

**Additional Site Characterization Activities
724 West International Airport Road
Anchorage, Alaska
ADEC File 2100.26.078**

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADOT	Alaska Department of Transportation
AK	Alaska Method
bgs	Below Ground Surface
BTOC	Below Top of Casing
Discovery	Discovery Drilling, Inc.
DQO	Data Quality Objective
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
GRO	Gasoline Range Organics
IDW	Investigation-Derived Waste
L/min	Liters Per Minute
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LDRC	Laboratory Data Review Checklist
LOQ	Limit of Quantification
LUST	Leaking Underground Storage Tank
µg/L	Micrograms per Liter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
mV	Millivolts
NTU	Nephelometric Turbidity Units
PAHs	Polynuclear Aromatic Hydrocarbons
PID	Photoionization Detector
ppm	Parts Per Million
RPD	Relative Percent Difference
SGS	SGS North America Inc.
SIM	Selective Ion Method
UST	Underground Storage Tank
VEAIS	Vapor Extraction Air Injection System
VOCs	Volatile Organic Compounds

**ADDITIONAL SITE CHARACTERIZATION ACTIVITIES
724 WEST INTERNATIONAL AIRPORT ROAD
ANCHORAGE, ALASKA
ADEC FILE NO. 2100.26.078**

1.0 INTRODUCTION

This report presents the results of Shannon & Wilson's additional site characterization activities conducted at Garrett's Tesoro located at 724 West International Airport Road in Anchorage, Alaska. The site is an active Alaska Department of Environmental Conservation (ADEC) leaking underground storage tank (LUST) site. A vicinity map is included as Figure 1.

2.0 BACKGROUND

Garrett's Tesoro is located at the southeast corner of the intersection of Arctic Boulevard and International Airport Road in Anchorage, Alaska. Two 12,000-gallon gasoline underground storage tanks (USTs) and one 8,000-gallon diesel UST are located at the site. In addition, fuel dispensers are located on the north-central and southern portions of the property. Two former gasoline USTs and a diesel UST were located on the central portion of the property.

Soil and groundwater contamination was identified at the site in 1988 and 1989, respectively. Subsequently, site characterization and cleanup activities have occurred at the site. Three pre-existing groundwater monitoring wells (Wells B1MWR2, B2MW, and B3MW) are located on site. Wells B1MWR2 and B2MW are located downgradient of the former on-site USTs and current north-central fuel dispensers. Well B3MW is located downgradient of the southern dispensers and upgradient of the former USTs and existing north-central fuel dispensers. A combined vapor extraction and air injection system (VEAIS) is also located on the northeast portion of the property.

As documented in our August 2018 *Groundwater Sampling and Remediation System Evaluation, 724 West International Airport Road, Anchorage, Alaska* report, monitoring Wells B1MWR2, B2MW, and B3MW were last sampled by Shannon & Wilson in 2018. At this time, concentrations of gasoline range organics (GRO), diesel range organics (DRO), benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,2-dichloroethane, and 1,3,5-trimethylbenzene exceeding the ADEC Table C cleanup levels were documented in Wells B1MWR2 and B2MW. In addition, n-propylbenzene was detected in B1MWR2 above the ADEC Table C cleanup level. The sample collected from Well B3MW did not contain contaminant concentrations in excess of the applicable cleanup levels.

On July 10, 2018, a Shannon & Wilson representative visually assessed and documented the condition of the inactive remediation system. The VEAIS and main components of the system were successfully started and appeared operational. Operation parameters including vapor extraction system exhaust temperature, pressure, and flow rate, and air injection system pressure and flow rate were recorded. The flow rate was negligible, and the blower pressure indicated it was operating at maximum capacity. The air injection system appeared to have a damaged connection (air flow coming from bottom of connection) and possibly needs to be repaired in order for the system to function properly.

In a response to our August 21, 2018 *Groundwater Sampling and Remediation System Evaluation, 724 West International Airport Road, Anchorage, Alaska* report, the ADEC issued a letter dated August 29, 2018 which requested the following:

- Delineation of the extent of contamination, to include extent of contamination migration off property.
- An evaluation of the vapor intrusion pathway.
- An assessment detailing the practicability of repairing and restarting the on-site VEAIS.

Based on a meeting between Shannon & Wilson and ADEC on January 30, 2019, the remediation system will not be repaired at this time and the project only included delineation of the extent of contamination requested by the ADEC.

The site characterization activities were performed in material accordance with our September 17, 2019 *Revised Work Plan for Additional Site Characterization Activities, 724 West International Airport Road, Anchorage, Alaska; ADEC File No. 2100.26.078*, which was approved by Ms. Chelsy Passmore of the Alaska Department of Environmental Conservation (ADEC) in an email dated September 19, 2019. Following discussions with ADEC, it was agreed to install an additional boring north of the property at 5121 Arctic Boulevard.

3.0 FIELD ACTIVITIES

Field activities consisted of advancing four soil borings, installing four groundwater monitoring wells, and collecting soil and groundwater samples. Discovery Drilling, Inc. (Discovery) of Anchorage, Alaska provided the equipment and personnel to advance the borings and install the groundwater monitoring wells. SGS North America Inc. (SGS) provided analysis of soil and groundwater samples. Site photographs and copies of field notes are included in Appendix A and Appendix B, respectively.

3.1 Soil Borings and Sampling

Four soil borings, designated Borings B4 through B7, were advanced by Discovery using a GeoProbe® 6712DT direct push drill rig equipped with 2.25-inch outside diameter direct push samplers (Photos 1 and 2). Borings B4 and B6 were advanced on October 22, 2019. Borings B5 and B7 were advanced on December 30, 2019 and February 25, 2020, respectively.

Boring B4, B5, and B7 were advanced off-property to the west, northwest, and north, respectively. Boring B6 was advanced on the northeast property boundary. With approval of the off-site property owners, Borings B4 and B7 were advanced at 800 West International Road and 5121 Arctic Boulevard, respectively. Boring B6 was advanced northeast of the intersection of Arctic Boulevard and International Airport Road, within the Alaska Department of Transportation (ADOT) right-of-way. Prior to advancing Boring B6, an ADOT Lane Closure Permit was acquired. Prior to advancing the borings, the utility locate center was contacted to mark buried utilities within the project area. Boring logs are included as Appendix C. The approximate location of the borings are shown on Figure 2.

The borings were advanced to approximately 25 feet below ground surface (bgs) to facilitate the collection of soil samples and the installation of groundwater monitoring wells. Soil samples were recovered on a continuous basis using 5-foot macrocore sampling sleeves. Each sampling sleeve was removed from the sampling device and split down the long axis. Based on the recovery length and soil type, the soil section was divided into two equal intervals for field screening purposes.

Immediately following retrieval and opening of the samplers, analytical samples and field screening samples were collected. The analytical sample jars for volatile analyses were collected first, followed by the non-volatile analytical sample jars, and finally the field screening sample. The soil samples were “screened” for volatile organic vapors using a Thermo Instruments OVM 580B photoionization detector (PID) and an ADEC-approved headspace screening technique. The PID was calibrated before screening activities with 100 parts per million (ppm) isobutylene standard gas. The field screening samples were collected in re-sealable plastic bags by filling them with freshly exposed soil to one-half of their volumes, sealing the top, warmed to at least 40 degrees Fahrenheit, and screened within 10 minutes to one hour of collection. Screening was accomplished by inserting the PID sampling probe into the air space above the soil in the bag. The field screening results are presented in Table 1.

One analytical soil sample from each boring was submitted for laboratory analysis. The samples were collected from the interval just above the soil/water interface or from the sample interval with the highest PID measurement. Soil samples for laboratory analysis were collected in laboratory-supplied jars in decreasing order of volatility. For each volatile sample, at least 25

grams of soil, but no more than what can be completely submerged with 25-milliliters of methanol, was placed into a pre-weighted, 4-ounce jar with a septa lid. A 25-milliliter aliquot of methanol containing laboratory-added surrogates was added to the sample jar to submerge the soil sample. For each non-volatile sample, the laboratory-supplied jar was completely filled with soil taking care to avoid pieces of gravel and debris. Sample jars were filled using decontaminated stainless steel spoons, placed in coolers with ice packs, and transferred to the laboratory using chain-of-custody procedures.

3.2 Groundwater Characterization

Groundwater characterization activities included the installation, development, and sampling of four new wells (B4MW through B7MW). In addition, three pre-existing wells (B1MWR, B2MW, and B3MW) were sampled.

3.2.1 Monitoring Well Installation

Borings B4 through B7 were completed as Monitoring Wells B4MW through B7MW, respectively. The monitoring wells were constructed of 2-inch nominal inside diameter schedule 40 polyvinyl chloride (PVC) pipe with threaded connections. The lower portion of each well consists of a 10-foot section of 0.010-inch slotted well screen. A continuous 20-40 silica sand pack was used to backfill around the well screens to about 2 feet above the screened section. Hydrated bentonite chips were used to backfill above the filter pack to approximately 1 foot bgs. Pea gravel was placed above the bentonite to about 0.3-foot bgs. The monitoring wells were completed with flushmount protective casings embedded in native soil or an asphalt patch to match the surrounding grade. Monitoring well construction details are included in Appendix C.

3.2.2 Monitoring Well Development

Monitoring Wells B4MW and B6MW were developed on October 25, 2019. Monitoring Wells B5MW and B7MW were developed on January 2 and March 6, 2020, respectively. Prior to initiating the well development activities, water depth relative to the top of the well casings was measured with an electronic water level indicator. The wells were developed using a surge block and a submersible pump with dedicated disposable tubing. Five-minute periods of surging were alternated with periods of purging. During well development, water quality parameters, including pH, specific conductivity, temperature, and turbidity were measured with Horiba and YSI water quality instruments, and a MicroTPW turbidimeter. Development was considered complete after at least 3 hours of effort was expended for each well. Each well purged dry during development and was allowed to recovery to at least 80 percent of their pre-purge volume prior to purging again. Groundwater data, including final water quality parameter measurements during development, are summarized in Table 2.

3.2.1 Monitoring Well Sampling

With the exception of Monitoring Wells B5MW and B7MW, groundwater samples were collected from the wells directly following development. In accordance with the project work plan, the wells were allowed to recharge to at least 80 percent of the pre-purge volume. Due to a slow recharge rate, Monitoring Wells B5MW and B7MW were allowed to recharge overnight to at least 80 percent of the pre-purge volume and were sampled the next day. Samples were collected using a submersible pump and dedicated disposable tubing.

Monitoring Wells B1MWR2, B2MW, and B3MW were sampled between October 25 and 27, 2019. Prior to collecting groundwater samples, the static water level was measured in the wells using an electronic water level indicator. The monitoring wells were purged and sampled using a low-flow sampling technique, using a submersible pump with disposable vinyl tubing. Sampling was initiated by purging each well to reduce the effect of stagnant well casing water on chemical concentrations and to obtain groundwater samples that are representative of the surrounding water-bearing formation. The submersible pump was placed within 2 feet of the measured groundwater depth in each well. The pump rate was set at approximately 0.1 to 0.5 liter per minute (L/min) with a goal of limiting the sustained water drawdown to a maximum of 4 inches. The drawdown was determined using an electronic water probe that was checked regularly throughout the purging/sampling process. Purging was considered complete when at least one well volume was removed and the following stabilization criteria were met over three successive readings: pH was within 0.1 unit, temperature was within 3 percent (minimum 0.2 degree Celsius), specific conductance was within three percent, and turbidity was within 10 percent or three consecutive readings of less than 10 Nephelometric Turbidity Units (NTU). The pump was decontaminated in between each well. Final water quality parameters are listed on Table 2.

Analytical samples were collected by transferring water directly from the pump tubing into the laboratory supplied containers. The sample jars were filled in decreasing order of volatility.

3.3 Investigation-Derived Waste

Investigation-derived waste (IDW) consisted of drill cuttings and development/purge water generated during drilling and groundwater monitoring activities. The development/purge water and drill cuttings were containerized in 55-gallon drums, labeled, and are currently stored at 724 West International Airport Road.

The ADEC will be contacted prior to treatment or on-property disposal of development/purge water and/or drill cuttings. Shannon & Wilson will complete the ADEC's *Transport, Treatment & Disposal Approval Form for Contaminated Media* and provide analytical soil and/or

groundwater data under separate cover for ADEC review and approval prior to coordinating IDW disposal.

4.0 LABORATORY ANALYSES

The soil and groundwater samples were submitted to SGS for analytical testing, using chain-of-custody procedures. Each sample was analyzed for GRO by Alaska Method (AK) 101, DRO by AK 102, volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260C, and polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D selective ion method (SIM). For quality control purposes, three methanol soil trip blanks and three water trip blanks were submitted to the laboratory and analyzed for GRO and VOCs. One duplicate groundwater sample was collected. Although included in or project work plan, a duplicate sample was inadvertently not collected. The laboratory reports and completed ADEC Laboratory Data Review Checklists (LDRCs) are provided in Appendix D. The analytical soil and groundwater sample results are summarized in Table 3 and Table 4, respectively.

5.0 SUBSURFACE CONDITIONS

The subsurface soil at the site generally consists of silt with varying amounts of sand. Groundwater was observed at between approximately 18.5 to 23 feet bgs during drilling. Depth to groundwater measured in Wells B1MWR2, B2MW, B3MW, B4MW, and B6MW on October 25, 2019 ranged from 16.62 to 19.51 feet below top of casing (BTOC). On January 2 and March 6, 2020, groundwater was measured at 14.90 and 15.16 feet BTOC, in Wells B5MW and B7MW, respectively. Historical groundwater flow direction is generally to the north/northeast/northwest. A level-loop survey, as outlined in our work plan, was not conducted. Piled snow prevented access to the off-property wells. Therefore, a level-loop survey will be conducted during future site activities.

6.0 DISCUSSION OF ANALYTICAL RESULTS

The analytical soil and groundwater results were compared to ADEC cleanup levels presented in the October 2018, 18 Alaska Administrative Code (AAC) 75 regulations. The applicable soil criteria consist of the most stringent ADEC Method Two cleanup levels listed in Tables B1 and B2 of 18 AAC 75.341, for the “under 40-inch (precipitation) zone” and “migration to groundwater.” Groundwater cleanup levels are established in Table C of 18 AAC 75.345. The applicable soil and groundwater cleanup levels are listed in Tables 3 and 4, respectively.

6.1 Soil Samples

DRO, toluene, and/or petroleum-related PAHs were detected in the soil samples collected from Borings B4, B5, and B7 at concentrations less than the most stringent ADEC Method Two cleanup levels. Tested analytes were not detected in the soil sample collected from Boring B6.

6.2 Groundwater Samples

Monitoring Wells B1MWR2, B2MW, B3MW, and B6MW are located on-property. The samples collected from Wells B1MWR2 and B2MW contained concentrations of GRO (maximum of 198,000 micrograms per liter [$\mu\text{g/L}$]), DRO (maximum of 5,670 $\mu\text{g/L}$), benzene (maximum of 57,900 $\mu\text{g/L}$), toluene (maximum of 33,900 $\mu\text{g/L}$), ethylbenzene (6,220 $\mu\text{g/L}$), and xylenes (maximum of 22,200 $\mu\text{g/L}$) exceeding the ADEC Table C cleanup levels of 2,200 $\mu\text{g/L}$, 1,500 $\mu\text{g/L}$, 4.6 $\mu\text{g/L}$, 1,100 $\mu\text{g/L}$, 15 $\mu\text{g/L}$, and 190 $\mu\text{g/L}$, respectively. The samples collected from Wells B1MWR2 and B2MW also contained concentrations of 1,2,4-trimethylbenzene (maximum of 1,650 $\mu\text{g/L}$), 1,2-dichloroethane (maximum of 205 J $\mu\text{g/L}$), 1,3,5-trimethylbenzene (maximum of 410 J $\mu\text{g/L}$), and naphthalene (maximum of 360 J $\mu\text{g/L}$) exceeding the ADEC Table C cleanup levels of 56 $\mu\text{g/L}$, 1.7 $\mu\text{g/L}$, 60 $\mu\text{g/L}$ and 1.7 $\mu\text{g/L}$, respectively. The sample collected from Well B1MWR2 also contained 21.8 $\mu\text{g/L}$ 1-methylnaphthalene which exceeds the ADEC cleanup level of 11 $\mu\text{g/L}$. The sample collected from Well B3MW did not contain target analytes exceeding the ADEC Table C cleanup levels. The Monitoring Well B1MWR2, B2MW, and B3MW sample results are consistent with historical sample results. The sample collected from Well B6MW contained 6.99 $\mu\text{g/L}$, which exceeds the applicable ADEC cleanup level.

Monitoring Wells B4MW, B5MW, and B7MW were installed off-property. With the exception of the sample collected from Well B4MW, the samples did not contain target analytes exceeding the ADEC Table C cleanup levels. The sample collected from Well B4MW contained 13.9 $\mu\text{g/L}$ benzene and 7.94 $\mu\text{g/L}$ 1,2-dichlorobenzene, which exceed the applicable ADEC cleanup levels.

6.3 Quality Control Samples

The project laboratory follows on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQOs). Internal laboratory controls to assess data quality for this project include surrogates, method blanks, matrix spike/matrix spike duplicates (MS/MSD), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to assess precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a brief narrative concerning the problem in the case narrative of their laboratory reports (see Appendix D).

Field quality control samples included trip blanks and a field duplicate water sample set. Laboratory-prepared trip blank samples (three soil and three water) accompanied the project sample jars and bottles from the laboratory to the site during sampling activities and back again to SGS. Estimate concentrations of methylene chloride were detected in the October 22, 2019 soil trip blank and the October 25, 2019 water trip blank. An estimate (J-flagged) concentration of methylene chloride was also detected in Sample B5S8. Therefore, the result was reported as non-detect at the limit of quantification (LOQ) and flagged "B" in Table 3. Methylene chloride was not detected in the corresponding groundwater samples.

One duplicate groundwater sample set (B2MW/B12MW) was collected to assess precision of the sampling and analysis processes using the calculated relative percent difference (RPD). With the exception of a DRO, the RPDs are within the ADEC recommended DQO of 30 percent for groundwater. Therefore, the DRO results are considered estimated and flagged “E” in Table 4.

Estimated concentrations of GRO, DRO, and methylene chloride were detected in at least one method blank associated with the soil samples. GRO was not detected in the corresponding samples. Estimated concentrations of methylene chloride and DRO were detected in Samples B5S8 and B6S3, respectively. Therefore, the sample results are reported as non-detect at the LOQ and flagged “B” on Table 3. The concentration of DRO in Sample B4S2 is greater than 5 times the blank concentration and less than or equal to 10 times the blank concentration. Therefore, the sample concentration is reported at the measured sample concentration and flagged “B” on Table 3. In addition, the concentration of DRO in Sample B7MW is greater than the LOQ and less than 5 times the blank concentration. The reported concentration is consistent with other off-property sample results, therefore, based on professional judgement, the sample result has been reported at the detected concentration and flagged “B” on Table 4.

Shannon & Wilson conducted a limited data assessment to review the laboratory’s compliance with precision, accuracy, sensitivity, and completeness to the data quality objectives. Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC’s Laboratory Data Review Checklist for each data package, which is included in Appendix D. No non-conformances that would adversely affect the quality or usability of the data were noted, with the exceptions discussed above.

7.0 CONCLUSIONS

Project activities consisted of advancing four soil borings, installing four groundwater monitoring wells, and collecting soil and groundwater samples. Contaminant concentrations exceeding the most stringent ADEC Method Two cleanup levels were not detected in the soil samples collected from the borings advanced on-property (Boring B6) or off-property (Borings B4, B5, and B7).

Groundwater impacted with benzene and 1,2-dichloroethane was documented in the groundwater sample collected from Monitoring Well B4MW, which was advanced west of the subject property at 800 West International Airport Road. The contaminant concentrations detected were significantly less than the concentrations detected in Well B2MW which is the closest on-property well (13.9 µg/L vs 57,900 µg/L benzene and 7.94 µg/L vs 205 µg/L 1,2-dichloroethane). Benzene exceeding the ADEC Table C cleanup level was identified in the groundwater sample collected from Well B6MW, which was advanced on the northeast property boundary. The concentration of benzene detected in Well B6MW (6.99 µg/L) is significantly less than the concentration (8,750 µg/L) detected in Well B1MWR, which is the closest on-

property well. Concentrations of the tested analytes exceeding the ADEC Table C cleanup levels were not detected in the samples collected from off-property Wells B5MW and B7MW.

Based on previous site characterization activities, impacted soil likely remains in the vicinity of the former USTs and existing north-central dispensers. In addition, impacted groundwater likely extends into West International Airport Road and Arctic Boulevard, but does not extend onto the adjacent parcels to the north and northwest. Impacted groundwater, with relatively low concentrations of benzene and 1,2-dichloroethane, is located on the adjacent parcel to the west, across Arctic Boulevard. An active automobile repair facility is located at this property and it is unknown whether this facility has contributed to the groundwater contamination identified at this location. There is also a potential that the vapor intrusion pathway is complete and may require additional evaluation if new structures are constructed onsite.

8.0 CLOSURE/LIMITATIONS

This report is prepared for the exclusive use of our client and their representatives in the study of this site. The findings presented within this report are based on the limited research, sampling, and analyses that were conducted. They should not be construed as definite conclusions regarding the site's soil or groundwater quality. As a result, the sampling, analyses, and data interpretations can provide you with only our professional judgment as to the environmental characteristics of this site, and in no way guarantee that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study unless specifically requested and authorized by Shoreside Petroleum Inc., or as required by law.

Shannon & Wilson has prepared the information in Appendix E, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our report.

We appreciate this opportunity to be of service and your continued confidence in our firm. If you have questions or comments concerning this submittal, please contact the undersigned at (907) 561-2120.

SHANNON & WILSON, INC.

Dan P. McMahon, PMP
Senior Associate

TABLE 1
SAMPLE LOCATIONS

Sample Number	Date	Sample Location (See Figures 1 and Appendix C)	Depth (feet bgs or BTOC)	Headspace (ppm) ^
Soil Samples				
Boring B4				
B4S1	10/22/2019	Boring B4, Sample S1	0-5	0.0
* B4S2	10/22/2019	Boring B4, Sample S2	5-10	1.2
B4S3	10/22/2019	Boring B4, Sample S3	10-15	0.2
B4S4	10/22/2019	Boring B4, Sample S4	15-20	0.0
B4S5	10/22/2019	Boring B4, Sample S5	20-25	0.4
Boring B5				
B5S1	12/30/2019	Boring B5, Sample S1	0-5	20.5
B5S2	12/30/2019	Boring B5, Sample S2	5-7.5	3.2
B5S3	12/30/2019	Boring B5, Sample S3	7.5-10	3.0
B5S4	12/30/2019	Boring B5, Sample S4	10-12.5	1.8
B5S5	12/30/2019	Boring B5, Sample S5	12.5-15	2.1
B5S6	12/30/2019	Boring B5, Sample S6	15-17.5	1.5
B5S7	12/30/2019	Boring B5, Sample S7	17.5-20	2.3
* B5S8	12/30/2019	Boring B5, Sample S8	20-22.5	1.8
B5S9	12/30/2019	Boring B5, Sample S9	22.5-25	2.6
Boring B6				
B6S1	10/22/2019	Boring B6 Sample S1	0-5	4.3
B6S2	10/22/2019	Boring B6 Sample S2	5-10	3.9
* B6S3	10/22/2019	Boring B6 Sample S3	10-15	6.0
B6S4	10/22/2019	Boring B6 Sample S4	15-20	3.4
Boring B7				
B7S1	2/25/2020	Boring B7 Sample S1	0-2.5	3.6
B7S1B	2/25/2020	Boring B7 Sample S1B	2.5-5	1.1
B7S2	2/25/2020	Boring B7 Sample S2	5-10	1.4
B7S3	2/25/2020	Boring B7 Sample S3	10-15	1.7
B7S4	2/25/2020	Boring B7 Sample S4	15-20	2.1
* B7S5	2/25/2020	Boring B7 Sample S5	20-25	2.5
Water Samples				
* B1MWR2	10/25/2019	Monitoring Well B1MWR2	18.02	-
* B2MW	10/27/2019	Monitoring Well B2MW	18.85	-
* B12MW	10/27/2019	Duplicate of Sample B2MW	18.85	-
* B3MW	10/25/2019	Monitoring Well B3MW	19.51	-
* B4MW	10/25/2019	Monitoring Well B4MW	17.02	-
* B5MW	1/3/2020	Monitoring Well B5MW	14.90	-
* B6MW	10/25/2019	Monitoring Well B6MW	16.62	-
* B7MW	3/7/2020	Monitoring Well B7MW	15.16	-
Quality Control Samples				
* TB	10/22/2019	Soil Trip Blank	-	-
* TB	12/30/2019	Soil Trip Blank	-	-
* STB	2/25/2020	Soil Trip Blank	-	-
* TB	10/25/2019	Water Trip Blank	-	-
* TB2	1/3/2020	Water Trip Blank	-	-
* WTB	3/7/2020	Water Trip Blank	-	-

Notes:

- * = Sample analyzed by the project laboratory (See Tables 3 and 4)
- ^ = Field screening instrument was a Thermo Environmental Instruments 580B photoionization detector (PID)
- = Measurement not applicable
- bgs = below ground surface
- BTOC = Below top of casing
- ppm = parts per million

TABLE 2
MONITORING WELL DEVELOPMENT & SAMPLING LOG

	Monitoring Well Number						
	B1MWR2	B2MW	B3MW	B4MW	B5MW	B6MW	B7MW
Development Data							
Development Date	-	-	-	10/25/2019	1/2/2020	10/25/2019	3/6/2020
Measured Depth to Water (ft below TOC)^	-	-	-	17.02	14.90	16.62	15.16
Total Depth of Well (ft below TOC)	-	-	-	23.44	24.92	23.54	25.23
Water Column in Well (ft)	-	-	-	6.42	10.02	6.92	10.07
Gallons per Foot	-	-	-	0.16	0.16	0.16	0.16
Water Column Volume (gallons)	-	-	-	1.03	1.60	1.11	1.61
Total Volume Pumped/Bailed (gallons)	-	-	-	23.5	11.3	8.4	5.8
Development Method	-	-	-	Surge Block and Submersible Pump	Surge Block and Submersible Pump	Surge Block and Submersible Pump	Surge Block and Submersible Pump
Water Level Measurement Data							
Date Water Level Measured	10/25/2019	10/27/2019	10/25/2019	10/25/2019	1/2/2020	10/25/2019	3/6/2020
Time Water Level Measured	12:31	12:39	12:21	12:54	15:00	12:43	10:05
Measured Depth to Water (ft below TOC)^	18.02	18.85	19.51	17.02	14.90	16.62	15.16
Sampling Data							
Date Sampled	10/25/2019	10/27/2019	10/25/2019	10/25/2019	1/3/2020	10/25/2019	3/7/2020
Time Sampled	22:55	14:05	21:30	16:44	12:05	23:42	11:05
Measured Depth to Water (ft below TOC)	18.02	18.85	19.51	17.02	14.90	16.62	15.16
Total Depth of Well (ft below TOC)	19.82	24.40	21.50	23.44	24.92	23.54	25.23
Water Column in Well (ft)	1.80	5.55	1.99	6.42	10.02	6.92	10.07
Gallons per Foot	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Water Column Volume (gallons)	0.29	0.89	0.32	1.03	1.60	1.11	1.61
Total Volume Pumped/Bailed (gallons)	1.4	1.4	1.5	23.5	11.3	8.4	5.8
Sampling Method	Submersible Pump	Submersible Pump	Submersible Pump	Submersible Pump	Submersible Pump	Submersible Pump	Submersible Pump
Diameter of Well Casing	2-inch	2-inch	2-inch	2-inch	2-inch	2-inch	2-inch
Water Quality Data ^^							
Temperature (°C)	8.85	8.02	8.54	9.08	5.60	7.65	3.24
pH (Standard Units)	6.31	6.85	6.02	6.54	4.57	6.82	5.62
Specific Conductivity (µS/cm)	4,370	1,910	1,710	1,670	651	768	1,754
Oxidation Reduction Potential (m/V)	-62	-153	34	-64	153	-25	133
Turbidity (NTU)	3.71	3.28	4.65	460	307	147	115
Remarks							
		Duplicate Sample B12MW	Well monument and cap damaged.	Purged dry during development	Purged dry during development	Purged dry during development	Purged dry during development

Notes:

Water quality parameters were measured with Hanna and Hach Water Quality Instruments

^ = Depth to water measurement prior to well survey

^^ = Water quality data at time of sampling

TOC = Top of casing

ft = Feet

m/V = Millivolts

NTU = Nephelometric Turbidity

°C = Degrees Celsius

µS/cm = Microsiemens per Centimeter

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level (mg/kg)**	Sample ID Number^ and Soil Sample Depth in Feet bgs or Sample Date (See Table 1, Figure 1, and Appendix C)						
			Soil Borings				Quality Control		
			Boring B4	Boring B5	Boring B6	Boring B7	Trip Blanks		
			B4S2 5-10	B5S8 20-22.5	B6S3 10-15	B7S5 20-25	TB 10/22/2019	TB 12/30/2019	STB 2/25/2020
PID Headspace Reading - ppm	580B PID	-	1.2	1.8	6.0	2.5	-	-	-
Gasoline Range Organics (GRO) - mg/kg	AK 101	300	<1.75	<2.00	<1.79	<2.21	<1.25	<1.26	<1.25
Diesel Range Organics (DRO) - mg/kg	AK 102	250	34.4 B	14.9 J	<24.9 B	16.8 J	-	-	-
Volatile Organic Compounds (VOCs)									
Benzene - mg/kg	EPA 8260C	0.022	<0.00875	<0.00995	<0.00895	<0.0111	<0.00625	<0.00630	<0.00625
Toluene - mg/kg	EPA 8260C	6.7	<0.0175	0.363	<0.0179	<0.0221	<0.0125	<0.0126	<0.0125
Ethylbenzene - mg/kg	EPA 8260C	0.13	<0.0175	<0.0199	<0.0179	<0.0221	<0.0125	<0.0126	<0.0125
Xylenes (total) - mg/kg	EPA 8260C	1.5	<0.0525	<0.0600	<0.0540	<0.0665	<0.0375	<0.0378	<0.0375
Methylene chloride - mg/kg	EPA 8260C	0.33	<0.0700	<0.160 B	<0.0715	<0.0885	0.0332 J	<0.0505	<0.0500
Other VOCs - mg/kg	EPA 8260C	Various	ND	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (PAHs)									
1-Methylnaphthalene - mg/kg	EPA 8270D-SIM	0.41	0.0121 J	<0.0166	<0.0156	0.0151 J	-	-	-
2-Methylnaphthalene - mg/kg	EPA 8270D-SIM	1.3	0.0161 J	<0.0166	<0.0156	0.0296 J	-	-	-
Chrysene - mg/kg	EPA 8270D-SIM	600	0.0133 J	<0.0166	<0.0156	<0.0164	-	-	-
Phenanthrene - mg/kg	EPA 8270D-SIM	39	0.0361	0.00925 J	<0.0156	0.0270 J	-	-	-
Pyrene - mg/kg	EPA 8270D-SIM	87	<0.0154	<0.0166	<0.0156	0.00866 J	-	-	-
Other PAHs - mg/kg	EPA 8270D-SIM	Various	ND	ND	ND	ND	-	-	-

Notes:

