory documents. Laboratory duplicates were analyzed at the proper frequency and the specified acceptance criteria were met.

### Field Duplicates

In order to assess precision, field duplicate samples were collected and analyzed along with the reviewed sample batches. The duplicate samples were analyzed for the same parameters as the associated parent samples. Precision is determined by calculating the RPD between each pair of samples. If one or more of the sample analytes has a concentration greater than five times the reporting limit for that sample, then the absolute difference is used instead of the RPD. The RPD control limit for water samples is 20 percent.

**SDG 590-5894-1:** One field duplicate sample pair, MW-1:041117 and Dup:041117, was submitted with this SDG. The precision criteria for all target analytes were met for this sample pair.

### OVERALL ASSESSMENT

As was determined by this data validation, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the surrogate, LCS/LCSD, and MS/MSD percent recovery values. Precision was acceptable, as demonstrated by the LCS/LCSD, MS/MSD, and laboratory/field duplicate RPD values.

No analytical results were qualified. All data are acceptable for the intended use.

### REFERENCES

U.S. Environmental Protection Agency (EPA). "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review," EPA-540-R-08-01. June 2008.

U.S. Environmental Protection Agency (EPA). "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use," EPA-540-R-08-005. January 2009.

U.S. Environmental Protection Agency (EPA). "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review," EPA-540-R-10-011. January 2010.

GeoEngineers, Inc., "Soil and Groundwater Assessment Work Plan", prepared for Washington State Department of Ecology, GEI File No. 0504-133-00. March 28, 2017.

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane

11922 East 1st Ave

Spokane, WA 99206

Tel: (509)924-9200

TestAmerica Job ID: 590-5873-1

Client Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

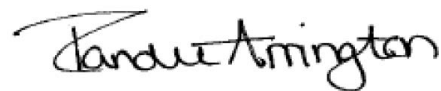
For:

GeoEngineers Inc

523 East Second Ave

Spokane, Washington 99202

Attn: JR Sugalski



Authorized for release by:

4/19/2017 9:59:51 AM

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Job ID: 590-5873-1**

**Laboratory: TestAmerica Spokane**

## Narrative

### Receipt

The samples were received on 4/10/2017 1:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° C.

### GC/MS VOA

Methods NWTPH-Gx and 8260C: The following sample was diluted due to the presence of large sediment layers in the following samples: B-2:GW;040617 (590-5873-2) and B-4:GW;040717 (590-5873-4). Elevated reporting limits (RLs) are provided.

Methods NWTPH-Gx and 8260C: The following samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: B-2:GW;040617 (590-5873-2) and B-4:GW;040717 (590-5873-4). The samples were analyzed within 7 days per EPA recommendation.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Organic Prep

Method 8011: The following samples were extracted with less than the prescribed volume due to the presence of large sediment layers: B-2:GW;040617 (590-5873-2) and B-4:GW;040717 (590-5873-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Sample Summary

Client: GeoEngineers Inc

TestAmerica Job ID: 590-5873-1

Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-5873-1	B-1:GW;040617	Water	04/06/17 11:35	04/10/17 13:45
590-5873-2	B-2:GW;040617	Water	04/06/17 16:00	04/10/17 13:45
590-5873-3	B-3:GW;040717	Water	04/07/17 11:15	04/10/17 13:45
590-5873-4	B-4:GW;040717	Water	04/07/17 15:00	04/10/17 13:45
590-5873-5	MW-1:GW:040617	Water	04/06/17 15:00	04/10/17 13:45
590-5873-6	MW-2:GW:040717	Water	04/07/17 10:00	04/10/17 13:45
590-5873-7	MW-3:GW:040717	Water	04/07/17 14:10	04/10/17 13:45

## Definitions/Glossary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Client Sample ID: B-1:GW;040617**

**Lab Sample ID: 590-5873-1**

**Date Collected: 04/06/17 11:35**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 20:26	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 20:26	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 20:26	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 20:26	1
o-Xylene	ND		1.0		ug/L			04/12/17 20:26	1
Toluene	ND		1.0		ug/L			04/12/17 20:26	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 20:26	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 20:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 125		04/12/17 20:26	1
4-Bromofluorobenzene (Surr)	101		69 - 120		04/12/17 20:26	1
Dibromofluoromethane (Surr)	102		80 - 120		04/12/17 20:26	1
Toluene-d8 (Surr)	94		80 - 120		04/12/17 20:26	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			04/12/17 20:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		68.7 - 141		04/12/17 20:26	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/14/17 09:29	04/14/17 14:05	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.70		mg/L		04/11/17 08:31	04/13/17 15:43	10

**Client Sample ID: B-2:GW;040617**

**Lab Sample ID: 590-5873-2**

**Date Collected: 04/06/17 16:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			04/12/17 20:47	5
Ethylbenzene	ND		5.0		ug/L			04/12/17 20:47	5
m,p-Xylene	ND		10		ug/L			04/12/17 20:47	5
Methyl tert-butyl ether	ND		5.0		ug/L			04/12/17 20:47	5
o-Xylene	ND		5.0		ug/L			04/12/17 20:47	5
Toluene	ND		5.0		ug/L			04/12/17 20:47	5
Xylenes, Total	ND		15		ug/L			04/12/17 20:47	5
1,2-Dichloroethane	ND		5.0		ug/L			04/12/17 20:47	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 125		04/12/17 20:47	5
4-Bromofluorobenzene (Surr)	99		69 - 120		04/12/17 20:47	5
Dibromofluoromethane (Surr)	104		80 - 120		04/12/17 20:47	5
Toluene-d8 (Surr)	98		80 - 120		04/12/17 20:47	5

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Client Sample ID: B-2:GW;040617**

**Lab Sample ID: 590-5873-2**

**Date Collected: 04/06/17 16:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		750		ug/L	-		04/12/17 20:47	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		68.7 - 141		04/12/17 20:47	5

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.015		ug/L	-	04/14/17 09:29	04/14/17 14:29	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.7		0.70		mg/L	-	04/11/17 08:31	04/13/17 15:47	10

**Client Sample ID: B-3:GW;040717**

**Lab Sample ID: 590-5873-3**

**Date Collected: 04/07/17 11:15**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L	-		04/12/17 21:30	1
Ethylbenzene	ND		1.0		ug/L	-		04/12/17 21:30	1
m,p-Xylene	ND		2.0		ug/L	-		04/12/17 21:30	1
Methyl tert-butyl ether	ND		1.0		ug/L	-		04/12/17 21:30	1
o-Xylene	ND		1.0		ug/L	-		04/12/17 21:30	1
Toluene	ND		1.0		ug/L	-		04/12/17 21:30	1
Xylenes, Total	ND		3.0		ug/L	-		04/12/17 21:30	1
1,2-Dichloroethane	ND		1.0		ug/L	-		04/12/17 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 125		04/12/17 21:30	1
4-Bromofluorobenzene (Surr)	101		69 - 120		04/12/17 21:30	1
Dibromofluoromethane (Surr)	103		80 - 120		04/12/17 21:30	1
Toluene-d8 (Surr)	101		80 - 120		04/12/17 21:30	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L	-		04/12/17 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		68.7 - 141		04/12/17 21:30	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L	-	04/14/17 09:29	04/14/17 14:52	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L	-	04/11/17 08:31	04/13/17 15:25	1

TestAmerica Spokane



# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Client Sample ID: B-4:GW:040717**

