Soil Assessment

Ray Rock Grocery Site
19475 Highway 2
Leavenworth, Washington

for
Washington State Department of Ecology

June 26, 2019

GeoEngineers
Earth Science + Technology

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Spokane, Washington 99202
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Soil Assessment

Ray Rock Grocery Site
19475 Highway 2
Leavenworth, Washington

File No. 0504-153-00

June 26, 2019

Prepared for:

Washington State Department of Ecology
Toxics Cleanup Program – Central Region Office
1250 West Alder Street
Union Gap, Washington 98903-0009

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Table of Contents

1.0 INTRODUCTION

This report describes soil assessment activities conducted at the former Ray Rock Grocery site located at 19475 Highway 2 in Leavenworth, Washington (herein referred to as "site"). The approximate site location is shown in the attached Vicinity Map, Figure 1.

Site environmental activities are managed by the Washington State Department of Ecology (Ecology). This report describes field activities, observations and chemical analytical results associated with soil samples collected at the site. The purpose of the assessment activities described herein was to identify remnant soil contamination beneath the site associated with a former underground storage tank (UST) operation. Ecology will use the assessment results to conduct a Site Hazard Assessment (SHA), if necessary, or close the site.

2.0 SITE DESCRIPTION AND BACKGROUND

The former Ray Rock Grocery site is located west of Leavenworth, Washington in Chelan County, as shown in Figure 1. The site is currently occupied by Ray Rock Custom Knives, a single-story business with asphalt and gravel surfaces. The site is located approximately 0.8-miles west of the intersection of Highway 2 and Gill Creek Road.

Two approximately 3,000-gallon USTs were removed from the site in 1991. Petroleum contaminated soil (PCS) was observed in the UST excavation and was subsequently removed and transported for disposal offsite. About 8 cubic yards of contaminated soil was removed and placed in a parking/drive area on a different part of the property. The final disposition (left on site or transported off site) of the PCS is not known. The available documentation stated that follow up confirmation soil samples collected after the PCS removal indicated that petroleum concentrations were less than regulatory cleanup levels within the excavation. However, the laboratory report included with the documentation indicates that benzene exceeded the Model Toxics Control Act (MTCA) Method A cleanup level (30 micrograms per milligram [µg/kg]) in a single confirmation soil sample (449 µg/kg) and gasoline exceeded the MTCA Method A cleanup level when benzene is present (30 milligrams per kilogram [mg/kg]) in samples #3 (2,240 mg/kg) and #4 (1,890 mg/kg). Sample locations are shown in Site Plan and Historical Features, Figure 2. Groundwater conditions were not reported.

3.0 SCOPE OF SERVICES

The scope of services included the following:

1. Prepared a Work Plan that included a Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPP), and Health and Safety Plan (HASP).
2. Coordinated underground utility locating using the State of Washington Utility Notification and Utilities Plus, LLC (Utilities Plus). GeoEngineers mobilized to/from the site from Spokane to mark the proposed boring locations prior to initiating the locate request and to conduct the assessment/sampling event.
3. Conducted 1 day of subsurface assessment using direct-push drilling techniques provided by Environmental West Explorations, Inc. (Environmental West). The borings were advanced to depths

from 2 to 15 feet below ground surface (bgs). Soil samples were collected from 4-foot intervals using a continuous core sampler for field screening and potential chemical analysis. Soil samples were collected per procedures outlined in the Work Plan.

4. Observed and documented subsurface soil conditions using a qualified field engineer or geologist. Field screening consisted of visual observation, water sheen testing and headspace vapor measurements using a photoionization detector (PID).
5. Backfilled borings with bentonite clay and surface completed with gravel or asphalt, as appropriate.
6. Submitted at least one soil sample from each boring to Eurofins TestAmerica (Test America) for chemical analysis. The soil sample with the greatest field screening indication of potential contamination was submitted for analysis. Soil samples submitted from the site were analyzed for the following potential contaminants:
    - Gasoline-range petroleum hydrocarbons (GRPH) using Northwest Method NWTPH-GX; and
    - Benzene, toluene, ethylbenzene and total xylenes (BTEX) using Environmental Protection Agency (EPA) Method 8260C.
7. Drummed and labeled investigation-derived waste (IDW). Able Cleanup Technologies was retained to profile and transport the IDW for disposal at a permitted facility. Based on the chemical analytical results the IDW does not designate as a hazardous waste.
8. Compared soil chemical analytical results to MTCA Method A cleanup levels.
9. Prepared this site assessment report summarizing field and laboratory data, comparison of analytical results to MTCA, and provides recommendations.
10. Entered laboratory analytical data results into Ecology's Environmental Information Management (EIM) database.

4.0 FIELD ACTIVITIES

4.1. Direct-Push Soil Assessment

Initial site reconnaissance took place on April 24, 2019. During this visit, site access was assessed, and soil borings were marked with white paint. Site utilities, located near the boring locations, were identified and marked by Utilities Plus prior to drilling. No utilities were observed in the vicinity of marked boring locations.

Field assessment activities were conducted on May 9, 2019. Environmental West, advanced five borings (GEI018-DP1 through GEI018-DP5) near the former UST excavation using direct-push drilling methods. The direct-push boring locations are summarized by the following:

- Soil boring GEI018-DP1 was drilled to the west of the former UST excavation to approximately 15 feet bgs. Two soil samples for potential chemical analysis were collected from 4 to 5 and 14 to 15 feet bgs. No petroleum sheen was observed and volatile organic vapors were detected at 9.8 parts per million (ppm) at the 4-foot sample interval.
- Soil boring GEI018-DP2 was drilled south-adjacent of the former UST excavation to approximately 15 feet bgs. Two soil samples for potential chemical analysis were collected from 4 to 5 and 12 to

13 feet bgs. A slight petroleum sheen was observed, and volatile organic vapors were detected at 34.9 ppm at the 12-foot sample interval.

- Soil boring GEI018-DP3 was drilled east-adjacent to the former UST excavation to approximately 12 feet bgs. Two soil samples for potential chemical analysis were collected from 4 to 4.5 and 8 to 8.5 feet bgs. No petroleum sheen was observed but volatile organic vapors were detected at 45.2 ppm at the 8-foot sample interval.
- Soil boring GEI018-DP4 was drilled north of the former UST excavation, near the entrance to Ray Rock Custom Knives to refusal at approximately 4 feet bgs. One soil sample for potential chemical analysis was collected from the 0.5 foot depth interval. No petroleum sheen was observed, but volatile organic vapors were detected at 30.2 ppm at the 0.5-foot sample interval.
- Soil boring GEI018-DP5 was drilled east of GEI018-DP3 to approximately 2 feet bgs due to drill refusal. One soil sample for potential chemical analysis was collected from the 0 to 0.75 foot depth interval. A slight organic sheen was observed, and volatile organic vapors were detected at 18.2 ppm at the 0.75-foot sample interval.

