Supplemental Phase II Site Assessment Report

Tiger Oil — Summitview
5511 Summitview Avenue
Yakima, Washington

for
Washington State Department of Ecology

June 29, 2015

GeoEngineers
Earth Science + Technology

Supplemental Phase II Site Assessment Report

Tiger Oil – Summitview
5511 Summitview Avenue
Yakima, Washington

for
Washington State Department of Ecology

June 29, 2015

GeoEngineers

523 East Second Avenue
Spokane, Washington 99206
509.363.3125

Supplemental Phase II Site Assessment Report

Tiger Oil – Summitview
5511 Summitview Avenue
Yakima, Washington

File No. 0504-101-02

June 29, 2015

Prepared for:

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

Attention: Mary Monahan

Prepared by:

GeoEngineers, Inc.
523 East Second Avenue
Spokane, Washington 99202
509.363.3125

Jedidiah R. Sugalski, PE
Environmental Engineer

Bruce D. Williams
Principal

JRS:BDW:tlm:tjh

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES (CONTINUED)

APPENDICES

ACRONYMS AND ABBREVIATIONS

bgs – below ground surface

BTEX – benzene, toluene, ethylbenzene and xylene

COCS – contaminants of concern

°C – degrees Celsius

DO – dissolved oxygen

DOT – U.S. Department of Transportation

DRPH – diesel-range petroleum hydrocarbons

Ecology – Washington State Department of Ecology

EDB – ethylene dibromide

EDC – 1,2-dichloroethane

Environmental West – Environmental West Explorations, Inc.

EPA – Environmental Protection Agency

ESA – environmental site assessment

eV – electron volt

GeoEngineers – GeoEngineers, Inc.

GPS – global positioning system

GRPH – gasoline-range petroleum hydrocarbons

IDW – Investigation-derived waste

LCS – laboratory control sample

LCSD – laboratory control sample duplicate

mg/L – milligrams per liter

mg/kg – milligrams per kilogram

mm - millimeter

MRL – Method Reporting Limit

MS – matrix spike

MSD – matrix spike duplicate

MTBE – methyl tertiary-butyl ether

MTCA – Model Toxics Control Act

NAD83 – North American Datum of 1983

NAVD88 – North American Vertical Datum of 1988

ntu – nephelometric turbidity units

ACRONYMS AND ABBREVIATIONS (CONTINUED)

ORPH – oil-range petroleum hydrocarbons

PAHs – polycyclic aromatic hydrocarbons

PID – photoionization detector

PLS – PLS, Inc.

ppm – parts per million

PVC – polyvinyl chloride

QAPP – Quality Assurance Project Plan

QA/QC – Quality Assurance/Quality Control

RPD – relative percent difference

SAP – Sampling and Analysis Plan

SDG – sample delivery group

SG – silica gel

TestAmerica – TestAmerica Laboratories, Inc.

TOC – total organic carbon

TPH – total petroleum hydrocarbons

µg/L – micrograms per liter

µg /kg – micrograms per kilogram

UST – underground storage tank

VOCs – volatile organic compounds

WAC – Washington Administrative Code

1.0 INTRODUCTION

This report describes soil and groundwater assessment activities conducted in March, April and May 2015 at the Tiger Oil – Summitview site at 5511 Summitview Avenue in Yakima, Washington (herein designated "site"). The site is located as shown in the attached Vicinity Map, Figure 1.

Activities conducted as part of the assessment included:

- Advancing nine sonic borings and collecting soil and grab groundwater samples in March 2015;
- Advancing six direct-push borings and collecting soil and grab groundwater samples in April 2015;
- Advancing five sonic borings in Summitview Avenue south of the property and collecting soil and grab groundwater samples in April 2015;
- Advancing two hollow-stem auger boring using a limited access drill rig and installing monitoring wells in the borings; and
- Collecting groundwater samples for the second quarter 2015 groundwater monitoring event.

This report includes a brief site description, our scope of services, a description of field activities, a summary of chemical and analytical results and our interpretations and recommendations. Assessment activities were conducted in general accordance with the approved work plan (GeoEngineers, 2014) and supplemental monitoring well installation memo (GeoEngineers, 2015b). Our services were performed under Washington State Department of Ecology (Ecology) Contract No. C1100145, GeoEngineers Proposal No. 0504-101-02, dated February 24, 2015, and Work Assignment No. C11145RR.

2.0 SITE DESCRIPTION AND BACKGROUND

The site is located at 5511 Summitview Avenue in Yakima, Washington. The site is bordered by arterial roadways Summitview Avenue to the south and North 56th Avenue to the west as shown on Site Plan and Sample Locations, Figure 2. A paved alley way is located to the north of the property and provides access to the bank building located to the east of the property.

The site operated as a retail gasoline station and convenience store until closure in 2001. The property contains two buildings and two historic fuel dispenser islands. Buildings at the property include the larger former convenience store in the northeast corner of the site and a smaller former satellite pay station in the southwest corner of the property. The convenience store has a glass face facing south near the former main entrance. Observations of the building interior from the glass face indicate the presence of moisture and organic vegetation on the floor of the building. Former fuel dispenser islands are located in the south and west areas of the property. A single tank pit was located south of the former convenience store between the convenience store and the southern fuel dispenser island. The property is generally paved, except where three former underground storage tanks (USTs) were removed.

In 2005, three USTs were decommissioned and removed from the property. Underground fuel delivery lines were drained and capped with quick setting cement and the tank excavation was backfilled with excavated soil and imported sand, gravels and cobbles. The tanks removed from the property included:

- One, 20,000-gallon steel regular gasoline tank
- Two, 10,000-gallon steel unleaded gasoline tanks

According to the UST decommissioning and site assessment report (Tetra Tech, 2005), visual observations did not indicate holes in the steel tanks; however, examination of the underlying soil indicated possible historic spillage associated with fill tubes for the 20,000-gallon and center 10,000-gallon USTs. Soil samples collected during the tank removal in 2005 indicated petroleum hydrocarbon concentrations greater than Model Toxics Control Act (MTCA) Method A cleanup criteria in the bottom of the tank pit.

Gasoline range petroleum hydrocarbons (GRPH), benzene, toluene, ethylbenzene and xylene (BTEX) and lead were identified approximately 11 to 15 feet below ground surface (bgs) in the soil of the tank beds during the tank removal site assessment. A follow up assessment for the dispensers and product lines indicated concentrations of GRPH and BTEX greater than MTCA Method A cleanup criteria at the western most fuel dispenser island at a depth of 3½ feet (Wayne Perry, 2005). Samples taken along the product lines and at the southern fuel dispenser island did not indicate GRPH or BTEX greater than laboratory detection limits (Wayne Perry, 2005). Approximate locations of the subsurface product lines are shown on Figure 2.

In 2014, GeoEngineers Inc. (GeoEngineers) conducted additional assessment activities in order to confirm the presence and extents of contamination identified during the 2005 UST removal. The 2014 assessment activities included advancing six direct-push borings, collecting groundwater samples from temporary wells installed in two of the direct-push borings where groundwater was encountered, installing three groundwater monitoring wells with flush mount monuments and collecting quarterly groundwater samples from each of the wells beginning in September 2014.

The 2014 assessment activities indicated the presence of GRPH, BTEX and naphthalenes exceeding MTCA Method A cleanup criteria in soil at SVDP-1, SVDP-2 and SVMW-3 (GeoEngineers, 2015a, 2015c, 2015d). Groundwater laboratory analytical results indicated GRPH, diesel-range petroleum hydrocarbons (DRPH), benzene, xylenes and naphthalenes were present at concentrations exceeding MTCA Method A cleanup criteria in SVMW-3, located south of the former tank pit and south fuel dispenser island. Analytical results of groundwater collected from SVMW-2 (located south of the subject property across Summitview Avenue) did not indicate the presence of petroleum hydrocarbons. Monitoring well SVMW-1, installed upgradient of the fuel dispenser islands, was screened in a non-water bearing subsurface stratum and has provided limited groundwater information to date. Exploration locations and cleanup criteria exceedances are shown in Figure 2.

3.0 SCOPE OF SERVICES

GeoEngineers prepared a Sampling and Analysis Plan (SAP) (GeoEngineers, 2014), to guide assessment activities. A follow up memo describing additional assessment activities was provided on March 10, 2015 (GeoEngineers, 2015b). Site assessment activities included:

- Advancing 20 direct-push and sonic soil borings (SVDP-7 through SVDP-26);
- Observing and documenting subsurface soil conditions for each boring;
- Conducting field screening activities and collecting soil and groundwater samples from the borings;

- Submitting selected soil and groundwater samples from the soil borings for laboratory chemical analysis;
- Installing two groundwater monitoring wells at the site (SVMW-4 and SVMW-5);
- Observing and documenting subsurface soil conditions and construction details for each monitoring well;
- Conducting field screening activities and collecting soil samples during the monitoring well installation;
- Submitting selected soil samples from the well installation for laboratory chemical analysis;
- Developing the new groundwater monitoring wells using surge and purge techniques;
- Surveying the new groundwater monitoring wells for horizontal and vertical references;
- Conducting the 2015 second quarter groundwater monitoring event; and
- Preparing investigation-derived waste (IDW) for disposal.

4.0 FIELD ACTIVITIES

Soil borings and well installations at the site were conducted in four separate mobilizations. For each drilling program, locations were marked in the field and a one-call utility locate was requested before equipment was mobilized to the site. A private utility locator (Utilities Plus, LLC) was contracted to locate site utilities near proposed drilling locations before drilling activities commenced. Soil borings, well construction and well development activities were conducted by Environmental West Explorations, Inc. (Environmental West). Locations of the borings and groundwater monitoring wells were established in the field using a hand-held iPad with global positioning system (GPS) software before drilling commenced. The horizontal accuracy of the hand-held unit is within about 10 feet.

GeoEngineers observed and documented soil boring activities for compliance with the previously prepared guidance documentation (GeoEngineers, 2014 and 2015b). GeoEngineers collected soil samples from the borings as they were advanced and groundwater samples were collected from temporary wells when groundwater was encountered. The two new groundwater monitoring wells were installed and developed by Environmental West and surveyed by a licensed professional surveyor, PLS, Inc. (PLS). IDW from assessment activities was contained in 55-gallon drums, labeled and stored on the subject property pending profiling and disposal.

Soil borings and well locations are shown on Figure 2. Samples collected for analytical testing were submitted to TestAmerica Laboratories, Inc. (TestAmerica) and analyzed in general accordance with the project documents. Detailed descriptions of the soil borings, well installations and groundwater sampling events are provided below.

4.1. Soil Borings

Twenty borings (SVDP-7 through SVDP-26) were advanced at the site between March 10 and April 7, 2015. Boring logs are provided in Appendix A, Figures A-2 through A-21. SVDP-7 through SVDP-15 were advanced March 16 through 18, 2015 using a S1 Schramm Sonic Rig operated by Environmental West. SVDP-16 through SVDP-21 were advanced on April 2, 2015 using a truck-mounted Geoprobe 6600. SVDP-22

through SVDP-26 were advanced on April 7, 2015 using the S1 Schramm Sonic Rig. Approximate locations are provided on Figure 2. In general, GeoEngineers followed the process below during the drilling program:

- Notified the Call-Before-You-Dig utility notification service before beginning drilling activities;
- Subcontracted Utilities Plus, LLC to locate potential utilities near each explorations before drilling;
- Subcontracted Environmental West to drill the direct-push soil borings at the site;
- Observed and documented subsurface soil conditions for each boring;
- Collected continuous soil samples and select sub-samples were field-screened using visual observations, water sheen and headspace vapor measurements with a photoionization detector (PID) to assess possible presence of petroleum-related contaminants;
- Collected grab water samples from temporary wells installed in 15 borings where groundwater was encountered;
- Backfilled exploratory boreholes with bentonite and repaired the surface with cold patch asphalt as needed; and
- Submitted 22 soil samples and 15 groundwater samples to TestAmerica of Spokane, Washington for chemical analysis.

Soil borings were generally advanced until they intercepted a clay layer underlying the site which generally occurred at a depth of approximately 18 to 22 feet bgs. Groundwater was encountered in each of the borings with the following exceptions:

- SVDP-7;
- SVDP-8;
- SVDP-14;
- SVDP-22; and
- SVDP-23.

One soil sample from each boring was submitted to TestAmerica for analysis. Logs of the soil borings are provided in Appendix A. Groundwater samples were collected and submitted to TestAmerica for analysis from temporary wells in borings where water was encountered. Groundwater was sampled by installing a 5-foot-long temporary well screen into the bottom of the boring and lowering polyethylene tubing into the temporary well.

For sonic borings SVDP-7 through SVDP-15, the borings were backfilled with bentonite up to the estimated clay layer before inserting the temporary well screen. Temporary wells were purged using a peristaltic pump for approximately 6 to 15 minutes before sampling. Water was routed through a water quality meter and flow through cell during well purging and then the flow through cell was disconnected and a sample of the water was collected for chemical analysis. Soil and groundwater samples were placed into coolers containing ice and delivered to TestAmerica under chain-of-custody for chemical analysis. Soil cuttings from the investigation were drummed, labeled and stored on the subject property pending profiling and disposal.

For soil borings SVDP-7 through SVDP-15, groundwater (if encountered) was allowed to stabilize overnight after the borings were drilled. The following day, depth to groundwater measurements were collected to estimate groundwater elevation and flow direction. Before leaving the site, SVDP-7 through SVDP-15 were surveyed for elevation and referenced to SVMW-3 by the field engineer. Estimated flow direction was used to inform the placement of monitoring wells SVMW-4 and SVMW-5 at the site. The following table summarizes the depth to water and corresponding calculated water surface elevation for the first round borings.

MARCH 16 THROUGH 18 GROUNDWATER WATER LEVEL MEASUREMENTS

Location	Depth to Water (feet)	Elevation (Feet)
SVMW-2	17.40	1198.19
SVMW-3	18.00	1200.38
SVDP-7	Dry	NA
SVDP-8	Dry	NA
SVDP-9	17.90	1200.86
SVDP-10	18.07	1200.80
SVDP-11	17.95	1201.02
SVDP-12	Not measured	NA
SVDP-13	18.41	1201.50
SVDP-14	Dry	NA
SVDP-15	Not Measured	NA

As shown on Groundwater Elevations March 16-18, 2015, Figure 3, groundwater flow direction was south during the March 2015 event. This flow direction is consistent with the groundwater flow direction estimated using the May 19, 2015 groundwater monitoring data (Groundwater Elevation and Interpreted Flow Direction May 19, 2015, Figure 4) after MW-4 and MW-5 were installed.

4.2. Monitoring Well Installation

Two groundwater monitoring wells (SVMW-4 and SVMW-5) were installed at the site on April 27, 2015 using a limited access Little Brutus hollow-stem auger drill rig operated by Environmental West. Monitoring well logs are provided in Appendix A, Figures A-22 and A-23. Wells were installed by advancing a 4.25-inch-diameter, hollow-stem auger. Approximate well locations are provided on Figure 2. In general, GeoEngineers followed the process below:

- Notified the Call-Before-You-Dig utility notification service before beginning drilling activities;
- Subcontracted Utilities Plus, LLC to locate potential utilities near each exploration before drilling;
- Subcontracted Environmental West to drill and construct the groundwater monitoring wells;
- Observed and documented subsurface soil conditions for each monitoring well;
- Collected soil samples during drilling. Select sub-samples were field-screened using visual observations, water sheen and headspace vapor measurements with a PID to assess possible presence of petroleum-related contaminants;

- Developed the groundwater monitoring wells using surging and pumping techniques;
- Submitted three soil samples (one from each well location and a duplicate from SVMW-5) to TestAmerica for chemical analysis; and
- Contracted with PLS to complete a horizontal and vertical survey of the wells.

SVMW-4 was advanced to a depth of 24-feet bgs. Water was encountered at approximately 22 feet during drilling. The well was installed using 2-inch-diameter, schedule 40 polyvinyl chloride (PVC) pipe and screened from about 13 to 23 feet bgs.

SVMW-5 was advanced to a depth of approximately 26½ feet bgs. Water was observed at about 20 feet during drilling. The hole was backfilled with bentonite chips to 24 feet bgs and then well construction materials were placed. The well was installed using 2-inch-diameter, schedule 40 PVC pipe and screened from about 14 to 24 feet bgs.

Wells were packed with silica-sand up to about 2 feet above the screen, sealed with bentonite chips to about 2½ foot bgs and then capped with a cement well monument. Wells were developed by Environmental West on April 27, 2015 using surge and purge methods. Soil cuttings and development water from the investigation were drummed, labeled and stored on the subject property pending profiling and disposal.

Discrete soil samples were collected from each monitoring well boring. Soil samples were field-screened to evaluate for petroleum hydrocarbons, using a PID and sheen pan. One soil sample collected just above the clay interface from each well location was selected for chemical analysis. A duplicate sample was collected from SVMW-5. Soil samples were placed into coolers containing ice and then delivered to TestAmerica under chain- of-custody for chemical analysis.

The two new groundwater monitoring wells installed at the site were surveyed on April 30, 2015 by PLS. The north edge of the top of the PVC casing, and north side of the top of the well monument 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. PLS also marked the north side of each well casing for future depth to groundwater measurements. Well survey information is provided in Appendix C.

4.3. Subsurface Conditions

Subsurface cross sections were developed using the information from the boring logs provided in Appendix A. Subsurface Cross Section A-A' and PID Readings, Figure 5, Subsurface Cross Section B-B' and PID Readings, Figure 6, Subsurface Cross Section C-C' and PID Readings, Figure 7 and Subsurface Cross Section D-D' and PID Readings Figure 8 represent interpreted subsurface conditions across the site. In general, brown silt with varying amounts of sand was observed below the asphalt and base coarse aggregates. A clay confining layer was observed at depths ranging from about 18 to 22 feet bgs. Above the observed clay layer, more permeable lenses of sand and gravel were present, which appear to be the predominant water bearing zone across the site. As shown in Figure 7, the confining clay layer appears to increase in elevation from west to east. This increase in elevation of the clay layer was further demonstrated by the lack of water observed in SVDP-6, SVDP-7, SVDP-8, SVDP-14, SVDP-22 and SVDP-23. The anomaly to this was the groundwater observed in SVDP-15. Groundwater was encountered in SVDP-15 near a clay sand interface.

4.4. Groundwater Monitoring

Groundwater monitoring wells SVMW-2, SVMW-3, SVMW-4 and SVMW-5 were sampled on May 19, 2015. There was not enough water to sample SVMW-1. The following sections provide a detailed description of the field activities conducted as part of the groundwater monitoring event.

Groundwater monitoring wells were purged and sampled using dedicated tubing, a peristaltic pump and standard low-flow sampling methodology (U.S. Environmental Protection Agency [EPA], 1996). Groundwater quality parameters were usually measured at 3-minute intervals during well purging and samples were generally collected when water quality parameter stabilized in conformance with the criteria presented in Appendix A or 30 minutes of purging had elapsed.

Laboratory prepared sample containers were filled, placed into a cooler on ice and submitted to the analytical laboratory for chemical analysis. One sample from each well was measured for soluble ferrous iron (Fe2+) in the field using a Hach IR-18C color disc test kit and the 1,10 phenanthroline testing method. A duplicate sample was collected from SVMW-2. Chemical analytical results are discussed in "Section 5.2.2." Groundwater field parameters are provided in Summary of Groundwater Field Parameters, Table 1. Purge water generated during groundwater sampling was drummed, labeled and stored on the subject property pending profiling and disposal.

4.4.1. Monitoring Well Headspace Vapor Monitoring

Monitoring well headspace vapors were measured on May 19, 2015 using a PID. Headspace measurements were collected by inserting the PID probe into the well casing immediately after removing the well cap and recording the maximum observed concentration. Headspace vapors ranged from 6.1 parts per million (ppm) in SVMW-2 to 284 ppm in SVMW-3, as shown in Table 1.

4.4.2. Groundwater Elevation Monitoring

Static depth to groundwater was measured in monitoring wells SVMW-1 through SVMW-5 on May 19, 2015 using an electronic water level indicator. Depth to groundwater ranged from 17.13 feet (SVMW-2) to 18.08 feet (SVMW-5) below the top of well casing, as shown in Summary of Groundwater Level Measurements, Table 2. Groundwater elevations ranged from about 1,198.46 feet in SVMW-2 to 1,200.39 feet in SVMW-4. In monitoring wells SVMW-2 and SVMW-3, groundwater elevations increased on average approximately 0.24 feet relative to the previous monitoring event conducted during March 2015.

Groundwater elevations in wells SVMW-2 through SVMW-5 appear to be representative of the shallow perched aquifer beneath the site. Based on groundwater elevations measured in SVMW-2 through SVMW-5 on May 19, 2015, groundwater flow in the shallow unconfined aquifer beneath the property was generally south, as shown in Figure 4. Groundwater gradient was estimated at 0.03 feet per foot (158.4 feet per mile) during the March 16 through 18, 2015 direct-push sampling program and 0.02 feet per foot (105.6 feet per mile) during the May 19, 2015 sampling event.

5.0 CHEMICAL ANALYTICAL RESULTS

5.1. Soil Chemical Analytical Results

One soil sample from borings SVDP-7 through SVDP-26, SVMW-4 and SVMW-5 was submitted to TestAmerica for chemical analysis. Soil samples were placed in coolers with wet ice immediately after sampling and were kept on ice until delivery to the analytical laboratory. Soil samples were submitted for the following chemical analyses:

- GRPH (NWTPH-Gx);
- DRPH (NWTPH-Dx);
- BTEX by (EPA 8260C);
- Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270D); and
- Total Lead (EPA 6010C).

Soil samples from SVDP-16 through SVDP-26 were also submitted for analysis of methyl tertiary-butyl ether (MTBE) by EPA Method 8260C.

Soil analytical results are summarized and compared to MTCA Method A cleanup criteria in Summary of Chemical Analytical Results - Soil, Table 3, and Summary of Chemical Analytical Results – Soil PAHs, Table 4. Chemical analytical results for the submitted soil samples are generally summarized by the following:

- GRPH was detected in samples from SVDP-7, SVDP-9, SVDP-12, SVDP-19, SVDP-22, SVDP-24, SVDP-25 and SVDP-26 at concentrations of 750 milligrams per kilogram (mg/kg), 1,400 mg/kg, 1,400 mg/kg, 100 mg/kg, 4,500 mg/kg, 2.400 mg/kg, 160 mg/kg and 42 mg/kg, respectively. These concentrations are greater than the MTCA Method A cleanup criteria for unrestricted land use of 30 mg/kg when benzene is detected at the site.
- Ethylbenzene was detected in samples from SVDP-7, SVDP-9, SVDP-12 and SVDP-24 at concentrations of 14 mg/kg, 13 mg/kg, 22 mg/kg and 24 mg/kg, respectively. These concentrations are greater than the MTCA Method A cleanup criteria for unrestricted land use of 6 mg/kg.
- Naphthalene analyzed by EPA Method 8260C was detected in the samples from SVDP-7, SVDP-22 and SVDP-24 at concentrations of 20 mg/kg, 6.4 mg/kg and 11 mg/kg, respectively. These concentrations are greater than the MTCA Method A cleanup criteria for unrestricted land use of 5 mg/kg.
- Naphthalene analyzed by EPA Method 8270D was detected in the sample from SVDP-7 at a concentration of 10,000 micrograms per kilogram (µg/kg), which is greater than the MTCA Method A cleanup criteria for unrestricted land use of 5,000 µg/kg for naphthalenes.
- 2-Methylnaphthalene was detected in the samples from SVDP-7 and SVDP-12 at concentrations of 5,400 µg/kg and 24,000 µg/kg, respectively. These concentrations are greater than the MTCA Method A cleanup criteria for unrestricted land use of 5,000 µg/kg for naphthalenes.
- 1-Methylnaphthalene was detected in the sample from SVDP-12 at a concentration of 11,000 µg/kg, which is greater than the MTCA Method A cleanup criteria for unrestricted land use of 5,000 µg/kg for naphthalenes.

- Toluene was detected in samples from SVDP-7, SVDP-9, SVDP-12 and SVDP-24 at concentrations of 11 mg/kg, 8.5 mg/kg, 12 mg/kg and 9.3 mg/kg, respectively. These concentrations are greater than the MTCA Method A cleanup criteria for unrestricted land use of 7 mg/kg.
- Total xylenes were detected in samples from SVDP-7, SVDP-9, SVDP-12, SVDP-22 and SVDP-24 at concentrations of 96 mg/kg, 69 mg/kg, 130 mg/kg, 22 mg/kg and 97 mg/kg, respectively. These concentrations are greater than the MTCA Method A cleanup criteria for unrestricted land use of 9 mg/kg.
- Other site contaminants of concern (COCs) were either not detected or were detected at concentrations less than MTCA Method A cleanup criteria in the samples from SVDP-7, SVDP-9, SVDP-12, SVDP-22 and SVDP-24.
- Site COCs were either not detected or were detected at concentrations less than MTCA Method A cleanup criteria in the samples from other site explorations.

Laboratory analytical reports are included in Appendix B.

5.2. Groundwater Chemical Analytical Results

5.2.1. Direct-Push Borings

Groundwater was encountered and sampled from borings SVDP-9 through SVDP-13, SVDP-15 through SVDP-21, and SVDP-24 through SVDP-26 between March 17 and April 7, 2014. Groundwater samples were analyzed for GRPH, DRPH and heavy oil-range petroleum hydrocarbons (ORPH) using Northwest Method NWTPH-HCID. Analytical results are summarized by the following:

- GRPH was detected in the samples from SVDP-9, SVDP-12, SVDP-19, SVDP-24 and SVDP-25 at concentrations of 8.3 milligrams per liter (mg/L), 6.8 mg/L, 1.5 mg/L, 110 mg/L and 3.6 mg/L, respectively.
- DRPH was detected in the samples from SVDP-9, SVDP-10, SVDP-12, SVDP-24 and SVDP-25 at concentrations of 2.8 mg/L, 1.0 mg/L, 2.1 mg/L, 30 mg/L and 2.3 mg/L, respectively.
- ORPH was detected in the samples from SVDP-16 and SVDP-24 at concentrations of 0.82 mg/L and 0.9 mg/L, respectively.
- GRPH, DRPH and ORPH were either not detected or were detected at concentrations less than their MTCA Method A cleanup criteria other than noted above.

Analytical results for grab groundwater samples collected from the soil soils borings are summarized in Table 5.

5.2.2. Groundwater Monitoring Wells

Analytical results for samples collected on May 19, 2015 are tabulated and compared to previous results and MTCA Method A cleanup criteria in Summary of Chemical Analytical Results – Groundwater, Table 6 and Summary of Chemical Analytical Results – Groundwater PAHs, Table 7. TestAmerica's laboratory report is provided in Appendix B.

The following is a summary of the May 19, 2015 analytical data:

- GRPH was detected at a concentration of 14,000 micrograms per liter (µg/L) in the sample collected from SVMW-3 and 2,100 µg/L in SVMW-5, which is greater than the MTCA Method A cleanup criteria of 800 µg/L (when benzene is present).
- DRPH was detected at a concentration of 1.0 mg/L in the sample collected from SVMW-3, which is greater than the MTCA Method A cleanup criteria of 0.5 mg/L. DRPH analyzed with silica gel cleanup was detected at a concentration of 0.99 mg/L in the sample from SVMW-3.
- Benzene was detected at a concentration of 25 µg/L in the sample collected from SVMW-3, which exceeds the MTCA Method A cleanup criteria of 5 µg/L.
- Ethylene dibromide (EDB) was not detected in the sample collected from SVMW-3; however the reporting limit was greater than the MTCA Method A cleanup criteria of 0.01 µg/L.
- Naphthalene was detected at a concentration of 290 µg/L in the sample collected from SVMW-3, which is greater than the MTCA Method A cleanup criteria of 160 µg/L.
- Total xylenes were detected at a concentration of 2,900 µg/L in the sample collected from SVMW-3, which is greater than the MTCA Method A cleanup criteria of 1,000 µg/L.
- 1,3,5-trimethylbenzene was detected at a concentration of 880 µg/L in the sample collected from SVMW-3 and 190 µg/L which is greater than the MTCA Method B cleanup criteria of 80 µg/L.
- Other analytes were either not detected or were detected at concentrations less than their applicable cleanup criteria in SVMW-3.
- Site COCs were either not detected or were detected at concentrations less than their applicable cleanup criteria in the sample from SVMW-2.

Analytical results of the groundwater collected from well SVMW-3 (including a duplicate sample) generally were similar to results from the March 2015 sampling event, with the exception of DRPH. The concentrations of DRPH in the samples from SVMW-3 roughly doubled from the December 2014 to the March 2015 event.

5.3. Natural Attenuation Parameters

In addition to the COCs, groundwater samples were analyzed for natural attenuation parameters and field parameters. Results of laboratory-analyzed natural attenuation parameters are provided in Table 6. Field measurement results are provided in Table 1. Reported field parameters reflect conditions at the conclusion of well purging during low-flow sampling.

Dissolved oxygen (DO) measurements during the May 19, 2015 groundwater monitoring event were most likely increased artificially because of an equipment malfunction. Nitrate and sulfate concentrations in SVMW-3 and SVMW-5 are less than concentrations in SVMW-2 and SVMW-4, which might indicate that biodegradation is occurring near SVMW-3 and SVMW-5.

The water quality of the shallow aquifer might naturally be of low quality because the water table is believed to have a thickness of about 2 feet and subsurface soil conditions were generally fine-grained silts and clays with lesser amounts of sand and gravel. This makes it difficult to evaluate natural attenuation parameters and effects from outside influences like petroleum hydrocarbons, lawn watering and fertilizer applications.

5.4. Quality Assurance/Quality Control Summary

GeoEngineers reviewed the laboratory internal quality assurance/quality control (QA/QC) in the context of project data quality goals. Results of our review, as well as our evaluation of data suitability, are provided in Appendix B. In summary, it is our opinion that the quality of the analytical data generally is acceptable for the intended use. The following items were noted in the data validation report:

- SVDP-21 (20-21) - The percent recoveries for surrogates nitrobenzene-d5 and 2-Fluorobiphenyl were less than the control limits. The reporting limits for all target analytes were qualified as estimated (UJ) in this sample.
- SVMW-4 (22.5-23) and SVMW-5(22.5-23) - The sample cooler temperature recorded at the laboratory was 8.2 degrees Celsius (°C) for the samples. The samples were put on ice when they were collected (4/27/2015) and ice was added every day until they were received by the laboratory (4/29/2015). The out-of-compliance temperature was very likely isolated to the day the samples were received at the laboratory. For this reason, this temperature should not affect the sample analytical results.
- SVDP-24:GW, SVDP-25:GW and SVDP-26:GW (NWTPH-HCID) - The percent recovery for surrogate n-Triacontane-d62 was less than the control limits. The positive results and reporting limits for all target analytes were qualified as estimated (J/UJ) in these samples.
- SVDP-24:GW and SVDP-25:GW (NWTPH-HCID) - The DRPH and ORPH results for these samples may be influenced by the relative concentration of GRPH in the samples. For this reason, the positive results for DRPH and ORPH were qualified as estimated (J) in these samples, in order to signify a potential high bias.
- SVDP-7-15 (NWTPH-Dx) - A laboratory duplicate analysis was performed on the sample. The relative percent difference (RPD) values for DRPH and ORPH were greater than the control limits. The positive results for these target analytes were qualified as estimated (J) in this sample.
- Samples SVMW-3, Duplicate and SVMW-5 (NWTPH-Dx) - The positive results for DRPH may be influenced by the relative concentration of GRPH in these samples. For this reason, the positive results for DRPH were qualified as estimated (J) in these samples, in order to signify a potential high bias.

6.0 SUMMARY, INTERPRETATIONS AND RECOMMENDATIONS

6.1. Soil Assessment

Observed subsurface conditions indicate the site is generally underlain by fine sand, silts and clays with occasional gravel. Soil observed in the borings indicate a low permeability confining layer at a depth of approximately 18 to 22 feet bgs, that decreases in depth from west to east.

Boring logs indicate a coarser lens of gravel and sands is overlying the low permeability clay layer observed near 20 feet bgs. The coarser gravels and sands over the low permeability layer appear to be the predominant water bearing zone of the subsurface. The log for MW-1 indicates that the low permeable layer may be approximately 12 feet thick, before coarser sands and gravels are encountered. Cross sections of the subsurface are provided in Figures 5 through 8.

6.2. Groundwater Assessment

Observations at the site indicate that groundwater is found in coarser sands and gravels lenses between the low permeability clay layer and near surface silt. The low permeability layer generally decreases in depth from west to east and therefore groundwater was not observed in borings on the east side of the site, with the exception of SVDP-15. The shallow clay layer was intercepted by a sand lens from about 19 to 22 feet bgs where water was encountered. The clay lens was encountered again at 22 feet bgs and continued until the boring termination depth of 23 feet bgs. Groundwater contours and elevations are provided in Figures 3 and 4.

6.3. Chemical Analytical Results and Interpretations

6.3.1. Soil

Soil analytical results indicate the presence of GRPH, BTEX and naphthalenes exceeding MTCA Method A cleanup criteria at the site. GRPH, BTEX and naphthalenes were not detected in SVDP-11, SVDP-13, SVDP-20 and SVDP-21. This suggests that there may have been at least two release points at the site. One release may have originated from the west fuel island and traveled south as demonstrated by detections of site COCs in SVDP-12, SVDP-19 and SVDP-26. Impacted soil observed along this path was generally at the soil water interface, and field screening of soil did not indicate COCs near in vadose zone. It is possible that an unidentified area of vadose contamination exists beneath the west fuel island, given that during the dispenser line assessment in 2005, site COCs were detected, however they were not observed in SVDP-3.

The second source area appears to be near SVDP-1. Shallower vadose zone contamination was identified in this boring. Additional borings down gradient of SVDP-1 identified site COCs near the soil groundwater interface and not in the vadose zone. Given the proximity of the product piping lines and former tank pit, it is possible that COCs identified in SVDP-1, SVDP-2, SVMW-3, SVDP-9, SVDP-22, SVDP-24 and SVDP-25 originated from either the product delivery lines or the former tank pit. The 2005 tank removal assessment report indicated that holes were not observed in the tanks and soil contamination was most likely from spillage associated with the tank fill tubes (Tetra Tech, 2005), therefore the most likely cause of the petroleum release was most likely the product lines. It should be noted that other Tiger Oil Sites at both 1606 East Nob Hill Boulevard and 1808 North First Street had documented releases from the product piping and installation procedures of the product piping were suspected as the cause.

It is unknown if the COCs identified in SVDP-7 were a result of spillage from the UST fill tubes or leakage from the product delivery lines or tanks. It is possible that the contamination observed in SVDP-7 indicates a third release area, possibly from the fill tubes.

From the source areas, petroleum hydrocarbons appear to migrate along the soil water interface above the clay confining layer. With the exception of SVDP-1 and to a lesser extent SVDP-7, field screening and chemical analysis has generally indicated that contamination exists in the more permeable soil above the clay confining layer. Potential source areas and estimated contamination extents are provided on Figure 2.

The borings advanced in Summitview Avenue, indicate that petroleum hydrocarbons have moved downgradient and extend under Summitview Avenue. Soil collected from SVMW-2, as well as groundwater samples, have not exceeded MTCA Method A cleanup criteria; however naphthalene was detected in SVMW-2 less than MTCA Method A criteria during the March 2015 groundwater sampling event. The

downgradient edge of the contamination plume has not been fully defined; however it is believed that that it terminates somewhere between the row of borings established by SVDP-22 through SVDP-26 and downgradient monitoring well SVMW-2.

6.3.2. Groundwater

Groundwater laboratory analytical results indicate GRPH, benzene, xylenes and naphthalenes exceeding MTCA Method A cleanup criteria in SVMW-3, located south of the former tank pit and south fuel dispenser island. GRPH was also detected above MTCA Method A cleanup criteria in SVMW-5. Analytical results of groundwater collected from SVMW-2 located across Summitview Avenue did not indicate the presence of petroleum hydrocarbons. Laboratory analytical results from SVMW-4 did not indicate the presence of petroleum related contaminants and this well appears to be suitable to monitor upgradient groundwater conditions. Quarterly groundwater monitoring results between September 2014 and May 2015 were generally consistent with COC concentrations exceeding MTCA Method A in SVMW-3 for each of the four monitoring events and site COCs generally less than detection limits in SVMW-2, with the exception of naphthalene less than MTCA Method A cleanup criteria during the March 31, 2015 event.

6.4. Recommendations

Soil and groundwater contamination greater than MTCA Method A cleanup criteria was observed south and west of the former tank pit and fuel dispenser island. Further investigation is needed to delineate the extent of contamination at this site. We recommend the following activities to address data gaps at the site:

- Further investigation west and south of the site in order to delineate the extent of contamination. This could be accomplished using direct-push soil borings.
- Additional on-site direct-push probes to attempt to identify shallow petroleum hydrocarbons and source areas. Additional areas of investigation are near both fuel dispenser islands as well as along the product lines between the former USTs and fuel islands. This could be accomplished using direct-push soil borings.
- Possible remedial actions based on the results of continued monitoring.

7.0 REFERENCES

GeoEngineers, Inc., 2014. "Sampling and Analysis Plan Soil and Groundwater Assessment." Three Tiger Oil Sites, Yakima, Washington. GEI File No. 0504-101-00, April 15, 2014.

GeoEngineers, Inc., 2015a. "Phase II Site Assessment Report, Tiger Oil - Summitview, Yakima, Washington." GEI File No. 0504-101-00. January 30, 2015.

GeoEngineers, Inc., 2015b. "Tiger Oil Data Gap Assessments: Supplemental Work Plan Memorandum." Three Tiger Oil Sites, Yakima, Washington. GEI File No. 0504-101-00, March 10, 2015.

GeoEngineers, Inc., 2015c. "Quarterly Groundwater Monitoring Report, Fourth Quarter 2014." Tiger Oil Summitview, Yakima, Washington. GEI File No. 0504-101-00, March 26, 2015.

GeoEngineers, Inc., 2015d. "DRAFT Quarterly Groundwater Monitoring Report, First Quarter 2015." Tiger Oil Summitview, Yakima, Washington. GEI File No. 0504-101-00, May 18, 2015.

Puls, R.W. and Barcelona, M.J., Low-flow (minimal drawdown) ground-water sampling procedures: EPA Ground Water Issue, April 1996, p.1-9.

Tetra Tech, 2005. "UST Decommissioning and Site Assessment at Tiger Oil Corporation Facility, 5511 Summitview Avenue, Yakima, Washington," March 29, 2005.

U.S. Environmental Protection Agency, 1996. Region 1, Low stress (low-flow) purging and sampling procedure for the collection of ground water samples from monitoring wells. EPA SOP No. GW 0001, Revision No. 2, July 30, 1996.

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

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

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

Washington State Department of Ecology, 2007. Model Toxics Control Act Cleanup Regulations, Washington Administrative Code, Chapter 173-340. November 2007.

Wayne Perry, 2005. "Results of Underground Piping and Dispenser Island Sampling at Tiger Oil Corporation Facility, 5511 Summitview in Yakima, Washington," December 14, 2005.

TABLES

GeoEngineers

Table 1

Summary of Groundwater Field Parameters[1]

Tiger Oil Summitview
Yakima, Washington

Well Number	Date Collected	pH	Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP - Field[2] (mV)	ORP - Normalized[3] (mV)	Turbidity (NTU)	Soluble Ferrous Iron (mg/L)	Monitoring Well Headspace[5] (ppm)
SVMW-1	09/18/14	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NA	NM[4]	NM[4]	0.0
	12/12/14	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NA	NM[4]	NM[4]	0.0
	03/31/15	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NA	NM[4]	NM[4]	0.0
	05/19/15	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NA	NM[4]	NM[4]	NM[4]
SVMW-2	09/18/14	6.97	16.78	0.75	1.11	170	372	0.8	0.0	0.1
	12/12/14	6.88	16.93	0.80	3.67	210	412	0.3	0.0	0.0
	03/31/15	6.92	16.52	0.80	1.68	247	449	0.9	0.0	0.0
	05/19/15	7.04	18.70	0.71	NR[6]	132	333	17.2	0.4	6.1
SVMW-3	09/18/14	6.81	17.14	0.78	0.96	-10	192	1.5	1.5	3.8
	12/12/14	6.83	17.07	0.80	1.09	-70	132	5.0	1.0	0.2
	03/31/15	6.80	16.21	0.79	0.18	-148	55	3.2	1.8	0.1
	05/19/15	6.84	19.29	0.72	NR[6]	-104	96	0.1	2.0	284
SVMW-4	05/19/15	7.10	18.04	0.70	NR[6]	148	349	60.3	0.1	1.9
SVMW-5	05/19/15	7.02	22.38	0.75	NR[6]	-72	125	81.8	1.6	32.2

Notes:

[1]Reported water quality parameters reflect stabilized conditions at the conclusion of well purging during low-flow sampling.

[2]Field ORP values are relative to the reference electrode associated with the multi-parameter meter.

[3]Normalized ORP values have been normalized, using algorithms provided by the instrument manufacturer, to the standard hydrogen electrode (SHE).

[4]Not measured (NM) due to lack of water in well.

[5]Well headspace measurements were obtained using a photoionization detector immediately upon removal of the well's compression cap.

[6]Field dissolved oxygen readings not recorded (NR) because of a possible equipment malfunction

ORP = Oxidation reduction potential; °C = degrees Celsius; mS/cm = millisiemens per centimeter; mg/L = milligrams per liter; mV = millivolts; NM = not measured

NA = not applicable; NTU = nephelometric turbidity units; ppm = parts per million

Table 2

Summary of Groundwater Level Measurements

Tiger Oil Summitview

Yakima, Washington

Well Number	Grid Northing[1] (feet)	Grid Easting[1] (feet)	Top of Casing Elevation[2] (feet)	Screen Elevation[2] (feet)	Date Measured	Depth to Groundwater[3] (feet)	Groundwater Elevation[2] (feet)	Change in Groundwater Elevation[4] (feet)
SVMW-1	462054.5	1619556.5	1,220.95	1191.0 to 1181.0	09/18/14	39.30	NA[5]	NA
					12/12/14	39.49	NA[5]	NA
					03/31/15	39.82	NA[5]	NA
					05/19/15	39.84	NA[5]	NA
SVMW-2	461870.0	1619606.4	1,215.59	1204.6 to 1189.6	09/18/14	16.70	1,198.89	NA
					12/12/14	16.90	1,198.69	-0.20
					03/31/15	17.43	1,198.16	-0.53
					05/19/15	17.13	1,198.46	0.30
SVMW-3	461949.3	1619606.4	1,218.38	1208.4 to 1193.4	09/18/14	17.20	1,201.18	NA
					12/12/14	17.38	1,201.00	-0.18
					03/31/15	17.97	1,200.41	-0.59
					05/19/15	17.79	1,200.59	0.18
SVMW-4	462028.3	1619576.7	1,220.00	1207.0 to 1197.0	05/19/15	17.99	1,200.39	NA
SVMW-5	461969.3	1619546.4	1,219.09	1205.1 to 1195.1	05/19/15	18.08	1,200.30	NA

Notes:

[1]Grid northing and easting are referenced to North American Datum of 1983 (NAD83), Washington State Plane Coordinate System, South Zone.

[2]Elevations are referenced to the North American Vertical Datum of 1988 (NAVD88). Screen elevations are referenced to the nearest 0.1 foot; other elevations are referenced to the nearest 0.01 foot.

[3]Depth to water measurements obtained from the north side of the top of PVC well casing.

[4]Represents change in groundwater elevation from previous monitoring event, as measured in monitoring wells.

[5]Water levels measured in SVMW-1 likely are not representative of general site groundwater conditions, therefore no elevation is reported.

NA = Not Applicable

Table 3

Summary of Chemical Analytical Results - Soil[1]

Tiger Oil Summitview
Yakima, Washington

Boring		SVDP-7	SVDP-8	SVDP-9	SVDP-10	SVDP-11	SVDP-12	SVDP-13	SVDP-14	SVDP-15	SVDP-16	SVDP-17	SVDP-18	SVDP-19	SVDP-20
Sample Depth (feet)	Regulatory	15	14	20	19	13	18.5	18	15	13	22-23	19.5-20.5	20-21	20-21	20-21
Date Sampled	Levels[2]	03/17/15	03/17/15	03/17/15	03/17/15	03/17/15	03/16/15	03/16/15	03/17/15	03/18/15	04/02/15	04/02/15	04/02/15	04/02/15	04/02/15
Method EPA 8260C - NWTPH-Gx and Volatile Organic Compounds (mg/kg)															
Gasoline-range hydrocarbons	30/100[3]	**750**	<5.7	**1,400**	**30**	<5.5	**1,400**	<5.0	<7.2	<7.7	<5.0	<4.9	<8.7	**100**	<6.1
Benzene	0.03	<0.23[6]	<0.017	<0.25[6]	<0.013	<0.017	<1.5[6]	<0.015	<0.022	<0.023	**0.029**	<0.015	<0.026	<0.020	<0.018
Ethylbenzene	6	**14**	<0.11	**13**	<0.084	<0.11	**22**	<0.10	<0.14	<0.15	<0.099	<0.099	<0.17	<0.14	<0.12
Methyl tert-butyl ether	0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.050	<0.049	<0.087	<0.068	<0.061
Naphthalene	5[4]	**20**	<0.23	**4.8**	<0.17	<0.22	<20[6]	<0.20	<0.29	<0.31	<0.20	<0.20	<0.35	<0.27	<0.24
Toluene	7	**11**	<0.11	**8.5**	<0.084	<0.11	**12**	<0.10	<0.14	<0.15	<0.099	<0.099	<0.17	<0.14	<0.12
o-Xylene	9[5]	**29**	<0.23	**18**	<0.17	<0.22	**31**	<0.20	<0.29	<0.31	<0.20	<0.20	<0.35	<0.27	<0.24
m,p-Xylene		**67**	<0.45	**51**	<0.34	<0.44	**95**	<0.40	<0.58	<0.62	<0.40	<0.39	<0.70	<0.54	<0.49
Xylenes (total)		**96**	<0.68	**69**	<0.51	<0.66	**130**	<0.60	<0.86	<0.93	<0.60	<0.59	<1.0	<0.81	<0.73
Method NWTPH-Dx - Semivolatile Petroleum Products (mg/kg)															
Diesel-range hydrocarbons	2,000	**170 J**	<12	<17	**35**	<12	**480**	<13	<13	<12	<13	<13	<15	<12	<12
Heavy oil-range hydrocarbons	2,000	**150 J**	<29	<43	**97**	<30	<88	<31	<34	<30	<32	<32	<36	<30	<31
Method EPA 6010C - Metals Content (mg/kg)															
Lead	250	**38**	**9.3**	**6.8**	**6.2**	**7.0**	<4.1	**4.3**	<5.3	**5.6**	<11	<25	<10	<11	<14

Boring Sample Depth (feet) Date Sampled	Regulatory Levels[2]	SVDP-21 20-21 04/02/15	SVDP-22 20.5-21 04/07/15	SVDP-23 18-18.5 04/07/15	SVDP-24 19.5-20 04/07/15	SVDP-25 19.5-20 04/07/15	SVDP-26 20-20.5 04/07/15	SVMW-4 22.5-23 04/27/15	SVMW-5 22.5-23 04/27/15
Method EPA 8260C - NWTPH-Gx and Volatile Organic Compounds (mg/kg)									
Gasoline-range hydrocarbons	30/100[3]	<6.3	**4,500**	<5.6	**2,400**	**160**	**42**	<10	<11
Benzene	0.03	<0.019	<0.14[6]	<0.017	<0.17[6]	<0.019	<0.025	<0.031[6]	<0.034[6]
Ethylbenzene	6	<0.13	**5.9**	<0.11	**24**	<0.13	<0.16	<0.21	<0.23
Methyl tert-butyl ether	0.1	<0.063	<0.47[6]	<0.056	<0.56[6]	<0.063	<0.082	NT	NT
Naphthalene	5[5]	<0.25	**6.4**	<0.22	**11**	<0.25	<0.33	NT	NT
Toluene	7	<0.13	**4.2**	<0.11	**9.3**	<0.13	<0.16	<0.21	<0.23
o-Xylene	9[4]	<0.25	**4.2**	<0.22	**29**	<0.25	<0.33	<0.42	<0.45
m,p-Xylene	9[4]	<0.50	**18**	<0.45	**68**	<0.51	<0.66	<0.83	<0.90
Xylenes (total)	9[4]	<0.75	**22**	<0.67	**97**	<0.76	<0.98	<1.2	<1.4
Method NWTPH-Dx - Semivolatile Petroleum Products (mg/kg)									
Diesel-range hydrocarbons	2,000	<12	**110**	**15**	**42**	**72**	<13	<15	<15
Heavy oil-range hydrocarbons	2,000	<30	<52	**85**	<29	<54	<34	<38	<38
Method EPA 6010C - Metals Content (mg/kg)									
Lead	250	<11	<8.9	<10	<11	<10	<9.4	<5.0	**4.9**

Notes:

[1] Chemical analyses conducted by TestAmerica of Spokane, Washington.