**Lab Sample ID: 590-5873-4**

**Date Collected: 04/07/17 15:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			04/12/17 21:51	5
Ethylbenzene	ND		5.0		ug/L			04/12/17 21:51	5
m,p-Xylene	ND		10		ug/L			04/12/17 21:51	5
Methyl tert-butyl ether	ND		5.0		ug/L			04/12/17 21:51	5
o-Xylene	ND		5.0		ug/L			04/12/17 21:51	5
Toluene	ND		5.0		ug/L			04/12/17 21:51	5
Xylenes, Total	ND		15		ug/L			04/12/17 21:51	5
1,2-Dichloroethane	ND		5.0		ug/L			04/12/17 21:51	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 125		04/12/17 21:51	5
4-Bromofluorobenzene (Surr)	98		69 - 120		04/12/17 21:51	5
Dibromofluoromethane (Surr)	101		80 - 120		04/12/17 21:51	5
Toluene-d8 (Surr)	100		80 - 120		04/12/17 21:51	5

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		750		ug/L			04/12/17 21:51	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		68.7 - 141		04/12/17 21:51	5

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.013		ug/L		04/14/17 09:29	04/14/17 15:15	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.79		0.70		mg/L		04/11/17 08:31	04/13/17 16:01	10

**Client Sample ID: MW-1:GW:040617**

**Lab Sample ID: 590-5873-5**

**Date Collected: 04/06/17 15:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 22:12	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 22:12	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 22:12	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 22:12	1
o-Xylene	ND		1.0		ug/L			04/12/17 22:12	1
Toluene	ND		1.0		ug/L			04/12/17 22:12	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 22:12	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 22:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125		04/12/17 22:12	1
4-Bromofluorobenzene (Surr)	96		69 - 120		04/12/17 22:12	1
Dibromofluoromethane (Surr)	102		80 - 120		04/12/17 22:12	1
Toluene-d8 (Surr)	99		80 - 120		04/12/17 22:12	1

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Client Sample ID: MW-1:GW:040617**

**Lab Sample ID: 590-5873-5**

**Date Collected: 04/06/17 15:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L	-		04/12/17 22:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		68.7 - 141		04/12/17 22:12	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L	-	04/14/17 09:29	04/14/17 15:38	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L	-	04/11/17 08:31	04/13/17 15:32	1

**Client Sample ID: MW-2:GW:040717**

**Lab Sample ID: 590-5873-6**

**Date Collected: 04/07/17 10:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L	-		04/12/17 22:33	1
Ethylbenzene	ND		1.0		ug/L	-		04/12/17 22:33	1
m,p-Xylene	ND		2.0		ug/L	-		04/12/17 22:33	1
Methyl tert-butyl ether	ND		1.0		ug/L	-		04/12/17 22:33	1
o-Xylene	ND		1.0		ug/L	-		04/12/17 22:33	1
Toluene	ND		1.0		ug/L	-		04/12/17 22:33	1
Xylenes, Total	ND		3.0		ug/L	-		04/12/17 22:33	1
1,2-Dichloroethane	ND		1.0		ug/L	-		04/12/17 22:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 125		04/12/17 22:33	1
4-Bromofluorobenzene (Surr)	98		69 - 120		04/12/17 22:33	1
Dibromofluoromethane (Surr)	103		80 - 120		04/12/17 22:33	1
Toluene-d8 (Surr)	99		80 - 120		04/12/17 22:33	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L	-		04/12/17 22:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		68.7 - 141		04/12/17 22:33	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L	-	04/14/17 09:29	04/14/17 16:02	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L	-	04/11/17 08:35	04/13/17 15:36	1

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

Client Sample ID: MW-3:GW:040717

Lab Sample ID: 590-5873-7

Date Collected: 04/07/17 14:10

Matrix: Water

Date Received: 04/10/17 13:45

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 22:54	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 22:54	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 22:54	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 22:54	1
o-Xylene	ND		1.0		ug/L			04/12/17 22:54	1
Toluene	ND		1.0		ug/L			04/12/17 22:54	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 22:54	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 22:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125					04/12/17 22:54	1
4-Bromofluorobenzene (Surr)	98		69 - 120					04/12/17 22:54	1
Dibromofluoromethane (Surr)	104		80 - 120					04/12/17 22:54	1
Toluene-d8 (Surr)	100		80 - 120					04/12/17 22:54	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			04/12/17 22:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		68.7 - 141					04/12/17 22:54	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/18/17 14:21	04/18/17 16:35	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L		04/11/17 08:35	04/13/17 15:40	1

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-11569/6

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 17:38	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 17:38	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 17:38	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 17:38	1
o-Xylene	ND		1.0		ug/L			04/12/17 17:38	1
Toluene	ND		1.0		ug/L			04/12/17 17:38	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 17:38	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 17:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 125		04/12/17 17:38	1
4-Bromofluorobenzene (Surr)	99		69 - 120		04/12/17 17:38	1
Dibromofluoromethane (Surr)	102		80 - 120		04/12/17 17:38	1
Toluene-d8 (Surr)	101		80 - 120		04/12/17 17:38	1

Lab Sample ID: LCS 590-11569/1004

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.93		ug/L		99	80 - 120
Ethylbenzene	10.0	9.88		ug/L		99	80 - 120
m,p-Xylene	10.0	10.2		ug/L		102	80 - 120
Methyl tert-butyl ether	10.0	10.1		ug/L		101	71 - 128
o-Xylene	10.0	10.2		ug/L		102	80 - 120
Toluene	10.0	10.1		ug/L		101	80 - 123
1,2-Dichloroethane	10.0	9.94		ug/L		99	68 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		70 - 125
4-Bromofluorobenzene (Surr)	98		69 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCSD 590-11569/7

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	10.2		ug/L		102	80 - 120	3	25
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120	1	25
m,p-Xylene	10.0	10.2		ug/L		102	80 - 120	1	25
Methyl tert-butyl ether	10.0	9.77		ug/L		98	71 - 128	3	12
o-Xylene	10.0	9.87		ug/L		99	80 - 120	3	25
Toluene	10.0	9.97		ug/L		100	80 - 123	1	25
1,2-Dichloroethane	10.0	9.98		ug/L		100	68 - 127	0	12

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-11569/7

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		70 - 125
4-Bromofluorobenzene (Surr)	98		69 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	99		80 - 120

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Lab Sample ID: MB 590-11570/6

Matrix: Water

Analysis Batch: 11570

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Gasoline	ND		150		ug/L			04/12/17 17:38	1
Surrogate	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
4-Bromofluorobenzene (Surr)	99		68.7 - 141					04/12/17 17:38	1

Lab Sample ID: LCS 590-11570/1005

Matrix: Water

Analysis Batch: 11570

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

			Spike	LCS	LCS							
Analyte			Added	Result	Qualifier	Unit	D	%Rec	%Rec.	Limits		
Gasoline			1000	980		ug/L		98	80 - 120			
Surrogate	LCS	LCS										
	%Recovery	Qualifier	Limits									
4-Bromofluorobenzene (Surr)	97		68.7 - 141									

Lab Sample ID: LCSD 590-11570/1016

Matrix: Water

Analysis Batch: 11570

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

			Spike	LCSD	LCSD				%Rec.	RPD	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline			1000	957		ug/L	-	96	80 - 120	2	20
					</						

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Lab Sample ID: MB 590-11608/2-A

Matrix: Water

Analysis Batch: 11609

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/14/17 09:29	04/14/17 10:38	1

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC) (Continued)

Lab Sample ID: LCS 590-11608/3-A

Matrix: Water

Analysis Batch: 11609

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	0.125	0.119		ug/L		95	60 - 140

Lab Sample ID: LCSD 590-11608/4-A

Matrix: Water

Analysis Batch: 11609

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 11608

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)	0.125	0.110		ug/L		88	60 - 140	8	20

Lab Sample ID: MB 590-11650/2-A

Matrix: Water

Analysis Batch: 11652

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/18/17 14:21	04/18/17 15:26	1