Environmental West backfilled each boring with bentonite and surface completed with gravel or asphalt. Excess soil cuttings were placed in one 55-gallon steel drum, labeled and placed at a location approved by the property owner (depicted on Figure 3). Boring logs associated with the borings are included in Appendix A.

4.2. Subsurface Conditions

Soil observed in GEI018-DP1 through GEI018-DP3 consisted of brown fine to medium grained sand with varying amounts of silt and gravel terminating between 12 and 15 feet bgs on decomposed granite. Soil observed in GEI018-DP4 and GEI018-DP5 consisted of brown fine to medium grained sand with gravel and trace silt underlain by gray gravel with trace sand to the termination of the boring. GEI018-DP4 and GEI018-DP5 terminated at refusal on decomposed granite at 4 and 2 feet bgs, respectively. Several attempts were made to step out from initial boring locations and were met with shallow refusal of less than 1 foot bgs. This approximate shallow refusal area is displayed on Figure 3. Groundwater was not observed during the assessment activities.

5.0 CHEMICAL ANALYTICAL RESULTS

5.1. Soil Chemical Analytical Results

Eight soil samples were submitted to TestAmerica for the chemical analyses described in "Section 3.0 Scope of Services." TestAmerica's laboratory reports are included in Appendix B; chemical analytical results are summarized and compared to MTCA Method A cleanup levels for unrestricted land use in Table 1 and summarized below.

- GRPH was not detected above laboratory method detection limit (MDL) in the soil samples analyzed.
- BTEX were not detected above laboratory MDLs in the soil samples analyzed.

TABLE 1. SUMMARY OF CHEMICAL ANALYTICAL RESULTS – SOIL (GRPH AND BTEX)

Sample Identification	Date Sampled	GRPH[2] (mg/kg)	BTEX[1]					
			Benzene[5] (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	m,p-Xylene (µg/kg)	o-Xylene (µg/kg)	Total Xylenes (µg/kg)
GEI018-DP1 (4-5')	5/9/2019	<6	<4.8	<190	<50	<250	<75	<250
GEI018-DP1 (14-15')	5/9/2019	<5.7	<4.3	<170	<46	<230	<69	<230
GEI018-DP2 (4-5')	5/9/2019	<5	<4.1	<160	<43	<220	<65	<220
GEI018-DP2 (12-13')	5/9/2019	<6.1	<4.6	<180	<48	<240	<73	<240
GEI018-DP3 (4-4.5')	5/9/2019	<5.3	<4.0	<160	<42	<210	<64	<210
GEI018-DP3 (8-8.5')	5/9/2019	<5.7	<4.4	<170	<46	<230	<69	<230
GEI018-DP4 (0.5-1')	5/9/2019	<6	<4.4	<170	<46	<230	<69	<230
GEI018-DP5 (0-0.75)	5/9/2019	<6	<4.5	<180	<47	<240	<71	<240
MTCA Method A CUL[3]		30 / 100[4]	30	7,000	6,000	NE	NE	9,000

Notes:

[1]BTEX analyzed using EPA Method 8260C.

[2]GRPH analyzed by Northwest Method NWTPH-Gx.

[3]MTCA Method A CUL - Washington State Model Toxics Control Act Method A unrestricted land use cleanup level

[4]Gasoline-range hydrocarbons when benzene is present / no detectable benzene.

[5]Benzene results are reported to the method detection limit (MDL).

mg/kg = milligrams per kilogram; µg/kg = micrograms per kilogram

6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Soil and groundwater assessment activities were conducted on May 9, 2019, at the former Ray Rock Grocery site located at 19475 Highway 2 near Leavenworth, Washington. Eight soil samples were submitted for GRPH and BTEX analysis; GRPH and BTEX were not detected in any of the samples submitted for analysis. Based on these assessment results, no further investigation appears to be warranted for the former Ray Rock Grocery site.

Able Cleanup Technologies was retained to pick up, transport and dispose the IDW at Waste Management's Graham Road landfill located near Medical Lake, Washington on June 18, 2019. The accumulated IDW amounted one, 55-gallon drum.

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.

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

FIGURES

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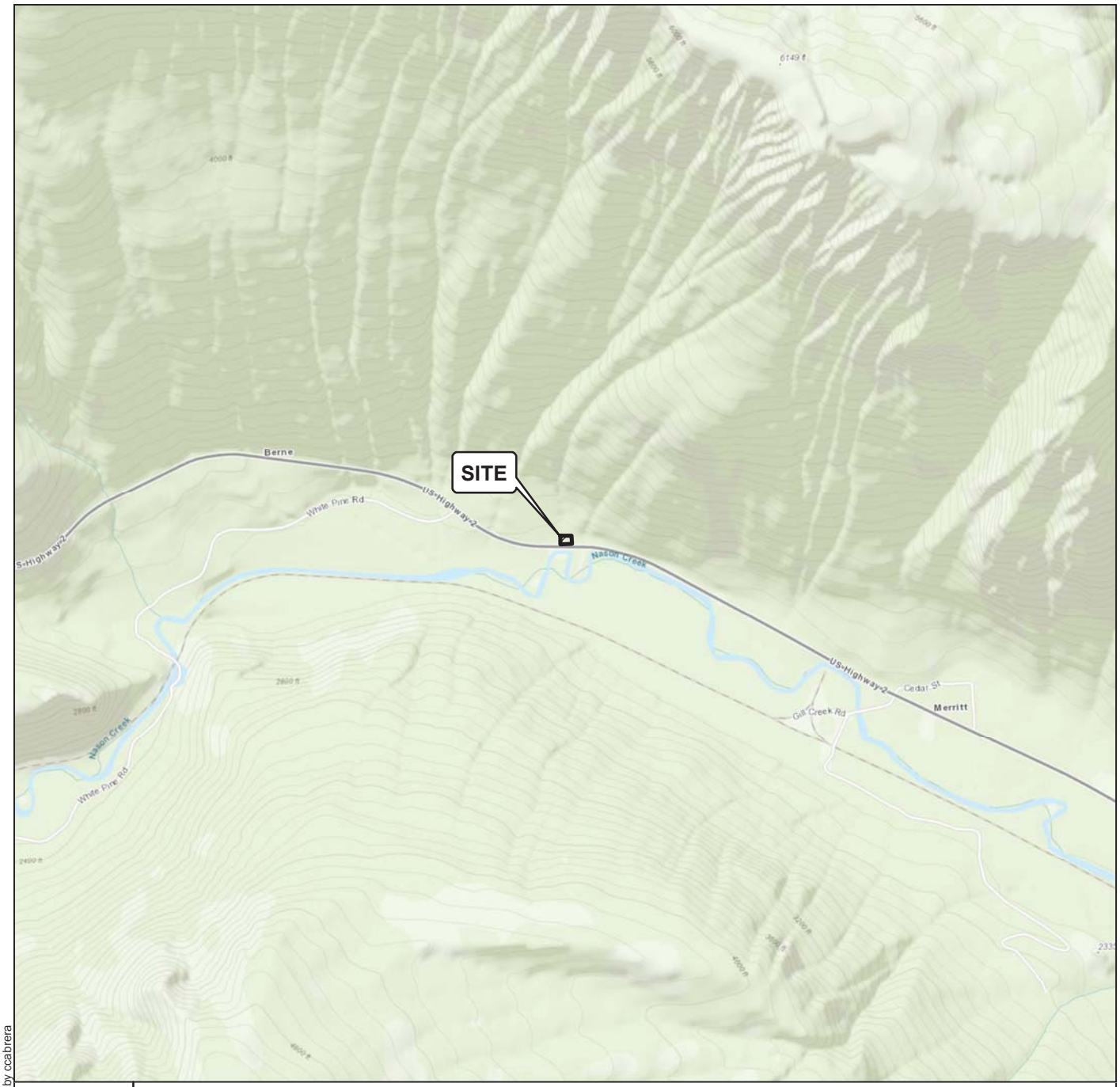