[2] Regulatory level refers to Washington State Model Toxics Control Act (MTCA) Method A cleanup criteria unless otherwise footnoted.

[3] Gasoline-range petroleum hydrocarbon cleanup levels in soil are 30 mg/kg when benzene is detected at the site and 100 mg/kg when benzene is not detected at the site.

[4] Cleanup level refers to sum of naphthalenes.

[5] Cleanup level for total xylenes.

[6] Reporting limit is greater than applicable cleanup criteria.

Bold indicates analyte concentration exceeds laboratory reporting limit.

Red Bold and outline indicates analyte concentration exceeds referenced regulatory criteria.

mg/kg = milligrams per kilogram; EPA = Washington State Environmental Protection Agency; NT = not tested

Table 4

Summary of Chemical Analytical Results - Soil PAHs[1]

Tiger Oil Summitview
Yakima, Washington

			Carcinogenic PAHs																			
			Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	cPAH TEQ[2]	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(ghi)perylene
		TEF[2]	0.1	1.0	0.1	0.1	0.01	0.1	0.1												
Sample ID	Sample Depth	Date Collected	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
SVDP-7	15	03/17/15	<24	<24	<24	<24	<24	<24	<24	<18	**10,000**	**5,400**	**2,400**	<24	<24	<24	<24	<24	<24	**24**	<24
SVDP-8	14	03/17/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-9	20	03/17/15	<12	<12	<12	<12	<12	<12	<12	<9	**89**	**300**	**130**	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-10	19	03/17/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-11	13	03/17/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-12	18.5	03/16/15	**12**	<12	<12	<12	<12	<12	<12	<9	**2,800**	**24,000**	**11,000**	**38**	**88**	<12	**60**	**15**	**16**	**18**	<12
SVDP-13	18	03/16/15	<13	<13	<13	<13	<13	<13	<13	<10	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13
SVDP-14	15	03/17/15	<14	<14	<14	<14	<14	<14	<14	<11	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14
SVDP-15	13	03/18/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-16	22-23	04/02/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-17	19.5-20.5	04/02/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-18	20-21	04/02/15	<14	<14	<14	<14	<14	<14	<14	<11	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14
SVDP-19	20-21	04/02/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	**47**	**23**	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-20	20-21	04/02/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-21	20-21	04/02/15	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<9	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ	<12 UJ
SVDP-22	20.5-21	04/07/15	<11	<11	<11	<11	<11	<11	<11	<8	**410**	**2,600**	**1,300**	<11	**34**	**34**	**33**	<11	<11	<11	<11
SVDP-23	18-18.5	04/07/15	<12	<12	<12	<12	<12	<12	<12	<9	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
SVDP-24	19.5-20	04/07/15	<12	<12	<12	<12	<12	<12	<12	<9	**250**	**1,600**	**670**	<12	**21**	**15**	**21**	<12	<12	<12	<12
SVDP-25	19.5-20	04/07/15	<12	<12	<12	<12	<12	<12	<12	<9	**12**	**100**	**110**	<12	**41**	**37**	**75**	**12**	**21**	**26**	<12
SVDP-26	20-20.5	04/07/15	<14	<14	<14	<14	<14	<14	<14	<11	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14
SVMW-4	22.5-23	04/27/15	<15	<15	<15	<15	<15	<15	<15	<11	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
SVMW-5	22.5-23	04/27/15	<16	<16	<16	<16	<16	<16	<16	<12	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16
MTCA Method A Unrestricted Land Use CUL[3]			NE	100	NE	NE	NE	NE	NE	100	5,000[4]			NE	NE	NE	NE	NE	NE	NE	NE

Notes:

[1]Polycyclic aromatic hydrocarbons (PAHs) analyzed using Environmental Protection Agency (EPA) Method 8270D by TestAmerica Laboratories, Inc., in Spokane, Washington.

[2]Carcinogenic PAH (cPAH) toxic equivalency (TEQ) calculated using toxicity equivalency factors (TEF) from MTCA Table 708-2, based on methodology described in MTCA Cleanup Regulation Washington Administrative Code 173-340-708. One half the reporting limit was used to calculate the TEQ.

[3]Model Toxics Control Act (MTCA) Method A unrestricted land use cleanup criteria.

[4]Total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.

µg/kg = micrograms per kilogram; NE = Not Established.

Bold indicates analyte concentration exceeds laboratory reporting limit.

Red Bold and outline indicates analyte concentration exceeds referenced regulatory criteria.

Table 5

Summary of Chemical Analytical Results - Groundwater from Soil Borings[1]

Tiger Oil Summitview
Yakima, Washington

Boring Number	Date Sampled	Gasoline-range hydrocarbons	Diesel-range hydrocarbons	Heavy oil-range hydrocarbons
Method NWTPH-HCID - Hydrocarbon Identification (mg/L)				
SVDP-9	03/18/15	**8.3**	**2.8**	<0.61
SVDP-10	03/18/15	**0.82**	**1.0**	<0.61
SVDP-11	03/18/15	<0.24	<0.60	<0.60
SVDP-12	03/17/15	**6.8**	**2.1**	<1.4
SVDP-13	03/17/15	<0.24	<0.60	<0.60
SVDP-15	03/18/15	<0.24	<0.61	<0.61
SVDP-16	04/02/15	<0.25	<0.63	**0.82**
SVDP-17	04/02/15	<0.26	<0.64	<0.64
SVDP-18	04/02/15	<0.24	<0.62	<0.62
SVDP-19	04/02/15	**1.5**	<0.63	<0.63
SVDP-20	04/02/15	<0.25	<0.63	<0.63
SVDP-21	04/02/15	<0.25	<0.62	<0.62
SVDP-24	04/07/15	**110 J**	**30 J**	**0.90 J**
SVDP-25	04/07/15	**3.6 J**	**2.3 J**	<0.62UJ
SVDP-26	04/07/15	<0.25 UJ	<0.63 UJ	<0.63 UJ

Notes:

[1] Chemical analyses conducted by TestAmerica of Spokane, Washington.

Bold indicates analyte concentration exceeds laboratory reporting limit.

mg/L = milligrams per liter

Table 6

Summary of Chemical Analytical Results - Groundwater[1]

Tiger Oil Summitview

Yakima, Washington

Well ID	Regulatory	SVMW-1[3]				SVMW-2				SVMW-3				Duplicate (SVMW-3)	SVMW-4	SVMW-5
Date Sampled	Levels[2]	09/18/14	12/12/14	3/31/2015[12]	5/19/2015[12]	09/18/14	12/12/14	03/31/15	05/19/15	09/18/14	12/12/14	03/31/15	05/19/15	05/19/15	05/19/15	05/20/15
Method NWTPH-Gx - Gasoline Range (µg/L)																
Gasoline-range hydrocarbons	800/1,000[4]	<100	<100	NT	NT	<100	<100	<100	<100	**12,700**	**13,200**	**12,000**	**14,000**	**14,000**	<100	**2,100**
Method NWTPH-Dx - Diesel Range (mg/L)																
Diesel-range hydrocarbons	0.5	NA	NT	NT	NT	<0.239	<0.232	<0.24	<0.25	**0.815 J**	**0.650 J**	**1.3**	**0.99 J**	**1.0 J**	<0.24	**0.49 J**
Diesel-range hydrocarbons w/silica gel	0.5	NT	NT	NT	NT	NT	NT	<0.24	NT	**0.968 J**	**0.592 J**	**1.1**	**0.99**	**1.0**	NT	**0.45**
Heavy Oil-Range Hydrocarbons	0.5	NA	NT	NT	NT	<0.399	<0.387	<0.40	<0.42	<0.385	<0.385	<0.39	<0.39	<0.41	<0.40	<0.41
Heavy Oil-Range Hydrocarbons w/silica gel	0.5	NT	NT	NT	NT	NT	NT	<0.40	NT	<0.385	<0.385	<0.39	<0.39	<0.41	NT	<0.41
Method EPA 8011 - EDB (µg/L)																
1,2-dibromoethane (EDB)	0.01	NT	NT	NT	NT	NT	<0.0100	<0.010	<1.0	NT	**0.181 J**	**0.13**	<100[7]	<100[7]	<1.0	<10[7]
Method EPA 8260 - VOCs (µg/L)[5]																
1,2-Dichloroethane (EDC)	5	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	<1.00	<100[7]	<100[7]	<100[7]	<100[7]	<1.0	<10[7]
2-Butanone	4,800[6]	<10.0	NT	NT	NT	<10.0	<10.0	<10	<10	**55.1**	<1000	<1000	<1,000	<1,000	<10	<100
Acetone	NE	<25.0	NT	NT	NT	<25.0	<25.0	<25	<25	**246**	NT	<2500	<2,500	<2,500	<25	<250
Benzene	5	<0.200	NT	NT	NT	<0.200	<0.200	<0.20	<0.20	**27.6**	**32.0**	**36**	**25**	**26**	<0.20	<2.0
Dichlorofluoromethane	NE	<0.200	NT	NT	NT	<0.200	<0.200	<0.20	<1.0	**246**	<20.0	<20	<100	<100	<1.0	<10
Ethylbenzene	700	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**436**	**571**	**560**	**570**	**560**	<1.0	<10
HCFC-21	NE	<0.200	NT	NT	NT	<0.200	<0.200			**0.270**						
Hexachlorobutadiene	NE	<2.00	NT	NT	NT	<2.00	<2.00			**<2.00**						
n-Hexane	480[6]	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**80.0**	<100	**110**	**120**	**110**	<1.0	<10
Isopropylbenzene (Cumene)	NE	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**33.6**	<100	<100	<100	<100	<1.0	<10
Methyl t-butyl ether (MTBE)	20	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	<1.00	<100[7]	<100[7]	<100	<100	<1.0	<10
Naphthalene	160	<2.00	NT	NT	NT	<2.00	<2.00	<2.0	<2.0	**236**	**200**	**280**	**290**	**310**	<2.0	<20
p-Isopropyltoluene	NE	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**11.2**	<100	<100	<100	<100	<1.0	<10
sec-Butylbenzene	800[6]	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**545**	<100	<100	<100	<100	<1.0	<10
tert-Butylbenzene	800[6]	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	<1.00	<100	120	<100	<100	<1.0	<10
Toluene	1,000	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**422**	**427**	**410**	**400**	**390**	<1.0	<10
Xylene, m-,p-	1,000[8]	<2.00	NT	NT	NT	<2.00	<2.00	<2.0	<2.0	**2,000**	**2,200**	**2,100**	**2,100**	**2,000**	<2.0	<20
Xylene, o-		<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**794**	**896**	**820**	**830**	**840**	<1.0	<10
Xylene, Total		<3.00	NT	NT	NT	<3.00	<3.00	<3.0	<3.0	**2,794**	**3,096**	**2,920[9]**	**2,900**	**2,900**	<3.0	<30
1,3,5-Trimethylbenzene	80[6]	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**140**	**211**	**220**	**880**	**820**	<1.0	**190**
1,2,4-Trimethylbenzene	NE	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**660**	**763**	**780**	**250**	**230**	<1.0	**100**
n-propylbenzene	800[6]	<1.00	NT	NT	NT	<1.00	<1.00	<1.0	<1.0	**82.0**	**107**	**110**	**110**	<100	<1.0	**18**
Metals Method EPA 200.7 - Total Lead (mg/L)																
Lead	0.015	NT	NT	NT	NT	NT	<0.0140	<0.014	<0.014	NT	<0.0140	<0.014	<0.014	<0.014	<0.014	<0.014

Well ID	Regulatory	SVMW-1[3]				SVMW-2				SVMW-3				Duplicate (SVMW-3)	SVMW-4	SVMW-5
Date Sampled	Levels[2]	09/18/14	12/12/14	3/31/2015[12]	5/19/2015[12]	09/18/14	12/12/14	03/31/15	05/19/15	09/18/14	12/12/14	03/31/15	05/19/15	05/19/15	05/19/15	05/20/15
Conventionals (mg/L)																
Nitrate-Nitrogen	10[10]	**3.43**	NT	NT	NT	**6.16**	**7.10**	**8.1**	**7.5**	**2.45**	**4.86**	**4.1**	**3.2**	**2.9**	**9.2**	**4.4**
Sulfate	250[11]	**28.6**	NT	NT	NT	**32.0**	**31.2**	**32**	**32**	**15.4**	**19.1**	**19**	**17**	**16**	**29**	**22**
Total Organic Carbon	NE	NA	NT	NT	NT	**4.39 J**	**1.79**	**1.9**	**1.7**	**3.45**	**2.69**	**2.5**	**2.9**	**2.7**	**1.6**	**2.1**

Notes:

[1]Chemical analyses conducted by TestAmerica of Spokane, Washington.

[2]Regulatory level refers to Washington State Model Toxics Control Act (MTCA) Method A cleanup level unless otherwise footnoted.

[3]Samples from SVMW-1 may not be representative of general site groundwater conditions.

[4]Cleanup level for GRPH is 800 µg/L when benzene is present, 1,000 µg/L when benzene is not present.

[5]Only VOCs detected at concentrations greater than their reporting limits are listed in the table. For a complete list of VOCs analyzed refer to the laboratory analytical report, Appendix B.

[6]MTCA Method B cleanup level.

[7]Reporting limits were greater than regulatory levels as a result of sample dilutions and the calibration range of the laboratory analytical equipment.

[8]Cleanup level for total xylenes.

[9]Total xylenes calculated by adding m,p- and o-xylenes. For total xylene concentration reported by TestAmerica see the laboratory analytical report, Appendix B.

[10]Maximum contaminant level established by Title 40, Volume 19 of the Code of Federal Regulations.

[11]Secondary maximum contaminant level recommended by the Environmental Protection Agency.

[12]Insufficent water volume available for chemical analysis

J flag indicates results are qualified as estimated. See data validation report for additional information. **Bold** indicates analyte concentration exceeds laboratory reporting limit. µg/L = micrograms per liter; mg/L = milligrams per liter; NA = not applicable; NE = not established; NT = not tested

Red Bold and outline indicates analyte concentration exceeds referenced regulatory level.

Table 7

Summary of Chemical Analytical Results - Groundwater PAHs[1]

Tiger Oil Summitview
Yakima, Washington

		Carcinogenic PAHs																		
		Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	cPAH TEQ[2]	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(ghi)perylene
TEF[2]		**0.1**	**1**	**0.1**	**0.1**	**0.01**	**0.1**	**0.1**												
Sample ID	**Date Collected**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
SVMW-1	09/18/14	<0.0260[3]	<0.0442[3]	<0.0286[3]	<0.0390[3]	<0.0286[3]	<0.0338[3]	<0.0572[3]	<0.03[4]	<0.234	<0.234	<0.234	<0.234	<0.234	<0.234	<0.234	<0.234	<0.234	<0.234	<0.234
	03/31/15	NT	NT	NT	NT	NT	NT	NT	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	05/19/15	NT	NT	NT	NT	NT	NT	NT	--	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SVMW-2	09/18/14	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.06	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856	<0.0856
	03/31/15	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.07	**0.44**	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087
	05/19/15	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.07	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094
SVMW-3	09/18/14	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854	<0.06	**178**	**48.4**	**29.3**	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854	<0.0854
	03/31/15	<0.088	<0.088	<0.088	<0.088	<0.088	<0.088	<0.088	<0.07	**200**	**65**	**38**	<0.088	0.11	<0.088	<0.088	<0.088	<0.088	<0.088	<0.088
	05/19/15	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.07	**210**	**68**	**38**	<0.089	**0.10**	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089
SVMW-4	05/19/15	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.07	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094
SVMW-5	05/19/15	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.07	**7.6**	**9.6**	**13**	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096
Duplicate (SVMW-2)	09/18/14	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.07	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863	<0.0863
Duplicate (SVMW-3)	03/31/15	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.07	**210**	**66**	**38**	<0.089	0.10	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089
Duplicate (SVMW-3)	05/19/15	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.07	**200**	**65**	**37**	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089
MTCA Method A Unrestricted Land Use CUL[5]		NE	0.1	NE	NE	NE	NE	NE	0.1	160[6]			NE	NE	NE	NE	NE	NE	NE	NE

Notes:

[1]Polycyclic aromatic hydrocarbons (PAHs) analyzed using Environmental Protection Agency Method 8270D by TestAmerica Laboratories, Inc., in Spokane, Washington.

[2]Carcinogenic PAH (cPAH) toxic equivalency (TEQ) calculated using toxicity equivalency factors (TEF) from MTCA Table 708-2, based on methodology described in MTCA Cleanup Regulation Washington Administrative Code 173-340-708. One half the reporting limit was used to calculate the TEQ.

[3]Reported value is the method detection limit, as the reporting limit exceeded the MTCA Method A level when used in the TEQ calculation.

[4]The TEQ reported was calculated using half the method detection limits.

[5]Model Toxics Control Act (MTCA) Method A unrestricted land use cleanup levels.

[6]Total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.

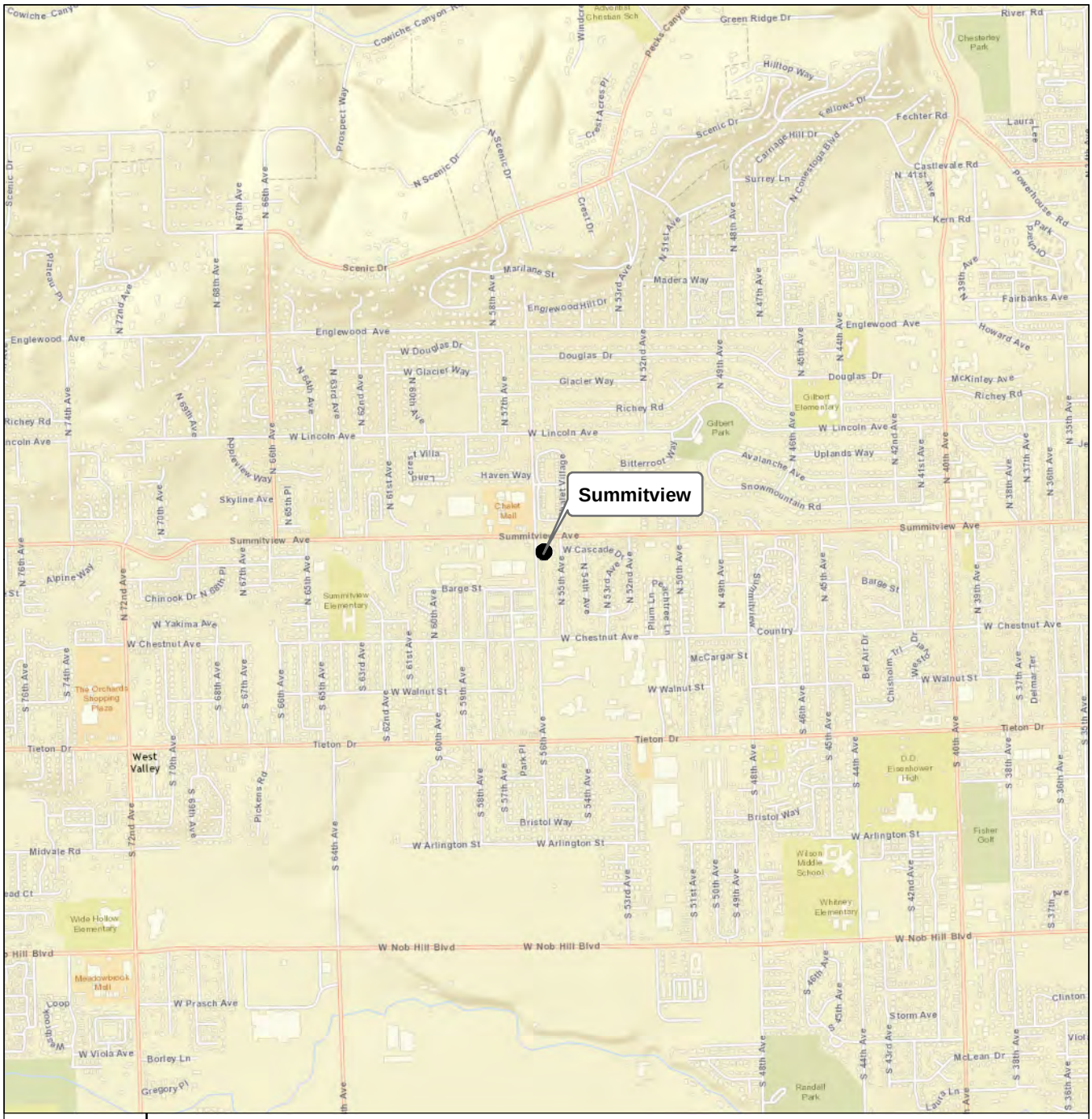
µg/L = micrograms per liter; NE = Not Established; NT = not tested

Bold indicates analyte concentration exceeds laboratory reporting limit.

Red Bold and outline indicates analyte concentration exceeds referenced regulatory level.

FIGURES

GeoEngineers



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 Sources: ESRI Data & Maps, Street Maps 2008.
Base map from ESRI Data Online.
Projection: NAD 1983, UTM Zone 10 North.

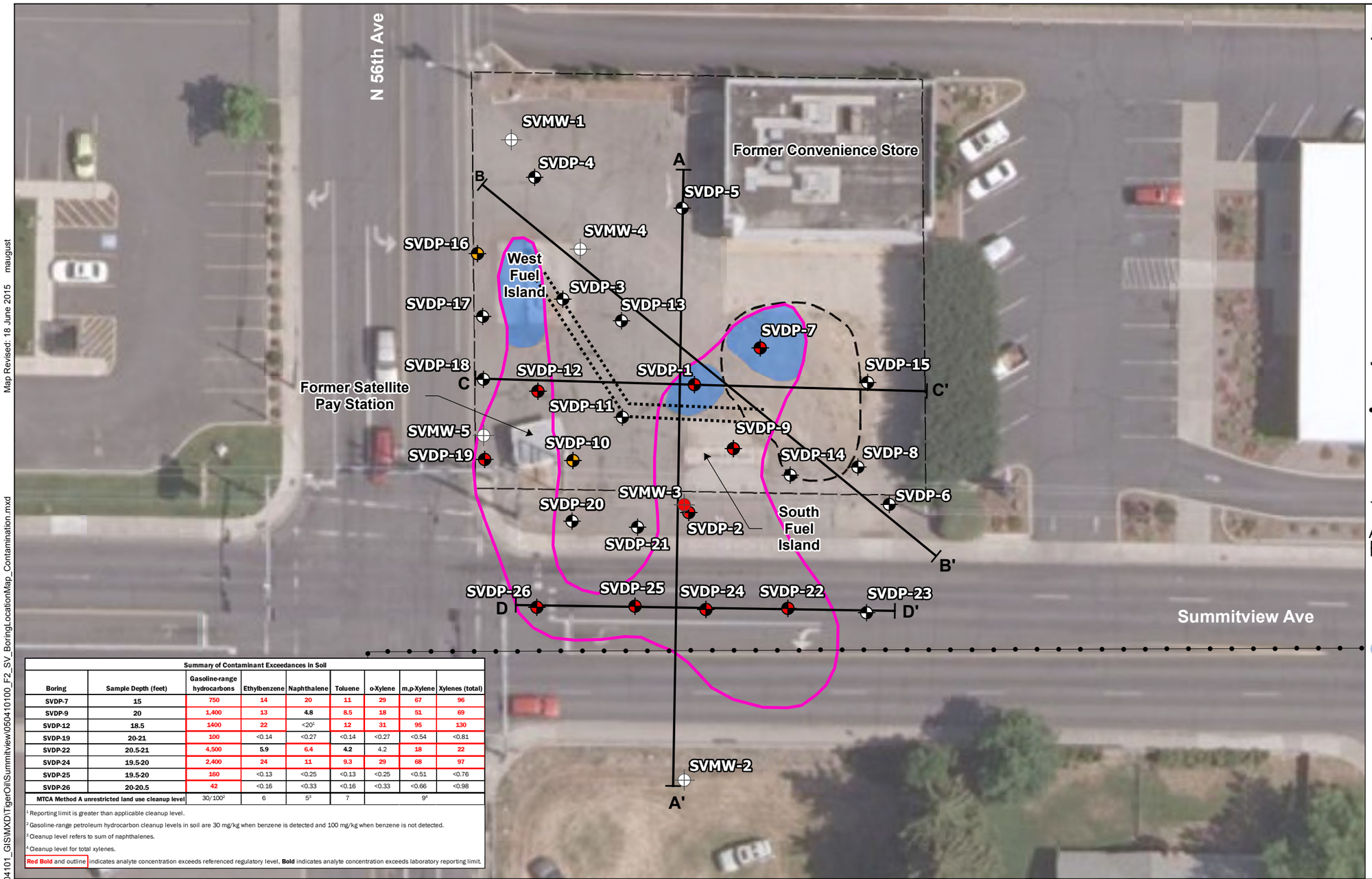
Vicinity Map

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 1

Map Revised: 11 September 2014 ccabrera
Path: P:\0\0504101_GIS\MXD\050410100_F1_VM_SV.mxd
Office: PORT



Summary of Contaminant Exceedances in Soil								
Boring	Sample Depth (feet)	Gasoline-range hydrocarbons	Ethylbenzene	Naphthalene	Toluene	o-Xylene	m,p-Xylene	Xylenes (total)
SVDP-7	15	750	14	20	11	29	67	96
SVDP-9	20	1,400	13	4.8	8.5	18	51	69
SVDP-12	18.5	1400	22	<20[3]	12	31	95	130
SVDP-19	20-21	100	<0.14	<0.27	<0.14	<0.27	<0.54	<0.81
SVDP-22	20.5-21	4,500	5.9	6.4	4.2	4.2	18	22
SVDP-24	19.5-20	2,400	24	11	9.3	29	68	97
SVDP-25	19.5-20	160	<0.13	<0.25	<0.13	<0.25	<0.51	<0.76
SVDP-26	20-20.5	42	<0.16	<0.33	<0.16	<0.33	<0.66	<0.98
MTCA Method A unrestricted land use cleanup level		30/100[2]	6	5[3]	7	9[4]		

[1] Reporting limit is greater than applicable cleanup level.

[2] Gasoline-range petroleum hydrocarbon cleanup levels in soil are 30 mg/kg when benzene is detected and 100 mg/kg when benzene is not detected.

[3] Cleanup level refers to sum of naphthalenes.

[4] Cleanup level for total xylenes.

Red Bold and outline indicates analyte concentration exceeds referenced regulatory level, **Bold** indicates analyte concentration exceeds laboratory reporting limit.

Legend

- SVDP-3 — Approximate Soil Boring Location
- SVMW-1 — Approximate Monitoring Well Location
- GRPH, Naphthalenes and/or BTEX Concentrations in Soil Greater than MTCA Method A Cleanup Criteria
- GRPH or Benzene in Soil Detected at a Concentration Less than MTCA Method A Cleanup Criteria
- Approximate Location of Product Piping
- Approximate DID Line Location
- Approximate Former Tank Pit Location
- Approximate Property Boundary
- A — A' Approximate Cross Section Location
- Estimated Extents of Petroleum Contamination
- Potential Contamination Source Area or Area of Shallow Contamination

N / W / E / S

30 0 30
Feet

Data Source: Aerial base from ArcGIS Online.

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

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. Product piping location estimated from "Results of Underground Piping and Dispenser Island Sampling at Tiger Oil Corporation Facility, 5511 Summitview in Yakima, Washington". Figure 2 Wayne Perry, Inc. December 14, 2005.

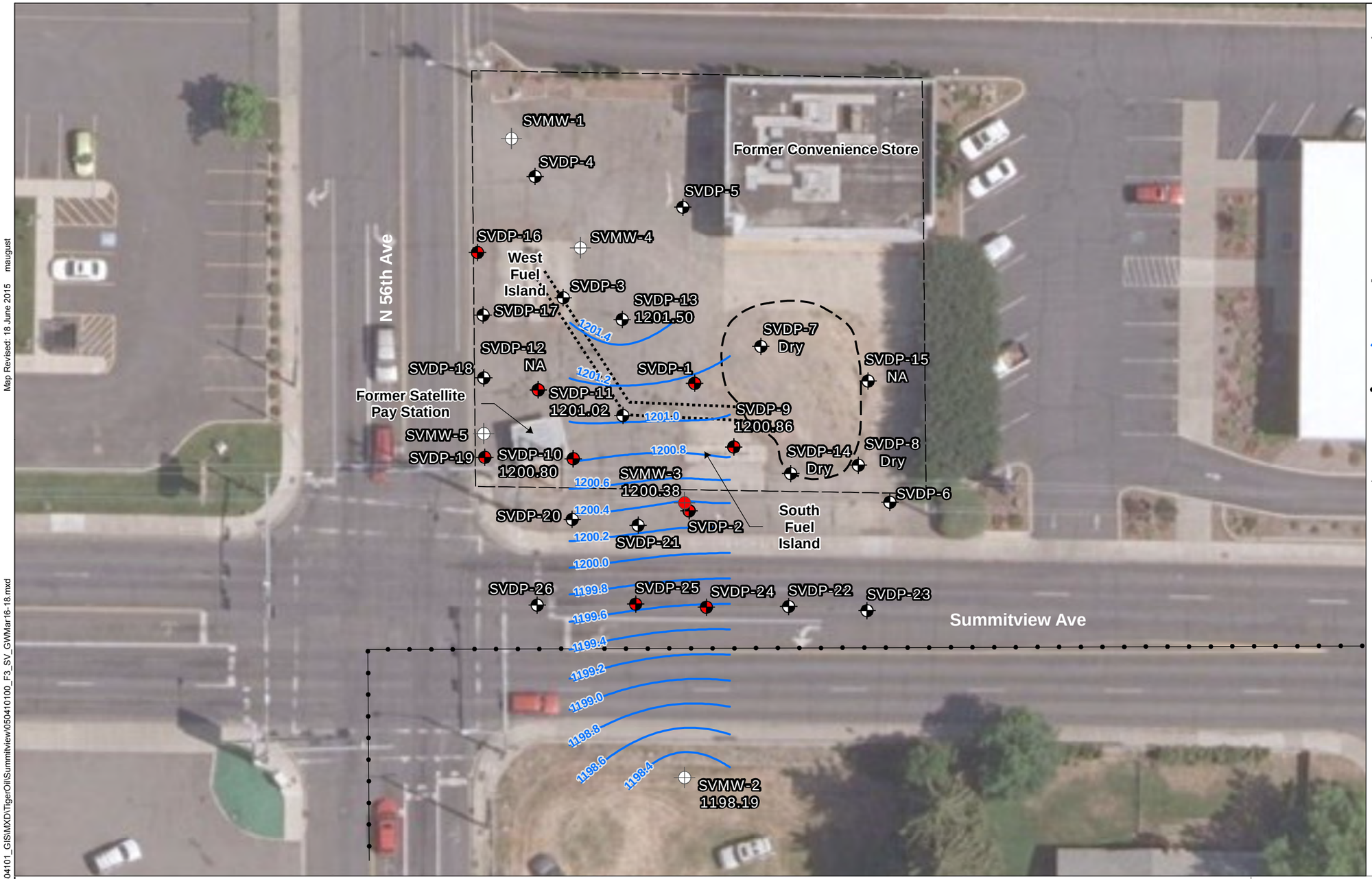
Site Plan and Sample Locations

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 2

Office: PORT Path: \\pdx\projects\0\05041\01_GIS\MXD\TigerOilSummitview\050410100_F2_SV_BoringLocationMap_Contamination.mxd Map Revised: 18 June 2015 maugust



Legend

- SVDP-3 — Approximate Soil Boring Location
- SVMW-10 / 1200.80 — Approximate Monitoring Well Location and Groundwater Elevation
- GRPH, DRPH and/or ORPH Detected in Grab Groundwater Samples Using Method NWTPH-HCID
- Approximate Location of Product Piping
- 1200.0 — Approximate Groundwater Elevation Contours (0.2-foot Interval)
- Approximate DID Line Location
- Approximate Former Tank Pit Location
- Approximate Property Boundary

N W E S

30 0 30
Feet

Data Source: Aerial base from ArcGIS Online.
Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet
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. Product piping location estimated from "Results of Underground Piping and Dispenser Island Sampling at Tiger Oil Corporation Facility, 5511 Summitview in Yakima, Washington". Figure 2 Wayne Perry, Inc. December 14, 2005.

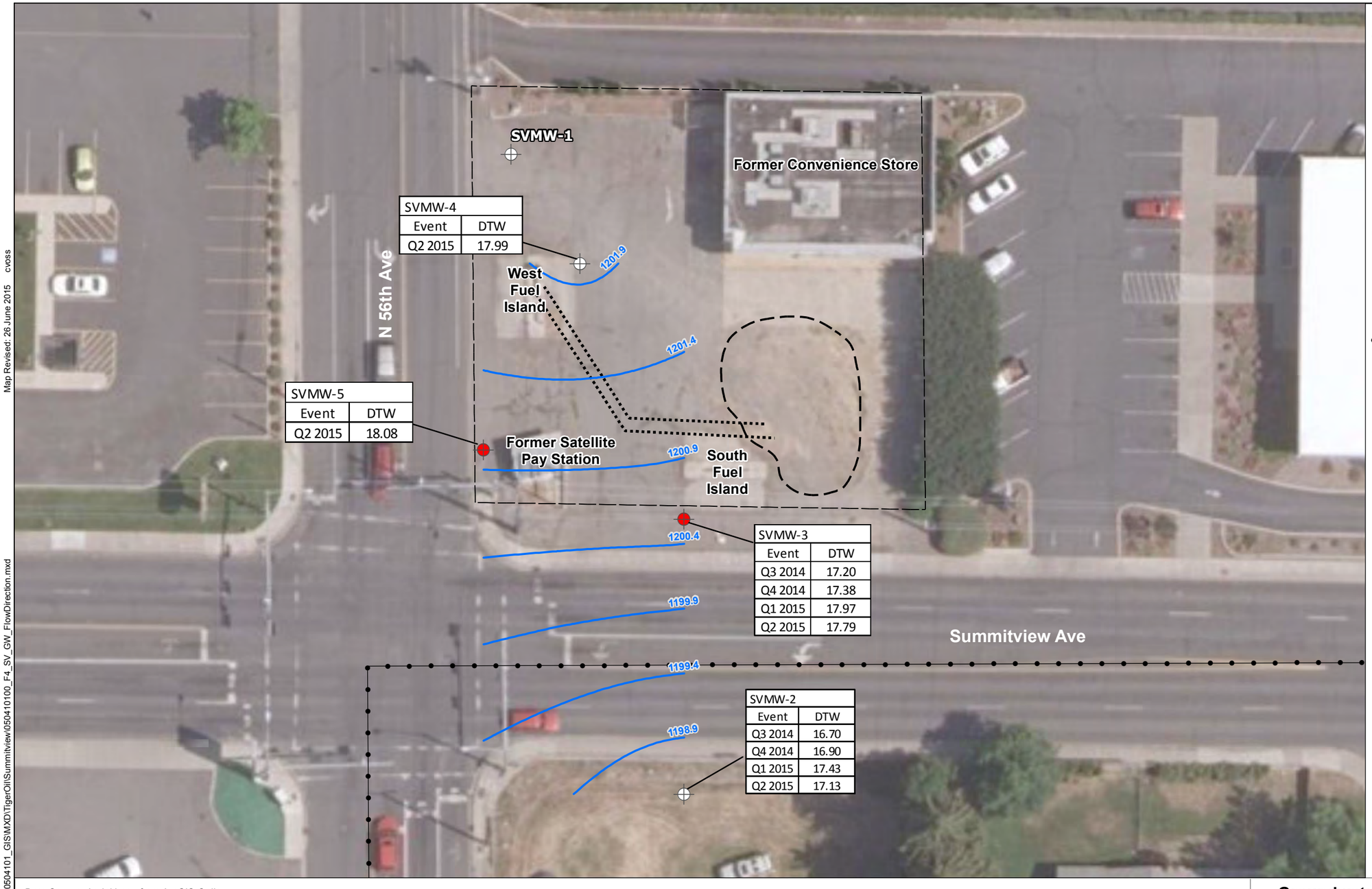
Groundwater Elevations March 16-18, 2015

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 3

Map Revised: 18 June 2015 maugust
Path: \\pdx\projects\0\0504101_GIS\MXD\TigerOilSummitview\0504101100_F3_SV_GWMar16-18.mxd
Office: PORT



Legend

- SVMW-1 — Approximate Monitoring Well Location
- GRPH and 1,3,5-Trimethylbenzene Concentrations in Groundwater Greater than MTCA Method A or B Cleanup Criteria
- Approximate Location of Product Piping
- 1198.9 — Approximate Groundwater Elevation Contours (0.5-foot Interval)
- Approximate DID Line Location
- Approximate Former Tank Pit Location
- Approximate Property Boundary

N
W E
S

30 0 30
Feet

Data Source: Aerial base from ArcGIS Online.

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

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 referred to the North American Vertical Datum of 1988 (NAVD 88).

Groundwater Elevation and Interpreted Flow Direction May 19, 2015

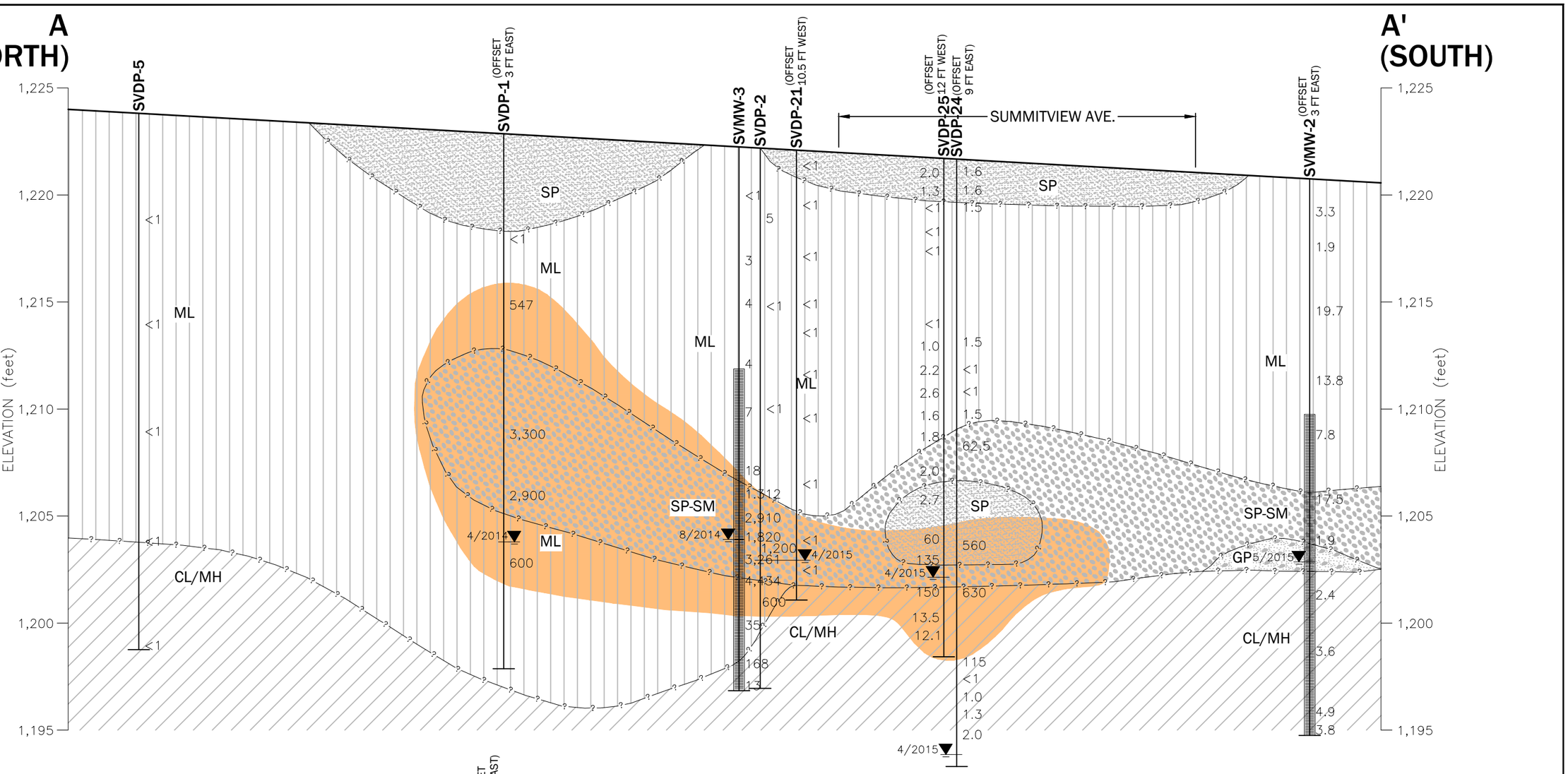
Tiger Oil Summitview
Yakima, Washington

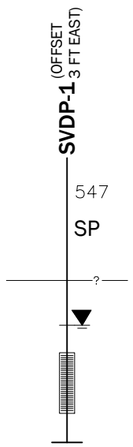
GeoEngineers

Figure 4

Map Revised: 26 June 2015 cvoss

Office: PORT Path: \\pdx\Projects\0\0504101_GIS\MXD\TigerOilSummitview\0504101_F4_SV_GW_FlowDirection.mxd





LEGEND:

- BORING / MONITORING WELL NUMBER AND APPROXIMATE LOCATION
- PID READINGS
- SOIL TYPE AT SAMPLE LOCATION
- SOIL CONTACT
- MEASURED GROUNDWATER LEVEL IN EXPLORATION
- SCREEN LOCATION
- > 100 ppm

UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

- SP
- ML
- GP
- SP-SM
- CL/MH

Notes:

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

15 0 15
Horizontal Scale in Feet
5 0 5
Vertical Scale in Feet
Vertical Exaggeration: 3X

Subsurface Cross Section A-A' and PID Readings

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 5

W:\Spokane\Projects\0\0504101\00\CAD\050410100_SV_F5_F6_F7_F8_NF_F4_F5_Cross Sections.dwg\TAB:F5 modified by syi on Jun 17, 2015 - 10:48am

B (NORTHWEST)

B' (SOUTHEAST)

SVDP-4 (OFFSET 10.5 FT NE)
SVMW-4 (OFFSET 3.5 FT NE)
SVDP-13 (OFFSET 5 FT SW)
SVDP-1 (OFFSET 7 FT SW)
SVDP-9 (OFFSET 14 FT SW)
SVDP-14 (OFFSET 9 FT SW)
SVDP-8 (OFFSET 5 FT NE)
SVDP-6 (OFFSET 3 FT NE)

ELEVATION (feet)

1,225
1,220
1,215
1,210
1,205
1,200
1,195

GP
SP
ML
SP-SM
GP-GC
SM
CL
<1
1.1
1.5
1.6
3.5
4.6
547
3,300
2,400
600
2.5
12.6
9.9
6.8
356
599
284
1.9
3.7
3.1
3.4
1.1
1
3/2015
4/2014

LEGEND:

- BORING / MONITORING WELL NUMBER AND APPROXIMATE LOCATION
- PID READINGS
- SOIL TYPE AT SAMPLE LOCATION
- SOIL CONTACT
- MEASURED GROUNDWATER LEVEL IN EXPLORATION
- SCREEN LOCATION

> 100 ppm

UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

SP, GP, ML, SM, CL, GP-GC, SP-SM

15 0 15
Horizontal Scale in Feet
5 0 5
Vertical Scale in Feet
Vertical Exaggeration: 3X

Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Subsurface Cross Section B-B' and PID Readings

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 6

W:\Spokane\Projects\0\0504101\00\CAD\050410100_SV_F5_F6_F7_F8_NF_F4_F5_Cross Sections.dwg\TAB:F6 modified by syi on Jun 17, 2015 - 10:48am

C (WEST)

C' (EAST)

SVDP-18

SVDP-12 (OFFSET 2 FT SOUTH)

SVDP-11 (OFFSET 7 FT SOUTH)

SVDP-1

SVDP-7 (OFFSET 7 FT NORTH)

SVDP-15 (OFFSET 3 FT NORTH)

ELEVATION (feet)

1,225
1,220
1,215
1,210
1,205
1,200
1,195

SP-SM
ML
GP
SM
CL
GP-GC
SP
SP-SC

4/2015
3/2015
4/2014

<1
1.9
9.3
6.6
1.3
3.1
13.9
2,449
99.5
12.5
2.8
2.2
4.8
1.7
1.1
547
3,300
2,400
600
913
1.5
3
15
2.5
1.2
7
1.9
2

ELEVATION (feet)

1,225
1,220
1,215
1,210
1,205
1,200
1,195

SVDP-11 (OFFSET 7 FT SOUTH)

4.8

SP

LEGEND:

- BORING / MONITORING WELL NUMBER AND APPROXIMATE LOCATION
- PID READINGS
- SOIL TYPE AT SAMPLE LOCATION
- SOIL CONTACT
- MEASURED GROUNDWATER LEVEL IN EXPLORATION

> 100 ppm

UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

- SP
- GP
- ML
- SM
- CL
- GP-GC
- SP-SC
- SP-SM

15 0 15
Horizontal Scale in Feet

5 0 5
Vertical Scale in Feet
Vertical Exaggeration: 3X

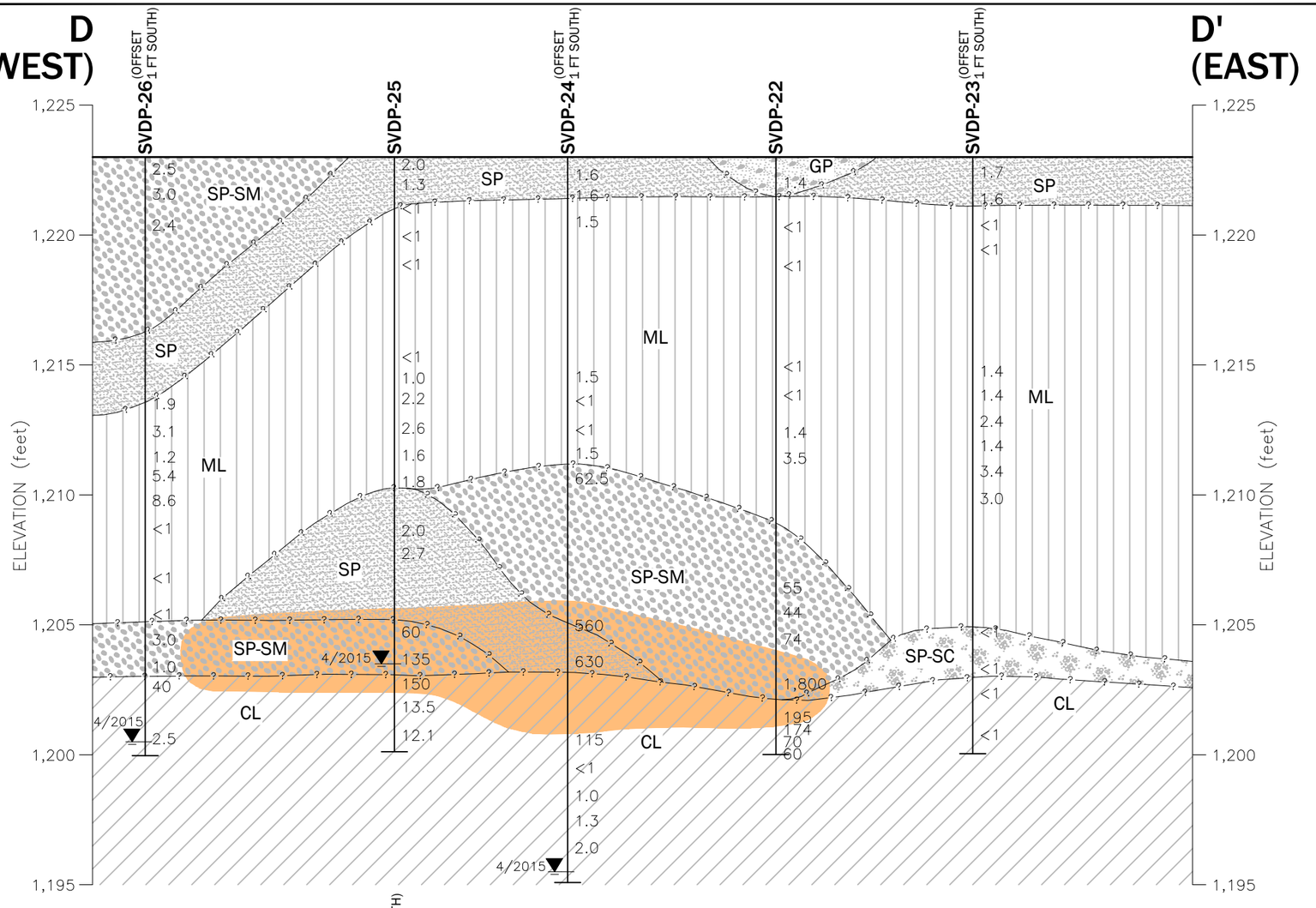
Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Subsurface Cross Section C-C' and PID Readings

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 7



SVDP-24 (OFFSET 1 FT SOUTH)
4.8
SP

LEGEND:

- BORING / MONITORING WELL NUMBER AND APPROXIMATE LOCATION
- PID READINGS
- SOIL TYPE AT SAMPLE LOCATION
- SOIL CONTACT
- MEASURED GROUNDWATER LEVEL IN EXPLORATION
- > 100 ppm

UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

- SP
- SP-SM
- GP
- ML
- SP-SC
- CL

15 0 15
Horizontal Scale in Feet
5 0 5
Vertical Scale in Feet
Vertical Exaggeration: 3X

Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Subsurface Cross Section D-D' and PID Readings

Tiger Oil Summitview
Yakima, Washington

GeoEngineers

Figure 8

APPENDICES

GeoEngineers

APPENDIX A
Field Methods and Boring Logs

APPENDIX A
FIELD METHODS AND BORING LOGS

General Soil Sampling Procedures

Soil samples were obtained using disposable nitrile gloves which were discarded after each use. Samples were placed in 4- or 9-ounce laboratory-supplied sample containers. Sample containers were filled to minimize headspace and labeled with a unique identification. Samples analyzed for volatile organic compounds (VOCs) were obtained using EPA Method 5035 sampling procedures. Samples were temporarily stored in an iced cooler before transfer to TestAmerica's Spokane Valley, Washington laboratory for analysis. Chain-of-custody protocols were followed.