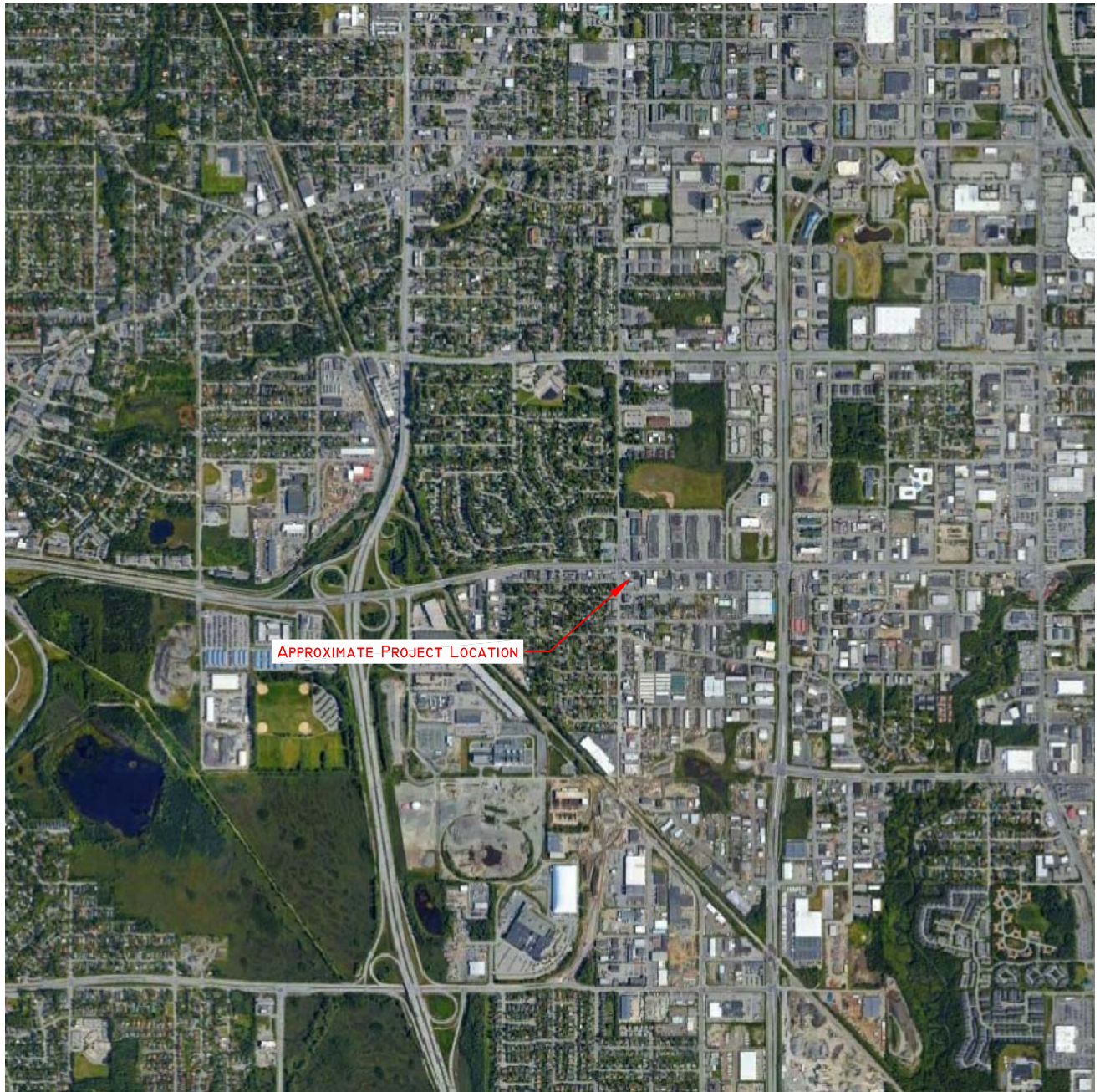
- ^ = Sample ID number preceded by "103798-" on the chain of custody form
- = Not applicable or sample not tested for this analyte
- * = See Appendix D for compounds tested, methods, and laboratory reporting limits
- ** = Soil cleanup level is the most stringent ADEC Method Two standard listed in Table B1 or B2, 18 AAC 75 (October 27, 2018), for the "under 40 inches (precipitation) zone"
- <1.75 = Analyte not detected; laboratory limit of detection of 1.75 mg/kg
- 0.363** = Analyte detected
- B = Analyte concentration potentially affected by a method or trip blank detection. See Appendix D for details.
- J = Estimated concentration less than the limit of quantitation. See the SGS laboratory report for more details.
- ppm = part per million
- ND = Not detected
- mg/kg = Milligram per kilogram

TABLE 4
SUMMARY OF WATER ANALYTICAL RESULTS

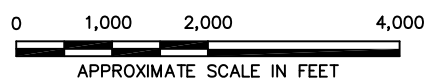
Parameter Tested	Method*	Cleanup Level (µg/L)**	Sample ID Number^, Sample Date, and Water Depth in Feet BTOC (See Tables 1 and 2, Figure 1, and Appendix C)										
			Monitoring Wells							Trip Blanks			
			B1MWR2 18.02	B2MW 18.85	B12MW ~ 18.85	B3MW 19.51	B4MW 17.02	B5MW 14.90	B6MW 16.62	B7MW 15.16	TB 10/25/2019	TB2 1/3/2020	WTB 3/7/2020
Gasoline Range Organics (GRO) - µg/L	AK 101	2,200	134,000	193,000	198,000	37.5 J	48.2 J	<50.0	124	<50.0	<50.0	<50.0	<50.0
Diesel Range Organics (DRO) - µg/L	AK 102	1,500	5,670	2,860 E	4,090 E	312 J	227 J	685	175 J	744 B	-	-	-
Volatile Organic Compounds (VOCs)													
Benzene - µg/L	EPA 8260C	4.6	8,750	57,900	57,900	<0.200	13.9	<0.200	6.99	<0.200	<0.200	<0.200	<0.200
Toluene - µg/L	EPA 8260C	1,100	31,400	33,900	33,800	<0.500	<0.500	0.344 J	27.7	<0.500	<0.500	<0.500	<0.500
Ethylbenzene - µg/L	EPA 8260C	15	6,220	3,350	3,380	<0.500	<0.500	<0.500	5.41	<0.500	<0.500	<0.500	<0.500
Xylenes (total) - µg/L	EPA 8260C	190	22,200	13,300	13,400	<1.50	<1.50	<1.50	19.0	<1.50	<1.50	<1.50	<1.50
1,2,4-Trimethylbenzene - µg/L	EPA 8260C	56	1,650	975	980	<0.500	<0.500	<0.500	1.27	1.32	<0.500	<0.500	<0.500
1,2-Dibromoethane - µg/L	EPA 8260C	0.075	<18.8	<18.8	<18.8	<0.0375	<0.0375	<0.0375	0.0333 J	<0.0375	<0.0375	<0.0375	<0.0375
1,2-Dichloroethane - µg/L	EPA 8260C	1.7	145 J	205 J	200 J	<0.250	7.94	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
1,3,5-Trimethylbenzene - µg/L	EPA 8260C	60	410 J	230 J	235 J	<0.500	<0.500	<0.500	0.389 J	0.493 J	<0.500	<0.500	<0.500
Chloroform - µg/L	EPA 8260C	2.2	<250	<250	<250	<0.500	<0.500	<0.500	2.13	<0.500	<0.500	<0.500	<0.500
Methylene chloride - µg/L	EPA 8260C	110	<1,250	<1,250	<1,250	<2.50	<2.50	<5.00	<2.50	<5.00	1.12 J	<5.00	<5.00
Naphthalene - µg/L	EPA 8260C	1.7	360 J	255 J	245 J	<0.500	<0.500	<0.500	0.472 J	0.476 J	<0.500	<0.500	<0.500
n-Butylbenzene - µg/L	EPA 8260C	1,000	<250	<250	<250	<0.500	<0.500	<0.500	<0.500	1.09	<0.500	<0.500	<0.500
n-Propylbenzene - µg/L	EPA 8260C	660	270 J	225 J	235 J	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Other VOCs - µg/L	EPA 8260C	Various	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene - µg/L	EPA 8270D-SIM	11	21.8	3.96	3.92	<0.0240	<0.0245	<0.0240	<0.0245	<0.0255 J-	-	-	-
2-Methylnaphthalene - µg/L	EPA 8270D-SIM	36	33.0	5.58	5.46	<0.0240	<0.0245	<0.0240	<0.0245	0.150 J-	-	-	-
Fluorene - µg/L	EPA 8270D-SIM	290	<0.0240	0.0514	0.0524	<0.0240	<0.0245	<0.0240	<0.0245	<0.0255 J-	-	-	-
Naphthalene - µg/L	EPA 8270D-SIM	1.7	285	104	101	<0.0481	0.0564 J	<0.0481	<0.0490	<0.0510 J-	-	-	-
Phenanthrene - µg/L	EPA 8270D-SIM	170	0.126	<0.0240	0.0361 J	<0.0240	<0.0245	<0.0240	<0.0245	<0.0255 J-	-	-	-
Other PAHs - µg/L	EPA 8270D-SIM	Various	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-

Notes:

- * = See Appendix D for compounds tested, methods, and laboratory reporting limits
- ** = Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (October 2018)
- ^ = Sample ID number preceded by "103798-" on the chain of custody form
- µg/L = micrograms per liter
- <0.500 = Analyte not detected; laboratory limit of detection of 0.500 µg/L
- 1,650** = Reported concentration exceeds the regulated cleanup level
- 21.8** = Analyte detected at a concentration less than the applicable ADEC cleanup level
- ND = Not detected
- = Not applicable or sample not tested for this analyte
- ~ = Field duplicate of Sample B2MW
- J = Estimated concentration less than the limit of quantitation. See Appendix D for details.
- J- = Results may be biased low due to surrogate failures. See Appendix D for details.
- E = Estimated concentration due to RPD failure. See the SGS laboratory report for more details.
- B = Analyte concentration potentially affected by a method blank detection. See Appendix D for details.
- BTOC = Below Top of Casing



Map adapted from aerial imagery provided with permission from Google Earth Pro™
Image date: July 2018



724 West International Airport Road
Anchorage, Alaska

VICINITY MAP

April 2020

103798-002



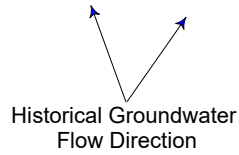
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 1

B5/B5MW

815 West International Airport Road

B7/B7MW
5121 Arctic Boulevard



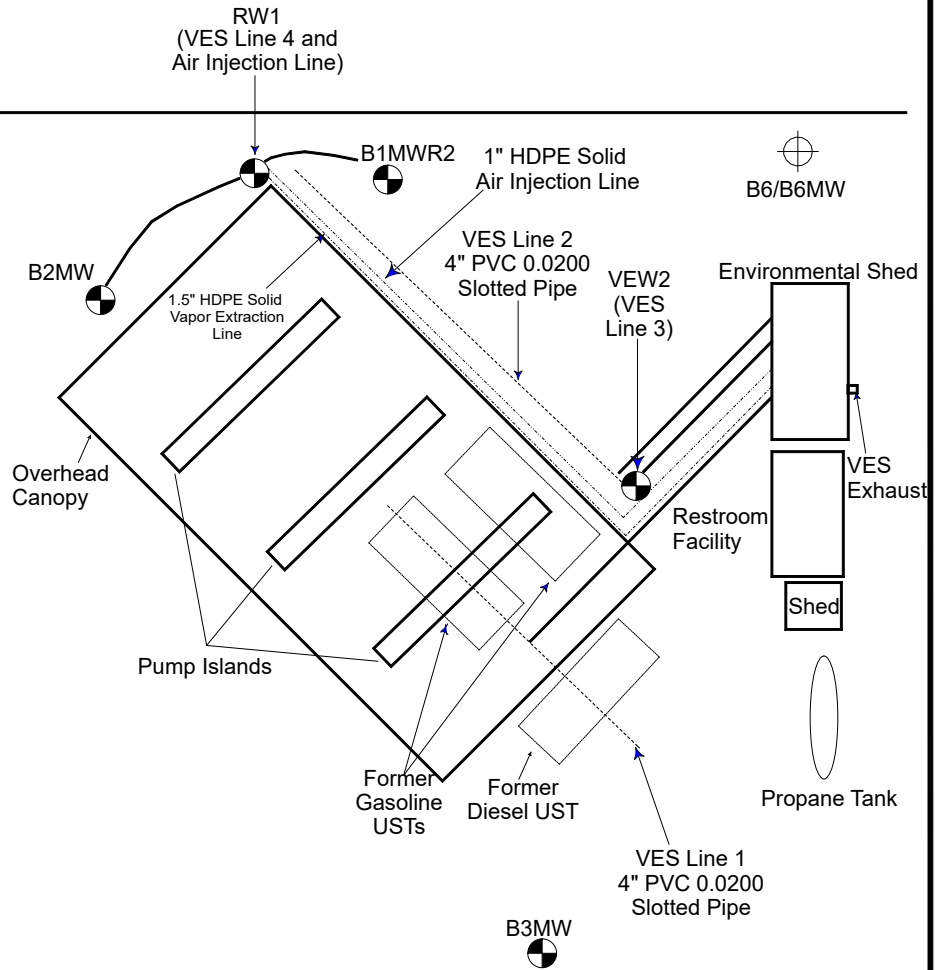
West International Airport Road

B4/B4MW

800 West International Airport Road

Arctic Boulevard

B6/B6MW



LEGEND

----- 4" PVC 0.0200 Slotted Pipe

———— 4" HDPE Solid Pipe

----- 1.5" HDPE Solid Vapor Extraction Line

----- 1" HDPE Solid Air Injection Line



B2MW

Approximate location of Monitoring Well B2MW installed by Shannon & Wilson.

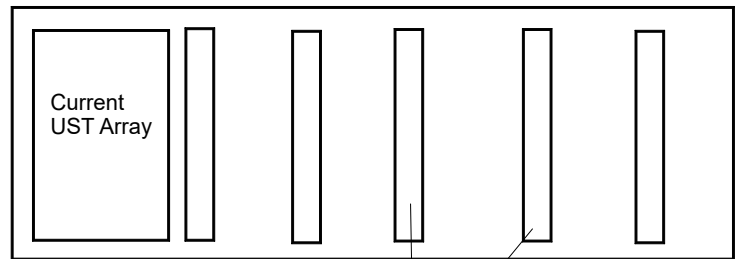


B4/B4MW

Approximate location of Boring B4/Monitoring Well B4MW installed by Shannon & Wilson during 2019/2020.

RW1 = Vapor Extraction Line 4 and Air injection line

VEW2 = Vapor Extraction Line 3



APPROXIMATE SCALE IN FEET

724 West International Airport Road
Anchorage, Alaska

SITE PLAN

April 2020

103798-002

SW SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 2

APPENDIX A
SITE PHOTOGRAPHS



Photo 1: Looking east at the advancement of Boring B5.
(December 30, 2019)



Photo 2: Looking south at the advancement of Boring B7.
(February 25, 2020)

724 West International Airport Road
Anchorage, Alaska

PHOTOS 1 AND 2

April 2020

103798-002



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

A-1

APPENDIX B
FIELD NOTES



LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 103798-001 Location: Garrett's Tesoro Weather: 36° mostly clear
Well No.: B1mWR2
Date: 10/25/19 Time Started: 22:05 Time Completed: 23:27
Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 12:31 Date of Depth Measurement: 10/25/19
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
Diameter of Casing: 18.02 2" Well Screen Interval: —
Total Depth of Well Below MP: 19.82 Product Thickness, if noted: —
Depth-to-Water (DTW) Below MP: 18.02
Water Column in Well: 1.80 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.29 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/25/19 Time Started: 22:20 Time Completed: 23:10
Three Well Volumes: 0.86 (Gallons in Well x 3)
Gallons Purged: 1.4 Depth of Pump (generally 2 ft from bottom): 19 ft
Max. Drawdown (generally 0.3 ft): 0.21 Pump Rate: 0.2

Well Purged Dry: BAZ 1838 Yes No (If yes, use Well Purged Dry Log)

Time	Gallons	Pump Rate (L/min)	DTW (ft BMP)	Drawdown (ft)	Temp (°C)	Sp. Cond. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mV)	Turb: (NTU)
22:22	0.2	0.2	18.64	0.26	8.72	8.63		5.91	164	593.8
22:25	0.3	0.2	18.56	0.18	8.59	7.53		5.97	45	276.7
22:28	0.4	0.2	18.58	0.20	8.74	7.30		6.00	-1	243.6
22:31	0.4	0.2	18.59	0.21	8.89	6.79		6.05	-18	123.2
22:34	0.5	0.2	18.59	0.21	8.97	5.98		6.17	-38	70.13
22:37	0.6	0.2	18.59	0.21	8.97	5.53		6.21	-47	39.13

SAMPLING DATA

Odor: Hydrocarbons Color: brown to clear
Sample Designation: 103798-B1mWR2 Time / Date: 22:55 10/25/19
QC Sample Designation: _____ Time / Date: _____
QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Submersible Pump / Other: mini whale #2
Sampling Method: Submersible Pump / Other: "

Water Quality Instruments Used/Manufacturer/Model Number Horiba & turb
Calibration Info (Time, Ranges, etc) 11:00 10/25/19

Remarks: _____

Sampling Personnel: JKW

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Continued from previous page

Job No: 103298-001 Location: Garrett's Tesoro Site: _____
 Well No.: R1MWR2
 Date: 10/25/19

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
22:40	0.7	0.2	18.59	0.21	8.88	5.19		6.24	-51	21.82
22:43	0.9	0.2	18.59	0.21	8.92	4.84		6.28	-56	12.56
22:47	1.1	0.2	18.59	0.21	8.90 ✓	4.66		6.29	-59	7.54 ✓
22:50	1.3	0.2	18.59	0.21	8.87 ✓	4.48		6.30 ✓	-61 ✓	4.63 ✓
22:54	1.4	0.2	18.59	0.21	8.85 ✓	4.37		6.31 ✓	-62 ✓	3.71 ✓
		Sample		22:55						

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10%
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10%	±0.1	±10	±10% or <5 NTU 10

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.
 ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.



LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 103798-001 Location: Garreri's Tesero Weather: light rain 42F
 Well No.: B2mw
 Date: 10/27/19 Time Started: 13:30 Time Completed: 14:48
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 12:39 Date of Depth Measurement: 10/27/19
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 24 Well Screen Interval: _____
 Total Depth of Well Below MP: 24.40 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 18.85
 Water Column in Well: 5.55 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 0.89 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/27/19 Time Started: 13:48 Time Completed: 14:21
 Three Well Volumes: 2.66 (Gallons in Well x 3)
 Gallons Purged: 1.4 Depth of Pump (generally 2 ft from bottom): ~ 20 ft
 Max. Drawdown (generally 0.3 ft): 0.11 Pump Rate: 0.5
 Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (µS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
13:52	0.2	0.4	18.85	0.11	8.11	1.87		6.82	-134	3.80
13:55	0.5	0.4	18.84	0.10	8.11	1.89		6.87	-148	2.67
13:58	0.6	0.5	18.81	0.07	8.06	1.90		6.86	-152	3.05
14:01	1.1	0.5	18.82	0.08	7.98	1.91		6.85	-152	2.60
14:04	1.4	0.5	18.82	0.08	8.02x	1.91x		6.85x	-153x	3.28x
		sample								

SAMPLING DATA

Odor: hydrocarbons Color: clear
 Sample Designation: 103798-B2mw Time / Date: 14:05 10/27/19
 QC Sample Designation: 103798-B2mw Time / Date: 14:35 10/27/19
 QA Sample Designation: _____ Time / Date: _____
 Evacuation Method: Submersible Pump / Other: mb; whale
 Sampling Method: Submersible Pump / Other: _____
 Water Quality Instruments Used/Manufacturer/Model Number: Horiba & turb
 Calibration Info (Time, Ranges, etc): 10/27/19 13:00
 Remarks: _____

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 103798-001 Location: _____ Weather: 37°F mostly clear
 Well No.: B3mw
 Date: 10/25/19 Time Started: 20:55 Time Completed: 21:55
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 12:21 Date of Depth Measurement: 10/25/19
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: _____
 Total Depth of Well Below MP: 21.50 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 19.51
 Water Column in Well: 1.99 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 0.32 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/25/19 Time Started: 21:11 Time Completed: 21:40
 Three Well Volumes: 0.96 (Gallons in Well x 3)
 Gallons Purged: 1.5 Depth of Pump (generally 2 ft from bottom): 20.5
 Max. Drawdown (generally 0.3 ft): 0.05 Pump Rate: 0.4

Well Purged Dry: BM Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (µS/cm)	DD: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
<u>21:14</u>	<u>0.3</u>	<u>0.4</u>	<u>19.58</u>	<u>0.04</u>	<u>8.41</u>	<u>1.80</u>		<u>5.98</u>	<u>73</u>	<u>147.9</u>
<u>21:17</u>	<u>0.5</u>	<u>0.4</u>	<u>19.59</u>	<u>0.05</u>	<u>8.44</u>	<u>1.78</u>		<u>5.99</u>	<u>69</u>	<u>58.15</u>
<u>21:20</u>	<u>0.8</u>	<u>0.4</u>	<u>19.59</u>	<u>0.05</u>	<u>8.53</u>	<u>1.75</u>		<u>6.00</u>	<u>48</u>	<u>23.64</u>
<u>21:23</u>	<u>1.0</u>	<u>0.4</u>	<u>19.58</u>	<u>0.04</u>	<u>8.53 v</u>	<u>1.74 v</u>		<u>6.01 v</u>	<u>40 v</u>	<u>11.94</u>
<u>21:26</u>	<u>1.3</u>	<u>0.4</u>	<u>19.58</u>	<u>0.04</u>	<u>8.56 v</u>	<u>1.72 v</u>		<u>6.02 v</u>	<u>34 v</u>	<u>5.24</u>
<u>21:29</u>	<u>1.5</u>	<u>0.4</u>	<u>19.58</u>	<u>0.04</u>	<u>8.54 u</u>	<u>1.71 u</u>		<u>6.02 u</u>	<u>34 u</u>	<u>4.65</u>

Sample

SAMPLING DATA

Odor: None Color: light brown to clear
 Sample Designation: 103798-001 B3mw Time / Date: 21:30 10/25/19
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Submersible Pump / Other: Man. white w/
 Sampling Method: Submersible Pump / Other: v

Water Quality Instruments Used/Manufacturer/Model Number Horiba S turb
 Calibration Info (Time, Ranges, etc) 11:00 10/25/19

Remarks: Monument lid upside down & covered in mud. Plug was off well & broken mud surrounding pipe

Sampling Personnel: JFK

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



Shannon & Wilson, Inc.

WELL DEVELOPMENT LOG

Job No: 103798-001 Location: Grattis Tesoro Weather: Partly cloudy 44°F
 Concern: _____ Well No.: B4MW
 Develop Date: 10/25/19 Time Started: 12:50 Time Completed: 16:16

PURGING DATA

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Time of Depth Measurement: 12:54
 Diameter of Casing: 1" 2"
 Total Depth of Well Below MP: 23.44
 Depth-to-Water (DTW) Below MP: 17.02
 Water Column in Well: 6.42 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 1.03 (Water Column in Well x Gallons per foot)
 Three Well Volumes: 3.08 (Gallons in Well x 3)
 Gallons Purged: 23.3

DEVELOPMENT DATA

Odor: None Color: dark grey-brown

Time:	Gallons:	+/- 1% Temp: (°C)	+/- 3% Sp. Cond.: (mS/cm)	+/- 0.1 pH: (S.U.)	ORP: (mV)	<10 NTU or Turbidity 10% (ntu)	
13:14	1.7	8.95	1.25	6.14	-11	>1000	low
13:32	2.5	8.26	1.45	6.37	-106	>1000	20.58
13:46	3.9	7.77	1.48	6.39	-96	>1000	—
14:00	5.2	7.52	1.52	6.47	-91	>1000	21.80
14:13	6.7	7.36	1.54	6.48	-75	>1000	22.8
Surge/purge (nd) 14:25	8.1	7.28	1.59	6.55	-49	>1000	23.1
5/5 (1.8) 14:39	9.9	7.25	1.65	6.52	-58	>1000	23.1
5/4 (1.6) 14:52	11.5	7.27	1.68	6.54	-48	>1000	23.1

Surging	Surging Time (minutes)	Gallons Purged	Purging Time (minutes)
1	13:08 - 13:03 (5)	1.7	13:14 - 13:18 (4)
2	13:23 - 13:26 (3)	1.8	13:27 - 13:32 (5)
3	13:35 - 13:38 (3)	1.7	13:40 - 13:45 (5)
4	13:49 - 13:52 (3)	1.3	13:54 - 13:59 (5)
5	14:01 - 14:04 (3)	1.5	14:06 - 14:11 (5)
6	14:15 - 14:20 (5)	1.4	14:21 - 14:25 (4)

Evacuation Method: Proactive Pump / Other: Mini whale Surge Block: pvc

Remarks: _____

Sampling Personnel: J/K/H

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



Shannon & Wilson, Inc.

WELL DEVELOPMENT LOG

Job No: 103798-001 Location: Garrett's Tower Weather: Partly Cloudy 44°F
Concern: _____ Well No.: B4MW
Date: 10/25/19 Time Started: 12:50 Time Completed: 16:16

DEVELOPMENT DATA CONTINUED

Surge/purge (gal)	Time:	Gallons:	Temp: (°C)	Sp. Cond.: (mS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)	
5/4 (1.6)	15:05	13.2	7.24	1.69	6.55	-52	71000	dhw 23.1
5/4 (1.6)	15:20	14.8	7.24	1.70	6.56	-50	71000	22.0
5/5 (2.4)	15:34	17.2	7.26	1.71	6.58	-42	71000	21.2
5/5 (2.1)	15:48	19.3	7.84	1.70	6.56	-30	71000	21.1
3/5 (1.9)	15:58	21.2	7.39	1.72	6.58	-36	71000	21.1
3/5 (2.1)	16:11	23.3	7.32	1.73	6.64	-15	7100	21.1

Remarks: _____

Sampling Personnel: JKH



WELL PURGED DRY LOG

Shannon & Wilson, Inc.

Job No: 103798-001 Location: Garretts Tesoro Weather: 30's partly cloudy
 Concern: _____ Well No.: B4MW
 Date: 10/25/19 Time Started: 16:16 Time Completed: 17:17

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 12:59 Date of Depth Measurement: 10/25/19
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: _____
 Total Depth of Well Below MP: 23.44 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 17.02
 Water Column in Well: 6.42 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 1.03 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/25/19 Time Started: 16:39 Time Completed: 16:53
 80% Recovery Water Column: 5.14 (Water Column in Well x 0.8)
 80% Recovery DTW: 18.30 (Initial DTW + (Water Col. - 80% Recovery Water Col.)

Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
<u>16:11</u>	<u>16:37</u>	<u>17.47</u>	<u>0.3</u> ^{gpm} 0.3

FIELD PARAMETERS AT TIME OF SAMPLING

pump depth 19.2

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft BMP):	Temp: (°C)	Sp. Cond.: (uS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
<u>16:42</u>	<u>0.2</u>	<u>0.3</u>	<u>17.92</u>	<u>0.90</u>	<u>9.08</u>	<u>1.67</u>	<u>6.54</u>	<u>-64</u>	<u>459.7</u>

SAMPLING DATA

Odor: None Color: cloudy
 Sample Designation: 103798-B4MW Time / Date: 16:44 10/25
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Whale Pump / Bladder Pump / Other: min: whale
 Sampling Method: Whale Pump / Bladder Pump / Other: //

Remarks: _____

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



Shannon & Wilson, Inc.

WELL DEVELOPMENT LOG

Job No: 103798-002

Location: _____

Weather: OVERCAST 8°F

Concern: _____

Well No.: B5MW

Develop Date: 1/2/20

Time Started: 14:57

Time Completed: 18:30

PURGING DATA

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____

Time of Depth Measurement: _____

Diameter of Casing: 1" 2"

Total Depth of Well Below MP: 24.92

Depth-to-Water (DTW) Below MP: 14.90

Water Column in Well: 10.02 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 1.60 (Water Column in Well x Gallons per foot)

Three Well Volumes: 4.81 (Gallons in Well x 3)

Gallons Purged: 11.1

DEVELOPMENT DATA

Odor: None Color: dark gray

Time:	Gallons:	Temp: (°C)	Sp. Cond.: (µS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)	dtw
15:28	2.1	6.24	621	5.41	163.4	71000	19.73
15:44	4.1	6.12	610	4.17	190.5	>1000	—
15:57	5.6	5.69	642	4.23	182.6	>1000	—
16:14	6.9	5.34	654	3.90	198.5	71000	22.70
16:29	8.0	4.90	672	3.95	195.1	>1000	23.55
16:47	8.6	4.23	643	3.64	208.0	>1000	23.73
18:20 (1.9)	10.4	4.66	666	5.90	108.1	71000	—
18:22	10.6	4.60	615	4.25	181.4	71000	—
18:27 (1.1)	11.1	4.37	592	4.13	182.1	>1000	—

Surging	Surging Time (minutes)	Gallons Purged	Purging Time (minutes)
1	15:14 - 15:19 (5)	2.1	15:22 - 15:27 (5)
2	15:33 - 15:38 (5)	2.0	15:38 - 15:43 (5)
3	15:44 - 15:49 (5)	1.5	15:50 - 15:55 (5)
4	15:59 - 16:04 (5)	1.3	16:07 - 16:12 (5)
5	16:15 - 16:20 (5)	1.1	16:22 - 16:27 (5)
6	16:33 - 16:38 (5)	0.6	16:40 - 16:44 (4)

Evacuation Method: Proactive Pump / Other: mini whole Surge Block: pvc

Remarks: 16:50 - take purge water to 55 gallon drum, dtw = 20.39
@ 18:13 restart 18:17; purge dry 18:27

Sampling Personnel: JFH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



WELL PURGED DRY LOG

Shannon & Wilson, Inc.

Job No: 103798-002 Location: _____ Weather: clear 69°
 Concern: _____ Well No.: B5MW
 Date: 1/3/20 Time Started: 11:45 Time Completed: 12:30

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 15:00 Date of Depth Measurement: 1/2/20
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: —
 Total Depth of Well Below MP: 24.92 Product Thickness, if noted: —
 Depth-to-Water (DTW) Below MP: 14.90
 Water Column in Well: 10.02 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 4.91 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 1/3/19 Time Started: 12:03 Time Completed: 12:14
 80% Recovery Water Column: 8.016 (Water Column in Well x 0.8)
 80% Recovery DTW: 16.91 (Initial DTW + (Water Col. - 80% Recovery Water Col.)

Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
<u>18:27 (1/2/20)</u>	<u>11:58 (1/3/20)</u>	<u>14.95</u>	<u>0.5</u>

FIELD PARAMETERS AT TIME OF SAMPLING

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft BMP):	Temp: (°C)	Sp. Cond.: (uS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
<u>12:05</u>	<u>0.2</u>	<u>0.5</u>	<u>—</u>	<u>—</u>	<u>5.60</u>	<u>651</u>	<u>4.57</u>	<u>153.2</u>	<u>306.8</u>

SAMPLING DATA

Odor: none Color: clear
 Sample Designation: 103798-B5MW Time / Date: 12:05 1/3/20
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Whale Pump / Bladder Pump / Other: mini whale
 Sampling Method: Whale Pump / Bladder Pump / Other: ''

Remarks: 11:58 dtw = 14.95 ; > 80% sample 12:05
pump on 12:03, off 12:14
 Sampling Personnel: SKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



WELL DEVELOPMENT LOG

Shannon & Wilson, Inc.

Job No: 103798-001 Location: _____ Weather: 30's
 Concern: _____ Well No.: B6mw
 Develop Date: 10/25/19 Time Started: 14:00 Time Completed: 20:51

PURGING DATA

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Time of Depth Measurement: 12:43
 Diameter of Casing: 1" 2"
 Total Depth of Well Below MP: 23.44 23.54
 Depth-to-Water (DTW) Below MP: 6.42 6.92 (Total Depth of Well Below MP - DTW Below MP)
 Water Column in Well: 0.16
 Gallons per foot: _____
 Gallons in Well: 1.03 1.11 (Water Column in Well x Gallons per foot)
 Three Well Volumes: 3.08 3.32 (Gallons in Well x 3)
 Gallons Purged: 25.3 8.2

DEVELOPMENT DATA

Odor: none Color: light brown

Time:	Gallons:	Temp: (°C)	Sp. Cond.: (mS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)	
18:36	2.6	8.29	0.650	6.61	186	71000	low
18:48	3.4	7.86	0.724	6.71	231	71000	23.0
19:05	4.1	7.57	0.545	6.99	209	71000	23.9
19:19	4.7	7.22	0.759	6.90	245	71000	23.0
19:33	5.2	7.01	0.752	6.85	246	71000	23.0
19:48	5.7	7.01	0.756	6.87	259	71000	23.0
19:59	6.2	7.54	0.747	6.85	216	71000	
20:15	6.7	8.19	0.745	6.62	136	635.4	

Surging	Surging Time (minutes)	Gallons Purged	Purging Time (minutes)
1	18:15 - 18:18 (3)	2.6	18:31 - 18:36 (5)
2	18:38 - 18:42 (4)	1.8	18:43 - 18:48 (5)
3	18:51 - 18:56 (5)	0.7	19:00 - 19:03 (3)
4	19:06 - 19:11 (5)	0.16	19:15 - 19:18 (3)
5	19:22 - 19:27 (5)	0.5	19:29 - 19:32 (3)
6	19:34 - 19:39 (5)	0.5	19:41 - 19:45 (4)

Evacuation Method: Proactive Pump / Other: mini whale Surge Block: pvc

Remarks: _____

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



Shannon & Wilson, Inc.

WELL DEVELOPMENT LOG

Job No: 103798-001 Location: _____ Weather: 30's
 Concern: _____ Well No.: B6mw
 Date: 10/25/19 Time Started: _____ Time Completed: _____

DEVELOPMENT DATA CONTINUED

Time:	Gallons:	Temp: (°C)	Sp. Cond.: (mS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)	
<u>20:20</u>	<u>7.2</u>	<u>8.07</u>	<u>0.755</u>	<u>6.67</u>	<u>132</u>	<u>360</u>	
<u>20:28</u>	<u>7.5</u>	<u>7.90</u>	<u>0.759</u>	<u>6.69</u>	<u>122</u>	<u>400.4</u>	
<u>20:32</u>	<u>7.8</u>	<u>7.77</u> ✓	<u>0.765</u> ✓	<u>6.69</u> ✓	<u>122</u>	<u>426.1</u> ✓	
<u>20:35</u>	<u>8.0</u>	<u>7.78</u> ✓	<u>0.765</u> ✓	<u>6.69</u> ✓	<u>137</u>	<u>387.6</u> ✓	
<u>20:39</u>	<u>8.2</u>	<u>8.04</u> ✓	<u>0.753</u> ✓	<u>6.68</u> ✓	<u>149</u>	<u>358.2</u> ✓	<u>draw 22.8</u>

Remarks: _____

Sampling Personnel: JLH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



WELL PURGED DRY LOG

Shannon & Wilson, Inc.