N
W E
S

2,000 0 2,000

Feet

Vicinity Map

Ray Rock Grocery
Leavenworth, Washington

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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: ESRI, World Topographic Map.

Projection: NAD 1983 UTM Zone 10N

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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: Clarity, ESRI.
Features from Forgren Associates, December 1991.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Former Exploration Number and Approximate Location (December 1991)
- Former UST Basin (December 1991)

N
W E
S

40 0 40
Feet

Site Plan and Historical Features

Ray Rock Grocery
Leavenworth, Washington

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Figure 2

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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: Clarity, ESRI.
Features from Forgren Associates, December 1991.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Direct Push Boring and Approximate Location
- Former UST Basin (December 1991)
- IDW Storage Area
- Shallow Refusal Area

N
W E
S

40 0 40
Feet

Exploration Locations

Ray Rock Grocery
Leavenworth, Washington

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Figure 3

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APPENDICES

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APPENDIX A
Field Procedures and Boring Logs

APPENDIX A
FIELD PROCEDURES AND BORING LOGS

General

Subsurface conditions at the former Ray Rock Grocery site were explored on May 9, 2019, by advancing five direct-push borings at the approximate locations shown on Figure 3. Borings GEI018-DP1 through GEI018-DP3 were advanced to between 12 to 15 feet below existing site grade and borings GEI018-DP4 and GEI018-DP5 were advanced to between 2 and 4 feet using a direct-push drill rig. Boring locations were established in the field using a site plan and measurements from onsite structures. 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 assessment procedures.

Soil Sample Collection

Soil samples obtained during direct-push drilling were removed from the sleeve using clean nitrile gloves, and transferred into a laboratory prepared container, 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 are presented in Figures A-2 through A-6. The logs are based on field data interpretation and indicate the depth at which subsurface materials, or their characteristics change, although these changes might actually be gradual.

Field Screening of Soil Samples

GeoEngineers' field representative performed field-screening tests on soil samples obtained from the borings. Field screening results were used as a general guideline to assess areas of possible petroleum-related contamination. The field screening methods used include: (1) PID screening; (2) visual screening; and (3) water-sheen screening.

PID screening involves placing soil in a container and after agitating or warming, measuring total volatile organic compounds in the available head space. Visual screening consists of observing soil for stains indicative of metal- or petroleum-related contamination. Water-sheen screening involved placing soil in a pan of water and observing the water surface for signs of sheen. Sheen screening may detect 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.

Field screening results can be site specific. The effectiveness of field screening can vary with temperature, moisture content, organic content, soil type, and contaminant type and age.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY 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
MORE THAN 50% PASSING NO. 200 SIEVE	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

ADDITIONAL MATERIAL SYMBOLS

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

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.

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 and dry density
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

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.

Key to Exploration Logs

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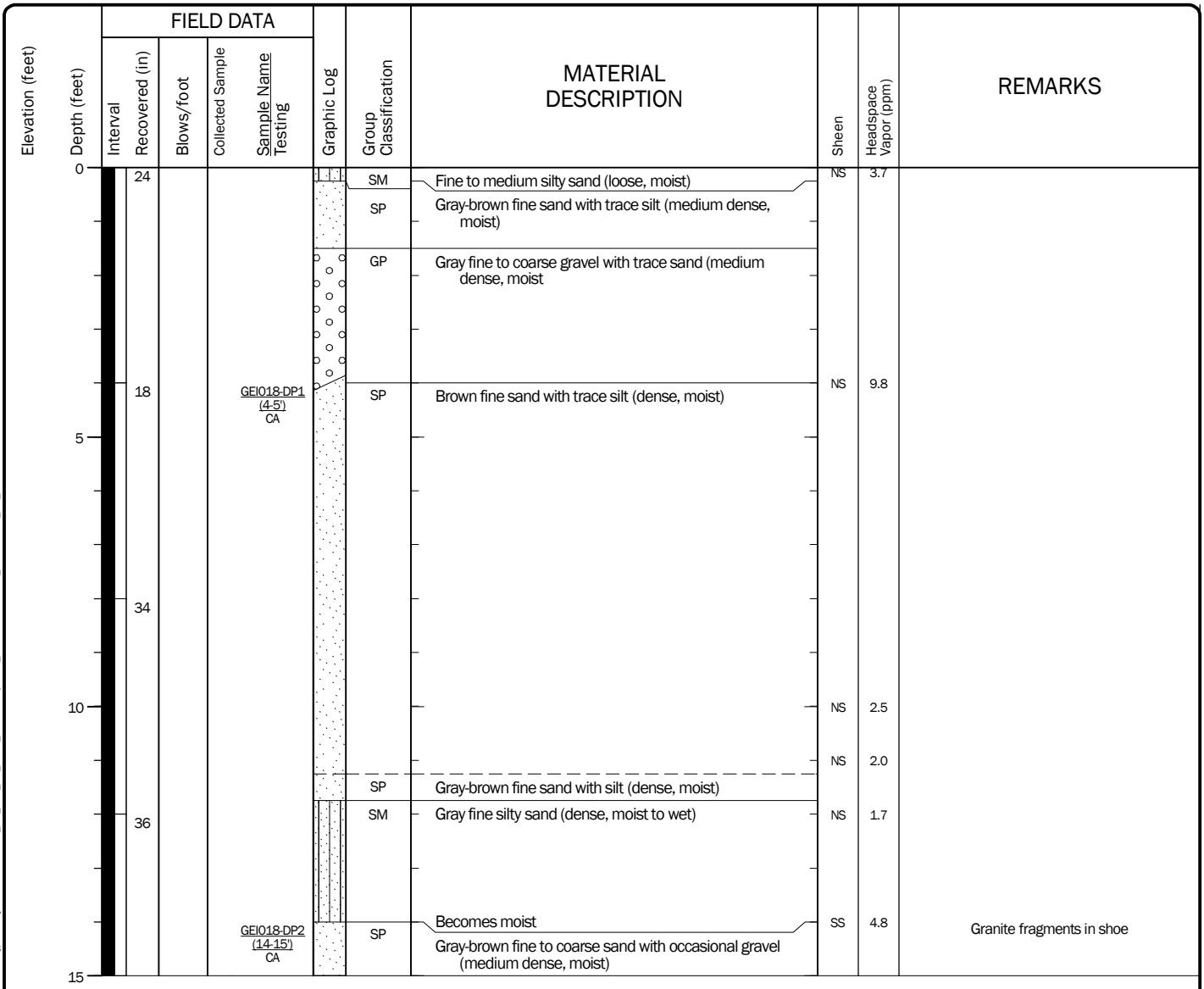
Figure A-1