Field Screening of Soil Samples

A GeoEngineers' representative performed field screening of soil samples obtained during drilling activities. Field screening results are used as a general guideline to delineate depths with possible petroleum-related contamination. The screening methods used include: (1) visual screening; (2) water sheen screening; and (3) headspace vapor screening using a MiniRae PID calibrated to isobutylene.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons such as motor oil, or when hydrocarbon concentrations are high. Water sheen screening is a more sensitive method that has been effective in evaluating whether contaminant concentrations are less than regulatory cleanup guidelines.

Water sheen screening involves placing soil in water and observing the water surface for signs of sheen. Sheen screening might detect both volatile and nonvolatile petroleum hydrocarbons. Sheen classifications are as follows:

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

Headspace vapor screening involved placing a soil sample in a plastic sample bag. Air was captured in the bag, and the bag was shaken to expose the soil to the air trapped in the bag. The probe of the PID was then inserted into the bag to measure VOCs in the air within the bag. In this application, the PID measured concentration of organic vapors ionizable by a 10.6 electron volt (eV) lamp in the range between 1.0 and 2,000 ppm), with a resolution of +/- 2 ppm.

Field screening results are site-specific. The effectiveness of field screening results will vary with temperature, moisture content, organic content, soil type and type and age of contaminant. The presence

or absence of a sheen or headspace vapors does not necessarily indicate the presence or absence of petroleum hydrocarbons.

Monitoring Well Construction, Development and Surveying

The groundwater monitoring wells were constructed in general accordance with Chapter 173-160, Section 400 of the Washington Administrative Code (WAC), titled *Washington State Resource Protection Well Construction Standards*. Monitoring well records were submitted in accordance with Washington State monitoring well construction standards. Monitoring well installations were observed and documented by a GeoEngineers' field representative.

The groundwater monitoring wells were installed using sonic drilling equipment and were constructed of 2-inch-diameter, Schedule 40 PVC casing and 0.01-inch slot width well screens. Well screen depths were based on groundwater conditions observed in the field such that the top of the shallow water table intercepted the well screen.

Each well was constructed with a bentonite seal and a flush-mount surface monument. A lockable cap was installed in the top of the PVC well casing. A concrete surface seal was placed around the monument at the ground surface to divert surface water away from the well location. Each well was developed using surging and pumping; wells were surged and then pumped until the development water was clear.

The monitoring well was developed to remove water introduced into the well during drilling (if any), stabilize the filter pack and formation materials surrounding the well screen, and restore the hydraulic connection between the well screen and the surrounding soil. The depth to water in the monitoring well was measured prior to development. The total depth of the well was measured and recorded. The groundwater monitoring wells were developed by pumping, surging, bailing or a combination of these methods after construction. Development of the well continued until the water was as free of sediment as practicable, with respect to the composition of the subsurface materials within the screened interval. The removal rate and amount of groundwater removed was recorded during the well development procedures. Development purge water was collected and stored on site.

The locations of the groundwater monitoring wells were established in the field using a hand-held iPad with GPS software, and subsequently surveyed by a licensed surveyor.

Depth to Groundwater

Depth to groundwater measurements from the new wells were collected and recorded in the field notebook after the water level stabilized after well development. Depth to groundwater relative to the marked north side of the monitoring well casing rims was measured to the nearest 0.01 foot using an electronic water level indicator and recorded in the field notebook. Groundwater elevation was calculated by subtracting the depth-to-water measurement from the surveyed casing rim elevation. The electronic water level indicator was decontaminated with Liquinox® solution wash and a distilled water rinse prior to use in each well.

Groundwater Sampling

Following depth to groundwater measurements, groundwater samples were collected from the installed groundwater monitoring wells consistent with the EPA's low-flow groundwater sampling procedures (EPA, 1996 and Puls and Barcelona, [Puls, 1996]). Dedicated polyethylene tubing and a portable peristaltic pump were used for groundwater purging and sampling. During purging activities, water quality parameters,

including pH, temperature, conductivity, DO and turbidity were measured using a multi-parameter meter equipped with a flow-through cell. Groundwater samples were collected after: (1) water quality parameters stabilized; or (2) a maximum purge time of 30 minutes was achieved. During purging and sampling, drawdown was not allowed to exceed 0.3 feet and the purge rate did not exceed 400 milliliters per minute. Water quality parameter stabilization criteria included the following:

- Turbidity: ±10 percent for values greater than 5 nephelometric turbidity units (ntu);
- Conductivity: ±3 percent;
- pH: ±0.1 unit;
- Temperature: ±3 percent; and
- DO: ± 10 percent.

Field water quality measurements and depth-to-water measurements were recorded on a Well Purging-Field Water Quality Measurement Form. The groundwater samples were transferred in the field to laboratory-prepared sample containers and kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed from the time of sample collection to delivery to the testing laboratory consistent with the Quality Assurance Project Plan (QAPP).

Location Control

The locations of the borings and groundwater monitoring wells were established in the field using a hand-held iPad with GPS software. The horizontal accuracy of the hand-held unit is within about 10 feet. Upon completion, horizontal and vertical locations of the groundwater monitoring wells were survey by a licensed professional surveyor and referenced to NAD83 and NAVD88, respectively. The horizontal coordinates of the groundwater monitoring wells and the elevation of the benchmark established at the site were determined using a Topcon GR-3 GPS receiver with a nominal accuracy of 10 millimeter (mm) + 1 mm horizontal and 15 mm + 1 mm vertical. The elevation of the monitoring wells relative to the benchmark established at the site were individually determined using a Leica DNA03 digital level with a vertical accuracy of +/- 0.01 feet.

Decontamination Procedures

The objective of the decontamination procedure was to minimize the potential for cross contamination between exploration locations and between individual samples within a specific exploration. A designated decontamination area was established for decontamination of drilling equipment and reusable sampling equipment. Drilling equipment was cleaned using pressure washing equipment.

Sampling or measurement equipment was decontaminated in accordance with the following procedures before each sampling attempt or measurement:

- Brush equipment with a wire brush, if necessary, to remove large particulate matter.
- Rinse with potable tap water.
- Wash with non-phosphate detergent solution (Liquinox® and potable tap water).
- Rinse with potable tap water.

- Rinse with distilled water.

Handling of Investigation-Derived Waste

IDW (drill cuttings and development and purge water), was placed in U.S. Department of Transportation (DOT) approved 55-gallon drums. The drums were labeled with the exploration number, general contents and date. IDW generated on site was placed in drums and is pending pickup for disposal at an appropriate facility.

Disposable items, such as sample tubing, direct-push sampler acrylic sleeves, gloves and paper towels, etc., were placed in plastic bags after use and deposited in trash receptacles for disposal.

Laboratory Analytical Plan

Method Reporting Limit (MRL) goals were based on Ecology MTCA soil or groundwater cleanup criteria. The following methods were used for the soil and groundwater samples:

Soil

- GRPH (NWTPH-Gx);
- DRPH (NWTPH-Dx);
- Total petroleum hydrocarbons (TPH) (NWTPH-HCID), direct push soil borings only;
- BTEX by (EPA 8260C);
- PAHs (EPA 8270D);
- EDB (EPA 8011);
- 1,2-dichloroethane (EDC) (EPA 8260C);
- MTBE (EPA Method 8260C); and
- Total Lead (EPA 6010C).

Groundwater

- GRPH (NWTPH-GX);
- DRPH (NWTPH-DX);
- VOCs (EPA 8260c);
- PAHs (EPA 8270D)
- TOC (SM5310B);
- Nitrate and Sulfate by (EPA 300); and

Ferrous Iron (Field Test, Hach 26672-88).

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 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
	TS	Topsoil/ Forest Duff/Sod

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 or geologic units

Approximate location of soil strata change within a geologic soil unit

Material Description Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil 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.

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

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
PPM	Parts per million
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
NT	Not Tested

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

GeoEngineers

FIGURE A-1

Drilled	Start 3/17/2015	End 3/17/2015	Total Depth (ft)	23	Logged By JWR / Checked By JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Sonic
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data			Drilling Equipment	Rig S-1		
Easting (X) / Northing (Y)			System Datum			Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)	

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		36						GP	Brown coarse gravel with silt, sand and occasional cobbles (loose, moist) (fill)	NS	<1	
	5		60								NS	3	
	10		60						ML	Brown clayey silt with sand (medium stiff, moist)	NS	1.5	
										With gravel	SS	600	
	15		60			SVDP-7-15 CA			SP-SM	Gray fine sand with silt (dense, moist)	MS	913	Petroleum hydrocarbon-like odor
										Becomes brown	NS	15	
	20		60						CL	Brown mottled clay with silt (stiff, moist)	NS	2.5	
											NS	1.2	

Boring drilled to 23 feet below ground surface (bgs) and backfilled to 18 feet bgs with bentonite chips. Temporary well set at 18 feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-7

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-2
Sheet 1 of 1

Drilled Start 3/17/2015 End 3/17/2015	Total Depth (ft) 18	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						SP	Brown fine to medium sand with trace silt, gravel and occasional cobbles (medium dense, moist) (fill)	NS	<1	
	5		60								NS	<1	
	10								ML	Brown silt with sand and occasional gravel (stiff, moist)			
	15					SVDP-8-14 CA					NS	<1	
											NS	<1	
									CL	Light brown mottled clay with trace silt (stiff, moist)	NS	<1	
										Boring drilled to 18 feet bgs and backfilled to about 17½ feet bgs with bentonite chips. Temporary well set at 17½ feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-8

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-3
Sheet 1 of 1

Drilled Start 3/17/2015 End 3/17/2015	Total Depth (ft) 23	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic	
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1	
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured 3/17/2015	Depth to Water (ft) 18.0 Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		36						SP	Brown fine to medium sand with trace silt, gravel and occasional cobbles (medium dense, moist) (fill)			
	5								ML	Brown clayey silt with sand (medium stiff, moist)	NS	<1	
			60								NS	2.5	
	10										NS	12.6	
									CL	Brown clay with trace gravel (very stiff, moist)			
			60						SM	Brown silty fine to medium sand with gravel (dense, moist)	NS	9.9	
	15									Becomes brownish gray			
							▼				NS	6.8	
			60						SP	Gray fine to coarse sand with trace silt and gravel (dense, wet)	NS	355.8	
	20					SVDP-9-20 CA					HS	599.0	Petroleum hydrocarbon-like odors
									CL	Brown clay with mottled iron staining with trace silt (stiff, moist)	SS	284	
											NS	1.9	

Boring drilled to 23 feet bgs and backfilled to 21 feet with bentonite chips. Temporary well set at 21 feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-9

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-4
Sheet 1 of 1

Drilled Start 3/17/2015 End 3/17/2015	Total Depth (ft) 23	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1
Easting (X) Northing (Y)		System Datum		Groundwater: Date Measured 3/17/2015; Depth to Water (ft) 18.1; Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	Asphalt concrete			
									GP	Dark gray coarse gravel (loose, moist) (fill)			
									ML	Brown fine sandy silt with occasional gravel (stiff, moist)		<1	
											NS	<1	
												<1	
	5										NS	1.4	
			60							Slightly indurated clay lenses			
											NS	2.6	
	10								SP	Grayish brown fine to coarse sand with gravel and occasional cobbles (dense, moist)			
									ML	Brown sandy silt with slightly indurated clay lenses (stiff, moist)			
											NS	4	
			60						CL	Light brown silty clay (stiff, moist)			
									ML	Brown sandy silt with trace gravel (stiff, moist)	NS	2.4	
	15												
											NS	1.7	
			60				▼				MS	246.5	
						SVCP-10-19 CA			SP	Light gray fine to medium sand with trace gravel (dense, wet)	HS	731.8	Petroleum hydrocarbon-like odor
	20								CL	Brown clay with mottled iron staining and trace silt (stiff, moist)			
											NS	<1	

Boring drilled to 23 feet bgs and backfilled to 20 feet bgs with bentonite chips. Temporary well set at 20 feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-10

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-5
Sheet 1 of 1

Drilled Start 3/17/2015 End 3/17/2015	Total Depth (ft) 23	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1
Easting (X) Northing (Y)		System Datum		Groundwater: Date Measured 3/17/2015; Depth to Water (ft) 18.0; Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		96						AC	Asphalt concrete			
									GP	Dark gray gravel with sand (loose, moist) (fill)			
									ML	Brown clayey silt (medium stiff, moist)	NS	<1	
											NS	<1	
	5									Trace gravel, very stiff	NS	2.8	
			60							Becomes sandy silt with occasional lenses of indurated clay	NS	<1	
	10										NS	2.2	
			60			SVDP-11-13 CA					NS	4.8	
	15										NS	1.7	
									SP-SC	Brown fine to coarse sand with clay and gravel (dense, moist)	NS	<1	
			60									<1	
										With cobbles	NS	1.1	
	20								CL	Light brown clay with mottled iron staining with trace silt (stiff, moist)	NS	<1	

Boring drilled to 23 feet bgs and backfilled to 20 feet bgs with bentonite chips. Temporary well set at 20 feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-11

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-6
Sheet 1 of 1

Drilled Start 3/16/2015 End 3/16/2015	Total Depth (ft) 23	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1
Easting (X) Northing (Y)		System Datum		Groundwater: Date Measured 3/16/2015; Depth to Water (ft) 18.0; Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		96						AC	Asphalt concrete			
									CL	Brown silty clay with occasional gravel (medium stiff, moist)			
									ML	Brown sandy silt with occasional clay lenses (stiff, moist)			
	5										NS	<1	
			60								NS	1.9	
	10										NS	9.3	
									GP-GC	Light gray coarse gravel with trace silt and indurated clay (very dense, moist)			
			60								NS	6.6	
											NS	1.3	
									ML	Brown sandy silt with occasional clay lenses (stiff, moist)			
	15										NS	3.1	
											NS	13.9	
			60			SVDP-12-18.5 CA			SM	Gray silty fine to medium sand with gravel and occasional cobbles (dense, wet)	HS	2,449	Petroleum hydrocarbon-like odor
	20										SS	99.5	
									CL	Brown clay with mottled iron staining with trace silt (stiff, moist)			
											NS	12.5	

Boring drilled to 23 feet bgs and backfilled with 20½ feet bgs with bentonite chips. Temporary well set at 20½ feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-12

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-7
Sheet 1 of 1

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
3/16/2015	3/16/2015	23	JWR / JRS	Environmental West Explorations, Inc.	Sonic

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		Rig S-1

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		3/16/2015	18.0	

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		96						AC	Asphalt concrete			
									GP	Dark gray gravel with sand (loose, moist) (fill)			
									ML	Brown clayey silt (medium stiff, moist)	NS	1.1	
											NS	1.5	
	5								GP-GC	Light brown-gray coarse gravel with trace silt and well indurated clay (dense, moist)			
											NS	5	
			96						SM	Brown silty fine sand (medium dense, moist)	NS	1.6	
	10										NS	3.5	
	15										NS	4.6	
			60			SVDP-13-18 CA	▼			Becomes clayey with cobbles	NS	<1	
									CL	Brown clay with mottled iron staining and trace silt (stiff, moist)	NS	<1	
	20										NS	<1	
											NS	<1	
										Boring drilled to 23 feet bgs and backfilled to 20 feet bgs with bentonite chips. Temporary well set at 20 feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-13

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-8
Sheet 1 of 1

Drilled Start 3/17/2015 End 3/17/2015	Total Depth (ft) 23	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		0						SP	Brown fine to medium sand with trace silt, gravel and occasional cobbles (medium dense, moist) (fill)			
	5		36						SM	Brown silty fine sand (medium dense, moist)	NS	1	
			60								NS	3.7	
	10										NS	3.1	
			60										
	15					SVDP-14-15 CA					NS	3.4	
											NS	1.1	
			60						CL	Light brown clay with mottled iron staining and trace silt (very stiff, dry)	NS	<1	
	20										NS	<1	

Boring drilled to 23 feet bgs and backfilled to 18 feet bgs with bentonite chips. Temporary well set at 18 feet bgs with 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-14

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-9
Sheet 1 of 1

Drilled Start 3/18/2015 End 3/18/2015	Total Depth (ft) 23	Logged By JWR Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured 3/18/2015 Depth to Water (ft) 18.0 Elevation (ft)

Notes: Temporary well installed on 3/17/15 and backfilled with bentonite chips on 3/18/15.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	Asphalt concrete			
									GP	Gray coarse gravel with sand (loose, moist) (fill)		<1	
									CL	Brown clay with sand (very stiff, moist)	NS	<1	
	5											<1	
			60						SM	Brown silty fine sand (dense, moist)			
											NS	<1	
	10												
			60			SVDP-15-13 CA				With gravel	NS	7	
	15								CL	Medium brown clayey silt (soft, moist)			
			60							Becomes wet	NS	1.9	
									SM	Brown silty fine sand with gravel and occasional cobbles (dense, wet)			
	20										NS	2	
									CL	Brown clay with mottled iron staining and silt (stiff, moist)			
											NS	<1	
										Boring drilled to 23 feet bgs and backfilled to 22 feet bgs with bentonite chips. Temporary well set at 23 feet bgs with 5 feet of 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-15

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-10
Sheet 1 of 1

Drilled	Start 4/2/2015	End 4/2/2015	Total Depth (ft)	23	Logged By JML Checked By JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Direct-Push
Surface Elevation (ft) Vertical Datum	Undetermined		Hammer Data			Drilling Equipment	Geoprobe 5600		
Easting (X) Northing (Y)			System Datum			Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)	
Notes:						4/2/2015	19.0		

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		32						AC	Approximately 6 inches asphalt concrete pavement		<1	
									SP				
									ML	Dark brown fine to medium sand with gravel (loose, moist)			
										Brown silt with trace fine sand (soft, moist)		<1	
			42									<1	
	5								SP	Brown gravelly fine to medium sand with trace silt (loose, moist)		<1	
									ML	Brown silt with fine sand and occasional gravel (medium stiff, moist)			
			48									<1	
	10											<1	
			48									<1	
												<1	
	15		48									<1	
							▼					<1	
	20		36										
						SVDP-16 (22-23) CA					NS	<1	
									CL	Gray silty clay (black/red) (stiff, moist)	NS	<1	
										Boring drilled to 23 feet bgs. Temporary well set at 18 to 23 feet bgs with 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-16

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-11
Sheet 1 of 1

Drilled Start 4/2/2015 End 4/2/2015	Total Depth (ft) 21	Logged By JML Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Direct-Push	
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Geoprobe 5600	
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured 4/2/2015	Depth to Water (ft) 18.0 Elevation (ft)
Notes:					

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24						AC	Approximately 6 inches asphalt concrete pavement			
									SP-SM			<1	
									ML	Dark brown fine to coarse sand with silt (medium dense, moist)		<1	
										Brown fine sandy silt (medium stiff, moist)			
			42									<1	
	5											<1	
			48									<1	
									SP-SM	Brown fine to medium sand with silt and occasional gravel (medium dense, moist)			
	10											<1	
			48									<1	
												<1	
	15								ML	Brown to gray silt with sand and occasional gravel (medium stiff, moist)			
			48									<1	
							▼				NS	<1	
			48			SVDP-17 (19.5-20.5) CA							
	20								CL	Gray clay with silt, black and red staining (very stiff, moist)	NS	<1	
										Boring drilled to 21 feet bgs. Temporary well set at 16 to 21 feet bgs with 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-17

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-12
Sheet 1 of 1

Drilled	Start 4/2/2015	End 4/2/2015	Total Depth (ft) 21.5	Logged By JML / Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Direct-Push
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data		Drilling Equipment	Geoprobe 5600
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) 17.0 / Elevation (ft)
Notes:					4/2/2015	

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	Approximately 6 inches asphalt concrete pavement			
									SP-SM	Dark gray fine to coarse sand with silt (medium dense, moist)		<1	
			36						ML	Brown silt with fine to medium sand (medium stiff, moist)		<1	
	5		42									<1	
												<1	
			48									<1	
	10											<1	
			48									<1	
									SP-SM	Brown fine to medium sand with silt and occasional gravel (medium dense, moist)			
	15								ML	Brown silt with fine to medium sand (medium stiff, wet)		<1	
			48				▼					<1	
												<1	
	20		48			SVDP-18 (20-21) CA			GP	Silty gravel with fine to medium sand (medium dense, moist)			
									CL	Gray clay (very stiff, moist)	NS	<1	
											NS	<1	

Boring drilled to 21½ feet bgs. Temporary well set at 16½ to 21½ feet bgs with 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-18

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-13
Sheet 1 of 1

Drilled	Start 4/2/2015	End 4/2/2015	Total Depth (ft)	22	Logged By JML / Checked By JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Direct-Push
Surface Elevation (ft) Vertical Datum	Undetermined		Hammer Data			Drilling Equipment	Geoprobe 5600		
Easting (X) Northing (Y)			System Datum			Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)	
Notes:						4/2/2015	18.4		

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	Approximately 6 inches asphalt concrete pavement			
									SP-SM			<1	
									ML	Dark gray fine to coarse sand with silt (loose, moist)			
			24							Brown silt with fine to medium sand (medium stiff, moist)			
												<1	
			36										
	5											<1	
												<1	
			42									<1	
									SP-SM	Brown fine to medium sand with silt (medium dense, moist)			
	10								ML	Brown silt with fine sand and occasional gravel (medium stiff, moist)		<1	
			48									<1	
												<1	
	15								CL	Gray clay with silt and sand (very stiff, moist)			
			48						ML	Brown silt with fine sand and occasional gravel (medium stiff, moist)		<1	
							▼					<1	
											SS	140	
	20		48			SVDP-19 (20-21) CA			SP	Dark gray fine to medium sand with trace silt (dense, moist)	SS	242	
									CL	Brown to gray clay with silt (very stiff, moist)	NS	9.5	
										Boring drilled to 22 feet bgs. Temporary well set at 17 to 22 feet bgs with 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-19

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-14
Sheet 1 of 1

Drilled	Start 4/2/2015	End 4/2/2015	Total Depth (ft)	22	Logged By JML / Checked By JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Direct-Push
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data			Drilling Equipment	Geoprobe 5600		
Easting (X) / Northing (Y)			System Datum			Groundwater	Date Measured: 4/2/2015	Depth to Water (ft): 18.4	Elevation (ft):
Notes:									

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		36						AC	Approximately 6 inches asphalt concrete pavement		<1	
									SP	Gray fine to coarse sand with trace silt			
									ML	Brown silt with fine to medium sand and occasional gravel (medium stiff, moist)		<1	
			36									<1	
	5											<1	
			24									<1	
	10											<1	
			48									<1	
									SP-SM	Fine to medium sand with silt and occasional gravel (medium dense, moist)		<1	
	15								ML	Brown silt with fine to medium sand and occasional gravel (medium stiff, moist)		<1	
			48									<1	
			36				▼					<1	
	20					SVDP-20 (20-21) CA			SP	Dark gray gravelly fine to medium gravel with silt (medium dense, moist)	NS	4.9	Slight hydrocarbon odor
									CL	Gray clay (very stiff, moist)	NS	<1	

Boring drilled to 22 feet bgs. Temporary well set at 17 to 22 feet bgs with 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-20

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-15
Sheet 1 of 1

Drilled	Start 4/2/2015	End 4/2/2015	Total Depth (ft)	21	Logged By / Checked By	JML / JRS	Driller	Environmental West Explorations, Inc.	Drilling Method	Direct-Push
Surface Elevation (ft) Vertical Datum	Undetermined		Hammer Data				Drilling Equipment	Geoprobe 5600		
Easting (X) Northing (Y)			System Datum				Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)	
Notes:							4/2/2015	18.4		

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	Approximately 6 inches asphalt concrete pavement			
									SP-SM	Dark gray fine to coarse sand with silt (medium dense, moist)		<1	
									ML	Brown silt with fine to medium sand (medium stiff, moist)			
			36									<1	
			36									<1	
	5												
												<1	
			48									<1	
	10												
												<1	
			42									<1	
	15												
												<1	
			48										
									SP-SM	Brown fine to coarse sand with silt and occasional gravel (medium dense, moist to wet)		<1	
							▼					<1	
	20		18			SVDP-21 (20-21) CA			CL	Gray clay with fine to medium sand and occasional gravel (very stiff, moist)			
										Boring drilled to 21 feet bgs. Temporary well set at 16 to 21 feet bgs with 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-21

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-16
Sheet 1 of 1

Drilled Start 4/7/2015 End 4/7/2015	Total Depth (ft) 23	Logged By JML Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic	
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data		Drilling Equipment Rig S-1	
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)	
Notes:					

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						AC	Approximately 6 inches asphalt concrete pavement			
									CC	Approximately 4 inches concrete cement	NS	1.4	
									GP	Gray fine to coarse gravel with fine to coarse sand (medium dense, moist)			
									ML	Brown silt with trace fine to medium sand and occasional gravel (medium stiff, moist)	NS	<1	
											NS	<1	
	5												
			48								NS	<1	
											NS	<1	
	10										NS	1.4	
											NS	3.5	
									SP-SM	Brown fine to medium sand with silt (medium dense, moist)			
	15												
			60								NS	55	
											NS	44	
											NS	74	
	20								SP-SM	Dark gray fine to coarse sand with silt, occasional gravel and trace clay (medium dense, moist)	SS	1800	Hydrocarbon odor
			36			SVDP-22 (20.5-21) CA			CL	Gray sandy clay with occasional gravel (stiff, wet)	NS	195	
											NS	174	
											NS	70	
											NS	60	

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

Log of Boring SVDP-22

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-17
Sheet 1 of 1

Drilled	Start 4/7/2015	End 4/7/2015	Total Depth (ft) 23	Logged By JML / Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data		Drilling Equipment	Rig S-1
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		96					AC	Approximately 6 inches asphalt concrete pavement			
								CC	Approximately 6 inches concrete cement	NS	1.7	
								SP	Dark gray fine to medium sand with gravel and trace silt (medium dense, moist)	NS	1.6	
								ML	Brown silt with trace fine to medium sand (medium stiff, moist)	NS	<1	
										NS	<1	
	5											
			120							NS	1.4	
										NS	1.4	
	10									NS	2.4	
										NS	1.4	
										NS	3.4	
										NS	3.0	
	15											
			60		SVDP-23 (18-18.5) CA			SP-SC	Brown fine to medium sand with clay and occasional gravel (medium dense, moist)	NS	<1	
										NS	<1	
	20							CL	Brown clay with trace fine to medium sand and trace gravel (very stiff, moist)	NS	<1	
										NS	<1	

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

Spokane: Date:6/23/15 Path:P:\0\0504101\GINT\0504101G2.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Log of Boring SVDP-23

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-18
Sheet 1 of 1

Drilled	Start 4/7/2015	End 4/7/2015	Total Depth (ft) 28	Logged By JML / Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data		Drilling Equipment	Rig S-1
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) 27.5 / Elevation (ft)
Notes:					4/7/2015	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		32						AC	Approximately 6 inches asphalt concrete pavement			
									CC	Approximately 6 inches concrete cement	NS	1.6	
									SP	Brown fine to medium sand with gravel and trace silt (medium dense, moist)	NS	1.6	
									ML	Brown silt with fine to medium sand and occasional gravel (medium stiff, moist)	NS	1.5	
	5												
			60								NS	1.5	
											NS	<1	
	10										NS	<1	
											NS	1.5	
									SP-SM	Gray fine to medium sand with silt (medium dense, moist)	NS	62.5	
	15												
			72						SP	Gray fine to medium sand with trace clay (medium dense, moist)		560	
	20					SVDP-24 (19.5-20) CA			CL	Gray clay (very stiff, moist)	NS	630	
			78								NS	115	
									CL	Brown clay (very stiff, moist)	NS	<1	
	25										NS	1.0	

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

Log of Boring SVDP-24

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-19
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	FIELD DATA: Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	25								NS	1.3	
									NS	2.0	

Boring drilled to 28 feet bgs. Temporary well set at 23 to 28 feet bgs with 2-inch-diameter 0.01 slot screen.

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

Log of Boring SVDP-24 (continued)

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-19
Sheet 2 of 2

Drilled	Start 4/7/2015	End 4/7/2015	Total Depth (ft) 23	Logged By JML / Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data		Drilling Equipment	Rig S-1
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) 19.5	Elevation (ft)
Notes:					4/7/2015		

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		54						AC	Approximately 6 inches asphalt concrete pavement	NS	2.0	
									CC	Approximately 6 inches concrete cement	NS	1.3	
									SP	Brown fine to medium sand with gravel (medium dense, moist)	NS	<1	
									ML	Brown silt with trace fine to coarse sand (medium stiff, moist)	NS	<1	
											NS	<1	
	5										NS	<1	
			102						ML	Brown silt with fine to medium sand (medium stiff, moist)	NS	1.0	
											NS	2.2	
	10										NS	2.6	
											NS	1.6	
											NS	1.8	
									SP	Brown fine to medium sand with trace silt and occasional gravel (medium dense, moist)	NS	2.0	
	15										NS	2.7	
			84						SP/SM	Brown fine to medium sand with silt (medium dense, moist) (black staining)	NS	60	
							▼				NS	135	
	20					SVDP-25 (19.5-20) CA			CL	Brown clay with fine to medium sand (very stiff, moist)	NS	150	
											NS	13.5	
											NS	12.1	
										Boring drilled to 23 feet bgs. Temporary well set at 18 to 23 feet bgs with 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-25

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-20
Sheet 1 of 1

Drilled	Start 4/7/2015	End 4/7/2015	Total Depth (ft) 23	Logged By JML / Checked By JRS	Driller Environmental West Explorations, Inc.	Drilling Method Sonic
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data		Drilling Equipment	Rig S-1
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) 22.5 / Elevation (ft)
Notes:					4/7/2015	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		36						AC	Approximately 6 inches asphalt concrete pavement			
									CC	Approximately 6 inches concrete cement	NS	2.5	
									SP-SM	Brown fine to medium sand with silt and gravel (medium dense, moist)	NS	3.0	
											NS	2.4	
	5												
			60						SP	Brown fine to medium sand with trace silt (medium dense, moist)			
											NS	1.9	
	10								ML	Brown silt with sand (medium stiff, moist)	NS	3.1	
											NS	1.2	
											NS	5.4	
			68								NS	8.6	
											NS	<1	
	15												
											NS	<1	
											NS	<1	
			90						SP-SM	Brown fine to medium sand with silt (medium dense, moist)	NS	3.0	
											NS	1.0	
	20					SVDP-26 (20-20.5) CA			CL	Brown with gray staining clay with fine to medium sand (medium stiff, moist)	NS	40	
											NS	2.5	
										Boring drilled to 23 feet bgs. Temporary well set at 18 to 23 feet bgs with 2-inch-diameter 0.01 slot screen.			

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

Log of Boring SVDP-26

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-21
Sheet 1 of 1

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
4/27/2015	4/27/2015	24	JML / JRS	Environmental West Explorations, Inc.	Hollow-Stem Auger

Hammer Data		Drilling Equipment	Lil Brutus
Surface Elevation (ft)	1220.35	Top of Casing Elevation (ft)	1220.00
Vertical Datum	NAVD88		
Easting (X)	1619576.7	Horizontal Datum	NAD83/91; WA South Zone
Northing (Y)	462028.3		

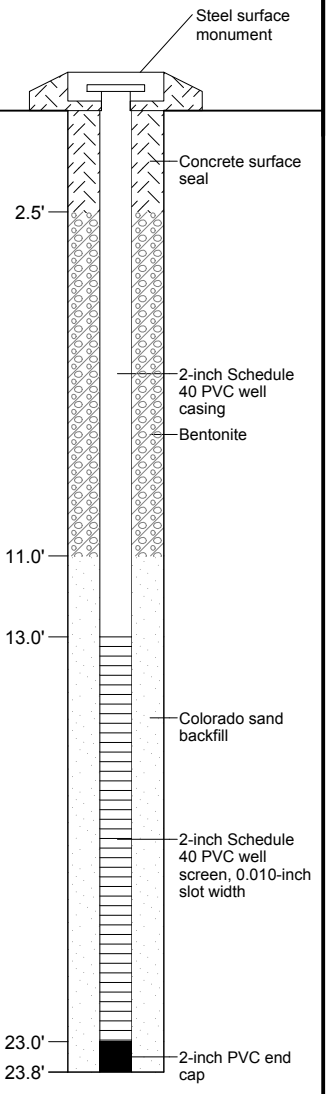
DOE Well I.D.: BHW-539
A 2 (in) well was installed on 4/27/2015 to a depth of 23.75 (ft).

Groundwater	Depth to Water (ft)	Elevation (ft)
Date Measured		
5/12/2015	18.0	1202.0

Notes: Diameter of well boring was 4.25 inches

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
1220	0							AC	Approximately 6 inches asphalt concrete pavement		
								ML	Brown silt with trace fine to medium sand (very stiff, moist)		
1215	5	18								NS	<1
								SP-SM	Brown fine to medium sand with silt (medium dense, moist)		
								ML	Brown silt with fine to medium sand (hard, moist)		
1210	10	8								NS	<1
								SP-SM	Brown silty fine to coarse sand (dense, moist)		
1205	15	18				▼				NS	<1
								ML	Brown sandy silt (hard, moist)		
1200	20	0									
		18			SVMW-4 (22.5-23) CA			CL	Brown clay with silt (medium dense, wet)		

WELL LOG



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

Log of Monitoring Well SVMW-4

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-22
Sheet 1 of 1

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
4/27/2015	4/27/2015	26.5	JML / JRS	Environmental West Explorations, Inc.	Hollow-Stem Auger

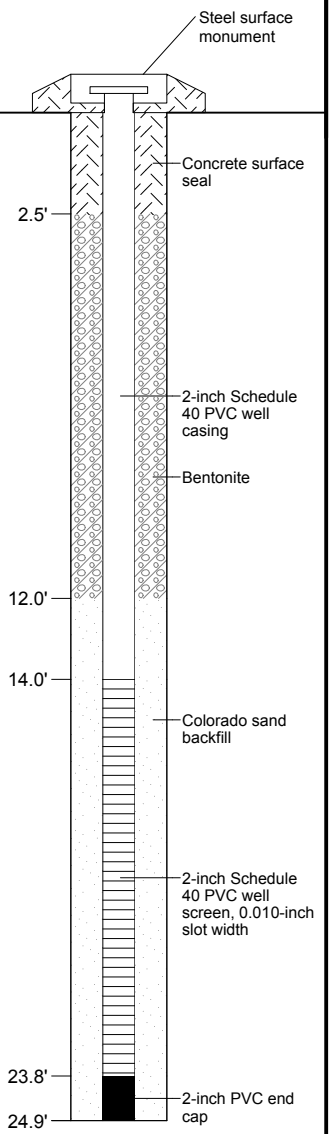
Hammer Data		Drilling Equipment	Lil Brutus
Surface Elevation (ft)	1219.41	Top of Casing Elevation (ft)	1219.09
Vertical Datum	NAVD88		
Easting (X)	1619546.4	Horizontal Datum	NAD83/91; WA South Zone
Northing (Y)	461969.3		

DOE Well I.D.: BHW-538
A 2 (in) well was installed on 4/27/2015 to a depth of 24.9 (ft).

Groundwater		
Date Measured	Depth to Water (ft)	Elevation (ft)
5/12/2015	18.1	1201.0

Notes: Diameter of well boring was 4.25 inches

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
	0							AC	Approximately 6 inches asphalt concrete pavement		
								ML	Brown silt with trace fine to medium sand (stiff, moist)		
1215	5	9								NS	<1
1210	10	13							Very stiff, moist	NS	<1
1205	15	10				▼			Brown silt with fine to medium sand (very stiff, moist)	NS	<1
1200	20	16							Brown silt with trace fine sand (very stiff, wet)	NS	1.8
		18			SVMW-5 (22.5-23) CA			CL	Brown silty clay with trace fine sand (very stiff, moist to wet)	NS	<1
1195	25	18								NS	<1



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

Log of Monitoring Well SVMW-5

GeoEngineers

Project: Tiger Oil - Summitview
Project Location: Yakima, Washington
Project Number: 0504-101-02

Figure A-23
Sheet 1 of 1

Spokane: Date:6/23/15 Path:P:\0\0504101\GINT\0504101G2.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

APPENDIX B
Laboratory Reports

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125, Fax: 509.363.3126 www.geoengineers.com

Data Validation Report

Project:	Tiger Oil – Summitview, Data Gap Assessment March 2015 Soil and Groundwater Samples
GEI File No:	00504-101-02
Date:	May 27, 2015

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 March 2015 sampling event, and the associated laboratory quality control (QC) samples. The samples were obtained from the Tiger Oil, Summitview Site located at 5511 Summitview Avenue in Yakima, 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 QAPP (Appendix A of the Sampling and Analysis Plan, Soil and Groundwater Assessment; GeoEngineers, 2014), 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 Duplicates

VALIDATED SAMPLE DELIVERY GROUPS

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

TABLE 1: SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-483-1	SVDP-7-15, SVDP-8-14, SVDP-9-20, SVDP-10-19, SVDP-11-13, SVDP-12-18.5, SVDP-13-18.0, SVDP-14-15, SVDP-15-13
590-484-1	SVDP-9-031815, SVDP-10-031815, SVDP-11-031815, SVDP-12-031715, SVDP-13-031715, SVDP-15-031815

CHEMICAL ANALYSIS PERFORMED

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

Groundwater:

- Hydrocarbon Identification (NWTPH-HCID) by Method NWTPH-HCID.

Soil:

- Petroleum Hydrocarbons (NWTPH-Dx) by Method NWTPH-Dx;
- Gas-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method SW8260C;
- Polycyclic Aromatic Hydrocarbons (PAHs) by Method SW8270D-SIM; and
- Total Metals by Method EPA6010C.

DATA VALIDATION SUMMARY

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

Data Package Completeness

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

Chain-of-Custody Documentation

Chain-of-custody forms were provided with the laboratory analytical report. The chain-of-custody forms 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 the analyses. The sample cooler arrived at the laboratory within the appropriate temperatures of between 2°C and 6°C.

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 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. 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 sample batches, method blanks for 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.

For inorganic methods, the matrix spike is followed by a post-digestion spike sample if the element percent recoveries were outside the control limits in the matrix spike. The percent recovery control limits for matrix spikes are 75 percent to 125 percent.

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

Laboratory Control Samples

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 control limits for accuracy are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS analyses would apply to samples in the associated

batch, instead of just the parent sample. The percent recovery control limits for LCS analyses are specified in the laboratory documents.

One LCS analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for the analyses and the percent recovery 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. For organic analyses, the RPD control limits are specified in the laboratory documents. For inorganic analyses, the RPD control limit for water is 20 percent and the RPD control limit for soil is 35 percent. Laboratory duplicates were analyzed at the proper frequency and the specified acceptance criteria were met, with the following exception:

SDG 590-483-1: (NWTPH-Dx) A laboratory duplicate analysis was performed on Sample SVDP-7-15. The RPD values for diesel-range and lube oil-range hydrocarbons were greater than the control limits. The positive results for these target analytes were qualified as estimated (J) in this sample.

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 and MS/MSD percent recovery values. Precision was acceptable, as demonstrated by the MS/MSD and laboratory duplicate RPD values, with the exception noted above.

Data is acceptable for the intended use, with the following qualifications listed below in Table 2.

TABLE 2: SUMMARY OF QUALIFIED SAMPLES

Sample ID	Analyte	Qualifier	Reason
SVDP-7-15	Diesel-range Hydrocarbons	J	Laboratory Duplicate RPD
	Lube oil-range Hydrocarbons	J	Laboratory Duplicate RPD

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125, Fax: 509.363.3126 www.geoengineers.com

Data Validation Report

Project:	Tiger Oil – Summitview, Data Gap Assessment April 2015 Direct Push Soil and Groundwater Samples
GEI File No:	00504-101-02
Date:	May 26, 2015

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 2015 sampling event, and the associated laboratory quality control (QC) samples. The samples were obtained from the Tiger Oil, Summitview Site located at 5511 Summitview Avenue in Yakima, 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 QAPP (Appendix A of the Sampling and Analysis Plan, Soil and Groundwater Assessment; GeoEngineers, 2014), 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 Duplicates

VALIDATED SAMPLE DELIVERY GROUPS

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

TABLE 1: SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-580-1	SVDP-16:GW, SVDP-17:GW, SVDP-18:GW, SVDP-19:GW, SVDP-20:GW, SVDP-21:GW
590-581-1	SVDP-16 (22-23), SVDP-17 (19.5-20.5), SVDP-18 (20-21), SVDP-19 (20-21), SVDP-20 (20-21), SVDP-21 (20-21)

CHEMICAL ANALYSIS PERFORMED

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

Groundwater:

- Hydrocarbon Identification (NWTPH-HCID) by Method NWTPH-HCID.

Soil:

- Petroleum Hydrocarbons (NWTPH-Dx) by Method NWTPH-Dx;
- Gas-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method SW8260C;
- Polycyclic Aromatic Hydrocarbons (PAHs) by Method SW8270D-SIM; and
- Total Metals by Method EPA6010C.

DATA VALIDATION SUMMARY

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

Data Package Completeness

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

Chain-of-Custody Documentation

Chain-of-custody forms were provided with the laboratory analytical report. The chain-of-custody forms 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 the analyses. The sample cooler arrived at the laboratory within the appropriate temperatures of between 2°C and 6°C.

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. Surrogate percent recoveries for field samples were within the laboratory control limits, with the following exceptions:

SDG 590-581-1: (PAHs) The percent recovery for surrogate 2-Fluorobiphenyl was less than the control limits in Samples SVDP-16 (22-23), SVDP-17 (19.5-20.5), SVDP-18 (20-21), SVDP-19 (20-21) and SVDP-20 (20-21); however, the samples were spiked with two additional surrogates, both within their respective control limits. No action was required for these outliers.

The percent recoveries for surrogates nitrobenzene-d5 and 2-Fluorobiphenyl were less than the control limits in Sample SVDP-21 (20-21). The reporting limits for the target analytes were qualified as estimated (UJ) in this sample.

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.

For inorganic methods, the matrix spike is followed by a post-digestion spike sample if the element percent recoveries were outside the control limits in the matrix spike. The percent recovery control limits for matrix spikes are 75 percent to 125 percent.

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 the analyses 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 the 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 the analyses 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. For organic analyses, the RPD control limits are specified in the laboratory documents. For inorganic analyses, the RPD control limit for water is 20 percent and the RPD control limit for soil is 35 percent. Laboratory duplicates were analyzed at the proper frequency and the specified acceptance criteria were met.

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, with the exceptions noted above. Precision was acceptable, as demonstrated by the LCS/LCSD, MS/MSD, and laboratory duplicate RPD values.

Data is acceptable for the intended use, with the following qualifications listed below in Table 2.

TABLE 2: SUMMARY OF QUALIFIED SAMPLES

Sample ID	Analyte	Qualifier	Reason
SVDP-21 (20-21)	PAH target analytes	UJ	Surrogate Recovery

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125, Fax: 509.363.3126 www.geoengineers.com

Data Validation Report

Project:	Tiger Oil – Summitview, Data Gap Assessment April 2015 Soil and Groundwater Boring Samples
GEI File No:	00504-101-02
Date:	May 27, 2015

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 2015 sampling event, and the associated laboratory and field quality control (QC) samples. The samples were obtained from the Tiger Oil, Summitview Site located at 5511 Summitview Avenue in Yakima, 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 QAPP (Appendix A of the Sampling and Analysis Plan, Soil and Groundwater Assessment; GeoEngineers, 2014), 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
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Miscellaneous

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
590-628-1	SVDP-22 (20.5-21), SVDP-23 (18-18.5), SVDP-24 (19.5-20), SVDP-25 (19.5-20), SVDP-26 (20-20.5), SVDP-24:GW, SVDP-25:GW, SVDP-26:GW, Trip Blank

CHEMICAL ANALYSIS PERFORMED

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

Groundwater:

- Hydrocarbon Identification (NWTPH-HCID) by Method NWTPH-HCID.

Soil:

- Petroleum Hydrocarbons (NWTPH-Dx) by Method NWTPH-Dx;
- Gas-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method SW8260C;
- Polycyclic Aromatic Hydrocarbons (PAHs) by Method SW8270D-SIM; and
- Total Metals by Method EPA6010C.

DATA VALIDATION SUMMARY

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

Data Package Completeness

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

Chain-of-Custody Documentation

Chain-of-custody forms were provided with the laboratory analytical report. The chain-of-custody forms were accurate and complete when submitted to the laboratory, with the following exception:

SDG 590-628-1: The laboratory noted that Sample Trip Blank was received, but not listed on the chain-of-custody form.

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 the analyses. The sample cooler arrived at the laboratory within the appropriate temperatures of between 2°C and 6°C.

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. Surrogate percent recoveries for field samples were within the laboratory control limits, with the following exceptions:

SDG 590-628-1: (NWTPH-HCID) The percent recovery for surrogate n-Triacontane-d62 was less than the control limits in Samples SVDP-24:GW, SVDP-25:GW and SVDP-26:GW. The positive results and reporting limits for the target analytes were qualified as estimated (J/UJ) in these samples.

Method and Trip 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 applicable methods were analyzed at the required frequency. None of the analytes of interest were detected above the reporting limits in the method 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 above the reporting limits in the trip blank.

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

Miscellaneous

SDG 590-628-1: (NWTPH-HCID) The DRPH and ORPH results for Samples SVDP-24:GW and SVDP-25:GW may be influenced by the relative concentration of GRPH in the samples. For this reason, the positive results for DRPH and ORPH were qualified as estimated (J) in these samples, in order to signify a potential high bias.

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, with the exceptions noted above. Precision was acceptable, as demonstrated by the LCS/LCSD RPD values.

The data is acceptable for the intended use, with the following qualifications listed below in Table 2.

TABLE 2: SUMMARY OF QUALIFIED SAMPLES

Sample ID	Analyte	Qualifier	Reason
SVDP-24:GW	Gasoline-range Hydrocarbons	J	Surrogate Recovery
	Diesel-range Hydrocarbons	J	Surrogate Recovery/Other
	Lube oil-range Hydrocarbons	J	Surrogate Recovery/Other
SVDP-25:GW	Gasoline-range Hydrocarbons	J	Surrogate Recovery
	Diesel-range Hydrocarbons	J	Surrogate Recovery/Other
	Lube oil-range Hydrocarbons	UJ	Surrogate Recovery
SVDP-26:GW	Gasoline-range Hydrocarbons	UJ	Surrogate Recovery
	Diesel-range Hydrocarbons	UJ	Surrogate Recovery
	Lube oil-range Hydrocarbons	UJ	Surrogate Recovery

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125, Fax: 509.363.3126 www.geoengineers.com

Data Validation Report

Project:	Tiger Oil – Summitview, Data Gap Assessment April 2015 Soil Samples
GEI File No:	00504-101-02
Date:	May 19, 2015

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 April 2015 sampling event, and the associated laboratory and field quality control (QC) samples. The samples were obtained from the Tiger Oil, Summitview Site located at 5511 Summitview Avenue in Yakima, 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 QAPP (Appendix A of the Sampling and Analysis Plan, Soil and Groundwater Assessment; GeoEngineers, 2014), 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 group (SDG) listed below in Table 1.