Job No: 103798-001 Location: _____ Weather: 30's mostly clear
 Concern: _____ Well No.: B6MW
 Date: 10/25/19 Time Started: 23:30 Time Completed: 24:23

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 12:43 Date of Depth Measurement: 10/25/19
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: _____
 Total Depth of Well Below MP: 23.54 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 16.62
 Water Column in Well: 6.92 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 1.1 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/25/19 Time Started: 23:38 Time Completed: 23:54
 80% Recovery Water Column: 5.54 (Water Column in Well x 0.8)
 80% Recovery DTW: 18.00 (Initial DTW + (Water Col. - 80% Recovery Water Col.)
pump depth = 19.61

Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
<u>20:39</u>	<u>23:36</u>	<u>17.13</u>	<u>0.3</u>

FIELD PARAMETERS AT TIME OF SAMPLING

Time: 23:39 Gallons: 0.2 Pump Rate (L/min): 0.3 DTW (ft BMP): 17.79 Drawdown (ft BMP): - Temp: (°C) 7.65 Sp. Cond.: (µS/cm) 0.768 pH: (S.U.) 6.82 ORP: (mV) -25 Turb: (NTU) 146.5

after sample done 18.15 @ 23:54

SAMPLING DATA

Odor: none Color: clear
 Sample Designation: 103798-B6MW Time / Date: 23:42 10/25/19
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Whale Pump/Bladder Pump / Other: mini whale
 Sampling Method: Whale Pump/Bladder Pump / Other: 1

Remarks: _____

Sampling Personnel: SKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



WELL DEVELOPMENT LOG

Shannon & Wilson, Inc.

Job No: 103798 Location: GARRETT'S TEST RD Weather: 5° clear
 Concern: _____ Well No.: B7MW
 Develop Date: 3/6/20 Time Started: 1020 Time Completed: 1320

PURGING DATA

Measuring Point (MP) Top of PVC Casing Top of Steel Protective Casing / Other: _____
 Time of Depth Measurement: 1005
 Diameter of Casing: 1" 2"
 Total Depth of Well Below MP: 25.23
 Depth-to-Water (DTW) Below MP: 15.16
 Water Column in Well: NR 10.05 10.07 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 1.61 (Water Column in Well x Gallons per foot)
 Three Well Volumes: 4.83 (Gallons in Well x 3)
 Gallons Purged: 5.6

DEVELOPMENT DATA

Odor: None observed Color: Dark grey (silty)

Time:	Gallons:	Temp: (°C)	Sp. Cond.: (mS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
<u>1030</u>	<u>1.5</u>	<u>3.52</u>	<u>1063</u>	<u>5.59</u>	<u>135.3</u>	<u>>1000</u>
<u>1055</u>	<u>3.0</u>	<u>4.85</u>	<u>1040</u>	<u>5.10</u>	<u>145.9</u>	<u>>1000</u>
<u>1110</u>	<u>4.0</u>	<u>3.23</u>	<u>1584</u>	<u>5.17</u>	<u>146.8</u>	<u>>1000</u>
<u>—</u>	<u>* well Purged Dry *</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>1207</u>	<u>4.5</u>	<u>2.77</u>	<u>1537</u>	<u>5.18</u>	<u>154.3</u>	<u>>1000</u>
<u>—</u>	<u>* well Purged Dry *</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>NR 1300</u>	<u>—</u>	<u>NR</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>1236</u>	<u>4.9</u>	<u>3.80</u>	<u>1431</u>	<u>5.57</u>	<u>128.4</u>	<u>>1000</u>

Surging	Surging Time (minutes)	Gallons Purged	Purging Time (minutes)	DTW
1	1020-1025	1.5	1025-1030	
2	1045-1050	1.5	1050-1055	
3	1056-1101	1.0	1105-1110	23.90
* Purged dry	4	0.2	1120-1121	* purged dry*
Purged dry	5	0.5	1206-1207	24.93
Purged dry	6	0.4	1234-1235	25.10

Evacuation Method: Proactive Pump / Other: mini whale Surge Block: PVC

Remarks: well purged dry @ 1121, 1207, 1235, 1300, 1320. waited 20-30 minutes for recharge and continued.

Sampling Personnel: AJR

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



Shannon & Wilson, Inc.

WELL DEVELOPMENT LOG

Job No: 103798 Location: CARRETT'S PESORO Weather: 5° clear
 Concern: _____ Well No.: B7MW
 Date: 3/10/20 Time Started: 1020 Time Completed: 1320

DEVELOPMENT DATA CONTINUED

Time:	Gallons:	Temp: (°C)	Sp. Cond.: (mS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
<u>1300</u>	<u>5.3</u>	<u>3.39</u>	<u>1542</u>	<u>5.94</u>	<u>107.2</u>	<u>>1000</u>
<u>1320</u>	<u>5.6</u>	<u>2.36</u>	<u>15.94</u>	<u>5.64</u>	<u>105.1</u>	<u>>1000</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

Remarks: _____

Sampling Personnel: AJK

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23



WELL PURGED DRY LOG

Shannon & Wilson, Inc.

Job No: 103798-002 Location: GARRETS TESSRO Weather: 15° overcast
 Concern: _____ Well No.: B7MW
 Date: 3/7/20 Time Started: 1030 Time Completed: 1200

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: AK 1045 1005 Date of Depth Measurement: 3/6/20
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: _____
 Total Depth of Well Below MP: 25.23 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: AK 15.33 15.10
 Water Column in Well: 10.07 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.14
 Gallons in Well: 1.61 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 3/7/20 Time Started: 1100 Time Completed: 1120
 80% Recovery Water Column: 8.06 (Water Column in Well x 0.8)
 80% Recovery DTW: 17.17 (Initial DTW + (Water Col. - 80% Recovery Water Col.)

Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
1320 (3/6/20)	10:45 (3/7/20)	15.33	0.3

FIELD PARAMETERS AT TIME OF SAMPLING

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft BMP):	Temp: (°C)	Sp. Cond.: (uS/cm)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
<u>1100</u>	<u>0.2</u>	<u>0.3</u>	<u>15.68</u>	<u>-</u>	<u>3.24</u>	<u>1754</u>	<u>5.62</u>	<u>1326</u>	<u>115.3</u>

SAMPLING DATA

Odor: None Color: 1105 cloudy 3/7/20
 Sample Designation: 103798-B7MW Time / Date: 1105 / 3/7/20
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Whale Pump/Bladder Pump / Other: _____
 Sampling Method: Whale Pump/Bladder Pump / Other: _____

Remarks: _____


Sampling Personnel: AJR

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

PROBING COMPANY/DRILLER: DISCOVERY
 PROBE RIG EQUIPMENT: GEO PROBE
 PROBING METHOD: DIRECT PUSH
 PROBE DIAM.: 2" TYP. RUN LENGTH: 5'
 WEATHER DURING DRILLING: OVERCAST 40°F 35°F

JOB NO: 103798-001 PROBE NO: B4
 JOB NAME: GARRETT'S TESORO
 LOGGED BY: JCT
 LOCATION: 724 W. INCL. ELEV.:
 START DATE: 10/22/19 END DATE: 10/22/19

PROBE RUN AND SAMPLE DATA

TIME DATE	RUN NO.	RUN DEPTH FROM TO	LENGTH RECOVERED	FIELD CLASSIFICATION AND SKETCH [density/consistency; color; slightly, minor, MAJOR, then trace constituents; moisture; structure; other; USCS classification (geology)]	PID READING	SAMPLE NO.	SAMPLE DEPTH	FROM TO		SAMPLE PURPOSE OR COMMENT
								FROM	TO	
9:55 10/22	1	0 5	3'	 <p>Top 2' asphalt 6" of the sand w/ gravel ben Brown to gray silt, moist</p>	0	B4 51				
10:08	2	5 10	4'	<p>Top 1 ft brown sand 3 ft brown - light brown silt moist</p>	1.2	B4 52				
10:15	3	10 15	4.5'	<p>Brown to gray silt moist only 1 sample collected since same material in sample</p>	0.2	B4 53				
10:30	4	15 20	4.5'	<p>Gray silt, moist to wet. Possible gravel at 19 to 20'.</p>	0	B4 54				
10:40	5	20 25	4.5'	<p>Gray silt to 24 then gray sand moist to wet.</p>	0.4	B4 55				
				<p>Hard to determine water interface in soil. Set well from 15-25 based on water level of 19' LGS in well B2 on on Garrett's property.</p>						

SUMMARY FIELD LOG OF GEOPROBE

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):

SUMMARY OF TIME

PROBE/SAMPLE _____ hrs. STANDBY: _____ hrs.
 SETUP/CLEANUP: _____ hrs. DECON: _____ hrs.
 OTHER: _____

PROBE NO: B4 SHEET 1 OF 1

MONITORING WELL CONSTRUCTION DETAILS

Shannon & Wilson, Inc.

Job No: 103798-001 Project: Garrett's Tesoro

Weather: 36°F overcast

Well No.: B4 MW

Date: 10/22/19 Time Started: 11:00 Time Completed: 12:15

WELL DATA:

Pipe Type: PVC Sched 40
 Diameter: 2"
 Total Depth (ft bgs): 24 ft
 Well Screen Interval (feet): ~~14-24 ft~~ bgs 10 ft
 Top of Well Screen (ft bgs): 14 ft
 Slot size: 0.010
 Casing Connection: threaded w/o ring
 Depth below surface: 0.42' N/A
 Casing stickup: NA N/A

PACKING MATERIAL:

	Depth below ground surface:	
	From	To
Soil Cuttings:	<u>10</u>	<u>4"</u>
Sand (20-40):	<u>4"</u>	<u>1'</u>
Bentonite chips:	<u>1'</u>	<u>12'</u>
Sand (20-40):	<u>12'</u>	<u>24'</u>

MONUMENT:

Flush Mount Post
 Monument height: N/A
 Monument Diameter: 8" N/A

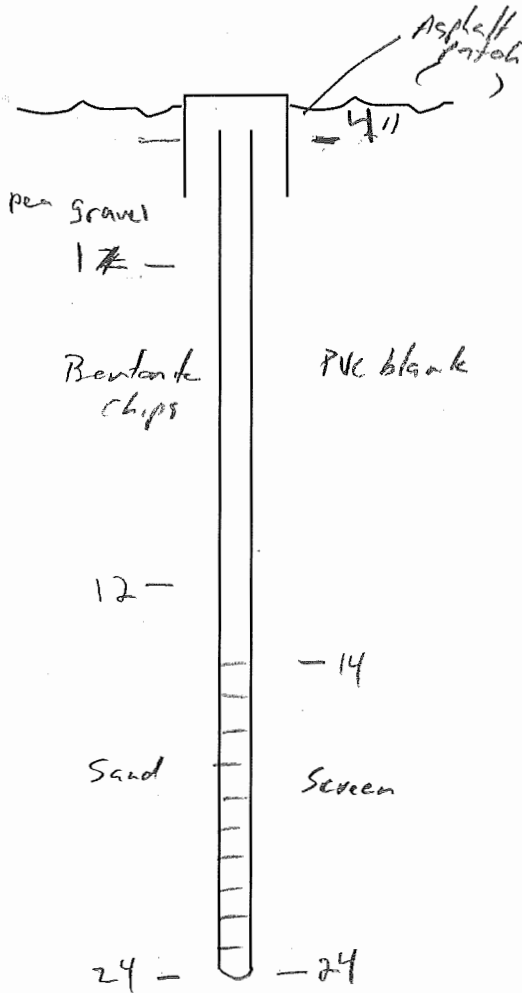
LOCK:

Type: NA
 Combination: NA
 Length cutoff last section:

Remarks:

Time between installation/development:

Engineer or Geologist:



PROBING COMPANY/DRILLER: Discovery
 PROBE RIG EQUIPMENT: Geo Probe
 PROBING METHOD: Direct Push
 PROBE DIAM.: 2" TYP. RUN LENGTH.: 5'
 WEATHER DURING DRILLING: Overcast 30°F

JOB NO: 103798-001 PROBE NO: B5
 JOB NAME: Garrett's Tesoro
 LOGGED BY: JKH
 LOCATION: _____ ELEV.: _____
 START DATE: 12/30/19 END DATE: _____

PROBE RUN AND SAMPLE DATA

TIME DATE	RUN NO.	RUN DEPTH FROM TO	LENGTH RECOVERED	FIELD CLASSIFICATION AND SKETCH [density/consistency; color; slightly, minor, MAJOR, then trace constituents; moisture; structure; other; USCS classification (geology)]	PID READING	SAMPLE NO.	SAMPLE DEPTH FROM TO	SAMPLE PURPOSE OR COMMENT
12/30/19 11:32	1	0 5	5'	0-1.5 ft top soil - dark brown sand & silt green 1-4.5 Brown silt & sand moist (top 1' green) 4.5-5 gray silt	20.5	B5S1		
11:40	2	5 10	4'	5-2ft gray silt moist 2-4ft brown silt moist/wet brown/grey silt/sand moist/wet	3.2 3.0	B5S2 B5S3		
11:55	3	10 15	5'		1.8	B5S4		
					2.1	B5S5		
12:08	4	15 20	5'	same	1.5 2.3	B5S6 B5S7		
12:22	5	20 25	5'	same water ~ 23 ft	1.4 2.6	B5S8 B5S9		

SUMMARY FIELD LOG OF GEOPROBE

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):

water ~ 23 ft

SUMMARY OF TIME

PROBE/SAMPLE _____ hrs. STANDBY: _____ hrs.
 SETUP/CLEANUP: _____ hrs. DECON: _____ hrs.
 OTHER: _____

PROBE NO: B5 SHEET 1 OF 1



MONITORING WELL CONSTRUCTION DETAILS

Shannon & Wilson, Inc.

Job No: 103798-001 Project: Garrett's Teraso

Weather: 30°F overcast

Well No.: _____

Date: 12/30/19 Time Started: 12:40 Time Completed: 14:20

WELL DATA:

Pipe Type: PVC sched. 40
Diameter: 2"
Total Depth (ft bgs): 25 ft
Well Screen Interval (feet): 10 ft
Top of Well Screen (ft bgs): 15 ft
Slot size: 0.010
Casing Connection: threaded w/o-ring
Depth below surface: _____ N/A
Casing stickup: NA N/A

PACKING MATERIAL:

	Depth below ground surface:	
	From	To
Soil Cuttings:	_____	_____
Sand (20-40):	_____	_____
Bentonite chips:	_____	_____
Sand (20-40):	_____	_____

MONUMENT:

Flush Mount Post
Monument height: _____ N/A
Monument Diameter: _____ N/A

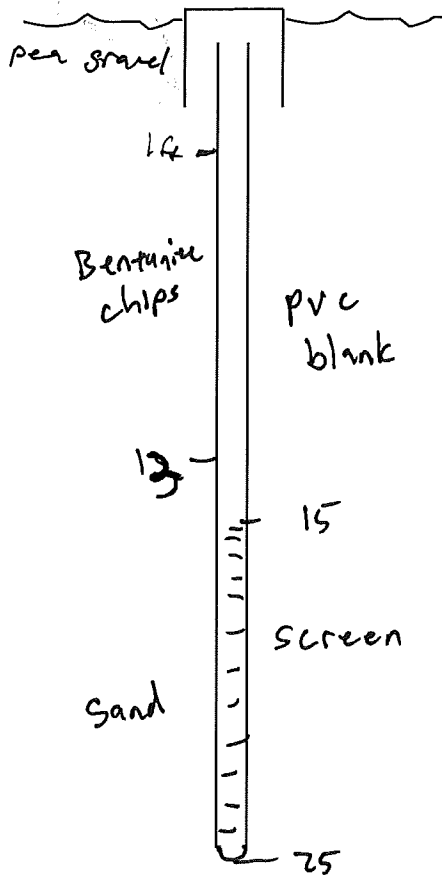
LOCK:

Type: NA
Combination: NA
Length cutoff last section: _____

Remarks: _____

Time between installation/development: _____

Engineer or Geologist: _____



PROBING COMPANY/DRILLER: <u>Discovery</u> PROBE RIG EQUIPMENT: <u>Geo Probe</u> PROBING METHOD: <u>Direct Push</u> PROBE DIAM.: <u>2"</u> TYP. RUN LENGTH.: <u>5'</u> WEATHER DURING DRILLING: <u>Overcast 40's</u>	JOB NO: <u>103798-001</u> PROBE NO: <u>B6</u> JOB NAME: <u>Garrett's Tesoro</u> LOGGED BY: <u>JKV</u> LOCATION: <u>7</u> ELEV.: _____ START DATE: <u>10/22/19</u> END DATE: <u>10/22/19</u>
---	---

PROBE RUN AND SAMPLE DATA

TIME DATE	RUN NO.	RUN DEPTH FROM TO	LENGTH RECOVERED	FIELD CLASSIFICATION AND SKETCH [density/consistency; color; slightly, minor, MAJOR, then trace constituents; moisture; structure; other; USCS classification (geology)]	PID READING	SAMPLE NO.	SAMPLE DEPTH	FROM TO	SAMPLE PURPOSE OR COMMENT
14:22	2	5 10	4' +1' sluff	top 2 ft Brown silt, moist bottom 2 ft Brown silt with sand (2" layers interbedded) moist	3.9	B652			
14:28	3	10' 15'	4'	1' Brown sand ^{JKV} w/ silt, moist 3' Brown silt w/ sand moist	6.0	B653			
14:47	4	15' 20	5'	Same as sample 3 (bottom 3') moist to wet + water w/ 9 ft hard to tell. but mid B2 dur. 196	3.4	B654 B6514			

SUMMARY FIELD LOG OF GEOPROBE

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):
utility issues at beginning

SUMMARY OF TIME

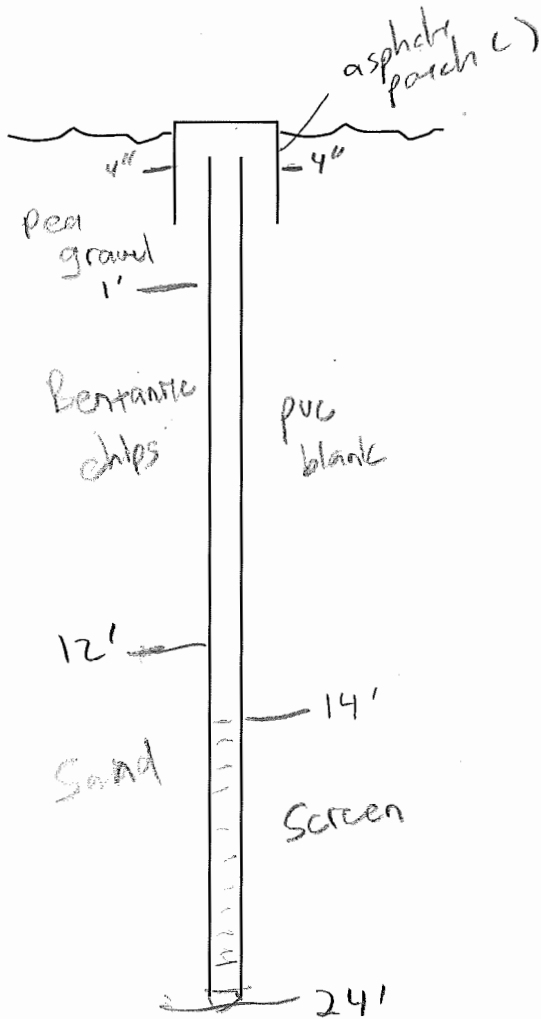
PROBE/SAMPLE _____ hrs. STANDBY: _____ hrs.
 SETUP/CLEANUP: _____ hrs. DECON: _____ hrs.
 OTHER: _____

PROBE NO: B6 SHEET 1 OF 1

MONITORING WELL CONSTRUCTION DETAILS

Shannon & Wilson, Inc.

Job No: 103798-001 Project: Garrett's Tesoro
 Weather: 40°F overcast
 Well No.: B6MW
 Date: 10/22/19 Time Started: 14:50 Time Completed: 16:45



WELL DATA:

Pipe Type: PVC (sch. 40)
 Diameter: 2"
 Total Depth (ft bgs): 24'
 Well Screen Interval (feet): 1'0 ft
 Top of Well Screen (ft bgs): 14'
 Slot size: 0.010
 Casing Connection: threaded w/a-ring
 Depth below surface: _____ N/A
 Casing stickup: NA N/A

PACKING MATERIAL:

	Depth below ground surface:	
	From	To
Soil Cuttings:	_____	_____
Sand (20-40):	_____	_____
Bentonite chips:	_____	_____
Sand (20-40):	_____	<u>24'</u>

MONUMENT:

Flush Mount Post
 Monument height: _____ N/A
 Monument Diameter: _____ N/A

LOCK:

Type: NA
 Combination: NA
 Length cutoff last section: _____

Remarks: _____

Time between installation/development: _____
 Engineer or Geologist: _____

PROBING COMPANY/DRILLER: <u>Discovery Drilling</u> PROBE RIG EQUIPMENT: <u>Geoprobe 6712DT</u> PROBING METHOD: <u>Direct Push</u> PROBE DIAM.: <u>MC7</u> TYP. RUN LENGTH.: <u>5'</u> WEATHER DURING DRILLING: <u>Overcast, 5°</u>	JOB NO: <u>103798-</u> PROBE NO: <u>B7</u> JOB NAME: <u>Garrett's Tesoro</u> LOGGED BY: <u>A. Rizzo</u> LOCATION: <u>M2/2</u> ELEV.: _____ START DATE: <u>2/25/20</u> END DATE: <u>2/25/20</u>
--	--

PROBE RUN AND SAMPLE DATA

TIME DATE	RUN NO.	RUN DEPTH FROM TO	LENGTH RECOVERED	FIELD CLASSIFICATION AND SKETCH [density/consistency; color; slightly, minor, MAJOR, then trace constituents; moisture; structure; other; USCS classification (geology)]	PID READING	SAMPLE NO.	SAMPLE DEPTH FROM TO	SAMPLE PURPOSE OR COMMENT
1300 2/25	1	0 2.5	2.5'	Brown, Sand with silt, Frozen	13.6	B7S1	0 2.5	
1315 2/25	2	2.5 5.0	2.5'	Brown to grey silt with sand moist to Frozen	10.1	-	2.5 5.0	
1335 2/25	3	5.0 10.0	4'	Brown to grey silt, minor sand present. moist	1.4	B7S2	5.0 10.0	
1325 2/25	4	10.0 15.0	4'	Brown to grey silt, minor sand moist	1.7	B7S3	10.0 15.0	
1340 2/25	5	15.0 20.0	4'	Brown to grey silt minor sand moist to saturated GW present @ 18.5 - 19.0 to bottom of sleeve	2.1	B7S4	15.0 20.0	
1400 2/25	6	20.0 25.0	5'	Brown to grey silt moist to saturated	2.5	B7S5	20.0 25.0	

SUMMARY FIELD LOG OF GEOPROBE

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):

Water present @ 18.5 - 19.0 ft bgs to bottom of boring.

SUMMARY OF TIME

PROBE/SAMPLE _____ hrs. STANDBY: _____ hrs.
 SETUP/CLEANUP: _____ hrs. DECON: _____ hrs.
 OTHER: _____

PROBE NO: _____ SHEET _____ OF _____



MONITORING WELL CONSTRUCTION DETAILS

Shannon & Wilson, Inc.

Job No: 103798-001 Project: Garrett's Tesoro

Weather: 10° overcast

Well No.: B7MW

Date: 2/25/20 Time Started: 1400 Time Completed: 1500

WELL DATA:

Pipe Type: PVC Sched 40
 Diameter: 2"
 Total Depth (ft bgs): 25.0
 Well Screen Interval (feet): 10.0
 Top of Well Screen (ft bgs): 15.0
 Slot size: 0.010
 Casing Connection: threaded
 Depth below surface: _____ N/A
 Casing stickup: _____ N/A

PACKING MATERIAL:

	Depth below ground surface:	
	From	To
Soil Cuttings:	<u>0</u>	<u>4"</u>
Sand (20-40):	<u>4"</u>	<u>1'</u>
Bentonite chips:	<u>1 1/2'</u>	<u>12'</u>
Sand (20-40):	<u>12'</u>	<u>25'</u>

MONUMENT:

Flush Mount Post
 Monument height: _____ N/A
 Monument Diameter: 8" N/A

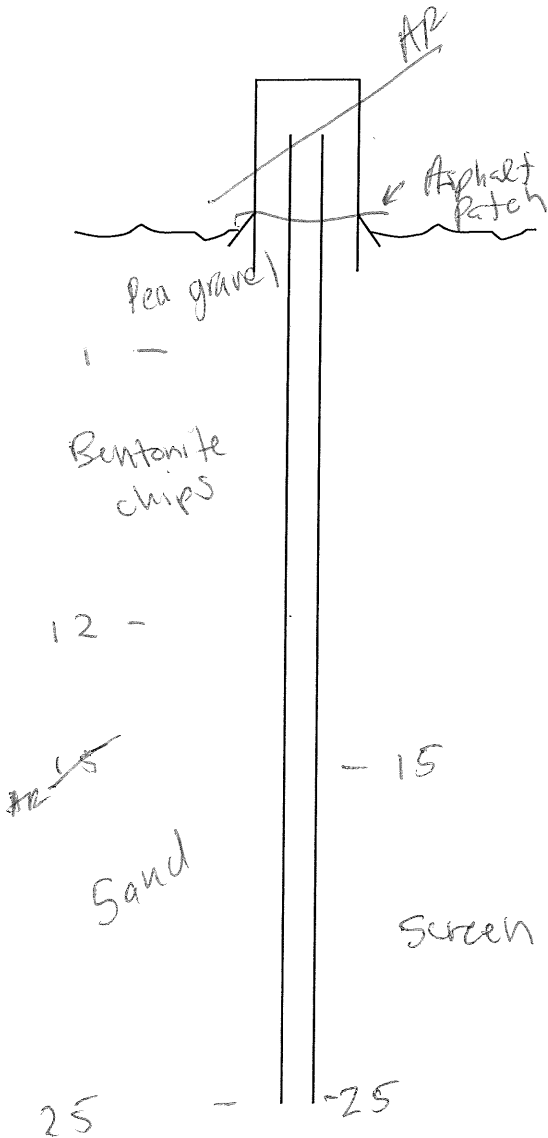
LOCK:

Type: NA
 Combination: NA
 Length cutoff last section: _____

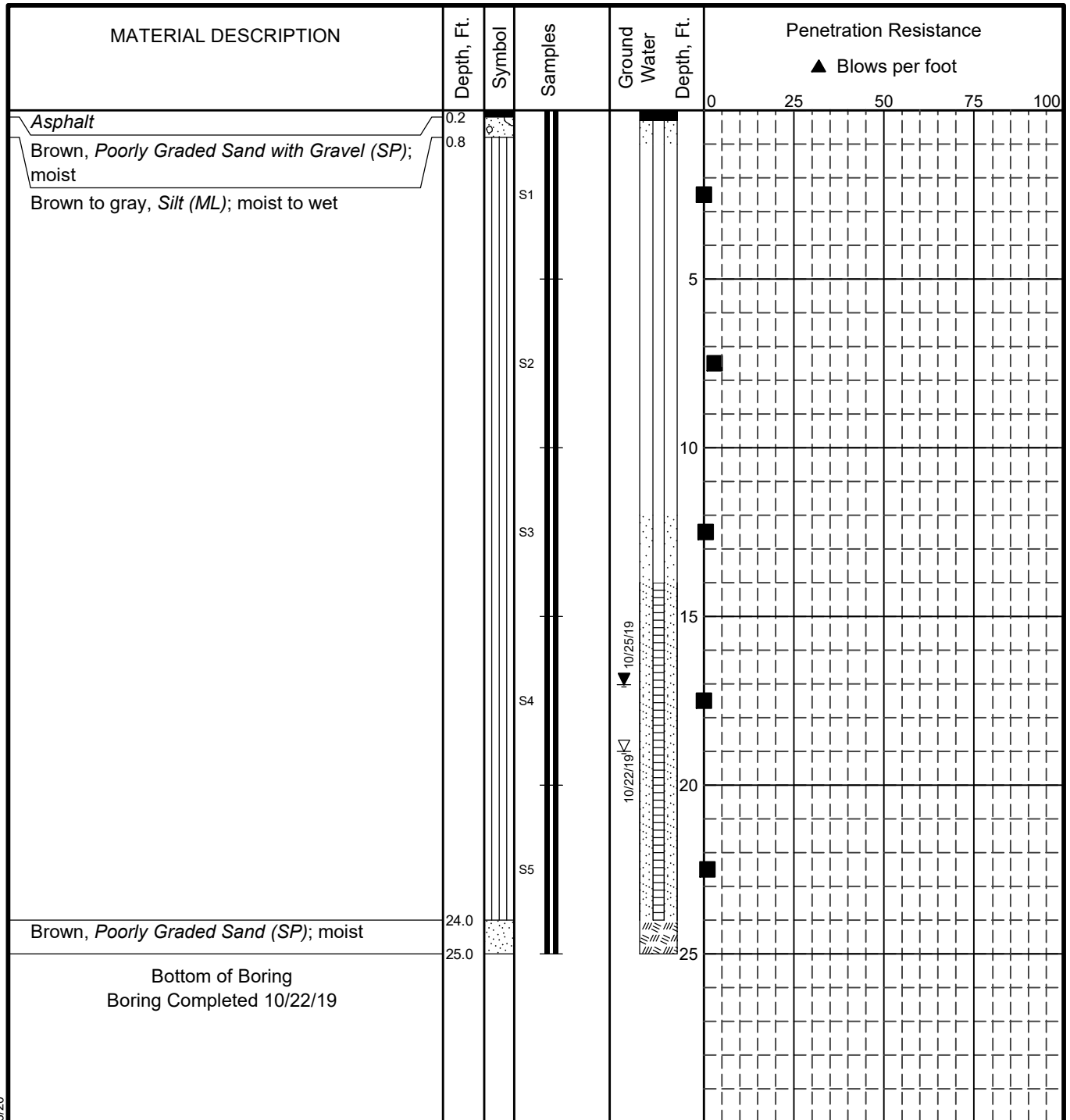
Remarks: _____

Time between installation/development: _____

Engineer or Geologist: _____



APPENDIX C
BORING LOGS AND MONITORING WELL
CONSTRUCTION DETAILS



LEGEND

- * Sample not recovered
- II Direct Push
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- Solid Casing, Sand Pack
- Solid Casing and Annular Seal
- Slotted Section, Filter Sand
- Solid Casing, Cuttings Backfill

■ PID Reading (ppm)

NOTES

- The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
- The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
- Water level, if indicated above, is for the date specified and may vary.
- USC letter symbol based on visual classification.

724 West International Airport Road
Anchorage, Alaska

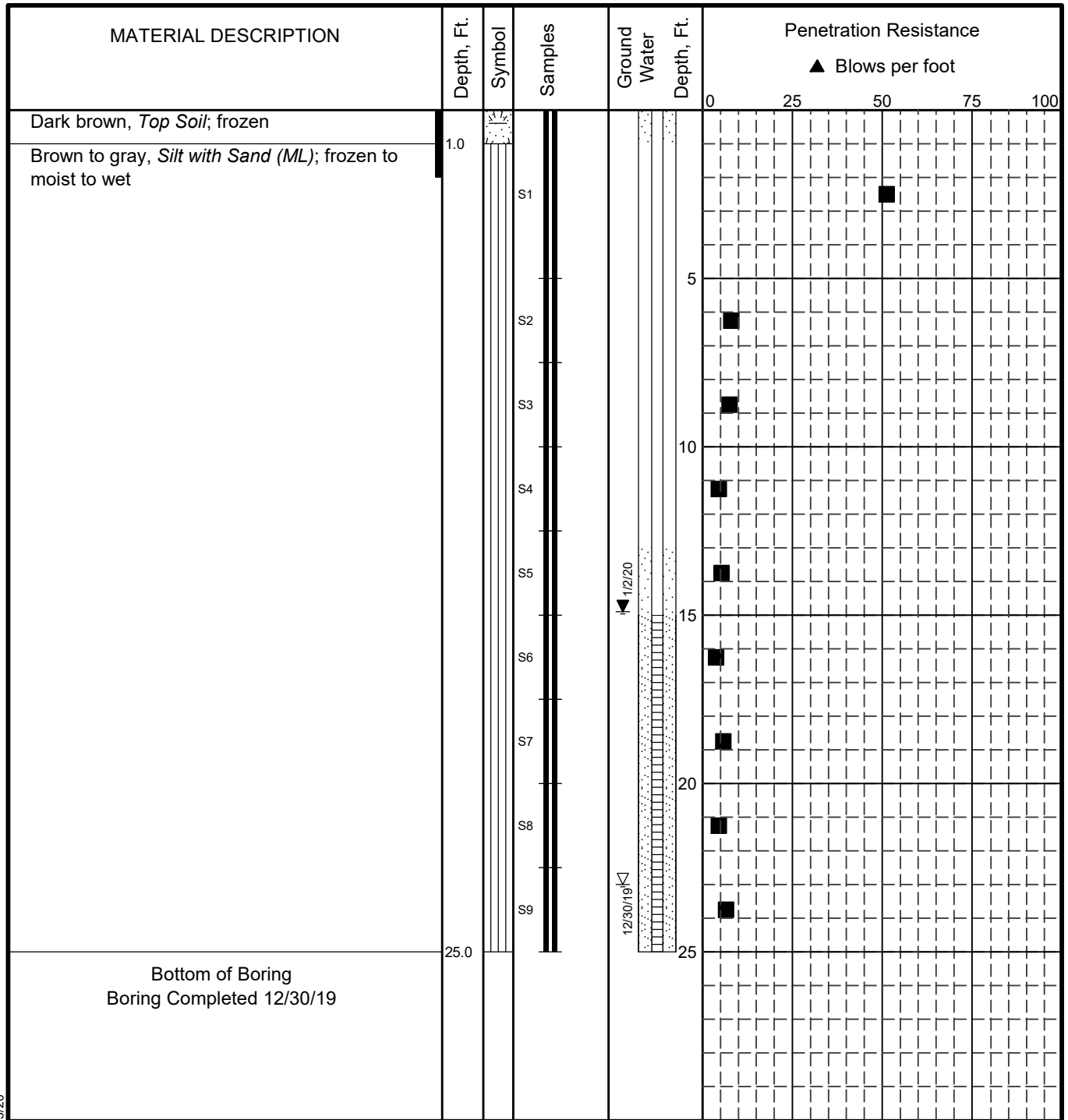
LOG OF BORING B4

April 2020

103798-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C-1



LEGEND

- * Sample not recovered
- II Direct Push
- Frozen
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- Solid Casing, Sand Pack
- Solid Casing and Annular Seal
- Slotted Section, Filter Sand
- Solid Casing, Cuttings Backfill

■ PID Reading (ppm)

NOTES

- The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
- The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
- Water level, if indicated above, is for the date specified and may vary.
- USC letter symbol based on visual classification.