Drilled	Start 5/9/2019	End 5/9/2019	Total Depth (ft)	15	Logged By	JDO	Driller	Environmental West Exploration	Drilling Method	Direct Push
Surface Elevation (ft) Vertical Datum	Undetermined				Hammer Data	N/A			Drilling Equipment	GeoProbe
Latitude Longitude	47° 47' 15.9504" -120° 51' 18.396"				System Datum				Groundwater not observed at time of exploration	

Notes:



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

Log of Boring GEI018-DP1

GeoEngineers

Project: Ray Rock Grocery Soil Assessment
Project Location: Leavenworth, Washington
Project Number: 0504-153-00

Figure A-2
Sheet 1 of 1

Drilled	Start 5/9/2019	End 5/9/2019	Total Depth (ft)	14.75	Logged By	JDO	Driller	Environmental West Exploration	Drilling Method	Direct Push
Checked By					SHL					

Surface Elevation (ft) Vertical Datum	Undetermined	Hammer Data	N/A	Drilling Equipment	GeoProbe
Latitude Longitude	47° 47' 15.8856" -120° 51' 18.1764"	System Datum		Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		30					AC	2 inches asphalt	SS	5.3	
								SP	Brown fine sand with trace silt and occasional gravel (medium dense, moist)			
								GP	Gray fine to coarse gravel with cobbles (dense, moist)			
			18			GEI018-DP2 (4-5') CA		SP	Brown fine sand with trace silt (dense, moist)	NS	4.4	
	5											
			30							NS	5.9	
	10							SP	Gray-brown fine to medium sand with occasional gravel (loose, moist)	SS	4.8	
			18			GEI018-DP2 (12-13') CA			Becomes dense	SS	34.9	Granite fragments in shoe

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

Log of Boring GEI018-DP2

GeoEngineers

Project: Ray Rock Grocery Soil Assessment
Project Location: Leavenworth, Washington
Project Number: 0504-153-00

Figure A-3
Sheet 1 of 1

Drilled	Start 5/9/2019	End 5/9/2019	Total Depth (ft)	12	Logged By	JDO	Driller	Environmental West Exploration	Drilling Method	Direct Push
Checked By					SHL					

Surface Elevation (ft) Vertical Datum	Undetermined	Hammer Data	N/A	Drilling Equipment	GeoProbe
Latitude Longitude	47° 47' 15.9504" -120° 51' 17.9784"	System Datum		Groundwater not observed at time of exploration	

Notes:

Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
0		21					SM	Brown fine to medium silty sand (loose, moist)	NS	36.5	
							SP	Light brown fine sand with trace silt and occasional gravel (loose, moist)	NS	25.2	
							SP-SM	Brown fine sand with silt (medium dense, moist)			
5		6			GEI018-DP3 (4-4.5') CA			Grades to fine to medium sand	NS	48.2	Poor recovery
		6			GEI018-DP3 (8-8.5') CA				NS	45.2	Poor recovery
10											Hole caving badly, could not advance past 12 feet bgs

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

Log of Boring GEI018-DP3

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Project: Ray Rock Grocery Soil Assessment
Project Location: Leavenworth, Washington
Project Number: 0504-153-00

Figure A-4
Sheet 1 of 1

Drilled	Start 5/9/2019	End 5/9/2019	Total Depth (ft)	4.25	Logged By / Checked By	JDO / SHL	Driller	Environmental West Exploration	Drilling Method	Direct Push
Surface Elevation (ft) Vertical Datum	Undetermined				Hammer Data	N/A			Drilling Equipment	GeoProbe
Latitude Longitude	47° 47' 16.1808" -120° 51' 18.198"				System Datum				Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0	24		GEI018-DP4 (0.5-1.5') CA		AC	2 inches asphalt	NS	30.2	
						SP	Brown fine to medium sand with gravel and trace silt (medium dense, moist)			
						GP	Light gray coarse gravel with sand and cobbles (dense, moist)			Granite fragments in shoe; attempt to step off, refusal at 3 feet bgs

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

Log of Boring GEI018-DP4

GeoEngineers

Project: Ray Rock Grocery Soil Assessment
Project Location: Leavenworth, Washington
Project Number: 0504-153-00

Figure A-5
Sheet 1 of 1

Drilled: Start 5/9/2019 End 5/9/2019	Total Depth (ft): 2	Logged By: JDO Checked By: SHL	Driller: Environmental West Exploration	Drilling Method: Direct Push	
Surface Elevation (ft) Vertical Datum: Undetermined		Hammer Data: N/A		Drilling Equipment: GeoProbe	
Latitude: 47° 47' 15.9504" Longitude: -120° 51' 17.8092"		System Datum:		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24			GEI018-DP5 (0.0-0.75') CA		AC	2 inches asphalt	NS	18.2	
								SP	Brown fine sand with trace silt (medium dense, moist)			
								GP	Light gray gravel with trace sand and cobbles (dense, moist)			Granite fragments in shoe; attempt to step off, refusal on asphalt

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

Log of Boring GEI018-DP5

GeoEngineers

Project: Ray Rock Grocery Soil Assessment
Project Location: Leavenworth, Washington
Project Number: 0504-153-00

Figure A-6
Sheet 1 of 1

APPENDIX B
Chemical Analytical Laboratory Reports

APPENDIX B
CHEMICAL ANALYTICAL LABORATORY REPORTS AND DATA VALIDATION REPORT

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 samples collected as part of the May 2019 sampling event, and the associated laboratory and field quality control (QC) samples. The samples were obtained from the Ray Rock Grocery store site located at 19475 Highway 2 in Leavenworth, Washington.