TABLE 1: SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-731-1	SVMW-4 (22.5-23), SVMW-5 (22.5-23), SVMW-Dup

CHEMICAL ANALYSIS PERFORMED

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

- Petroleum Hydrocarbons (NWTPH-Dx) by Method NWTPH-Dx;
- Gas-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method SW8260C;
- Polycyclic Aromatic Hydrocarbons (PAHs) by Method SW8270D-SIM; and
- Total Metals by Method EPA6010C.

DATA VALIDATION SUMMARY

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

Data Package Completeness

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

Chain-of-Custody Documentation

Chain-of-custody forms were provided with the laboratory analytical report. The chain-of-custody forms 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 the analyses. The sample cooler arrived at the laboratory outside the appropriate temperatures of between 2°C and 6°C. The out-of-compliance temperature is detailed below.

SDG 590-731-1: The sample cooler temperature recorded at the laboratory was 8.2°C. The samples were put on ice when they were collected (4/27/2015) and ice was added every day until they were received by the laboratory (4/29/2015). The out-of-compliance temperature was very likely isolated to the day the

samples were received at the laboratory. For this reason, 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. 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 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.

For inorganic methods, the matrix spike is followed by a post-digestion spike sample if the element percent recoveries were outside the control limits in the matrix spike. The percent recovery control limits for matrix spikes are 75 percent to 125 percent.

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 the analyses 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/laboratory control sample duplicate (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 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 the analyses 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. For organic analyses, the RPD control limits are specified in the laboratory documents. For inorganic analyses, the RPD control limit is 35 percent. 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 are collected and analyzed along with the reviewed sample batches. The duplicate samples are 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 less than five times the reporting limit for that sample, then the absolute difference is used instead of the RPD. The RPD control limit is 35 percent.

SDG 590-731-1: One field duplicate sample pair, SVMW-5 (22.5-23) and SVMW-Dup, was submitted with this SDG. The precision criteria for the 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. Data is acceptable for the intended use.

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125, Fax: 509.363.3126 www.geoengineers.com

Data Validation Report

Project:	Tiger Oil - Summitview Second Quarter 2015 Groundwater Samples
GEI File No:	00504-101-00
Date:	June 11, 2015

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 groundwater samples collected as part of the May 2015 sampling event, and the associated laboratory and field quality control (QC) samples. The samples were obtained from the Tiger Oil, Summitview Site located at 5511 Summitview Avenue in Yakima, 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 QAPP (Appendix A of the Sampling and Analysis Plan, Soil and Groundwater Assessment; GeoEngineers, 2014), 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
- Field Duplicates
- Miscellaneous

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
590-870-1	SVMW-2, SVMW-3, Duplicate, SVMW-4, SVMW-5, Trip Blank

CHEMICAL ANALYSIS PERFORMED

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

- Petroleum Hydrocarbons (NWTPH-Dx) by Method NWTPH-Dx;
- Petroleum Hydrocarbons with Silica Gel (SG) Cleanup (NWTPH-Dx/SG) by Method NWTPH-Dx/SG;
- Gas-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method SW8260C;
- 1,2-Dibromoethane (EDB) by Method SW8011;
- Polycyclic Aromatic Hydrocarbons (PAHs) by Method SW8270D-SIM;
- Total Metals by Method EPA200.7;
- Anions by Method EPA300.0; and
- Total Organic Carbon (TOC) by Method SM5310C.

DATA VALIDATION SUMMARY

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

Data Package Completeness

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

Chain-of-Custody Documentation

Chain-of-custody forms were provided with the laboratory analytical report. The chain-of-custody forms 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 all analyses. The sample cooler arrived at the laboratory within the appropriate temperatures of between 2°C and 6°C.

Surrogate Recoveries

A surrogate compound is a compound that is chemically similar to the organic analytes of interest, but unlikely to be found in any environmental sample. Surrogates are used for organic analyses and are added to all 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. All 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 all sample batches, method blanks for all applicable methods were analyzed at the required frequency. None of the analytes of interest were detected above the reporting limits in any of 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 target analytes were detected above the reporting limits 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. 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.

For inorganic methods, the matrix spike is followed by a post-digestion spike sample if any element percent recoveries were outside the control limits in the matrix spike. The percent recovery control limits for matrix spikes are 75 percent to 125 percent.

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

Laboratory Control Samples

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 control limits for accuracy are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS analyses would apply to all samples in the associated batch, instead of just the parent sample. The percent recovery control limits for LCS analyses are specified in the laboratory documents.

One LCS 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 values were within the proper control limits.

Field Duplicates

In order to assess precision, field duplicate samples are collected and analyzed along with the reviewed sample batches. The duplicate samples are 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 less than five times the reporting limit for that sample, then the absolute difference is used instead of the RPD. The RPD control limit is 20 percent.

SDG 590-870-1: One field duplicate sample pair, SVMW-3 and Duplicate, was submitted with this SDG. The precision criteria for all target analytes were met for this sample pair.

Miscellaneous

SDG 590-870-1: (NWTPH-Dx) The positive results for DRPH in Samples SVMW-3, Duplicate and SVMW-5 may be influenced by the relative concentration of GRPH in these samples. For this reason, the positive results for DRPH were qualified as estimated (J) in these samples, in order to signify a potential high bias.

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 and MS percent recovery values. Precision was acceptable, as demonstrated by the field duplicate RPD values.

All data are acceptable for the intended use, with the following qualifications listed below in Table 2.

TABLE 2: SUMMARY OF QUALIFIED SAMPLES

Sample ID	Analyte	Qualifier	Reason
SVMW-3	Diesel-range Hydrocarbons	J	See Miscellaneous
Duplicate	Diesel-range Hydrocarbons	J	See Miscellaneous
SVMW-5	Diesel-range Hydrocarbons	J	See Miscellaneous

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: 590-483-1
Client Project/Site: Tiger Oil - Summitview

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

Attn: JR Sugalski

Authorized for release by:
3/30/2015 6:04:27 PM

Michelle Johnston, Project Manager II
(303)736-0110
michelle.johnston@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.

Table of Contents

Sample Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-483-1	SVDP-9-20	Solid	03/17/15 14:15	03/20/15 12:10
590-483-2	SVDP-7-15	Solid	03/17/15 09:05	03/20/15 12:10
590-483-3	SVDP-11-13	Solid	03/17/15 10:44	03/20/15 12:10
590-483-4	SVDP-10-19	Solid	03/17/15 12:53	03/20/15 12:10
590-483-5	SVDP-8-14	Solid	03/17/15 11:38	03/20/15 12:10
590-483-6	SVDP-15-13	Solid	03/18/15 10:25	03/20/15 12:10
590-483-7	SVDP-13-18.0	Solid	03/16/15 16:55	03/20/15 12:10
590-483-8	SVDP-12-18.5	Solid	03/16/15 13:55	03/20/15 12:10
590-483-9	SVDP-14-15	Solid	03/17/15 15:05	03/20/15 12:10

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit

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: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Client Sample ID: SVDP-9-20
Date Collected: 03/17/15 14:15
Date Received: 03/20/15 12:10

Lab Sample ID: 590-483-1
Matrix: Solid
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		0.25		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10
Ethylbenzene	**13**		1.6		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10
m,p-Xylene	**51**		6.6		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10
o-Xylene	**18**		3.3		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10
Toluene	**8.5**		1.6		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10
Naphthalene	**4.8**		3.3		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10
Xylenes, Total	**69**		9.9		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 11:50*	*10*
4-Bromofluorobenzene (Surr)	*104*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 11:50*	*10*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*03/25/15 10:38*	*03/25/15 11:50*	*10*
Toluene-d8 (Surr)	*97*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 11:50*	*10*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**1400**		82		mg/Kg	☼	03/25/15 10:38	03/25/15 11:50	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 11:50*	*10*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**89**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
2-Methylnaphthalene	**300**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
1-Methylnaphthalene	**130**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Acenaphthylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Acenaphthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Fluorene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Phenanthrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Chrysene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*53*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 13:45*	*1*
2-Fluorobiphenyl (Surr)	*73*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 13:45*	*1*
p-Terphenyl-d14	*80*		*48 - 166*	*03/26/15 11:12*	*03/26/15 13:45*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		17		mg/Kg	☼	03/25/15 09:56	03/25/15 12:08	1

Client Sample ID: SVDP-9-20

Lab Sample ID: 590-483-1
Date Collected: 03/17/15 14:15
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 80.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		43		mg/Kg	☼	03/25/15 09:56	03/25/15 12:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*90*		*50 - 150*	*03/25/15 09:56*	*03/25/15 12:08*	*1*
n-Triacontane-d62	*93*		*50 - 150*	*03/25/15 09:56*	*03/25/15 12:08*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**6.8**		5.8		mg/Kg	☼	03/23/15 07:57	03/24/15 18:03	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**20**		0.010		%			03/23/15 14:09	1
Percent Solids	**80**		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-7-15

Lab Sample ID: 590-483-2
Date Collected: 03/17/15 09:05
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 83.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.23		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10
Ethylbenzene	**14**		1.5		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10
m,p-Xylene	**67**		6.1		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10
o-Xylene	**29**		3.1		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10
Toluene	**11**		1.5		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10
Naphthalene	**20**		3.1		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10
Xylenes, Total	**96**		9.2		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 15:11*	*10*
4-Bromofluorobenzene (Surr)	*104*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 15:11*	*10*
Dibromofluoromethane (Surr)	*100*		*80 - 120*	*03/25/15 10:38*	*03/25/15 15:11*	*10*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 15:11*	*10*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**750**		76		mg/Kg	☼	03/25/15 10:38	03/25/15 15:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 15:11*	*10*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**10000**		60		ug/Kg	☼	03/26/15 11:12	03/27/15 11:59	5
2-Methylnaphthalene	**5400**		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
1-Methylnaphthalene	**2400**		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Acenaphthylene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Acenaphthene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Fluorene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Phenanthrene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2

Client Sample ID: SVDP-7-15

Lab Sample ID: 590-483-2
Date Collected: 03/17/15 09:05
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 83.1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Fluoranthene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Pyrene	**24**		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Benzo[a]anthracene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Chrysene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Benzo[b]fluoranthene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Benzo[k]fluoranthene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Benzo[a]pyrene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Indeno[1,2,3-cd]pyrene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Dibenz(a,h)anthracene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2
Benzo[g,h,i]perylene	ND		24		ug/Kg	☼	03/26/15 11:12	03/26/15 14:08	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*61*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 14:08*	*2*
2-Fluorobiphenyl (Surr)	*86*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 14:08*	*2*
p-Terphenyl-d14	*82*		*48 - 166*	*03/26/15 11:12*	*03/26/15 14:08*	*2*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**170**		12		mg/Kg	☼	03/25/15 09:56	03/25/15 12:52	1
Residual Range Organics (RRO) (C25-C36)	**150**		30		mg/Kg	☼	03/25/15 09:56	03/25/15 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*98*		*50 - 150*	*03/25/15 09:56*	*03/25/15 12:52*	*1*
n-Triacontane-d62	*101*		*50 - 150*	*03/25/15 09:56*	*03/25/15 12:52*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**38**		4.7		mg/Kg	☼	03/23/15 07:57	03/24/15 18:07	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**17**		0.010		%			03/23/15 14:09	1
Percent Solids	**83**		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-11-13

Lab Sample ID: 590-483-3
Date Collected: 03/17/15 10:44
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 79.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.017		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1
Ethylbenzene	ND		0.11		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1
m,p-Xylene	ND		0.44		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1
o-Xylene	ND		0.22		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1
Toluene	ND		0.11		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1
Naphthalene	ND		0.22		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1
Xylenes, Total	ND		0.66		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1

Client Sample ID: SVDP-11-13
Date Collected: 03/17/15 10:44
Date Received: 03/20/15 12:10

Lab Sample ID: 590-483-3
Matrix: Solid
Percent Solids: 79.3

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 12:35*	*1*
4-Bromofluorobenzene (Surr)	*98*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 12:35*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*03/25/15 10:38*	*03/25/15 12:35*	*1*
Toluene-d8 (Surr)	*103*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 12:35*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.5		mg/Kg	☼	03/25/15 10:38	03/25/15 12:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 12:35*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Acenaphthylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Acenaphthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Fluorene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Phenanthrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Chrysene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*54*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 14:30*	*1*
2-Fluorobiphenyl (Surr)	*73*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 14:30*	*1*
p-Terphenyl-d14	*83*		*48 - 166*	*03/26/15 11:12*	*03/26/15 14:30*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	03/25/15 09:56	03/25/15 13:15	1
Residual Range Organics (RRO) (C25-C36)	ND		30		mg/Kg	☼	03/25/15 09:56	03/25/15 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*50 - 150*	*03/25/15 09:56*	*03/25/15 13:15*	*1*
n-Triacontane-d62	*100*		*50 - 150*	*03/25/15 09:56*	*03/25/15 13:15*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**7.0**		5.6		mg/Kg	☼	03/23/15 07:57	03/24/15 18:11	5

Client Sample ID: SVDP-11-13

Lab Sample ID: 590-483-3

Date Collected: 03/17/15 10:44

Matrix: Solid

Date Received: 03/20/15 12:10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	21		0.010		%			03/23/15 14:09	1
Percent Solids	79		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-10-19

Lab Sample ID: 590-483-4

Date Collected: 03/17/15 12:53

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 79.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.013		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1
Ethylbenzene	ND		0.084		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1
m,p-Xylene	ND		0.34		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1
o-Xylene	ND		0.17		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1
Toluene	ND		0.084		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1
Naphthalene	ND		0.17		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1
Xylenes, Total	ND		0.51		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 12:57*	*1*
4-Bromofluorobenzene (Surr)	*110*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 12:57*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*	*03/25/15 10:38*	*03/25/15 12:57*	*1*
Toluene-d8 (Surr)	*98*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 12:57*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	30		4.2		mg/Kg	☼	03/25/15 10:38	03/25/15 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 12:57*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Acenaphthylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Acenaphthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Fluorene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Phenanthrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Chrysene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 15:38	1

Client Sample ID: SVDP-10-19

Lab Sample ID: 590-483-4

Date Collected: 03/17/15 12:53

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 79.7

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*50*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 15:38*	*1*
2-Fluorobiphenyl (Surr)	*65*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 15:38*	*1*
p-Terphenyl-d14	*85*		*48 - 166*	*03/26/15 11:12*	*03/26/15 15:38*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**35**		12		mg/Kg	☼	03/25/15 09:56	03/25/15 13:38	1
Residual Range Organics (RRO) (C25-C36)	**97**		30		mg/Kg	☼	03/25/15 09:56	03/25/15 13:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*99*		*50 - 150*	*03/25/15 09:56*	*03/25/15 13:38*	*1*
n-Triacontane-d62	*108*		*50 - 150*	*03/25/15 09:56*	*03/25/15 13:38*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**6.2**		5.0		mg/Kg	☼	03/23/15 07:57	03/24/15 18:13	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**20**		0.010		%			03/23/15 14:09	1
Percent Solids	**80**		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-8-14

Lab Sample ID: 590-483-5

Date Collected: 03/17/15 11:38

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 83.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.017		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1
Ethylbenzene	ND		0.11		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1
m,p-Xylene	ND		0.45		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1
o-Xylene	ND		0.23		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1
Toluene	ND		0.11		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1
Naphthalene	ND		0.23		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1
Xylenes, Total	ND		0.68		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 13:20*	*1*
4-Bromofluorobenzene (Surr)	*100*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 13:20*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*	*03/25/15 10:38*	*03/25/15 13:20*	*1*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 13:20*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.7		mg/Kg	☼	03/25/15 10:38	03/25/15 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 13:20*	*1*

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Client Sample ID: SVDP-8-14

Lab Sample ID: 590-483-5
Date Collected: 03/17/15 11:38
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 83.8

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Acenaphthylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Acenaphthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Fluorene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Phenanthrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Chrysene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*43*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 16:00*	*1*
2-Fluorobiphenyl (Surr)	*58*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 16:00*	*1*
p-Terphenyl-d14	*77*		*48 - 166*	*03/26/15 11:12*	*03/26/15 16:00*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	03/25/15 09:56	03/25/15 14:01	1
Residual Range Organics (RRO) (C25-C36)	ND		29		mg/Kg	☼	03/25/15 09:56	03/25/15 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*03/25/15 09:56*	*03/25/15 14:01*	*1*
n-Triacontane-d62	*96*		*50 - 150*	*03/25/15 09:56*	*03/25/15 14:01*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**9.3**		5.6		mg/Kg	☼	03/23/15 07:57	03/24/15 18:17	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**16**		0.010		%			03/23/15 14:09	1
Percent Solids	**84**		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-15-13

Lab Sample ID: 590-483-6
Date Collected: 03/18/15 10:25
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 80.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Client Sample ID: SVDP-15-13
Date Collected: 03/18/15 10:25
Date Received: 03/20/15 12:10

Lab Sample ID: 590-483-6
Matrix: Solid
Percent Solids: 80.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		0.15		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1
m,p-Xylene	ND		0.62		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1
o-Xylene	ND		0.31		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1
Toluene	ND		0.15		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1
Naphthalene	ND		0.31		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1
Xylenes, Total	ND		0.93		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 13:42*	*1*
4-Bromofluorobenzene (Surr)	*101*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 13:42*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*03/25/15 10:38*	*03/25/15 13:42*	*1*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 13:42*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		7.7		mg/Kg	☼	03/25/15 10:38	03/25/15 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 13:42*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Acenaphthylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Acenaphthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Fluorene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Phenanthrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Chrysene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*56*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 16:23*	*1*
2-Fluorobiphenyl (Surr)	*76*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 16:23*	*1*
p-Terphenyl-d14	*86*		*48 - 166*	*03/26/15 11:12*	*03/26/15 16:23*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	03/25/15 09:56	03/25/15 14:21	1

Client Sample ID: SVDP-15-13

Lab Sample ID: 590-483-6
Date Collected: 03/18/15 10:25
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 80.9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		30		mg/Kg	☼	03/25/15 09:56	03/25/15 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*93*		*50 - 150*	*03/25/15 09:56*	*03/25/15 14:21*	*1*
n-Triacontane-d62	*97*		*50 - 150*	*03/25/15 09:56*	*03/25/15 14:21*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**5.6**		5.2		mg/Kg	☼	03/23/15 07:57	03/24/15 18:20	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**19**		0.010		%			03/23/15 14:09	1
Percent Solids	**81**		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-13-18.0

Lab Sample ID: 590-483-7
Date Collected: 03/16/15 16:55
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 76.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.015		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1
Ethylbenzene	ND		0.10		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1
m,p-Xylene	ND		0.40		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1
o-Xylene	ND		0.20		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1
Toluene	ND		0.10		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1
Naphthalene	ND		0.20		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1
Xylenes, Total	ND		0.60		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 14:04*	*1*
4-Bromofluorobenzene (Surr)	*100*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 14:04*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*03/25/15 10:38*	*03/25/15 14:04*	*1*
Toluene-d8 (Surr)	*100*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 14:04*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg	☼	03/25/15 10:38	03/25/15 14:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 14:04*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
2-Methylnaphthalene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
1-Methylnaphthalene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Acenaphthylene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Acenaphthene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Fluorene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Phenanthrene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1

Client Sample ID: SVDP-13-18.0

Lab Sample ID: 590-483-7

Date Collected: 03/16/15 16:55
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 76.9

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Fluoranthene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Pyrene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Benzo[a]anthracene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Chrysene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Benzo[b]fluoranthene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Benzo[k]fluoranthene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Benzo[a]pyrene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Indeno[1,2,3-cd]pyrene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Dibenz(a,h)anthracene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1
Benzo[g,h,i]perylene	ND		13		ug/Kg	☼	03/26/15 11:12	03/26/15 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*45*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 16:45*	*1*
2-Fluorobiphenyl (Surr)	*62*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 16:45*	*1*
p-Terphenyl-d14	*80*		*48 - 166*	*03/26/15 11:12*	*03/26/15 16:45*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		13		mg/Kg	☼	03/25/15 09:56	03/25/15 14:44	1
Residual Range Organics (RRO) (C25-C36)	ND		31		mg/Kg	☼	03/25/15 09:56	03/25/15 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*03/25/15 09:56*	*03/25/15 14:44*	*1*
n-Triacontane-d62	*101*		*50 - 150*	*03/25/15 09:56*	*03/25/15 14:44*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		4.3		mg/Kg	☼	03/23/15 07:57	03/24/15 18:24	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**23**		0.010		%			03/23/15 14:09	1
Percent Solids	**77**		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-12-18.5

Lab Sample ID: 590-483-8

Date Collected: 03/16/15 13:55
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 81.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.5		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100
Ethylbenzene	**22**		10		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100
m,p-Xylene	**95**		40		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100
o-Xylene	**31**		20		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100
Toluene	**12**		10		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100
Naphthalene	ND		20		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100
Xylenes, Total	**130**		60		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100

Client Sample ID: SVDP-12-18.5
Date Collected: 03/16/15 13:55
Date Received: 03/20/15 12:10

Lab Sample ID: 590-483-8
Matrix: Solid
Percent Solids: 81.3

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 14:27*	*100*
4-Bromofluorobenzene (Surr)	*100*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 14:27*	*100*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*03/25/15 10:38*	*03/25/15 14:27*	*100*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 14:27*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**1400**		500		mg/Kg	☼	03/25/15 10:38	03/25/15 14:27	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 14:27*	*100*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**2800**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
2-Methylnaphthalene	**24000**		120		ug/Kg	☼	03/26/15 11:12	03/27/15 12:21	10
1-Methylnaphthalene	**11000**		120		ug/Kg	☼	03/26/15 11:12	03/27/15 12:21	10
Acenaphthylene	**38**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Acenaphthene	**88**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Fluorene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Phenanthrene	**60**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Anthracene	**15**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Fluoranthene	**16**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Pyrene	**18**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Benzo[a]anthracene	**12**		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Chrysene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	03/26/15 11:12	03/26/15 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*78*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 17:08*	*1*
2-Fluorobiphenyl (Surr)	*85*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 17:08*	*1*
p-Terphenyl-d14	*83*		*48 - 166*	*03/26/15 11:12*	*03/26/15 17:08*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**480**		35		mg/Kg	☼	03/25/15 09:56	03/26/15 09:28	2
Residual Range Organics (RRO) (C25-C36)	ND		88		mg/Kg	☼	03/25/15 09:56	03/26/15 09:28	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*90*		*50 - 150*	*03/25/15 09:56*	*03/26/15 09:28*	*2*
n-Triacontane-d62	*98*		*50 - 150*	*03/25/15 09:56*	*03/26/15 09:28*	*2*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		4.1		mg/Kg	☼	03/23/15 07:57	03/24/15 18:28	5

Client Sample ID: SVDP-12-18.5

Lab Sample ID: 590-483-8

Date Collected: 03/16/15 13:55

Matrix: Solid

Date Received: 03/20/15 12:10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	19		0.010		%			03/23/15 14:09	1
Percent Solids	81		0.010		%			03/23/15 14:09	1

Client Sample ID: SVDP-14-15

Lab Sample ID: 590-483-9

Date Collected: 03/17/15 15:05

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 73.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1
Ethylbenzene	ND		0.14		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1
m,p-Xylene	ND		0.58		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1
o-Xylene	ND		0.29		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1
Toluene	ND		0.14		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1
Naphthalene	ND		0.29		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1
Xylenes, Total	ND		0.86		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 14:49*	*1*
4-Bromofluorobenzene (Surr)	*101*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 14:49*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*03/25/15 10:38*	*03/25/15 14:49*	*1*
Toluene-d8 (Surr)	*102*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 14:49*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		7.2		mg/Kg	☼	03/25/15 10:38	03/25/15 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 14:49*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
2-Methylnaphthalene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
1-Methylnaphthalene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Acenaphthylene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Acenaphthene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Fluorene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Phenanthrene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Anthracene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Fluoranthene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Pyrene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Benzo[a]anthracene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Chrysene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Benzo[b]fluoranthene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Benzo[k]fluoranthene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Benzo[a]pyrene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Indeno[1,2,3-cd]pyrene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Dibenz(a,h)anthracene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1
Benzo[g,h,i]perylene	ND		14		ug/Kg	☼	03/26/15 11:12	03/26/15 17:30	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Client Sample ID: SVDP-14-15
Date Collected: 03/17/15 15:05
Date Received: 03/20/15 12:10

Lab Sample ID: 590-483-9
Matrix: Solid
Percent Solids: 73.8

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*52*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 17:30*	*1*
2-Fluorobiphenyl (Surr)	*69*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 17:30*	*1*
p-Terphenyl-d14	*83*		*48 - 166*	*03/26/15 11:12*	*03/26/15 17:30*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		13		mg/Kg	☼	03/25/15 09:56	03/25/15 15:53	1
Residual Range Organics (RRO) (C25-C36)	ND		34		mg/Kg	☼	03/25/15 09:56	03/25/15 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*90*		*50 - 150*	*03/25/15 09:56*	*03/25/15 15:53*	*1*
n-Triacontane-d62	*93*		*50 - 150*	*03/25/15 09:56*	*03/25/15 15:53*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		5.3		mg/Kg	☼	03/23/15 07:57	03/24/15 18:42	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**26**		0.010		%			03/23/15 14:09	1
Percent Solids	**74**		0.010		%			03/23/15 14:09	1

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

Lab Sample ID: MB 590-859/1-A
Matrix: Solid
Analysis Batch: 850

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 859

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.015		mg/Kg		03/25/15 10:38	03/25/15 10:20	1
Ethylbenzene	ND		0.10		mg/Kg		03/25/15 10:38	03/25/15 10:20	1
m,p-Xylene	ND		0.40		mg/Kg		03/25/15 10:38	03/25/15 10:20	1
o-Xylene	ND		0.20		mg/Kg		03/25/15 10:38	03/25/15 10:20	1
Toluene	ND		0.10		mg/Kg		03/25/15 10:38	03/25/15 10:20	1
Naphthalene	ND		0.20		mg/Kg		03/25/15 10:38	03/25/15 10:20	1
Xylenes, Total	ND		0.60		mg/Kg		03/25/15 10:38	03/25/15 10:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*74.7 - 120*	*03/25/15 10:38*	*03/25/15 10:20*	*1*
4-Bromofluorobenzene (Surr)	*99*		*69.8 - 140*	*03/25/15 10:38*	*03/25/15 10:20*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*	*03/25/15 10:38*	*03/25/15 10:20*	*1*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*03/25/15 10:38*	*03/25/15 10:20*	*1*

Lab Sample ID: LCS 590-859/2-A
Matrix: Solid
Analysis Batch: 850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 859

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.500	0.483		mg/Kg		97	75.8 - 123
Ethylbenzene	0.500	0.472		mg/Kg		94	77.3 - 121
m,p-Xylene	0.500	0.484		mg/Kg		97	77.7 - 124
o-Xylene	0.500	0.478		mg/Kg		96	76.7 - 129
Toluene	0.500	0.478		mg/Kg		96	76.6 - 125
Naphthalene	0.500	0.440		mg/Kg		88	55.1 - 142

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*74.7 - 120*
4-Bromofluorobenzene (Surr)	*98*		*69.8 - 140*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*100*		*78.5 - 125*

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

Lab Sample ID: MB 590-859/1-A
Matrix: Solid
Analysis Batch: 852

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 859

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		03/25/15 10:38	03/25/15 10:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41.5 - 162*	*03/25/15 10:38*	*03/25/15 10:20*	*1*

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

Lab Sample ID: LCS 590-859/3-A
Matrix: Solid
Analysis Batch: 852

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 859

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	50.0	47.8		mg/Kg		96	74.4 - 124

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*41.5 - 162*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-877/1-A
Matrix: Solid
Analysis Batch: 876

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 877

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
2-Methylnaphthalene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
1-Methylnaphthalene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Acenaphthylene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Acenaphthene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Fluorene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Phenanthrene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Anthracene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Fluoranthene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Pyrene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Benzo[a]anthracene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Chrysene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Benzo[b]fluoranthene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Benzo[k]fluoranthene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Benzo[a]pyrene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		03/26/15 11:12	03/26/15 17:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*60*		*35.1 - 144*	*03/26/15 11:12*	*03/26/15 17:53*	*1*
2-Fluorobiphenyl (Surr)	*67*		*48.8 - 134*	*03/26/15 11:12*	*03/26/15 17:53*	*1*
p-Terphenyl-d14	*90*		*48 - 166*	*03/26/15 11:12*	*03/26/15 17:53*	*1*

Lab Sample ID: LCS 590-877/2-A
Matrix: Solid
Analysis Batch: 876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	267	154		ug/Kg		58	51.4 - 133
Fluorene	267	246		ug/Kg		92	65.7 - 123
Chrysene	267	239		ug/Kg		90	57.3 - 133
Indeno[1,2,3-cd]pyrene	267	341		ug/Kg		128	54.6 - 142

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 590-877/2-A
Matrix: Solid
Analysis Batch: 876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 877

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	52		35.1 - 144
2-Fluorobiphenyl (Surr)	71		48.8 - 134
p-Terphenyl-d14	88		48 - 166

Lab Sample ID: 590-483-3 MS
Matrix: Solid
Analysis Batch: 876

Client Sample ID: SVDP-11-13
Prep Type: Total/NA
Prep Batch: 877

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	ND		323	217		ug/Kg	☼	67	30 - 120
Fluorene	ND		323	313		ug/Kg	☼	97	30 - 140
Chrysene	ND		323	269		ug/Kg	☼	83	30 - 133
Indeno[1,2,3-cd]pyrene	ND		323	303		ug/Kg	☼	94	30 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Nitrobenzene-d5	61		35.1 - 144
2-Fluorobiphenyl (Surr)	85		48.8 - 134
p-Terphenyl-d14	86		48 - 166

Lab Sample ID: 590-483-3 MSD
Matrix: Solid
Analysis Batch: 876

Client Sample ID: SVDP-11-13
Prep Type: Total/NA
Prep Batch: 877

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		330	195		ug/Kg	☼	59	30 - 120	10	35
Fluorene	ND		330	316		ug/Kg	☼	96	30 - 140	1	35
Chrysene	ND		330	273		ug/Kg	☼	83	30 - 133	1	35
Indeno[1,2,3-cd]pyrene	ND		330	349		ug/Kg	☼	106	30 - 140	14	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Nitrobenzene-d5	63		35.1 - 144
2-Fluorobiphenyl (Surr)	79		48.8 - 134
p-Terphenyl-d14	80		48 - 166

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-853/1-A
Matrix: Solid
Analysis Batch: 856

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		10		mg/Kg		03/25/15 09:56	03/25/15 11:22	1
Residual Range Organics (RRO) (C25-C36)	ND		25		mg/Kg		03/25/15 09:56	03/25/15 11:22	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: MB 590-853/1-A
Matrix: Solid
Analysis Batch: 856

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 853

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	03/25/15 09:56	03/25/15 11:22	1
n-Triacontane-d62	90		50 - 150	03/25/15 09:56	03/25/15 11:22	1

Lab Sample ID: LCS 590-853/2-A
Matrix: Solid
Analysis Batch: 856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	66.7	58.3		mg/Kg		87	50 - 150
Residual Range Organics (RRO) (C25-C36)	66.7	58.8		mg/Kg		88	

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	98		50 - 150
n-Triacontane-d62	99		50 - 150

Lab Sample ID: 590-483-2 DU
Matrix: Solid
Analysis Batch: 856

Client Sample ID: SVDP-7-15
Prep Type: Total/NA
Prep Batch: 853

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	170		82.3	F3	mg/Kg	☼	69	40
Residual Range Organics (RRO) (C25-C36)	150		91.7	F3	mg/Kg	☼	47	40

Surrogate	DU %Recovery	DU Qualifier	Limits
o-Terphenyl	97		50 - 150
n-Triacontane-d62	102		50 - 150

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 590-819/2-A
Matrix: Solid
Analysis Batch: 845

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 819

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.025		mg/Kg		03/23/15 07:56	03/24/15 11:25	1

Lab Sample ID: LCS 590-819/1-A
Matrix: Solid
Analysis Batch: 845

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 819

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.976		mg/Kg		98	80 - 120

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Method: Moisture - Percent Moisture

Lab Sample ID: 590-483-1 DU
Matrix: Solid
Analysis Batch: 832

Client Sample ID: SVDP-9-20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	20			21		%				3	20
Percent Solids	80			79		%				0.8	20

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Client Sample ID: SVDP-9-20

Lab Sample ID: 590-483-1

Date Collected: 03/17/15 14:15

Matrix: Solid

Date Received: 03/20/15 12:10

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			4.466 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		10	4.466 g	5 mL	850	03/25/15 11:50	MRS	TAL SPK
Total/NA	Prep	5035			4.466 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		10	4.466 g	5 mL	852	03/25/15 11:50	MRS	TAL SPK
Total/NA	Prep	3550C			15.32 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.32 g	2 mL	876	03/26/15 13:45	NMI	TAL SPK
Total/NA	Prep	3550C			10.92 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	10.92 g	5 mL	856	03/25/15 12:08	NMI	TAL SPK
Total/NA	Prep	3050B			1.35 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.35 g	50 mL	864	03/24/15 18:03	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-7-15

Lab Sample ID: 590-483-2

Date Collected: 03/17/15 09:05

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.552 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		10	4.552 g	5 mL	850	03/25/15 15:11	MRS	TAL SPK
Total/NA	Prep	5035			4.552 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		10	4.552 g	5 mL	852	03/25/15 15:11	MRS	TAL SPK
Total/NA	Prep	3550C			15.10 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		2	15.10 g	2 mL	876	03/26/15 14:08	NMI	TAL SPK
Total/NA	Prep	3550C			15.10 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		5	15.10 g	2 mL	890	03/27/15 11:59	NMI	TAL SPK
Total/NA	Prep	3550C			15.27 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.27 g	5 mL	856	03/25/15 12:52	NMI	TAL SPK
Total/NA	Prep	3050B			1.59 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.59 g	50 mL	864	03/24/15 18:07	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-11-13

Lab Sample ID: 590-483-3

Date Collected: 03/17/15 10:44

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 79.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			7.512 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		1	7.512 g	5 mL	850	03/25/15 12:35	MRS	TAL SPK
Total/NA	Prep	5035			7.512 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	7.512 g	5 mL	852	03/25/15 12:35	MRS	TAL SPK
Total/NA	Prep	3550C			15.71 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.71 g	2 mL	876	03/26/15 14:30	NMI	TAL SPK
Total/NA	Prep	3550C			15.85 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK

Client Sample ID: SVDP-11-13

Lab Sample ID: 590-483-3

Date Collected: 03/17/15 10:44

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 79.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	NWTPH-Dx		1	15.85 g	5 mL	856	03/25/15 13:15	NMI	TAL SPK
Total/NA	Prep	3050B			1.40 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.40 g	50 mL	864	03/24/15 18:11	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-10-19

Lab Sample ID: 590-483-4

Date Collected: 03/17/15 12:53

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 79.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			10.633 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		1	10.633 g	5 mL	850	03/25/15 12:57	MRS	TAL SPK
Total/NA	Prep	5035			10.633 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	10.633 g	5 mL	852	03/25/15 12:57	MRS	TAL SPK
Total/NA	Prep	3550C			15.19 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.19 g	2 mL	876	03/26/15 15:38	NMI	TAL SPK
Total/NA	Prep	3550C			15.47 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.47 g	5 mL	856	03/25/15 13:38	NMI	TAL SPK
Total/NA	Prep	3050B			1.58 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.58 g	50 mL	864	03/24/15 18:13	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-8-14

Lab Sample ID: 590-483-5

Date Collected: 03/17/15 11:38

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 83.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.357 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		1	6.357 g	5 mL	850	03/25/15 13:20	MRS	TAL SPK
Total/NA	Prep	5035			6.357 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	6.357 g	5 mL	852	03/25/15 13:20	MRS	TAL SPK
Total/NA	Prep	3550C			15.12 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.12 g	2 mL	876	03/26/15 16:00	NMI	TAL SPK
Total/NA	Prep	3550C			15.43 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.43 g	5 mL	856	03/25/15 14:01	NMI	TAL SPK
Total/NA	Prep	3050B			1.34 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.34 g	50 mL	864	03/24/15 18:17	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-15-13

Lab Sample ID: 590-483-6

Date Collected: 03/18/15 10:25

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 80.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.736 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		1	4.736 g	5 mL	850	03/25/15 13:42	MRS	TAL SPK
Total/NA	Prep	5035			4.736 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	4.736 g	5 mL	852	03/25/15 13:42	MRS	TAL SPK
Total/NA	Prep	3550C			15.02 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.02 g	2 mL	876	03/26/15 16:23	NMI	TAL SPK
Total/NA	Prep	3550C			15.54 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.54 g	5 mL	856	03/25/15 14:21	NMI	TAL SPK
Total/NA	Prep	3050B			1.50 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.50 g	50 mL	864	03/24/15 18:20	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-13-18.0

Lab Sample ID: 590-483-7

Date Collected: 03/16/15 16:55

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 76.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			9.195 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		1	9.195 g	5 mL	850	03/25/15 14:04	MRS	TAL SPK
Total/NA	Prep	5035			9.195 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	9.195 g	5 mL	852	03/25/15 14:04	MRS	TAL SPK
Total/NA	Prep	3550C			15.42 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.42 g	2 mL	876	03/26/15 16:45	NMI	TAL SPK
Total/NA	Prep	3550C			15.53 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.53 g	5 mL	856	03/25/15 14:44	NMI	TAL SPK
Total/NA	Prep	3050B			1.89 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.89 g	50 mL	864	03/24/15 18:24	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-12-18.5

Lab Sample ID: 590-483-8

Date Collected: 03/16/15 13:55

Matrix: Solid

Date Received: 03/20/15 12:10

Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			7.97 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		100	7.97 g	5 mL	850	03/25/15 14:27	MRS	TAL SPK
Total/NA	Prep	5035			7.97 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		100	7.97 g	5 mL	852	03/25/15 14:27	MRS	TAL SPK
Total/NA	Prep	3550C			15.47 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.47 g	2 mL	876	03/26/15 17:08	NMI	TAL SPK
Total/NA	Prep	3550C			15.47 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		10	15.47 g	2 mL	890	03/27/15 12:21	NMI	TAL SPK
Total/NA	Prep	3550C			10.54 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Client Sample ID: SVDP-12-18.5

Lab Sample ID: 590-483-8

Date Collected: 03/16/15 13:55
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	NWTPH-Dx		2	10.54 g	5 mL	856	03/26/15 09:28	NMI	TAL SPK
Total/NA	Prep	3050B			1.88 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.88 g	50 mL	864	03/24/15 18:28	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Client Sample ID: SVDP-14-15

Lab Sample ID: 590-483-9

Date Collected: 03/17/15 15:05
Matrix: Solid
Date Received: 03/20/15 12:10
Percent Solids: 73.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.244 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	8260C		1	6.244 g	5 mL	850	03/25/15 14:49	MRS	TAL SPK
Total/NA	Prep	5035			6.244 g	5 mL	859	03/25/15 10:38	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	6.244 g	5 mL	852	03/25/15 14:49	MRS	TAL SPK
Total/NA	Prep	3550C			15.04 g	2 mL	877	03/26/15 11:12	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.04 g	2 mL	876	03/26/15 17:30	NMI	TAL SPK
Total/NA	Prep	3550C			15.11 g	5 mL	853	03/25/15 09:56	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.11 g	5 mL	856	03/25/15 15:53	NMI	TAL SPK
Total/NA	Prep	3050B			1.60 g	50 mL	819	03/23/15 07:57	JSP	TAL SPK
Total/NA	Analysis	6010C		5	1.60 g	50 mL	864	03/24/15 18:42	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			832	03/23/15 14:09	NMI	TAL SPK

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summitview

TestAmerica Job ID: 590-483-1

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
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	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

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers

REPORT TO: JR Sugalski jsugalski@geoengineers.com
ADDRESS: 523 East Second Ave Spokane WA 99202
PHONE: 509-363-3125 FAX: 509-363-3126

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: Tyler 0.1 - Summitview
PROJECT NUMBER: 0504-101-02
SAMPLED BY: JWR

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] STD. [7] [5] [4] [3] [2] [1] [<1]
Petroleum Hydrocarbon Analyses: [X] STD. [4] [3] [2] [1] [<1]
[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: NWTPH-Gx	NWTPH-Dx	BTEX	PAHs (Sim 8270D)	Total Lead	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	SVDP-9-20	3/17/15 1415		X	X	X	X	X	S	3		
2	SVDP-7-15	3/17/15 0905										
3	SVDP-11-13	3/17/15 1044										
4	SVDP-10-19	3/17/15 1253										
5	SVDP-8-14	3/17/15 1438										
6	SVDP-15-13	3/18/15 1025										
7	SVDP-B-18.0	3/16/15 1655										
8	SVDP-12-18.5	3/16/15 1355										
9	SVDP-14-15	3/17/15 1505										
10												

RELEASED BY: JR
PRINT NAME: Justin Rice FIRM: GeoEng DATE: 3/20/15 TIME: 1210

RECEIVED BY: Sheila Kratz
PRINT NAME: Sheila Kratz FIRM: TestAmerica DATE: 3/20/15 TIME: 12:10

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 2.6 C PAGE 1 OF 1

590-483 Chain of Custody

TAL-1000 (0714)

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-483-1

Login Number: 483

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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	
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.	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.	N/A	
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	

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: 590-484-1
Client Project/Site: Tiger Oil

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

Attn: JR Sugalski

Authorized for release by:
3/27/2015 8:33:22 AM

Michelle Johnston, Project Manager II
(303)736-0110
michelle.johnston@testamericainc.com

Table of Contents

Sample Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil

TestAmerica Job ID: 590-484-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-484-1	SVDP-12-031715	Water	03/17/15 08:01	03/20/15 12:10
590-484-2	SVDP-9-031815	Water	03/18/15 09:56	03/20/15 12:10
590-484-3	SVDP-13-031715	Water	03/17/15 07:41	03/20/15 12:10
590-484-4	SVDP-11-031815	Water	03/18/15 08:39	03/20/15 12:10
590-484-5	SVDP-15-031815	Water	03/18/15 11:25	03/20/15 12:10
590-484-6	SVDP-10-031815	Water	03/18/15 10:11	03/20/15 12:10

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 ID: SVDP-12-031715

Lab Sample ID: 590-484-1

Date Collected: 03/17/15 08:01

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	6.8		0.57		mg/L		03/24/15 09:25	03/24/15 13:52	1
Diesel Range Organics (DRO) (C10-C25)	2.1		1.4		mg/L		03/24/15 09:25	03/24/15 13:52	1
Residual Range Organics (RRO) (C25-C36)	ND		1.4		mg/L		03/24/15 09:25	03/24/15 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*105*		*50 - 150*	*03/24/15 09:25*	*03/24/15 13:52*	*1*
n-Triacontane-d62	*98*		*50 - 150*	*03/24/15 09:25*	*03/24/15 13:52*	*1*

Client Sample ID: SVDP-9-031815

Lab Sample ID: 590-484-2

Date Collected: 03/18/15 09:56

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	8.3		0.24		mg/L		03/24/15 09:25	03/24/15 14:16	1
Diesel Range Organics (DRO) (C10-C25)	2.8		0.61		mg/L		03/24/15 09:25	03/24/15 14:16	1
Residual Range Organics (RRO) (C25-C36)	ND		0.61		mg/L		03/24/15 09:25	03/24/15 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*99*		*50 - 150*	*03/24/15 09:25*	*03/24/15 14:16*	*1*
n-Triacontane-d62	*97*		*50 - 150*	*03/24/15 09:25*	*03/24/15 14:16*	*1*

Client Sample ID: SVDP-13-031715

Lab Sample ID: 590-484-3

Date Collected: 03/17/15 07:41

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.24		mg/L		03/24/15 09:25	03/24/15 14:40	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.60		mg/L		03/24/15 09:25	03/24/15 14:40	1
Residual Range Organics (RRO) (C25-C36)	ND		0.60		mg/L		03/24/15 09:25	03/24/15 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*101*		*50 - 150*	*03/24/15 09:25*	*03/24/15 14:40*	*1*
n-Triacontane-d62	*96*		*50 - 150*	*03/24/15 09:25*	*03/24/15 14:40*	*1*

Client Sample ID: SVDP-11-031815

Lab Sample ID: 590-484-4

Date Collected: 03/18/15 08:39

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.24		mg/L		03/24/15 09:25	03/24/15 15:04	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.60		mg/L		03/24/15 09:25	03/24/15 15:04	1

Client Sample ID: SVDP-11-031815

Lab Sample ID: 590-484-4

Date Collected: 03/18/15 08:39

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC) (Continued)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		0.60		mg/L		03/24/15 09:25	03/24/15 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*99*		*50 - 150*	*03/24/15 09:25*	*03/24/15 15:04*	*1*
n-Triacontane-d62	*91*		*50 - 150*	*03/24/15 09:25*	*03/24/15 15:04*	*1*

Client Sample ID: SVDP-15-031815

Lab Sample ID: 590-484-5

Date Collected: 03/18/15 11:25

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.24		mg/L		03/24/15 09:25	03/24/15 15:28	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.61		mg/L		03/24/15 09:25	03/24/15 15:28	1
Residual Range Organics (RRO) (C25-C36)	ND		0.61		mg/L		03/24/15 09:25	03/24/15 15:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*102*		*50 - 150*	*03/24/15 09:25*	*03/24/15 15:28*	*1*
n-Triacontane-d62	*96*		*50 - 150*	*03/24/15 09:25*	*03/24/15 15:28*	*1*

Client Sample ID: SVDP-10-031815

Lab Sample ID: 590-484-6

Date Collected: 03/18/15 10:11

Matrix: Water

Date Received: 03/20/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	**0.82**		0.24		mg/L		03/24/15 09:25	03/24/15 15:51	1
Diesel Range Organics (DRO) (C10-C25)	**1.0**		0.61		mg/L		03/24/15 09:25	03/24/15 15:51	1
Residual Range Organics (RRO) (C25-C36)	ND		0.61		mg/L		03/24/15 09:25	03/24/15 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*112*		*50 - 150*	*03/24/15 09:25*	*03/24/15 15:51*	*1*
n-Triacontane-d62	*103*		*50 - 150*	*03/24/15 09:25*	*03/24/15 15:51*	*1*

Client: GeoEngineers Inc
Project/Site: Tiger Oil

TestAmerica Job ID: 590-484-1

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 590-836/1-A
Matrix: Water
Analysis Batch: 841

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 836

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		03/24/15 09:25	03/24/15 13:28	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		03/24/15 09:25	03/24/15 13:28	1
Residual Range Organics (RRO) (C25-C36)	ND		0.63		mg/L		03/24/15 09:25	03/24/15 13:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*104*		*50 - 150*	*03/24/15 09:25*	*03/24/15 13:28*	*1*
n-Triacontane-d62	*102*		*50 - 150*	*03/24/15 09:25*	*03/24/15 13:28*	*1*

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil

TestAmerica Job ID: 590-484-1

Client Sample ID: SVDP-12-031715
Lab Sample ID: 590-484-1
Date Collected: 03/17/15 08:01
Matrix: Water
Date Received: 03/20/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			54.9 mL	2 mL	836	03/24/15 09:25	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	54.9 mL	2 mL	841	03/24/15 13:52	NMI	TAL SPK

Client Sample ID: SVDP-9-031815
Lab Sample ID: 590-484-2
Date Collected: 03/18/15 09:56
Matrix: Water
Date Received: 03/20/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			129.2 mL	2 mL	836	03/24/15 09:25	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	129.2 mL	2 mL	841	03/24/15 14:16	NMI	TAL SPK

Client Sample ID: SVDP-13-031715
Lab Sample ID: 590-484-3
Date Collected: 03/17/15 07:41
Matrix: Water
Date Received: 03/20/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			130.8 mL	2 mL	836	03/24/15 09:25	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	130.8 mL	2 mL	841	03/24/15 14:40	NMI	TAL SPK

Client Sample ID: SVDP-11-031815
Lab Sample ID: 590-484-4
Date Collected: 03/18/15 08:39
Matrix: Water
Date Received: 03/20/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			130.8 mL	2 mL	836	03/24/15 09:25	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	130.8 mL	2 mL	841	03/24/15 15:04	NMI	TAL SPK

Client Sample ID: SVDP-15-031815
Lab Sample ID: 590-484-5
Date Collected: 03/18/15 11:25
Matrix: Water
Date Received: 03/20/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			128.2 mL	2 mL	836	03/24/15 09:25	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	128.2 mL	2 mL	841	03/24/15 15:28	NMI	TAL SPK

Client Sample ID: SVDP-10-031815
Lab Sample ID: 590-484-6
Date Collected: 03/18/15 10:11
Matrix: Water
Date Received: 03/20/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			128.2 mL	2 mL	836	03/24/15 09:25	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	128.2 mL	2 mL	841	03/24/15 15:51	NMI	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil

TestAmerica Job ID: 590-484-1

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil

TestAmerica Job ID: 590-484-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil

TestAmerica Job ID: 590-484-1

Method	Method Description	Protocol	Laboratory
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	TAL SPK

Protocol References:

NWTPH = Northwest Total Petroleum Hydrocarbon

Laboratory References:

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers

INVOICE TO:

REPORT TO: JR Sugalski JSugalski@geoengineers.com
ADDRESS: 523 East Second Ave
Spokane WA 99202
PHONE: 509-363-3125 FAX: 509-363-3126

P.O. NUMBER:

PROJECT NAME: Tyler Oil Summitview
PROJECT NUMBER: 0504-101-02
SAMPLED BY: JWR

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: ~~10~~ STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: ~~5~~ STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: NWTPH-HCID	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	SUDP-12-031715	3/17/15 0801		X	W	1		
2	SUDP-9-031815	3/18/15 0956		X				
3	SUDP-13-031715	3/17/15 0741		X				
4	SUDP-11-031815	3/18/15 0839		X				
5	SUDP-15-031815	3/18/15 1125		X				
6	SUDP-10-031815	3/18/15 1011		X				
7								
8								
9								
10								

RELEASED BY: JR
PRINT NAME: Justin Rice FIRM: Geo DATE: 3/20/15 TIME: 1210

RECEIVED BY: Sheila Kratz
PRINT NAME: Sheila Kratz FIRM: TestAmerica DATE: 3/20/15 TIME: 12:10

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS

TEMP: 2.6 PAGE 1 OF 1

590-484 Chain of Custody

TAL-1000 (0714)

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-484-1

Login Number: 484

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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	
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.	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.	N/A	
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	

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: 590-581-1
Client Project/Site: Tiger Oil Summitview

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

Attn: JR Sugalski

Authorized for release by:
4/15/2015 4:00:21 PM

Michelle Johnston, Project Manager II
(303)736-0110
michelle.johnston@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.