Lab Sample ID: LCS 590-11650/3-A

Matrix: Water

Analysis Batch: 11652

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	0.125	0.108		ug/L		86	60 - 140

Lab Sample ID: LCSD 590-11650/4-A

Matrix: Water

Analysis Batch: 11652

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 11650

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)	0.125	0.110		ug/L		88	60 - 140	2	20

## Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 590-11526/2-A

Matrix: Water

Analysis Batch: 11611

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11526

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L		04/11/17 08:31	04/13/17 14:10	1

Lab Sample ID: LCS 590-11526/1-A

Matrix: Water

Analysis Batch: 11611

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11526

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.988		mg/L		99	85 - 115

TestAmerica Spokane

# Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Client Sample ID: B-1:GW;040617**

**Date Collected: 04/06/17 11:35**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5873-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 20:26	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 20:26	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 14:05	CBW	TAL SPK
Total/NA	Prep	200.7			10 mL	50 mL	11526	04/11/17 08:31	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		10			11611	04/13/17 15:43	JSP	TAL SPK

**Client Sample ID: B-2:GW;040617**

**Date Collected: 04/06/17 16:00**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5873-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5	43 mL	43 mL	11569	04/12/17 20:47	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		5	43 mL	43 mL	11570	04/12/17 20:47	MRS	TAL SPK
Total/NA	Prep	8011			55 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 14:29	CBW	TAL SPK
Total/NA	Prep	200.7			10 mL	50 mL	11526	04/11/17 08:31	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		10			11611	04/13/17 15:47	JSP	TAL SPK

**Client Sample ID: B-3:GW;040717**

**Date Collected: 04/07/17 11:15**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5873-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 21:30	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 21:30	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 14:52	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11526	04/11/17 08:31	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11611	04/13/17 15:25	JSP	TAL SPK

**Client Sample ID: B-4:GW;040717**

**Date Collected: 04/07/17 15:00**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5873-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5	43 mL	43 mL	11569	04/12/17 21:51	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		5	43 mL	43 mL	11570	04/12/17 21:51	MRS	TAL SPK
Total/NA	Prep	8011			63 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 15:15	CBW	TAL SPK
Total/NA	Prep	200.7			10 mL	50 mL	11526	04/11/17 08:31	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		10			11611	04/13/17 16:01	JSP	TAL SPK

TestAmerica Spokane

## Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

**Client Sample ID: MW-1:GW:040617**

**Lab Sample ID: 590-5873-5**

**Date Collected: 04/06/17 15:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 22:12	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 22:12	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 15:38	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11526	04/11/17 08:31	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11611	04/13/17 15:32	JSP	TAL SPK

**Client Sample ID: MW-2:GW:040717**

**Lab Sample ID: 590-5873-6**

**Date Collected: 04/07/17 10:00**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 22:33	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 22:33	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 16:02	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11526	04/11/17 08:35	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11611	04/13/17 15:36	JSP	TAL SPK

**Client Sample ID: MW-3:GW:040717**

**Lab Sample ID: 590-5873-7**

**Date Collected: 04/07/17 14:10**

**Matrix: Water**

**Date Received: 04/10/17 13:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 22:54	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 22:54	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11650	04/18/17 14:21	NMI	TAL SPK
Total/NA	Analysis	8011		1			11652	04/18/17 16:35	NMI	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11526	04/11/17 08:35	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11611	04/13/17 15:40	JSP	TAL SPK

### Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

TestAmerica Spokane



## Accreditation/Certification Summary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

### Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-18
Analysis Method	Prep Method	Matrix	Analyte	

## Method Summary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5873-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC/MS)	NWTPH	TAL SPK
8011	EDB, DBCP, and 1,2,3-TCP (GC)	SW846	TAL SPK
200.7 Rev 4.4	Metals (ICP)	EPA	TAL SPK

### Protocol References:

EPA = US Environmental Protection Agency

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200



## Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-5873-1

**Login Number: 5873**

**List Source: TestAmerica Spokane**

**List Number: 1**

**Creator: Kratz, Sheila J**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane

11922 East 1st Ave

Spokane, WA 99206

Tel: (509)924-9200

TestAmerica Job ID: 590-5875-1

Client Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

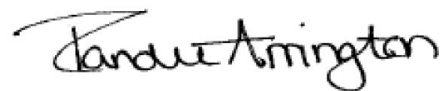
For:

GeoEngineers Inc

523 East Second Ave

Spokane, Washington 99202

Attn: JR Sugalski



Authorized for release by:

4/14/2017 1:28:57 PM

Randee Arrington, Project Manager II

(509)924-9200

[randee.arrington@testamericainc.com](mailto:randee.arrington@testamericainc.com)

### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Job ID: 590-5875-1**

**Laboratory: TestAmerica Spokane**

## Narrative

### Receipt

The samples were received on 4/10/2017 1:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° C.

### Receipt Exceptions

The container labels on the voa vials for the following samples did not match the information listed on the Chain-of-Custody (COC): B-1 (2.5-3) (590-5875-1) and B-1 (7.5-8) (590-5875-2). The container labels lists B-1 (2.5-4) And B-1 (7.5-9), while the COC lists B-1 (2.5-3) and B-1(7.5-8). The samples were logged in per the COC.

### GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Sample Summary

Client: GeoEngineers Inc

TestAmerica Job ID: 590-5875-1

Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-5875-1	B-1 (2.5-3)	Solid	04/06/17 10:20	04/10/17 13:45
590-5875-3	MW-1 (5-5.5)	Solid	04/06/17 12:55	04/10/17 13:45
590-5875-5	B-2 (7.5-8)	Solid	04/06/17 15:15	04/10/17 13:45
590-5875-6	MW-2 (7.5-8)	Solid	04/07/17 08:10	04/10/17 13:45
590-5875-8	B-3 (7.5-8)	Solid	04/07/17 10:05	04/10/17 13:45
590-5875-10	MW-3 (7.5-8)	Solid	04/07/17 12:00	04/10/17 13:45
590-5875-12	B-4(5-5.5)	Solid	04/07/17 14:05	04/10/17 13:45



## Definitions/Glossary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: B-1 (2.5-3)**

**Date Collected: 04/06/17 10:20**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-1**

**Matrix: Solid**

**Percent Solids: 78.2**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.028		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
Ethylbenzene	ND		0.14		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
m,p-Xylene	ND		0.55		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
Methyl tert-butyl ether	ND		0.069		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
o-Xylene	ND		0.28		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
Toluene	ND		0.14		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
Xylenes, Total	ND		0.83		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1
1,2-Dichloroethane	ND		0.14		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		75 - 120	04/13/17 10:56	04/13/17 14:48	1
4-Bromofluorobenzene (Surr)	94		76 - 122	04/13/17 10:56	04/13/17 14:48	1
Dibromofluoromethane (Surr)	106		80 - 120	04/13/17 10:56	04/13/17 14:48	1
Toluene-d8 (Surr)	101		80 - 120	04/13/17 10:56	04/13/17 14:48	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	40		6.9		mg/Kg	☼	04/13/17 10:56	04/13/17 14:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		41.5 - 162	04/13/17 10:56	04/13/17 14:48	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.10		ug/Kg	☼	04/13/17 12:52	04/13/17 16:04	1

## Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		5.2		mg/Kg	☼	04/12/17 07:52	04/12/17 14:11	5