OBJECTIVE AND QUALITY CONTROL ELEMENTS

GeoEngineers, Inc. (GeoEngineers) completed the data validation consistent with the EPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review (EPA 2017) (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 (QAPP), Appendix B of the Work Plan (GeoEngineers 2019), 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 and Trip Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates

VALIDATED SAMPLE DELIVERY GROUPS

This data validation included review of the sample delivery group (SDG) listed below in Table 1.

TABLE 1: SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-10980-1	GEI018-DP1 (4-5), GEI018-DP1 (14-15), GEI018-DP2 (4-5), GEI018-DP2 (12-13), GEI018-DP3 (4-4.5), GEI018-DP3 (8-8.5), GEI018-DP4 (0.5-1.5), GEI018-DP5 (0-0.75), Trip Blank

CHEMICAL ANALYSIS PERFORMED

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

- Gasoline-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx; and
- Volatile Organic Compounds (VOCs) by Method EPA8260C

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.

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 cooler arrived at the laboratory within the appropriate temperatures of between 2 and 6 degrees Celsius.

SDG 590-10980-1: The laboratory noted that bulk soil jars were submitted for Samples GEI018-DP1 (4-5), GEI018-DP1 (14-15), GEI018-DP2 (4-5), GEI018-DP2 (12-13), GEI018-DP3 (4-4.5), GEI018-DP3 (8-8.5), GEI018-DP4 (0.5-1.5), and GEI018-DP5 (0-0.75); therefore, dry-weight correction could not be performed.

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 and Trip Blanks

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 each sample batch, method blanks for the applicable methods were analyzed at the required frequency. None of the analytes of interest were detected in the method blanks.

Trip Blanks

Trip blanks are analyzed to provide an indication as to whether volatile compounds have cross-contaminated other like samples within the transportation process to the laboratory. None of the analytes of interest were detected in the trip blank.

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.

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) sample set was performed in lieu of a MS/MSD analysis.

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 all samples 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 all analyses and the percent recovery and RPD values were within the proper control limits.

OVERALL ASSESSMENT

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

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

REFERENCES

GeoEngineers, Inc. (GeoEngineers). 2019. "Work Plan, Former Ray Rock Grocery," prepared for Washington State Department of Ecology. April 23, 2019.

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

U.S. Environmental Protection Agency (EPA). 2017. "Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review," EPA-540-R-2017-002. January 2017.

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ANALYTICAL REPORT

Eurofins TestAmerica, Spokane
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Tel: (509)924-9200

Laboratory Job ID: 590-10980-1
Client Project/Site: Ray Rock Grocery/00504-153-00
Revision: 1

For:
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Attn: Scott Lathen

Authorized for release by:
6/21/2019 1:07:58 PM

Randee Arrington, Project Manager II
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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.

Table of Contents

Case Narrative

Client: GeoEngineers Inc
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

Job ID: 590-10980-1

Laboratory: Eurofins TestAmerica, Spokane

Narrative

Report Revision 06/21/2019
Data was re-evaluated down to the method detection limit per the client's request.

Receipt
The samples were received on 5/10/2019 3:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4º C.

Receipt Exceptions
A bulk soil jar was not submitted for the following samples; therefore, dry-weight correction can not be performed: GEI018-DP1 (4-5) (590-10980-1), GEI018-DP1 (14-15) (590-10980-2), GEI018-DP2 (4-5) (590-10980-3), GEI018-DP2 (12-13) (590-10980-4), GEI018-DP3 (4-4.5) (590-10980-5), GEI018-DP3 (8-8.5) (590-10980-6), GEI018-DP4 (0.5-1.5) (590-10980-7) and GEI018-DP5 (0-0.75) (590-10980-8).

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

GC VOA
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
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
590-10980-1	GEI018-DP1 (4-5)	Solid	05/09/19 14:18	05/10/19 15:20	
590-10980-2	GEI018-DP1 (14-15)	Solid	05/09/19 14:30	05/10/19 15:20	
590-10980-3	GEI018-DP2 (4-5)	Solid	05/09/19 14:40	05/10/19 15:20	
590-10980-4	GEI018-DP2 (12-13)	Solid	05/09/19 14:50	05/10/19 15:20	
590-10980-5	GEI018-DP3 (4-4.5)	Solid	05/09/19 15:15	05/10/19 15:20	
590-10980-6	GEI018-DP3 (8-8.5)	Solid	05/09/19 15:25	05/10/19 15:20	
590-10980-7	GEI018-DP4 (0.5-1.5)	Solid	05/09/19 15:50	05/10/19 15:20	
590-10980-8	GEI018-DP5 (0-0.75)	Solid	05/09/19 14:25	05/10/19 15:20	
590-10980-9	Trip Blank	Solid	05/09/19 14:18	05/10/19 15:20	

Definitions/Glossary

Client: GeoEngineers Inc
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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 ID: GEI018-DP1 (4-5)
Lab Sample ID: 590-10980-1
Date Collected: 05/09/19 14:18
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		38	4.8	ug/Kg		05/21/19 09:05	05/21/19 15:27	1
Toluene	ND		190	17	ug/Kg		05/21/19 09:05	05/21/19 15:27	1
Ethylbenzene	ND		50	11	ug/Kg		05/21/19 09:05	05/21/19 15:27	1
m-Xylene & p-Xylene	ND		250	19	ug/Kg		05/21/19 09:05	05/21/19 15:27	1
o-Xylene	ND		75	17	ug/Kg		05/21/19 09:05	05/21/19 15:27	1
Xylenes, Total	ND		250	19	ug/Kg		05/21/19 09:05	05/21/19 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:27*	*1*
Trifluorotoluene (Surr)	*103*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:27*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:27*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 121*	*05/21/19 09:05*	*05/21/19 15:27*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		6.3	2.9	mg/Kg		05/20/19 11:20	05/20/19 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*50 - 150*	*05/20/19 11:20*	*05/20/19 14:06*	*1*