724 West International Airport Road
Anchorage, Alaska

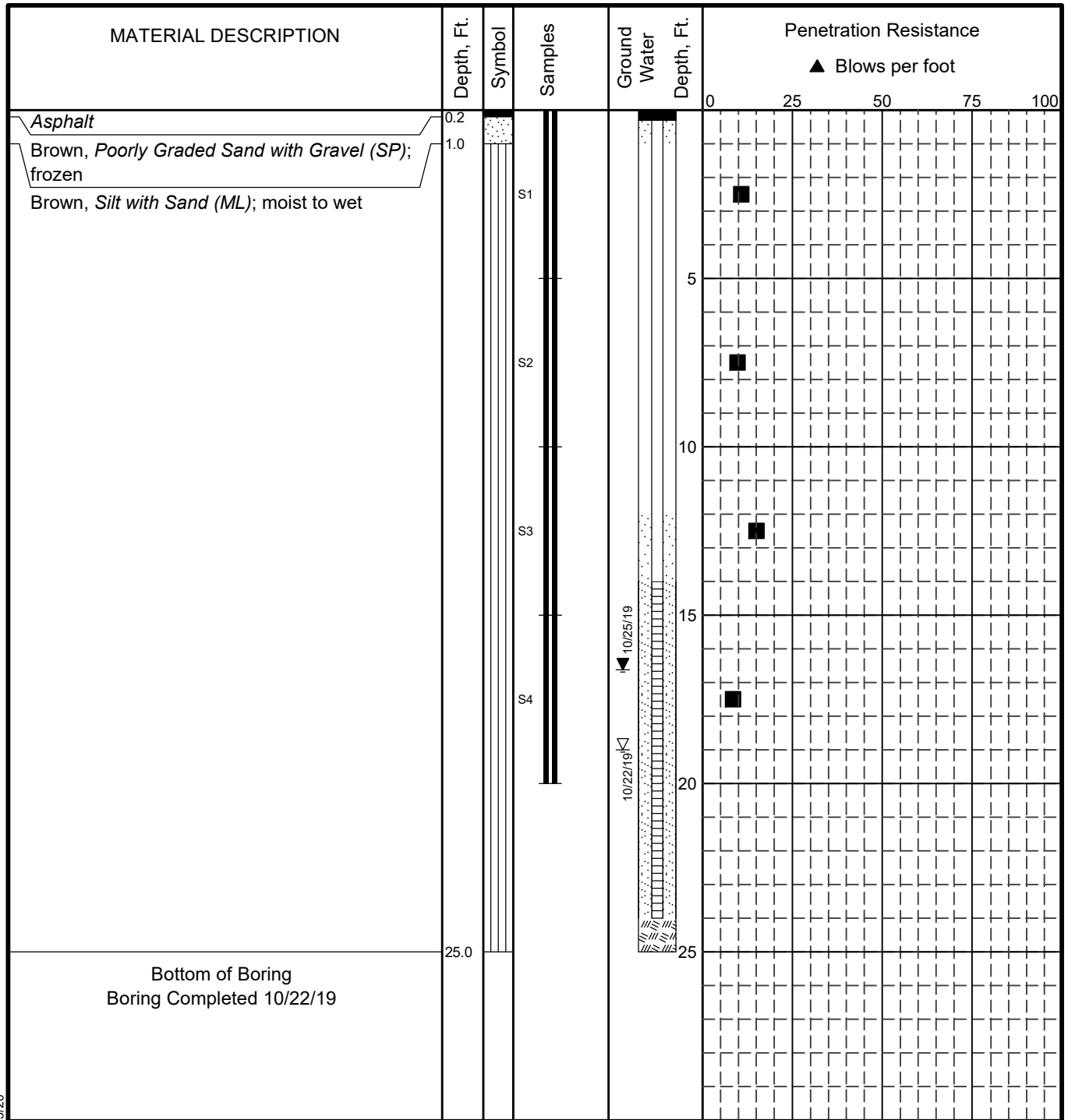
LOG OF BORING B5

April 2020

103798-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C-2



LEGEND

- * Sample not recovered
- II Direct Push
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- ▨ Solid Casing, Sand Pack
- ▩ Solid Casing and Annular Seal
- ▧ Slotted Section, Filter Sand
- ▩ Solid Casing, Cuttings Backfill

■ PID Reading (ppm)

NOTES

- The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
- The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
- Water level, if indicated above, is for the date specified and may vary.
- USC letter symbol based on visual classification.

724 West International Airport Road
Anchorage, Alaska

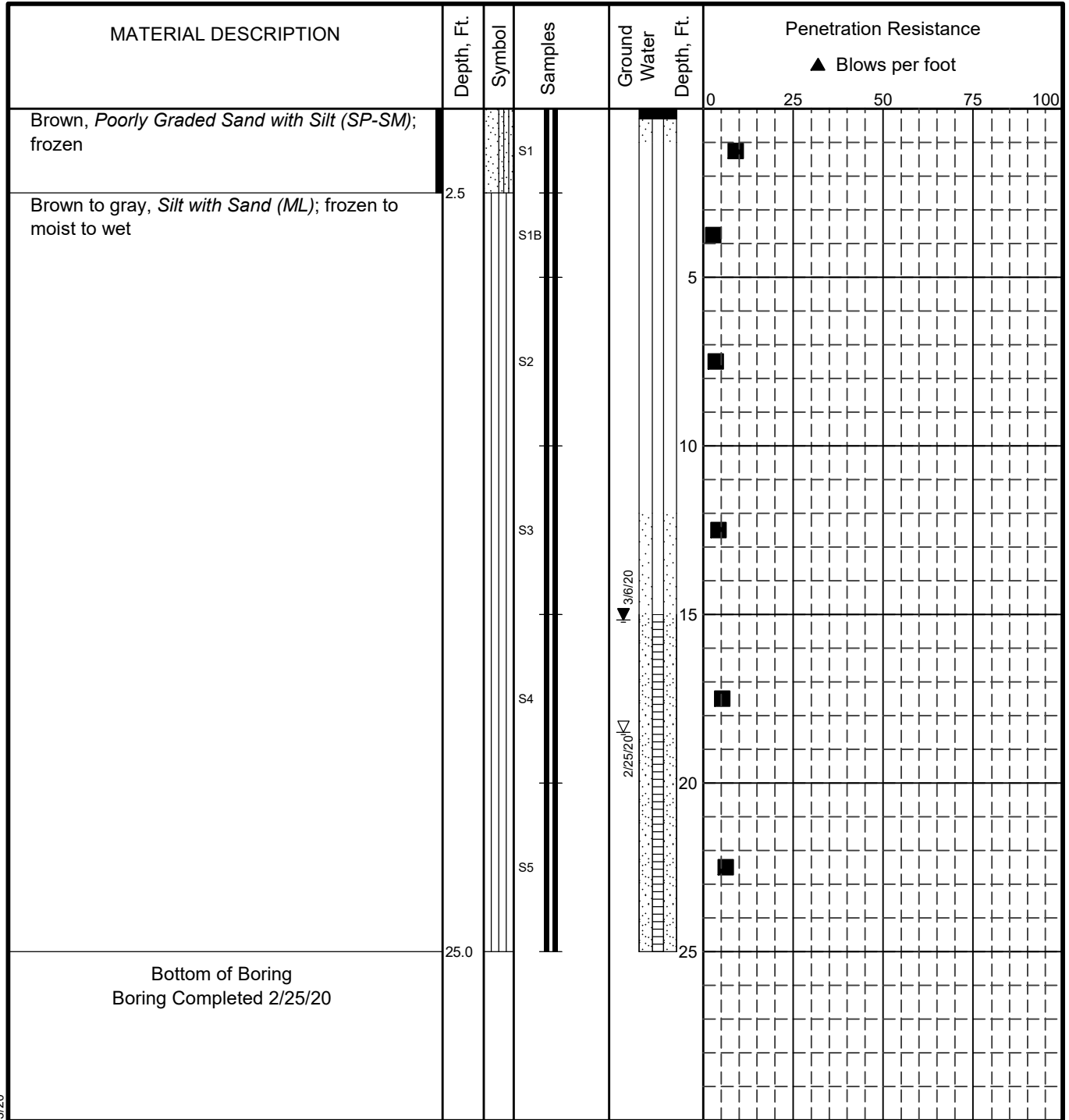
LOG OF BORING B6

April 2020

103798-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C-3



LEGEND

- * Sample not recovered
- II Direct Push
- Frozen
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- Solid Casing, Sand Pack
- Solid Casing and Annular Seal
- Slotted Section, Filter Sand
- Solid Casing, Cuttings Backfill

■ PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

724 West International Airport Road
Anchorage, Alaska

LOG OF BORING B7

April 2020

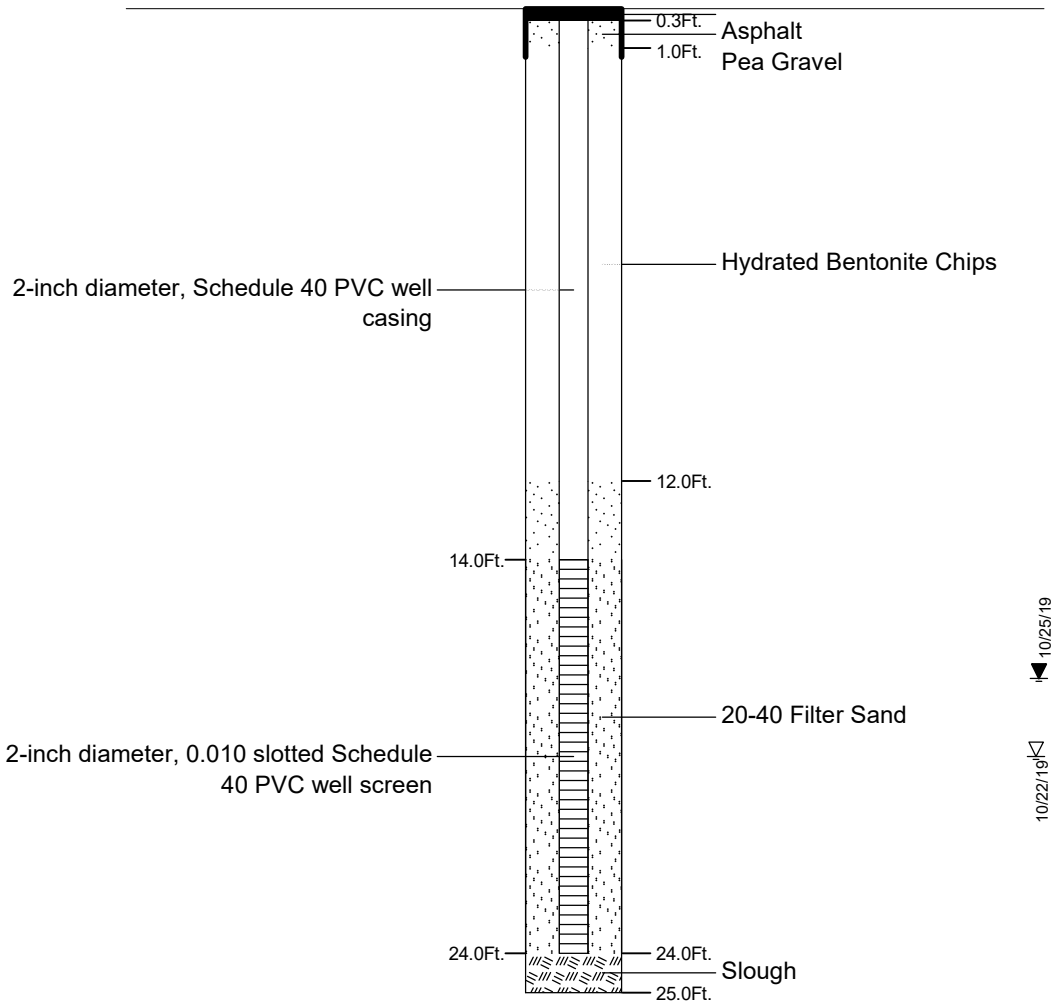
103798-001

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FIG. C-4

Casing Description

Backfill Description



LEGEND

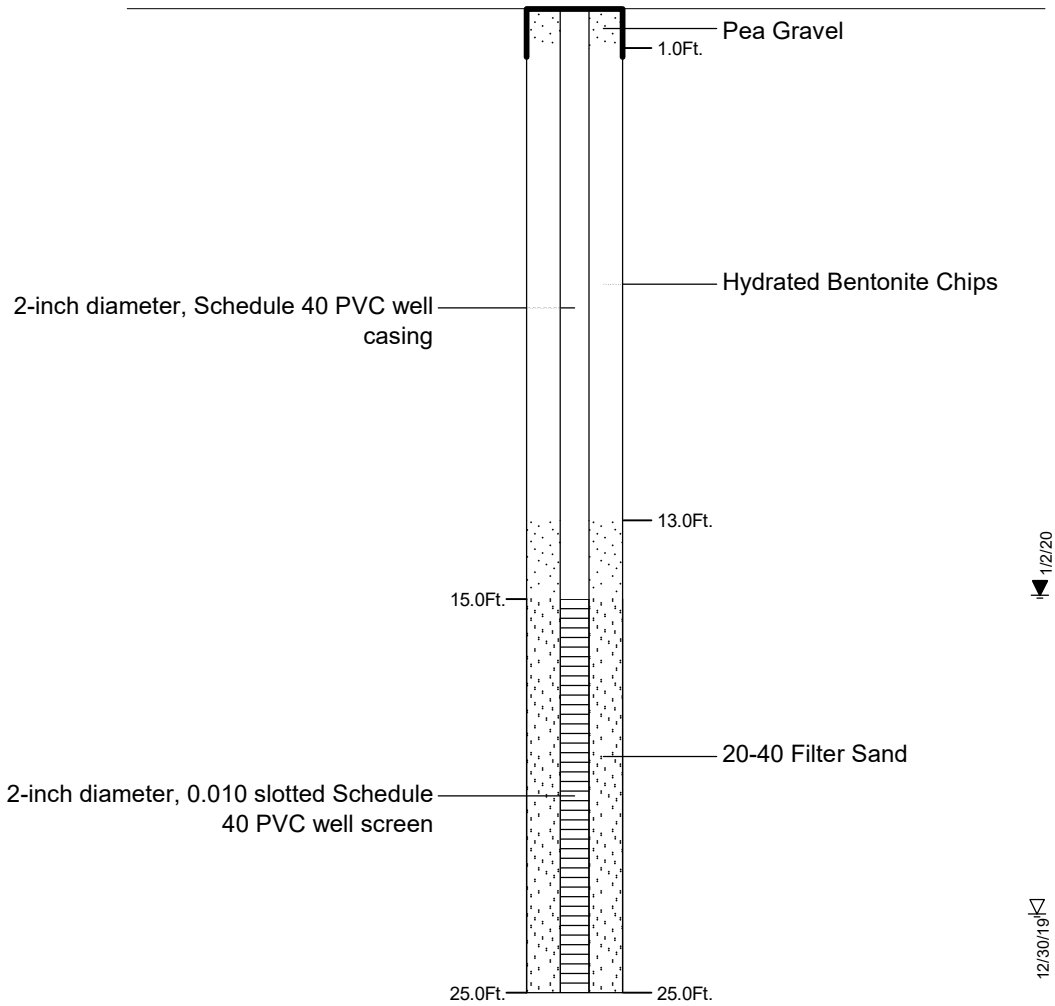
- ▽ Groundwater Level ATD
- ▼ Static Groundwater Level

NOTE: All joints use threaded connections.

724 West International Airport Road Anchorage, Alaska	
MONITORING WELL B4MW CONSTRUCTION DETAIL	
April 2020	103798-001
 SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Fig. C-5

Casing Description

Backfill Description



LEGEND

- ▽ Groundwater Level ATD
- ▼ Static Groundwater Level

NOTE: All joints use threaded connections.

724 West International Airport Road
Anchorage, Alaska

**MONITORING WELL B5MW
CONSTRUCTION DETAIL**

April 2020

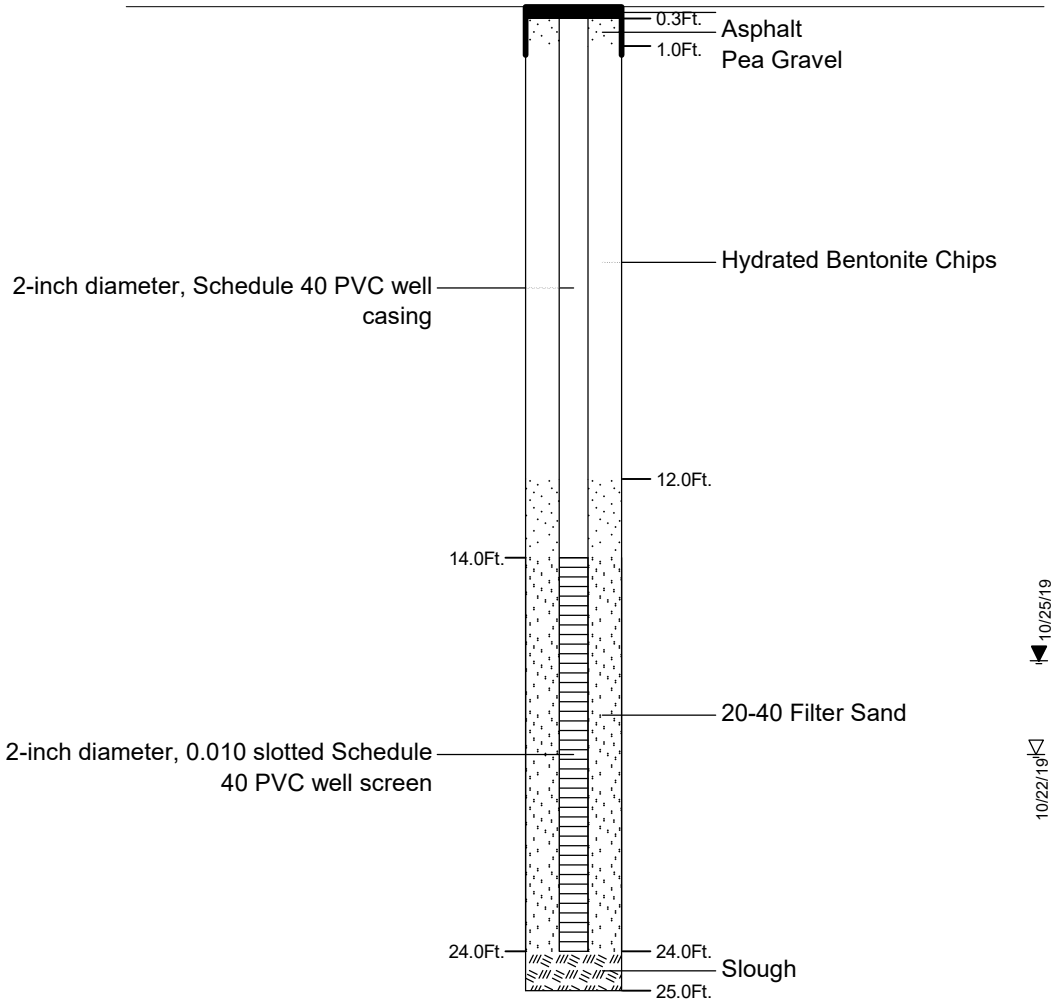
103798-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. C-6

Casing Description

Backfill Description



LEGEND

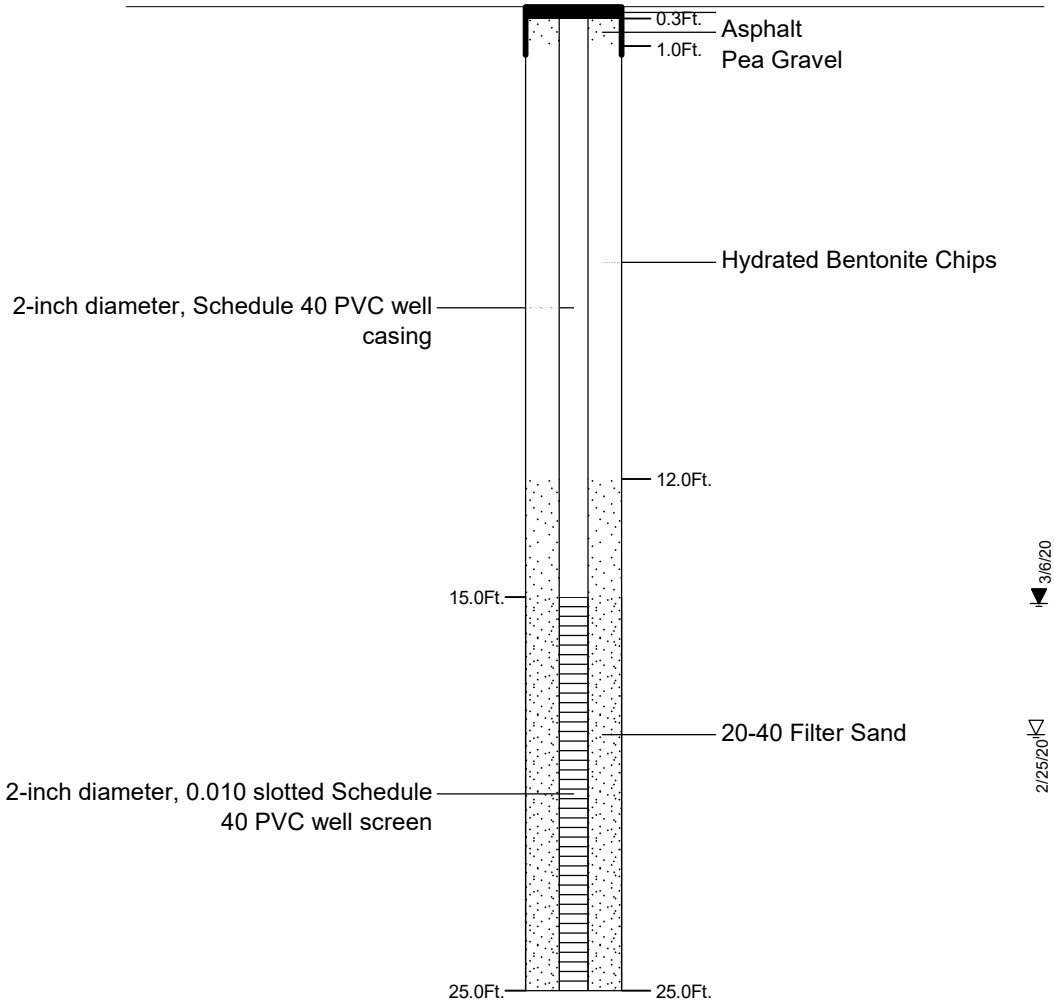
- ▽ Groundwater Level ATD
- ▼ Static Groundwater Level

NOTE: All joints use threaded connections.

724 West International Airport Road Anchorage, Alaska	
MONITORING WELL B6MW CONSTRUCTION DETAIL	
April 2020	103798-001
 SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Fig. C-7

Casing Description

Backfill Description



LEGEND

- ▽ Groundwater Level ATD
- ▼ Static Groundwater Level

NOTE: All joints use threaded connections.

724 West International Airport Road
Anchorage, Alaska

**MONITORING WELL B7MW
CONSTRUCTION DETAIL**

April 2020

103798-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. C-8

APPENDIX D

RESULTS OF ANALYTICAL TESTING BY SGS NORTH AMERICA INC.

AND

ADEC LABORATORY DATA REVIEW CHECKLISTS

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks St. Suite 3
Anchorage, AK 99518
(907)561-2120

Report Number: **1196381**

Client Project: **103798-001 Garrett's Tesoro**

Dear Jacob Tracy,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jillian Janssen
Project Manager
Jillian.Janssen@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1196381**
Project Name/Site: **103798-001 Garrett's Tesoro**
Project Contact: **Jacob Tracy**

Refer to sample receipt form for information on sample condition.

LCS for HBN 1801465 [XXX/42521 (1540103) LCS

AK102/103 - Surrogate recovery for 5a-androstane does not meet QC criteria, however samples are within criteria.

1196401001MS (1540151) MS

8270D SIM - PAH MS recovery for Indeno[1,2,3-c,d] pyrene, Dibenzo[a,h]anthracene and Benzo[g,h,i]perylene do not meet QC criteria. Refer to the LCS for accuracy requirements.

1199887002(1541359MS) (1541295) MS

8260C - MS recoveries for trichlorofluoromethane and trans-1,2-dichloroethene do not meet QC criteria. These analytes were not detected above the LOQ in the associated parent sample.

1196401001MSD (1540152) MSD

8270D SIM - PAH MSD recovery for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

8270D SIM - PAH MS/MSD RPD for Σ PAHs does not meet QC criteria. Results for this analyte are considered estimated in the parent sample.

1199887002(1541359MSD) (1541296) MSD

8260C - MS/MSD RPD for multiple analytes do not meet QC criteria. These analytes were not detected above the LOQ in the associated parent sample.

1196478004(1542086MSD) (1542088) MSD

8260C - MS/MSD RPD for Σ PAHs do not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
103798-B4S2	1196381001	10/22/2019	10/23/2019	Soil/Solid (dry weight)
103798-B6S3	1196381002	10/22/2019	10/23/2019	Soil/Solid (dry weight)
103798-TB	1196381003	10/22/2019	10/23/2019	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel Range Organics (S)
AK101	Gasoline Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted

Print Date: 11/08/2019 4:53:14PM

Detectable Results Summary

Client Sample ID: **103798-B4S2**

Lab Sample ID: 1196381001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	12.1J	ug/Kg
2-Methylnaphthalene	16.1J	ug/Kg
Chrysene	13.3J	ug/Kg
Phenanthrene	36.1	ug/Kg
Diesel Range Organics	34.4	mg/Kg

Semivolatile Organic Fuels

Client Sample ID: **103798-B6S3**

Lab Sample ID: 1196381002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	9.20J	mg/Kg

Client Sample ID: **103798-TB**

Lab Sample ID: 1196381003

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Methylene chloride	33.2J	ug/Kg



Results of 103798-B4S2

Client Sample ID: 103798-B4S2
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196381001
Lab Project ID: 1196381

Collection Date: 10/22/19 10:08
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.9
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11846
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 11/05/19 17:26
Container ID: 1196381001-A

Prep Batch: XXX42522
Prep Method: SW3550C
Prep Date/Time: 10/24/19 12:25
Prep Initial Wt./Vol.: 22.559 g
Prep Extract Vol: 5 mL

Results of 103798-B4S2

Client Sample ID: **103798-B4S2**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381001
 Lab Project ID: 1196381

Collection Date: 10/22/19 10:08
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.9
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	34.4	24.4	7.57	mg/Kg	1		10/31/19 00:40
Surrogates							
5a Androstane (surr)	87.6	50-150		%	1		10/31/19 00:40

Batch Information

Analytical Batch: XFC15454
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/31/19 00:40
 Container ID: 1196381001-A

Prep Batch: XXX42521
 Prep Method: SW3550C
 Prep Date/Time: 10/24/19 09:35
 Prep Initial Wt./Vol.: 30.334 g
 Prep Extract Vol: 5 mL

Results of 103798-B4S2

Client Sample ID: **103798-B4S2**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381001
 Lab Project ID: 1196381

Collection Date: 10/22/19 10:08
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.9
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.75 U	3.50	1.05	mg/Kg	1		10/25/19 19:58
Surrogates							
4-Bromofluorobenzene (surr)	82.4	50-150		%	1		10/25/19 19:58

Batch Information

Analytical Batch: VFC15012
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/25/19 19:58
 Container ID: 1196381001-B

Prep Batch: VXX35152
 Prep Method: SW5035A
 Prep Date/Time: 10/22/19 10:08
 Prep Initial Wt./Vol.: 66.41 g
 Prep Extract Vol: 37.6522 mL



Results of 103798-B4S2

Client Sample ID: 103798-B4S2
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196381001
Lab Project ID: 1196381

Collection Date: 10/22/19 10:08
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.9
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-B4S2

Client Sample ID: 103798-B4S2
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196381001
Lab Project ID: 1196381

Collection Date: 10/22/19 10:08
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.9
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of **103798-B4S2**

Client Sample ID: **103798-B4S2**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196381001
Lab Project ID: 1196381

Collection Date: 10/22/19 10:08
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.9
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19616
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/25/19 13:19
Container ID: 1196381001-B

Prep Batch: VXX35167
Prep Method: SW5035A
Prep Date/Time: 10/22/19 10:08
Prep Initial Wt./Vol.: 66.41 g
Prep Extract Vol: 37.6522 mL

Analytical Batch: VMS19632
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 11/02/19 17:57
Container ID: 1196381001-B

Prep Batch: VXX35193
Prep Method: SW5035A
Prep Date/Time: 10/22/19 10:08
Prep Initial Wt./Vol.: 66.41 g
Prep Extract Vol: 37.6522 mL



Results of 103798-B6S3

Client Sample ID: 103798-B6S3
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196381002
Lab Project ID: 1196381

Collection Date: 10/22/19 14:28
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.4
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11846
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 11/05/19 17:46
Container ID: 1196381002-A

Prep Batch: XXX42522
Prep Method: SW3550C
Prep Date/Time: 10/24/19 12:25
Prep Initial Wt./Vol.: 22.467 g
Prep Extract Vol: 5 mL

Results of 103798-B6S3

Client Sample ID: **103798-B6S3**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381002
 Lab Project ID: 1196381

Collection Date: 10/22/19 14:28
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.4
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	9.20 J	24.9	7.70	mg/Kg	1		10/31/19 00:49
Surrogates							
5a Androstane (surr)	91.1	50-150		%	1		10/31/19 00:49

Batch Information

Analytical Batch: XFC15454
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/31/19 00:49
 Container ID: 1196381002-A

Prep Batch: XXX42521
 Prep Method: SW3550C
 Prep Date/Time: 10/24/19 09:35
 Prep Initial Wt./Vol.: 30.042 g
 Prep Extract Vol: 5 mL

Results of 103798-B6S3

Client Sample ID: **103798-B6S3**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381002
 Lab Project ID: 1196381

Collection Date: 10/22/19 14:28
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.4
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.79 U	3.59	1.08	mg/Kg	1		10/25/19 20:15
Surrogates							
4-Bromofluorobenzene (surr)	97.4	50-150		%	1		10/25/19 20:15

Batch Information

Analytical Batch: VFC15012
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/25/19 20:15
 Container ID: 1196381002-B

Prep Batch: VXX35152
 Prep Method: SW5035A
 Prep Date/Time: 10/22/19 14:28
 Prep Initial Wt./Vol.: 65.829 g
 Prep Extract Vol: 37.9313 mL



Results of 103798-B6S3

Client Sample ID: 103798-B6S3
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196381002
Lab Project ID: 1196381

Collection Date: 10/22/19 14:28
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.4
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-B6S3

Client Sample ID: **103798-B6S3**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381002
 Lab Project ID: 1196381