Table of Contents

Job ID: 590-581-1

Laboratory: TestAmerica Spokane

Narrative

Job Narrative
590-581-1

Comments
No additional comments.

Receipt
The samples were received on 4/3/2015 12:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5º C.

Except:

The container label for the following sample SVDP-20 (9-10) did not match the information listed on the Chain-of-Custody (COC). The sample is listed on the COC but there is no sample container for it.

Several samples were placed on hold upon receipt at the laboratory in accordance with the instructions on the COC. In accordance with the client's isntructions provided on 04/15/2015, all analyses on hold were cancelled.

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

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

GC Semi VOA
Method(s) 8270D SIM: Surrogate recovery for the following samples were outside control limits: SVDP- 17 (19.5-20.5) (590-581-11), SVDP-16 (22-23) (590-581-12), SVDP-18 (20-21) (590-581-18), SVDP-19 (20-21) (590-581-24), SVDP-19 (20-21) (590-581-24 MS), SVDP-20 (20-21) (590-581-29), SVDP-21 (20-21) (590-581-34). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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

Metals
Method(s) 6010C: The samples were analyzed at dilutions for the presence of interferring, non-target analytes.

No additional analytical or quality issues were noted, other than those described above or 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
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-581-11	SVDP- 17 (19.5-20.5)	Solid	04/02/15 12:30	04/03/15 12:10
590-581-12	SVDP-16 (22-23)	Solid	04/02/15 10:30	04/03/15 12:10
590-581-18	SVDP-18 (20-21)	Solid	04/02/15 14:50	04/03/15 12:10
590-581-24	SVDP-19 (20-21)	Solid	04/02/15 17:00	04/03/15 12:10
590-581-29	SVDP-20 (20-21)	Solid	04/02/15 18:25	04/03/15 12:10
590-581-34	SVDP-21 (20-21)	Solid	04/02/15 19:40	04/03/15 12:10

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

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: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Client Sample ID: SVDP- 17 (19.5-20.5)
Date Collected: 04/02/15 12:30
Date Received: 04/03/15 12:10

Lab Sample ID: 590-581-11
Matrix: Solid
Percent Solids: 76.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.015		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
Ethylbenzene	ND		0.099		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
m,p-Xylene	ND		0.39		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
Methyl tert-butyl ether	ND		0.049		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
o-Xylene	ND		0.20		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
Toluene	ND		0.099		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
Naphthalene	ND		0.20		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1
Xylenes, Total	ND		0.59		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 15:19*	*1*
4-Bromofluorobenzene (Surr)	*98*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 15:19*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*	*04/06/15 14:22*	*04/06/15 15:19*	*1*
Toluene-d8 (Surr)	*100*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 15:19*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.9		mg/Kg	☼	04/06/15 14:22	04/06/15 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 15:19*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Acenaphthylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Acenaphthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Fluorene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Phenanthrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Chrysene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*48*		*35.1 - 144*	*04/07/15 09:20*	*04/07/15 16:19*	*1*
2-Fluorobiphenyl (Surr)	*48*	*X*	*48.8 - 134*	*04/07/15 09:20*	*04/07/15 16:19*	*1*
p-Terphenyl-d14	*66*		*48 - 166*	*04/07/15 09:20*	*04/07/15 16:19*	*1*

Client Sample ID: SVDP- 17 (19.5-20.5)

Lab Sample ID: 590-581-11

Date Collected: 04/02/15 12:30

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 76.1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		13		mg/Kg	☼	04/08/15 10:35	04/08/15 12:16	1
Residual Range Organics (RRO) (C25-C36)	ND		32		mg/Kg	☼	04/08/15 10:35	04/08/15 12:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*04/08/15 10:35*	*04/08/15 12:16*	*1*
n-Triacontane-d62	*83*		*50 - 150*	*04/08/15 10:35*	*04/08/15 12:16*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		25		mg/Kg	☼	04/06/15 09:43	04/08/15 12:34	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**24**		0.010		%			04/07/15 09:16	1
Percent Solids	**76**		0.010		%			04/07/15 09:16	1

Client Sample ID: SVDP-16 (22-23)

Lab Sample ID: 590-581-12

Date Collected: 04/02/15 10:30

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 75.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.029**		0.015		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
Ethylbenzene	ND		0.099		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
m,p-Xylene	ND		0.40		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
Methyl tert-butyl ether	ND		0.050		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
o-Xylene	ND		0.20		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
Toluene	ND		0.099		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
Naphthalene	ND		0.20		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1
Xylenes, Total	ND		0.60		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 15:42*	*1*
4-Bromofluorobenzene (Surr)	*99*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 15:42*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*04/06/15 14:22*	*04/06/15 15:42*	*1*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 15:42*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg	☼	04/06/15 14:22	04/06/15 15:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 15:42*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Acenaphthylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1

Client Sample ID: SVDP-16 (22-23)

Lab Sample ID: 590-581-12
Date Collected: 04/02/15 10:30
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 75.7

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Fluorene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Phenanthrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Chrysene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*38*		*35.1 - 144*	*04/07/15 09:20*	*04/07/15 16:42*	*1*
2-Fluorobiphenyl (Surr)	*48*	*X*	*48.8 - 134*	*04/07/15 09:20*	*04/07/15 16:42*	*1*
p-Terphenyl-d14	*65*		*48 - 166*	*04/07/15 09:20*	*04/07/15 16:42*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		13		mg/Kg	☼	04/08/15 10:35	04/08/15 12:39	1
Residual Range Organics (RRO) (C25-C36)	ND		32		mg/Kg	☼	04/08/15 10:35	04/08/15 12:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*99*		*50 - 150*	*04/08/15 10:35*	*04/08/15 12:39*	*1*
n-Triacontane-d62	*81*		*50 - 150*	*04/08/15 10:35*	*04/08/15 12:39*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		11		mg/Kg	☼	04/06/15 09:43	04/08/15 11:39	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**24**		0.010		%			04/07/15 09:16	1
Percent Solids	**76**		0.010		%			04/07/15 09:16	1

Client Sample ID: SVDP-18 (20-21)

Lab Sample ID: 590-581-18
Date Collected: 04/02/15 14:50
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 68.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.026		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1
Ethylbenzene	ND		0.17		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1
m,p-Xylene	ND		0.70		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1
Methyl tert-butyl ether	ND		0.087		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1
o-Xylene	ND		0.35		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Client Sample ID: SVDP-18 (20-21)
Date Collected: 04/02/15 14:50
Date Received: 04/03/15 12:10

Lab Sample ID: 590-581-18
Matrix: Solid
Percent Solids: 68.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		0.17		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1
Naphthalene	ND		0.35		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1
Xylenes, Total	ND		1.0		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 16:04*	*1*
4-Bromofluorobenzene (Surr)	*98*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 16:04*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*04/06/15 14:22*	*04/06/15 16:04*	*1*
Toluene-d8 (Surr)	*101*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 16:04*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		8.7		mg/Kg	☼	04/06/15 14:22	04/06/15 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 16:04*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
2-Methylnaphthalene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
1-Methylnaphthalene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Acenaphthylene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Acenaphthene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Fluorene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Phenanthrene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Anthracene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Fluoranthene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Pyrene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Benzo[a]anthracene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Chrysene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Benzo[b]fluoranthene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Benzo[k]fluoranthene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Benzo[a]pyrene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Indeno[1,2,3-cd]pyrene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Dibenz(a,h)anthracene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1
Benzo[g,h,i]perylene	ND		14		ug/Kg	☼	04/07/15 09:20	04/07/15 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*39*		*35.1 - 144*	*04/07/15 09:20*	*04/07/15 17:04*	*1*
2-Fluorobiphenyl (Surr)	*38*	*X*	*48.8 - 134*	*04/07/15 09:20*	*04/07/15 17:04*	*1*
p-Terphenyl-d14	*51*		*48 - 166*	*04/07/15 09:20*	*04/07/15 17:04*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		15		mg/Kg	☼	04/08/15 10:35	04/08/15 12:58	1
Residual Range Organics (RRO) (C25-C36)	ND		36		mg/Kg	☼	04/08/15 10:35	04/08/15 12:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*98*		*50 - 150*	*04/08/15 10:35*	*04/08/15 12:58*	*1*

Client Sample ID: SVDP-18 (20-21)

Lab Sample ID: 590-581-18

Date Collected: 04/02/15 14:50

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 68.2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Triacontane-d62	*93*		*50 - 150*	*04/08/15 10:35*	*04/08/15 12:58*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		10		mg/Kg	☼	04/06/15 09:43	04/08/15 11:41	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**32**		0.010		%			04/07/15 09:16	1
Percent Solids	**68**		0.010		%			04/07/15 09:16	1

Client Sample ID: SVDP-19 (20-21)

Lab Sample ID: 590-581-24

Date Collected: 04/02/15 17:00

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 81.1

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	☼	04/06/15 14:22	04/06/15 16:27	1
Ethylbenzene	ND		0.14		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1
m,p-Xylene	ND		0.54		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1
Methyl tert-butyl ether	ND		0.068		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1
o-Xylene	ND		0.27		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1
Toluene	ND		0.14		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1
Naphthalene	ND		0.27		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1
Xylenes, Total	ND		0.81		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*91*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 16:27*	*1*
4-Bromofluorobenzene (Surr)	*100*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 16:27*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*04/06/15 14:22*	*04/06/15 16:27*	*1*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 16:27*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**100**		6.8		mg/Kg	☼	04/06/15 14:22	04/06/15 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*100*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 16:27*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
2-Methylnaphthalene	**47**		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
1-Methylnaphthalene	**23**		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Acenaphthylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Acenaphthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Fluorene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Phenanthrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1

Client Sample ID: SVDP-19 (20-21)

Lab Sample ID: 590-581-24

Date Collected: 04/02/15 17:00

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 81.1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Chrysene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*37*		*35.1 - 144*	*04/07/15 09:20*	*04/07/15 15:12*	*1*
2-Fluorobiphenyl (Surr)	*47*	*X*	*48.8 - 134*	*04/07/15 09:20*	*04/07/15 15:12*	*1*
p-Terphenyl-d14	*64*		*48 - 166*	*04/07/15 09:20*	*04/07/15 15:12*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	04/08/15 10:35	04/08/15 13:17	1
Residual Range Organics (RRO) (C25-C36)	ND		30		mg/Kg	☼	04/08/15 10:35	04/08/15 13:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*04/08/15 10:35*	*04/08/15 13:17*	*1*
n-Triacontane-d62	*94*		*50 - 150*	*04/08/15 10:35*	*04/08/15 13:17*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		11		mg/Kg	☼	04/06/15 09:43	04/08/15 11:43	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**19**		0.010		%			04/07/15 09:16	1
Percent Solids	**81**		0.010		%			04/07/15 09:16	1

Client Sample ID: SVDP-20 (20-21)

Lab Sample ID: 590-581-29

Date Collected: 04/02/15 18:25

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 79.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
Ethylbenzene	ND		0.12		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
m,p-Xylene	ND		0.49		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
Methyl tert-butyl ether	ND		0.061		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
o-Xylene	ND		0.24		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
Toluene	ND		0.12		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
Naphthalene	ND		0.24		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1
Xylenes, Total	ND		0.73		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 16:49*	*1*
4-Bromofluorobenzene (Surr)	*97*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 16:49*	*1*

Client Sample ID: SVDP-20 (20-21)
Date Collected: 04/02/15 18:25
Date Received: 04/03/15 12:10

Lab Sample ID: 590-581-29
Matrix: Solid
Percent Solids: 79.2

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*04/06/15 14:22*	*04/06/15 16:49*	*1*
Toluene-d8 (Surr)	*103*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 16:49*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		6.1		mg/Kg	☼	04/06/15 14:22	04/06/15 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 16:49*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Acenaphthylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Acenaphthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Fluorene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Phenanthrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Chrysene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*42*		*35.1 - 144*	*04/07/15 09:20*	*04/07/15 17:27*	*1*
2-Fluorobiphenyl (Surr)	*44*	*X*	*48.8 - 134*	*04/07/15 09:20*	*04/07/15 17:27*	*1*
p-Terphenyl-d14	*64*		*48 - 166*	*04/07/15 09:20*	*04/07/15 17:27*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	04/08/15 10:35	04/08/15 13:36	1
Residual Range Organics (RRO) (C25-C36)	ND		31		mg/Kg	☼	04/08/15 10:35	04/08/15 13:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*100*		*50 - 150*	*04/08/15 10:35*	*04/08/15 13:36*	*1*
n-Triacontane-d62	*95*		*50 - 150*	*04/08/15 10:35*	*04/08/15 13:36*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		14		mg/Kg	☼	04/06/15 09:43	04/08/15 11:46	10

Client Sample ID: SVDP-20 (20-21)

Lab Sample ID: 590-581-29

Date Collected: 04/02/15 18:25

Matrix: Solid

Date Received: 04/03/15 12:10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	21		0.010		%			04/07/15 09:16	1
Percent Solids	79		0.010		%			04/07/15 09:16	1

Client Sample ID: SVDP-21 (20-21)

Lab Sample ID: 590-581-34

Date Collected: 04/02/15 19:40

Matrix: Solid

Date Received: 04/03/15 12:10

Percent Solids: 80.6

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
Ethylbenzene	ND		0.13		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
m,p-Xylene	ND		0.50		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
Methyl tert-butyl ether	ND		0.063		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
o-Xylene	ND		0.25		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
Toluene	ND		0.13		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
Naphthalene	ND		0.25		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1
Xylenes, Total	ND		0.75		mg/Kg	☼	04/06/15 14:22	04/06/15 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 17:12*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 17:12*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*	*04/06/15 14:22*	*04/06/15 17:12*	*1*
Toluene-d8 (Surr)	*103*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 17:12*	*1*

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	☼	04/06/15 14:22	04/06/15 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 17:12*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Acenaphthylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Acenaphthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Fluorene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Phenanthrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Chrysene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/07/15 09:20	04/07/15 17:49	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Client Sample ID: SVDP-21 (20-21)
Date Collected: 04/02/15 19:40
Date Received: 04/03/15 12:10

Lab Sample ID: 590-581-34
Matrix: Solid
Percent Solids: 80.6

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*33*	*X*	*35.1 - 144*	*04/07/15 09:20*	*04/07/15 17:49*	*1*
2-Fluorobiphenyl (Surr)	*43*	*X*	*48.8 - 134*	*04/07/15 09:20*	*04/07/15 17:49*	*1*
p-Terphenyl-d14	*63*		*48 - 166*	*04/07/15 09:20*	*04/07/15 17:49*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	04/08/15 10:35	04/08/15 13:55	1
Residual Range Organics (RRO) (C25-C36)	ND		30		mg/Kg	☼	04/08/15 10:35	04/08/15 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*91*		*50 - 150*	*04/08/15 10:35*	*04/08/15 13:55*	*1*
n-Triacontane-d62	*89*		*50 - 150*	*04/08/15 10:35*	*04/08/15 13:55*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		11		mg/Kg	☼	04/06/15 09:43	04/08/15 11:58	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**19**		0.010		%			04/07/15 09:16	1
Percent Solids	**81**		0.010		%			04/07/15 09:16	1

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

Lab Sample ID: MB 590-1016/1-A
Matrix: Solid
Analysis Batch: 1011

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1016

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.015		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
Ethylbenzene	ND		0.10		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
m,p-Xylene	ND		0.40		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
Methyl tert-butyl ether	ND		0.050		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
o-Xylene	ND		0.20		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
Toluene	ND		0.10		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
Naphthalene	ND		0.20		mg/Kg		04/06/15 14:22	04/06/15 13:01	1
Xylenes, Total	ND		0.60		mg/Kg		04/06/15 14:22	04/06/15 13:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*74.7 - 120*	*04/06/15 14:22*	*04/06/15 13:01*	*1*
4-Bromofluorobenzene (Surr)	*97*		*69.8 - 140*	*04/06/15 14:22*	*04/06/15 13:01*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*04/06/15 14:22*	*04/06/15 13:01*	*1*
Toluene-d8 (Surr)	*102*		*78.5 - 125*	*04/06/15 14:22*	*04/06/15 13:01*	*1*

Lab Sample ID: LCS 590-1016/2-A
Matrix: Solid
Analysis Batch: 1011

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1016

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.500	0.534		mg/Kg		107	75.8 - 123
Ethylbenzene	0.500	0.539		mg/Kg		108	77.3 - 121
m,p-Xylene	0.500	0.555		mg/Kg		111	77.7 - 124
Methyl tert-butyl ether	0.500	0.468		mg/Kg		94	60 - 140
o-Xylene	0.500	0.548		mg/Kg		110	76.7 - 129
Toluene	0.500	0.544		mg/Kg		109	76.6 - 125
Naphthalene	0.500	0.452		mg/Kg		90	55.1 - 142

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*74.7 - 120*
4-Bromofluorobenzene (Surr)	*97*		*69.8 - 140*
Dibromofluoromethane (Surr)	*97*		*80 - 120*
Toluene-d8 (Surr)	*101*		*78.5 - 125*

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

Lab Sample ID: MB 590-1016/1-A
Matrix: Solid
Analysis Batch: 1013

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1016

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		04/06/15 14:22	04/06/15 13:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*41.5 - 162*	*04/06/15 14:22*	*04/06/15 13:01*	*1*

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

Lab Sample ID: LCS 590-1016/3-A
Matrix: Solid
Analysis Batch: 1013

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1016

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	50.0	50.4		mg/Kg		101	74.4 - 124

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*41.5 - 162*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-1026/1-A
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1026

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
2-Methylnaphthalene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
1-Methylnaphthalene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Acenaphthylene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Acenaphthene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Fluorene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Phenanthrene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Anthracene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Fluoranthene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Pyrene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Benzo[a]anthracene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Chrysene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Benzo[b]fluoranthene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Benzo[k]fluoranthene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Benzo[a]pyrene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		04/07/15 09:20	04/07/15 13:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*36*		*35.1 - 144*	*04/07/15 09:20*	*04/07/15 13:19*	*1*
2-Fluorobiphenyl (Surr)	*58*		*48.8 - 134*	*04/07/15 09:20*	*04/07/15 13:19*	*1*
p-Terphenyl-d14	*62*		*48 - 166*	*04/07/15 09:20*	*04/07/15 13:19*	*1*

Lab Sample ID: LCS 590-1026/2-A
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1026

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	267	173		ug/Kg		65	51.4 - 133
Fluorene	267	221		ug/Kg		83	65.7 - 123
Chrysene	267	220		ug/Kg		83	57.3 - 133
Indeno[1,2,3-cd]pyrene	267	243		ug/Kg		91	54.6 - 142

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 590-1026/2-A
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1026

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	41		35.1 - 144
2-Fluorobiphenyl (Surr)	50		48.8 - 134
p-Terphenyl-d14	68		48 - 166

Lab Sample ID: LCSD 590-1026/3-A
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 1026

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			267	164		ug/Kg		61	51.4 - 133	5	35
Fluorene			267	208		ug/Kg		78	65.7 - 123	6	35
Chrysene			267	213		ug/Kg		80	57.3 - 133	3	35
Indeno[1,2,3-cd]pyrene			267	219		ug/Kg		82	54.6 - 142	11	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	56		35.1 - 144
2-Fluorobiphenyl (Surr)	54		48.8 - 134
p-Terphenyl-d14	62		48 - 166

Lab Sample ID: 590-581-24 MS
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: SVDP-19 (20-21)
Prep Type: Total/NA
Prep Batch: 1026

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	ND		313	187		ug/Kg	☼	60	30 - 120
Fluorene	ND		313	255		ug/Kg	☼	81	30 - 140
Chrysene	ND		313	234		ug/Kg	☼	75	30 - 133
Indeno[1,2,3-cd]pyrene	ND		313	237		ug/Kg	☼	76	30 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Nitrobenzene-d5	49		35.1 - 144
2-Fluorobiphenyl (Surr)	48	X	48.8 - 134
p-Terphenyl-d14	60		48 - 166

Lab Sample ID: 590-581-24 MSD
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: SVDP-19 (20-21)
Prep Type: Total/NA
Prep Batch: 1026

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		328	199		ug/Kg	☼	61	30 - 120	7	35
Fluorene	ND		328	260		ug/Kg	☼	79	30 - 140	2	35
Chrysene	ND		328	275		ug/Kg	☼	84	30 - 133	16	35
Indeno[1,2,3-cd]pyrene	ND		328	261		ug/Kg	☼	79	30 - 140	10	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Nitrobenzene-d5	48		35.1 - 144
2-Fluorobiphenyl (Surr)	50		48.8 - 134

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 590-581-24 MSD
Matrix: Solid
Analysis Batch: 1024

Client Sample ID: SVDP-19 (20-21)
Prep Type: Total/NA
Prep Batch: 1026

Surrogate	MSD %Recovery	MSD Qualifier	Limits
p-Terphenyl-d14	63		48 - 166

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-1047/1-A
Matrix: Solid
Analysis Batch: 1044

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		10		mg/Kg		04/08/15 10:35	04/08/15 11:11	1
Residual Range Organics (RRO) (C25-C36)	ND		25		mg/Kg		04/08/15 10:35	04/08/15 11:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	104		50 - 150	04/08/15 10:35	04/08/15 11:11	1
n-Triacontane-d62	94		50 - 150	04/08/15 10:35	04/08/15 11:11	1

Lab Sample ID: LCS 590-1047/2-A
Matrix: Solid
Analysis Batch: 1044

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	66.7	62.5		mg/Kg		94	50 - 150
Residual Range Organics (RRO) (C25-C36)	66.7	59.6		mg/Kg		89	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	102		50 - 150
n-Triacontane-d62	97		50 - 150

Lab Sample ID: 590-581-11 DU
Matrix: Solid
Analysis Batch: 1044

Client Sample ID: SVDP- 17 (19.5-20.5)
Prep Type: Total/NA
Prep Batch: 1047

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	ND		ND		mg/Kg	☼	5	40
Residual Range Organics (RRO) (C25-C36)	ND		ND		mg/Kg	☼	NC	40

Surrogate	DU %Recovery	DU Qualifier	Limits
o-Terphenyl	100		50 - 150
n-Triacontane-d62	81		50 - 150

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 590-1002/2-A
Matrix: Solid
Analysis Batch: 1048

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1002

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.025		mg/Kg		04/06/15 09:43	04/07/15 13:45	1

Lab Sample ID: LCS 590-1002/1-A
Matrix: Solid
Analysis Batch: 1048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1002

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			1.00	1.01		mg/Kg		101	80 - 120		

Method: Moisture - Percent Moisture

Lab Sample ID: 590-581-24 DU
Matrix: Solid
Analysis Batch: 1025

Client Sample ID: SVDP-19 (20-21)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	19			18		%				4	20
Percent Solids	81			82		%				1	20

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Client Sample ID: SVDP- 17 (19.5-20.5)

Lab Sample ID: 590-581-11

Date Collected: 04/02/15 12:30
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 76.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			9.775 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	8260C		1	9.775 g	5 mL	1011	04/06/15 15:19	MRS	TAL SPK
Total/NA	Prep	5035			9.775 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	9.775 g	5 mL	1013	04/06/15 15:19	MRS	TAL SPK
Total/NA	Prep	3550C			15.93 g	2 mL	1026	04/07/15 09:20	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.93 g	2 mL	1024	04/07/15 16:19	NMI	TAL SPK
Total/NA	Prep	3550C			15.54 g	5 mL	1047	04/08/15 10:35	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.54 g	5 mL	1044	04/08/15 12:16	NMI	TAL SPK
Total/NA	Prep	3050B			1.29 g	50 mL	1002	04/06/15 09:43	JSP	TAL SPK
Total/NA	Analysis	6010C		20	1.29 g	50 mL	1055	04/08/15 12:34	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1025	04/07/15 09:16	NMI	TAL SPK

Client Sample ID: SVDP-16 (22-23)

Lab Sample ID: 590-581-12

Date Collected: 04/02/15 10:30
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 75.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			9.809 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	8260C		1	9.809 g	5 mL	1011	04/06/15 15:42	MRS	TAL SPK
Total/NA	Prep	5035			9.809 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	9.809 g	5 mL	1013	04/06/15 15:42	MRS	TAL SPK
Total/NA	Prep	3550C			15.86 g	2 mL	1026	04/07/15 09:20	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.86 g	2 mL	1024	04/07/15 16:42	NMI	TAL SPK
Total/NA	Prep	3550C			15.33 g	5 mL	1047	04/08/15 10:35	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.33 g	5 mL	1044	04/08/15 12:39	NMI	TAL SPK
Total/NA	Prep	3050B			1.47 g	50 mL	1002	04/06/15 09:43	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.47 g	50 mL	1055	04/08/15 11:39	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1025	04/07/15 09:16	NMI	TAL SPK

Client Sample ID: SVDP-18 (20-21)

Lab Sample ID: 590-581-18

Date Collected: 04/02/15 14:50
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 68.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.75 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	8260C		1	5.75 g	5 mL	1011	04/06/15 16:04	MRS	TAL SPK
Total/NA	Prep	5035			5.75 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	5.75 g	5 mL	1013	04/06/15 16:04	MRS	TAL SPK
Total/NA	Prep	3550C			15.26 g	2 mL	1026	04/07/15 09:20	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.26 g	2 mL	1024	04/07/15 17:04	NMI	TAL SPK
Total/NA	Prep	3550C			15.08 g	5 mL	1047	04/08/15 10:35	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.08 g	5 mL	1044	04/08/15 12:58	NMI	TAL SPK
Total/NA	Prep	3050B			1.78 g	50 mL	1002	04/06/15 09:43	JSP	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Client Sample ID: SVDP-18 (20-21)

Lab Sample ID: 590-581-18

Date Collected: 04/02/15 14:50
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 68.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010C		10	1.78 g	50 mL	1055	04/08/15 11:41	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1025	04/07/15 09:16	NMI	TAL SPK

Client Sample ID: SVDP-19 (20-21)

Lab Sample ID: 590-581-24

Date Collected: 04/02/15 17:00
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 81.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.505 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	8260C		1	5.505 g	5 mL	1011	04/06/15 16:27	MRS	TAL SPK
Total/NA	Prep	5035			5.505 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	5.505 g	5 mL	1013	04/06/15 16:27	MRS	TAL SPK
Total/NA	Prep	3550C			15.13 g	2 mL	1026	04/07/15 09:20	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.13 g	2 mL	1024	04/07/15 15:12	NMI	TAL SPK
Total/NA	Prep	3550C			15.38 g	5 mL	1047	04/08/15 10:35	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.38 g	5 mL	1044	04/08/15 13:17	NMI	TAL SPK
Total/NA	Prep	3050B			1.36 g	50 mL	1002	04/06/15 09:43	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.36 g	50 mL	1055	04/08/15 11:43	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1025	04/07/15 09:16	NMI	TAL SPK

Client Sample ID: SVDP-20 (20-21)

Lab Sample ID: 590-581-29

Date Collected: 04/02/15 18:25
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 79.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.595 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	8260C		1	6.595 g	5 mL	1011	04/06/15 16:49	MRS	TAL SPK
Total/NA	Prep	5035			6.595 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	6.595 g	5 mL	1013	04/06/15 16:49	MRS	TAL SPK
Total/NA	Prep	3550C			15.89 g	2 mL	1026	04/07/15 09:20	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.89 g	2 mL	1024	04/07/15 17:27	NMI	TAL SPK
Total/NA	Prep	3550C			15.26 g	5 mL	1047	04/08/15 10:35	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.26 g	5 mL	1044	04/08/15 13:36	NMI	TAL SPK
Total/NA	Prep	3050B			1.13 g	50 mL	1002	04/06/15 09:43	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.13 g	50 mL	1055	04/08/15 11:46	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1025	04/07/15 09:16	NMI	TAL SPK

Client Sample ID: SVDP-21 (20-21)

Lab Sample ID: 590-581-34

Date Collected: 04/02/15 19:40
Matrix: Solid
Date Received: 04/03/15 12:10
Percent Solids: 80.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.102 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Client Sample ID: SVDP-21 (20-21)
Date Collected: 04/02/15 19:40
Date Received: 04/03/15 12:10

Lab Sample ID: 590-581-34
Matrix: Solid
Percent Solids: 80.6

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	6.102 g	5 mL	1011	04/06/15 17:12	MRS	TAL SPK
Total/NA	Prep	5035			6.102 g	5 mL	1016	04/06/15 14:22	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	6.102 g	5 mL	1013	04/06/15 17:12	MRS	TAL SPK
Total/NA	Prep	3550C			15.75 g	2 mL	1026	04/07/15 09:20	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.75 g	2 mL	1024	04/07/15 17:49	NMI	TAL SPK
Total/NA	Prep	3550C			15.63 g	5 mL	1047	04/08/15 10:35	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.63 g	5 mL	1044	04/08/15 13:55	NMI	TAL SPK
Total/NA	Prep	3050B			1.36 g	50 mL	1002	04/06/15 09:43	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.36 g	50 mL	1055	04/08/15 11:58	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1025	04/07/15 09:16	NMI	TAL SPK

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-581-1

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
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	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

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers

REPORT TO: JSugalski@geoengineers.com

ADDRESS: 523 E Second Ave Spokane WA 99202

PHONE: 509-363-3125 FAX: 509-363-3126

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: Tiger Oil - Summerview

PROJECT NUMBER: 0504-101-02

SAMPLED BY: JML

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: NWTPH-Gx	NWTPH-Dx	BTEX 8260C	PAHs SIM 8270D	Pb (Total) EPA 6010C	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 SVDP-16 (2-3)	4/2/2015 0930							S	3		
2 SVDP-16 (5-6)	0940										
3 SVDP-16 (10-11)	0945										
4 SVDP-16 (15-16)	0950										
5 SVDP-16 (17-18)	1000										
6 SVDP-17 (1-2)	1130										
7 SVDP-17 (4-5)	1140										
8 SVDP-17 (11-12)	1145										
9 SVDP-17 (15-16)	1200										
10 SVDP-17 (18-19)	1210							↓	↓		

RELEASED BY:		DATE: 4/3/2015	RECEIVED BY: Sheila Kratz		DATE: 4/3/15
PRINT NAME: Josh Lee	FIRM: GEI	TIME: 12:10	PRINT NAME: Sheila Kratz	FIRM: Test America	TIME: 12:10
RELEASED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS:

TEMP: 5.6°C PAGE 1 OF 4

TAL-1000 (0714)

590-581 Chain of Custody

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290 X
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Geo Engineers

INVOICE TO:

REPORT TO: jsingleshi@geoengineers.com
ADDRESS: 523 E Second Ave
Spokane WA 99202
PHONE: 509-363-3125 FAX: 509-363-3125

P.O. NUMBER:

PROJECT NAME: Tyee Oil - Summitview
PROJECT NUMBER: 0504-101-02
SAMPLED BY: JML

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	NWTPH-Gx	NWTPH-Dx	BTEX 8260C	SIM PAHs 8270D	Pb (total) 6010C	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 SVDP-17(19.5-20.5)	1230		X	X	X	X	X				
2 SVDP-16(22-23)	1030		X	X	X	X	X				
3 SVDP-18(2-3)	1400										
4 SVDP-18(6-7)	1405										
5 SVDP-18(11-12)	1410										
6 SVDP-19(15-16)	1415										
7 SVDP-19(19-20)	1425										
8 SVDP-19(20-21)	1450		X	X	X	X	X				
9 SVDP-19(1-2)	1600										
10 SVDP-19(6-7)	1610										

RELEASED BY:	DATE: 4/3/2015	RECEIVED BY: Sheila Kratz	DATE: 4/3/15
PRINT NAME: Josh Le	FIRM: GEI	TIME: 1210	PRINT NAME: Sheila Kratz	FIRM: TA	TIME 10:10
RELEASED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME

ADDITIONAL REMARKS:

TEMP: 5.6 PAGE 2 OF 4

TAL-1000 (0714)

590-581-01 Chain of Custody

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290 [X]
9405 SW Nimbus Ave , Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210 [ ]
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210 [ ]

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers

REPORT TO: jsugalski@geoengineers.com

ADDRESS: 523 E Second Ave Spokane, WA 99202

PHONE: 509-363-3125 FAX: 509-363-3126

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: Tiger Oil - Summerview

PROJECT NUMBER: 0504-101-02

SAMPLED BY: JML

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: [X] STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	NWTPH-Gx	NWTPH-Dx	BTEX 8260C	PAHs SIM 8270D	Pb (total) EPA 6010C	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 SVDP-19(10-11)	4/2/2015 1620							S	3		
2 SVDP-19(15-16)	1630										
3 SVDP-19(19-20)	1650										
4 SVDP-19(20-21)	1700		X	X	X	X	X				
5 SVDP-20(1-2)	1750										
6 SVDP-20(6-7)	1800										
7 SVDP-20(14-15)	1815										
8 SVDP-20(9-10)	1810										
9 SVDP-20(18-19)	1820										
10 SVDP-20(20-21)	1825		X	X	X	X	X				

RELEASED BY:		DATE: 4/3/2015	RECEIVED BY: Sheila Kraft		DATE 4/3/15
PRINT NAME: Josh Lee	FIRM: GEI	TIME: 1210	PRINT NAME: Sheila Kraft	FIRM: T.A	TIME: 12:10
RELEASED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS.

TEMP: 5.6°C PAGE 3 OF 4

TAL-1000 (0714)

590-581-02 Chain of Custody

1 2 3 4 5 6 7 8 9 10 11 12

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290 [X]
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210 [ ]
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210 [ ]

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers
REPORT TO: jsubalski@geoengineers.com
ADDRESS: 523 E Second Ave Spokane, WA 99202
PHONE: 509-363-3125 FAX: 509-363-3126
INVOICE TO:
P.O. NUMBER:
PROJECT NAME: Tiger Oil - Summitview
PROJECT NUMBER: 0504-101-02
SAMPLED BY: JML

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] 10 STD. 7 5 4 3 2 1 <1
Petroleum Hydrocarbon Analyses: [X] 5 STD. 4 3 2 1 <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE / REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	Gx NWTPH	Dx NWTPH	Naphthalene BTEX 8260C	VOCs 8260 (17)	8270 PAHs SIM 8270D	Pb (total) 6010C EPA							MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 SVDP-21 (2-3)	4/2/2015 1900													S	3		
2 SVDP-21 (6-7)	↓ 1910													↓	↓		
3 SVDP-21 (10-11)	↓ 1920													↓	↓		
4 SVDP-21 (18.5-19.5)	↓ 1925													↓	↓		
5 SVDP-21 (20-21)	↓ 1940	X	X	X	(17) X	X	X							↓	↓		
6																	
7																	
8																	
9																	
10																	

RELEASED BY: [signature] PRINT NAME: Josh Lee FIRM: GEI DATE: 4/3/2015 TIME: 1210
RECEIVED BY: [signature] PRINT NAME: Sheila Kratz FIRM: T.A. DATE: 4/3/15 TIME: 12:10

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: Hold samples Not method for analysis.

TEMP: 5.6°C PAGE 4 OF 4

TAL-1000 (0714)

590-581-03 Chain of Custody

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-581-1

Login Number: 581

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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	5.5
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	Refer to Job Narrative for details.
Samples are received within Holding Time.	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").	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: 590-580-1
Client Project/Site: Tiger Oil Summitview

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

Attn: JR Sugalski

Authorized for release by:
4/13/2015 10:44:00 AM

Michelle Johnston, Project Manager II
(303)736-0110
michelle.johnston@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.

Table of Contents

Job ID: 590-580-1

Laboratory: TestAmerica Spokane

Narrative

Job Narrative
590-580-1

Comments
No additional comments.

Receipt
The samples were received on 4/3/2015 12:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5º C.

GC Semi VOA
Method(s) NWTPH-HCID: Gasoline in samples 590-580-5 and SVDP-20:GW (590-580-5 appears to be present just below the reporting limit.

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

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

Sample Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-580-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-580-1	SVDP-16:GW	Water	04/02/15 11:08	04/03/15 12:10
590-580-2	SVDP-17:GW	Water	04/02/15 13:25	04/03/15 12:10
590-580-3	SVDP-18:GW	Water	04/02/15 15:38	04/03/15 12:10
590-580-4	SVDP-19:GW	Water	04/02/15 17:32	04/03/15 12:10
590-580-5	SVDP-20:GW	Water	04/02/15 18:46	04/03/15 12:10
590-580-6	SVDP-21:GW	Water	04/02/15 20:04	04/03/15 12:10

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 ID: SVDP-16:GW

Lab Sample ID: 590-580-1

Date Collected: 04/02/15 11:08

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		04/08/15 12:46	04/09/15 12:17	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 12:17	1
Residual Range Organics (RRO) (C25-C36)	**0.82**		0.63		mg/L		04/08/15 12:46	04/09/15 12:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*50 - 150*	*04/08/15 12:46*	*04/09/15 12:17*	*1*
n-Triacontane-d62	*76*		*50 - 150*	*04/08/15 12:46*	*04/09/15 12:17*	*1*

Client Sample ID: SVDP-17:GW

Lab Sample ID: 590-580-2

Date Collected: 04/02/15 13:25

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.26		mg/L		04/08/15 12:46	04/09/15 12:38	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.64		mg/L		04/08/15 12:46	04/09/15 12:38	1
Residual Range Organics (RRO) (C25-C36)	ND		0.64		mg/L		04/08/15 12:46	04/09/15 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*50 - 150*	*04/08/15 12:46*	*04/09/15 12:38*	*1*
n-Triacontane-d62	*69*		*50 - 150*	*04/08/15 12:46*	*04/09/15 12:38*	*1*

Client Sample ID: SVDP-18:GW

Lab Sample ID: 590-580-3

Date Collected: 04/02/15 15:38

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.24		mg/L		04/08/15 12:46	04/09/15 13:02	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.62		mg/L		04/08/15 12:46	04/09/15 13:02	1
Residual Range Organics (RRO) (C25-C36)	ND		0.62		mg/L		04/08/15 12:46	04/09/15 13:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*04/08/15 12:46*	*04/09/15 13:02*	*1*
n-Triacontane-d62	*69*		*50 - 150*	*04/08/15 12:46*	*04/09/15 13:02*	*1*

Client Sample ID: SVDP-19:GW

Lab Sample ID: 590-580-4

Date Collected: 04/02/15 17:32

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	**1.5**		0.25		mg/L		04/08/15 12:46	04/09/15 13:20	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 13:20	1

Client Sample ID: SVDP-19:GW

Lab Sample ID: 590-580-4

Date Collected: 04/02/15 17:32

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC) (Continued)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*100*		*50 - 150*	*04/08/15 12:46*	*04/09/15 13:20*	*1*
n-Triacontane-d62	*72*		*50 - 150*	*04/08/15 12:46*	*04/09/15 13:20*	*1*

Client Sample ID: SVDP-20:GW

Lab Sample ID: 590-580-5

Date Collected: 04/02/15 18:46

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		04/08/15 12:46	04/09/15 13:42	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 13:42	1
Residual Range Organics (RRO) (C25-C36)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*50 - 150*	*04/08/15 12:46*	*04/09/15 13:42*	*1*
n-Triacontane-d62	*75*		*50 - 150*	*04/08/15 12:46*	*04/09/15 13:42*	*1*

Client Sample ID: SVDP-21:GW

Lab Sample ID: 590-580-6

Date Collected: 04/02/15 20:04

Matrix: Water

Date Received: 04/03/15 12:10

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		04/08/15 12:46	04/09/15 14:02	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.62		mg/L		04/08/15 12:46	04/09/15 14:02	1
Residual Range Organics (RRO) (C25-C36)	ND		0.62		mg/L		04/08/15 12:46	04/09/15 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*04/08/15 12:46*	*04/09/15 14:02*	*1*
n-Triacontane-d62	*69*		*50 - 150*	*04/08/15 12:46*	*04/09/15 14:02*	*1*

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-580-1

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 590-1049/1-A
Matrix: Water
Analysis Batch: 1069

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1049

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		04/08/15 12:46	04/09/15 11:54	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 11:54	1
Residual Range Organics (RRO) (C25-C36)	ND		0.63		mg/L		04/08/15 12:46	04/09/15 11:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*102*		*50 - 150*	*04/08/15 12:46*	*04/09/15 11:54*	*1*
n-Triacontane-d62	*68*		*50 - 150*	*04/08/15 12:46*	*04/09/15 11:54*	*1*

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-580-1

Client Sample ID: SVDP-16:GW — Lab Sample ID: 590-580-1

Date Collected: 04/02/15 11:08 — **Matrix: Water**
Date Received: 04/03/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			124.9 mL	2 mL	1049	04/08/15 12:46	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	124.9 mL	2 mL	1069	04/09/15 12:17	NMI	TAL SPK

Client Sample ID: SVDP-17:GW — Lab Sample ID: 590-580-2

Date Collected: 04/02/15 13:25 — **Matrix: Water**
Date Received: 04/03/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			122.5 mL	2 mL	1049	04/08/15 12:46	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	122.5 mL	2 mL	1069	04/09/15 12:38	NMI	TAL SPK

Client Sample ID: SVDP-18:GW — Lab Sample ID: 590-580-3

Date Collected: 04/02/15 15:38 — **Matrix: Water**
Date Received: 04/03/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			127.7 mL	2 mL	1049	04/08/15 12:46	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	127.7 mL	2 mL	1069	04/09/15 13:02	NMI	TAL SPK

Client Sample ID: SVDP-19:GW — Lab Sample ID: 590-580-4

Date Collected: 04/02/15 17:32 — **Matrix: Water**
Date Received: 04/03/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			125.4 mL	2 mL	1049	04/08/15 12:46	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	125.4 mL	2 mL	1069	04/09/15 13:20	NMI	TAL SPK

Client Sample ID: SVDP-20:GW — Lab Sample ID: 590-580-5

Date Collected: 04/02/15 18:46 — **Matrix: Water**
Date Received: 04/03/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			124.8 mL	2 mL	1049	04/08/15 12:46	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	124.8 mL	2 mL	1069	04/09/15 13:42	NMI	TAL SPK

Client Sample ID: SVDP-21:GW — Lab Sample ID: 590-580-6

Date Collected: 04/02/15 20:04 — **Matrix: Water**
Date Received: 04/03/15 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			126.3 mL	2 mL	1049	04/08/15 12:46	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	126.3 mL	2 mL	1069	04/09/15 14:02	NMI	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-580-1

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-580-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-580-1

Method	Method Description	Protocol	Laboratory
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	TAL SPK

Protocol References:

NWTPH = Northwest Total Petroleum Hydrocarbon

Laboratory References:

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Geo Engineers

REPORT TO: JR Smith jsmith@geoengrs.com

ADDRESS: 523 E Second Ave Spokane WA 99202

PHONE: 509-363-3125 FAX:

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: Summitview Tiger Oil

PROJECT NUMBER:

SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: [X] STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	HLD	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	SVDP-16:GW	4/2/2015 1108	X	W	1		
2	SVDP-17:GW	1325	X				
3	SVDP-18:GW	1538	X				
4	SVDP-19:GW	1732	X				
5	SVDP-20:GW	1846	X				
6	SVDP-21:GW	2004	X				
7							
8							
9							
10							

RELEASED BY: Josh Lee DATE: 4/3/2015

PRINT NAME: Josh Lee FIRM: Geo TIME: 1210

RECEIVED BY: Sheila Kratz DATE: 4/3/15

PRINT NAME: Sheila Kratz FIRM: Test America TIME: 12:10

RELEASED BY: DATE:

PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE

PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP: 5.6 °C PAGE 1 OF 1

TAL-1000 (0714)

590-580 Chain of Custody

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-580-1

Login Number: 580

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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	5.5
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.	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").	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: 590-628-1
Client Project/Site: Tiger Oil Summitview

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

Attn: JR Sugalski

Authorized for release by:
4/22/2015 10:05:56 AM
Stephanie Kupper, Project Manager I
(303)736-0182
stephanie.kupper@testamericainc.com

Designee for

Michelle Johnston, Project Manager II
(303)736-0110
michelle.johnston@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.

Table of Contents

Job ID: 590-628-1

Laboratory: TestAmerica Spokane

Narrative

Job Narrative
590-628-1

Receipt
The samples were received on 4/9/2015 at 9:52 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6º C.

Except:

Sample Trip Blank (590-628-9) was received at the laboratory, but was not listed on the COC. This sample was logged for methods 8260B and NWTPH-Gx per the volume received. The client was notified on 04/10/2015.

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

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

GC Semi VOA
Method NWTPH-HCID: Surrogate recovery for the following samples was outside control limits: SVDP-24 :GW (590-628-6), SVDP-25 :GW (590-628-7), SVDP-26 :GW (590-628-8). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method NWTPH-HCID: Detected hydrocarbons appear to be due to gasoline overlap: SVDP-24 :GW (590-628-6), SVDP-25 :GW (590-628-7).