**Client Sample ID: MW-1 (5-5.5)**

**Date Collected: 04/06/17 12:55**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-3**

**Matrix: Solid**

**Percent Solids: 91.9**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.028		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
Ethylbenzene	ND		0.14		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
m,p-Xylene	ND		0.56		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
Methyl tert-butyl ether	ND		0.070		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
o-Xylene	ND		0.28		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
Toluene	ND		0.14		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
Xylenes, Total	ND		0.84		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1
1,2-Dichloroethane	ND		0.14		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 120	04/13/17 10:56	04/13/17 15:09	1
4-Bromofluorobenzene (Surr)	95		76 - 122	04/13/17 10:56	04/13/17 15:09	1
Dibromofluoromethane (Surr)	104		80 - 120	04/13/17 10:56	04/13/17 15:09	1
Toluene-d8 (Surr)	102		80 - 120	04/13/17 10:56	04/13/17 15:09	1

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# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

## Client Sample ID: MW-1 (5-5.5)

Date Collected: 04/06/17 12:55

Date Received: 04/10/17 13:45

## Lab Sample ID: 590-5875-3

Matrix: Solid

Percent Solids: 91.9

### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		7.0		mg/Kg	☼	04/13/17 10:56	04/13/17 15:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		41.5 - 162	04/13/17 10:56	04/13/17 15:09	1

### Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.087		ug/Kg	☼	04/13/17 12:52	04/13/17 16:27	1

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		4.5		mg/Kg	☼	04/12/17 07:52	04/13/17 10:30	5

## Client Sample ID: B-2 (7.5-8)

Date Collected: 04/06/17 15:15

Date Received: 04/10/17 13:45

## Lab Sample ID: 590-5875-5

Matrix: Solid

Percent Solids: 86.5

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
Ethylbenzene	ND		0.12		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
m,p-Xylene	ND		0.48		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
Methyl tert-butyl ether	ND		0.060		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
o-Xylene	ND		0.24		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
Toluene	ND		0.12		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
Xylenes, Total	ND		0.72		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1
1,2-Dichloroethane	ND		0.12		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 120	04/13/17 10:58	04/13/17 15:30	1
4-Bromofluorobenzene (Surr)	95		76 - 122	04/13/17 10:58	04/13/17 15:30	1
Dibromofluoromethane (Surr)	102		80 - 120	04/13/17 10:58	04/13/17 15:30	1
Toluene-d8 (Surr)	104		80 - 120	04/13/17 10:58	04/13/17 15:30	1

### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		6.0		mg/Kg	☼	04/13/17 10:58	04/13/17 15:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		41.5 - 162	04/13/17 10:58	04/13/17 15:30	1

### Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.092		ug/Kg	☼	04/13/17 12:52	04/13/17 16:50	1

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		5.8		mg/Kg	☼	04/12/17 07:52	04/13/17 10:33	5

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: MW-2 (7.5-8)**

**Lab Sample ID: 590-5875-6**

**Date Collected: 04/07/17 08:10**

**Matrix: Solid**

**Date Received: 04/10/17 13:45**

**Percent Solids: 87.7**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
Ethylbenzene	ND		0.10		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
m,p-Xylene	ND		0.41		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
Methyl tert-butyl ether	ND		0.051		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
o-Xylene	ND		0.20		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
Toluene	ND		0.10		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
Xylenes, Total	ND		0.61		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1
1,2-Dichloroethane	ND		0.10		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 120	04/13/17 10:58	04/13/17 15:51	1
4-Bromofluorobenzene (Surr)	96		76 - 122	04/13/17 10:58	04/13/17 15:51	1
Dibromofluoromethane (Surr)	102		80 - 120	04/13/17 10:58	04/13/17 15:51	1
Toluene-d8 (Surr)	104		80 - 120	04/13/17 10:58	04/13/17 15:51	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.1		mg/Kg	☼	04/13/17 10:58	04/13/17 15:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		41.5 - 162	04/13/17 10:58	04/13/17 15:51	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.091		ug/Kg	☼	04/13/17 12:52	04/13/17 17:14	1

## Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		3.9		mg/Kg	☼	04/12/17 07:52	04/13/17 10:37	5

**Client Sample ID: B-3 (7.5-8)**

**Lab Sample ID: 590-5875-8**

**Date Collected: 04/07/17 10:05**

**Matrix: Solid**

**Date Received: 04/10/17 13:45**

**Percent Solids: 80.0**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
Ethylbenzene	ND		0.13		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
m,p-Xylene	ND		0.50		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
Methyl tert-butyl ether	ND		0.063		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
o-Xylene	ND		0.25		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
Toluene	ND		0.13		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
Xylenes, Total	ND		0.75		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1
1,2-Dichloroethane	ND		0.13		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		75 - 120	04/13/17 10:58	04/13/17 16:11	1
4-Bromofluorobenzene (Surr)	99		76 - 122	04/13/17 10:58	04/13/17 16:11	1
Dibromofluoromethane (Surr)	104		80 - 120	04/13/17 10:58	04/13/17 16:11	1
Toluene-d8 (Surr)	103		80 - 120	04/13/17 10:58	04/13/17 16:11	1

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

## Client Sample ID: B-3 (7.5-8)

Date Collected: 04/07/17 10:05

Date Received: 04/10/17 13:45

## Lab Sample ID: 590-5875-8

Matrix: Solid

Percent Solids: 80.0

### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		6.3		mg/Kg	☼	04/13/17 10:58	04/13/17 16:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		41.5 - 162	04/13/17 10:58	04/13/17 16:11	1

### Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.099		ug/Kg	☼	04/13/17 12:52	04/13/17 17:37	1

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		5.3		mg/Kg	☼	04/12/17 07:52	04/13/17 10:40	5

## Client Sample ID: MW-3 (7.5-8)

Date Collected: 04/07/17 12:00

Date Received: 04/10/17 13:45

## Lab Sample ID: 590-5875-10

Matrix: Solid

Percent Solids: 72.4

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.034		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
Ethylbenzene	ND		0.17		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
m,p-Xylene	ND		0.68		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
Methyl tert-butyl ether	ND		0.085		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
o-Xylene	ND		0.34		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
Toluene	ND		0.17		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
Xylenes, Total	ND		1.0		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1
1,2-Dichloroethane	ND		0.17		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 120	04/13/17 10:58	04/13/17 16:33	1
4-Bromofluorobenzene (Surr)	98		76 - 122	04/13/17 10:58	04/13/17 16:33	1
Dibromofluoromethane (Surr)	101		80 - 120	04/13/17 10:58	04/13/17 16:33	1
Toluene-d8 (Surr)	101		80 - 120	04/13/17 10:58	04/13/17 16:33	1

### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		8.5		mg/Kg	☼	04/13/17 10:58	04/13/17 16:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		41.5 - 162	04/13/17 10:58	04/13/17 16:33	1

### Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.11		ug/Kg	☼	04/13/17 12:52	04/13/17 18:00	1

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		6.0		mg/Kg	☼	04/12/17 07:52	04/13/17 10:42	5

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: B-4(5-5.5)**

**Lab Sample ID: 590-5875-12**

**Date Collected: 04/07/17 14:05**

**Matrix: Solid**

**Date Received: 04/10/17 13:45**

**Percent Solids: 71.1**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.036		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
Ethylbenzene	ND		0.18		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
m,p-Xylene	ND		0.71		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
Methyl tert-butyl ether	ND		0.089		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
o-Xylene	ND		0.36		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
Toluene	ND		0.18		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
Xylenes, Total	ND		1.1		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1
1,2-Dichloroethane	ND		0.18		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 120	04/13/17 10:58	04/13/17 16:53	1
4-Bromofluorobenzene (Surr)	100		76 - 122	04/13/17 10:58	04/13/17 16:53	1
Dibromofluoromethane (Surr)	102		80 - 120	04/13/17 10:58	04/13/17 16:53	1
Toluene-d8 (Surr)	103		80 - 120	04/13/17 10:58	04/13/17 16:53	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		8.9		mg/Kg	☼	04/13/17 10:58	04/13/17 16:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		41.5 - 162	04/13/17 10:58	04/13/17 16:53	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.11		ug/Kg	☼	04/13/17 13:21	04/13/17 18:46	1

## Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		6.8		mg/Kg	☼	04/12/17 07:52	04/13/17 10:45	5

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-11583/1-A

Matrix: Solid

Analysis Batch: 11586

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11583

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
Ethylbenzene	ND		0.10		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
m,p-Xylene	ND		0.40		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
Methyl tert-butyl ether	ND		0.050		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
o-Xylene	ND		0.20		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
Toluene	ND		0.10		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
Xylenes, Total	ND		0.60		mg/Kg		04/13/17 10:56	04/13/17 13:46	1
1,2-Dichloroethane	ND		0.10		mg/Kg		04/13/17 10:56	04/13/17 13:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		75 - 120	04/13/17 10:56	04/13/17 13:46	1
4-Bromofluorobenzene (Surr)	99		76 - 122	04/13/17 10:56	04/13/17 13:46	1
Dibromofluoromethane (Surr)	105		80 - 120	04/13/17 10:56	04/13/17 13:46	1
Toluene-d8 (Surr)	103		80 - 120	04/13/17 10:56	04/13/17 13:46	1

Lab Sample ID: LCS 590-11583/2-A

Matrix: Solid

Analysis Batch: 11586

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.500	0.483		mg/Kg		97	76 - 123
Ethylbenzene	0.500	0.491		mg/Kg		98	77 - 121
m,p-Xylene	0.500	0.503		mg/Kg		101	78 - 124
Methyl tert-butyl ether	0.500	0.451		mg/Kg		90	67 - 130
o-Xylene	0.500	0.491		mg/Kg		98	77 - 129
Toluene	0.500	0.489		mg/Kg		98	77 - 125
1,2-Dichloroethane	0.500	0.467		mg/Kg		93	61 - 142

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		75 - 120
4-Bromofluorobenzene (Surr)	98		76 - 122
Dibromofluoromethane (Surr)	99		80 - 120
Toluene-d8 (Surr)	101		80 - 120

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Lab Sample ID: MB 590-11583/1-A

Matrix: Solid

Analysis Batch: 11587

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11583

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		04/13/17 10:56	04/13/17 13:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		41.5 - 162	04/13/17 10:56	04/13/17 13:46	1

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS) (Continued)

Lab Sample ID: LCS 590-11583/3-A

Matrix: Solid

Analysis Batch: 11587

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	50.0	49.1		mg/Kg		98	74.4 - 124
Surrogate	%Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	95		41.5 - 162				

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Lab Sample ID: MB 590-11591/2-A

Matrix: Solid

Analysis Batch: 11592

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11591

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		0.080		ug/Kg		04/13/17 12:52	04/13/17 14:31	1

Lab Sample ID: LCS 590-11591/3-A

Matrix: Solid

Analysis Batch: 11592

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11591

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromo-3-Chloropropane	1.00	1.11		ug/Kg		111	60 - 140

Lab Sample ID: 590-5875-1 MS

Matrix: Solid

Analysis Batch: 11592

Client Sample ID: B-1 (2.5-3)

Prep Type: Total/NA

Prep Batch: 11591

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromo-3-Chloropropane	ND		1.26	0.909		ug/Kg	☼	72	60 - 140

Lab Sample ID: 590-5875-1 MSD

Matrix: Solid

Analysis Batch: 11592

Client Sample ID: B-1 (2.5-3)

Prep Type: Total/NA

Prep Batch: 11591

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromo-3-Chloropropane	ND		1.24	0.743		ug/Kg	☼	60	60 - 140	20	20

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 590-11554/2-A

Matrix: Solid

Analysis Batch: 11567

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11554

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.3		mg/Kg		04/12/17 07:52	04/12/17 14:05	1

TestAmerica Spokane



# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

## Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 590-11554/1-A  
Matrix: Solid  
Analysis Batch: 11567

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 11554

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	50.0	51.6		mg/Kg		103	80 - 120

Lab Sample ID: 590-5875-1 MS  
Matrix: Solid  
Analysis Batch: 11567

Client Sample ID: B-1 (2.5-3)  
Prep Type: Total/NA  
Prep Batch: 11554

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	ND		62.7	66.7		mg/Kg	✱	100	75 - 125

Lab Sample ID: 590-5875-1 MSD  
Matrix: Solid  
Analysis Batch: 11567

Client Sample ID: B-1 (2.5-3)  
Prep Type: Total/NA  
Prep Batch: 11554

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	ND		59.8	64.9		mg/Kg	✱	102	75 - 125	3	20

Lab Sample ID: 590-5875-1 DU  
Matrix: Solid  
Analysis Batch: 11567

Client Sample ID: B-1 (2.5-3)  
Prep Type: Total/NA  
Prep Batch: 11554

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Lead	ND		ND		mg/Kg	✱	NC	20

# Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: B-1 (2.5-3)**

**Date Collected: 04/06/17 10:20**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-1**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

**Client Sample ID: B-1 (2.5-3)**

**Date Collected: 04/06/17 10:20**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-1**

**Matrix: Solid**

**Percent Solids: 78.2**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.786 g	5 mL	11583	04/13/17 10:56	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 14:48	MRS	TAL SPK
Total/NA	Prep	5035			5.786 g	5 mL	11583	04/13/17 10:56	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 14:48	MRS	TAL SPK
Total/NA	Prep	8011			10.21 g	2 mL	11591	04/13/17 12:52	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 16:04	NMI	TAL SPK
Total/NA	Prep	3050B			1.55 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11567	04/12/17 14:11	JSP	TAL SPK

**Client Sample ID: MW-1 (5-5.5)**

**Date Collected: 04/06/17 12:55**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-3**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

**Client Sample ID: MW-1 (5-5.5)**

**Date Collected: 04/06/17 12:55**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-3**

**Matrix: Solid**

**Percent Solids: 91.9**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.166 g	5 mL	11583	04/13/17 10:56	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 15:09	MRS	TAL SPK
Total/NA	Prep	5035			4.166 g	5 mL	11583	04/13/17 10:56	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 15:09	MRS	TAL SPK
Total/NA	Prep	8011			10.00 g	2 mL	11591	04/13/17 12:52	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 16:27	NMI	TAL SPK
Total/NA	Prep	3050B			1.50 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11605	04/13/17 10:30	JSP	TAL SPK

TestAmerica Spokane

# Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: B-2 (7.5-8)**

**Date Collected: 04/06/17 15:15**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-5**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

**Client Sample ID: B-2 (7.5-8)**

**Date Collected: 04/06/17 15:15**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-5**

**Matrix: Solid**

**Percent Solids: 86.5**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.542 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 15:30	MRS	TAL SPK
Total/NA	Prep	5035			5.542 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 15:30	MRS	TAL SPK
Total/NA	Prep	8011			10.09 g	2 mL	11591	04/13/17 12:52	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 16:50	NMI	TAL SPK
Total/NA	Prep	3050B			1.24 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11605	04/13/17 10:33	JSP	TAL SPK

**Client Sample ID: MW-2 (7.5-8)**

**Date Collected: 04/07/17 08:10**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-6**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

**Client Sample ID: MW-2 (7.5-8)**

**Date Collected: 04/07/17 08:10**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-6**

**Matrix: Solid**

**Percent Solids: 87.7**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.455 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 15:51	MRS	TAL SPK
Total/NA	Prep	5035			6.455 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 15:51	MRS	TAL SPK
Total/NA	Prep	8011			10.03 g	2 mL	11591	04/13/17 12:52	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 17:14	NMI	TAL SPK
Total/NA	Prep	3050B			1.81 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11605	04/13/17 10:37	JSP	TAL SPK