Collection Date: 10/22/19 14:28
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.4
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	144 U	287	88.9	ug/Kg	1		10/25/19 13:34
Chloroform	1.44 U	2.87	0.889	ug/Kg	1		10/25/19 13:34
Chloromethane	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
cis-1,2-Dichloroethene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
cis-1,3-Dichloropropene	8.95 U	17.9	5.59	ug/Kg	1		10/25/19 13:34
Dibromochloromethane	1.44 U	2.87	0.889	ug/Kg	1		10/25/19 13:34
Dibromomethane	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
Dichlorodifluoromethane	35.9 U	71.7	21.5	ug/Kg	1		10/25/19 13:34
Ethylbenzene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
Freon-113	71.5 U	143	44.5	ug/Kg	1		10/25/19 13:34
Hexachlorobutadiene	14.4 U	28.7	8.89	ug/Kg	1		10/25/19 13:34
Isopropylbenzene (Cumene)	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
Methylene chloride	71.5 U	143	44.5	ug/Kg	1		10/25/19 13:34
Methyl-t-butyl ether	71.5 U	143	44.5	ug/Kg	1		10/25/19 13:34
Naphthalene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
n-Butylbenzene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
n-Propylbenzene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
o-Xylene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
P & M -Xylene	35.9 U	71.7	21.5	ug/Kg	1		10/25/19 13:34
sec-Butylbenzene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
Styrene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
tert-Butylbenzene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
Tetrachloroethene	8.95 U	17.9	5.59	ug/Kg	1		10/25/19 13:34
Toluene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
trans-1,2-Dichloroethene	17.9 U	35.9	11.2	ug/Kg	1		10/25/19 13:34
trans-1,3-Dichloropropene	8.95 U	17.9	5.59	ug/Kg	1		10/25/19 13:34
Trichloroethene	3.59 U	7.17	2.15	ug/Kg	1		10/25/19 13:34
Trichlorofluoromethane	35.9 U	71.7	21.5	ug/Kg	1		10/25/19 13:34
Vinyl acetate	71.5 U	143	44.5	ug/Kg	1		10/25/19 13:34
Vinyl chloride	0.575 U	1.15	0.359	ug/Kg	1		10/25/19 13:34
Xylenes (total)	54.0 U	108	32.7	ug/Kg	1		10/25/19 13:34
Surrogates							
1,2-Dichloroethane-D4 (surr)	98.8	71-136		%	1		10/25/19 13:34
4-Bromofluorobenzene (surr)	132	55-151		%	1		10/25/19 13:34
Toluene-d8 (surr)	99.5	85-116		%	1		10/25/19 13:34

Results of 103798-B6S3

Client Sample ID: **103798-B6S3**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196381002
Lab Project ID: 1196381

Collection Date: 10/22/19 14:28
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):80.4
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19616
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/25/19 13:34
Container ID: 1196381002-B

Prep Batch: VXX35167
Prep Method: SW5035A
Prep Date/Time: 10/22/19 14:28
Prep Initial Wt./Vol.: 65.829 g
Prep Extract Vol: 37.9313 mL

Analytical Batch: VMS19632
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 11/02/19 18:13
Container ID: 1196381002-B

Prep Batch: VXX35193
Prep Method: SW5035A
Prep Date/Time: 10/22/19 14:28
Prep Initial Wt./Vol.: 65.829 g
Prep Extract Vol: 37.9313 mL

Results of 103798-TB

Client Sample ID: **103798-TB**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381003
 Lab Project ID: 1196381

Collection Date: 10/22/19 09:00
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.25 U	2.50	0.750	mg/Kg	1		10/25/19 14:41
Surrogates							
4-Bromofluorobenzene (surr)	79.5	50-150		%	1		10/25/19 14:41

Batch Information

Analytical Batch: VFC15012
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/25/19 14:41
 Container ID: 1196381003-A

Prep Batch: VXX35152
 Prep Method: SW5035A
 Prep Date/Time: 10/22/19 09:00
 Prep Initial Wt./Vol.: 50.009 g
 Prep Extract Vol: 25 mL



Results of 103798-TB

Client Sample ID: 103798-TB
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196381003
Lab Project ID: 1196381

Collection Date: 10/22/19 09:00
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 103798-TB

Client Sample ID: **103798-TB**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196381003
 Lab Project ID: 1196381

Collection Date: 10/22/19 09:00
 Received Date: 10/23/19 09:28
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	100 U	200	62.0	ug/Kg	1		10/25/19 12:32
Chloroform	1.00 U	2.00	0.620	ug/Kg	1		10/25/19 12:32
Chloromethane	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
cis-1,2-Dichloroethene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
cis-1,3-Dichloropropene	6.25 U	12.5	3.90	ug/Kg	1		10/25/19 12:32
Dibromochloromethane	1.00 U	2.00	0.620	ug/Kg	1		10/25/19 12:32
Dibromomethane	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
Dichlorodifluoromethane	25.0 U	50.0	15.0	ug/Kg	1		10/25/19 12:32
Ethylbenzene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
Freon-113	50.0 U	100	31.0	ug/Kg	1		10/25/19 12:32
Hexachlorobutadiene	10.0 U	20.0	6.20	ug/Kg	1		10/25/19 12:32
Isopropylbenzene (Cumene)	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
Methylene chloride	33.2 J	100	31.0	ug/Kg	1		10/25/19 12:32
Methyl-t-butyl ether	50.0 U	100	31.0	ug/Kg	1		10/25/19 12:32
Naphthalene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
n-Butylbenzene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
n-Propylbenzene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
o-Xylene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
P & M -Xylene	25.0 U	50.0	15.0	ug/Kg	1		10/25/19 12:32
sec-Butylbenzene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
Styrene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
tert-Butylbenzene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
Tetrachloroethene	6.25 U	12.5	3.90	ug/Kg	1		10/25/19 12:32
Toluene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
trans-1,2-Dichloroethene	12.5 U	25.0	7.80	ug/Kg	1		10/25/19 12:32
trans-1,3-Dichloropropene	6.25 U	12.5	3.90	ug/Kg	1		10/25/19 12:32
Trichloroethene	2.50 U	5.00	1.50	ug/Kg	1		10/25/19 12:32
Trichlorofluoromethane	25.0 U	50.0	15.0	ug/Kg	1		10/25/19 12:32
Vinyl acetate	50.0 U	100	31.0	ug/Kg	1		10/25/19 12:32
Vinyl chloride	0.400 U	0.800	0.250	ug/Kg	1		10/25/19 12:32
Xylenes (total)	37.5 U	75.0	22.8	ug/Kg	1		10/25/19 12:32
Surrogates							
1,2-Dichloroethane-D4 (surr)	97.9	71-136		%	1		10/25/19 12:32
4-Bromofluorobenzene (surr)	102	55-151		%	1		10/25/19 12:32
Toluene-d8 (surr)	102	85-116		%	1		10/25/19 12:32

Results of 103798-TB

Client Sample ID: **103798-TB**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196381003
Lab Project ID: 1196381

Collection Date: 10/22/19 09:00
Received Date: 10/23/19 09:28
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19616
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/25/19 12:32
Container ID: 1196381003-A

Prep Batch: VXX35167
Prep Method: SW5035A
Prep Date/Time: 10/22/19 09:00
Prep Initial Wt./Vol.: 50.009 g
Prep Extract Vol: 25 mL

Analytical Batch: VMS19632
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 11/02/19 16:55
Container ID: 1196381003-A

Prep Batch: VXX35193
Prep Method: SW5035A
Prep Date/Time: 10/22/19 09:00
Prep Initial Wt./Vol.: 50.009 g
Prep Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1801458 [SPT/10920]

Blank Lab ID: 1540075

QC for Samples:

1196381001, 1196381002

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10920

Analytical Method: SM21 2540G

Instrument:

Analyst: MER

Analytical Date/Time: 10/23/2019 3:56:00PM

Print Date: 11/08/2019 4:53:20PM

Duplicate Sample Summary

Original Sample ID: 1196371001

Duplicate Sample ID: 1540076

QC for Samples:

Analysis Date: 10/23/2019 15:56

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	93.9	94.0	%	0.11	(< 15)

Batch Information

Analytical Batch: SPT10920

Analytical Method: SM21 2540G

Instrument:

Analyst: MER

Print Date: 11/08/2019 4:53:21PM

Duplicate Sample Summary

Original Sample ID: 1196371003

Duplicate Sample ID: 1540077

QC for Samples:

1196381001, 1196381002

Analysis Date: 10/23/2019 15:56

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	94.0	94.0	%	0.04	(< 15)

Batch Information

Analytical Batch: SPT10920

Analytical Method: SM21 2540G

Instrument:

Analyst: MER

Print Date: 11/08/2019 4:53:21PM

Method Blank

Blank ID: MB for HBN 1801596 [VXX/35152]

Blank Lab ID: 1540800

QC for Samples:

1196381001, 1196381002, 1196381003

Matrix: Soil/Solid (dry weight)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.83J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	95.3	50-150		%

Batch Information

Analytical Batch: VFC15012

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: ST

Analytical Date/Time: 10/25/2019 2:06:00PM

Prep Batch: VXX35152

Prep Method: SW5035A

Prep Date/Time: 10/25/2019 8:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 11/08/2019 4:53:24PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [VXX35152]
 Blank Spike Lab ID: 1540801
 Date Analyzed: 10/25/2019 13:31

Spike Duplicate ID: LCSD for HBN 1196381 [VXX35152]
 Spike Duplicate Lab ID: 1540802
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	12.9	103	12.5	12.6	101	(60-120)	1.80	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	98.4	98	1.25	98.6	99	(50-150)	0.18	
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Batch Information

Analytical Batch: **VFC15012**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35152**
 Prep Method: **SW5035A**
 Prep Date/Time: **10/25/2019 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1801713 [VXX/35167]

Blank Lab ID: 1541293

QC for Samples:

1196381001, 1196381002, 1196381003

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	1.00U	2.00	0.620	ug/Kg
1,1,2-Trichloroethane	0.400U	0.800	0.250	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	0.500U	1.00	0.310	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	1.00U	2.00	0.620	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	1.00U	2.00	0.620	ug/Kg

Print Date: 11/08/2019 4:53:29PM

Method Blank

Blank ID: MB for HBN 1801713 [VXX/35167]

Blank Lab ID: 1541293

QC for Samples:

1196381001, 1196381002, 1196381003

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	1.00U	2.00	0.620	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	2.50U	5.00	1.50	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	0.400U	0.800	0.250	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	100	71-136		%
4-Bromofluorobenzene (surr)	100	55-151		%
Toluene-d8 (surr)	101	85-116		%

Method Blank

Blank ID: MB for HBN 1801713 [VXX/35167]
Blank Lab ID: 1541293

Matrix: Soil/Solid (dry weight)

QC for Samples:
1196381001, 1196381002, 1196381003

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19616
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 10/25/2019 9:18:00AM

Prep Batch: VXX35167
Prep Method: SW5035A
Prep Date/Time: 10/25/2019 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 11/08/2019 4:53:29PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [VXX35167]

Blank Spike Lab ID: 1541294

Date Analyzed: 10/25/2019 09:34

Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	818	109	(78-125)
1,1,1-Trichloroethane	750	763	102	(73-130)
1,1,2,2-Tetrachloroethane	750	826	110	(70-124)
1,1,2-Trichloroethane	750	769	103	(78-121)
1,1-Dichloroethane	750	825	110	(76-125)
1,1-Dichloroethene	750	756	101	(70-131)
1,1-Dichloropropene	750	857	114	(76-125)
1,2,3-Trichlorobenzene	750	849	113	(66-130)
1,2,3-Trichloropropane	750	789	105	(73-125)
1,2,4-Trichlorobenzene	750	876	117	(67-129)
1,2,4-Trimethylbenzene	750	863	115	(75-123)
1,2-Dibromo-3-chloropropane	750	833	111	(61-132)
1,2-Dibromoethane	750	822	110	(78-122)
1,2-Dichlorobenzene	750	859	115	(78-121)
1,2-Dichloroethane	750	729	97	(73-128)
1,2-Dichloropropane	750	820	109	(76-123)
1,3,5-Trimethylbenzene	750	826	110	(73-124)
1,3-Dichlorobenzene	750	827	110	(77-121)
1,3-Dichloropropane	750	803	107	(77-121)
1,4-Dichlorobenzene	750	831	111	(75-120)
2,2-Dichloropropane	750	901	120	(67-133)
2-Butanone (MEK)	2250	2230	99	(51-148)
2-Chlorotoluene	750	846	113	(75-122)
2-Hexanone	2250	2390	106	(53-145)
4-Chlorotoluene	750	865	115	(72-124)
4-Isopropyltoluene	750	773	103	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2410	107	(65-135)
Acetone	2250	2050	91	(36-164)
Benzene	750	834	111	(77-121)
Bromobenzene	750	842	112	(78-121)
Bromochloromethane	750	766	102	(78-125)
Bromodichloromethane	750	772	103	(75-127)
Bromoform	750	800	107	(67-132)
Carbon disulfide	1130	1170	104	(63-132)

Print Date: 11/08/2019 4:53:31PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [VXX35167]

Blank Spike Lab ID: 1541294

Date Analyzed: 10/25/2019 09:34

Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	779	104	(70-135)
Chlorobenzene	750	825	110	(79-120)
Chloroethane	750	763	102	(59-139)
Chloroform	750	765	102	(78-123)
Chloromethane	750	888	118	(50-136)
cis-1,2-Dichloroethene	750	822	110	(77-123)
cis-1,3-Dichloropropene	750	785	105	(74-126)
Dibromochloromethane	750	785	105	(74-126)
Dibromomethane	750	789	105	(78-125)
Dichlorodifluoromethane	750	935	125	(29-149)
Ethylbenzene	750	845	113	(76-122)
Freon-113	1130	1180	105	(66-136)
Hexachlorobutadiene	750	771	103	(61-135)
Isopropylbenzene (Cumene)	750	767	102	(68-134)
Methylene chloride	750	794	106	(70-128)
Methyl-t-butyl ether	1130	1140	101	(73-125)
Naphthalene	750	887	118	(62-129)
n-Butylbenzene	750	837	112	(70-128)
n-Propylbenzene	750	873	116	(73-125)
o-Xylene	750	838	112	(77-123)
P & M -Xylene	1500	1680	112	(77-124)
sec-Butylbenzene	750	773	103	(73-126)
Styrene	750	808	108	(76-124)
tert-Butylbenzene	750	777	104	(73-125)
Tetrachloroethene	750	744	99	(73-128)
Toluene	750	775	103	(77-121)
trans-1,2-Dichloroethene	750	801	107	(74-125)
trans-1,3-Dichloropropene	750	777	104	(71-130)
Trichloroethene	750	871	116	(77-123)
Trichlorofluoromethane	750	983	131	(62-140)
Vinyl acetate	750	847	113	(50-151)
Vinyl chloride	750	729	97	(56-135)
Xylenes (total)	2250	2520	112	(78-124)

Print Date: 11/08/2019 4:53:31PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [VXX35167]
 Blank Spike Lab ID: 1541294
 Date Analyzed: 10/25/2019 09:34

Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	97.1	97	(71-136)
4-Bromofluorobenzene (surr)	750	99.8	100	(55-151)
Toluene-d8 (surr)	750	102	102	(85-116)

Batch Information

Analytical Batch: **VMS19616**
 Analytical Method: **SW8260C**
 Instrument: **VRA Agilent GC/MS 7890B/5977A**
 Analyst: **KAJ**

Prep Batch: **VXX35167**
 Prep Method: **SW5035A**
 Prep Date/Time: **10/25/2019 06:00**
 Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 11/08/2019 4:53:31PM

Matrix Spike Summary

Original Sample ID: 1541359
 MS Sample ID: 1541295 MS
 MSD Sample ID: 1541296 MSD

Analysis Date: 10/25/2019 12:48
 Analysis Date: 10/25/2019 10:44
 Analysis Date: 10/25/2019 11:00
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	7.95U	598	650	109	598	668	112	78-125	2.60	(< 20)
1,1,1-Trichloroethane	9.95U	598	614	103	598	603	101	73-130	1.80	(< 20)
1,1,2,2-Tetrachloroethane	0.795U	598	640	107	598	690	116	70-124	7.60	(< 20)
1,1,2-Trichloroethane	0.319U	598	600	100	598	634	106	78-121	5.60	(< 20)
1,1-Dichloroethane	9.95U	598	643	108	598	642	107	76-125	0.28	(< 20)
1,1-Dichloroethene	9.95U	598	712	119	598	588	98	70-131	19.20	(< 20)
1,1-Dichloropropene	9.95U	598	696	116	598	680	114	76-125	2.40	(< 20)
1,2,3-Trichlorobenzene	19.9U	598	564	94	598	702	117	66-130	21.70	* (< 20)
1,2,3-Trichloropropane	0.399U	598	607	102	598	646	108	73-125	6.20	(< 20)
1,2,4-Trichlorobenzene	9.95U	598	624	104	598	699	117	67-129	11.40	(< 20)
1,2,4-Trimethylbenzene	19.9U	598	669	112	598	685	115	75-123	2.30	(< 20)
1,2-Dibromo-3-chloropropane	39.9U	598	601	101	598	685	115	61-132	13.00	(< 20)
1,2-Dibromoethane	0.399U	598	640	107	598	676	113	78-122	5.50	(< 20)
1,2-Dichlorobenzene	9.95U	598	668	112	598	686	115	78-121	2.70	(< 20)
1,2-Dichloroethane	0.795U	598	567	95	598	581	97	73-128	2.50	(< 20)
1,2-Dichloropropane	3.98U	598	641	107	598	648	108	76-123	1.10	(< 20)
1,3,5-Trimethylbenzene	9.95U	598	648	108	598	660	110	73-124	1.90	(< 20)
1,3-Dichlorobenzene	9.95U	598	644	108	598	653	109	77-121	1.40	(< 20)
1,3-Dichloropropane	3.98U	598	626	105	598	663	111	77-121	5.90	(< 20)
1,4-Dichlorobenzene	9.95U	598	661	111	598	674	113	75-120	1.90	(< 20)
2,2-Dichloropropane	9.95U	598	739	124	598	725	121	67-133	2.00	(< 20)
2-Butanone (MEK)	99.5U	1790	1600	89	1790	1830	102	51-148	13.10	(< 20)
2-Chlorotoluene	9.95U	598	672	112	598	680	114	75-122	1.20	(< 20)
2-Hexanone	39.9U	1790	1790	100	1790	2000	112	53-145	11.50	(< 20)
4-Chlorotoluene	9.95U	598	680	114	598	684	114	72-124	0.58	(< 20)
4-Isopropyltoluene	39.9U	598	604	101	598	615	103	73-127	1.80	(< 20)
4-Methyl-2-pentanone (MIBK)	99.5U	1790	1820	102	1790	1990	111	65-135	8.60	(< 20)
Acetone	99.5U	1790	1380	77	1790	1570	88	36-164	13.20	(< 20)
Benzene	4.98U	598	653	109	598	658	110	77-121	0.64	(< 20)
Bromobenzene	9.95U	598	666	111	598	674	113	78-121	1.20	(< 20)
Bromochloromethane	9.95U	598	600	100	598	605	101	78-125	0.93	(< 20)
Bromodichloromethane	0.795U	598	610	102	598	618	103	75-127	1.40	(< 20)
Bromoform	9.95U	598	626	105	598	664	111	67-132	5.90	(< 20)
Carbon disulfide	39.9U	897	1130	126	897	901	100	63-132	22.60	* (< 20)
Carbon tetrachloride	4.98U	598	633	106	598	617	103	70-135	2.60	(< 20)
Chlorobenzene	9.95U	598	651	109	598	670	112	79-120	2.90	(< 20)
Chloroethane	79.5U	598	556	93	598	480	80	59-139	14.60	(< 20)

Print Date: 11/08/2019 4:53:32PM

Matrix Spike Summary

Original Sample ID: 1541359
 MS Sample ID: 1541295 MS
 MSD Sample ID: 1541296 MSD

Analysis Date: 10/25/2019 12:48
 Analysis Date: 10/25/2019 10:44
 Analysis Date: 10/25/2019 11:00
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	0.795U	598	600	100	598	605	101	78-123	0.76	(< 20)
Chloromethane	9.95U	598	503	84	598	471	79	50-136	6.50	(< 20)
cis-1,2-Dichloroethene	9.95U	598	641	107	598	648	108	77-123	1.20	(< 20)
cis-1,3-Dichloropropene	4.98U	598	625	105	598	629	105	74-126	0.54	(< 20)
Dibromochloromethane	0.795U	598	615	103	598	645	108	74-126	4.80	(< 20)
Dibromomethane	9.95U	598	615	103	598	636	106	78-125	3.50	(< 20)
Dichlorodifluoromethane	19.9U	598	328	55	598	297	50	29-149	10.10	(< 20)
Ethylbenzene	9.95U	598	672	112	598	686	115	76-122	2.10	(< 20)
Freon-113	39.9U	897	1090	122	897	886	99	66-136	20.60	* (< 20)
Hexachlorobutadiene	7.95U	598	682	114	598	676	113	61-135	0.91	(< 20)
Isopropylbenzene (Cumene)	9.95U	598	607	101	598	616	103	68-134	1.50	(< 20)
Methylene chloride	39.9U	598	548	92	598	566	95	70-128	3.40	(< 20)
Methyl-t-butyl ether	39.9U	897	863	96	897	917	102	73-125	6.10	(< 20)
Naphthalene	9.95U	598	609	102	598	750	126	62-129	20.70	* (< 20)
n-Butylbenzene	9.95U	598	626	105	598	645	108	70-128	3.00	(< 20)
n-Propylbenzene	9.95U	598	690	116	598	690	115	73-125	0.06	(< 20)
o-Xylene	9.95U	598	665	111	598	678	113	77-123	2.00	(< 20)
P & M -Xylene	19.9U	1200	1340	112	1200	1350	113	77-124	1.10	(< 20)
sec-Butylbenzene	9.95U	598	595	100	598	603	101	73-126	1.40	(< 20)
Styrene	9.95U	598	635	106	598	660	110	76-124	3.90	(< 20)
tert-Butylbenzene	9.95U	598	604	101	598	613	103	73-125	1.50	(< 20)
Tetrachloroethene	6.18J	598	630	104	598	614	102	73-128	2.60	(< 20)
Toluene	9.95U	598	620	104	598	633	106	77-121	2.10	(< 20)
trans-1,2-Dichloroethene	9.95U	598	781	131	598	638	107	74-125	20.10	* (< 20)
trans-1,3-Dichloropropene	4.98U	598	618	103	598	641	107	71-130	3.60	(< 20)
Trichloroethene	2.00U	598	697	117	598	690	115	77-123	1.10	(< 20)
Trichlorofluoromethane	19.9U	598	903	151	598	757	127	62-140	17.60	(< 20)
Vinyl acetate	39.9U	598	551	92	598	594	99	50-151	7.50	(< 20)
Vinyl chloride	0.319U	598	517	87	598	440	74	56-135	16.10	(< 20)
Xylenes (total)	29.9U	1790	2000	112	1790	2030	113	78-124	1.40	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		598	560	94	598	570	95	71-136	1.90	
4-Bromofluorobenzene (surr)		996	640	64	996	642	64	55-151	0.25	
Toluene-d8 (surr)		598	607	102	598	608	102	85-116	0.13	

Print Date: 11/08/2019 4:53:32PM

Matrix Spike Summary

Original Sample ID: 1541359
 MS Sample ID: 1541295 MS
 MSD Sample ID: 1541296 MSD

Analysis Date:
 Analysis Date: 10/25/2019 10:44
 Analysis Date: 10/25/2019 11:00
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS19616
 Analytical Method: SW8260C
 Instrument: VRA Agilent GC/MS 7890B/5977A
 Analyst: KAJ
 Analytical Date/Time: 10/25/2019 10:44:01AM

Prep Batch: VXX35167
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 10/25/2019 6:00:00AM
 Prep Initial Wt./Vol.: 62.73g
 Prep Extract Vol: 25.00mL

Print Date: 11/08/2019 4:53:32PM

Method Blank

Blank ID: MB for HBN 1801872 [VXX/35193]
 Blank Lab ID: 1542084

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1196381001, 1196381002, 1196381003

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Bromomethane	10.0U	20.0	6.20	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	111	71-136		%
4-Bromofluorobenzene (surr)	105	55-151		%
Toluene-d8 (surr)	97.1	85-116		%

Batch Information

Analytical Batch: VMS19632
 Analytical Method: SW8260C
 Instrument: VRA Agilent GC/MS 7890B/5977A
 Analyst: KAJ
 Analytical Date/Time: 11/2/2019 1:06:00PM

Prep Batch: VXX35193
 Prep Method: SW5035A
 Prep Date/Time: 11/2/2019 6:00:00AM
 Prep Initial Wt./Vol.: 50 g
 Prep Extract Vol: 25 mL

Print Date: 11/08/2019 4:53:34PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [VXX35193]
 Blank Spike Lab ID: 1542085
 Date Analyzed: 11/02/2019 14:08

Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL (53-143)
	Spike	Result	Rec (%)	
Bromomethane	750	743	99	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	105	105	(71-136)
4-Bromofluorobenzene (surr)	750	104	104	(55-151)
Toluene-d8 (surr)	750	100	100	(85-116)

Batch Information

Analytical Batch: **VMS19632**
 Analytical Method: **SW8260C**
 Instrument: **VRA Agilent GC/MS 7890B/5977A**
 Analyst: **KAJ**

Prep Batch: **VXX35193**
 Prep Method: **SW5035A**
 Prep Date/Time: **11/02/2019 06:00**
 Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1542086
 MS Sample ID: 1542087 MS
 MSD Sample ID: 1542088 MSD

Analysis Date: 11/02/2019 17:42
 Analysis Date: 11/02/2019 14:52
 Analysis Date: 11/02/2019 15:07
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1196381001, 1196381002, 1196381003

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Bromomethane	6.80U	510	481	94	510	386	76	53-143	22.10	* (< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		510	489	96	510	544	107	71-136	10.50	
4-Bromofluorobenzene (surr)		851	699	82	851	697	82	55-151	0.37	
Toluene-d8 (surr)		510	504	99	510	506	99	85-116	0.47	

Batch Information

Analytical Batch: VMS19632
 Analytical Method: SW8260C
 Instrument: VRA Agilent GC/MS 7890B/5977A
 Analyst: KAJ
 Analytical Date/Time: 11/2/2019 2:52:00PM

Prep Batch: VXX35193
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 11/2/2019 6:00:00AM
 Prep Initial Wt./Vol.: 73.47g
 Prep Extract Vol: 25.00mL

Method Blank

Blank ID: MB for HBN 1801465 [XXX/42521]

Blank Lab ID: 1540102

QC for Samples:

1196381001, 1196381002

Matrix: Soil/Solid (dry weight)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	6.79J	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	106	60-120		%

Batch Information

Analytical Batch: XFC15454

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: CMS

Analytical Date/Time: 10/30/2019 6:16:00PM

Prep Batch: XXX42521

Prep Method: SW3550C

Prep Date/Time: 10/24/2019 9:35:43AM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 11/08/2019 4:53:38PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [XXX42521]
 Blank Spike Lab ID: 1540103
 Date Analyzed: 10/30/2019 18:46

Spike Duplicate ID: LCSD for HBN 1196381 [XXX42521]
 Spike Duplicate Lab ID: 1540104
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	833	876	105	833	794	95	(75-125)	9.80	(< 20)	
Surrogates										
5a Androstane (surr)	16.7	121	121	* 16.7	110	110	(60-120)	9.60		

Batch Information

Analytical Batch: **XFC15454**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CMS**

Prep Batch: **XXX42521**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/24/2019 09:35**
 Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1801475 [XXX/42522]

Blank Lab ID: 1540149

QC for Samples:

1196381001, 1196381002

Matrix: Soil/Solid (dry weight)

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
2-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
Acenaphthene	12.5U	25.0	6.25	ug/Kg
Acenaphthylene	12.5U	25.0	6.25	ug/Kg
Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/Kg
Chrysene	12.5U	25.0	6.25	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/Kg
Fluoranthene	12.5U	25.0	6.25	ug/Kg
Fluorene	12.5U	25.0	6.25	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/Kg
Naphthalene	10.0U	20.0	5.00	ug/Kg
Phenanthrene	12.5U	25.0	6.25	ug/Kg
Pyrene	12.5U	25.0	6.25	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	80.2	58-103		%
Fluoranthene-d10 (surr)	86	54-113		%

Batch Information

Analytical Batch: XMS11846
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 11/5/2019 1:39:00PM

Prep Batch: XXX42522
 Prep Method: SW3550C
 Prep Date/Time: 10/24/2019 12:25:06PM
 Prep Initial Wt./Vol.: 22.5 g
 Prep Extract Vol: 5 mL

Print Date: 11/08/2019 4:53:42PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196381 [XXX42522]
 Blank Spike Lab ID: 1540150
 Date Analyzed: 11/05/2019 14:00

Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002

Results by 8270D SIM (PAH)

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	93.2	84	(43-111)
2-Methylnaphthalene	111	91.3	82	(39-114)
Acenaphthene	111	93.5	84	(44-111)
Acenaphthylene	111	95.7	86	(39-116)
Anthracene	111	90.8	82	(50-114)
Benzo(a)Anthracene	111	92.4	83	(54-122)
Benzo[a]pyrene	111	88.0	79	(50-125)
Benzo[b]Fluoranthene	111	92.2	83	(53-128)
Benzo[g,h,i]perylene	111	91.8	83	(49-127)
Benzo[k]fluoranthene	111	94.6	85	(56-123)
Chrysene	111	95.7	86	(57-118)
Dibenzo[a,h]anthracene	111	92.3	83	(50-129)
Fluoranthene	111	99.9	90	(55-119)
Fluorene	111	93.7	84	(47-114)
Indeno[1,2,3-c,d] pyrene	111	98.4	89	(49-130)
Naphthalene	111	92.7	84	(38-111)
Phenanthrene	111	93.2	84	(49-113)
Pyrene	111	103	93	(55-117)

Surrogates

2-Methylnaphthalene-d10 (surr)	111	79.9	80	(58-103)
Fluoranthene-d10 (surr)	111	84.8	85	(54-113)

Batch Information

Analytical Batch: XMS11846
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD

Prep Batch: XXX42522
 Prep Method: SW3550C
 Prep Date/Time: 10/24/2019 12:25
 Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1196401001
 MS Sample ID: 1540151 MS
 MSD Sample ID: 1540152 MSD

Analysis Date: 11/05/2019 19:29
 Analysis Date: 11/05/2019 19:50
 Analysis Date: 11/05/2019 20:11
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1196381001, 1196381002

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	14.8U	134	105	79	134	103	78	43-111	1.40	(< 20)
2-Methylnaphthalene	14.8U	134	104	78	134	102	76	39-114	2.50	(< 20)
Acenaphthene	14.8U	134	105	79	134	102	76	44-111	3.20	(< 20)
Acenaphthylene	14.8U	134	110	83	134	109	82	39-116	0.88	(< 20)
Anthracene	14.8U	134	99.3	74	134	91.3	69	50-114	8.40	(< 20)
Benzo(a)Anthracene	14.8U	134	88.0	66	134	77.2	58	54-122	13.00	(< 20)
Benzo(a)pyrene	14.8U	134	73.3	55	134	60.6	46	* 50-125	18.90	(< 20)
Benzo(b)Fluoranthene	14.8U	134	79.6	60	134	67.6	51	* 53-128	16.40	(< 20)
Benzo(g,h,i)perylene	14.8U	134	54.5	41	* 134	45.5	34	* 49-127	17.80	(< 20)
Benzo(k)fluoranthene	14.8U	134	79.8	60	134	67.5	51	* 56-123	16.80	(< 20)
Chrysene	14.8U	134	88.1	66	134	77.3	58	57-118	13.00	(< 20)
Dibenzo(a,h)anthracene	14.8U	134	60.1	45	* 134	48.3	36	* 50-129	21.70	* (< 20)
Fluoranthene	14.8U	134	100	75	134	92.7	70	55-119	7.60	(< 20)
Fluorene	14.8U	134	105	78	134	103	77	47-114	1.70	(< 20)
Indeno[1,2,3-c,d] pyrene	14.8U	134	60.6	45	* 134	50.1	38	* 49-130	18.90	(< 20)
Naphthalene	11.9U	134	105	78	134	103	77	38-111	1.80	(< 20)
Phenanthrene	14.8U	134	99.6	75	134	93.7	70	49-113	6.20	(< 20)
Pyrene	14.8U	134	104	78	134	94.0	71	55-117	10.10	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		134	103	77	134	101	76	58-103	1.20	
Fluoranthene-d10 (surr)		134	106	79	134	104	78	54-113	1.60	

Batch Information

Analytical Batch: XMS11846
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 11/5/2019 7:50:00PM

Prep Batch: XXX42522
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 10/24/2019 12:25:06PM
 Prep Initial Wt./Vol.: 22.55g
 Prep Extract Vol: 5.00mL

1196381



Profile: 334864 JK

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAI

RECORD

Laboratory SGS Page 1 of 1
Attn: Jillian

400 N. 34th Street, Suite 100 Seattle, WA 98103 (206) 632-8020
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3990 Collins Way, Suite 100 Lake Oswego, OR 97035 (503) 223-6147

1321 Bannock Street, Suite 200 Denver, CO 80204 (303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO/NOC AK 101/92606	DRD/PAHS AK 102/8220-515	Total Number of Containers	Remarks/Matrix
103798-B452	① AB	10:08	10/22/19	X	X	X		2	soil
103798-B653	② AB	14:28	10/22/19	X	X	X		2	soil
103798-TB	③ A	9:00	10/22/19		X			1	trip blank

Project Information	Sample Receipt
Project Number: <u>103798-001</u>	Total Number of Containers: <u> </u>
Project Name: <u>Garrett's Tesoro</u>	COC Seals/Intact? Y/N/NA <u>NA</u>
Contact: <u>JCT/JKH</u>	Received Good Cond./Cold <u>1-0</u>
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method: <u>D45</u>
Sampler: <u>JCT/JKH</u>	(attach shipping bill, if any)

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Time: <u>9:28</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: <u>Judy Hepler</u> Date: <u>10/23/19</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: <u>SWI</u>	Company: _____	Company: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Time: _____	Signature: _____ Time: _____	Signature: <u>[Signature]</u> Time: <u>03:28</u>
Printed Name: _____ Date: _____	Printed Name: _____ Date: _____	Printed Name: <u>AMG</u> Date: <u>10/23/19</u>
Company: _____	Company: _____	Company: <u>SGS</u>

Instructions
Requested Turnaround Time: <u>Standard</u>
Special Instructions: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File



e-Sample Receipt Form

SGS Workorder #:

1196381



1 1 9 6 3 8 1

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.0 °C Therm. ID: D45
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g, 200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	Yes	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1196381001-A	No Preservative Required	OK			
1196381001-B	Methanol field pres. 4 C	OK			
1196381002-A	No Preservative Required	OK			
1196381002-B	Methanol field pres. 4 C	OK			
1196381003-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Judy Hepner

Title: Environmental Staff

Date: 1/29/2020

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America Inc.