No additional analytical or quality issues were noted, other than those described above or 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
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-628-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-628-1	SVDP-22 (20.5-21)	Solid	04/07/15 11:30	04/09/15 09:52
590-628-2	SVDP-23 (18-18.5)	Solid	04/07/15 13:00	04/09/15 09:52
590-628-3	SVDP-24 (19.5-20)	Solid	04/07/15 14:00	04/09/15 09:52
590-628-4	SVDP-25 (19.5-20)	Solid	04/07/15 15:40	04/09/15 09:52
590-628-5	SVDP-26 (20-20.5)	Solid	04/07/15 17:15	04/09/15 09:52
590-628-6	SVDP-24 :GW	Water	04/07/15 14:40	04/09/15 09:52
590-628-7	SVDP-25 :GW	Water	04/07/15 16:03	04/09/15 09:52
590-628-8	SVDP-26 :GW	Water	04/07/15 17:40	04/09/15 09:52
590-628-9	Trip Blank	Water	04/02/15 00:00	04/09/15 09:52

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

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 ID: SVDP-22 (20.5-21)
Date Collected: 04/07/15 11:30
Date Received: 04/09/15 09:52

Lab Sample ID: 590-628-1
Matrix: Solid
Percent Solids: 88.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.14		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
Ethylbenzene	**5.9**		0.95		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
m,p-Xylene	**18**		3.8		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
Methyl tert-butyl ether	ND		0.47		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
o-Xylene	**4.2**		1.9		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
Toluene	**4.2**		0.95		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
Naphthalene	**6.4**		1.9		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10
Xylenes, Total	**22**		5.7		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 11:01*	*10*
4-Bromofluorobenzene (Surr)	*105*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 11:01*	*10*
Dibromofluoromethane (Surr)	*93*		*80 - 120*	*04/10/15 09:34*	*04/10/15 11:01*	*10*
Toluene-d8 (Surr)	*102*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 11:01*	*10*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**4500**		47		mg/Kg	☼	04/10/15 09:34	04/10/15 11:01	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*41.5 - 162*	*04/10/15 09:34*	*04/10/15 11:01*	*10*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**410**		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
2-Methylnaphthalene	**2600**		22		ug/Kg	☼	04/17/15 11:36	04/17/15 17:38	2
1-Methylnaphthalene	**1300**		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Acenaphthylene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Acenaphthene	**34**		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Fluorene	**34**		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Phenanthrene	**33**		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Anthracene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Fluoranthene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Pyrene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Benzo[a]anthracene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Chrysene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Benzo[b]fluoranthene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Benzo[k]fluoranthene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Benzo[a]pyrene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Indeno[1,2,3-cd]pyrene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Dibenz(a,h)anthracene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1
Benzo[g,h,i]perylene	ND		11		ug/Kg	☼	04/17/15 11:36	04/17/15 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*50*		*35.1 - 144*	*04/17/15 11:36*	*04/17/15 15:23*	*1*
2-Fluorobiphenyl (Surr)	*68*		*48.8 - 134*	*04/17/15 11:36*	*04/17/15 15:23*	*1*
p-Terphenyl-d14	*71*		*48 - 166*	*04/17/15 11:36*	*04/17/15 15:23*	*1*

Client Sample ID: SVDP-22 (20.5-21)

Lab Sample ID: 590-628-1
Date Collected: 04/07/15 11:30
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 88.8

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**110**		21		mg/Kg	☼	04/16/15 11:17	04/17/15 21:25	1
Residual Range Organics (RRO) (C25-C36)	ND		52		mg/Kg	☼	04/16/15 11:17	04/17/15 21:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*111*		*50 - 150*	*04/16/15 11:17*	*04/17/15 21:25*	*1*
n-Triacontane-d62	*110*		*50 - 150*	*04/16/15 11:17*	*04/17/15 21:25*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		8.9		mg/Kg	☼	04/17/15 09:34	04/21/15 12:47	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**11**		0.010		%			04/10/15 15:26	1
Percent Solids	**89**		0.010		%			04/10/15 15:26	1

Client Sample ID: SVDP-23 (18-18.5)

Lab Sample ID: 590-628-2
Date Collected: 04/07/15 13:00
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 81.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.017		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
Ethylbenzene	ND		0.11		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
m,p-Xylene	ND		0.45		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
Methyl tert-butyl ether	ND		0.056		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
o-Xylene	ND		0.22		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
Toluene	ND		0.11		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
Naphthalene	ND		0.22		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1
Xylenes, Total	ND		0.67		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 11:23*	*1*
4-Bromofluorobenzene (Surr)	*104*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 11:23*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*	*04/10/15 09:34*	*04/10/15 11:23*	*1*
Toluene-d8 (Surr)	*100*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 11:23*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.6		mg/Kg	☼	04/10/15 09:34	04/10/15 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*41.5 - 162*	*04/10/15 09:34*	*04/10/15 11:23*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
1-Methylnaphthalene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Acenaphthylene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1

Client Sample ID: SVDP-23 (18-18.5)

Lab Sample ID: 590-628-2
Date Collected: 04/07/15 13:00
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 81.3

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Fluorene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Phenanthrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Chrysene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*51*		*35.1 - 144*	*04/17/15 11:36*	*04/17/15 15:46*	*1*
2-Fluorobiphenyl (Surr)	*63*		*48.8 - 134*	*04/17/15 11:36*	*04/17/15 15:46*	*1*
p-Terphenyl-d14	*71*		*48 - 166*	*04/17/15 11:36*	*04/17/15 15:46*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**15**		12		mg/Kg	☼	04/16/15 11:17	04/17/15 21:49	1
Residual Range Organics (RRO) (C25-C36)	**85**		30		mg/Kg	☼	04/16/15 11:17	04/17/15 21:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*101*		*50 - 150*	*04/16/15 11:17*	*04/17/15 21:49*	*1*
n-Triacontane-d62	*103*		*50 - 150*	*04/16/15 11:17*	*04/17/15 21:49*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		10		mg/Kg	☼	04/17/15 09:34	04/21/15 12:49	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**19**		0.010		%			04/10/15 15:26	1
Percent Solids	**81**		0.010		%			04/10/15 15:26	1

Client Sample ID: SVDP-24 (19.5-20)

Lab Sample ID: 590-628-3
Date Collected: 04/07/15 14:00
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 83.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.17		mg/Kg	☼	04/10/15 09:34	04/10/15 11:46	10
Ethylbenzene	**24**		1.1		mg/Kg	☼	04/10/15 09:34	04/10/15 11:46	10
m,p-Xylene	**68**		45		mg/Kg	☼	04/10/15 09:34	04/10/15 14:18	100
Methyl tert-butyl ether	ND		0.56		mg/Kg	☼	04/10/15 09:34	04/10/15 11:46	10
o-Xylene	**29**		22		mg/Kg	☼	04/10/15 09:34	04/10/15 14:18	100

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-628-1

Client Sample ID: SVDP-24 (19.5-20)
Date Collected: 04/07/15 14:00
Date Received: 04/09/15 09:52

Lab Sample ID: 590-628-3
Matrix: Solid
Percent Solids: 83.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	9.3		1.1		mg/Kg	☼	04/10/15 09:34	04/10/15 11:46	10
Naphthalene	11		2.2		mg/Kg	☼	04/10/15 09:34	04/10/15 11:46	10
Xylenes, Total	97		67		mg/Kg	☼	04/10/15 09:34	04/10/15 14:18	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 11:46*	*10*
1,2-Dichloroethane-d4 (Surr)	*97*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 14:18*	*100*
4-Bromofluorobenzene (Surr)	*105*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 11:46*	*10*
4-Bromofluorobenzene (Surr)	*101*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 14:18*	*100*
Dibromofluoromethane (Surr)	*94*		*80 - 120*	*04/10/15 09:34*	*04/10/15 11:46*	*10*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*04/10/15 09:34*	*04/10/15 14:18*	*100*
Toluene-d8 (Surr)	*101*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 11:46*	*10*
Toluene-d8 (Surr)	*97*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 14:18*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	2400		56		mg/Kg	☼	04/10/15 09:34	04/10/15 11:46	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*41.5 - 162*	*04/10/15 09:34*	*04/10/15 11:46*	*10*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	250		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
2-Methylnaphthalene	1600		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
1-Methylnaphthalene	670		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Acenaphthylene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Acenaphthene	21		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Fluorene	15		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Phenanthrene	21		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Chrysene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*49*		*35.1 - 144*	*04/17/15 11:36*	*04/17/15 16:08*	*1*
2-Fluorobiphenyl (Surr)	*69*		*48.8 - 134*	*04/17/15 11:36*	*04/17/15 16:08*	*1*
p-Terphenyl-d14	*63*		*48 - 166*	*04/17/15 11:36*	*04/17/15 16:08*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	42		12		mg/Kg	☼	04/16/15 11:17	04/17/15 22:13	1

Client Sample ID: SVDP-24 (19.5-20)

Lab Sample ID: 590-628-3
Date Collected: 04/07/15 14:00
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 83.2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		29		mg/Kg	☼	04/16/15 11:17	04/17/15 22:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*100*		*50 - 150*	*04/16/15 11:17*	*04/17/15 22:13*	*1*
n-Triacontane-d62	*102*		*50 - 150*	*04/16/15 11:17*	*04/17/15 22:13*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		11		mg/Kg	☼	04/17/15 09:34	04/21/15 12:52	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**17**		0.010		%			04/10/15 15:26	1
Percent Solids	**83**		0.010		%			04/10/15 15:26	1

Client Sample ID: SVDP-25 (19.5-20)

Lab Sample ID: 590-628-4
Date Collected: 04/07/15 15:40
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 78.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
Ethylbenzene	ND		0.13		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
m,p-Xylene	ND		0.51		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
Methyl tert-butyl ether	ND		0.063		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
o-Xylene	ND		0.25		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
Toluene	ND		0.13		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
Naphthalene	ND		0.25		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1
Xylenes, Total	ND		0.76		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 12:08*	*1*
4-Bromofluorobenzene (Surr)	*110*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 12:08*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*04/10/15 09:34*	*04/10/15 12:08*	*1*
Toluene-d8 (Surr)	*101*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 12:08*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**160**		6.3		mg/Kg	☼	04/10/15 09:34	04/10/15 12:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*41.5 - 162*	*04/10/15 09:34*	*04/10/15 12:08*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**12**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
2-Methylnaphthalene	**100**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
1-Methylnaphthalene	**110**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Acenaphthylene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Acenaphthene	**41**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Fluorene	**37**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1

Client Sample ID: SVDP-25 (19.5-20)

Lab Sample ID: 590-628-4

Date Collected: 04/07/15 15:40

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 78.0

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenanthrene	**75**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Anthracene	**12**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Fluoranthene	**21**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Pyrene	**26**		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Chrysene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	04/17/15 11:36	04/17/15 16:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*56*		*35.1 - 144*	*04/17/15 11:36*	*04/17/15 16:31*	*1*
2-Fluorobiphenyl (Surr)	*66*		*48.8 - 134*	*04/17/15 11:36*	*04/17/15 16:31*	*1*
p-Terphenyl-d14	*70*		*48 - 166*	*04/17/15 11:36*	*04/17/15 16:31*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**72**		22		mg/Kg	☼	04/16/15 11:17	04/17/15 22:37	1
Residual Range Organics (RRO) (C25-C36)	ND		54		mg/Kg	☼	04/16/15 11:17	04/17/15 22:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*109*		*50 - 150*	*04/16/15 11:17*	*04/17/15 22:37*	*1*
n-Triacontane-d62	*106*		*50 - 150*	*04/16/15 11:17*	*04/17/15 22:37*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		10		mg/Kg	☼	04/17/15 09:34	04/21/15 12:54	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**22**		0.010		%			04/10/15 15:26	1
Percent Solids	**78**		0.010		%			04/10/15 15:26	1

Client Sample ID: SVDP-26 (20-20.5)

Lab Sample ID: 590-628-5

Date Collected: 04/07/15 17:15

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 72.9

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	☼	04/10/15 09:34	04/10/15 12:31	1
Ethylbenzene	ND		0.16		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1
m,p-Xylene	ND		0.66		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1
Methyl tert-butyl ether	ND		0.082		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1
o-Xylene	ND		0.33		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1
Toluene	ND		0.16		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1
Naphthalene	ND		0.33		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1

Client Sample ID: SVDP-26 (20-20.5) — **Lab Sample ID: 590-628-5**
Date Collected: 04/07/15 17:15 — **Matrix: Solid**
Date Received: 04/09/15 09:52 — **Percent Solids: 72.9**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.98		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 12:31*	*1*
4-Bromofluorobenzene (Surr)	*105*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 12:31*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*	*04/10/15 09:34*	*04/10/15 12:31*	*1*
Toluene-d8 (Surr)	*100*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 12:31*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	42		8.2		mg/Kg	☼	04/10/15 09:34	04/10/15 12:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*41.5 - 162*	*04/10/15 09:34*	*04/10/15 12:31*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
2-Methylnaphthalene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
1-Methylnaphthalene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Acenaphthylene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Acenaphthene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Fluorene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Phenanthrene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Anthracene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Fluoranthene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Pyrene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Benzo[a]anthracene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Chrysene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Benzo[b]fluoranthene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Benzo[k]fluoranthene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Benzo[a]pyrene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Indeno[1,2,3-cd]pyrene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Dibenz(a,h)anthracene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1
Benzo[g,h,i]perylene	ND		14		ug/Kg	☼	04/17/15 11:36	04/17/15 16:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*54*		*35.1 - 144*	*04/17/15 11:36*	*04/17/15 16:53*	*1*
2-Fluorobiphenyl (Surr)	*67*		*48.8 - 134*	*04/17/15 11:36*	*04/17/15 16:53*	*1*
p-Terphenyl-d14	*68*		*48 - 166*	*04/17/15 11:36*	*04/17/15 16:53*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		13		mg/Kg	☼	04/16/15 11:17	04/17/15 23:01	1
Residual Range Organics (RRO) (C25-C36)	ND		34		mg/Kg	☼	04/16/15 11:17	04/17/15 23:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*04/16/15 11:17*	*04/17/15 23:01*	*1*
n-Triacontane-d62	*100*		*50 - 150*	*04/16/15 11:17*	*04/17/15 23:01*	*1*

Client Sample ID: SVDP-26 (20-20.5)

Lab Sample ID: 590-628-5
Date Collected: 04/07/15 17:15
Matrix: Solid
Date Received: 04/09/15 09:52
Percent Solids: 72.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		9.4		mg/Kg	☼	04/17/15 09:34	04/21/15 12:56	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	27		0.010		%			04/10/15 15:26	1
Percent Solids	73		0.010		%			04/10/15 15:26	1

Client Sample ID: SVDP-24 :GW

Lab Sample ID: 590-628-6
Date Collected: 04/07/15 14:40
Matrix: Water
Date Received: 04/09/15 09:52

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	110		0.27		mg/L		04/13/15 14:39	04/15/15 09:11	1
Diesel Range Organics (DRO) (C10-C25)	30		0.69		mg/L		04/13/15 14:39	04/15/15 09:11	1
Residual Range Organics (RRO) (C25-C36)	0.90		0.69		mg/L		04/13/15 14:39	04/15/15 09:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*92*		*50 - 150*	*04/13/15 14:39*	*04/15/15 09:11*	*1*
n-Triacontane-d62	*40*	*X*	*50 - 150*	*04/13/15 14:39*	*04/15/15 09:11*	*1*

Client Sample ID: SVDP-25 :GW

Lab Sample ID: 590-628-7
Date Collected: 04/07/15 16:03
Matrix: Water
Date Received: 04/09/15 09:52

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	3.6		0.25		mg/L		04/13/15 14:39	04/15/15 09:33	1
Diesel Range Organics (DRO) (C10-C25)	2.3		0.62		mg/L		04/13/15 14:39	04/15/15 09:33	1
Residual Range Organics (RRO) (C25-C36)	ND		0.62		mg/L		04/13/15 14:39	04/15/15 09:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*04/13/15 14:39*	*04/15/15 09:33*	*1*
n-Triacontane-d62	*45*	*X*	*50 - 150*	*04/13/15 14:39*	*04/15/15 09:33*	*1*

Client Sample ID: SVDP-26 :GW

Lab Sample ID: 590-628-8
Date Collected: 04/07/15 17:40
Matrix: Water
Date Received: 04/09/15 09:52

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		04/13/15 14:43	04/15/15 09:56	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		04/13/15 14:43	04/15/15 09:56	1
Residual Range Organics (RRO) (C25-C36)	ND		0.63		mg/L		04/13/15 14:43	04/15/15 09:56	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-628-1

Client Sample ID: SVDP-26 :GW

Lab Sample ID: 590-628-8

Date Collected: 04/07/15 17:40

Matrix: Water

Date Received: 04/09/15 09:52

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	81		50 - 150	04/13/15 14:43	04/15/15 09:56	1
n-Triacontane-d62	37	X	50 - 150	04/13/15 14:43	04/15/15 09:56	1

Client Sample ID: Trip Blank

Lab Sample ID: 590-628-9

Date Collected: 04/02/15 00:00

Matrix: Water

Date Received: 04/09/15 09:52

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,1,1-Trichloroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,1,2-Trichloroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,1-Dichloroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,1-Dichloroethene	ND		1.0		ug/L			04/10/15 21:45	1
1,1-Dichloropropene	ND		1.0		ug/L			04/10/15 21:45	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			04/10/15 21:45	1
1,2,3-Trichloropropane	ND		1.0		ug/L			04/10/15 21:45	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			04/10/15 21:45	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			04/10/15 21:45	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			04/10/15 21:45	1
1,2-Dichlorobenzene	ND		1.0		ug/L			04/10/15 21:45	1
1,2-Dichloroethane	ND		1.0		ug/L			04/10/15 21:45	1
1,2-Dichloropropane	ND		1.0		ug/L			04/10/15 21:45	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
1,3-Dichlorobenzene	ND		1.0		ug/L			04/10/15 21:45	1
1,3-Dichloropropane	ND		1.0		ug/L			04/10/15 21:45	1
1,4-Dichlorobenzene	ND		1.0		ug/L			04/10/15 21:45	1
2,2-Dichloropropane	ND		1.0		ug/L			04/10/15 21:45	1
2-Butanone (MEK)	ND		10		ug/L			04/10/15 21:45	1
2-Chlorotoluene	ND		1.0		ug/L			04/10/15 21:45	1
2-Hexanone	ND		10		ug/L			04/10/15 21:45	1
4-Chlorotoluene	ND		1.0		ug/L			04/10/15 21:45	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			04/10/15 21:45	1
Acetone	ND		25		ug/L			04/10/15 21:45	1
Benzene	ND		0.20		ug/L			04/10/15 21:45	1
Bromobenzene	ND		1.0		ug/L			04/10/15 21:45	1
Bromochloromethane	ND		1.0		ug/L			04/10/15 21:45	1
Bromodichloromethane	ND		1.0		ug/L			04/10/15 21:45	1
Bromoform	ND		1.0		ug/L			04/10/15 21:45	1
Bromomethane	ND		5.0		ug/L			04/10/15 21:45	1
Carbon disulfide	ND		1.0		ug/L			04/10/15 21:45	1
Carbon tetrachloride	ND		1.0		ug/L			04/10/15 21:45	1
Chlorobenzene	ND		1.0		ug/L			04/10/15 21:45	1
Chloroethane	ND		1.0		ug/L			04/10/15 21:45	1
Chloroform	ND		1.0		ug/L			04/10/15 21:45	1
Chloromethane	ND		3.0		ug/L			04/10/15 21:45	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			04/10/15 21:45	1

Client Sample ID: Trip Blank — **Lab Sample ID: 590-628-9**
Date Collected: 04/02/15 00:00 — **Matrix: Water**
Date Received: 04/09/15 09:52

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0		ug/L			04/10/15 21:45	1
Dibromochloromethane	ND		1.0		ug/L			04/10/15 21:45	1
Dibromomethane	ND		1.0		ug/L			04/10/15 21:45	1
Dichlorodifluoromethane	ND		1.0		ug/L			04/10/15 21:45	1
Dichlorofluoromethane	ND		0.20		ug/L			04/10/15 21:45	1
Ethylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
Hexachlorobutadiene	ND		2.0		ug/L			04/10/15 21:45	1
Hexane	ND		1.0		ug/L			04/10/15 21:45	1
Isopropylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
m,p-Xylene	ND		2.0		ug/L			04/10/15 21:45	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/10/15 21:45	1
Methylene Chloride	ND		10		ug/L			04/10/15 21:45	1
Naphthalene	ND		2.0		ug/L			04/10/15 21:45	1
n-Butylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
N-Propylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
o-Xylene	ND		1.0		ug/L			04/10/15 21:45	1
p-Isopropyltoluene	ND		1.0		ug/L			04/10/15 21:45	1
sec-Butylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
Styrene	ND		1.0		ug/L			04/10/15 21:45	1
tert-Butanol	ND		5.0		ug/L			04/10/15 21:45	1
tert-Butylbenzene	ND		1.0		ug/L			04/10/15 21:45	1
Tetrachloroethene	ND		1.0		ug/L			04/10/15 21:45	1
Toluene	ND		1.0		ug/L			04/10/15 21:45	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			04/10/15 21:45	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			04/10/15 21:45	1
Trichloroethene	ND		1.0		ug/L			04/10/15 21:45	1
Trichlorofluoromethane	ND		1.0		ug/L			04/10/15 21:45	1
Vinyl chloride	ND		0.20		ug/L			04/10/15 21:45	1
Xylenes, Total	ND		3.0		ug/L			04/10/15 21:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*04/10/15 21:45*	*1*
4-Bromofluorobenzene (Surr)	*99*		*68.7 - 141*		*04/10/15 21:45*	*1*
Dibromofluoromethane (Surr)	*105*		*71.2 - 143*		*04/10/15 21:45*	*1*
Toluene-d8 (Surr)	*100*		*74.1 - 135*		*04/10/15 21:45*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		100		ug/L			04/10/15 21:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*68.7 - 141*		*04/10/15 21:45*	*1*

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

Lab Sample ID: MB 590-1077/1-A
Matrix: Solid
Analysis Batch: 1073

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1077

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.015		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
Ethylbenzene	ND		0.10		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
m,p-Xylene	ND		0.40		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
Methyl tert-butyl ether	ND		0.050		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
Naphthalene	ND		0.20		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
o-Xylene	ND		0.20		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
Toluene	ND		0.10		mg/Kg		04/10/15 09:34	04/10/15 09:05	1
Xylenes, Total	ND		0.60		mg/Kg		04/10/15 09:34	04/10/15 09:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*74.7 - 120*	*04/10/15 09:34*	*04/10/15 09:05*	*1*
4-Bromofluorobenzene (Surr)	*101*		*69.8 - 140*	*04/10/15 09:34*	*04/10/15 09:05*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*	*04/10/15 09:34*	*04/10/15 09:05*	*1*
Toluene-d8 (Surr)	*100*		*78.5 - 125*	*04/10/15 09:34*	*04/10/15 09:05*	*1*

Lab Sample ID: LCS 590-1077/2-A
Matrix: Solid
Analysis Batch: 1073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1077

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.500	0.479		mg/Kg		96	75.8 - 123
Ethylbenzene	0.500	0.477		mg/Kg		95	77.3 - 121
m,p-Xylene	0.500	0.481		mg/Kg		96	77.7 - 124
Methyl tert-butyl ether	0.500	0.473		mg/Kg		95	60 - 140
Naphthalene	0.500	0.440		mg/Kg		88	55.1 - 142
o-Xylene	0.500	0.478		mg/Kg		96	76.7 - 129
Toluene	0.500	0.490		mg/Kg		98	76.6 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*74.7 - 120*
4-Bromofluorobenzene (Surr)	*100*		*69.8 - 140*
Dibromofluoromethane (Surr)	*100*		*80 - 120*
Toluene-d8 (Surr)	*99*		*78.5 - 125*

Lab Sample ID: MB 590-1091/4
Matrix: Water
Analysis Batch: 1091

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,1,1-Trichloroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,1,2-Trichloroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,1-Dichloroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,1-Dichloroethene	ND		1.0		ug/L			04/10/15 19:06	1
1,1-Dichloropropene	ND		1.0		ug/L			04/10/15 19:06	1

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

Lab Sample ID: MB 590-1091/4
Matrix: Water
Analysis Batch: 1091

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichlorobenzene	ND		1.0		ug/L			04/10/15 19:06	1
1,2,3-Trichloropropane	ND		1.0		ug/L			04/10/15 19:06	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			04/10/15 19:06	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			04/10/15 19:06	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			04/10/15 19:06	1
1,2-Dichlorobenzene	ND		1.0		ug/L			04/10/15 19:06	1
1,2-Dichloroethane	ND		1.0		ug/L			04/10/15 19:06	1
1,2-Dichloropropane	ND		1.0		ug/L			04/10/15 19:06	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
1,3-Dichlorobenzene	ND		1.0		ug/L			04/10/15 19:06	1
1,3-Dichloropropane	ND		1.0		ug/L			04/10/15 19:06	1
1,4-Dichlorobenzene	ND		1.0		ug/L			04/10/15 19:06	1
2,2-Dichloropropane	ND		1.0		ug/L			04/10/15 19:06	1
2-Butanone (MEK)	ND		10		ug/L			04/10/15 19:06	1
2-Chlorotoluene	ND		1.0		ug/L			04/10/15 19:06	1
2-Hexanone	ND		10		ug/L			04/10/15 19:06	1
4-Chlorotoluene	ND		1.0		ug/L			04/10/15 19:06	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			04/10/15 19:06	1
Acetone	ND		25		ug/L			04/10/15 19:06	1
Benzene	ND		0.20		ug/L			04/10/15 19:06	1
Bromobenzene	ND		1.0		ug/L			04/10/15 19:06	1
Bromochloromethane	ND		1.0		ug/L			04/10/15 19:06	1
Bromodichloromethane	ND		1.0		ug/L			04/10/15 19:06	1
Bromoform	ND		1.0		ug/L			04/10/15 19:06	1
Bromomethane	ND		5.0		ug/L			04/10/15 19:06	1
Carbon disulfide	ND		1.0		ug/L			04/10/15 19:06	1
Carbon tetrachloride	ND		1.0		ug/L			04/10/15 19:06	1
Chlorobenzene	ND		1.0		ug/L			04/10/15 19:06	1
Chloroethane	ND		1.0		ug/L			04/10/15 19:06	1
Chloroform	ND		1.0		ug/L			04/10/15 19:06	1
Chloromethane	ND		3.0		ug/L			04/10/15 19:06	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			04/10/15 19:06	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			04/10/15 19:06	1
Dibromochloromethane	ND		1.0		ug/L			04/10/15 19:06	1
Dibromomethane	ND		1.0		ug/L			04/10/15 19:06	1
Dichlorodifluoromethane	ND		1.0		ug/L			04/10/15 19:06	1
Dichlorofluoromethane	ND		0.20		ug/L			04/10/15 19:06	1
Ethylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
Hexachlorobutadiene	ND		2.0		ug/L			04/10/15 19:06	1
Hexane	ND		1.0		ug/L			04/10/15 19:06	1
Isopropylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
m,p-Xylene	ND		2.0		ug/L			04/10/15 19:06	1
Methyl tert-butyl ether	ND		1.0		ug/L			04/10/15 19:06	1
Methylene Chloride	ND		10		ug/L			04/10/15 19:06	1
Naphthalene	ND		2.0		ug/L			04/10/15 19:06	1
n-Butylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
N-Propylbenzene	ND		1.0		ug/L			04/10/15 19:06	1

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

Lab Sample ID: MB 590-1091/4
Matrix: Water
Analysis Batch: 1091

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		1.0		ug/L			04/10/15 19:06	1
p-Isopropyltoluene	ND		1.0		ug/L			04/10/15 19:06	1
sec-Butylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
Styrene	ND		1.0		ug/L			04/10/15 19:06	1
tert-Butanol	ND		5.0		ug/L			04/10/15 19:06	1
tert-Butylbenzene	ND		1.0		ug/L			04/10/15 19:06	1
Tetrachloroethene	ND		1.0		ug/L			04/10/15 19:06	1
Toluene	ND		1.0		ug/L			04/10/15 19:06	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			04/10/15 19:06	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			04/10/15 19:06	1
Trichloroethene	ND		1.0		ug/L			04/10/15 19:06	1
Trichlorofluoromethane	ND		1.0		ug/L			04/10/15 19:06	1
Vinyl chloride	ND		0.20		ug/L			04/10/15 19:06	1
Xylenes, Total	ND		3.0		ug/L			04/10/15 19:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*04/10/15 19:06*	*1*
4-Bromofluorobenzene (Surr)	*99*		*68.7 - 141*		*04/10/15 19:06*	*1*
Dibromofluoromethane (Surr)	*106*		*71.2 - 143*		*04/10/15 19:06*	*1*
Toluene-d8 (Surr)	*101*		*74.1 - 135*		*04/10/15 19:06*	*1*

Lab Sample ID: LCS 590-1091/5
Matrix: Water
Analysis Batch: 1091

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	10.0	11.1		ug/L		111	60 - 140
1,1,1-Trichloroethane	10.0	10.3		ug/L		103	60 - 140
1,1,2,2-Tetrachloroethane	10.0	10.6		ug/L		106	60 - 140
1,1,2-Trichloroethane	10.0	10.8		ug/L		108	60 - 140
1,1,2-Trichlorotrifluoroethane	10.0	10.9		ug/L		109	60 - 140
1,1-Dichloroethane	10.0	10.8		ug/L		108	60 - 140
1,1-Dichloroethene	10.0	11.0		ug/L		110	78.1 - 155
1,1-Dichloropropene	10.0	11.0		ug/L		110	60 - 140
1,2,3-Trichlorobenzene	10.0	10.5		ug/L		105	60 - 140
1,2,3-Trichloropropane	10.0	10.7		ug/L		107	60 - 140
1,2,4-Trichlorobenzene	10.0	10.2		ug/L		102	60 - 140
1,2,4-Trimethylbenzene	10.0	10.1		ug/L		101	60 - 140
1,2-Dibromo-3-Chloropropane	10.0	11.3		ug/L		113	60 - 140
1,2-Dichlorobenzene	10.0	10.5		ug/L		105	60 - 140
1,2-Dichloroethane	10.0	10.5		ug/L		105	63.9 - 144
1,2-Dichloropropane	10.0	10.5		ug/L		105	60 - 140
1,3,5-Trimethylbenzene	10.0	10.1		ug/L		101	60 - 140
1,3-Dichlorobenzene	10.0	10.6		ug/L		106	60 - 140
1,3-Dichloropropane	10.0	10.9		ug/L		109	60 - 140
1,4-Dichlorobenzene	10.0	10.3		ug/L		103	60 - 140
2,2-Dichloropropane	10.0	10.3		ug/L		103	60 - 140
2-Butanone (MEK)	50.0	57.7		ug/L		115	60 - 140

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

Lab Sample ID: LCS 590-1091/5
Matrix: Water
Analysis Batch: 1091

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chlorotoluene	10.0	10.3		ug/L		103	60 - 140
2-Hexanone	50.0	59.1		ug/L		118	60 - 140
4-Chlorotoluene	10.0	10.1		ug/L		101	60 - 140
4-Methyl-2-pentanone (MIBK)	50.0	57.5		ug/L		115	60 - 140
Acetone	50.0	51.7		ug/L		103	60 - 140
Benzene	10.0	10.6		ug/L		106	80 - 140
Bromobenzene	10.0	10.7		ug/L		107	60 - 140
Bromochloromethane	10.0	10.9		ug/L		109	60 - 140
Bromodichloromethane	10.0	10.3		ug/L		103	60 - 140
Bromoform	10.0	10.7		ug/L		107	60 - 140
Bromomethane	10.0	12.2		ug/L		122	60 - 140
Carbon disulfide	10.0	11.3		ug/L		113	60 - 140
Carbon tetrachloride	10.0	11.0		ug/L		110	60 - 140
Chlorobenzene	10.0	11.0		ug/L		110	79.2 - 125
Chloroethane	10.0	11.7		ug/L		117	60 - 140
Chloroform	10.0	10.4		ug/L		104	60 - 140
Chloromethane	10.0	12.1		ug/L		121	60 - 140
cis-1,2-Dichloroethene	10.0	10.6		ug/L		106	60 - 140
cis-1,3-Dichloropropene	10.0	10.3		ug/L		103	60 - 140
Dibromochloromethane	10.0	10.7		ug/L		107	60 - 140
Dibromomethane	10.0	11.3		ug/L		113	60 - 140
Dichlorodifluoromethane	10.0	13.2		ug/L		132	60 - 140
Dichlorofluoromethane	10.0	11.3		ug/L		113	60 - 140
Ethylbenzene	10.0	10.6		ug/L		106	80 - 120
Hexachlorobutadiene	10.0	10.5		ug/L		105	80 - 120
Hexane	10.0	10.9		ug/L		109	60 - 140
Isopropylbenzene	10.0	10.4		ug/L		104	60 - 140
m,p-Xylene	10.0	10.6		ug/L		106	80 - 120
Methyl tert-butyl ether	10.0	11.1		ug/L		111	80.1 - 128
Methylene Chloride	10.0	9.14	J	ug/L		91	60 - 140
Naphthalene	10.0	10.7		ug/L		107	62.8 - 132
n-Butylbenzene	10.0	10.1		ug/L		101	60 - 140
N-Propylbenzene	10.0	10.1		ug/L		101	60 - 140
o-Xylene	10.0	10.5		ug/L		105	80 - 120
p-Isopropyltoluene	10.0	10.6		ug/L		106	60 - 140
sec-Butylbenzene	10.0	10.1		ug/L		101	60 - 140
Styrene	10.0	10.6		ug/L		106	60 - 140
tert-Butanol	100	129		ug/L		129	60 - 140
tert-Butylbenzene	10.0	10.7		ug/L		107	60 - 140
Tetrachloroethene	10.0	11.0		ug/L		110	60 - 140
Toluene	10.0	10.6		ug/L		106	80 - 123
trans-1,2-Dichloroethene	10.0	10.9		ug/L		109	60 - 140
trans-1,3-Dichloropropene	10.0	10.4		ug/L		104	60 - 140
Trichloroethene	10.0	11.4		ug/L		114	74.8 - 123
Trichlorofluoromethane	10.0	10.7		ug/L		107	60 - 140
Vinyl chloride	10.0	12.3		ug/L		123	60 - 140

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

Lab Sample ID: LCS 590-1091/5
Matrix: Water
Analysis Batch: 1091

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

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		70 - 140
4-Bromofluorobenzene (Surr)	97		68.7 - 141
Dibromofluoromethane (Surr)	105		71.2 - 143
Toluene-d8 (Surr)	100		74.1 - 135

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

Lab Sample ID: MB 590-1077/1-A
Matrix: Solid
Analysis Batch: 1074

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1077

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		04/10/15 09:34	04/10/15 09:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		41.5 - 162	04/10/15 09:34	04/10/15 09:05	1

Lab Sample ID: LCS 590-1077/3-A
Matrix: Solid
Analysis Batch: 1074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1077

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	50.0	51.3		mg/Kg		103	74.4 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		41.5 - 162

Lab Sample ID: MB 590-1090/4
Matrix: Water
Analysis Batch: 1090

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		100		ug/L			04/10/15 19:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		68.7 - 141		04/10/15 19:06	1

Lab Sample ID: LCS 590-1090/6
Matrix: Water
Analysis Batch: 1090

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1000	1010		ug/L		101	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		68.7 - 141

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-1155/1-A
Matrix: Solid
Analysis Batch: 1154

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1155

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
2-Methylnaphthalene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
1-Methylnaphthalene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Acenaphthylene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Acenaphthene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Fluorene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Phenanthrene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Anthracene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Fluoranthene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Pyrene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Benzo[a]anthracene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Chrysene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Benzo[b]fluoranthene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Benzo[k]fluoranthene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Benzo[a]pyrene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		04/17/15 11:36	04/17/15 12:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*45*		*35.1 - 144*	*04/17/15 11:36*	*04/17/15 12:37*	*1*
2-Fluorobiphenyl (Surr)	*53*		*48.8 - 134*	*04/17/15 11:36*	*04/17/15 12:37*	*1*
p-Terphenyl-d14	*80*		*48 - 166*	*04/17/15 11:36*	*04/17/15 12:37*	*1*

Lab Sample ID: LCS 590-1155/2-A
Matrix: Solid
Analysis Batch: 1154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1155

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			267	194		ug/Kg		73	51.4 - 133		
Fluorene			267	286		ug/Kg		107	65.7 - 123		
Chrysene			267	273		ug/Kg		102	57.3 - 133		
Indeno[1,2,3-cd]pyrene			267	247		ug/Kg		92	54.6 - 142		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*59*		*35.1 - 144*
2-Fluorobiphenyl (Surr)	*73*		*48.8 - 134*
p-Terphenyl-d14	*70*		*48 - 166*

Lab Sample ID: LCSD 590-1155/3-A
Matrix: Solid
Analysis Batch: 1154

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 1155

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			267	201		ug/Kg		75	51.4 - 133	3	35
Fluorene			267	310		ug/Kg		116	65.7 - 123	8	35
Chrysene			267	264		ug/Kg		99	57.3 - 133	3	35

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 590-1155/3-A
Matrix: Solid
Analysis Batch: 1154

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 1155

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Indeno[1,2,3-cd]pyrene			267	275		ug/Kg		103	54.6 - 142	11	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5	*61*		*35.1 - 144*
2-Fluorobiphenyl (Surr)	*90*		*48.8 - 134*
p-Terphenyl-d14	*76*		*48 - 166*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-1136/1-A
Matrix: Solid
Analysis Batch: 1160

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1136

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		10		mg/Kg		04/16/15 11:17	04/17/15 15:25	1
Residual Range Organics (RRO) (C25-C36)	ND		25		mg/Kg		04/16/15 11:17	04/17/15 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*04/16/15 11:17*	*04/17/15 15:25*	*1*
n-Triacontane-d62	*103*		*50 - 150*	*04/16/15 11:17*	*04/17/15 15:25*	*1*

Lab Sample ID: LCS 590-1136/2-A
Matrix: Solid
Analysis Batch: 1160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1136

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)			66.7	58.7		mg/Kg		88	50 - 150
Residual Range Organics (RRO) (C25-C36)			66.7	60.5		mg/Kg		91	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*99*		*50 - 150*
n-Triacontane-d62	*105*		*50 - 150*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 590-1104/1-A
Matrix: Water
Analysis Batch: 1112

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1104

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		0.25		mg/L		04/13/15 14:39	04/15/15 08:48	1
Diesel Range Organics (DRO) (C10-C25)	ND		0.63		mg/L		04/13/15 14:39	04/15/15 08:48	1

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC) (Continued)

Lab Sample ID: MB 590-1104/1-A
Matrix: Water
Analysis Batch: 1112

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1104

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		0.63		mg/L		04/13/15 14:39	04/15/15 08:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*114*		*50 - 150*	*04/13/15 14:39*	*04/15/15 08:48*	*1*
n-Triacontane-d62	*52*		*50 - 150*	*04/13/15 14:39*	*04/15/15 08:48*	*1*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 590-1151/2-A
Matrix: Solid
Analysis Batch: 1189

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1151

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.025		mg/Kg		04/17/15 09:34	04/21/15 10:52	1

Lab Sample ID: LCS 590-1151/1-A
Matrix: Solid
Analysis Batch: 1189

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1151

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.955		mg/Kg		95	80 - 120

Client Sample ID: SVDP-22 (20.5-21)

Lab Sample ID: 590-628-1

Date Collected: 04/07/15 11:30

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 88.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.839 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	8260C		10	6.839 g	5 mL	1073	04/10/15 11:01	MRS	TAL SPK
Total/NA	Prep	5035			6.839 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		10	6.839 g	5 mL	1074	04/10/15 11:01	MRS	TAL SPK
Total/NA	Prep	3550C			15.60 g	2 mL	1155	04/17/15 11:36	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.60 g	2 mL	1154	04/17/15 15:23	NMI	TAL SPK
Total/NA	Prep	3550C			15.60 g	2 mL	1155	04/17/15 11:36	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		2	15.60 g	2 mL	1154	04/17/15 17:38	NMI	TAL SPK
Total/NA	Prep	3550C			8.11 g	5 mL	1136	04/16/15 11:17	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	8.11 g	5 mL	1160	04/17/15 21:25	NMI	TAL SPK
Total/NA	Prep	3050B			1.58 g	50 mL	1151	04/17/15 09:34	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.58 g	50 mL	1189	04/21/15 12:47	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1086	04/10/15 15:26	NMI	TAL SPK

Client Sample ID: SVDP-23 (18-18.5)

Lab Sample ID: 590-628-2

Date Collected: 04/07/15 13:00

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.886 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	8260C		1	6.886 g	5 mL	1073	04/10/15 11:23	MRS	TAL SPK
Total/NA	Prep	5035			6.886 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	6.886 g	5 mL	1074	04/10/15 11:23	MRS	TAL SPK
Total/NA	Prep	3550C			15.71 g	2 mL	1155	04/17/15 11:36	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.71 g	2 mL	1154	04/17/15 15:46	NMI	TAL SPK
Total/NA	Prep	3550C			15.13 g	5 mL	1136	04/16/15 11:17	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.13 g	5 mL	1160	04/17/15 21:49	NMI	TAL SPK
Total/NA	Prep	3050B			1.50 g	50 mL	1151	04/17/15 09:34	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.50 g	50 mL	1189	04/21/15 12:49	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1086	04/10/15 15:26	NMI	TAL SPK

Client Sample ID: SVDP-24 (19.5-20)

Lab Sample ID: 590-628-3

Date Collected: 04/07/15 14:00

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.597 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	8260C		10	6.597 g	5 mL	1073	04/10/15 11:46	MRS	TAL SPK
Total/NA	Prep	5035			6.597 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	8260C		100	6.597 g	5 mL	1073	04/10/15 14:18	MRS	TAL SPK
Total/NA	Prep	5035			6.597 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		10	6.597 g	5 mL	1074	04/10/15 11:46	MRS	TAL SPK
Total/NA	Prep	3550C			15.35 g	2 mL	1155	04/17/15 11:36	NMI	TAL SPK

Client Sample ID: SVDP-24 (19.5-20)

Lab Sample ID: 590-628-3

Date Collected: 04/07/15 14:00

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D SIM		1	15.35 g	2 mL	1154	04/17/15 16:08	NMI	TAL SPK
Total/NA	Prep	3550C			15.65 g	5 mL	1136	04/16/15 11:17	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.65 g	5 mL	1160	04/17/15 22:13	NMI	TAL SPK
Total/NA	Prep	3050B			1.40 g	50 mL	1151	04/17/15 09:34	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.40 g	50 mL	1189	04/21/15 12:52	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1086	04/10/15 15:26	NMI	TAL SPK

Client Sample ID: SVDP-25 (19.5-20)

Lab Sample ID: 590-628-4

Date Collected: 04/07/15 15:40

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 78.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.54 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	8260C		1	6.54 g	5 mL	1073	04/10/15 12:08	MRS	TAL SPK
Total/NA	Prep	5035			6.54 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	6.54 g	5 mL	1074	04/10/15 12:08	MRS	TAL SPK
Total/NA	Prep	3550C			15.61 g	2 mL	1155	04/17/15 11:36	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.61 g	2 mL	1154	04/17/15 16:31	NMI	TAL SPK
Total/NA	Prep	3550C			8.83 g	5 mL	1136	04/16/15 11:17	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	8.83 g	5 mL	1160	04/17/15 22:37	NMI	TAL SPK
Total/NA	Prep	3050B			1.61 g	50 mL	1151	04/17/15 09:34	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.61 g	50 mL	1189	04/21/15 12:54	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1086	04/10/15 15:26	NMI	TAL SPK

Client Sample ID: SVDP-26 (20-20.5)

Lab Sample ID: 590-628-5

Date Collected: 04/07/15 17:15

Matrix: Solid

Date Received: 04/09/15 09:52

Percent Solids: 72.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.413 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	8260C		1	5.413 g	5 mL	1073	04/10/15 12:31	MRS	TAL SPK
Total/NA	Prep	5035			5.413 g	5 mL	1077	04/10/15 09:34	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	5.413 g	5 mL	1074	04/10/15 12:31	MRS	TAL SPK
Total/NA	Prep	3550C			15.14 g	2 mL	1155	04/17/15 11:36	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.14 g	2 mL	1154	04/17/15 16:53	NMI	TAL SPK
Total/NA	Prep	3550C			15.32 g	5 mL	1136	04/16/15 11:17	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.32 g	5 mL	1160	04/17/15 23:01	NMI	TAL SPK
Total/NA	Prep	3050B			1.82 g	50 mL	1151	04/17/15 09:34	JSP	TAL SPK
Total/NA	Analysis	6010C		10	1.82 g	50 mL	1189	04/21/15 12:56	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1086	04/10/15 15:26	NMI	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-628-1

Client Sample ID: SVDP-24 :GW

Lab Sample ID: 590-628-6

Date Collected: 04/07/15 14:40

Matrix: Water

Date Received: 04/09/15 09:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			114.5 mL	2 mL	1104	04/13/15 14:39	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	114.5 mL	2 mL	1112	04/15/15 09:11	NMI	TAL SPK

Client Sample ID: SVDP-25 :GW

Lab Sample ID: 590-628-7

Date Collected: 04/07/15 16:03

Matrix: Water

Date Received: 04/09/15 09:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			126.7 mL	2 mL	1104	04/13/15 14:39	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	126.7 mL	2 mL	1112	04/15/15 09:33	NMI	TAL SPK

Client Sample ID: SVDP-26 :GW

Lab Sample ID: 590-628-8

Date Collected: 04/07/15 17:40

Matrix: Water

Date Received: 04/09/15 09:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			124.9 mL	2 mL	1104	04/13/15 14:43	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1	124.9 mL	2 mL	1112	04/15/15 09:56	NMI	TAL SPK

Client Sample ID: Trip Blank

Lab Sample ID: 590-628-9

Date Collected: 04/02/15 00:00

Matrix: Water

Date Received: 04/09/15 09:52

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	1091	04/10/15 21:45	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	1090	04/10/15 21:45	MRS	TAL SPK

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-628-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil Summitview

TestAmerica Job ID: 590-628-1

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
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	TAL SPK
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	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

Client Information	Sampler: Josh Lee (JML)	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 590-253-89.1
Client Contact: JR Sugalski	Phone: 406-239-7810	E-Mail: michelle.johnston@testamericainc.com		Page: Page 1 of 1
Company: GeoEngineers Inc				Job #:
Address: 523 East Second Ave	Due Date Requested:			
City: Spokane	TAT Requested (days): Std.			
State, Zip: WA, 99202				
Phone: 509-209-2830(Tel)	PO #: Purchase Order not required			
Email: jsugalski@geoengineers.com	WO #:			
Project Name: Tiger Oil - Sumitview - Soil	Project #: 59000440			
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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, 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)	8260C, NWTPH_Gx_MS	6010C, 8270D_SIM, NWTPH_Dx	HCID	Total Number of containers	Special Instructions/Note:
			Preservation Code:				F	N			
SVDP-22(20.5-21)	4/7/2015	1130	G	S			X	X		3	
SVDP-23(18-18.5)	"	1300	"	"			X	X		3	
SVDP-24(19.5-20)	"	1400	"	"			X	X		3	
SVDP-25(19.5-20)	"	1540	"	"			X	X		3	
SVDP-26(20-20.5)	"	1715	"	"			X	X		3	
~~SVDP-22:GW~~											
~~SVDP-23:GW~~											
SVDP-24:GW		1440	G	W	N				X	1	
SVDP-25:GW		1603	"	"	"				X	1	
SVDP-26:GW		1740	"	"	"				X	1	
Trip Blank										2	

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: Sheila Krata — Date/Time: 4/9/15 9:52 — Company: TestAmerica
Relinquished by:			Received by: — Date/Time: — Company
Relinquished by:			Received by: — Date/Time: — Company
Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	590-628 Chain of Custody	Cooler Temperature(s) °C and Other Remarks: 4.7 C IR001

4/22/2015

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-628-1

Login Number: 628

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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	4.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Trip Blank received, but not listed on COC.
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.	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").	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: 590-731-1
Client Project/Site: Tiger Oil/0504-101-02

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

Attn: JR Sugalski

Randee Arrington

Authorized for release by:
5/13/2015 2:09:04 PM

Randee Arrington, Project Manager II
(509)924-9200
randee.arrington@testamericainc.com

Table of Contents

Job ID: 590-731-1

Laboratory: TestAmerica Spokane

Narrative

Receipt
The samples were received on 4/29/2015 4:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 8.1º C.

Except:

The following samples were received at the laboratory outside the required temperature criteria: SVMW-Dup (590-731-1), SVMW-5 (22.5-23) (590-731-2) and SVMW-4 (22.5-23) (590-731-3).

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

GC/MS Semi 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
Method Moisture: The sample duplicate (DUP) precision for 590-1316 was outside control limits. Sample non-homogeneity is suspected.