**Client Sample ID: B-3 (7.5-8)**

**Date Collected: 04/07/17 10:05**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-8**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

TestAmerica Spokane

# Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: B-3 (7.5-8)**

**Date Collected: 04/07/17 10:05**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-8**

**Matrix: Solid**

**Percent Solids: 80.0**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.246 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 16:11	MRS	TAL SPK
Total/NA	Prep	5035			6.246 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 16:11	MRS	TAL SPK
Total/NA	Prep	8011			10.11 g	2 mL	11591	04/13/17 12:52	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 17:37	NMI	TAL SPK
Total/NA	Prep	3050B			1.47 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11605	04/13/17 10:40	JSP	TAL SPK

**Client Sample ID: MW-3 (7.5-8)**

**Date Collected: 04/07/17 12:00**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-10**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

**Client Sample ID: MW-3 (7.5-8)**

**Date Collected: 04/07/17 12:00**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-10**

**Matrix: Solid**

**Percent Solids: 72.4**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.204 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 16:33	MRS	TAL SPK
Total/NA	Prep	5035			5.204 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 16:33	MRS	TAL SPK
Total/NA	Prep	8011			10.31 g	2 mL	11591	04/13/17 12:52	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 18:00	NMI	TAL SPK
Total/NA	Prep	3050B			1.45 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11605	04/13/17 10:42	JSP	TAL SPK

**Client Sample ID: B-4(5-5.5)**

**Date Collected: 04/07/17 14:05**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-12**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			11565	04/12/17 11:12	NMI	TAL SPK

TestAmerica Spokane

## Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

**Client Sample ID: B-4(5-5.5)**

**Date Collected: 04/07/17 14:05**

**Date Received: 04/10/17 13:45**

**Lab Sample ID: 590-5875-12**

**Matrix: Solid**

**Percent Solids: 71.1**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.12 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	11586	04/13/17 16:53	MRS	TAL SPK
Total/NA	Prep	5035			5.12 g	5 mL	11583	04/13/17 10:58	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	11587	04/13/17 16:53	MRS	TAL SPK
Total/NA	Prep	8011			10.01 g	2 mL	11591	04/13/17 13:21	NMI	TAL SPK
Total/NA	Analysis	8011		1			11592	04/13/17 18:46	NMI	TAL SPK
Total/NA	Prep	3050B			1.30 g	50 mL	11554	04/12/17 07:52	JSP	TAL SPK
Total/NA	Analysis	6010C		5			11605	04/13/17 10:45	JSP	TAL SPK

### Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

## Accreditation/Certification Summary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5875-1

### Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

## Method Summary

Client: GeoEngineers Inc

TestAmerica Job ID: 590-5875-1

Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC/MS)	NWTPH	TAL SPK
8011	EDB, DBCP, and 1,2,3-TCP (GC)	SW846	TAL SPK
6010C	Metals (ICP)	SW846	TAL SPK
Moisture	Percent Moisture	EPA	TAL SPK

### Protocol References:

EPA = US Environmental Protection Agency

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200



# TestAmerica Spokane

11922 East 1st Ave  
Spokane, WA 99206  
Phone (509) 924-9200 Fax (509) 924-9290

## Chain of Custody Record



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information</b>		Sampler: <u>JMK</u>		Lab PM: Arrington, Randee E		590-5875 Chain of Custody		OC No: 90-2447-850.1		Page <u>1 of 2</u>	
Client Contact: JR Sugalski		Phone: <u>406-234-7810</u>		E-Mail: randee.arrington@tes.				Job #:			
Company: GeoEngineers Inc		Due Date Requested: <u>Std.</u>		Analysis Requested				Preservation Codes:			
Address: 523 East Second Ave		TAT Requested (days): <u>Std.</u>						A - HCL M - Hexane			
City: Spokane								B - NaOH N - None			
State, Zip: WA, 99202								C - Zn Acetate O - AsNaO2			
Phone: 509-209-2830(Tel)		PO #: Purchase Order not required						D - Nitric Acid P - Na2O4S			
Email: jsugalski@geoengineers.com		WO #:						E - NaHSO4 Q - Na2SO3			
Project Name: Texaco Bulk Plant Dayton, WA/0504-133-00		Project #: 59001179						F - MeOH R - Na2S2O3			
Site:		SSOW#:						G - Amchlor S - H2SO4			
								H - Ascorbic Acid T - TSP Dodecahydrate			
								I - Ice U - Acetone			
								J - DI Water V - MCAA			
								K - EDTA W - pH 4-5			
								L - EDA Z - other (specify)			
								Other:			
<b>Sample Identification</b>		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=air)		Field Filtered Sample (Yes or No)	
										Perform MS/MSD (Yes or No)	
										Total Number of containers	
										Special Instructions/Note:	
B-1(2.5-9)		4/6/2017		1020		G		Solid		X X X X 3	
B-1(7.5-8)				1040				Solid		1	
MW-1(5-5.5)				1255				Solid		X X X X ✓ low volume - Gx, 8260, 8260	
MW-1(7.5-8)				1305				Solid			
D-2(7.5-8)				1515				Solid		X X X X ✓	
MW-2(7.5-8)		4/7/2017		0810				Solid		X X X X ✓	
MW-2(10-10.5)				0820				Solid			
B-3(7.5-8)				1005				Solid		X X X X ✓	
MW-3(5-5.5)				1150				Solid			
MW-3(7.5-8)				1200				Solid		X X X X ✓	
MW-3(10-10.5)				1210				Solid			
<b>Possible Hazard Identification</b>											
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological											
<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>											
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months											
<b>Deliverable Requested: I, II, III, IV, Other (specify)</b>											
<b>Special Instructions/QC Requirements:</b>											
<b>Empty Kit Relinquished by:</b>											
Relinquished by: <u>Josh Lee</u> Date/Time: <u>4/10/17 1445</u> Company: <u>GEI</u> Received by: <u>Sheneka Kray</u> Date/Time: <u>4/10/17 1345</u> Company: <u>TestAmerica</u>											
Relinquished by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____											
Relinquished by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____											
<b>Custody Seals Intact:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Custody Seal No.:</b> _____											
<b>Cooler Temperature(s) °C and Other Remarks:</b> <u>3.9°C FROXY</u>											

4/14/2017

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**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

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## Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-5875-1

**Login Number: 5875**

**List Source: TestAmerica Spokane**

**List Number: 1**

**Creator: Kratz, Sheila J**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	False	Limited volume received.
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane

11922 East 1st Ave

Spokane, WA 99206

Tel: (509)924-9200

TestAmerica Job ID: 590-5894-1

Client Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

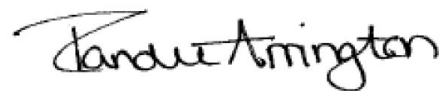
For:

GeoEngineers Inc

523 East Second Ave

Spokane, Washington 99202

Attn: JR Sugalski



Authorized for release by:

4/17/2017 1:22:35 PM

Randee Arrington, Project Manager II

(509)924-9200

[randee.arrington@testamericainc.com](mailto:randee.arrington@testamericainc.com)

### LINKS

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results through

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[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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## Case Narrative

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

**Job ID: 590-5894-1**

**Laboratory: TestAmerica Spokane**

### Narrative

#### Receipt

The samples were received on 4/12/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.4° C.

#### GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Sample Summary

Client: GeoEngineers Inc

TestAmerica Job ID: 590-5894-1

Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-5894-1	MW-1:041117	Water	04/11/17 12:10	04/12/17 09:30
590-5894-2	MW-2:041117	Water	04/11/17 10:40	04/12/17 09:30
590-5894-3	MW-3:041117	Water	04/11/17 11:18	04/12/17 09:30
590-5894-4	Dup:041117	Water	04/11/17 12:00	04/12/17 09:30

## Definitions/Glossary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

**Client Sample ID: MW-1:041117**

**Lab Sample ID: 590-5894-1**

**Date Collected: 04/11/17 12:10**

**Matrix: Water**

**Date Received: 04/12/17 09:30**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 23:36	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 23:36	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 23:36	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 23:36	1
o-Xylene	ND		1.0		ug/L			04/12/17 23:36	1
Toluene	ND		1.0		ug/L			04/12/17 23:36	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 23:36	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 23:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125					04/12/17 23:36	1
4-Bromofluorobenzene (Surr)	100		69 - 120					04/12/17 23:36	1
Dibromofluoromethane (Surr)	100		80 - 120					04/12/17 23:36	1
Toluene-d8 (Surr)	100		80 - 120					04/12/17 23:36	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			04/12/17 23:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		68.7 - 141					04/12/17 23:36	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/14/17 09:29	04/14/17 12:33	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L		04/13/17 11:05	04/14/17 18:53	1

**Client Sample ID: MW-2:041117**

**Lab Sample ID: 590-5894-2**

**Date Collected: 04/11/17 10:40**

**Matrix: Water**

**Date Received: 04/12/17 09:30**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 23:57	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 23:57	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 23:57	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 23:57	1
o-Xylene	ND		1.0		ug/L			04/12/17 23:57	1
Toluene	ND		1.0		ug/L			04/12/17 23:57	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 23:57	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 23:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125					04/12/17 23:57	1
4-Bromofluorobenzene (Surr)	96		69 - 120					04/12/17 23:57	1
Dibromofluoromethane (Surr)	105		80 - 120					04/12/17 23:57	1
Toluene-d8 (Surr)	101		80 - 120					04/12/17 23:57	1

TestAmerica Spokane



# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

**Client Sample ID: MW-2:041117**

**Lab Sample ID: 590-5894-2**

**Date Collected: 04/11/17 10:40**

**Matrix: Water**

**Date Received: 04/12/17 09:30**

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L	-		04/12/17 23:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		68.7 - 141		04/12/17 23:57	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L	-	04/14/17 09:29	04/14/17 12:56	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L	-	04/13/17 11:05	04/14/17 19:07	1

**Client Sample ID: MW-3:041117**

**Lab Sample ID: 590-5894-3**

**Date Collected: 04/11/17 11:18**

**Matrix: Water**

**Date Received: 04/12/17 09:30**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L	-		04/13/17 00:18	1
Ethylbenzene	ND		1.0		ug/L	-		04/13/17 00:18	1
m,p-Xylene	ND		2.0		ug/L	-		04/13/17 00:18	1
Methyl tert-butyl ether	ND		1.0		ug/L	-		04/13/17 00:18	1
o-Xylene	ND		1.0		ug/L	-		04/13/17 00:18	1
Toluene	ND		1.0		ug/L	-		04/13/17 00:18	1
Xylenes, Total	ND		3.0		ug/L	-		04/13/17 00:18	1
1,2-Dichloroethane	ND		1.0		ug/L	-		04/13/17 00:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 125		04/13/17 00:18	1
4-Bromofluorobenzene (Surr)	98		69 - 120		04/13/17 00:18	1
Dibromofluoromethane (Surr)	105		80 - 120		04/13/17 00:18	1
Toluene-d8 (Surr)	101		80 - 120		04/13/17 00:18	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L	-		04/13/17 00:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		68.7 - 141		04/13/17 00:18	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L	-	04/14/17 09:29	04/14/17 13:19	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L	-	04/13/17 11:05	04/14/17 19:15	1

TestAmerica Spokane

# Client Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

Client Sample ID: Dup:041117

Lab Sample ID: 590-5894-4

Date Collected: 04/11/17 12:00

Matrix: Water

Date Received: 04/12/17 09:30

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/13/17 00:39	1
Ethylbenzene	ND		1.0		ug/L			04/13/17 00:39	1
m,p-Xylene	ND		2.0		ug/L			04/13/17 00:39	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/13/17 00:39	1
o-Xylene	ND		1.0		ug/L			04/13/17 00:39	1
Toluene	ND		1.0		ug/L			04/13/17 00:39	1
Xylenes, Total	ND		3.0		ug/L			04/13/17 00:39	1
1,2-Dichloroethane	ND		1.0		ug/L			04/13/17 00:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 125					04/13/17 00:39	1
4-Bromofluorobenzene (Surr)	96		69 - 120					04/13/17 00:39	1
Dibromofluoromethane (Surr)	102		80 - 120					04/13/17 00:39	1
Toluene-d8 (Surr)	102		80 - 120					04/13/17 00:39	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			04/13/17 00:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		68.7 - 141					04/13/17 00:39	1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/14/17 09:29	04/14/17 13:42	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L		04/13/17 11:05	04/14/17 19:18	1

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-11569/6

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			04/12/17 17:38	1
Ethylbenzene	ND		1.0		ug/L			04/12/17 17:38	1
m,p-Xylene	ND		2.0		ug/L			04/12/17 17:38	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/12/17 17:38	1
o-Xylene	ND		1.0		ug/L			04/12/17 17:38	1
Toluene	ND		1.0		ug/L			04/12/17 17:38	1
Xylenes, Total	ND		3.0		ug/L			04/12/17 17:38	1
1,2-Dichloroethane	ND		1.0		ug/L			04/12/17 17:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 125		04/12/17 17:38	1
4-Bromofluorobenzene (Surr)	99		69 - 120		04/12/17 17:38	1
Dibromofluoromethane (Surr)	102		80 - 120		04/12/17 17:38	1
Toluene-d8 (Surr)	101		80 - 120		04/12/17 17:38	1

Lab Sample ID: LCS 590-11569/1004

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.93		ug/L		99	80 - 120
Ethylbenzene	10.0	9.88		ug/L		99	80 - 120
m,p-Xylene	10.0	10.2		ug/L		102	80 - 120
Methyl tert-butyl ether	10.0	10.1		ug/L		101	71 - 128
o-Xylene	10.0	10.2		ug/L		102	80 - 120
Toluene	10.0	10.1		ug/L		101	80 - 123
1,2-Dichloroethane	10.0	9.94		ug/L		99	68 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		70 - 125
4-Bromofluorobenzene (Surr)	98		69 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCSD 590-11569/7

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	10.2		ug/L		102	80 - 120	3	25
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120	1	25
m,p-Xylene	10.0	10.2		ug/L		102	80 - 120	1	25
Methyl tert-butyl ether	10.0	9.77		ug/L		98	71 - 128	3	12
o-Xylene	10.0	9.87		ug/L		99	80 - 120	3	25
Toluene	10.0	9.97		ug/L		100	80 - 123	1	25
1,2-Dichloroethane	10.0	9.98		ug/L		100	68 - 127	0	12

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-11569/7

Matrix: Water

Analysis Batch: 11569

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		70 - 125
4-Bromofluorobenzene (Surr)	98		69 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	99		80 - 120

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Lab Sample ID: MB 590-11570/6

Matrix: Water

Analysis Batch: 11570

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			04/12/17 17:38	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		68.7 - 141					04/12/17 17:38	1

Lab Sample ID: LCS 590-11570/1005

Matrix: Water

Analysis Batch: 11570

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1000	980		ug/L		98	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	97		68.7 - 141				

Lab Sample ID: LCSD 590-11570/1016

Matrix: Water

Analysis Batch: 11570

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	1000	957		ug/L		96	80 - 120	2	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	93		68.7 - 141						

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Lab Sample ID: MB 590-11608/2-A