Laboratory Report Number: 1196381

Laboratory Report Date: 11/11/2019

Contaminated Site Name: Tesoro - Garretts

ADEC File Number: 2100.26.078

Hazard Identification Number: 23603

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA

Comments:

- b. Correct analyses requested? **Yes** / No / NA

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes / No / NA

Comments: *The cooler temperature blank was 1.0° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes**/ No / NA

Comments:

- c. Sample condition documented - broken, leaking (MeOH), zero headspace (VOC vials)? **Yes**/ No / NA

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? Yes / No / **NA**

Comments: *No discrepancies were noted.*

- e. Data quality or usability affected?

Comments: *See above.*

4. Case Narrative

- a. Present and understandable? **Yes**/ No / NA

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes**/ No / NA

Comments: *The following discrepancies, errors, or QC failures were noted in the case narrative:*

- AK 102/103 – Surrogate recovery for 5a-anthracene does not meet QC criteria, however samples are within criteria.
- 8260C – MS recoveries for trichlorofluoromethane and trans-1,2-dichloroethene do not meet QC criteria. These analytes were not detected above the LOQ in the associated parent sample.
- 8260C – MS/MSD RPD for multiple analytes do not meet QC criteria. These analytes were not detected above the LOQ in the associated parent sample.
- 8260C – MS/MSD RPD for bromomethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample.
- 8270D SIM – PAH recovery for Indeno[1,2,3-c,d]pyrene, Dibenzo[a,h]anthracene and Benzo[g,h,i]perylene do not meet QC criteria. Refer to the LCS for accuracy requirements.
- 8270D SIM - PAH MS/MSD RPD for Dibenzo[a,h]anthracene does not meet QC criteria. Results for this analyte are considered estimated in the parent sample.
- 8270D SIM – PAH MSD recovery for several analytes do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.

- c. Were all corrective actions documented? Yes/**No**/ NA

Comments: *See above.*

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA
Comments:
- b. All applicable holding times met? **Yes** / No / NA
Comments:
- c. All soils reported on a dry weight basis? **Yes** / No / NA
Comments:
- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** / **No** / NA
Comments: *The LOQs for 1,2,3-trichloropropane and 1,2-dibromoethane are greater than the ADEC cleanup levels.*
- e. Data quality or usability affected?
Comments: *There is a potential that these target analytes are present at concentrations in the associated samples greater than the ADEC cleanup levels, but less than the LOQs; however, these analytes were not detected at estimated concentrations in the project samples.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / NA
Comments:
- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?
Yes / No / NA
Comments: *Although less than the LOQ, estimated (J-flagged) concentrations of GRO (1.83 mg/kg) and DRO (6.79 mg/kg) were detected in the method blank associated with soil Samples B4S2 and B6S3.*
- iii. If above LOQ or project specified objectives, what samples are affected?
Comments: *Each sample is potentially affected by the GRO method blank detection. Samples B4S2 and B6S3 are considered potentially affected by the DRO method blank detection.*
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes / No / NA
Comments: *When the reported sample concentration is within 10 times the reported blank concentration, the project samples are flagged "B". If both the sample*

concentration and method blank concentrations are reported at levels less than the LOQ, the sample concentration is reported as non-detect at the LOQ and flagged "B". If the sample concentration is greater than 5 times the blank concentration and less than or equal to 10 times the blank concentration, the sample concentration is reported at the measured sample concentration and flagged "B".

- v. Data quality or usability affected?

Comments: *See above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / **NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / **No** / NA

Comments: *AK 102/103 – Surrogate recovery for 5a-anthracene does not meet QC criteria, however samples are within criteria.*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from LCS/LCSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / No / NA

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Each sample.*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined? **Yes** / **No** / NA

Comments: *The project samples were within criteria; therefore, flagging is not required.*

- vii. Data quality or usability affected?

Comments: *No, see above.*

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics - One MS/MSD reported per matrix, analysis, and 20 samples?

Yes / No / NA

Comments:

- ii. Metals/Inorganics - One MS and one MSD reported per matrix, analysis and 20 samples? Yes / No / **NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) Yes / **No** / NA

Comments: *See Section 4.b.*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from MS/MSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) Yes / **No** / NA

Comments: *See Section 4.b.*

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Each sample.*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / **No** / NA

Comments: *The analytes were not detected in the parent samples or the LCS was used for accuracy requirements.*

- vii. Data quality or usability affected?

Comments: *No, see above.*

d. Surrogates - Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses - field, QC, and laboratory samples? **Yes** / No / NA

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) Yes / **No** / NA

Comments: *For Method AK102/103, surrogate recovery for 5 α -androstande did not meet QC criteria.*

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined? **Yes** **No** / **NA**

Comments: *The sample surrogate recovery are within criteria; therefore, flagging is not required.*

- iv. Data quality or usability affected?

Comments: *No, See above.*

e. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? **Yes** / **No** / **NA**

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes** **No** / **NA**

Comments: *Only one cooler was used to transport the samples each day.*

- iii. All results less than LOQ and project specified objectives? **Yes** / **No** / **NA**

Comments: *Although less than the LOQ, an estimated (J-flagged) concentration of methylene chloride (33.2 ug/kg) was detected in the trip blank.*

- iv. If above LOQ or project specified DQOs, what samples are affected?

Comments: *Each sample. Although, methylene chloride was not detected in the samples. Therefore, flagging is not required.*

- v. Data quality or usability affected?

Comments: *No, see above.*

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes **No** / **NA**

Comments: *A field duplicate was not submitted with this lab report.*

- ii. Were the field duplicates submitted blind to the lab? **Yes** / **No** / **NA**

Comments:

- iii. Precision – All relative percent differences (RPDs) less than specified project objectives? (Recommended: 30% for water, 50% for soil) **Yes** / **No** / **NA**

Comments:

- iv. Data quality or usability affected?

Comments: *See above.*

- g. Decontamination or Equipment Blank** (if not applicable, a comment stating why must be entered below).

Yes / **No** / NA

Comments: *A decontamination or equipment blank was not included in our ADEC-approved work plan.*

- h. All results less than LOQ and project specified objectives?**

Yes / No / **NA**

Comments:

- i. If above LOQ or project specified objectives, what samples are affected?**

Comments:

- ii. Data quality or usability affected?**

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?** **Yes** / No / NA

Comments: *A key is provided on Page 3 of the SGS Laboratory Report.*

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks St. Suite 3
Anchorage, AK 99518
(907)561-2120

Report Number: **1196455**

Client Project: **103798-001 Garrett's Tesoro**

Dear Jacob Tracy,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jillian Janssen
Project Manager
Jillian.Janssen@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1196455**
Project Name/Site: **103798-001 Garrett's Tesoro**
Project Contact: **Jacob Tracy**

Refer to sample receipt form for information on sample condition.

LCSD for HBN 1801819 [VXX/3518 (1541880) LCSD

8260C - LCS/LCSD RPD for chloroethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/12/2019 9:08:00AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
103798-B1MWR2	1196455001	10/25/2019	10/28/2019	Water (Surface, Eff., Ground)
103798-B2MW	1196455002	10/27/2019	10/28/2019	Water (Surface, Eff., Ground)
103798-B3MW	1196455003	10/25/2019	10/28/2019	Water (Surface, Eff., Ground)
103798-B4MW	1196455004	10/25/2019	10/28/2019	Water (Surface, Eff., Ground)
103798-B6MW	1196455005	10/25/2019	10/28/2019	Water (Surface, Eff., Ground)
103798-B12MW	1196455006	10/27/2019	10/28/2019	Water (Surface, Eff., Ground)
103798-TB	1196455007	10/25/2019	10/28/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 11/12/2019 9:08:04AM

Detectable Results Summary

Client Sample ID: **103798-B1MWR2**

Lab Sample ID: 1196455001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	21.8	ug/L
2-Methylnaphthalene	33.0	ug/L
Naphthalene	285	ug/L
Phenanthrene	0.126	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	5.67	mg/L
Volatile Fuels		
Gasoline Range Organics	134	mg/L
Volatile GC/MS		
1,2,4-Trimethylbenzene	1650	ug/L
1,2-Dichloroethane	145J	ug/L
1,3,5-Trimethylbenzene	410J	ug/L
Benzene	8750	ug/L
Ethylbenzene	6220	ug/L
Naphthalene	360J	ug/L
n-Propylbenzene	270J	ug/L
o-Xylene	5170	ug/L
P & M -Xylene	17100	ug/L
Toluene	31400	ug/L
Xylenes (total)	22200	ug/L

Client Sample ID: **103798-B2MW**

Lab Sample ID: 1196455002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	3.96	ug/L
2-Methylnaphthalene	5.58	ug/L
Fluorene	0.0514	ug/L
Naphthalene	104	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	2.86	mg/L
Volatile Fuels		
Gasoline Range Organics	193	mg/L
Volatile GC/MS		
1,2,4-Trimethylbenzene	975	ug/L
1,2-Dichloroethane	205J	ug/L
1,3,5-Trimethylbenzene	230J	ug/L
Benzene	57900	ug/L
Ethylbenzene	3350	ug/L
Naphthalene	255J	ug/L
n-Propylbenzene	225J	ug/L
o-Xylene	4110	ug/L
P & M -Xylene	9200	ug/L
Toluene	33900	ug/L
Xylenes (total)	13300	ug/L

Client Sample ID: **103798-B3MW**

Lab Sample ID: 1196455003

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.312J	mg/L
Gasoline Range Organics	0.0375J	mg/L

Detectable Results Summary

Client Sample ID: **103798-B4MW**

Lab Sample ID: 1196455004

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Naphthalene	0.0564J	ug/L
Diesel Range Organics	0.227J	mg/L
Gasoline Range Organics	0.0482J	mg/L
1,2-Dichloroethane	7.94	ug/L
Benzene	13.9	ug/L

Client Sample ID: **103798-B6MW**

Lab Sample ID: 1196455005

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.175J	mg/L
Gasoline Range Organics	0.124	mg/L
1,2,4-Trimethylbenzene	1.27	ug/L
1,2-Dibromoethane	0.0333J	ug/L
1,3,5-Trimethylbenzene	0.389J	ug/L
Benzene	6.99	ug/L
Chloroform	2.13	ug/L
Ethylbenzene	5.41	ug/L
Naphthalene	0.472J	ug/L
o-Xylene	4.34	ug/L
P & M -Xylene	14.6	ug/L
Toluene	27.7	ug/L
Xylenes (total)	19.0	ug/L

Client Sample ID: **103798-B12MW**

Lab Sample ID: 1196455006

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	3.92	ug/L
2-Methylnaphthalene	5.46	ug/L
Fluorene	0.0524	ug/L
Naphthalene	101	ug/L
Phenanthrene	0.0361J	ug/L
Diesel Range Organics	4.09	mg/L
Gasoline Range Organics	198	mg/L
1,2,4-Trimethylbenzene	980	ug/L
1,2-Dichloroethane	200J	ug/L
1,3,5-Trimethylbenzene	235J	ug/L
Benzene	57900	ug/L
Ethylbenzene	3380	ug/L
Naphthalene	245J	ug/L
n-Propylbenzene	235J	ug/L
o-Xylene	4120	ug/L
P & M -Xylene	9280	ug/L
Toluene	33800	ug/L
Xylenes (total)	13400	ug/L

Client Sample ID: **103798-TB**

Lab Sample ID: 1196455007

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Methylene chloride	1.12J	ug/L

Print Date: 11/12/2019 9:08:06AM



Results of 103798-B1MWR2

Client Sample ID: 103798-B1MWR2
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455001
Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards with associated quality and detection data.

Results of 103798-B1MWR2

Client Sample ID: **103798-B1MWR2**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455001
Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Batch Information

Analytical Batch: XMS11856
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/11/19 13:01
Container ID: 1196455001-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/07/19 14:00
Container ID: 1196455001-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11854
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/08/19 14:33
Container ID: 1196455001-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of 103798-B1MWR2

Client Sample ID: **103798-B1MWR2**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455001
 Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	5.67	0.577	0.173	mg/L	1		10/30/19 23:50
Surrogates							
5a Androstane (surr)	71.2	50-150		%	1		10/30/19 23:50

Batch Information

Analytical Batch: XFC15456
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/30/19 23:50
 Container ID: 1196455001-C

Prep Batch: XXX42531
 Prep Method: SW3520C
 Prep Date/Time: 10/29/19 08:23
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of 103798-B1MWR2

Client Sample ID: **103798-B1MWR2**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455001
 Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	134	10.0	3.10	mg/L	100		11/01/19 03:21
Surrogates							
4-Bromofluorobenzene (surr)	85.2	50-150		%	100		11/01/19 03:21

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 11/01/19 03:21
 Container ID: 1196455001-F

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B1MWR2

Client Sample ID: 103798-B1MWR2
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455001
Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-B1MWR2

Client Sample ID: **103798-B1MWR2**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455001
 Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	250 U	500	155	ug/L	500		10/28/19 20:26
Chloromethane	250 U	500	155	ug/L	500		10/28/19 20:26
cis-1,2-Dichloroethene	250 U	500	155	ug/L	500		10/28/19 20:26
cis-1,3-Dichloropropene	125 U	250	75.0	ug/L	500		10/28/19 20:26
Dibromochloromethane	125 U	250	75.0	ug/L	500		10/28/19 20:26
Dibromomethane	250 U	500	155	ug/L	500		10/28/19 20:26
Dichlorodifluoromethane	250 U	500	155	ug/L	500		10/28/19 20:26
Ethylbenzene	6220	500	155	ug/L	500		10/28/19 20:26
Freon-113	2500 U	5000	1550	ug/L	500		10/28/19 20:26
Hexachlorobutadiene	250 U	500	155	ug/L	500		10/28/19 20:26
Isopropylbenzene (Cumene)	250 U	500	155	ug/L	500		10/28/19 20:26
Methylene chloride	1250 U	2500	500	ug/L	500		10/28/19 20:26
Methyl-t-butyl ether	2500 U	5000	1550	ug/L	500		10/28/19 20:26
Naphthalene	360 J	500	155	ug/L	500		10/28/19 20:26
n-Butylbenzene	250 U	500	155	ug/L	500		10/28/19 20:26
n-Propylbenzene	270 J	500	155	ug/L	500		10/28/19 20:26
o-Xylene	5170	500	155	ug/L	500		10/28/19 20:26
P & M -Xylene	17100	1000	310	ug/L	500		10/28/19 20:26
sec-Butylbenzene	250 U	500	155	ug/L	500		10/28/19 20:26
Styrene	250 U	500	155	ug/L	500		10/28/19 20:26
tert-Butylbenzene	250 U	500	155	ug/L	500		10/28/19 20:26
Tetrachloroethene	250 U	500	155	ug/L	500		10/28/19 20:26
Toluene	31400	500	155	ug/L	500		10/28/19 20:26
trans-1,2-Dichloroethene	250 U	500	155	ug/L	500		10/28/19 20:26
trans-1,3-Dichloropropene	250 U	500	155	ug/L	500		10/28/19 20:26
Trichloroethene	250 U	500	155	ug/L	500		10/28/19 20:26
Trichlorofluoromethane	250 U	500	155	ug/L	500		10/28/19 20:26
Vinyl acetate	2500 U	5000	1550	ug/L	500		10/28/19 20:26
Vinyl chloride	37.5 U	75.0	25.0	ug/L	500		10/28/19 20:26
Xylenes (total)	22200	1500	500	ug/L	500		10/28/19 20:26
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	500		10/28/19 20:26
4-Bromofluorobenzene (surr)	99.6	85-114		%	500		10/28/19 20:26
Toluene-d8 (surr)	99.2	89-112		%	500		10/28/19 20:26

Print Date: 11/12/2019 9:08:07AM

J flagging is activated

Results of 103798-B1MWR2

Client Sample ID: **103798-B1MWR2**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455001
Lab Project ID: 1196455

Collection Date: 10/25/19 22:55
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19613
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 20:26
Container ID: 1196455001-H

Prep Batch: VXX35162
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-B2MW

Client Sample ID: 103798-B2MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455002
Lab Project ID: 1196455

Collection Date: 10/27/19 14:05
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/07/19 14:21
Container ID: 1196455002-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11854
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/08/19 14:53
Container ID: 1196455002-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of **103798-B2MW**

Client Sample ID: **103798-B2MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455002
Lab Project ID: 1196455

Collection Date: 10/27/19 14:05
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	2.86		0.588	0.176	mg/L	1		10/31/19 00:00
Surrogates								
5a Androstane (surr)	73.5		50-150		%	1		10/31/19 00:00

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 00:00
Container ID: 1196455002-C

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of 103798-B2MW

Client Sample ID: **103798-B2MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455002
 Lab Project ID: 1196455

Collection Date: 10/27/19 14:05
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	193	10.0	3.10	mg/L	100		11/01/19 03:39
Surrogates							
4-Bromofluorobenzene (surr)	84.5	50-150		%	100		11/01/19 03:39

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 11/01/19 03:39
 Container ID: 1196455002-F

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B2MW

Client Sample ID: **103798-B2MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455002
 Lab Project ID: 1196455

Collection Date: 10/27/19 14:05
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	125 U	250	75.0	ug/L	500		10/28/19 20:42
1,1,1-Trichloroethane	250 U	500	155	ug/L	500		10/28/19 20:42
1,1,2,2-Tetrachloroethane	125 U	250	75.0	ug/L	500		10/28/19 20:42
1,1,2-Trichloroethane	100 U	200	60.0	ug/L	500		10/28/19 20:42
1,1-Dichloroethane	250 U	500	155	ug/L	500		10/28/19 20:42
1,1-Dichloroethene	250 U	500	155	ug/L	500		10/28/19 20:42
1,1-Dichloropropene	250 U	500	155	ug/L	500		10/28/19 20:42
1,2,3-Trichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:42
1,2,3-Trichloropropane	250 U	500	155	ug/L	500		10/28/19 20:42
1,2,4-Trichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:42
1,2,4-Trimethylbenzene	975	500	155	ug/L	500		10/28/19 20:42
1,2-Dibromo-3-chloropropane	2500 U	5000	1550	ug/L	500		10/28/19 20:42
1,2-Dibromoethane	18.8 U	37.5	9.00	ug/L	500		10/28/19 20:42
1,2-Dichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:42
1,2-Dichloroethane	205 J	250	75.0	ug/L	500		10/28/19 20:42
1,2-Dichloropropane	250 U	500	155	ug/L	500		10/28/19 20:42
1,3,5-Trimethylbenzene	230 J	500	155	ug/L	500		10/28/19 20:42
1,3-Dichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:42
1,3-Dichloropropane	125 U	250	75.0	ug/L	500		10/28/19 20:42
1,4-Dichlorobenzene	125 U	250	75.0	ug/L	500		10/28/19 20:42
2,2-Dichloropropane	250 U	500	155	ug/L	500		10/28/19 20:42
2-Butanone (MEK)	2500 U	5000	1550	ug/L	500		10/28/19 20:42
2-Chlorotoluene	250 U	500	155	ug/L	500		10/28/19 20:42
2-Hexanone	2500 U	5000	1550	ug/L	500		10/28/19 20:42
4-Chlorotoluene	250 U	500	155	ug/L	500		10/28/19 20:42
4-Isopropyltoluene	250 U	500	155	ug/L	500		10/28/19 20:42
4-Methyl-2-pentanone (MIBK)	2500 U	5000	1550	ug/L	500		10/28/19 20:42
Benzene	57900	200	60.0	ug/L	500		10/28/19 20:42
Bromobenzene	250 U	500	155	ug/L	500		10/28/19 20:42
Bromochloromethane	250 U	500	155	ug/L	500		10/28/19 20:42
Bromodichloromethane	125 U	250	75.0	ug/L	500		10/28/19 20:42
Bromoform	250 U	500	155	ug/L	500		10/28/19 20:42
Bromomethane	1250 U	2500	750	ug/L	500		10/28/19 20:42
Carbon disulfide	2500 U	5000	1550	ug/L	500		10/28/19 20:42
Carbon tetrachloride	250 U	500	155	ug/L	500		10/28/19 20:42
Chlorobenzene	125 U	250	75.0	ug/L	500		10/28/19 20:42
Chloroethane	250 U	500	155	ug/L	500		10/28/19 20:42

Print Date: 11/12/2019 9:08:07AM

J flagging is activated



Results of 103798-B2MW

Client Sample ID: **103798-B2MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455002
 Lab Project ID: 1196455

Collection Date: 10/27/19 14:05
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	250 U	500	155	ug/L	500		10/28/19 20:42
Chloromethane	250 U	500	155	ug/L	500		10/28/19 20:42
cis-1,2-Dichloroethene	250 U	500	155	ug/L	500		10/28/19 20:42
cis-1,3-Dichloropropene	125 U	250	75.0	ug/L	500		10/28/19 20:42
Dibromochloromethane	125 U	250	75.0	ug/L	500		10/28/19 20:42
Dibromomethane	250 U	500	155	ug/L	500		10/28/19 20:42
Dichlorodifluoromethane	250 U	500	155	ug/L	500		10/28/19 20:42
Ethylbenzene	3350	500	155	ug/L	500		10/28/19 20:42
Freon-113	2500 U	5000	1550	ug/L	500		10/28/19 20:42
Hexachlorobutadiene	250 U	500	155	ug/L	500		10/28/19 20:42
Isopropylbenzene (Cumene)	250 U	500	155	ug/L	500		10/28/19 20:42
Methylene chloride	1250 U	2500	500	ug/L	500		10/28/19 20:42
Methyl-t-butyl ether	2500 U	5000	1550	ug/L	500		10/28/19 20:42
Naphthalene	255 J	500	155	ug/L	500		10/28/19 20:42
n-Butylbenzene	250 U	500	155	ug/L	500		10/28/19 20:42
n-Propylbenzene	225 J	500	155	ug/L	500		10/28/19 20:42
o-Xylene	4110	500	155	ug/L	500		10/28/19 20:42
P & M -Xylene	9200	1000	310	ug/L	500		10/28/19 20:42
sec-Butylbenzene	250 U	500	155	ug/L	500		10/28/19 20:42
Styrene	250 U	500	155	ug/L	500		10/28/19 20:42
tert-Butylbenzene	250 U	500	155	ug/L	500		10/28/19 20:42
Tetrachloroethene	250 U	500	155	ug/L	500		10/28/19 20:42
Toluene	33900	500	155	ug/L	500		10/28/19 20:42
trans-1,2-Dichloroethene	250 U	500	155	ug/L	500		10/28/19 20:42
trans-1,3-Dichloropropene	250 U	500	155	ug/L	500		10/28/19 20:42
Trichloroethene	250 U	500	155	ug/L	500		10/28/19 20:42
Trichlorofluoromethane	250 U	500	155	ug/L	500		10/28/19 20:42
Vinyl acetate	2500 U	5000	1550	ug/L	500		10/28/19 20:42
Vinyl chloride	37.5 U	75.0	25.0	ug/L	500		10/28/19 20:42
Xylenes (total)	13300	1500	500	ug/L	500		10/28/19 20:42
Surrogates							
1,2-Dichloroethane-D4 (surr)	98.7	81-118		%	500		10/28/19 20:42
4-Bromofluorobenzene (surr)	99.4	85-114		%	500		10/28/19 20:42
Toluene-d8 (surr)	99.6	89-112		%	500		10/28/19 20:42

Results of 103798-B2MW

Client Sample ID: **103798-B2MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455002
Lab Project ID: 1196455

Collection Date: 10/27/19 14:05
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19613
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 20:42
Container ID: 1196455002-H

Prep Batch: VXX35162
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-B3MW

Client Sample ID: 103798-B3MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455003
Lab Project ID: 1196455

Collection Date: 10/25/19 21:30
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/07/19 14:42
Container ID: 1196455003-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of 103798-B3MW

Client Sample ID: **103798-B3MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455003
 Lab Project ID: 1196455

Collection Date: 10/25/19 21:30
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.312 J	0.588	0.176	mg/L	1		10/31/19 00:10
Surrogates							
5a Androstane (surr)	83.4	50-150		%	1		10/31/19 00:10

Batch Information

Analytical Batch: XFC15456
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/31/19 00:10
 Container ID: 1196455003-C

Prep Batch: XXX42531
 Prep Method: SW3520C
 Prep Date/Time: 10/29/19 08:23
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

Results of 103798-B3MW

Client Sample ID: **103798-B3MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455003
 Lab Project ID: 1196455

Collection Date: 10/25/19 21:30
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0375 J	0.100	0.0310	mg/L	1		11/01/19 04:31
Surrogates							
4-Bromofluorobenzene (surr)	75.5	50-150		%	1		11/01/19 04:31

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 11/01/19 04:31
 Container ID: 1196455003-F

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B3MW

Client Sample ID: 103798-B3MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455003
Lab Project ID: 1196455

Collection Date: 10/25/19 21:30
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-B3MW

Client Sample ID: **103798-B3MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455003
 Lab Project ID: 1196455

Collection Date: 10/25/19 21:30
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Chloromethane	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		10/28/19 20:11
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		10/28/19 20:11
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Freon-113	5.00 U	10.0	3.10	ug/L	1		10/28/19 20:11
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		10/28/19 20:11
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		10/28/19 20:11
Naphthalene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/28/19 20:11
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Styrene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Toluene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		10/28/19 20:11
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		10/28/19 20:11
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		10/28/19 20:11
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		10/28/19 20:11
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		10/28/19 20:11
4-Bromofluorobenzene (surr)	103	85-114		%	1		10/28/19 20:11
Toluene-d8 (surr)	99.7	89-112		%	1		10/28/19 20:11

Results of 103798-B3MW

Client Sample ID: **103798-B3MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455003
Lab Project ID: 1196455

Collection Date: 10/25/19 21:30
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19613
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 20:11
Container ID: 1196455003-H

Prep Batch: VXX35162
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-B4MW

Client Sample ID: 103798-B4MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455004
Lab Project ID: 1196455

Collection Date: 10/25/19 16:44
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/07/19 15:02
Container ID: 1196455004-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of **103798-B4MW**

Client Sample ID: **103798-B4MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455004
Lab Project ID: 1196455

Collection Date: 10/25/19 16:44
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.227 J	0.566	0.170	mg/L	1		10/31/19 00:20
Surrogates							
5a Androstane (surr)	76.1	50-150		%	1		10/31/19 00:20

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 00:20
Container ID: 1196455004-C

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Results of 103798-B4MW

Client Sample ID: **103798-B4MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455004
 Lab Project ID: 1196455

Collection Date: 10/25/19 16:44
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0482 J	0.100	0.0310	mg/L	1		11/01/19 04:49
Surrogates							
4-Bromofluorobenzene (surr)	77.8	50-150		%	1		11/01/19 04:49

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 11/01/19 04:49
 Container ID: 1196455004-F

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B4MW

Client Sample ID: 103798-B4MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455004
Lab Project ID: 1196455

Collection Date: 10/25/19 16:44
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-B4MW

Client Sample ID: 103798-B4MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455004
Lab Project ID: 1196455

Collection Date: 10/25/19 16:44
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 103798-B4MW

Client Sample ID: **103798-B4MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455004
Lab Project ID: 1196455

Collection Date: 10/25/19 16:44
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19627
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 11/03/19 08:49
Container ID: 1196455004-I

Prep Batch: VXX35181
Prep Method: SW5030B
Prep Date/Time: 11/03/19 00:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-B6MW

Client Sample ID: 103798-B6MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455005
Lab Project ID: 1196455

Collection Date: 10/25/19 23:42
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/07/19 15:23
Container ID: 1196455005-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of 103798-B6MW

Client Sample ID: **103798-B6MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455005
 Lab Project ID: 1196455

Collection Date: 10/25/19 23:42
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.175 J	0.577	0.173	mg/L	1		10/31/19 00:30
Surrogates							
5a Androstane (surr)	76.5	50-150		%	1		10/31/19 00:30

Batch Information

Analytical Batch: XFC15456
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/31/19 00:30
 Container ID: 1196455005-C

Prep Batch: XXX42531
 Prep Method: SW3520C
 Prep Date/Time: 10/29/19 08:23
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of 103798-B6MW

Client Sample ID: **103798-B6MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455005
 Lab Project ID: 1196455

Collection Date: 10/25/19 23:42
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.124	0.100	0.0310	mg/L	1		11/01/19 05:06
Surrogates							
4-Bromofluorobenzene (surr)	82.5	50-150		%	1		11/01/19 05:06

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 11/01/19 05:06
 Container ID: 1196455005-F

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B6MW

Client Sample ID: 103798-B6MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455005
Lab Project ID: 1196455

Collection Date: 10/25/19 23:42
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-B6MW

Client Sample ID: **103798-B6MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455005
 Lab Project ID: 1196455

Collection Date: 10/25/19 23:42
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	2.13	1.00	0.310	ug/L	1		11/03/19 09:04
Chloromethane	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		11/03/19 09:04
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		11/03/19 09:04
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Ethylbenzene	5.41	1.00	0.310	ug/L	1		11/03/19 09:04
Freon-113	5.00 U	10.0	3.10	ug/L	1		11/03/19 09:04
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		11/03/19 09:04
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		11/03/19 09:04
Naphthalene	0.472 J	1.00	0.310	ug/L	1		11/03/19 09:04
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
o-Xylene	4.34	1.00	0.310	ug/L	1		11/03/19 09:04
P & M -Xylene	14.6	2.00	0.620	ug/L	1		11/03/19 09:04
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Styrene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Toluene	27.7	1.00	0.310	ug/L	1		11/03/19 09:04
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		11/03/19 09:04
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		11/03/19 09:04
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		11/03/19 09:04
Xylenes (total)	19.0	3.00	1.00	ug/L	1		11/03/19 09:04
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		11/03/19 09:04
4-Bromofluorobenzene (surr)	101	85-114		%	1		11/03/19 09:04
Toluene-d8 (surr)	98.2	89-112		%	1		11/03/19 09:04

Results of 103798-B6MW

Client Sample ID: **103798-B6MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455005
Lab Project ID: 1196455

Collection Date: 10/25/19 23:42
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19627
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 11/03/19 09:04
Container ID: 1196455005-I

Prep Batch: VXX35181
Prep Method: SW5030B
Prep Date/Time: 11/03/19 00:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-B12MW

Client Sample ID: 103798-B12MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455006
Lab Project ID: 1196455

Collection Date: 10/27/19 14:35
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11854
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/08/19 15:14
Container ID: 1196455006-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 11/07/19 15:44
Container ID: 1196455006-A

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:50
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of 103798-B12MW

Client Sample ID: **103798-B12MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455006
 Lab Project ID: 1196455

Collection Date: 10/27/19 14:35
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	4.09		0.577	0.173	mg/L	1		10/31/19 00:40
Surrogates								
5a Androstane (surr)	76		50-150		%	1		10/31/19 00:40

Batch Information

Analytical Batch: XFC15456
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/31/19 00:40
 Container ID: 1196455006-C

Prep Batch: XXX42531
 Prep Method: SW3520C
 Prep Date/Time: 10/29/19 08:23
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of 103798-B12MW

Client Sample ID: **103798-B12MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455006
 Lab Project ID: 1196455

Collection Date: 10/27/19 14:35
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	198	10.0	3.10	mg/L	100		11/01/19 03:56
Surrogates							
4-Bromofluorobenzene (surr)	86.5	50-150		%	100		11/01/19 03:56

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 11/01/19 03:56
 Container ID: 1196455006-F

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B12MW

Client Sample ID: **103798-B12MW**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455006
 Lab Project ID: 1196455

Collection Date: 10/27/19 14:35
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	125 U	250	75.0	ug/L	500		10/28/19 20:58
1,1,1-Trichloroethane	250 U	500	155	ug/L	500		10/28/19 20:58
1,1,2,2-Tetrachloroethane	125 U	250	75.0	ug/L	500		10/28/19 20:58
1,1,2-Trichloroethane	100 U	200	60.0	ug/L	500		10/28/19 20:58
1,1-Dichloroethane	250 U	500	155	ug/L	500		10/28/19 20:58
1,1-Dichloroethene	250 U	500	155	ug/L	500		10/28/19 20:58
1,1-Dichloropropene	250 U	500	155	ug/L	500		10/28/19 20:58
1,2,3-Trichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:58
1,2,3-Trichloropropane	250 U	500	155	ug/L	500		10/28/19 20:58
1,2,4-Trichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:58
1,2,4-Trimethylbenzene	980	500	155	ug/L	500		10/28/19 20:58
1,2-Dibromo-3-chloropropane	2500 U	5000	1550	ug/L	500		10/28/19 20:58
1,2-Dibromoethane	18.8 U	37.5	9.00	ug/L	500		10/28/19 20:58
1,2-Dichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:58
1,2-Dichloroethane	200 J	250	75.0	ug/L	500		10/28/19 20:58
1,2-Dichloropropane	250 U	500	155	ug/L	500		10/28/19 20:58
1,3,5-Trimethylbenzene	235 J	500	155	ug/L	500		10/28/19 20:58
1,3-Dichlorobenzene	250 U	500	155	ug/L	500		10/28/19 20:58
1,3-Dichloropropane	125 U	250	75.0	ug/L	500		10/28/19 20:58
1,4-Dichlorobenzene	125 U	250	75.0	ug/L	500		10/28/19 20:58
2,2-Dichloropropane	250 U	500	155	ug/L	500		10/28/19 20:58
2-Butanone (MEK)	2500 U	5000	1550	ug/L	500		10/28/19 20:58
2-Chlorotoluene	250 U	500	155	ug/L	500		10/28/19 20:58
2-Hexanone	2500 U	5000	1550	ug/L	500		10/28/19 20:58
4-Chlorotoluene	250 U	500	155	ug/L	500		10/28/19 20:58
4-Isopropyltoluene	250 U	500	155	ug/L	500		10/28/19 20:58
4-Methyl-2-pentanone (MIBK)	2500 U	5000	1550	ug/L	500		10/28/19 20:58
Benzene	57900	200	60.0	ug/L	500		10/28/19 20:58
Bromobenzene	250 U	500	155	ug/L	500		10/28/19 20:58
Bromochloromethane	250 U	500	155	ug/L	500		10/28/19 20:58
Bromodichloromethane	125 U	250	75.0	ug/L	500		10/28/19 20:58
Bromoform	250 U	500	155	ug/L	500		10/28/19 20:58
Bromomethane	1250 U	2500	750	ug/L	500		10/28/19 20:58
Carbon disulfide	2500 U	5000	1550	ug/L	500		10/28/19 20:58
Carbon tetrachloride	250 U	500	155	ug/L	500		10/28/19 20:58
Chlorobenzene	125 U	250	75.0	ug/L	500		10/28/19 20:58
Chloroethane	250 U	500	155	ug/L	500		10/28/19 20:58

Print Date: 11/12/2019 9:08:07AM

J flagging is activated



Results of 103798-B12MW

Client Sample ID: 103798-B12MW
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455006
Lab Project ID: 1196455

Collection Date: 10/27/19 14:35
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like Chloroform, Benzene, and Toluene, along with a Surrogates section.