No additional analytical or quality issues were noted, other than those described above or 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
Project/Site: Tiger Oil/0504-101-02

TestAmerica Job ID: 590-731-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-731-1	SVMW-Dup	Solid	04/27/15 08:00	04/29/15 16:25
590-731-2	SVMW-5 (22.5-23)	Solid	04/27/15 09:30	04/29/15 16:25
590-731-3	SVMW-4 (22.5-23)	Solid	04/27/15 12:00	04/29/15 16:25

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 ID: SVMW-Dup

Date Collected: 04/27/15 08:00
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-1

Matrix: Solid
Percent Solids: 63.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.040		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1
Ethylbenzene	ND		0.27		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1
m,p-Xylene	ND		1.1		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1
o-Xylene	ND		0.53		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1
Toluene	ND		0.27		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1
Xylenes, Total	ND		1.6		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*74.7 - 120*	*05/01/15 12:55*	*05/01/15 13:26*	*1*
4-Bromofluorobenzene (Surr)	*101*		*69.8 - 140*	*05/01/15 12:55*	*05/01/15 13:26*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*05/01/15 12:55*	*05/01/15 13:26*	*1*
Toluene-d8 (Surr)	*101*		*78.5 - 125*	*05/01/15 12:55*	*05/01/15 13:26*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	13		13		mg/Kg	☼	05/01/15 12:55	05/01/15 13:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*41.5 - 162*	*05/01/15 12:55*	*05/01/15 13:26*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
2-Methylnaphthalene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
1-Methylnaphthalene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Acenaphthylene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Acenaphthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Fluorene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Phenanthrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Anthracene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Fluoranthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Pyrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Benzo[a]anthracene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Chrysene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Benzo[b]fluoranthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Benzo[k]fluoranthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Benzo[a]pyrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Indeno[1,2,3-cd]pyrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Dibenz(a,h)anthracene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1
Benzo[g,h,i]perylene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*67*		*35.1 - 144*	*05/08/15 10:17*	*05/12/15 17:16*	*1*
2-Fluorobiphenyl (Surr)	*55*		*48.8 - 134*	*05/08/15 10:17*	*05/12/15 17:16*	*1*
p-Terphenyl-d14	*109*		*48 - 166*	*05/08/15 10:17*	*05/12/15 17:16*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		16		mg/Kg	☼	05/05/15 08:15	05/05/15 10:36	1

Client Sample ID: SVMW-Dup

Date Collected: 04/27/15 08:00
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-1

Matrix: Solid
Percent Solids: 63.7

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		39		mg/Kg	☼	05/05/15 08:15	05/05/15 10:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*05/05/15 08:15*	*05/05/15 10:36*	*1*
n-Triacontane-d62	*88*		*50 - 150*	*05/05/15 08:15*	*05/05/15 10:36*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**5.4**		4.8		mg/Kg	☼	04/30/15 09:21	05/01/15 13:11	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**36**		0.010		%			05/01/15 16:12	1
Percent Solids	**64**		0.010		%			05/01/15 16:12	1

Client Sample ID: SVMW-5 (22.5-23)

Date Collected: 04/27/15 09:30
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-2

Matrix: Solid
Percent Solids: 62.7

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	☼	05/01/15 12:55	05/01/15 13:49	1
Ethylbenzene	ND		0.23		mg/Kg	☼	05/01/15 12:55	05/01/15 13:49	1
m,p-Xylene	ND		0.90		mg/Kg	☼	05/01/15 12:55	05/01/15 13:49	1
o-Xylene	ND		0.45		mg/Kg	☼	05/01/15 12:55	05/01/15 13:49	1
Toluene	ND		0.23		mg/Kg	☼	05/01/15 12:55	05/01/15 13:49	1
Xylenes, Total	ND		1.4		mg/Kg	☼	05/01/15 12:55	05/01/15 13:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*74.7 - 120*	*05/01/15 12:55*	*05/01/15 13:49*	*1*
4-Bromofluorobenzene (Surr)	*101*		*69.8 - 140*	*05/01/15 12:55*	*05/01/15 13:49*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*05/01/15 12:55*	*05/01/15 13:49*	*1*
Toluene-d8 (Surr)	*101*		*78.5 - 125*	*05/01/15 12:55*	*05/01/15 13:49*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		11		mg/Kg	☼	05/01/15 12:55	05/01/15 13:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*41.5 - 162*	*05/01/15 12:55*	*05/01/15 13:49*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
2-Methylnaphthalene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
1-Methylnaphthalene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Acenaphthylene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Acenaphthene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Fluorene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Phenanthrene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Anthracene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1

Client Sample ID: SVMW-5 (22.5-23)

Date Collected: 04/27/15 09:30
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-2
Matrix: Solid
Percent Solids: 62.7

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Pyrene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Benzo[a]anthracene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Chrysene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Benzo[b]fluoranthene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Benzo[k]fluoranthene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Benzo[a]pyrene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Indeno[1,2,3-cd]pyrene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Dibenz(a,h)anthracene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1
Benzo[g,h,i]perylene	ND		16		ug/Kg	☼	05/08/15 10:17	05/12/15 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*71*		*35.1 - 144*	*05/08/15 10:17*	*05/12/15 17:39*	*1*
2-Fluorobiphenyl (Surr)	*60*		*48.8 - 134*	*05/08/15 10:17*	*05/12/15 17:39*	*1*
p-Terphenyl-d14	*98*		*48 - 166*	*05/08/15 10:17*	*05/12/15 17:39*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		15		mg/Kg	☼	05/05/15 08:15	05/05/15 10:59	1
Residual Range Organics (RRO) (C25-C36)	ND		38		mg/Kg	☼	05/05/15 08:15	05/05/15 10:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*05/05/15 08:15*	*05/05/15 10:59*	*1*
n-Triacontane-d62	*89*		*50 - 150*	*05/05/15 08:15*	*05/05/15 10:59*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**4.9**		4.0		mg/Kg	☼	04/30/15 09:21	05/01/15 13:15	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**37**		0.010		%			05/01/15 16:12	1
Percent Solids	**63**		0.010		%			05/01/15 16:12	1

Client Sample ID: SVMW-4 (22.5-23)

Date Collected: 04/27/15 12:00
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-3
Matrix: Solid
Percent Solids: 64.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.031		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1
Ethylbenzene	ND		0.21		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1
m,p-Xylene	ND		0.83		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1
o-Xylene	ND		0.42		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1
Toluene	ND		0.21		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1
Xylenes, Total	ND		1.2		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*74.7 - 120*	*05/01/15 12:55*	*05/01/15 14:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*69.8 - 140*	*05/01/15 12:55*	*05/01/15 14:11*	*1*

Client Sample ID: SVMW-4 (22.5-23)

Date Collected: 04/27/15 12:00
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-3

Matrix: Solid
Percent Solids: 64.5

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*05/01/15 12:55*	*05/01/15 14:11*	*1*
Toluene-d8 (Surr)	*102*		*78.5 - 125*	*05/01/15 12:55*	*05/01/15 14:11*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		10		mg/Kg	☼	05/01/15 12:55	05/01/15 14:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*98*		*41.5 - 162*	*05/01/15 12:55*	*05/01/15 14:11*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
2-Methylnaphthalene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
1-Methylnaphthalene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Acenaphthylene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Acenaphthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Fluorene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Phenanthrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Anthracene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Fluoranthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Pyrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Benzo[a]anthracene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Chrysene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Benzo[b]fluoranthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Benzo[k]fluoranthene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Benzo[a]pyrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Indeno[1,2,3-cd]pyrene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Dibenz(a,h)anthracene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1
Benzo[g,h,i]perylene	ND		15		ug/Kg	☼	05/08/15 10:17	05/12/15 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*64*		*35.1 - 144*	*05/08/15 10:17*	*05/12/15 18:01*	*1*
2-Fluorobiphenyl (Surr)	*57*		*48.8 - 134*	*05/08/15 10:17*	*05/12/15 18:01*	*1*
p-Terphenyl-d14	*109*		*48 - 166*	*05/08/15 10:17*	*05/12/15 18:01*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		15		mg/Kg	☼	05/05/15 08:15	05/05/15 11:22	1
Residual Range Organics (RRO) (C25-C36)	ND		38		mg/Kg	☼	05/05/15 08:15	05/05/15 11:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*87*		*50 - 150*	*05/05/15 08:15*	*05/05/15 11:22*	*1*
n-Triacontane-d62	*83*		*50 - 150*	*05/05/15 08:15*	*05/05/15 11:22*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		5.0		mg/Kg	☼	04/30/15 09:21	05/01/15 13:19	5

Client: GeoEngineers Inc
Project/Site: Tiger Oil/0504-101-02

TestAmerica Job ID: 590-731-1

Client Sample ID: SVMW-4 (22.5-23)
Date Collected: 04/27/15 12:00
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-3
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	36		0.010		%			05/01/15 16:12	1
Percent Solids	64		0.010		%			05/01/15 16:12	1

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

Lab Sample ID: MB 590-1312/7-A
Matrix: Solid
Analysis Batch: 1310

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1312

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.015		mg/Kg		05/01/15 16:23	05/01/15 16:30	1
Ethylbenzene	ND		0.10		mg/Kg		05/01/15 16:23	05/01/15 16:30	1
m,p-Xylene	ND		0.40		mg/Kg		05/01/15 16:23	05/01/15 16:30	1
o-Xylene	ND		0.20		mg/Kg		05/01/15 16:23	05/01/15 16:30	1
Toluene	ND		0.10		mg/Kg		05/01/15 16:23	05/01/15 16:30	1
Xylenes, Total	ND		0.60		mg/Kg		05/01/15 16:23	05/01/15 16:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*74.7 - 120*	*05/01/15 16:23*	*05/01/15 16:30*	*1*
4-Bromofluorobenzene (Surr)	*99*		*69.8 - 140*	*05/01/15 16:23*	*05/01/15 16:30*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*05/01/15 16:23*	*05/01/15 16:30*	*1*
Toluene-d8 (Surr)	*99*		*78.5 - 125*	*05/01/15 16:23*	*05/01/15 16:30*	*1*

Lab Sample ID: LCS 590-1312/2-A
Matrix: Solid
Analysis Batch: 1310

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1312

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.500	0.497		mg/Kg		99	75.8 - 123
Ethylbenzene	0.500	0.501		mg/Kg		100	77.3 - 121
m,p-Xylene	0.500	0.502		mg/Kg		100	77.7 - 124
o-Xylene	0.500	0.501		mg/Kg		100	76.7 - 129
Toluene	0.500	0.503		mg/Kg		101	76.6 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*74.7 - 120*
4-Bromofluorobenzene (Surr)	*99*		*69.8 - 140*
Dibromofluoromethane (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*100*		*78.5 - 125*

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

Lab Sample ID: MB 590-1312/7-A
Matrix: Solid
Analysis Batch: 1313

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1312

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		05/01/15 16:23	05/01/15 16:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41.5 - 162*	*05/01/15 16:23*	*05/01/15 16:30*	*1*

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

Lab Sample ID: LCS 590-1312/3-A
Matrix: Solid
Analysis Batch: 1313

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1312

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	50.0	51.4		mg/Kg		103	74.4 - 124

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*41.5 - 162*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-1385/1-A
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1385

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
2-Methylnaphthalene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
1-Methylnaphthalene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Acenaphthylene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Acenaphthene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Fluorene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Phenanthrene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Anthracene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Fluoranthene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Pyrene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Benzo[a]anthracene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Chrysene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Benzo[b]fluoranthene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Benzo[k]fluoranthene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Benzo[a]pyrene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		05/08/15 10:17	05/12/15 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*69*		*35.1 - 144*	*05/08/15 10:17*	*05/12/15 13:27*	*1*
2-Fluorobiphenyl (Surr)	*69*		*48.8 - 134*	*05/08/15 10:17*	*05/12/15 13:27*	*1*
p-Terphenyl-d14	*122*		*48 - 166*	*05/08/15 10:17*	*05/12/15 13:27*	*1*

Lab Sample ID: LCS 590-1385/2-A
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1385

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	267	269		ug/Kg		101	51.4 - 133
Fluorene	267	282		ug/Kg		106	65.7 - 123
Chrysene	267	294		ug/Kg		110	57.3 - 133
Indeno[1,2,3-cd]pyrene	267	314		ug/Kg		118	54.6 - 142

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 590-1385/2-A
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1385

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*73*		*35.1 - 144*
2-Fluorobiphenyl (Surr)	*84*		*48.8 - 134*
p-Terphenyl-d14	*102*		*48 - 166*

Lab Sample ID: LCSD 590-1385/3-A
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 1385

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	267	271		ug/Kg		102	51.4 - 133	1	35
Fluorene	267	284		ug/Kg		106	65.7 - 123	1	35
Chrysene	267	290		ug/Kg		109	57.3 - 133	1	35
Indeno[1,2,3-cd]pyrene	267	316		ug/Kg		119	54.6 - 142	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5	*72*		*35.1 - 144*
2-Fluorobiphenyl (Surr)	*84*		*48.8 - 134*
p-Terphenyl-d14	*100*		*48 - 166*

Lab Sample ID: 590-731-1 MS
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: SVMW-Dup
Prep Type: Total/NA
Prep Batch: 1385

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	ND		415	408		ug/Kg	☼	98	30 - 120
Fluorene	ND		415	455		ug/Kg	☼	110	30 - 140
Chrysene	ND		415	463		ug/Kg	☼	112	30 - 133
Indeno[1,2,3-cd]pyrene	ND		415	527		ug/Kg	☼	126	30 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Nitrobenzene-d5	*88*		*35.1 - 144*
2-Fluorobiphenyl (Surr)	*92*		*48.8 - 134*
p-Terphenyl-d14	*102*		*48 - 166*

Lab Sample ID: 590-731-1 MSD
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: SVMW-Dup
Prep Type: Total/NA
Prep Batch: 1385

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		413	421		ug/Kg	☼	102	30 - 120	3	35
Fluorene	ND		413	337		ug/Kg	☼	82	30 - 140	30	35
Chrysene	ND		413	453		ug/Kg	☼	110	30 - 133	2	35
Indeno[1,2,3-cd]pyrene	ND		413	508		ug/Kg	☼	122	30 - 140	4	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5	*95*		*35.1 - 144*
2-Fluorobiphenyl (Surr)	*72*		*48.8 - 134*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 590-731-1 MSD
Matrix: Solid
Analysis Batch: 1398

Client Sample ID: SVMW-Dup
Prep Type: Total/NA
Prep Batch: 1385

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
p-Terphenyl-d14	*101*		*48 - 166*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-1339/1-A
Matrix: Solid
Analysis Batch: 1335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1339

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		10		mg/Kg		05/05/15 08:15	05/05/15 09:08	1
Residual Range Organics (RRO) (C25-C36)	ND		25		mg/Kg		05/05/15 08:15	05/05/15 09:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*50 - 150*	*05/05/15 08:15*	*05/05/15 09:08*	*1*
n-Triacontane-d62	*79*		*50 - 150*	*05/05/15 08:15*	*05/05/15 09:08*	*1*

Lab Sample ID: LCS 590-1339/2-A
Matrix: Solid
Analysis Batch: 1335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1339

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	66.7	67.6		mg/Kg		101	50 - 150
Residual Range Organics (RRO) (C25-C36)	66.7	72.9		mg/Kg		109	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*109*		*50 - 150*
n-Triacontane-d62	*102*		*50 - 150*

Lab Sample ID: LCSD 590-1339/3-A
Matrix: Solid
Analysis Batch: 1335

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 1339

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	66.7	71.1		mg/Kg		107	50 - 150	5	25
Residual Range Organics (RRO) (C25-C36)	66.7	74.9		mg/Kg		112	50 - 150	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*110*		*50 - 150*
n-Triacontane-d62	*102*		*50 - 150*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: 590-731-1 DU
Matrix: Solid
Analysis Batch: 1335

Client Sample ID: SVMW-Dup
Prep Type: Total/NA
Prep Batch: 1339

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	ND			ND		mg/Kg	☼			NC	40
Residual Range Organics (RRO) (C25-C36)	ND			ND		mg/Kg	☼			NC	40

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
o-Terphenyl	*87*		*50 - 150*
n-Triacontane-d62	*78*		*50 - 150*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 590-1290/2-A
Matrix: Solid
Analysis Batch: 1315

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1290

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.025		mg/Kg		04/30/15 09:21	05/01/15 11:09	1

Lab Sample ID: LCS 590-1290/1-A
Matrix: Solid
Analysis Batch: 1315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1290

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			1.00	0.910		mg/Kg		91	80 - 120		

Client Sample ID: SVMW-Dup

Lab Sample ID: 590-731-1

Date Collected: 04/27/15 08:00

Matrix: Solid

Date Received: 04/29/15 16:25

Percent Solids: 63.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			3.767 g	5 mL	1312	05/01/15 12:55	MRS	TAL SPK
Total/NA	Analysis	8260C		1	3.767 g	5 mL	1310	05/01/15 13:26	MRS	TAL SPK
Total/NA	Prep	5035			3.767 g	5 mL	1312	05/01/15 12:55	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	3.767 g	5 mL	1313	05/01/15 13:26	MRS	TAL SPK
Total/NA	Prep	3550C			15.46 g	2 mL	1385	05/08/15 10:17	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.46 g	2 mL	1398	05/12/15 17:16	MRS	TAL SPK
Total/NA	Prep	3550C			15.16 g	5 mL	1339	05/05/15 08:15	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.16 g	5 mL	1335	05/05/15 10:36	NMI	TAL SPK
Total/NA	Prep	3050B			2.04 g	50 mL	1290	04/30/15 09:21	JSP	TAL SPK
Total/NA	Analysis	6010C		5	2.04 g	50 mL	1315	05/01/15 13:11	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1316	05/01/15 16:12	JSP	TAL SPK

Client Sample ID: SVMW-5 (22.5-23)

Lab Sample ID: 590-731-2

Date Collected: 04/27/15 09:30

Matrix: Solid

Date Received: 04/29/15 16:25

Percent Solids: 62.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.798 g	5 mL	1312	05/01/15 12:55	MRS	TAL SPK
Total/NA	Analysis	8260C		1	4.798 g	5 mL	1310	05/01/15 13:49	MRS	TAL SPK
Total/NA	Prep	5035			4.798 g	5 mL	1312	05/01/15 12:55	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	4.798 g	5 mL	1313	05/01/15 13:49	MRS	TAL SPK
Total/NA	Prep	3550C			15.25 g	2 mL	1385	05/08/15 10:17	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.25 g	2 mL	1398	05/12/15 17:39	MRS	TAL SPK
Total/NA	Prep	3550C			15.57 g	5 mL	1339	05/05/15 08:15	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.57 g	5 mL	1335	05/05/15 10:59	NMI	TAL SPK
Total/NA	Prep	3050B			2.49 g	50 mL	1290	04/30/15 09:21	JSP	TAL SPK
Total/NA	Analysis	6010C		5	2.49 g	50 mL	1315	05/01/15 13:15	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1316	05/01/15 16:12	JSP	TAL SPK

Client Sample ID: SVMW-4 (22.5-23)

Lab Sample ID: 590-731-3

Date Collected: 04/27/15 12:00

Matrix: Solid

Date Received: 04/29/15 16:25

Percent Solids: 64.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.067 g	5 mL	1312	05/01/15 12:55	MRS	TAL SPK
Total/NA	Analysis	8260C		1	5.067 g	5 mL	1310	05/01/15 14:11	MRS	TAL SPK
Total/NA	Prep	5035			5.067 g	5 mL	1312	05/01/15 12:55	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	5.067 g	5 mL	1313	05/01/15 14:11	MRS	TAL SPK
Total/NA	Prep	3550C			15.21 g	2 mL	1385	05/08/15 10:17	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	15.21 g	2 mL	1398	05/12/15 18:01	MRS	TAL SPK
Total/NA	Prep	3550C			15.25 g	5 mL	1339	05/05/15 08:15	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	15.25 g	5 mL	1335	05/05/15 11:22	NMI	TAL SPK
Total/NA	Prep	3050B			1.94 g	50 mL	1290	04/30/15 09:21	JSP	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil/0504-101-02

TestAmerica Job ID: 590-731-1

Client Sample ID: SVMW-4 (22.5-23)

Date Collected: 04/27/15 12:00
Date Received: 04/29/15 16:25

Lab Sample ID: 590-731-3

Matrix: Solid
Percent Solids: 64.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010C		5	1.94 g	50 mL	1315	05/01/15 13:19	JSP	TAL SPK
Total/NA	Analysis	Moisture		1			1316	05/01/15 16:12	JSP	TAL SPK

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil/0504-101-02

TestAmerica Job ID: 590-731-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil/0504-101-02

TestAmerica Job ID: 590-731-1

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
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	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

5/13/2015

Client Information	Sampler: Josh Lee	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 590-291-89.1
Client Contact: JR Sugalski	Phone: 406-239-7810	E-Mail: michelle.johnston@testamericainc.com		Page: Page 1 of 1
Company: GeoEngineers Inc		Analysis Requested		Job #: 0504-101-02

Address: 523 East Second Ave	Due Date Requested:	
City: Spokane	TAT Requested (days): Std.	
State, Zip: WA, 99202		
Phone: 509-209-2830(Tel)	PO #: Purchase Order not required	
Email: jsugalski@geoengineers.com	WO #:	
Project Name: Tiger Oil - Sumitview - Soil	Project #: 59000440	
Site:	SSOW#:	

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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, 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)	8260C, NWTPH_Gx_MS	6010C, 8270D_SIM, NWTPH_Dx	Total Number of containers	Special Instructions/Note:
			Preservation Code:				F	N		
SVMW-Dup	4/29/2015	0800	G	S			X	X	3	
SVMW-5 (22.5-23)		0930					X	X	3	
SVMW-4 (22.5-23)		1200					X	X	3	

590-731 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:

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by:	4/29/15 16:25	GEI	Sheila Trad	4/29/15 16:25	TA-Spok
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: 8.2° IR001

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-731-1
SDG Number:

Login Number: 731
List Number: 1
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

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.	False	Cooler temperature outside required temperature criteria.
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.	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.	N/A	
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	

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: 590-870-1
Client Project/Site: Tiger Oil - Summit View
Revision: 1

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

Attn: JR Sugalski

Authorized for release by:
6/15/2015 3:28:57 PM

Randee Arrington, Project Manager II
(509)924-9200
randee.arrington@testamericainc.com

Table of Contents

Case Narrative

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Job ID: 590-870-1

Laboratory: TestAmerica Spokane

Narrative

Revision1
The QC data for method 200.7 was inadvertantly not included in the intial final report. This final report replaces the final report generated on 05/29/2015.

Receipt
The samples were received on 5/20/2015 10:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6º C.

GC/MS VOA Method 8260C:
The continuing calibration verification (CCV) associated with batch 590-1594 recovered above the upper control limit for Dichlorodifluoromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Duplicate (590-870-1), SVMW-2 (590-870-2), SVMW-3 (590-870-3), SVMW-4 (590-870-4), SVMW-5 (590-870-5), Trip Blank (590-870-6) and (CCVIS 590-1594/6).

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

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

GC Semi VOA Method NWTPH-Dx:
Detected hydrocarbons appear to be due to gasoline overlap in the following samples: Duplicate (590-870-1), SVMW-3 (590-870-3) and SVMW-5 (590-870-5).

No additional analytical or quality issues were noted, other than those described above or 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
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-870-1	Duplicate	Water	05/19/15 08:00	05/20/15 10:40
590-870-2	SVMW-2	Water	05/19/15 12:46	05/20/15 10:40
590-870-3	SVMW-3	Water	05/19/15 14:23	05/20/15 10:40
590-870-4	SVMW-4	Water	05/19/15 11:30	05/20/15 10:40
590-870-5	SVMW-5	Water	05/19/15 13:35	05/20/15 10:40
590-870-6	Trip Blank	Water	05/19/15 00:00	05/20/15 10:40

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: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Client Sample ID: Duplicate
Date Collected: 05/19/15 08:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		100		ug/L			05/28/15 17:08	100
1,1,1-Trichloroethane	ND		100		ug/L			05/28/15 17:08	100
1,1,2,2-Tetrachloroethane	ND		100		ug/L			05/28/15 17:08	100
1,1,2-Trichloroethane	ND		100		ug/L			05/28/15 17:08	100
1,1,2-Trichlorotrifluoroethane	ND		100		ug/L			05/28/15 17:08	100
1,1-Dichloroethane	ND		100		ug/L			05/28/15 17:08	100
1,1-Dichloroethene	ND		100		ug/L			05/28/15 17:08	100
1,1-Dichloropropene	ND		100		ug/L			05/28/15 17:08	100
1,2,3-Trichlorobenzene	ND		100		ug/L			05/28/15 17:08	100
1,2,3-Trichloropropane	ND		100		ug/L			05/28/15 17:08	100
1,2,4-Trichlorobenzene	ND		100		ug/L			05/28/15 17:08	100
1,2,4-Trimethylbenzene	**230**		100		ug/L			05/28/15 17:08	100
1,2-Dibromo-3-Chloropropane	ND		500		ug/L			05/28/15 17:08	100
1,2-Dibromoethane (EDB)	ND		100		ug/L			05/28/15 17:08	100
1,2-Dichlorobenzene	ND		100		ug/L			05/28/15 17:08	100
1,2-Dichloroethane	ND		100		ug/L			05/28/15 17:08	100
1,2-Dichloropropane	ND		100		ug/L			05/28/15 17:08	100
1,3,5-Trimethylbenzene	**820**		100		ug/L			05/28/15 17:08	100
1,3-Dichlorobenzene	ND		100		ug/L			05/28/15 17:08	100
1,3-Dichloropropane	ND		100		ug/L			05/28/15 17:08	100
1,4-Dichlorobenzene	ND		100		ug/L			05/28/15 17:08	100
2,2-Dichloropropane	ND		100		ug/L			05/28/15 17:08	100
2-Butanone (MEK)	ND		1000		ug/L			05/28/15 17:08	100
2-Chlorotoluene	ND		100		ug/L			05/28/15 17:08	100
2-Hexanone	ND		1000		ug/L			05/28/15 17:08	100
4-Chlorotoluene	ND		100		ug/L			05/28/15 17:08	100
4-Methyl-2-pentanone (MIBK)	ND		1000		ug/L			05/28/15 17:08	100
Acetone	ND		2500		ug/L			05/28/15 17:08	100
Benzene	**26**		20		ug/L			05/28/15 17:08	100
Bromobenzene	ND		100		ug/L			05/28/15 17:08	100
Bromochloromethane	ND		100		ug/L			05/28/15 17:08	100
Bromodichloromethane	ND		100		ug/L			05/28/15 17:08	100
Bromoform	ND		100		ug/L			05/28/15 17:08	100
Bromomethane	ND		500		ug/L			05/28/15 17:08	100
Carbon disulfide	ND		100		ug/L			05/28/15 17:08	100
Carbon tetrachloride	ND		100		ug/L			05/28/15 17:08	100
Chlorobenzene	ND		100		ug/L			05/28/15 17:08	100
Chloroethane	ND		100		ug/L			05/28/15 17:08	100
Chloroform	ND		100		ug/L			05/28/15 17:08	100
Chloromethane	ND		300		ug/L			05/28/15 17:08	100
cis-1,2-Dichloroethene	ND		100		ug/L			05/28/15 17:08	100
cis-1,3-Dichloropropene	ND		100		ug/L			05/28/15 17:08	100
Dibromochloromethane	ND		100		ug/L			05/28/15 17:08	100
Dibromomethane	ND		100		ug/L			05/28/15 17:08	100
Dichlorodifluoromethane	ND		100		ug/L			05/28/15 17:08	100
Dichlorofluoromethane	ND		20		ug/L			05/28/15 17:08	100
Ethylbenzene	**560**		100		ug/L			05/28/15 17:08	100
Hexachlorobutadiene	ND		200		ug/L			05/28/15 17:08	100
Hexane	**110**		100		ug/L			05/28/15 17:08	100

Client Sample ID: Duplicate
Date Collected: 05/19/15 08:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		100		ug/L			05/28/15 17:08	100
m,p-Xylene	**2000**		200		ug/L			05/28/15 17:08	100
Methyl tert-butyl ether	ND		100		ug/L			05/28/15 17:08	100
Methylene Chloride	ND		1000		ug/L			05/28/15 17:08	100
Naphthalene	**310**		200		ug/L			05/28/15 17:08	100
n-Butylbenzene	ND		100		ug/L			05/28/15 17:08	100
N-Propylbenzene	ND		100		ug/L			05/28/15 17:08	100
o-Xylene	**840**		100		ug/L			05/28/15 17:08	100
p-Isopropyltoluene	ND		100		ug/L			05/28/15 17:08	100
sec-Butylbenzene	ND		100		ug/L			05/28/15 17:08	100
Styrene	ND		100		ug/L			05/28/15 17:08	100
tert-Butanol	ND		500		ug/L			05/28/15 17:08	100
tert-Butylbenzene	ND		100		ug/L			05/28/15 17:08	100
Tetrachloroethene	ND		100		ug/L			05/28/15 17:08	100
Toluene	**390**		100		ug/L			05/28/15 17:08	100
trans-1,2-Dichloroethene	ND		100		ug/L			05/28/15 17:08	100
trans-1,3-Dichloropropene	ND		100		ug/L			05/28/15 17:08	100
Trichloroethene	ND		100		ug/L			05/28/15 17:08	100
Trichlorofluoromethane	ND		100		ug/L			05/28/15 17:08	100
Vinyl chloride	ND		20		ug/L			05/28/15 17:08	100
Xylenes, Total	**2900**		300		ug/L			05/28/15 17:08	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*05/28/15 17:08*	*100*
4-Bromofluorobenzene (Surr)	*97*		*68.7 - 141*		*05/28/15 17:08*	*100*
Dibromofluoromethane (Surr)	*100*		*71.2 - 143*		*05/28/15 17:08*	*100*
Toluene-d8 (Surr)	*101*		*74.1 - 135*		*05/28/15 17:08*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**14000**		10000		ug/L			05/28/15 17:08	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*68.7 - 141*		*05/28/15 17:08*	*100*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**200**		1.8		ug/L		05/21/15 12:52	05/21/15 17:43	20
2-Methylnaphthalene	**65**		1.8		ug/L		05/21/15 12:52	05/21/15 17:43	20
1-Methylnaphthalene	**37**		1.8		ug/L		05/21/15 12:52	05/21/15 17:43	20
Acenaphthylene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Acenaphthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Fluorene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Phenanthrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Anthracene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Fluoranthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Pyrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Benzo[a]anthracene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Chrysene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Benzo[b]fluoranthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1

Client Sample ID: Duplicate

Date Collected: 05/19/15 08:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-1

Matrix: Water

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Benzo[a]pyrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Indeno[1,2,3-cd]pyrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Dibenz(a,h)anthracene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1
Benzo[g,h,i]perylene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*69*		*32.7 - 135*	*05/21/15 12:52*	*05/21/15 17:43*	*20*
2-Fluorobiphenyl (Surr)	*67*		*44.3 - 120*	*05/21/15 12:52*	*05/21/15 15:24*	*1*
p-Terphenyl-d14	*91*		*59.5 - 154*	*05/21/15 12:52*	*05/21/15 15:24*	*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		05/27/15 09:58	05/27/15 11:40	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**1.0**		0.24		mg/L		05/26/15 13:14	05/26/15 17:40	1
Residual Range Organics (RRO) (C25-C36)	ND		0.41		mg/L		05/26/15 13:14	05/26/15 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*50 - 150*	*05/26/15 13:14*	*05/26/15 17:40*	*1*
n-Triacontane-d62	*106*		*50 - 150*	*05/26/15 13:14*	*05/26/15 17:40*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**1.0**		0.24		mg/L		05/26/15 13:14	05/27/15 09:54	1
Residual Range Organics (RRO) (C25-C36)	ND		0.41		mg/L		05/26/15 13:14	05/27/15 09:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*05/26/15 13:14*	*05/27/15 09:54*	*1*
n-Triacontane-d62	*89*		*50 - 150*	*05/26/15 13:14*	*05/27/15 09:54*	*1*

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**2.9**		0.20		mg/L			05/20/15 16:00	1
Sulfate	**16**		0.50		mg/L			05/20/15 16:00	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		05/27/15 14:00	05/28/15 22:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**2.7**		1.0		mg/L			05/26/15 11:39	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Client Sample ID: SVMW-2
Date Collected: 05/19/15 12:46
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,1,1-Trichloroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,1,2-Trichloroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,1-Dichloroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,1-Dichloroethene	ND		1.0		ug/L			05/28/15 17:30	1
1,1-Dichloropropene	ND		1.0		ug/L			05/28/15 17:30	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			05/28/15 17:30	1
1,2,3-Trichloropropane	ND		1.0		ug/L			05/28/15 17:30	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			05/28/15 17:30	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			05/28/15 17:30	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			05/28/15 17:30	1
1,2-Dichlorobenzene	ND		1.0		ug/L			05/28/15 17:30	1
1,2-Dichloroethane	ND		1.0		ug/L			05/28/15 17:30	1
1,2-Dichloropropane	ND		1.0		ug/L			05/28/15 17:30	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
1,3-Dichlorobenzene	ND		1.0		ug/L			05/28/15 17:30	1
1,3-Dichloropropane	ND		1.0		ug/L			05/28/15 17:30	1
1,4-Dichlorobenzene	ND		1.0		ug/L			05/28/15 17:30	1
2,2-Dichloropropane	ND		1.0		ug/L			05/28/15 17:30	1
2-Butanone (MEK)	ND		10		ug/L			05/28/15 17:30	1
2-Chlorotoluene	ND		1.0		ug/L			05/28/15 17:30	1
2-Hexanone	ND		10		ug/L			05/28/15 17:30	1
4-Chlorotoluene	ND		1.0		ug/L			05/28/15 17:30	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			05/28/15 17:30	1
Acetone	ND		25		ug/L			05/28/15 17:30	1
Benzene	ND		0.20		ug/L			05/28/15 17:30	1
Bromobenzene	ND		1.0		ug/L			05/28/15 17:30	1
Bromochloromethane	ND		1.0		ug/L			05/28/15 17:30	1
Bromodichloromethane	ND		1.0		ug/L			05/28/15 17:30	1
Bromoform	ND		1.0		ug/L			05/28/15 17:30	1
Bromomethane	ND		5.0		ug/L			05/28/15 17:30	1
Carbon disulfide	ND		1.0		ug/L			05/28/15 17:30	1
Carbon tetrachloride	ND		1.0		ug/L			05/28/15 17:30	1
Chlorobenzene	ND		1.0		ug/L			05/28/15 17:30	1
Chloroethane	ND		1.0		ug/L			05/28/15 17:30	1
Chloroform	ND		1.0		ug/L			05/28/15 17:30	1
Chloromethane	ND		3.0		ug/L			05/28/15 17:30	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 17:30	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 17:30	1
Dibromochloromethane	ND		1.0		ug/L			05/28/15 17:30	1
Dibromomethane	ND		1.0		ug/L			05/28/15 17:30	1
Dichlorodifluoromethane	ND		1.0		ug/L			05/28/15 17:30	1
Dichlorofluoromethane	ND		0.20		ug/L			05/28/15 17:30	1
Ethylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
Hexachlorobutadiene	ND		2.0		ug/L			05/28/15 17:30	1
Hexane	ND		1.0		ug/L			05/28/15 17:30	1

Client Sample ID: SVMW-2
Date Collected: 05/19/15 12:46
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
m,p-Xylene	ND		2.0		ug/L			05/28/15 17:30	1
Methyl tert-butyl ether	ND		1.0		ug/L			05/28/15 17:30	1
Methylene Chloride	ND		10		ug/L			05/28/15 17:30	1
Naphthalene	ND		2.0		ug/L			05/28/15 17:30	1
n-Butylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
N-Propylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
o-Xylene	ND		1.0		ug/L			05/28/15 17:30	1
p-Isopropyltoluene	ND		1.0		ug/L			05/28/15 17:30	1
sec-Butylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
Styrene	ND		1.0		ug/L			05/28/15 17:30	1
tert-Butanol	ND		5.0		ug/L			05/28/15 17:30	1
tert-Butylbenzene	ND		1.0		ug/L			05/28/15 17:30	1
Tetrachloroethene	ND		1.0		ug/L			05/28/15 17:30	1
Toluene	ND		1.0		ug/L			05/28/15 17:30	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 17:30	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 17:30	1
Trichloroethene	ND		1.0		ug/L			05/28/15 17:30	1
Trichlorofluoromethane	ND		1.0		ug/L			05/28/15 17:30	1
Vinyl chloride	ND		0.20		ug/L			05/28/15 17:30	1
Xylenes, Total	ND		3.0		ug/L			05/28/15 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*05/28/15 17:30*	*1*
4-Bromofluorobenzene (Surr)	*102*		*68.7 - 141*		*05/28/15 17:30*	*1*
Dibromofluoromethane (Surr)	*100*		*71.2 - 143*		*05/28/15 17:30*	*1*
Toluene-d8 (Surr)	*96*		*74.1 - 135*		*05/28/15 17:30*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		100		ug/L			05/28/15 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*68.7 - 141*		*05/28/15 17:30*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
2-Methylnaphthalene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
1-Methylnaphthalene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Acenaphthylene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Acenaphthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Fluorene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Phenanthrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Anthracene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Fluoranthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Pyrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Benzo[a]anthracene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Chrysene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Benzo[b]fluoranthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1

Client Sample ID: SVMW-2

Date Collected: 05/19/15 12:46
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-2
Matrix: Water

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Benzo[a]pyrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Indeno[1,2,3-cd]pyrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Dibenz(a,h)anthracene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1
Benzo[g,h,i]perylene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*96*		*32.7 - 135*	*05/21/15 12:52*	*05/21/15 15:52*	*1*
2-Fluorobiphenyl (Surr)	*72*		*44.3 - 120*	*05/21/15 12:52*	*05/21/15 15:52*	*1*
p-Terphenyl-d14	*94*		*59.5 - 154*	*05/21/15 12:52*	*05/21/15 15:52*	*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		05/27/15 09:58	05/27/15 11:56	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.25		mg/L		05/26/15 13:14	05/26/15 18:00	1
Residual Range Organics (RRO) (C25-C36)	ND		0.42		mg/L		05/26/15 13:14	05/26/15 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*05/26/15 13:14*	*05/26/15 18:00*	*1*
n-Triacontane-d62	*107*		*50 - 150*	*05/26/15 13:14*	*05/26/15 18:00*	*1*

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**7.5**		0.20		mg/L			05/20/15 16:13	1
Sulfate	**32**		0.50		mg/L			05/20/15 16:13	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		05/27/15 14:00	05/28/15 22:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**1.7**		1.0		mg/L			05/26/15 11:39	1

Client Sample ID: SVMW-3

Date Collected: 05/19/15 14:23
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		100		ug/L			05/28/15 18:01	100
1,1,1-Trichloroethane	ND		100		ug/L			05/28/15 18:01	100
1,1,2,2-Tetrachloroethane	ND		100		ug/L			05/28/15 18:01	100
1,1,2-Trichloroethane	ND		100		ug/L			05/28/15 18:01	100
1,1,2-Trichlorotrifluoroethane	ND		100		ug/L			05/28/15 18:01	100
1,1-Dichloroethane	ND		100		ug/L			05/28/15 18:01	100
1,1-Dichloroethene	ND		100		ug/L			05/28/15 18:01	100

Client Sample ID: SVMW-3
Date Collected: 05/19/15 14:23
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloropropene	ND		100		ug/L			05/28/15 18:01	100
1,2,3-Trichlorobenzene	ND		100		ug/L			05/28/15 18:01	100
1,2,3-Trichloropropane	ND		100		ug/L			05/28/15 18:01	100
1,2,4-Trichlorobenzene	ND		100		ug/L			05/28/15 18:01	100
1,2,4-Trimethylbenzene	**250**		100		ug/L			05/28/15 18:01	100
1,2-Dibromo-3-Chloropropane	ND		500		ug/L			05/28/15 18:01	100
1,2-Dibromoethane (EDB)	ND		100		ug/L			05/28/15 18:01	100
1,2-Dichlorobenzene	ND		100		ug/L			05/28/15 18:01	100
1,2-Dichloroethane	ND		100		ug/L			05/28/15 18:01	100
1,2-Dichloropropane	ND		100		ug/L			05/28/15 18:01	100
1,3,5-Trimethylbenzene	**880**		100		ug/L			05/28/15 18:01	100
1,3-Dichlorobenzene	ND		100		ug/L			05/28/15 18:01	100
1,3-Dichloropropane	ND		100		ug/L			05/28/15 18:01	100
1,4-Dichlorobenzene	ND		100		ug/L			05/28/15 18:01	100
2,2-Dichloropropane	ND		100		ug/L			05/28/15 18:01	100
2-Butanone (MEK)	ND		1000		ug/L			05/28/15 18:01	100
2-Chlorotoluene	ND		100		ug/L			05/28/15 18:01	100
2-Hexanone	ND		1000		ug/L			05/28/15 18:01	100
4-Chlorotoluene	ND		100		ug/L			05/28/15 18:01	100
4-Methyl-2-pentanone (MIBK)	ND		1000		ug/L			05/28/15 18:01	100
Acetone	ND		2500		ug/L			05/28/15 18:01	100
Benzene	**25**		20		ug/L			05/28/15 18:01	100
Bromobenzene	ND		100		ug/L			05/28/15 18:01	100
Bromochloromethane	ND		100		ug/L			05/28/15 18:01	100
Bromodichloromethane	ND		100		ug/L			05/28/15 18:01	100
Bromoform	ND		100		ug/L			05/28/15 18:01	100
Bromomethane	ND		500		ug/L			05/28/15 18:01	100
Carbon disulfide	ND		100		ug/L			05/28/15 18:01	100
Carbon tetrachloride	ND		100		ug/L			05/28/15 18:01	100
Chlorobenzene	ND		100		ug/L			05/28/15 18:01	100
Chloroethane	ND		100		ug/L			05/28/15 18:01	100
Chloroform	ND		100		ug/L			05/28/15 18:01	100
Chloromethane	ND		300		ug/L			05/28/15 18:01	100
cis-1,2-Dichloroethene	ND		100		ug/L			05/28/15 18:01	100
cis-1,3-Dichloropropene	ND		100		ug/L			05/28/15 18:01	100
Dibromochloromethane	ND		100		ug/L			05/28/15 18:01	100
Dibromomethane	ND		100		ug/L			05/28/15 18:01	100
Dichlorodifluoromethane	ND		100		ug/L			05/28/15 18:01	100
Dichlorofluoromethane	ND		20		ug/L			05/28/15 18:01	100
Ethylbenzene	**570**		100		ug/L			05/28/15 18:01	100
Hexachlorobutadiene	ND		200		ug/L			05/28/15 18:01	100
Hexane	**120**		100		ug/L			05/28/15 18:01	100
Isopropylbenzene	ND		100		ug/L			05/28/15 18:01	100
m,p-Xylene	**2100**		200		ug/L			05/28/15 18:01	100
Methyl tert-butyl ether	ND		100		ug/L			05/28/15 18:01	100
Methylene Chloride	ND		1000		ug/L			05/28/15 18:01	100
Naphthalene	**290**		200		ug/L			05/28/15 18:01	100
n-Butylbenzene	ND		100		ug/L			05/28/15 18:01	100
N-Propylbenzene	**110**		100		ug/L			05/28/15 18:01	100

Client Sample ID: SVMW-3
Date Collected: 05/19/15 14:23
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	**830**		100		ug/L			05/28/15 18:01	100
p-Isopropyltoluene	ND		100		ug/L			05/28/15 18:01	100
sec-Butylbenzene	ND		100		ug/L			05/28/15 18:01	100
Styrene	ND		100		ug/L			05/28/15 18:01	100
tert-Butanol	ND		500		ug/L			05/28/15 18:01	100
tert-Butylbenzene	ND		100		ug/L			05/28/15 18:01	100
Tetrachloroethene	ND		100		ug/L			05/28/15 18:01	100
Toluene	**400**		100		ug/L			05/28/15 18:01	100
trans-1,2-Dichloroethene	ND		100		ug/L			05/28/15 18:01	100
trans-1,3-Dichloropropene	ND		100		ug/L			05/28/15 18:01	100
Trichloroethene	ND		100		ug/L			05/28/15 18:01	100
Trichlorofluoromethane	ND		100		ug/L			05/28/15 18:01	100
Vinyl chloride	ND		20		ug/L			05/28/15 18:01	100
Xylenes, Total	**2900**		300		ug/L			05/28/15 18:01	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*05/28/15 18:01*	*100*
4-Bromofluorobenzene (Surr)	*105*		*68.7 - 141*		*05/28/15 18:01*	*100*
Dibromofluoromethane (Surr)	*104*		*71.2 - 143*		*05/28/15 18:01*	*100*
Toluene-d8 (Surr)	*99*		*74.1 - 135*		*05/28/15 18:01*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**14000**		10000		ug/L			05/28/15 18:01	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*68.7 - 141*		*05/28/15 18:01*	*100*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**210**		1.8		ug/L		05/21/15 12:52	05/21/15 18:38	20
2-Methylnaphthalene	**68**		1.8		ug/L		05/21/15 12:52	05/21/15 18:38	20
1-Methylnaphthalene	**38**		1.8		ug/L		05/21/15 12:52	05/21/15 18:38	20
Acenaphthylene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Acenaphthene	**0.10**		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Fluorene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Phenanthrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Anthracene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Fluoranthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Pyrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Benzo[a]anthracene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Chrysene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Benzo[b]fluoranthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Benzo[k]fluoranthene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Benzo[a]pyrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Indeno[1,2,3-cd]pyrene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Dibenz(a,h)anthracene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1
Benzo[g,h,i]perylene	ND		0.089		ug/L		05/21/15 12:52	05/21/15 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*56*		*32.7 - 135*	*05/21/15 12:52*	*05/21/15 18:38*	*20*

Client Sample ID: SVMW-3

Date Collected: 05/19/15 14:23
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-3
Matrix: Water

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	65		44.3 - 120	05/21/15 12:52	05/21/15 16:20	1
p-Terphenyl-d14	83		59.5 - 154	05/21/15 12:52	05/21/15 16:20	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		05/27/15 09:58	05/27/15 12:13	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**1.0**		0.23		mg/L		05/26/15 13:14	05/26/15 18:20	1
Residual Range Organics (RRO) (C25-C36)	ND		0.39		mg/L		05/26/15 13:14	05/26/15 18:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	05/26/15 13:14	05/26/15 18:20	1
n-Triacontane-d62	106		50 - 150	05/26/15 13:14	05/26/15 18:20	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.99**		0.23		mg/L		05/26/15 13:14	05/27/15 10:14	1
Residual Range Organics (RRO) (C25-C36)	ND		0.39		mg/L		05/26/15 13:14	05/27/15 10:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	96		50 - 150	05/26/15 13:14	05/27/15 10:14	1
n-Triacontane-d62	94		50 - 150	05/26/15 13:14	05/27/15 10:14	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**3.2**		0.20		mg/L			05/20/15 16:26	1
Sulfate	**17**		0.50		mg/L			05/20/15 16:26	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		05/27/15 14:00	05/28/15 22:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**2.9**		1.0		mg/L			05/26/15 11:39	1

Client Sample ID: SVMW-4

Date Collected: 05/19/15 11:30
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 18:23	1
1,1,1-Trichloroethane	ND		1.0		ug/L			05/28/15 18:23	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 18:23	1
1,1,2-Trichloroethane	ND		1.0		ug/L			05/28/15 18:23	1

Client Sample ID: SVMW-4
Date Collected: 05/19/15 11:30
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			05/28/15 18:23	1
1,1-Dichloroethane	ND		1.0		ug/L			05/28/15 18:23	1
1,1-Dichloroethene	ND		1.0		ug/L			05/28/15 18:23	1
1,1-Dichloropropene	ND		1.0		ug/L			05/28/15 18:23	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			05/28/15 18:23	1
1,2,3-Trichloropropane	ND		1.0		ug/L			05/28/15 18:23	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			05/28/15 18:23	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			05/28/15 18:23	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			05/28/15 18:23	1
1,2-Dichlorobenzene	ND		1.0		ug/L			05/28/15 18:23	1
1,2-Dichloroethane	ND		1.0		ug/L			05/28/15 18:23	1
1,2-Dichloropropane	ND		1.0		ug/L			05/28/15 18:23	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
1,3-Dichlorobenzene	ND		1.0		ug/L			05/28/15 18:23	1
1,3-Dichloropropane	ND		1.0		ug/L			05/28/15 18:23	1
1,4-Dichlorobenzene	ND		1.0		ug/L			05/28/15 18:23	1
2,2-Dichloropropane	ND		1.0		ug/L			05/28/15 18:23	1
2-Butanone (MEK)	ND		10		ug/L			05/28/15 18:23	1
2-Chlorotoluene	ND		1.0		ug/L			05/28/15 18:23	1
2-Hexanone	ND		10		ug/L			05/28/15 18:23	1
4-Chlorotoluene	ND		1.0		ug/L			05/28/15 18:23	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			05/28/15 18:23	1
Acetone	ND		25		ug/L			05/28/15 18:23	1
Benzene	ND		0.20		ug/L			05/28/15 18:23	1
Bromobenzene	ND		1.0		ug/L			05/28/15 18:23	1
Bromochloromethane	ND		1.0		ug/L			05/28/15 18:23	1
Bromodichloromethane	ND		1.0		ug/L			05/28/15 18:23	1
Bromoform	ND		1.0		ug/L			05/28/15 18:23	1
Bromomethane	ND		5.0		ug/L			05/28/15 18:23	1
Carbon disulfide	ND		1.0		ug/L			05/28/15 18:23	1
Carbon tetrachloride	ND		1.0		ug/L			05/28/15 18:23	1
Chlorobenzene	ND		1.0		ug/L			05/28/15 18:23	1
Chloroethane	ND		1.0		ug/L			05/28/15 18:23	1
Chloroform	ND		1.0		ug/L			05/28/15 18:23	1
Chloromethane	ND		3.0		ug/L			05/28/15 18:23	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 18:23	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 18:23	1
Dibromochloromethane	ND		1.0		ug/L			05/28/15 18:23	1
Dibromomethane	ND		1.0		ug/L			05/28/15 18:23	1
Dichlorodifluoromethane	ND		1.0		ug/L			05/28/15 18:23	1
Dichlorofluoromethane	ND		0.20		ug/L			05/28/15 18:23	1
Ethylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
Hexachlorobutadiene	ND		2.0		ug/L			05/28/15 18:23	1
Hexane	ND		1.0		ug/L			05/28/15 18:23	1
Isopropylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
m,p-Xylene	ND		2.0		ug/L			05/28/15 18:23	1
Methyl tert-butyl ether	ND		1.0		ug/L			05/28/15 18:23	1
Methylene Chloride	ND		10		ug/L			05/28/15 18:23	1