Client Sample ID: GEI018-DP1 (14-15)
Lab Sample ID: 590-10980-2
Date Collected: 05/09/19 14:30
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		34	4.3	ug/Kg		05/21/19 09:05	05/21/19 15:52	1
Toluene	ND		170	15	ug/Kg		05/21/19 09:05	05/21/19 15:52	1
Ethylbenzene	ND		46	10	ug/Kg		05/21/19 09:05	05/21/19 15:52	1
m-Xylene & p-Xylene	ND		230	17	ug/Kg		05/21/19 09:05	05/21/19 15:52	1
o-Xylene	ND		69	15	ug/Kg		05/21/19 09:05	05/21/19 15:52	1
Xylenes, Total	ND		230	17	ug/Kg		05/21/19 09:05	05/21/19 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:52*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:52*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:52*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 15:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 121*	*05/21/19 09:05*	*05/21/19 15:52*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.7	2.6	mg/Kg		05/20/19 11:20	05/20/19 14:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*	*05/20/19 11:20*	*05/20/19 14:36*	*1*

Client Sample ID: GEI018-DP2 (4-5)
Lab Sample ID: 590-10980-3
Date Collected: 05/09/19 14:40
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		32	4.1	ug/Kg		05/21/19 09:05	05/21/19 16:16	1
Toluene	ND		160	15	ug/Kg		05/21/19 09:05	05/21/19 16:16	1
Ethylbenzene	ND		43	9.8	ug/Kg		05/21/19 09:05	05/21/19 16:16	1
m-Xylene & p-Xylene	ND		220	16	ug/Kg		05/21/19 09:05	05/21/19 16:16	1
o-Xylene	ND		65	14	ug/Kg		05/21/19 09:05	05/21/19 16:16	1
Xylenes, Total	ND		220	16	ug/Kg		05/21/19 09:05	05/21/19 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:16*	*1*
Trifluorotoluene (Surr)	*104*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:16*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:16*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 121*	*05/21/19 09:05*	*05/21/19 16:16*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.4	2.5	mg/Kg		05/20/19 11:20	05/20/19 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*50 - 150*	*05/20/19 11:20*	*05/20/19 15:06*	*1*

Client Sample ID: GEI018-DP2 (12-13)
Lab Sample ID: 590-10980-4
Date Collected: 05/09/19 14:50
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		36	4.6	ug/Kg		05/21/19 09:05	05/21/19 16:41	1
Toluene	ND		180	16	ug/Kg		05/21/19 09:05	05/21/19 16:41	1
Ethylbenzene	ND		48	11	ug/Kg		05/21/19 09:05	05/21/19 16:41	1
m-Xylene & p-Xylene	ND		240	18	ug/Kg		05/21/19 09:05	05/21/19 16:41	1
o-Xylene	ND		73	16	ug/Kg		05/21/19 09:05	05/21/19 16:41	1
Xylenes, Total	ND		240	18	ug/Kg		05/21/19 09:05	05/21/19 16:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:41*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:41*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:41*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*	*05/21/19 09:05*	*05/21/19 16:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 121*	*05/21/19 09:05*	*05/21/19 16:41*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		6.1	2.8	mg/Kg		05/20/19 11:20	05/20/19 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*50 - 150*	*05/20/19 11:20*	*05/20/19 15:36*	*1*

Client Sample ID: GEI018-DP3 (4-4.5)
Lab Sample ID: 590-10980-5
Date Collected: 05/09/19 15:15
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		32	4.0	ug/Kg		05/21/19 09:05	05/21/19 17:05	1
Toluene	ND		160	14	ug/Kg		05/21/19 09:05	05/21/19 17:05	1
Ethylbenzene	ND		42	9.6	ug/Kg		05/21/19 09:05	05/21/19 17:05	1
m-Xylene & p-Xylene	ND		210	16	ug/Kg		05/21/19 09:05	05/21/19 17:05	1
o-Xylene	ND		64	14	ug/Kg		05/21/19 09:05	05/21/19 17:05	1
Xylenes, Total	ND		210	16	ug/Kg		05/21/19 09:05	05/21/19 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:05*	*1*
Trifluorotoluene (Surr)	*105*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:05*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:05*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 121*	*05/21/19 09:05*	*05/21/19 17:05*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.3	2.4	mg/Kg		05/20/19 11:20	05/20/19 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*50 - 150*	*05/20/19 11:20*	*05/20/19 16:35*	*1*

Client Sample ID: GEI018-DP3 (8-8.5)
Lab Sample ID: 590-10980-6
Date Collected: 05/09/19 15:25
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		34	4.4	ug/Kg		05/21/19 09:05	05/21/19 17:30	1
Toluene	ND		170	15	ug/Kg		05/21/19 09:05	05/21/19 17:30	1
Ethylbenzene	ND		46	10	ug/Kg		05/21/19 09:05	05/21/19 17:30	1
m-Xylene & p-Xylene	ND		230	17	ug/Kg		05/21/19 09:05	05/21/19 17:30	1
o-Xylene	ND		69	15	ug/Kg		05/21/19 09:05	05/21/19 17:30	1
Xylenes, Total	ND		230	17	ug/Kg		05/21/19 09:05	05/21/19 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:30*	*1*
Trifluorotoluene (Surr)	*103*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:30*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:30*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 121*	*05/21/19 09:05*	*05/21/19 17:30*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.7	2.6	mg/Kg		05/20/19 11:20	05/20/19 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*50 - 150*	*05/20/19 11:20*	*05/20/19 17:06*	*1*

Client Sample ID: GEI018-DP4 (0.5-1.5)
Lab Sample ID: 590-10980-7

Date Collected: 05/09/19 15:50
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		35	4.4	ug/Kg		05/21/19 09:05	05/21/19 17:54	1
Toluene	ND		170	16	ug/Kg		05/21/19 09:05	05/21/19 17:54	1
Ethylbenzene	ND		46	11	ug/Kg		05/21/19 09:05	05/21/19 17:54	1
m-Xylene & p-Xylene	ND		230	17	ug/Kg		05/21/19 09:05	05/21/19 17:54	1
o-Xylene	ND		69	15	ug/Kg		05/21/19 09:05	05/21/19 17:54	1
Xylenes, Total	ND		230	17	ug/Kg		05/21/19 09:05	05/21/19 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:54*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:54*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:54*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 17:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 121*	*05/21/19 09:05*	*05/21/19 17:54*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.8	2.7	mg/Kg		05/20/19 11:20	05/20/19 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*	*05/20/19 11:20*	*05/20/19 17:35*	*1*