Results of 103798-B12MW

Client Sample ID: **103798-B12MW**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455006
Lab Project ID: 1196455

Collection Date: 10/27/19 14:35
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19613
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 20:58
Container ID: 1196455006-H

Prep Batch: VXX35162
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of 103798-TB

Client Sample ID: **103798-TB**
 Client Project ID: **103798-001 Garrett's Tesoro**
 Lab Sample ID: 1196455007
 Lab Project ID: 1196455

Collection Date: 10/25/19 13:00
 Received Date: 10/28/19 11:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/29/19 03:27
Surrogates							
4-Bromofluorobenzene (surr)	82.6	50-150		%	1		10/29/19 03:27

Batch Information

Analytical Batch: VFC15015
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/29/19 03:27
 Container ID: 1196455007-A

Prep Batch: VXX35160
 Prep Method: SW5030B
 Prep Date/Time: 10/28/19 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-TB

Client Sample ID: 103798-TB
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455007
Lab Project ID: 1196455

Collection Date: 10/25/19 13:00
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-TB

Client Sample ID: 103798-TB
Client Project ID: 103798-001 Garrett's Tesoro
Lab Sample ID: 1196455007
Lab Project ID: 1196455

Collection Date: 10/25/19 13:00
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 103798-TB

Client Sample ID: **103798-TB**
Client Project ID: **103798-001 Garrett's Tesoro**
Lab Sample ID: 1196455007
Lab Project ID: 1196455

Collection Date: 10/25/19 13:00
Received Date: 10/28/19 11:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19613
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 19:24
Container ID: 1196455007-D

Prep Batch: VXX35162
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1801632 [VXX/35160]
 Blank Lab ID: 1540981

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1196455007

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	81.2	50-150		%

Batch Information

Analytical Batch: VFC15015
 Analytical Method: AK101
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 10/29/2019 3:09:00AM

Prep Batch: VXX35160
 Prep Method: SW5030B
 Prep Date/Time: 10/28/2019 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:10AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35160]
 Blank Spike Lab ID: 1540982
 Date Analyzed: 10/29/2019 00:12

Spike Duplicate ID: LCSD for HBN 1196455 [VXX35160]
 Spike Duplicate Lab ID: 1540983
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455007

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	1.01	101	1.00	0.996	100	(60-120)	1.40	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	97.3	97	0.0500	96.3	96	(50-150)	1.10	
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Batch Information

Analytical Batch: **VFC15015**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35160**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/28/2019 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:12AM

Method Blank

Blank ID: MB for HBN 1801650 [VXX/35162]
 Blank Lab ID: 1541033

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1196455001, 1196455002, 1196455003, 1196455006, 1196455007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 11/12/2019 9:08:14AM



Method Blank

Blank ID: MB for HBN 1801650 [VXX/35162]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1541033

QC for Samples:

1196455001, 1196455002, 1196455003, 1196455006, 1196455007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	98.1	89-112		%

Print Date: 11/12/2019 9:08:14AM

Method Blank

Blank ID: MB for HBN 1801650 [VXX/35162]
Blank Lab ID: 1541033

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196455001, 1196455002, 1196455003, 1196455006, 1196455007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19613
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 10/28/2019 4:32:00PM

Prep Batch: VXX35162
Prep Method: SW5030B
Prep Date/Time: 10/28/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:14AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35162]
 Blank Spike Lab ID: 1541034
 Date Analyzed: 10/28/2019 16:48

Spike Duplicate ID: LCSD for HBN 1196455
 [VXX35162]
 Spike Duplicate Lab ID: 1541035
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455001, 1196455002, 1196455003, 1196455006, 1196455007

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	28.4	95	30	27.4	91	(78-124)	3.90	(< 20)
1,1,1-Trichloroethane	30	26.4	88	30	26.8	89	(74-131)	1.40	(< 20)
1,1,2,2-Tetrachloroethane	30	27.1	91	30	28.1	94	(71-121)	3.40	(< 20)
1,1,2-Trichloroethane	30	28.7	96	30	28.4	95	(80-119)	1.20	(< 20)
1,1-Dichloroethane	30	26.0	87	30	26.4	88	(77-125)	1.60	(< 20)
1,1-Dichloroethene	30	26.3	88	30	26.4	88	(71-131)	0.42	(< 20)
1,1-Dichloropropene	30	27.4	91	30	27.7	92	(79-125)	1.10	(< 20)
1,2,3-Trichlorobenzene	30	27.9	93	30	30.7	102	(69-129)	9.60	(< 20)
1,2,3-Trichloropropane	30	26.1	87	30	27.0	90	(73-122)	3.50	(< 20)
1,2,4-Trichlorobenzene	30	29.1	97	30	30.6	102	(69-130)	5.10	(< 20)
1,2,4-Trimethylbenzene	30	28.6	95	30	28.8	96	(79-124)	0.77	(< 20)
1,2-Dibromo-3-chloropropane	30	27.4	92	30	29.3	98	(62-128)	6.70	(< 20)
1,2-Dibromoethane	30	29.4	98	30	29.3	98	(77-121)	0.51	(< 20)
1,2-Dichlorobenzene	30	27.9	93	30	28.3	94	(80-119)	1.30	(< 20)
1,2-Dichloroethane	30	25.4	85	30	26.0	87	(73-128)	2.60	(< 20)
1,2-Dichloropropane	30	27.9	93	30	28.0	93	(78-122)	0.36	(< 20)
1,3,5-Trimethylbenzene	30	28.4	95	30	28.9	96	(75-124)	1.70	(< 20)
1,3-Dichlorobenzene	30	28.7	96	30	29.0	97	(80-119)	1.10	(< 20)
1,3-Dichloropropane	30	29.3	98	30	29.3	98	(80-119)	0.03	(< 20)
1,4-Dichlorobenzene	30	28.5	95	30	28.6	95	(79-118)	0.04	(< 20)
2,2-Dichloropropane	30	25.0	83	30	25.3	84	(60-139)	0.92	(< 20)
2-Butanone (MEK)	90	82.2	91	90	86.7	96	(56-143)	5.30	(< 20)
2-Chlorotoluene	30	27.8	93	30	28.1	94	(79-122)	0.93	(< 20)
2-Hexanone	90	80.7	90	90	84.0	93	(57-139)	4.00	(< 20)
4-Chlorotoluene	30	28.0	93	30	28.2	94	(78-122)	0.75	(< 20)
4-Isopropyltoluene	30	28.9	96	30	29.3	98	(77-127)	1.20	(< 20)
4-Methyl-2-pentanone (MIBK)	90	77.0	86	90	81.8	91	(67-130)	6.00	(< 20)
Benzene	30	27.3	91	30	27.4	91	(79-120)	0.29	(< 20)
Bromobenzene	30	27.9	93	30	28.3	94	(80-120)	1.10	(< 20)
Bromochloromethane	30	25.7	86	30	26.5	88	(78-123)	3.10	(< 20)
Bromodichloromethane	30	27.3	91	30	27.8	93	(79-125)	1.70	(< 20)
Bromoform	30	28.6	95	30	28.4	95	(66-130)	0.56	(< 20)
Bromomethane	30	24.7	82	30	25.2	84	(53-141)	1.80	(< 20)
Carbon disulfide	45	38.8	86	45	39.5	88	(64-133)	1.90	(< 20)

Print Date: 11/12/2019 9:08:17AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35162]
 Blank Spike Lab ID: 1541034
 Date Analyzed: 10/28/2019 16:48

Spike Duplicate ID: LCSD for HBN 1196455 [VXX35162]
 Spike Duplicate Lab ID: 1541035
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455001, 1196455002, 1196455003, 1196455006, 1196455007

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	26.5	88	30	26.8	89	(72-136)	1.10	(< 20)
Chlorobenzene	30	27.4	91	30	27.0	90	(82-118)	1.70	(< 20)
Chloroethane	30	33.5	112	30	27.9	93	(60-138)	18.40	(< 20)
Chloroform	30	26.2	87	30	26.6	89	(79-124)	1.50	(< 20)
Chloromethane	30	24.6	82	30	24.5	82	(50-139)	0.41	(< 20)
cis-1,2-Dichloroethene	30	26.3	88	30	26.6	89	(78-123)	0.98	(< 20)
cis-1,3-Dichloropropene	30	28.0	93	30	28.5	95	(75-124)	1.90	(< 20)
Dibromochloromethane	30	28.8	96	30	28.5	95	(74-126)	1.10	(< 20)
Dibromomethane	30	26.3	88	30	27.4	91	(79-123)	3.90	(< 20)
Dichlorodifluoromethane	30	27.8	93	30	27.8	93	(32-152)	0.00	(< 20)
Ethylbenzene	30	28.1	94	30	27.7	92	(79-121)	1.40	(< 20)
Freon-113	45	40.1	89	45	40.4	90	(70-136)	0.67	(< 20)
Hexachlorobutadiene	30	28.0	93	30	29.7	99	(66-134)	5.90	(< 20)
Isopropylbenzene (Cumene)	30	29.0	97	30	28.4	95	(72-131)	2.10	(< 20)
Methylene chloride	30	27.1	90	30	27.7	92	(74-124)	1.90	(< 20)
Methyl-t-butyl ether	45	39.9	89	45	41.4	92	(71-124)	3.60	(< 20)
Naphthalene	30	25.8	86	30	28.7	96	(61-128)	10.70	(< 20)
n-Butylbenzene	30	29.4	98	30	29.9	100	(75-128)	1.70	(< 20)
n-Propylbenzene	30	29.1	97	30	29.0	97	(76-126)	0.38	(< 20)
o-Xylene	30	28.5	95	30	28.2	94	(78-122)	1.30	(< 20)
P & M -Xylene	60	57.2	95	60	56.1	94	(80-121)	1.90	(< 20)
sec-Butylbenzene	30	28.8	96	30	29.1	97	(77-126)	1.10	(< 20)
Styrene	30	29.0	97	30	28.9	97	(78-123)	0.24	(< 20)
tert-Butylbenzene	30	28.1	94	30	28.3	94	(78-124)	0.85	(< 20)
Tetrachloroethene	30	28.2	94	30	27.1	90	(74-129)	3.90	(< 20)
Toluene	30	26.5	88	30	26.1	87	(80-121)	1.60	(< 20)
trans-1,2-Dichloroethene	30	25.9	86	30	26.3	88	(75-124)	1.60	(< 20)
trans-1,3-Dichloropropene	30	26.7	89	30	26.3	88	(73-127)	1.70	(< 20)
Trichloroethene	30	27.6	92	30	27.8	93	(79-123)	0.58	(< 20)
Trichlorofluoromethane	30	29.8	99	30	28.4	95	(65-141)	4.80	(< 20)
Vinyl acetate	30	28.3	94	30	29.3	98	(54-146)	3.50	(< 20)
Vinyl chloride	30	26.6	89	30	26.4	88	(58-137)	0.60	(< 20)
Xylenes (total)	90	85.7	95	90	84.3	94	(79-121)	1.70	(< 20)

Print Date: 11/12/2019 9:08:17AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35162]
 Blank Spike Lab ID: 1541034
 Date Analyzed: 10/28/2019 16:48

Spike Duplicate ID: LCSD for HBN 1196455
 [VXX35162]
 Spike Duplicate Lab ID: 1541035
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455001, 1196455002, 1196455003, 1196455006, 1196455007

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	94.4	94	30	96.1	96	(81-118)	1.70	
4-Bromofluorobenzene (surr)	30	101	101	30	99.6	100	(85-114)	1.00	
Toluene-d8 (surr)	30	100	100	30	98.4	98	(89-112)	1.70	

Batch Information

Analytical Batch: **VMS19613**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **CMC**

Prep Batch: **VXX35162**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/28/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:17AM

Method Blank

Blank ID: MB for HBN 1801769 [VXX/35172]
 Blank Lab ID: 1541570

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1196455001, 1196455002, 1196455003, 1196455004, 1196455005, 1196455006

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	74.3	50-150		%

Batch Information

Analytical Batch: VFC15018
 Analytical Method: AK101
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 11/1/2019 2:28:00AM

Prep Batch: VXX35172
 Prep Method: SW5030B
 Prep Date/Time: 10/31/2019 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:19AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35172]
 Blank Spike Lab ID: 1541571
 Date Analyzed: 11/01/2019 02:11

Spike Duplicate ID: LCSD for HBN 1196455 [VXX35172]
 Spike Duplicate Lab ID: 1541572
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455001, 1196455002, 1196455003, 1196455004, 1196455005, 1196455006

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.950	95	1.00	1.06	106	(60-120)	10.70	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	82.5	83	0.0500	84.3	84	(50-150)	2.20	

Batch Information

Analytical Batch: **VFC15018**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35172**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/31/2019 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1801819 [VXX/35181]

Blank Lab ID: 1541878

QC for Samples:

1196455004, 1196455005

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 11/12/2019 9:08:24AM

Method Blank

Blank ID: MB for HBN 1801819 [VXX/35181]

Blank Lab ID: 1541878

QC for Samples:

1196455004, 1196455005

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	98.4	89-112		%

Print Date: 11/12/2019 9:08:24AM



Method Blank

Blank ID: MB for HBN 1801819 [VXX/35181]
Blank Lab ID: 1541878

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196455004, 1196455005

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19627
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 11/3/2019 2:33:00AM

Prep Batch: VXX35181
Prep Method: SW5030B
Prep Date/Time: 11/3/2019 12:30:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:24AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35181]
 Blank Spike Lab ID: 1541879
 Date Analyzed: 11/03/2019 03:32

Spike Duplicate ID: LCSD for HBN 1196455
 [VXX35181]
 Spike Duplicate Lab ID: 1541880
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455004, 1196455005

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	29.7	99	30	28.8	96	(78-124)	3.30	(< 20)
1,1,1-Trichloroethane	30	30.2	101	30	27.8	93	(74-131)	8.40	(< 20)
1,1,2,2-Tetrachloroethane	30	30.3	101	30	29.6	99	(71-121)	2.40	(< 20)
1,1,2-Trichloroethane	30	30.1	100	30	30.1	100	(80-119)	0.25	(< 20)
1,1-Dichloroethane	30	29.9	100	30	27.4	91	(77-125)	9.00	(< 20)
1,1-Dichloroethene	30	31.2	104	30	27.7	92	(71-131)	11.70	(< 20)
1,1-Dichloropropene	30	31.3	104	30	29.0	97	(79-125)	7.50	(< 20)
1,2,3-Trichlorobenzene	30	26.6	89	30	32.5	108	(69-129)	19.80	(< 20)
1,2,3-Trichloropropane	30	28.8	96	30	28.0	93	(73-122)	2.90	(< 20)
1,2,4-Trichlorobenzene	30	30.0	100	30	31.8	106	(69-130)	5.70	(< 20)
1,2,4-Trimethylbenzene	30	31.1	104	30	29.6	99	(79-124)	5.10	(< 20)
1,2-Dibromo-3-chloropropane	30	28.6	95	30	30.0	100	(62-128)	4.70	(< 20)
1,2-Dibromoethane	30	31.2	104	30	31.0	103	(77-121)	0.52	(< 20)
1,2-Dichlorobenzene	30	30.5	102	30	29.4	98	(80-119)	3.70	(< 20)
1,2-Dichloroethane	30	29.0	97	30	27.1	90	(73-128)	7.00	(< 20)
1,2-Dichloropropane	30	31.6	105	30	28.9	96	(78-122)	9.10	(< 20)
1,3,5-Trimethylbenzene	30	31.3	104	30	29.6	99	(75-124)	5.60	(< 20)
1,3-Dichlorobenzene	30	31.3	104	30	29.8	100	(80-119)	4.60	(< 20)
1,3-Dichloropropane	30	31.1	104	30	30.8	103	(80-119)	0.91	(< 20)
1,4-Dichlorobenzene	30	31.4	105	30	29.6	99	(79-118)	5.70	(< 20)
2,2-Dichloropropane	30	29.3	98	30	26.5	88	(60-139)	10.10	(< 20)
2-Butanone (MEK)	90	88.4	98	90	88.7	99	(56-143)	0.43	(< 20)
2-Chlorotoluene	30	30.5	102	30	29.0	97	(79-122)	4.80	(< 20)
2-Hexanone	90	87.6	97	90	87.1	97	(57-139)	0.57	(< 20)
4-Chlorotoluene	30	30.9	103	30	29.0	97	(78-122)	6.50	(< 20)
4-Isopropyltoluene	30	32.1	107	30	30.3	101	(77-127)	5.80	(< 20)
4-Methyl-2-pentanone (MIBK)	90	89.3	99	90	84.4	94	(67-130)	5.60	(< 20)
Benzene	30	30.5	102	30	28.7	96	(79-120)	6.10	(< 20)
Bromobenzene	30	30.5	102	30	29.2	98	(80-120)	4.30	(< 20)
Bromochloromethane	30	29.8	99	30	27.4	91	(78-123)	8.30	(< 20)
Bromodichloromethane	30	31.4	105	30	28.9	96	(79-125)	8.40	(< 20)
Bromoform	30	30.9	103	30	30.3	101	(66-130)	2.20	(< 20)
Bromomethane	30	28.3	95	30	25.4	85	(53-141)	10.80	(< 20)
Carbon disulfide	45	47.1	105	45	41.6	92	(64-133)	12.40	(< 20)

Print Date: 11/12/2019 9:08:25AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35181]
 Blank Spike Lab ID: 1541879
 Date Analyzed: 11/03/2019 03:32

Spike Duplicate ID: LCSD for HBN 1196455 [VXX35181]
 Spike Duplicate Lab ID: 1541880
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455004, 1196455005

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	30.4	101	30	28.0	93	(72-136)	8.20	(< 20)
Chlorobenzene	30	29.4	98	30	28.1	94	(82-118)	4.50	(< 20)
Chloroethane	30	37.8	126	30	28.3	94	(60-138)	28.70	* (< 20)
Chloroform	30	30.0	100	30	27.5	92	(79-124)	8.70	(< 20)
Chloromethane	30	28.0	93	30	25.1	84	(50-139)	10.60	(< 20)
cis-1,2-Dichloroethene	30	30.5	102	30	27.6	92	(78-123)	10.00	(< 20)
cis-1,3-Dichloropropene	30	32.1	107	30	30.0	100	(75-124)	6.80	(< 20)
Dibromochloromethane	30	30.9	103	30	30.6	102	(74-126)	0.92	(< 20)
Dibromomethane	30	30.3	101	30	28.6	95	(79-123)	5.70	(< 20)
Dichlorodifluoromethane	30	33.3	111	30	29.8	100	(32-152)	11.00	(< 20)
Ethylbenzene	30	30.2	101	30	28.4	95	(79-121)	6.20	(< 20)
Freon-113	45	47.4	105	45	42.4	94	(70-136)	11.20	(< 20)
Hexachlorobutadiene	30	32.6	109	30	30.0	100	(66-134)	8.40	(< 20)
Isopropylbenzene (Cumene)	30	31.0	103	30	29.2	97	(72-131)	6.10	(< 20)
Methylene chloride	30	31.5	105	30	28.3	94	(74-124)	10.80	(< 20)
Methyl-t-butyl ether	45	44.9	100	45	43.5	97	(71-124)	3.10	(< 20)
Naphthalene	30	24.9	83	30	30.3	101	(61-128)	19.40	(< 20)
n-Butylbenzene	30	33.0	110	30	30.8	103	(75-128)	7.00	(< 20)
n-Propylbenzene	30	32.0	107	30	30.0	100	(76-126)	6.60	(< 20)
o-Xylene	30	30.6	102	30	28.9	96	(78-122)	5.90	(< 20)
P & M -Xylene	60	61.3	102	60	57.8	96	(80-121)	5.90	(< 20)
sec-Butylbenzene	30	31.8	106	30	30.3	101	(77-126)	5.00	(< 20)
Styrene	30	31.3	104	30	30.0	100	(78-123)	4.10	(< 20)
tert-Butylbenzene	30	31.0	103	30	29.2	98	(78-124)	5.90	(< 20)
Tetrachloroethene	30	29.9	100	30	28.7	96	(74-129)	4.00	(< 20)
Toluene	30	28.5	95	30	27.2	91	(80-121)	4.80	(< 20)
trans-1,2-Dichloroethene	30	30.0	100	30	27.3	91	(75-124)	9.50	(< 20)
trans-1,3-Dichloropropene	30	28.4	95	30	28.3	94	(73-127)	0.34	(< 20)
Trichloroethene	30	31.1	104	30	29.0	97	(79-123)	6.80	(< 20)
Trichlorofluoromethane	30	35.8	119	30	29.6	99	(65-141)	19.00	(< 20)
Vinyl acetate	30	34.5	115	30	33.4	111	(54-146)	3.20	(< 20)
Vinyl chloride	30	32.5	108	30	28.6	95	(58-137)	12.60	(< 20)
Xylenes (total)	90	92.0	102	90	86.7	96	(79-121)	5.90	(< 20)

Print Date: 11/12/2019 9:08:25AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [VXX35181]
 Blank Spike Lab ID: 1541879
 Date Analyzed: 11/03/2019 03:32

Spike Duplicate ID: LCSD for HBN 1196455 [VXX35181]
 Spike Duplicate Lab ID: 1541880
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455004, 1196455005

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	98.1	98	30	95	95	(81-118)	3.20	
4-Bromofluorobenzene (surr)	30	101	101	30	99.5	100	(85-114)	1.80	
Toluene-d8 (surr)	30	97.2	97	30	96.8	97	(89-112)	0.37	

Batch Information

Analytical Batch: **VMS19627**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX35181**
 Prep Method: **SW5030B**
 Prep Date/Time: **11/03/2019 00:30**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/12/2019 9:08:25AM



Method Blank

Blank ID: MB for HBN 1801619 [XXX/42531]
Blank Lab ID: 1540930

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1196455001, 1196455002, 1196455003, 1196455004, 1196455005, 1196455006

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	82.9	60-120		%

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/30/2019 6:06:00PM

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/2019 8:23:06AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/12/2019 9:08:27AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [XXX42531]
 Blank Spike Lab ID: 1540931
 Date Analyzed: 10/30/2019 18:36

Spike Duplicate ID: LCSD for HBN 1196455
 [XXX42531]
 Spike Duplicate Lab ID: 1540932
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455001, 1196455002, 1196455003, 1196455004, 1196455005, 1196455006

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	19.0	95	20	17.2	86	(75-125)	9.70	(< 20)

Surrogates

5a Androstane (surr)	0.4	98.4	98	0.4	91.8	92	(60-120)	6.90	
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Batch Information

Analytical Batch: **XFC15456**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **CMS**

Prep Batch: **XXX42531**
 Prep Method: **SW3520C**
 Prep Date/Time: **10/29/2019 08:23**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 11/12/2019 9:08:30AM



Method Blank

Blank ID: MB for HBN 1801620 [XXX/42532]
Blank Lab ID: 1540933

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196455001, 1196455002, 1196455003, 1196455004, 1196455005, 1196455006

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	65	47-106		%
Fluoranthene-d10 (surr)	69.6	24-116		%

Batch Information

Analytical Batch: XMS11853
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 11/7/2019 12:58:00PM

Prep Batch: XXX42532
Prep Method: SW3520C
Prep Date/Time: 10/29/2019 8:50:25AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/12/2019 9:08:32AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196455 [XXX42532]
 Blank Spike Lab ID: 1540934
 Date Analyzed: 11/07/2019 13:19

Spike Duplicate ID: LCSD for HBN 1196455
 [XXX42532]
 Spike Duplicate Lab ID: 1540935
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196455001, 1196455002, 1196455003, 1196455004, 1196455005, 1196455006

Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.60	80	2	1.65	83	(41-115)	3.30	(< 20)
2-Methylnaphthalene	2	1.56	78	2	1.61	81	(39-114)	3.40	(< 20)
Acenaphthene	2	1.56	78	2	1.61	81	(48-114)	3.10	(< 20)
Acenaphthylene	2	1.70	85	2	1.73	86	(35-121)	1.80	(< 20)
Anthracene	2	1.53	77	2	1.56	78	(53-119)	1.80	(< 20)
Benzo(a)Anthracene	2	1.60	80	2	1.65	83	(59-120)	3.00	(< 20)
Benzo[a]pyrene	2	1.50	75	2	1.55	78	(53-120)	3.60	(< 20)
Benzo[b]Fluoranthene	2	1.56	78	2	1.60	80	(53-126)	2.50	(< 20)
Benzo[g,h,i]perylene	2	1.45	73	2	1.53	77	(44-128)	5.40	(< 20)
Benzo[k]fluoranthene	2	1.57	79	2	1.64	82	(54-125)	3.90	(< 20)
Chrysene	2	1.60	80	2	1.66	83	(57-120)	3.90	(< 20)
Dibenzo[a,h]anthracene	2	1.38	69	2	1.48	74	(44-131)	7.10	(< 20)
Fluoranthene	2	1.73	87	2	1.76	88	(58-120)	1.70	(< 20)
Fluorene	2	1.59	80	2	1.63	81	(50-118)	1.90	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.55	78	2	1.63	81	(48-130)	4.80	(< 20)
Naphthalene	2	1.65	83	2	1.71	86	(43-114)	3.50	(< 20)
Phenanthrene	2	1.52	76	2	1.58	79	(53-115)	4.30	(< 20)
Pyrene	2	1.79	90	2	1.82	91	(53-121)	1.50	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	74.5	75	2	75.4	75	(47-106)	1.20	
Fluoranthene-d10 (surr)	2	81.5	82	2	82.8	83	(24-116)	1.60	

Batch Information

Analytical Batch: XMS11853
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD

Prep Batch: XXX42532
 Prep Method: SW3520C
 Prep Date/Time: 10/29/2019 08:50
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

1196455



Profile: 334864 JKJ

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

3990 Collins Way, Suite 100
Lake Oswego, OR 97035
(503) 223-6147

2043 Westport Center Drive
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(314) 699-9660

5430 Fairbanks Street, Suite 3
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(907) 561-2120

1321 Bannock Street, Suite 200
Denver, CO 80204
(303) 825-3800

2705 Saint Andrews Loop, Suite A
Pasco, WA 99301-3378
(509) 946-6309

CUSTODY RECORD

Laboratory SGS Page 1 of 1
Attn: Jillian

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO	AK101	DR0	AK102	VOCS	EPA 8260C	PAHS	EPA 8270B-SM	Total Number of Containers	Remarks/Matrix
103798-B1MWR2	(1AJ)	22:55	10/25/19	X	X	X	X	X	X	X				10	Groundwater
Y - B2MW	(2AJ)	14:05	10/27/19	↓	↓	↓	↓	↓	↓	↓				↓	↓
- B3MW	(3AJ)	21:30	10/25/19	↓	↓	↓	↓	↓	↓	↓				↓	↓
- B4MW	(4AJ)	16:44	10/25/19	↓	↓	↓	↓	↓	↓	↓				↓	↓
- B6MW	(5AJ)	23:42	10/25/19	↓	↓	↓	↓	↓	↓	↓				↓	↓
- B12MW	(6AJ)	14:35	10/27/19	↓	↓	↓	↓	↓	↓	↓				↓	↓
↓ - TB	(7AF)	13:00	10/25/19	↓	X			X						6	Trip Blank

Project Information	Sample Receipt
Project Number: <u>103798-001</u>	Total Number of Containers
Project Name: <u>Garrett's Tesoro</u>	COC Seals/Intact? Y/N/NA
Contact: <u>JCT/JKH</u>	Received Good Cond./Cold
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:
Sampler: <u>JKH</u>	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: <u>Standard</u>
Special Instructions:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>Judy Kepner</u> Time: <u>11:00</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: <u>Judy Kepner</u> Date: <u>10/28/19</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: <u>SWI</u>	Company: _____	Company: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Time: _____	Signature: _____ Time: _____	Signature: <u>Michelle Allarar</u> Time: <u>11:11</u>
Printed Name: _____ Date: _____	Printed Name: _____ Date: _____	Printed Name: <u>Michelle Allarar</u> Date: <u>10-28-19</u>
Company: _____	Company: _____	Company: <u>HD, Absent</u>

SGS 1:1 D45



e-Sample Receipt Form

SGS Workorder #:

1196455



1 1 9 6 4 5 5

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.1 °C Therm. ID: D45
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
<i>*If >6°C, were samples collected <8 hours ago?</i>	N/A	
<i>If <0°C, were sample containers ice free?</i>	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g, 200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1196455001-A	No Preservative Required	OK	1196455006-A	No Preservative Required	OK
1196455001-B	No Preservative Required	OK	1196455006-B	No Preservative Required	OK
1196455001-C	HCL to pH < 2	OK	1196455006-C	HCL to pH < 2	OK
1196455001-D	HCL to pH < 2	OK	1196455006-D	HCL to pH < 2	OK
1196455001-E	HCL to pH < 2	OK	1196455006-E	HCL to pH < 2	OK
1196455001-F	HCL to pH < 2	OK	1196455006-F	HCL to pH < 2	OK
1196455001-G	HCL to pH < 2	OK	1196455006-G	HCL to pH < 2	OK
1196455001-H	HCL to pH < 2	OK	1196455006-H	HCL to pH < 2	OK
1196455001-I	HCL to pH < 2	OK	1196455006-I	HCL to pH < 2	OK
1196455001-J	HCL to pH < 2	OK	1196455006-J	HCL to pH < 2	OK
1196455002-A	No Preservative Required	OK	1196455007-A	HCL to pH < 2	OK
1196455002-B	No Preservative Required	OK	1196455007-B	HCL to pH < 2	OK
1196455002-C	HCL to pH < 2	OK	1196455007-C	HCL to pH < 2	OK
1196455002-D	HCL to pH < 2	OK	1196455007-D	HCL to pH < 2	OK
1196455002-E	HCL to pH < 2	OK	1196455007-E	HCL to pH < 2	OK
1196455002-F	HCL to pH < 2	OK	1196455007-F	HCL to pH < 2	OK
1196455002-G	HCL to pH < 2	OK			
1196455002-H	HCL to pH < 2	OK			
1196455002-I	HCL to pH < 2	OK			
1196455002-J	HCL to pH < 2	OK			
1196455003-A	No Preservative Required	OK			
1196455003-B	No Preservative Required	OK			
1196455003-C	HCL to pH < 2	OK			
1196455003-D	HCL to pH < 2	OK			
1196455003-E	HCL to pH < 2	OK			
1196455003-F	HCL to pH < 2	OK			
1196455003-G	HCL to pH < 2	OK			
1196455003-H	HCL to pH < 2	OK			
1196455003-I	HCL to pH < 2	OK			
1196455003-J	HCL to pH < 2	OK			
1196455004-A	No Preservative Required	OK			
1196455004-B	No Preservative Required	OK			
1196455004-C	HCL to pH < 2	OK			
1196455004-D	HCL to pH < 2	OK			
1196455004-E	HCL to pH < 2	OK			
1196455004-F	HCL to pH < 2	OK			
1196455004-G	HCL to pH < 2	OK			
1196455004-H	HCL to pH < 2	OK			
1196455004-I	HCL to pH < 2	OK			
1196455004-J	HCL to pH < 2	OK			
1196455005-A	No Preservative Required	OK			
1196455005-B	No Preservative Required	OK			
1196455005-C	HCL to pH < 2	OK			
1196455005-D	HCL to pH < 2	OK			
1196455005-E	HCL to pH < 2	OK			
1196455005-F	HCL to pH < 2	OK			
1196455005-G	HCL to pH < 2	OK			
1196455005-H	HCL to pH < 2	OK			
1196455005-I	HCL to pH < 2	OK			
1196455005-J	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Judy Hepner

Title: Environmental Staff

Date: 1/29/2020

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America Inc.