Client Sample ID: SVMW-4
Date Collected: 05/19/15 11:30
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		2.0		ug/L			05/28/15 18:23	1
n-Butylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
N-Propylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
o-Xylene	ND		1.0		ug/L			05/28/15 18:23	1
p-Isopropyltoluene	ND		1.0		ug/L			05/28/15 18:23	1
sec-Butylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
Styrene	ND		1.0		ug/L			05/28/15 18:23	1
tert-Butanol	ND		5.0		ug/L			05/28/15 18:23	1
tert-Butylbenzene	ND		1.0		ug/L			05/28/15 18:23	1
Tetrachloroethene	ND		1.0		ug/L			05/28/15 18:23	1
Toluene	ND		1.0		ug/L			05/28/15 18:23	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 18:23	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 18:23	1
Trichloroethene	ND		1.0		ug/L			05/28/15 18:23	1
Trichlorofluoromethane	ND		1.0		ug/L			05/28/15 18:23	1
Vinyl chloride	ND		0.20		ug/L			05/28/15 18:23	1
Xylenes, Total	ND		3.0		ug/L			05/28/15 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*05/28/15 18:23*	*1*
4-Bromofluorobenzene (Surr)	*107*		*68.7 - 141*		*05/28/15 18:23*	*1*
Dibromofluoromethane (Surr)	*100*		*71.2 - 143*		*05/28/15 18:23*	*1*
Toluene-d8 (Surr)	*99*		*74.1 - 135*		*05/28/15 18:23*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		100		ug/L			05/28/15 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*68.7 - 141*		*05/28/15 18:23*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
2-Methylnaphthalene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
1-Methylnaphthalene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Acenaphthylene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Acenaphthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Fluorene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Phenanthrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Anthracene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Fluoranthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Pyrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Benzo[a]anthracene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Chrysene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Benzo[b]fluoranthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Benzo[k]fluoranthene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Benzo[a]pyrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Indeno[1,2,3-cd]pyrene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1
Dibenz(a,h)anthracene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1

Client Sample ID: SVMW-4

Date Collected: 05/19/15 11:30
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-4
Matrix: Water

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[g,h,i]perylene	ND		0.094		ug/L		05/21/15 12:52	05/21/15 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*96*		*32.7 - 135*	*05/21/15 12:52*	*05/21/15 16:47*	*1*
2-Fluorobiphenyl (Surr)	*74*		*44.3 - 120*	*05/21/15 12:52*	*05/21/15 16:47*	*1*
p-Terphenyl-d14	*90*		*59.5 - 154*	*05/21/15 12:52*	*05/21/15 16:47*	*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		05/27/15 09:58	05/27/15 12:29	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.24		mg/L		05/26/15 13:14	05/26/15 18:40	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40		mg/L		05/26/15 13:14	05/26/15 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*05/26/15 13:14*	*05/26/15 18:40*	*1*
n-Triacontane-d62	*107*		*50 - 150*	*05/26/15 13:14*	*05/26/15 18:40*	*1*

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**9.2**		0.20		mg/L			05/20/15 16:39	1
Sulfate	**29**		0.50		mg/L			05/20/15 16:39	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		05/27/15 14:00	05/28/15 22:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**1.6**		1.0		mg/L			05/26/15 11:39	1

Client Sample ID: SVMW-5

Date Collected: 05/19/15 13:35
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		10		ug/L			05/28/15 18:45	10
1,1,1-Trichloroethane	ND		10		ug/L			05/28/15 18:45	10
1,1,2,2-Tetrachloroethane	ND		10		ug/L			05/28/15 18:45	10
1,1,2-Trichloroethane	ND		10		ug/L			05/28/15 18:45	10
1,1,2-Trichlorotrifluoroethane	ND		10		ug/L			05/28/15 18:45	10
1,1-Dichloroethane	ND		10		ug/L			05/28/15 18:45	10
1,1-Dichloroethene	ND		10		ug/L			05/28/15 18:45	10
1,1-Dichloropropene	ND		10		ug/L			05/28/15 18:45	10
1,2,3-Trichlorobenzene	ND		10		ug/L			05/28/15 18:45	10
1,2,3-Trichloropropane	ND		10		ug/L			05/28/15 18:45	10
1,2,4-Trichlorobenzene	ND		10		ug/L			05/28/15 18:45	10

Client Sample ID: SVMW-5
Date Collected: 05/19/15 13:35
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	**100**		10		ug/L			05/28/15 18:45	10
1,2-Dibromo-3-Chloropropane	ND		50		ug/L			05/28/15 18:45	10
1,2-Dibromoethane (EDB)	ND		10		ug/L			05/28/15 18:45	10
1,2-Dichlorobenzene	ND		10		ug/L			05/28/15 18:45	10
1,2-Dichloroethane	ND		10		ug/L			05/28/15 18:45	10
1,2-Dichloropropane	ND		10		ug/L			05/28/15 18:45	10
1,3,5-Trimethylbenzene	**190**		10		ug/L			05/28/15 18:45	10
1,3-Dichlorobenzene	ND		10		ug/L			05/28/15 18:45	10
1,3-Dichloropropane	ND		10		ug/L			05/28/15 18:45	10
1,4-Dichlorobenzene	ND		10		ug/L			05/28/15 18:45	10
2,2-Dichloropropane	ND		10		ug/L			05/28/15 18:45	10
2-Butanone (MEK)	ND		100		ug/L			05/28/15 18:45	10
2-Chlorotoluene	ND		10		ug/L			05/28/15 18:45	10
2-Hexanone	ND		100		ug/L			05/28/15 18:45	10
4-Chlorotoluene	ND		10		ug/L			05/28/15 18:45	10
4-Methyl-2-pentanone (MIBK)	ND		100		ug/L			05/28/15 18:45	10
Acetone	ND		250		ug/L			05/28/15 18:45	10
Benzene	ND		2.0		ug/L			05/28/15 18:45	10
Bromobenzene	ND		10		ug/L			05/28/15 18:45	10
Bromochloromethane	ND		10		ug/L			05/28/15 18:45	10
Bromodichloromethane	ND		10		ug/L			05/28/15 18:45	10
Bromoform	ND		10		ug/L			05/28/15 18:45	10
Bromomethane	ND		50		ug/L			05/28/15 18:45	10
Carbon disulfide	ND		10		ug/L			05/28/15 18:45	10
Carbon tetrachloride	ND		10		ug/L			05/28/15 18:45	10
Chlorobenzene	ND		10		ug/L			05/28/15 18:45	10
Chloroethane	ND		10		ug/L			05/28/15 18:45	10
Chloroform	ND		10		ug/L			05/28/15 18:45	10
Chloromethane	ND		30		ug/L			05/28/15 18:45	10
cis-1,2-Dichloroethene	ND		10		ug/L			05/28/15 18:45	10
cis-1,3-Dichloropropene	ND		10		ug/L			05/28/15 18:45	10
Dibromochloromethane	ND		10		ug/L			05/28/15 18:45	10
Dibromomethane	ND		10		ug/L			05/28/15 18:45	10
Dichlorodifluoromethane	ND		10		ug/L			05/28/15 18:45	10
Dichlorofluoromethane	ND		2.0		ug/L			05/28/15 18:45	10
Ethylbenzene	ND		10		ug/L			05/28/15 18:45	10
Hexachlorobutadiene	ND		20		ug/L			05/28/15 18:45	10
Hexane	ND		10		ug/L			05/28/15 18:45	10
Isopropylbenzene	ND		10		ug/L			05/28/15 18:45	10
m,p-Xylene	ND		20		ug/L			05/28/15 18:45	10
Methyl tert-butyl ether	ND		10		ug/L			05/28/15 18:45	10
Methylene Chloride	ND		100		ug/L			05/28/15 18:45	10
Naphthalene	ND		20		ug/L			05/28/15 18:45	10
n-Butylbenzene	ND		10		ug/L			05/28/15 18:45	10
N-Propylbenzene	**18**		10		ug/L			05/28/15 18:45	10
o-Xylene	ND		10		ug/L			05/28/15 18:45	10
p-Isopropyltoluene	ND		10		ug/L			05/28/15 18:45	10
sec-Butylbenzene	ND		10		ug/L			05/28/15 18:45	10
Styrene	ND		10		ug/L			05/28/15 18:45	10

Client Sample ID: SVMW-5
Date Collected: 05/19/15 13:35
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
tert-Butanol	ND		50		ug/L			05/28/15 18:45	10
tert-Butylbenzene	ND		10		ug/L			05/28/15 18:45	10
Tetrachloroethene	ND		10		ug/L			05/28/15 18:45	10
Toluene	ND		10		ug/L			05/28/15 18:45	10
trans-1,2-Dichloroethene	ND		10		ug/L			05/28/15 18:45	10
trans-1,3-Dichloropropene	ND		10		ug/L			05/28/15 18:45	10
Trichloroethene	ND		10		ug/L			05/28/15 18:45	10
Trichlorofluoromethane	ND		10		ug/L			05/28/15 18:45	10
Vinyl chloride	ND		2.0		ug/L			05/28/15 18:45	10
Xylenes, Total	ND		30		ug/L			05/28/15 18:45	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*05/28/15 18:45*	*10*
4-Bromofluorobenzene (Surr)	*104*		*68.7 - 141*		*05/28/15 18:45*	*10*
Dibromofluoromethane (Surr)	*103*		*71.2 - 143*		*05/28/15 18:45*	*10*
Toluene-d8 (Surr)	*97*		*74.1 - 135*		*05/28/15 18:45*	*10*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**2100**		1000		ug/L			05/28/15 18:45	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*68.7 - 141*		*05/28/15 18:45*	*10*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**7.6**		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
2-Methylnaphthalene	**9.6**		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
1-Methylnaphthalene	**13**		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Acenaphthylene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Acenaphthene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Fluorene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Phenanthrene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Anthracene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Fluoranthene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Pyrene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Benzo[a]anthracene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Chrysene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Benzo[b]fluoranthene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Benzo[k]fluoranthene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Benzo[a]pyrene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Indeno[1,2,3-cd]pyrene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Dibenz(a,h)anthracene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1
Benzo[g,h,i]perylene	ND		0.096		ug/L		05/21/15 12:52	05/21/15 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*92*		*32.7 - 135*	*05/21/15 12:52*	*05/21/15 17:15*	*1*
2-Fluorobiphenyl (Surr)	*79*		*44.3 - 120*	*05/21/15 12:52*	*05/21/15 17:15*	*1*
p-Terphenyl-d14	*94*		*59.5 - 154*	*05/21/15 12:52*	*05/21/15 17:15*	*1*

Client Sample ID: SVMW-5

Lab Sample ID: 590-870-5
Date Collected: 05/19/15 13:35
Matrix: Water
Date Received: 05/20/15 10:40

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		05/27/15 09:58	05/27/15 12:45	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.49**		0.25		mg/L		05/26/15 13:14	05/26/15 19:00	1
Residual Range Organics (RRO) (C25-C36)	ND		0.41		mg/L		05/26/15 13:14	05/26/15 19:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*05/26/15 13:14*	*05/26/15 19:00*	*1*
n-Triacontane-d62	*104*		*50 - 150*	*05/26/15 13:14*	*05/26/15 19:00*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.45**		0.25		mg/L		05/26/15 13:14	05/27/15 10:34	1
Residual Range Organics (RRO) (C25-C36)	ND		0.41		mg/L		05/26/15 13:14	05/27/15 10:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*05/26/15 13:14*	*05/27/15 10:34*	*1*
n-Triacontane-d62	*71*		*50 - 150*	*05/26/15 13:14*	*05/27/15 10:34*	*1*

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**4.4**		0.20		mg/L			05/20/15 16:52	1
Sulfate	**22**		0.50		mg/L			05/20/15 16:52	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		05/27/15 14:00	05/28/15 22:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**2.1**		1.0		mg/L			05/26/15 11:39	1

Client Sample ID: Trip Blank

Lab Sample ID: 590-870-6
Date Collected: 05/19/15 00:00
Matrix: Water
Date Received: 05/20/15 10:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,1-Trichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,1-Trichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,2-Trichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,2-Trichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			05/28/15 19:07	1

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Client Sample ID: Trip Blank
Date Collected: 05/19/15 00:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1-Dichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1-Dichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,1-Dichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
1,1-Dichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
1,1-Dichloropropene	ND		1.0		ug/L			05/28/15 19:07	1
1,1-Dichloropropene	ND		1.0		ug/L			05/28/15 19:07	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2,3-Trichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
1,2,3-Trichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			05/28/15 19:07	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			05/28/15 19:07	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dichloroethane	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
1,2-Dichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,3-Dichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,3-Dichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,3-Dichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
1,3-Dichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
1,4-Dichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
1,4-Dichlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
2,2-Dichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
2,2-Dichloropropane	ND		1.0		ug/L			05/28/15 19:07	1
2-Butanone (MEK)	ND		10		ug/L			05/28/15 19:07	1
2-Butanone (MEK)	ND		10		ug/L			05/28/15 19:07	1
2-Chlorotoluene	ND		1.0		ug/L			05/28/15 19:07	1
2-Chlorotoluene	ND		1.0		ug/L			05/28/15 19:07	1
2-Hexanone	ND		10		ug/L			05/28/15 19:07	1
2-Hexanone	ND		10		ug/L			05/28/15 19:07	1
4-Chlorotoluene	ND		1.0		ug/L			05/28/15 19:07	1
4-Chlorotoluene	ND		1.0		ug/L			05/28/15 19:07	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			05/28/15 19:07	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			05/28/15 19:07	1
Acetone	ND		25		ug/L			05/28/15 19:07	1
Acetone	ND		25		ug/L			05/28/15 19:07	1
Benzene	ND		0.20		ug/L			05/28/15 19:07	1
Benzene	ND		0.20		ug/L			05/28/15 19:07	1

Client Sample ID: Trip Blank
Date Collected: 05/19/15 00:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromobenzene	ND		1.0		ug/L			05/28/15 19:07	1
Bromobenzene	ND		1.0		ug/L			05/28/15 19:07	1
Bromochloromethane	ND		1.0		ug/L			05/28/15 19:07	1
Bromochloromethane	ND		1.0		ug/L			05/28/15 19:07	1
Bromodichloromethane	ND		1.0		ug/L			05/28/15 19:07	1
Bromodichloromethane	ND		1.0		ug/L			05/28/15 19:07	1
Bromoform	ND		1.0		ug/L			05/28/15 19:07	1
Bromoform	ND		1.0		ug/L			05/28/15 19:07	1
Bromomethane	ND		5.0		ug/L			05/28/15 19:07	1
Bromomethane	ND		5.0		ug/L			05/28/15 19:07	1
Carbon disulfide	ND		1.0		ug/L			05/28/15 19:07	1
Carbon disulfide	ND		1.0		ug/L			05/28/15 19:07	1
Carbon tetrachloride	ND		1.0		ug/L			05/28/15 19:07	1
Carbon tetrachloride	ND		1.0		ug/L			05/28/15 19:07	1
Chlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
Chlorobenzene	ND		1.0		ug/L			05/28/15 19:07	1
Chloroethane	ND		1.0		ug/L			05/28/15 19:07	1
Chloroethane	ND		1.0		ug/L			05/28/15 19:07	1
Chloroform	ND		1.0		ug/L			05/28/15 19:07	1
Chloroform	ND		1.0		ug/L			05/28/15 19:07	1
Chloromethane	ND		3.0		ug/L			05/28/15 19:07	1
Chloromethane	ND		3.0		ug/L			05/28/15 19:07	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 19:07	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 19:07	1
Dibromochloromethane	ND		1.0		ug/L			05/28/15 19:07	1
Dibromochloromethane	ND		1.0		ug/L			05/28/15 19:07	1
Dibromomethane	ND		1.0		ug/L			05/28/15 19:07	1
Dibromomethane	ND		1.0		ug/L			05/28/15 19:07	1
Dichlorodifluoromethane	ND		1.0		ug/L			05/28/15 19:07	1
Dichlorodifluoromethane	ND		1.0		ug/L			05/28/15 19:07	1
Dichlorofluoromethane	ND		0.20		ug/L			05/28/15 19:07	1
Dichlorofluoromethane	ND		0.20		ug/L			05/28/15 19:07	1
Ethylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
Ethylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
Hexachlorobutadiene	ND		2.0		ug/L			05/28/15 19:07	1
Hexachlorobutadiene	ND		2.0		ug/L			05/28/15 19:07	1
Hexane	ND		1.0		ug/L			05/28/15 19:07	1
Hexane	ND		1.0		ug/L			05/28/15 19:07	1
Isopropylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
Isopropylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
m,p-Xylene	ND		2.0		ug/L			05/28/15 19:07	1
m,p-Xylene	ND		2.0		ug/L			05/28/15 19:07	1
Methyl tert-butyl ether	ND		1.0		ug/L			05/28/15 19:07	1
Methyl tert-butyl ether	ND		1.0		ug/L			05/28/15 19:07	1
Methylene Chloride	ND		10		ug/L			05/28/15 19:07	1
Methylene Chloride	ND		10		ug/L			05/28/15 19:07	1
Naphthalene	ND		2.0		ug/L			05/28/15 19:07	1

Client Sample ID: Trip Blank
Date Collected: 05/19/15 00:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		2.0		ug/L			05/28/15 19:07	1
n-Butylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
n-Butylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
N-Propylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
N-Propylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
o-Xylene	ND		1.0		ug/L			05/28/15 19:07	1
o-Xylene	ND		1.0		ug/L			05/28/15 19:07	1
p-Isopropyltoluene	ND		1.0		ug/L			05/28/15 19:07	1
p-Isopropyltoluene	ND		1.0		ug/L			05/28/15 19:07	1
sec-Butylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
sec-Butylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
Styrene	ND		1.0		ug/L			05/28/15 19:07	1
Styrene	ND		1.0		ug/L			05/28/15 19:07	1
tert-Butanol	ND		5.0		ug/L			05/28/15 19:07	1
tert-Butanol	ND		5.0		ug/L			05/28/15 19:07	1
tert-Butylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
tert-Butylbenzene	ND		1.0		ug/L			05/28/15 19:07	1
Tetrachloroethene	ND		1.0		ug/L			05/28/15 19:07	1
Tetrachloroethene	ND		1.0		ug/L			05/28/15 19:07	1
Toluene	ND		1.0		ug/L			05/28/15 19:07	1
Toluene	ND		1.0		ug/L			05/28/15 19:07	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 19:07	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 19:07	1
Trichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
Trichloroethene	ND		1.0		ug/L			05/28/15 19:07	1
Trichlorofluoromethane	ND		1.0		ug/L			05/28/15 19:07	1
Trichlorofluoromethane	ND		1.0		ug/L			05/28/15 19:07	1
Vinyl chloride	ND		0.20		ug/L			05/28/15 19:07	1
Vinyl chloride	ND		0.20		ug/L			05/28/15 19:07	1
Xylenes, Total	ND		3.0		ug/L			05/28/15 19:07	1
Xylenes, Total	ND		3.0		ug/L			05/28/15 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*05/28/15 19:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*05/28/15 19:07*	*1*
4-Bromofluorobenzene (Surr)	*106*		*68.7 - 141*		*05/28/15 19:07*	*1*
4-Bromofluorobenzene (Surr)	*106*		*68.7 - 141*		*05/28/15 19:07*	*1*
Dibromofluoromethane (Surr)	*98*		*71.2 - 143*		*05/28/15 19:07*	*1*
Dibromofluoromethane (Surr)	*98*		*71.2 - 143*		*05/28/15 19:07*	*1*
Toluene-d8 (Surr)	*97*		*74.1 - 135*		*05/28/15 19:07*	*1*
Toluene-d8 (Surr)	*97*		*74.1 - 135*		*05/28/15 19:07*	*1*

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

Lab Sample ID: MB 590-1594/7
Matrix: Water
Analysis Batch: 1594

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,1,1-Trichloroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,1,2-Trichloroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,1,2-Trichlorotrifluoroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,1-Dichloroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,1-Dichloroethene	ND		1.0		ug/L			05/28/15 10:19	1
1,1-Dichloropropene	ND		1.0		ug/L			05/28/15 10:19	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			05/28/15 10:19	1
1,2,3-Trichloropropane	ND		1.0		ug/L			05/28/15 10:19	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			05/28/15 10:19	1
1,2,4-Trimethylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			05/28/15 10:19	1
1,2-Dibromoethane (EDB)	ND		1.0		ug/L			05/28/15 10:19	1
1,2-Dichlorobenzene	ND		1.0		ug/L			05/28/15 10:19	1
1,2-Dichloroethane	ND		1.0		ug/L			05/28/15 10:19	1
1,2-Dichloropropane	ND		1.0		ug/L			05/28/15 10:19	1
1,3,5-Trimethylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
1,3-Dichlorobenzene	ND		1.0		ug/L			05/28/15 10:19	1
1,3-Dichloropropane	ND		1.0		ug/L			05/28/15 10:19	1
1,4-Dichlorobenzene	ND		1.0		ug/L			05/28/15 10:19	1
2,2-Dichloropropane	ND		1.0		ug/L			05/28/15 10:19	1
2-Butanone (MEK)	ND		10		ug/L			05/28/15 10:19	1
2-Chlorotoluene	ND		1.0		ug/L			05/28/15 10:19	1
2-Hexanone	ND		10		ug/L			05/28/15 10:19	1
4-Chlorotoluene	ND		1.0		ug/L			05/28/15 10:19	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			05/28/15 10:19	1
Acetone	ND		25		ug/L			05/28/15 10:19	1
Benzene	ND		0.20		ug/L			05/28/15 10:19	1
Bromobenzene	ND		1.0		ug/L			05/28/15 10:19	1
Bromochloromethane	ND		1.0		ug/L			05/28/15 10:19	1
Bromodichloromethane	ND		1.0		ug/L			05/28/15 10:19	1
Bromoform	ND		1.0		ug/L			05/28/15 10:19	1
Bromomethane	ND		5.0		ug/L			05/28/15 10:19	1
Carbon disulfide	ND		1.0		ug/L			05/28/15 10:19	1
Carbon tetrachloride	ND		1.0		ug/L			05/28/15 10:19	1
Chlorobenzene	ND		1.0		ug/L			05/28/15 10:19	1
Chloroethane	ND		1.0		ug/L			05/28/15 10:19	1
Chloroform	ND		1.0		ug/L			05/28/15 10:19	1
Chloromethane	ND		3.0		ug/L			05/28/15 10:19	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 10:19	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 10:19	1
Dibromochloromethane	ND		1.0		ug/L			05/28/15 10:19	1
Dibromomethane	ND		1.0		ug/L			05/28/15 10:19	1
Dichlorodifluoromethane	ND		1.0		ug/L			05/28/15 10:19	1
Dichlorofluoromethane	ND		0.20		ug/L			05/28/15 10:19	1
Ethylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
Hexachlorobutadiene	ND		2.0		ug/L			05/28/15 10:19	1

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

Lab Sample ID: MB 590-1594/7
Matrix: Water
Analysis Batch: 1594

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexane	ND		1.0		ug/L			05/28/15 10:19	1
Isopropylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
m,p-Xylene	ND		2.0		ug/L			05/28/15 10:19	1
Methyl tert-butyl ether	ND		1.0		ug/L			05/28/15 10:19	1
Methylene Chloride	ND		10		ug/L			05/28/15 10:19	1
Naphthalene	ND		2.0		ug/L			05/28/15 10:19	1
n-Butylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
N-Propylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
o-Xylene	ND		1.0		ug/L			05/28/15 10:19	1
p-Isopropyltoluene	ND		1.0		ug/L			05/28/15 10:19	1
sec-Butylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
Styrene	ND		1.0		ug/L			05/28/15 10:19	1
tert-Butanol	ND		5.0		ug/L			05/28/15 10:19	1
tert-Butylbenzene	ND		1.0		ug/L			05/28/15 10:19	1
Tetrachloroethene	ND		1.0		ug/L			05/28/15 10:19	1
Toluene	ND		1.0		ug/L			05/28/15 10:19	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			05/28/15 10:19	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			05/28/15 10:19	1
Trichloroethene	ND		1.0		ug/L			05/28/15 10:19	1
Trichlorofluoromethane	ND		1.0		ug/L			05/28/15 10:19	1
Vinyl chloride	ND		0.20		ug/L			05/28/15 10:19	1
Xylenes, Total	ND		3.0		ug/L			05/28/15 10:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*05/28/15 10:19*	*1*
4-Bromofluorobenzene (Surr)	*103*		*68.7 - 141*		*05/28/15 10:19*	*1*
Dibromofluoromethane (Surr)	*101*		*71.2 - 143*		*05/28/15 10:19*	*1*
Toluene-d8 (Surr)	*104*		*74.1 - 135*		*05/28/15 10:19*	*1*

Lab Sample ID: LCS 590-1594/8
Matrix: Water
Analysis Batch: 1594

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	10.0	9.56		ug/L		96	60 - 140
1,1,1-Trichloroethane	10.0	9.57		ug/L		96	60 - 140
1,1,2,2-Tetrachloroethane	10.0	9.90		ug/L		99	60 - 140
1,1,2-Trichloroethane	10.0	9.90		ug/L		99	60 - 140
1,1,2-Trichlorotrifluoroethane	10.0	10.2		ug/L		102	60 - 140
1,1-Dichloroethane	10.0	10.1		ug/L		101	60 - 140
1,1-Dichloroethene	10.0	9.69		ug/L		97	78.1 - 155
1,1-Dichloropropene	10.0	10.9		ug/L		109	60 - 140
1,2,3-Trichlorobenzene	10.0	10.3		ug/L		103	60 - 140
1,2,3-Trichloropropane	10.0	9.48		ug/L		95	60 - 140
1,2,4-Trichlorobenzene	10.0	10.0		ug/L		100	60 - 140
1,2,4-Trimethylbenzene	10.0	9.87		ug/L		99	60 - 140
1,2-Dibromo-3-Chloropropane	10.0	8.55		ug/L		86	60 - 140
1,2-Dichlorobenzene	10.0	9.87		ug/L		99	60 - 140

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

Lab Sample ID: LCS 590-1594/8
Matrix: Water
Analysis Batch: 1594

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloroethane	10.0	9.68		ug/L		97	63.9 - 144
1,2-Dichloropropane	10.0	10.1		ug/L		101	60 - 140
1,3,5-Trimethylbenzene	10.0	9.60		ug/L		96	60 - 140
1,3-Dichlorobenzene	10.0	9.66		ug/L		97	60 - 140
1,3-Dichloropropane	10.0	9.79		ug/L		98	60 - 140
1,4-Dichlorobenzene	10.0	9.75		ug/L		97	60 - 140
2,2-Dichloropropane	10.0	9.59		ug/L		96	60 - 140
2-Butanone (MEK)	50.0	57.3		ug/L		115	60 - 140
2-Chlorotoluene	10.0	10.0		ug/L		100	60 - 140
2-Hexanone	50.0	51.0		ug/L		102	60 - 140
4-Chlorotoluene	10.0	9.61		ug/L		96	60 - 140
4-Methyl-2-pentanone (MIBK)	50.0	49.3		ug/L		99	60 - 140
Acetone	50.0	51.6		ug/L		103	60 - 140
Benzene	10.0	9.81		ug/L		98	80 - 140
Bromobenzene	10.0	9.83		ug/L		98	60 - 140
Bromochloromethane	10.0	9.55		ug/L		96	60 - 140
Bromodichloromethane	10.0	9.62		ug/L		96	60 - 140
Bromoform	10.0	8.82		ug/L		88	60 - 140
Bromomethane	10.0	11.2		ug/L		112	60 - 140
Carbon disulfide	10.0	10.0		ug/L		100	60 - 140
Carbon tetrachloride	10.0	9.89		ug/L		99	60 - 140
Chlorobenzene	10.0	9.62		ug/L		96	79.2 - 125
Chloroethane	10.0	10.8		ug/L		108	60 - 140
Chloroform	10.0	9.63		ug/L		96	60 - 140
Chloromethane	10.0	11.4		ug/L		114	60 - 140
cis-1,2-Dichloroethene	10.0	9.56		ug/L		96	60 - 140
cis-1,3-Dichloropropene	10.0	10.1		ug/L		101	60 - 140
Dibromochloromethane	10.0	9.48		ug/L		95	60 - 140
Dibromomethane	10.0	9.49		ug/L		95	60 - 140
Dichlorodifluoromethane	10.0	12.9		ug/L		129	60 - 140
Dichlorofluoromethane	10.0	10.2		ug/L		102	60 - 140
Ethylbenzene	10.0	9.82		ug/L		98	80 - 120
Hexachlorobutadiene	10.0	9.52		ug/L		95	80 - 120
Hexane	10.0	10.4		ug/L		104	60 - 140
Isopropylbenzene	10.0	9.45		ug/L		95	60 - 140
m,p-Xylene	10.0	9.80		ug/L		98	80 - 120
Methyl tert-butyl ether	10.0	10.0		ug/L		100	80.1 - 128
Methylene Chloride	10.0	12.1		ug/L		121	60 - 140
Naphthalene	10.0	10.0		ug/L		100	62.8 - 132
n-Butylbenzene	10.0	9.72		ug/L		97	60 - 140
N-Propylbenzene	10.0	9.97		ug/L		100	60 - 140
o-Xylene	10.0	9.60		ug/L		96	80 - 120
p-Isopropyltoluene	10.0	9.51		ug/L		95	60 - 140
sec-Butylbenzene	10.0	9.50		ug/L		95	60 - 140
Styrene	10.0	9.13		ug/L		91	60 - 140
tert-Butanol	100	98.3		ug/L		98	60 - 140
tert-Butylbenzene	10.0	9.82		ug/L		98	60 - 140
Tetrachloroethene	10.0	9.67		ug/L		97	60 - 140

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

Lab Sample ID: LCS 590-1594/8
Matrix: Water
Analysis Batch: 1594

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	10.0	9.58		ug/L		96	80 - 123
trans-1,2-Dichloroethene	10.0	9.98		ug/L		100	60 - 140
trans-1,3-Dichloropropene	10.0	10.7		ug/L		107	60 - 140
Trichloroethene	10.0	10.3		ug/L		103	74.8 - 123
Trichlorofluoromethane	10.0	10.1		ug/L		101	60 - 140
Vinyl chloride	10.0	11.0		ug/L		110	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*
4-Bromofluorobenzene (Surr)	*98*		*68.7 - 141*
Dibromofluoromethane (Surr)	*98*		*71.2 - 143*
Toluene-d8 (Surr)	*100*		*74.1 - 135*

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

Lab Sample ID: MB 590-1596/7
Matrix: Water
Analysis Batch: 1596

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		100		ug/L			05/28/15 10:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*68.7 - 141*		*05/28/15 10:19*	*1*

Lab Sample ID: LCS 590-1596/9
Matrix: Water
Analysis Batch: 1596

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1000	932		ug/L		93	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*68.7 - 141*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-1534/1-A
Matrix: Water
Analysis Batch: 1531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1534

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
2-Methylnaphthalene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
1-Methylnaphthalene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Acenaphthylene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Acenaphthene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 590-1534/1-A
Matrix: Water
Analysis Batch: 1531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1534

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Phenanthrene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Anthracene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Fluoranthene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Pyrene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Benzo[a]anthracene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Chrysene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Benzo[b]fluoranthene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Benzo[k]fluoranthene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Benzo[a]pyrene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Indeno[1,2,3-cd]pyrene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Dibenz(a,h)anthracene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1
Benzo[g,h,i]perylene	ND		0.18		ug/L		05/21/15 12:52	05/21/15 14:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*117*		*32.7 - 135*	*05/21/15 12:52*	*05/21/15 14:29*	*1*
2-Fluorobiphenyl (Surr)	*88*		*44.3 - 120*	*05/21/15 12:52*	*05/21/15 14:29*	*1*
p-Terphenyl-d14	*106*		*59.5 - 154*	*05/21/15 12:52*	*05/21/15 14:29*	*1*

Lab Sample ID: LCS 590-1534/2-A
Matrix: Water
Analysis Batch: 1531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1534

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	3.20	3.01		ug/L		94	27.8 - 143
Fluorene	3.20	3.69		ug/L		115	59.2 - 120
Chrysene	3.20	3.67		ug/L		115	69.1 - 122
Indeno[1,2,3-cd]pyrene	3.20	3.94		ug/L		123	56.1 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*97*		*32.7 - 135*
2-Fluorobiphenyl (Surr)	*79*		*44.3 - 120*
p-Terphenyl-d14	*85*		*59.5 - 154*

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

Lab Sample ID: MB 590-1582/2-A
Matrix: Water
Analysis Batch: 1583

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1582

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		05/27/15 09:58	05/27/15 11:07	1

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

Lab Sample ID: LCS 590-1582/3-A
Matrix: Water
Analysis Batch: 1583

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1582

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	0.125	0.157		ug/L		125	60 - 140

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-1559/1-A
Matrix: Water
Analysis Batch: 1555

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1559

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.24		mg/L		05/26/15 13:14	05/26/15 17:00	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40		mg/L		05/26/15 13:14	05/26/15 17:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*92*		*50 - 150*	*05/26/15 13:14*	*05/26/15 17:00*	*1*
n-Triacontane-d62	*102*		*50 - 150*	*05/26/15 13:14*	*05/26/15 17:00*	*1*

Lab Sample ID: MB 590-1559/1-A
Matrix: Water
Analysis Batch: 1574

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1559

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.24		mg/L		05/26/15 13:14	05/27/15 09:15	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40		mg/L		05/26/15 13:14	05/27/15 09:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*93*		*50 - 150*	*05/26/15 13:14*	*05/27/15 09:15*	*1*
n-Triacontane-d62	*74*		*50 - 150*	*05/26/15 13:14*	*05/27/15 09:15*	*1*

Lab Sample ID: LCS 590-1559/2-A
Matrix: Water
Analysis Batch: 1555

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1559

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	3.20	2.89		mg/L		90	50 - 150
Residual Range Organics (RRO) (C25-C36)	3.20	2.97		mg/L		93	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*98*		*50 - 150*
n-Triacontane-d62	*105*		*50 - 150*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 590-1559/2-A
Matrix: Water
Analysis Batch: 1574

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1559

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	3.20	2.84		mg/L		89	50 - 150
Residual Range Organics (RRO) (C25-C36)	3.20	2.99		mg/L		93	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*98*		*50 - 150*
n-Triacontane-d62	*64*		*50 - 150*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-1516/15
Matrix: Water
Analysis Batch: 1516

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.20		mg/L			05/20/15 15:08	1

Lab Sample ID: LCS 590-1516/14
Matrix: Water
Analysis Batch: 1516

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	5.00	5.08		mg/L		102	90 - 110

Lab Sample ID: MB 590-1517/15
Matrix: Water
Analysis Batch: 1517

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		0.50		mg/L			05/20/15 15:08	1

Lab Sample ID: LCS 590-1517/14
Matrix: Water
Analysis Batch: 1517

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	12.5	12.8		mg/L		102	90 - 110

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 590-1553/2-A
Matrix: Water
Analysis Batch: 1633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1553

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.014		mg/L		05/27/15 14:00	05/29/15 11:10	1

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

Lab Sample ID: LCS 590-1553/1-A
Matrix: Water
Analysis Batch: 1633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1553

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.997		mg/L		100	85 - 115

Method: SM 5310C - TOC

Lab Sample ID: MB 490-251385/1
Matrix: Water
Analysis Batch: 251385

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			05/26/15 11:39	1

Lab Sample ID: LCS 490-251385/4
Matrix: Water
Analysis Batch: 251385

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.81		mg/L		98	90 - 110
TOC Result 1	10.0	9.89		mg/L		99	90 - 110
TOC Result 2	10.0	9.73		mg/L		97	90 - 110

Client Sample ID: Duplicate

Lab Sample ID: 590-870-1

Date Collected: 05/19/15 08:00

Matrix: Water

Date Received: 05/20/15 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		100	43 mL	43 mL	1594	05/28/15 17:08	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		100	43 mL	43 mL	1596	05/28/15 17:08	MRS	TAL SPK
Total/NA	Prep	3510C			253.9 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	253.9 mL	2 mL	1531	05/21/15 15:24	NMI	TAL SPK
Total/NA	Prep	3510C			253.9 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		20	253.9 mL	2 mL	1531	05/21/15 17:43	NMI	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	1582	05/27/15 09:58	NMI	TAL SPK
Total/NA	Analysis	8011		1	80 mL	2 mL	1583	05/27/15 11:40	NMI	TAL SPK
Silica Gel Cleanup	Prep	3510C SGC			122.9 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Silica Gel Cleanup	Analysis	NWTPH-Dx		1	122.9 mL	2 mL	1574	05/27/15 09:54	NMI	TAL SPK
Total/NA	Prep	3510C SGC			122.9 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	122.9 mL	2 mL	1555	05/26/15 17:40	NMI	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1516	05/20/15 16:00	MRS	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1517	05/20/15 16:00	MRS	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	1553	05/27/15 14:00	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1	50 mL	50 mL	1622	05/28/15 22:09	JSP	TAL SPK
Total/NA	Analysis	SM 5310C		1	50 mL	50 mL	251385	05/26/15 11:39	JAB	TAL NSH

Client Sample ID: SVMW-2

Lab Sample ID: 590-870-2

Date Collected: 05/19/15 12:46

Matrix: Water

Date Received: 05/20/15 10:40

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	1594	05/28/15 17:30	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	1596	05/28/15 17:30	MRS	TAL SPK
Total/NA	Prep	3510C			238.8 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	238.8 mL	2 mL	1531	05/21/15 15:52	NMI	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	1582	05/27/15 09:58	NMI	TAL SPK
Total/NA	Analysis	8011		1	80 mL	2 mL	1583	05/27/15 11:56	NMI	TAL SPK
Total/NA	Prep	3510C SGC			118.9 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	118.9 mL	2 mL	1555	05/26/15 18:00	NMI	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1516	05/20/15 16:13	MRS	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1517	05/20/15 16:13	MRS	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	1553	05/27/15 14:00	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1	50 mL	50 mL	1622	05/28/15 22:11	JSP	TAL SPK
Total/NA	Analysis	SM 5310C		1	50 mL	50 mL	251385	05/26/15 11:39	JAB	TAL NSH

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Client Sample ID: SVMW-3

Date Collected: 05/19/15 14:23
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-3

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		100	43 mL	43 mL	1594	05/28/15 18:01	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		100	43 mL	43 mL	1596	05/28/15 18:01	MRS	TAL SPK
Total/NA	Prep	3510C			253 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	253 mL	2 mL	1531	05/21/15 16:20	NMI	TAL SPK
Total/NA	Prep	3510C			253 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		20	253 mL	2 mL	1531	05/21/15 18:38	NMI	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	1582	05/27/15 09:58	NMI	TAL SPK
Total/NA	Analysis	8011		1	80 mL	2 mL	1583	05/27/15 12:13	NMI	TAL SPK
Silica Gel Cleanup	Prep	3510C SGC			127.7 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Silica Gel Cleanup	Analysis	NWTPH-Dx		1	127.7 mL	2 mL	1574	05/27/15 10:14	NMI	TAL SPK
Total/NA	Prep	3510C SGC			127.7 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	127.7 mL	2 mL	1555	05/26/15 18:20	NMI	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1516	05/20/15 16:26	MRS	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1517	05/20/15 16:26	MRS	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	1553	05/27/15 14:00	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1	50 mL	50 mL	1622	05/28/15 22:14	JSP	TAL SPK
Total/NA	Analysis	SM 5310C		1	50 mL	50 mL	251385	05/26/15 11:39	JAB	TAL NSH

Client Sample ID: SVMW-4

Date Collected: 05/19/15 11:30
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-4

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	1594	05/28/15 18:23	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	1596	05/28/15 18:23	MRS	TAL SPK
Total/NA	Prep	3510C			239.2 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	239.2 mL	2 mL	1531	05/21/15 16:47	NMI	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	1582	05/27/15 09:58	NMI	TAL SPK
Total/NA	Analysis	8011		1	80 mL	2 mL	1583	05/27/15 12:29	NMI	TAL SPK
Total/NA	Prep	3510C SGC			126.2 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	126.2 mL	2 mL	1555	05/26/15 18:40	NMI	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1516	05/20/15 16:39	MRS	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1517	05/20/15 16:39	MRS	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	1553	05/27/15 14:00	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1	50 mL	50 mL	1622	05/28/15 22:17	JSP	TAL SPK
Total/NA	Analysis	SM 5310C		1	50 mL	50 mL	251385	05/26/15 11:39	JAB	TAL NSH

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Client Sample ID: SVMW-5

Date Collected: 05/19/15 13:35
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-5

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		10	43 mL	43 mL	1594	05/28/15 18:45	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		10	43 mL	43 mL	1596	05/28/15 18:45	MRS	TAL SPK
Total/NA	Prep	3510C			233.3 mL	2 mL	1534	05/21/15 12:52	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1	233.3 mL	2 mL	1531	05/21/15 17:15	NMI	TAL SPK
Total/NA	Prep	8011			80 mL	2 mL	1582	05/27/15 09:58	NMI	TAL SPK
Total/NA	Analysis	8011		1	80 mL	2 mL	1583	05/27/15 12:45	NMI	TAL SPK
Silica Gel Cleanup	Prep	3510C SGC			120.7 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Silica Gel Cleanup	Analysis	NWTPH-Dx		1	120.7 mL	2 mL	1574	05/27/15 10:34	NMI	TAL SPK
Total/NA	Prep	3510C SGC			120.7 mL	2 mL	1559	05/26/15 13:14	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1	120.7 mL	2 mL	1555	05/26/15 19:00	NMI	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1516	05/20/15 16:52	MRS	TAL SPK
Total/NA	Analysis	300.0		1	5 mL		1517	05/20/15 16:52	MRS	TAL SPK
Total/NA	Prep	200.7			50 mL	50 mL	1553	05/27/15 14:00	JSP	TAL SPK
Total/NA	Analysis	200.7 Rev 4.4		1	50 mL	50 mL	1622	05/28/15 22:19	JSP	TAL SPK
Total/NA	Analysis	SM 5310C		1	50 mL	50 mL	251385	05/26/15 11:39	JAB	TAL NSH

Client Sample ID: Trip Blank

Date Collected: 05/19/15 00:00
Date Received: 05/20/15 10:40

Lab Sample ID: 590-870-6

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	1594	05/28/15 19:07	MRS	TAL SPK

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177
TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Certification Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-15
Washington	State Program	10	C569	01-06-16

Laboratory: TestAmerica Nashville

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C789	07-19-15

Method Summary

Client: GeoEngineers Inc
Project/Site: Tiger Oil - Summit View

TestAmerica Job ID: 590-870-1

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
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
8011	EDB, DBCP, and 1,2,3-TCP (GC)	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	TAL SPK
300.0	Anions, Ion Chromatography	MCAWW	TAL SPK
200.7 Rev 4.4	Metals (ICP)	EPA	TAL SPK
SM 5310C	TOC	SM	TAL NSH

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NWTPH = Northwest Total Petroleum Hydrocarbon

SM = "Standard Methods For The Examination Of Water And Wastewater",

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

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

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

Client Information	Sampler: Aaron Fredericy	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-364-128.1
Client Contact: JR Sugalski	Phone: 216 403 6773	E-Mail: randee.arrington@testamericainc.com		Page: Page 1 of 1
Company: GeoEngineers Inc				Job #
Address: 523 East Second Ave	Due Date Requested:			
City: Spokane	TAT Requested (days):			
State, Zip: WA, 99202				
Phone: 509-209-2830(Tel)	PO #: Purchase Order not required			
Email: jsugalski@geoengineers.com	WO #			
Project Name: Tiger Oil - Summit View	Project #: 59000440			
Site: Washington	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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, 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)	6310C - Total Organic Carbon (TOC)	8270D_SIM - Polycyclic Aromatic Hydrocarbons	300_ORGFM_28D, 300_ORGFMS	200.7 - Lead <1.5 ppb	8260C, NWTPH_Gx_MS	NWTPH_Dx - NWTPH-Dx with and w/o SGT	8011 - 1,2-Dibromoethane (EDB)	8260C - 8260C - Volatiles	Total Number of containers	Special Instructions/Note:
			Preservation Code:				S	N	N	D	A	A	N	A		
DUPLICATE	5/19/15	0800	G	Water	N		X	X	X	X	X	X	X	X		
SVMW-2		1246	G	Water	N		X	X	X	X	X	X	X	X		
SVMW-3		1423	G	Water	N		X	X	X	X	X	X	X	X		
SVMW-4		1130	G	Water	N		X	X	X	X	X	X	X	X		
SVMW-5		1335	G	Water	N		X	X	X	X	X	X	X	X		
TRIP BLANK				Water	N									X		
				Water												
				Water												

590-870 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements: *RL<1.5ppb FOR LEAD

Empty Kit Relinquished by.	Date:	Time	Method of Shipment

Relinquished by:	Date/Time: 5/19/15 1516	Company: GEI	Received by: Sheila Kpat	Date/Time: 5/20/15 10:40	Company: TA Spok
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.: 420705	Cooler Temperature(s) °C and Other Remarks: 4.6 °C IR001

6/15/2015

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-870-1

Login Number: 870
List Number: 1
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

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	
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.	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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-870-1

Login Number: 870
List Number: 2
Creator: Ford, Easton

List Source: TestAmerica Nashville
List Creation: 05/21/15 04:28 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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	
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.	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.	N/A	
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
Well Survey Report

TIGER OIL MONITORING WELL ELEVATION TABLE YAKIMA, WA			SURVEY DATE 4/30/2015	PLS JOB NO. 15029
FEATURE	NORTH EDGE OF PVC	NORTH RIM OF OUTER CASE	NORTHING	EASTING
SUMMITVIEW				
SVMW-4	1220.00	1220.35	462028.3	1619576.7
SVMW-5	1219.09	1219.41	461969.3	1619546.4
BENCHMARK ELEVATION = 1219.58'	SW CORNER OF TRAFFIC SIGNAL POLE CONCRETE PAD AT THE NE CORNER OF SUMMITVIEW AVE. AND N. 56TH AVE AT N. END OF CONCRETE WALK		461957.6	1619548.4

VERTICAL DATUM:	NAVD 88 - REFERENCED FROM WSDOT MONUMENT DESIGNATION GP39012-9, WITH A PUBLISHED ELEVATION OF 1130.33 FEET.
HORIZONTAL DATUM:	NAD 83/91 WASHINGTON SOUTH ZONE - BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK.

The horizontal coordinates of the groundwater monitoring wells and the elevation of the benchmark established at the site were determined using a Topcon GR-3 GPS receiver with a nominal accuracy of 10mm + 1ppm horizontal and 15mm + 1ppm vertical. The elevation of the monitoring wells at each site are relative to the benchmark established at each site and were individually determined using a Leica DNA03 digital level with a vertical accuracy of +/- 0.01 feet.

APPENDIX D
Report Limitations and Guidelines for Use

APPENDIX D
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

GeoEngineers has performed this assessment of the Tiger Oil – Summitview site in Yakima, Washington in general accordance with the Work Plan dated April 15, 2014. This report has been prepared for the exclusive use of the Washington Department of Ecology. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an Environmental Site Assessment (ESA) 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 property. No one except the Washington Department of Ecology should rely on this environmental report without first conferring with GeoEngineers. Use of this report is not recommended 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 Tiger Oil – Summitview site in Yakima, 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, it is important not to 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 to the project or property after the date of this report, we recommend that GeoEngineers be given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

Reliance Conditions for Third Parties

Our report was prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree to such reliance in advance and in writing. This is to provide our firm 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

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

have been executed in accordance with our Agreement with the Client 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 vicinity of the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, 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 substances, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain Even After This Phase II ESA is Completed

Performance of a Phase II ESA is intended to reduce uncertainty regarding the potential for contamination in connection with a property, but no ESA can wholly eliminate that uncertainty. 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 man-made events such as construction on or adjacent to the subject property, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Please contact GeoEngineers before applying this report for its intended purpose so that GeoEngineers may evaluate whether changed conditions affect the continued applicability of the report.

Soil and Groundwater End Use

The cleanup criteria referenced in this report are site- and situation-specific. The cleanup criteria may not be applicable for other properties or for other on-site uses of the affected soil and/or groundwater. Note that hazardous substances may be present in some of the on-site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup criteria. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject property or reuse of the affected soil or groundwater on-site to evaluate the potential for associated environmental liabilities. We are unable to assume responsibility for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject property to another location or its reuse on-site in instances that we did not know or could not control.

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 subject property. 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 informed opinion about subsurface conditions throughout the property. 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 reproduction is acceptable, but separating logs from the report can create a risk of misinterpretation.

Read These Provisions Closely

It is important to recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are less exact than other engineering and natural science disciplines. Without this understanding, there may be 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 need to know more about how these "Report Limitations and Guidelines for Use" apply to your project or property.

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.

A Client that desires these specialized services is advised to obtain them 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**.

GeoEngineers