Client Sample ID: GEI018-DP5 (0-0.75)
Lab Sample ID: 590-10980-8

Date Collected: 05/09/19 14:25
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		35	4.5	ug/Kg		05/21/19 09:05	05/21/19 18:19	1
Toluene	ND		180	16	ug/Kg		05/21/19 09:05	05/21/19 18:19	1
Ethylbenzene	ND		47	11	ug/Kg		05/21/19 09:05	05/21/19 18:19	1
m-Xylene & p-Xylene	ND		240	18	ug/Kg		05/21/19 09:05	05/21/19 18:19	1
o-Xylene	ND		71	16	ug/Kg		05/21/19 09:05	05/21/19 18:19	1
Xylenes, Total	ND		240	18	ug/Kg		05/21/19 09:05	05/21/19 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:19*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:19*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:19*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 121*	*05/21/19 09:05*	*05/21/19 18:19*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.9	2.7	mg/Kg		05/20/19 11:20	05/20/19 18:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*50 - 150*	*05/20/19 11:20*	*05/20/19 18:05*	*1*

Client: GeoEngineers Inc
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

Client Sample ID: Trip Blank
Lab Sample ID: 590-10980-9
Date Collected: 05/09/19 14:18
Matrix: Solid
Date Received: 05/10/19 15:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		30	3.8	ug/Kg		05/21/19 09:05	05/21/19 18:44	1
Toluene	ND		150	14	ug/Kg		05/21/19 09:05	05/21/19 18:44	1
Ethylbenzene	ND		40	9.1	ug/Kg		05/21/19 09:05	05/21/19 18:44	1
m-Xylene & p-Xylene	ND		200	15	ug/Kg		05/21/19 09:05	05/21/19 18:44	1
o-Xylene	ND		60	13	ug/Kg		05/21/19 09:05	05/21/19 18:44	1
Xylenes, Total	ND		200	15	ug/Kg		05/21/19 09:05	05/21/19 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:44*	*1*
Trifluorotoluene (Surr)	*105*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:44*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:44*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*	*05/21/19 09:05*	*05/21/19 18:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 121*	*05/21/19 09:05*	*05/21/19 18:44*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0	2.3	mg/Kg		05/20/19 11:20	05/20/19 13:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*50 - 150*	*05/20/19 11:20*	*05/20/19 13:06*	*1*

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

Lab Sample ID: MB 580-301179/1-A
Matrix: Solid
Analysis Batch: 301182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 301179

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		30	3.8	ug/Kg		05/21/19 09:05	05/21/19 12:34	1
Toluene	ND		150	14	ug/Kg		05/21/19 09:05	05/21/19 12:34	1
Ethylbenzene	ND		40	9.1	ug/Kg		05/21/19 09:05	05/21/19 12:34	1
m-Xylene & p-Xylene	ND		200	15	ug/Kg		05/21/19 09:05	05/21/19 12:34	1
o-Xylene	ND		60	13	ug/Kg		05/21/19 09:05	05/21/19 12:34	1
Xylenes, Total	ND		200	15	ug/Kg		05/21/19 09:05	05/21/19 12:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 12:34*	*1*
Trifluorotoluene (Surr)	*104*		*80 - 120*	*05/21/19 09:05*	*05/21/19 12:34*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 12:34*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*	*05/21/19 09:05*	*05/21/19 12:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 121*	*05/21/19 09:05*	*05/21/19 12:34*	*1*

Lab Sample ID: LCS 580-301179/2-A
Matrix: Solid
Analysis Batch: 301182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 301179

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	800	845		ug/Kg		106	72 - 135
Toluene	800	814		ug/Kg		102	75 - 137
Ethylbenzene	800	837		ug/Kg		105	80 - 135
m-Xylene & p-Xylene	800	826		ug/Kg		103	80 - 132
o-Xylene	800	816		ug/Kg		102	80 - 125
Xylenes, Total	1600	1640		ug/Kg		103	80 - 128

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*80 - 120*
Trifluorotoluene (Surr)	*105*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 121*

Lab Sample ID: LCSD 580-301179/3-A
Matrix: Solid
Analysis Batch: 301182

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 301179

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	800	866		ug/Kg		108	72 - 135	2	15
Toluene	800	835		ug/Kg		104	75 - 137	3	20
Ethylbenzene	800	856		ug/Kg		107	80 - 135	2	16
m-Xylene & p-Xylene	800	842		ug/Kg		105	80 - 132	2	20
o-Xylene	800	828		ug/Kg		104	80 - 125	1	14
Xylenes, Total	1600	1670		ug/Kg		104	80 - 128	2	19

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*80 - 120*

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

Lab Sample ID: LCSD 580-301179/3-A
Matrix: Solid
Analysis Batch: 301182

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 301179

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Trifluorotoluene (Surr)	*103*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 121*

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

Lab Sample ID: MB 580-301070/1-A
Matrix: Solid
Analysis Batch: 301096

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 301070

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0	2.3	mg/Kg		05/20/19 09:30	05/20/19 10:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*50 - 150*	*05/20/19 09:30*	*05/20/19 10:27*	*1*

Lab Sample ID: LCS 580-301070/2-A
Matrix: Solid
Analysis Batch: 301096

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 301070

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline			40.0	35.0		mg/Kg		87	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*50 - 150*

Lab Sample ID: LCSD 580-301070/3-A
Matrix: Solid
Analysis Batch: 301096

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 301070

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline			40.0	36.6		mg/Kg		92	80 - 120	5	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*50 - 150*

Lab Chronicle

Client: GeoEngineers Inc
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

Client Sample ID: GEI018-DP1 (4-5)
Lab Sample ID: 590-10980-1
Date Collected: 05/09/19 14:18
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			3.99 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 15:27	CJ	TAL SEA
Total/NA	Prep	5035			3.99 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 14:06	T1W	TAL SEA

Client Sample ID: GEI018-DP1 (14-15)
Lab Sample ID: 590-10980-2
Date Collected: 05/09/19 14:30
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.37 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 15:52	CJ	TAL SEA
Total/NA	Prep	5035			4.37 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 14:36	T1W	TAL SEA