Matrix: Water

Analysis Batch: 11609

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		04/14/17 09:29	04/14/17 10:38	1

TestAmerica Spokane

# QC Sample Results

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

## Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC) (Continued)

Lab Sample ID: LCS 590-11608/3-A

Matrix: Water

Analysis Batch: 11609

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	0.125	0.119		ug/L		95	60 - 140

Lab Sample ID: LCSD 590-11608/4-A

Matrix: Water

Analysis Batch: 11609

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 11608

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)	0.125	0.110		ug/L		88	60 - 140	8	20

## Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 590-11585/2-A

Matrix: Water

Analysis Batch: 11628

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 11585

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L		04/13/17 11:05	04/14/17 18:51	1

Lab Sample ID: LCS 590-11585/1-A

Matrix: Water

Analysis Batch: 11628

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 11585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	1.04		mg/L		104	85 - 115

Lab Sample ID: 590-5894-1 MS

Matrix: Water

Analysis Batch: 11628

Client Sample ID: MW-1:041117

Prep Type: Total/NA

Prep Batch: 11585

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	ND		2.50	2.62		mg/L		105	70 - 130

Lab Sample ID: 590-5894-1 MSD

Matrix: Water

Analysis Batch: 11628

Client Sample ID: MW-1:041117

Prep Type: Total/NA

Prep Batch: 11585

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	ND		2.50	2.50		mg/L		100	70 - 130	5	20

Lab Sample ID: 590-5894-1 DU

Matrix: Water

Analysis Batch: 11628

Client Sample ID: MW-1:041117

Prep Type: Total/NA

Prep Batch: 11585

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Lead	ND		ND		mg/L		NC	20

TestAmerica Spokane

# Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

**Client Sample ID: MW-1:041117**

**Date Collected: 04/11/17 12:10**

**Date Received: 04/12/17 09:30**

**Lab Sample ID: 590-5894-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 23:36	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 23:36	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 12:33	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11585	04/13/17 11:05	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11628	04/14/17 18:53	JSP	TAL SPK

**Client Sample ID: MW-2:041117**

**Date Collected: 04/11/17 10:40**

**Date Received: 04/12/17 09:30**

**Lab Sample ID: 590-5894-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/12/17 23:57	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/12/17 23:57	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 12:56	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11585	04/13/17 11:05	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11628	04/14/17 19:07	JSP	TAL SPK

**Client Sample ID: MW-3:041117**

**Date Collected: 04/11/17 11:18**

**Date Received: 04/12/17 09:30**

**Lab Sample ID: 590-5894-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/13/17 00:18	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/13/17 00:18	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 13:19	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11585	04/13/17 11:05	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11628	04/14/17 19:15	JSP	TAL SPK

**Client Sample ID: Dup:041117**

**Date Collected: 04/11/17 12:00**

**Date Received: 04/12/17 09:30**

**Lab Sample ID: 590-5894-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	11569	04/13/17 00:39	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	11570	04/13/17 00:39	MRS	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	11608	04/14/17 09:29	NMI	TAL SPK
Total/NA	Analysis	8011		1			11609	04/14/17 13:42	CBW	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	11585	04/13/17 11:05	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1			11628	04/14/17 19:18	JSP	TAL SPK

TestAmerica Spokane

Lab Chronicle

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

**Laboratory References:**  
TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

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## Accreditation/Certification Summary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

### Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-18
Analysis Method	Prep Method	Matrix	Analyte	



## Method Summary

Client: GeoEngineers Inc  
Project/Site: Texaco Bulk Plant Dayton, WA/0504-133-00

TestAmerica Job ID: 590-5894-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC/MS)	NWTPH	TAL SPK
8011	EDB, DBCP, and 1,2,3-TCP (GC)	SW846	TAL SPK
200.7 Rev 4.4	Metals (ICP)	EPA	TAL SPK

### Protocol References:

EPA = US Environmental Protection Agency

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

DATE 4/12/17  
PAGE 1 OF 1  
LAB  
LAB NO.

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590-5894 Chain of Custody

## Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-5894-1

**Login Number: 5894**

**List Source: TestAmerica Spokane**

**List Number: 1**

**Creator: Kratz, Sheila J**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## **APPENDIX C**

### **Well Survey Report**

WASHINGTON STATE DEPARTMENT OF ECOLOGY  
TEXACO BULK PLANT MONITORING WELLS SURVEY  
DAYTON, WASHINGTON



SCALE: 1"=50'

HORIZONTAL DATUM

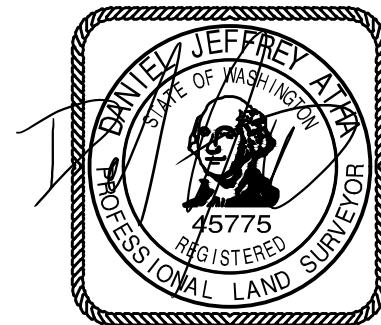
SURVEY IS BASED ON WASHINGTON STATE  
PLANE SYSTEM, NAD83, SOUTH ZONE, U.S.  
FOOT.

ELEVATION DATUM

NORTH AMERICAN VERTICAL DATUM OF  
1988(NAVD 88). GEOID 12A

NOTES

FIELD SURVEY COMPLETED APRIL 11, 2017.



DESCRIPTION	NORTHING	EASTING	ELEVATION
MW-1	368209.06	2274297.57	1584.78
MW-2	368307.65	2274191.24	1583.21
MW-3	368084.76	2274241.01	1585.18

**COFFMAN**  
ENGINEERS  
10 N. Post Street Suite 500  
Spokane, Washington 99201  
509 328 2994 Fax 509 328 2999

project TEXACO BULK PLANT MONITORING WELL SURVEY  
location 606 WAGON ROAD DAYTON, WASHINGTON  
client GEOENGINEERS  
(WASHINGTON STATE DEPARTMENT OF ECOLOGY)

by JEA  
date 04/17/2017  
checked DJA  
date 04/17/2017

sheet no.  
1 OF 1  
job no.  
170214

## **APPENDIX D**

### **Report Limitations and Guidelines for Use**

## **APPENDIX D**

### **REPORT LIMITATIONS AND GUIDELINES FOR USE<sup>1</sup>**

This appendix provides information to help you manage your risks with respect to the use of this report.

#### **Environmental Services Are Performed for Specific Purposes, Persons and Projects**

This report has been prepared for the exclusive use of the Washington State Department of Ecology (Ecology). This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Ecology should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

#### **This Environmental Report is Based on a Unique Set of Project-Specific Factors**

This report has been prepared for at the former Texaco Bulk Plant located at 606 Wagon Road in Dayton, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

#### **Reliance Conditions for Third Parties**

Our report was prepared for the exclusive use of Ecology. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm and Ecology with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services

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<sup>1</sup> Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; [www.asfe.org](http://www.asfe.org).

have been executed in accordance with our Agreement with Ecology and generally accepted environmental practices in this area at the time this report was prepared.

### **Environmental Regulations are Always Evolving**

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

### **Uncertainty May Remain Even After This Assessment is Completed**

No environmental site assessment can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

### **Subsurface Conditions Can Change**

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

### **Most Environmental Findings are Professional Opinions**

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

### **Do Not Redraw the Exploration Logs**

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproductions are acceptable, but recognize that separating logs from the report can elevate risk.

### **Read These Provisions Closely**

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations”



provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

### **Geotechnical, Geologic and Geoenvironmental Reports Should Not be Interchanged**

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

### **Biological Pollutants**

GeoEngineers’ Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Ecology desires these specialized services, they should be obtained from a consultant who offers services in this specialized field

Have we delivered World Class Client Service?

Please let us know by visiting [\*\*www.geoengineers.com/feedback\*\*](http://www.geoengineers.com/feedback).