Client Sample ID: GEI018-DP2 (4-5)
Lab Sample ID: 590-10980-3
Date Collected: 05/09/19 14:40
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.63 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 16:16	CJ	TAL SEA
Total/NA	Prep	5035			4.63 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 15:06	T1W	TAL SEA

Client Sample ID: GEI018-DP2 (12-13)
Lab Sample ID: 590-10980-4
Date Collected: 05/09/19 14:50
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.13 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 16:41	CJ	TAL SEA
Total/NA	Prep	5035			4.13 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 15:36	T1W	TAL SEA

Client Sample ID: GEI018-DP3 (4-4.5)
Lab Sample ID: 590-10980-5
Date Collected: 05/09/19 15:15
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.72 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 17:05	CJ	TAL SEA
Total/NA	Prep	5035			4.72 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 16:35	T1W	TAL SEA

Lab Chronicle

Client: GeoEngineers Inc
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

Client Sample ID: GEI018-DP3 (8-8.5)
Lab Sample ID: 590-10980-6
Date Collected: 05/09/19 15:25
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.36 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 17:30	CJ	TAL SEA
Total/NA	Prep	5035			4.36 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 17:06	T1W	TAL SEA

Client Sample ID: GEI018-DP4 (0.5-1.5)
Lab Sample ID: 590-10980-7
Date Collected: 05/09/19 15:50
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.33 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 17:54	CJ	TAL SEA
Total/NA	Prep	5035			4.33 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 17:35	T1W	TAL SEA

Client Sample ID: GEI018-DP5 (0-0.75)
Lab Sample ID: 590-10980-8
Date Collected: 05/09/19 14:25
Matrix: Solid
Date Received: 05/10/19 15:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.23 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 18:19	CJ	TAL SEA
Total/NA	Prep	5035			4.23 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 18:05	T1W	TAL SEA

Client Sample ID: Trip Blank
Lab Sample ID: 590-10980-9
Date Collected: 05/09/19 14:18
Matrix: Solid
Date Received: 05/10/19 15:20

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 g	5 mL	301179	05/21/19 09:05	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	1.075 mL	43 mL	301182	05/21/19 18:44	CJ	TAL SEA
Total/NA	Prep	5035			5 g	5 mL	301070	05/20/19 11:20	JSM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	1.075 mL	43 mL	301096	05/20/19 13:06	T1W	TAL SEA

Laboratory References:
TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: GeoEngineers Inc
Job ID: 590-10980-1
Project/Site: Ray Rock Grocery/00504-153-00

Laboratory: Eurofins TestAmerica, Spokane

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-025	12-07-19
Oregon	NELAP	10	4137	12-07-19
Washington	State Program	10	C569	01-06-20

Laboratory: Eurofins TestAmerica, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-20
ANAB	DoD		L2236	01-19-22
ANAB	ISO/IEC 17025		L2236	01-19-22
California	State Program	9	2901	11-05-19
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-20

Method Summary

Client: GeoEngineers Inc
Project/Site: Ray Rock Grocery/00504-153-00

Job ID: 590-10980-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SEA
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC)	NWTPH	TAL SEA
5035	Closed System Purge and Trap	SW846	TAL SEA

Protocol References:

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 SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

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

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Justin Orr	Lab PM:	Carrier Tracking No(s):	COC No: 590-4574-1476.28
Client Contact: Scott Lathen	Phone: (406) 890-1310	E-Mail:		Page: Page 28 of 29
Company: GeoEngineers Inc				Job #:
Address: 523 East Second Ave	Due Date Requested: STD			
City: Spokane	TAT Requested (days): STD			
State, Zip: WA, 99202				
Phone:	PO #: 0504-153-00			
Email: slathen@geoengineers.com	WO #:			
Project Name: Former Ray Rock Grocery	Project #: 0504-153-00			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
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:

Sample Identification	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)	GRPH / NWTPH-Gx	BTEX / 8260C	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
GEI018-DP1(4-5)	5/9/19	1418	G	S					2	
GEI018-DP1(14-15)		1430							1	
GEI018-DP2(4-5)		1440								
GEI018-DP2(12-13)		1450								
GEI018-DP3(4-4.5)		1515								
GEI018-DP3(8-8.5)		1525								
GEI018-DP4(0.5-1.5)		1550								
GEI019-DP5(0-0.75)		1425								
Trip Blank		1418								

590-10980 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5-10-19 / 1518	GEI	Sheela Thatte	5/10/19 1520	TA Spo
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 3.4 C IR0016

Ver: 01/16/2019

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

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-4335.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: randee.arrington@testamericainc.com	State of Origin: Washington	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Washington		Job #: 590-10980-1
Address: 5755 8th Street East, .	Due Date Requested: 5/22/2019			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel) 253-922-5047(Fax)	PO #:			
Email:	WO #:			
Project Name: Ray Rock Grocery/00504-153-00	Project #: 59001777			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	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)	NWTPH_Gx/5035A_FM Northwest - GRO	8260C/5035A_FM (MOD) BTEX	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
GEI018-DP1 (4-5) (590-10980-1)	5/9/19	14:18 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP1 (14-15) (590-10980-2)	5/9/19	14:30 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP2 (4-5) (590-10980-3)	5/9/19	14:40 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP2 (12-13) (590-10980-4)	5/9/19	14:50 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP3 (4-4.5) (590-10980-5)	5/9/19	15:15 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP3 (8-8.5) (590-10980-6)	5/9/19	15:25 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP4 (0.5-1.5) (590-10980-7)	5/9/19	15:50 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
GEI018-DP5 (0-0.75) (590-10980-8)	5/9/19	14:25 Pacific		Solid			X	X	2	Samples collected in 5ml MeOH vials
Trip Blank (590-10980-9)	5/9/19	14:18 Pacific		Solid			X	X	1	Samples collected in 5ml MeOH vials

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Maria Droole	5/13/19 15:25	TAS(V		5.14.19 0944	TAS(V
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.2 5=0.3

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-10980-1

Login Number: 10980
List Number: 1
Creator: O'Toole, Maria C

List Source: Eurofins TestAmerica, Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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.	False	Refer to Job Narrative for details.
Sample bottles are completely filled.	N/A	
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-10980-1

Login Number: 10980
List Number: 2
Creator: Hobbs, Kenneth F

List Source: Eurofins TestAmerica, Seattle
List Creation: 05/14/19 11:30 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	IR5=0.3/0.4
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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

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 the former Ray Rock Grocery site located at 19475 Highway 2 in Leavenworth, 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 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.

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[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

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 Phase II ESA is Completed

No ESA 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.

GeoEngineers