Laboratory Report Number: 1196455

Laboratory Report Date: 11/12/2019

Contaminated Site Name: Tesoro - Garretts

ADEC File Number: 2100.26.078

Hazard Identification Number: 23603

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA

Comments:

- b. Correct analyses requested? **Yes** / No / NA

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes / No / NA

Comments: *The cooler temperature blank was 1.1° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes**/ No / NA

Comments:

- c. Sample condition documented - broken, leaking (MeOH), zero headspace (VOC vials)? **Yes**/ No / NA

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? **Yes** / No / **NA**

Comments: *No discrepancies were noted.*

- e. Data quality or usability affected?

Comments: *See above.*

4. Case Narrative

- a. Present and understandable? **Yes**/ No / NA

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes**/ No / NA

Comments: *8260C - LCS/LSCD RDP for chloroethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.*

- c. Were all corrective actions documented? **Yes**/ **No** / NA

Comments:

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes**/ No / NA

Comments:

- b. All applicable holding times met? **Yes**/ No / NA

Comments:

- c. All soils reported on a dry weight basis? **Yes** / No / **NA**

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** / **No** / **NA**

Comments: *The LOQs for 1,2,3-trichloropropane are greater than the ADEC cleanup level. In addition, LOQs for several VOCs and PAHs associated with Sample BIMWR, B2MW, and B12MW are greater than the ADEC cleanup levels due to dilution.*

- e. Data quality or usability affected?

Comments: *There is a potential that 1,2,3-trichloropropane is present at concentrations in the associated samples greater than the ADEC cleanup level, but less than the LOQs; however, this analyte was not detected at estimated concentrations in the project samples. The analytes with elevated LOQs due to dilution, are associated with samples with relatively high contaminant concentrations. Therefore, data usability is unaffected for these samples.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / **No** / **NA**

Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes / **No** / **NA**

Comments:

- iii. If above LOQ or project specified objectives, what samples are affected?

Comments: *NA*

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes / **No** / **NA**

Comments:

- v. Data quality or usability affected?

Comments: *See above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / **No** / **NA**

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / **No** / **NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / No / NA

Comments:

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from LCS/LCSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / **No** / NA

Comments: *The LCS/LCSD RPD for chloroethane did not meet QC criteria.*

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Each sample.*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?
Yes / **No** / NA

Comments: *Chloroethane was not detected in the samples, therefore, flagging is not required.*

- vii. Data quality or usability affected?

Comments: *No, see above.*

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics - One MS/MSD reported per matrix, analysis, and 20 samples?

Yes / No / **NA**

Comments:

- ii. Metals/Inorganics - One MS and one MSD reported per matrix, analysis and 20 samples? **Yes** / No / **NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / No / **NA**

Comments:

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from MS/MSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / No / **NA**

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / **NA**

Comments:

- vii. Data quality or usability affected?

Comments:

d. Surrogates - Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses - field, QC, and laboratory samples? **Yes** / No / NA

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes** / No / NA

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined? Yes / No / **NA**

Comments:

- iv. Data quality or usability affected?

Comments: *No, See above.*

e. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? **Yes** / No / NA

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? Yes / **No** / NA

Comments: *Only one cooler was used to transport the samples each day.*

- iii. All results less than LOQ and project specified objectives? **Yes** / No / NA

Comments: *Although less than the LOQ, an estimated (J-flagged) concentration of methylene chloride (1.12 ug/L) was measured in the trip blank.*

- iv. If above LOQ or project specified DQOs, what samples are affected?

Comments: *Each sample. Although, methylene chloride was not detected in the samples. Therefore, flagging is not required.*

- v. Data quality or usability affected?
Comments: *No, see above.*

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No / NA
Comments: *Sample B12MW is a duplicate of Sample B2MW.*
- ii. Were the field duplicates submitted blind to the lab? **Yes** / No / NA
Comments:
- iii. Precision – All relative percent differences (RPDs) less than specified project objectives? (Recommended: 30% for water, 50% for soil) Yes / **No** / NA
Comments: *The RPD for DRO (35%) exceeds QC criteria.*
- iv. Data quality or usability affected?
Comments: *The corresponding DRO results are flagged “E” on Table 4.*

g. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below).

Yes / **No** / NA

Comments: *A decontamination or equipment blank was not included in our ADEC-approved work plan.*

- i. All results less than LOQ and project specified objectives?
Yes / No / **NA**
Comments:
- ii. If above LOQ or project specified objectives, what samples are affected?
Comments:
- iii. Data quality or usability affected?
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate? **Yes** / No / NA
Comments: *A key is provided on Page 3 of the SGS Laboratory Report.*

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks St. Suite 3
Anchorage, AK 99518
(907)561-2120

Report Number: **1200034**

Client Project: **103798-002 Garrett's Tesoro**

Dear Jacob Tracy,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1200034**
Project Name/Site: **103798-002 Garrett's Tesoro**
Project Contact: **Jacob Tracy**

Refer to sample receipt form for information on sample condition.

103798-B5MW (1200034001) PS

AK102/103 - LCSD RPD for DRO does not meet QC criteria.

LCSD for HBN 1803650 [VXX/3536 (1548724) LCSD

8260C - LCSD recoveries for 2,2-dichloropropane and 4-Methyl-2-pentanone does not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 01/15/2020 4:22:18PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
103798-B5MW	1200034001	01/03/2020	01/03/2020	Water (Surface, Eff., Ground)
103798-TB2	1200034002	01/03/2020	01/03/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 01/15/2020 4:22:21PM

Detectable Results Summary

Client Sample ID: **103798-B5MW**

Lab Sample ID: 1200034001

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.685	mg/L
Toluene	0.344J	ug/L

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Member of SGS Group



Results of 103798-B5MW

Client Sample ID: 103798-B5MW
Client Project ID: 103798-002 Garrett's Tesoro
Lab Sample ID: 1200034001
Lab Project ID: 1200034

Collection Date: 01/03/20 12:05
Received Date: 01/03/20 12:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11906
Analytical Method: 8270D SIM LV (PAH)
Analyst: BMZ
Analytical Date/Time: 01/08/20 16:36
Container ID: 1200034001-C

Prep Batch: XXX42731
Prep Method: SW3520C
Prep Date/Time: 01/06/20 10:45
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of 103798-B5MW

Client Sample ID: **103798-B5MW**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 1200034001
 Lab Project ID: 1200034

Collection Date: 01/03/20 12:05
 Received Date: 01/03/20 12:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.685	0.566	0.170	mg/L	1		01/13/20 12:04
Surrogates							
5a Androstane (surr)	94.3	50-150		%	1		01/13/20 12:04

Batch Information

Analytical Batch: XFC15517
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 01/13/20 12:04
 Container ID: 1200034001-B

Prep Batch: XXX42737
 Prep Method: SW3520C
 Prep Date/Time: 01/08/20 15:55
 Prep Initial Wt./Vol.: 265 mL
 Prep Extract Vol: 1 mL

Results of 103798-B5MW

Client Sample ID: **103798-B5MW**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 1200034001
 Lab Project ID: 1200034

Collection Date: 01/03/20 12:05
 Received Date: 01/03/20 12:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		01/07/20 14:02
Surrogates							
4-Bromofluorobenzene (surr)	73.2	50-150		%	1		01/07/20 14:02

Batch Information

Analytical Batch: VFC15070
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 01/07/20 14:02
 Container ID: 1200034001-E

Prep Batch: VXX35367
 Prep Method: SW5030B
 Prep Date/Time: 01/07/20 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-B5MW

Client Sample ID: 103798-B5MW
Client Project ID: 103798-002 Garrett's Tesoro
Lab Sample ID: 1200034001
Lab Project ID: 1200034

Collection Date: 01/03/20 12:05
Received Date: 01/03/20 12:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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J flagging is activated



Results of 103798-B5MW

Client Sample ID: **103798-B5MW**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 1200034001
 Lab Project ID: 1200034

Collection Date: 01/03/20 12:05
 Received Date: 01/03/20 12:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Chloromethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		01/07/20 18:07
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		01/07/20 18:07
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Freon-113	5.00 U	10.0	3.10	ug/L	1		01/07/20 18:07
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		01/07/20 18:07
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		01/07/20 18:07
Naphthalene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
o-Xylene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		01/07/20 18:07
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Styrene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Toluene	0.344 J	1.00	0.310	ug/L	1		01/07/20 18:07
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 18:07
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		01/07/20 18:07
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		01/07/20 18:07
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		01/07/20 18:07
Surrogates							
1,2-Dichloroethane-D4 (surr)	111	81-118		%	1		01/07/20 18:07
4-Bromofluorobenzene (surr)	98.9	85-114		%	1		01/07/20 18:07
Toluene-d8 (surr)	96.7	89-112		%	1		01/07/20 18:07

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Results of 103798-B5MW

Client Sample ID: **103798-B5MW**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 1200034001
Lab Project ID: 1200034

Collection Date: 01/03/20 12:05
Received Date: 01/03/20 12:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19754
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 01/07/20 18:07
Container ID: 1200034001-H

Prep Batch: VXX35368
Prep Method: SW5030B
Prep Date/Time: 01/07/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of 103798-TB2

Client Sample ID: **103798-TB2**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 1200034002
 Lab Project ID: 1200034

Collection Date: 01/03/20 12:00
 Received Date: 01/03/20 12:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		01/07/20 14:19
Surrogates							
4-Bromofluorobenzene (surr)	77.3	50-150		%	1		01/07/20 14:19

Batch Information

Analytical Batch: VFC15070
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 01/07/20 14:19
 Container ID: 1200034002-A

Prep Batch: VXX35367
 Prep Method: SW5030B
 Prep Date/Time: 01/07/20 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 103798-TB2

Client Sample ID: **103798-TB2**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 1200034002
 Lab Project ID: 1200034

Collection Date: 01/03/20 12:00
 Received Date: 01/03/20 12:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		01/07/20 16:36
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		01/07/20 16:36
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		01/07/20 16:36
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		01/07/20 16:36
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		01/07/20 16:36
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		01/07/20 16:36
Benzene	0.200 U	0.400	0.120	ug/L	1		01/07/20 16:36
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
Bromoform	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
Bromomethane	2.50 U	5.00	2.00	ug/L	1		01/07/20 16:36
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		01/07/20 16:36
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		01/07/20 16:36
Chloroethane	0.500 U	1.00	0.310	ug/L	1		01/07/20 16:36

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J flagging is activated



Results of 103798-TB2

Client Sample ID: 103798-TB2
Client Project ID: 103798-002 Garrett's Tesoro
Lab Sample ID: 1200034002
Lab Project ID: 1200034

Collection Date: 01/03/20 12:00
Received Date: 01/03/20 12:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 103798-TB2

Client Sample ID: **103798-TB2**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 1200034002
Lab Project ID: 1200034

Collection Date: 01/03/20 12:00
Received Date: 01/03/20 12:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19754
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 01/07/20 16:36
Container ID: 1200034002-D

Prep Batch: VXX35368
Prep Method: SW5030B
Prep Date/Time: 01/07/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1803634 [VXX/35367]

Blank Lab ID: 1548657

QC for Samples:

1200034001, 1200034002

Matrix: Water (Surface, Eff., Ground)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	78.3	50-150		%

Batch Information

Analytical Batch: VFC15070

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: ST

Analytical Date/Time: 1/7/2020 11:07:00AM

Prep Batch: VXX35367

Prep Method: SW5030B

Prep Date/Time: 1/7/2020 8:00:00AM

Prep Initial Wt./Vol.: 5 mL

Prep Extract Vol: 5 mL

Print Date: 01/15/2020 4:22:27PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200034 [VXX35367]
 Blank Spike Lab ID: 1548658
 Date Analyzed: 01/07/2020 11:42

Spike Duplicate ID: LCSD for HBN 1200034 [VXX35367]
 Spike Duplicate Lab ID: 1548659
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200034001, 1200034002

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.873	87	1.00	0.866	87	(60-120)	0.75	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	83.1	83	0.0500	81.2	81	(50-150)	2.30	
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Batch Information

Analytical Batch: **VFC15070**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35367**
 Prep Method: **SW5030B**
 Prep Date/Time: **01/07/2020 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 01/15/2020 4:22:29PM



Method Blank

Blank ID: MB for HBN 1803650 [VXX/35368]

Blank Lab ID: 1548722

QC for Samples:

1200034001, 1200034002

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 01/15/2020 4:22:32PM

Method Blank

Blank ID: MB for HBN 1803650 [VXX/35368]

Blank Lab ID: 1548722

QC for Samples:

1200034001, 1200034002

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	97.3	89-112		%

Print Date: 01/15/2020 4:22:32PM



Method Blank

Blank ID: MB for HBN 1803650 [VXX/35368]
Blank Lab ID: 1548722

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1200034001, 1200034002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19754
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 1/7/2020 2:21:00PM

Prep Batch: VXX35368
Prep Method: SW5030B
Prep Date/Time: 1/7/2020 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 01/15/2020 4:22:32PM

Leaching Blank

Blank ID: LB for HBN 1803551 [TCLP/10420]
 Blank Lab ID: 1548353

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200034001, 1200034002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1-Dichloroethene	25.0U	50.0	15.5	ug/L
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
2-Butanone (MEK)	250U	500	155	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Carbon tetrachloride	25.0U	50.0	15.5	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
Chloroform	25.0U	50.0	15.5	ug/L
Hexachlorobutadiene	25.0U	50.0	15.5	ug/L
Tetrachloroethene	25.0U	50.0	15.5	ug/L
Trichloroethene	25.0U	50.0	15.5	ug/L
Vinyl chloride	25.0U	50.0	15.5	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	98.9	85-114		%
Toluene-d8 (surr)	97	89-112		%

Batch Information

Analytical Batch: VMS19754
 Analytical Method: SW8260C
 Instrument: VPA 780/5975 GC/MS
 Analyst: NRB
 Analytical Date/Time: 1/7/2020 3:36:00PM

Prep Batch: VXX35368
 Prep Method: SW5030B
 Prep Date/Time: 1/7/2020 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200034 [VXX35368]
 Blank Spike Lab ID: 1548723
 Date Analyzed: 01/07/2020 14:36

Spike Duplicate ID: LCSD for HBN 1200034 [VXX35368]
 Spike Duplicate Lab ID: 1548724
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200034001, 1200034002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	31.0	103	30	32.2	107	(78-124)	4.00	(< 20)
1,1,1-Trichloroethane	30	32.0	107	30	32.1	107	(74-131)	0.23	(< 20)
1,1,2,2-Tetrachloroethane	30	30.9	103	30	32.5	108	(71-121)	5.20	(< 20)
1,1,2-Trichloroethane	30	31.4	105	30	33.7	112	(80-119)	7.10	(< 20)
1,1-Dichloroethane	30	30.5	102	30	30.9	103	(77-125)	1.10	(< 20)
1,1-Dichloroethene	30	29.6	99	30	28.8	96	(71-131)	2.60	(< 20)
1,1-Dichloropropene	30	28.9	97	30	28.9	96	(79-125)	0.16	(< 20)
1,2,3-Trichlorobenzene	30	34.7	116	30	35.8	119	(69-129)	3.10	(< 20)
1,2,3-Trichloropropane	30	32.4	108	30	34.0	113	(73-122)	4.80	(< 20)
1,2,4-Trichlorobenzene	30	34.3	114	30	35.3	118	(69-130)	3.00	(< 20)
1,2,4-Trimethylbenzene	30	33.1	110	30	33.0	110	(79-124)	0.47	(< 20)
1,2-Dibromo-3-chloropropane	30	31.9	106	30	34.7	116	(62-128)	8.20	(< 20)
1,2-Dibromoethane	30	31.5	105	30	34.0	113	(77-121)	7.60	(< 20)
1,2-Dichlorobenzene	30	32.3	108	30	32.6	109	(80-119)	0.80	(< 20)
1,2-Dichloroethane	30	32.2	107	30	34.3	114	(73-128)	6.40	(< 20)
1,2-Dichloropropane	30	33.2	111	30	34.8	116	(78-122)	4.60	(< 20)
1,3,5-Trimethylbenzene	30	32.6	109	30	31.5	105	(75-124)	3.50	(< 20)
1,3-Dichlorobenzene	30	33.4	111	30	33.5	112	(80-119)	0.20	(< 20)
1,3-Dichloropropane	30	31.4	105	30	33.6	112	(80-119)	6.70	(< 20)
1,4-Dichlorobenzene	30	32.7	109	30	33.0	110	(79-118)	0.69	(< 20)
2,2-Dichloropropane	30	41.0	137	30	42.2	141	* (60-139)	2.70	(< 20)
2-Butanone (MEK)	90	108	120	90	126	140	(56-143)	15.60	(< 20)
2-Chlorotoluene	30	32.4	108	30	31.5	105	(79-122)	2.90	(< 20)
2-Hexanone	90	105	116	90	116	129	(57-139)	10.70	(< 20)
4-Chlorotoluene	30	32.9	110	30	32.6	109	(78-122)	0.93	(< 20)
4-Isopropyltoluene	30	31.1	104	30	30.1	100	(77-127)	3.10	(< 20)
4-Methyl-2-pentanone (MIBK)	90	114	126	90	126	140	* (67-130)	10.20	(< 20)
Benzene	30	31.8	106	30	32.6	109	(79-120)	2.50	(< 20)
Bromobenzene	30	32.2	107	30	32.2	107	(80-120)	0.11	(< 20)
Bromochloromethane	30	30.7	102	30	31.7	106	(78-123)	3.40	(< 20)
Bromodichloromethane	30	31.9	106	30	33.4	111	(79-125)	4.40	(< 20)
Bromoform	30	32.1	107	30	34.5	115	(66-130)	7.50	(< 20)
Bromomethane	30	35.4	118	30	33.0	110	(53-141)	6.90	(< 20)
Carbon disulfide	45	40.7	90	45	39.7	88	(64-133)	2.60	(< 20)

Print Date: 01/15/2020 4:22:34PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1200034 [VXX35368]
 Blank Spike Lab ID: 1548723
 Date Analyzed: 01/07/2020 14:36

Spike Duplicate ID: LCSD for HBN 1200034 [VXX35368]
 Spike Duplicate Lab ID: 1548724
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200034001, 1200034002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	31.9	106	30	32.0	107	(72-136)	0.10	(< 20)
Chlorobenzene	30	30.9	103	30	31.7	106	(82-118)	2.40	(< 20)
Chloroethane	30	35.8	119	30	31.0	103	(60-138)	14.20	(< 20)
Chloroform	30	29.3	98	30	30.2	101	(79-124)	2.90	(< 20)
Chloromethane	30	30.9	103	30	30.2	101	(50-139)	2.30	(< 20)
cis-1,2-Dichloroethene	30	30.2	101	30	30.7	102	(78-123)	1.70	(< 20)
cis-1,3-Dichloropropene	30	34.3	114	30	35.7	119	(75-124)	3.90	(< 20)
Dibromochloromethane	30	31.5	105	30	33.1	110	(74-126)	5.20	(< 20)
Dibromomethane	30	32.6	109	30	35.3	118	(79-123)	8.20	(< 20)
Dichlorodifluoromethane	30	32.8	109	30	31.9	106	(32-152)	2.70	(< 20)
Ethylbenzene	30	31.9	106	30	32.3	108	(79-121)	1.50	(< 20)
Freon-113	45	46.5	103	45	46.1	102	(70-136)	0.82	(< 20)
Hexachlorobutadiene	30	33.4	111	30	32.4	108	(66-134)	3.00	(< 20)
Isopropylbenzene (Cumene)	30	30.8	103	30	30.8	103	(72-131)	0.02	(< 20)
Methylene chloride	30	30.4	101	30	31.6	105	(74-124)	3.70	(< 20)
Methyl-t-butyl ether	45	51.8	115	45	55.8	124	(71-124)	7.40	(< 20)
Naphthalene	30	33.9	113	30	36.1	120	(61-128)	6.20	(< 20)
n-Butylbenzene	30	33.7	112	30	33.2	111	(75-128)	1.50	(< 20)
n-Propylbenzene	30	32.0	107	30	30.7	102	(76-126)	4.20	(< 20)
o-Xylene	30	32.2	107	30	32.5	108	(78-122)	0.94	(< 20)
P & M -Xylene	60	63.7	106	60	64.2	107	(80-121)	0.71	(< 20)
sec-Butylbenzene	30	32.5	108	30	31.3	104	(77-126)	3.80	(< 20)
Styrene	30	33.4	111	30	34.3	114	(78-123)	2.60	(< 20)
tert-Butylbenzene	30	30.8	103	30	29.8	99	(78-124)	3.40	(< 20)
Tetrachloroethene	30	31.1	104	30	31.4	105	(74-129)	1.10	(< 20)
Toluene	30	31.0	103	30	31.4	105	(80-121)	1.20	(< 20)
trans-1,2-Dichloroethene	30	30.8	103	30	31.5	105	(75-124)	2.20	(< 20)
trans-1,3-Dichloropropene	30	34.1	114	30	35.7	119	(73-127)	4.70	(< 20)
Trichloroethene	30	31.6	105	30	32.1	107	(79-123)	1.60	(< 20)
Trichlorofluoromethane	30	33.2	111	30	31.0	103	(65-141)	6.70	(< 20)
Vinyl acetate	30	47.2	157	* 30	50.9	170	* (54-146)	7.70	(< 20)
Vinyl chloride	30	27.8	93	30	27.1	90	(58-137)	2.30	(< 20)
Xylenes (total)	90	95.9	107	90	96.7	107	(79-121)	0.79	(< 20)

Print Date: 01/15/2020 4:22:34PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200034 [VXX35368]
 Blank Spike Lab ID: 1548723
 Date Analyzed: 01/07/2020 14:36

Spike Duplicate ID: LCSD for HBN 1200034 [VXX35368]
 Spike Duplicate Lab ID: 1548724
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200034001, 1200034002

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	97.7	98	30	101	101	(81-118)	3.40	
4-Bromofluorobenzene (surr)	30	102	102	30	98.5	99	(85-114)	3.60	
Toluene-d8 (surr)	30	102	102	30	101	101	(89-112)	0.32	

Batch Information

Analytical Batch: **VMS19754**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX35368**
 Prep Method: **SW5030B**
 Prep Date/Time: **01/07/2020 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 01/15/2020 4:22:34PM

Method Blank

Blank ID: MB for HBN 1803583 [XXX/42731]
 Blank Lab ID: 1548472

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200034001

Results by 8270D SIM LV (PAH)

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	71	47-106		%
Fluoranthene-d10 (surr)	76.5	24-116		%

Batch Information

Analytical Batch: XMS11906
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: BMZ
 Analytical Date/Time: 1/8/2020 3:35:00PM

Prep Batch: XXX42731
 Prep Method: SW3520C
 Prep Date/Time: 1/6/2020 10:45:39AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200034 [XXX42731]
 Blank Spike Lab ID: 1548473
 Date Analyzed: 01/08/2020 15:55

Spike Duplicate ID: LCSD for HBN 1200034 [XXX42731]
 Spike Duplicate Lab ID: 1548474
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200034001

Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.56	78	2	1.53	76	(41-115)	2.20	(< 20)
2-Methylnaphthalene	2	1.55	77	2	1.52	76	(39-114)	1.60	(< 20)
Acenaphthene	2	1.86	93	2	1.85	92	(48-114)	1.00	(< 20)
Acenaphthylene	2	1.52	76	2	1.50	75	(35-121)	1.30	(< 20)
Anthracene	2	1.63	82	2	1.59	79	(53-119)	2.60	(< 20)
Benzo(a)Anthracene	2	1.66	83	2	1.60	80	(59-120)	3.30	(< 20)
Benzo[a]pyrene	2	1.64	82	2	1.42	71	(53-120)	13.80	(< 20)
Benzo[b]Fluoranthene	2	1.66	83	2	1.58	79	(53-126)	4.70	(< 20)
Benzo[g,h,i]perylene	2	1.42	71	2	1.34	67	(44-128)	6.00	(< 20)
Benzo[k]fluoranthene	2	1.58	79	2	1.50	75	(54-125)	4.80	(< 20)
Chrysene	2	1.64	82	2	1.58	79	(57-120)	3.50	(< 20)
Dibenzo[a,h]anthracene	2	1.40	70	2	1.36	68	(44-131)	3.20	(< 20)
Fluoranthene	2	1.63	81	2	1.58	79	(58-120)	2.70	(< 20)
Fluorene	2	1.65	83	2	1.62	81	(50-118)	1.80	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.57	78	2	1.46	73	(48-130)	7.40	(< 20)
Naphthalene	2	1.54	77	2	1.51	76	(43-114)	1.90	(< 20)
Phenanthrene	2	1.55	78	2	1.55	78	(53-115)	0.21	(< 20)
Pyrene	2	1.68	84	2	1.63	81	(53-121)	2.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	72.4	72	2	72	72	(47-106)	0.53	
Fluoranthene-d10 (surr)	2	78.7	79	2	76.4	76	(24-116)	2.90	

Batch Information

Analytical Batch: XMS11906
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: BMZ

Prep Batch: XXX42731
 Prep Method: SW3520C
 Prep Date/Time: 01/06/2020 10:45
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL



Method Blank

Blank ID: MB for HBN 1803659 [XXX/42737]
Blank Lab ID: 1548757

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1200034001

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	99.4	60-120		%

Batch Information

Analytical Batch: XFC15517
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: JMG
Analytical Date/Time: 1/13/2020 11:05:00AM

Prep Batch: XXX42737
Prep Method: SW3520C
Prep Date/Time: 1/8/2020 3:55:59PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 01/15/2020 4:22:40PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200034 [XXX42737]
 Blank Spike Lab ID: 1548758
 Date Analyzed: 01/13/2020 11:25

Spike Duplicate ID: LCSD for HBN 1200034
 [XXX42737]
 Spike Duplicate Lab ID: 1548759
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200034001

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	20.5	103	20	21.9	109	(75-125)	6.30	(< 20)
Surrogates									
5a Androstane (surr)	0.4	106	106	0.4	119	119	(60-120)	10.80	

Batch Information

Analytical Batch: **XFC15517**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX42737**
 Prep Method: **SW3520C**
 Prep Date/Time: **01/08/2020 15:55**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1200034



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1
Attn: Sustan

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 899-9660

2705 Saint Andrews Loop, Suite A
Pasco, WA 99301-3378
(509) 946-6309

Analysis Parameters/Sample Container Description
(include preservative if used)

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

3990 Collins Way, Suite 100
Lake Oswego, OR 97035
(503) 223-6147

1321 Bannock Street, Suite 200
Denver, CO 80204
(303) 825-3800

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRD	AK101	PRO	AK102	VOL	SOBOL	PAHS	SOBOD-SIM	Total Number of Containers	Remarks/Matrix
103798-B5MW	1/3/20														
103798-B5MW	① AJ	12:05	1/3/20	X	X	X	X	X	X	X	X	X		10	Groundwater
103798-TB2	② AF	12:00	1/3/20	X	X				X					6	Trip blank

Project Information	Sample Receipt
Project Number: <u>103798-002</u>	Total Number of Containers
Project Name: <u>Garrett's Tesoro</u>	COC Seals/Intact? Y/N/NA
Contact: <u>JCT/JKH</u>	Received Good Cond./Cold
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:
Sampler: <u>JKH</u>	(attach shipping bill, if any)

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Time: <u>12:55</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: <u>Judy Hepner</u> Date: <u>1/3/20</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: <u>SWI</u>	Company: _____	Company: _____

Instructions
Requested Turnaround Time: <u>Standard</u>
Special Instructions: <u>Profile 334864 JM</u>

Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Time: _____	Signature: _____ Time: _____	Signature: <u>[Signature]</u> Time: <u>1/3/20</u>
Printed Name: _____ Date: _____	Printed Name: _____ Date: _____	Printed Name: <u>JAW</u> Date: <u>12:55</u>
Company: _____	Company: _____	Company: <u>SGS</u>

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

1.3°C DGZ Absent



e-Sample Receipt Form

SGS Workorder #:

1200034



1 2 0 0 0 3 4

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		<input checked="" type="checkbox"/> Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="checkbox"/> N/A	Absent
COC accompanied samples?	<input checked="" type="checkbox"/> Yes	
DOD: Were samples received in COC corresponding coolers?	<input type="checkbox"/> N/A	
<input checked="" type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> Yes	Cooler ID: 1 @ 1.3 °C Therm. ID: D62
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/> N/A	
If <0°C, were sample containers ice free?	<input type="checkbox"/> N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	<input checked="" type="checkbox"/> Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	<input checked="" type="checkbox"/> Yes	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N/A ***Exemption permitted for metals (e.g,200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/> Yes	
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/> N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1200034001-A	HCL to pH < 2	OK			
1200034001-B	HCL to pH < 2	OK			
1200034001-C	No Preservative Required	OK			
1200034001-D	No Preservative Required	OK			
1200034001-E	HCL to pH < 2	OK			
1200034001-F	HCL to pH < 2	OK			
1200034001-G	HCL to pH < 2	OK			
1200034001-H	HCL to pH < 2	OK			
1200034001-I	HCL to pH < 2	OK			
1200034001-J	HCL to pH < 2	OK			
1200034002-A	HCL to pH < 2	OK			
1200034002-B	HCL to pH < 2	OK			
1200034002-C	HCL to pH < 2	OK			
1200034002-D	HCL to pH < 2	OK			
1200034002-E	HCL to pH < 2	OK			
1200034002-F	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Judy Hepner

Title: Environmental Staff

Date: 1/29/2020

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America Inc.

Laboratory Report Number: 1200034

Laboratory Report Date: 1/15/2020

Contaminated Site Name: Tesoro - Garretts

ADEC File Number: 2100.26.078

Hazard Identification Number: 23603

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA

Comments:

- b. Correct analyses requested? **Yes** / No / NA

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes / No / NA

Comments: *The cooler temperature blank was 1.3° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes**/ No / NA

Comments:

- c. Sample condition documented - broken, leaking (MeOH), zero headspace (VOC vials)? **Yes**/ No / NA

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? Yes / No / **NA**

Comments: *No discrepancies were noted.*

- e. Data quality or usability affected?

Comments: *See above.*

4. Case Narrative

- a. Present and understandable? **Yes**/ No / NA

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes**/ No / NA

Comments: *The following discrepancies, errors, or QC failures were noted in the case narrative:*

- AK 102/103 – Sample B5MW LCSD RPD for DRO does not meet QC criteria.
- 8260C - LCSD recoveries for 2,2-dichloropropane and 4-methyl-2-pentanone does not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

- c. Were all corrective actions documented? Yes/**No**/ NA

Comments: *See above.*

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes**/ No / NA

Comments:

- b. All applicable holding times met? **Yes**/ No / NA

Comments:

- c. All soils reported on a dry weight basis? Yes / No / **NA**

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** **No** / NA

Comments: *The reported LOQ is greater than the cleanup level for 1,2,3-trichloropropane.*

- e. Data quality or usability affected?

Comments: *There is a potential that 1,2,3-trichloropropane is present at concentrations in the associated samples greater than the ADEC cleanup levels, but less than the LOQs; however, this analyte was not detected at estimated concentrations in the project samples.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / No / NA

Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes / No / NA

Comments:

- iii. If above LOQ or project specified objectives, what samples are affected?

Comments: *NA*

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes / No / **NA**

Comments:

- v. Data quality or usability affected?

Comments: *See above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / **NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments: *LCSD recoveries for 2,2-dichloropropane and 4-methyl-2-pentanone, do not meet QC criteria (biased high).*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from LCS/LCSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments: *LCS/LCSD RPD for DRO does not meet QC criteria.*

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Each sample.*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / NA

Comments: *These analytes were not detected in the associated project samples; therefore, the data quality and usability is unaffected. According to the laboratory data package the LCS/LCSD RPD for DRO meets QC criteria. Therefore, flagging is not required.*

- vii. Data quality or usability affected?

Comments: *No, see above.*

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics - One MS/MSD reported per matrix, analysis, and 20 samples?

Yes / No / NA

Comments:

- ii. Metals/Inorganics - One MS and one MSD reported per matrix, analysis and 20 samples? **Yes / No / NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments:

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from MS/MSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / NA

Comments: .

- vii. Data quality or usability affected?

Comments:

d. Surrogates - Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses - field, QC, and laboratory samples? **Yes / No / NA**

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes / No / NA**

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined? **Yes / No / NA**

Comments:

- iv. Data quality or usability affected?

Comments: *No, See above.*

e. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? **Yes / No / NA**

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes / No / NA**

Comments: *Only one cooler was used to transport the samples.*

iii. All results less than LOQ and project specified objectives? **Yes** / No / NA
Comments:

iv. If above LOQ or project specified DQOs, what samples are affected?
Comments: NA

v. Data quality or usability affected?
Comments: No, see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / **No** / NA
Comments: A field duplicate was not included in this laboratory report.

ii. Were the field duplicates submitted blind to the lab? **Yes** / No / **NA**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified project objectives? (Recommended: 30% for water, 50% for soil) **Yes** / No / **NA**
Comments:

iv. Data quality or usability affected?
Comments: NA

g. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below).

Yes / **No** / NA

Comments: A decontamination or equipment blank was not included in our ADEC-approved work plan.

i. All results less than LOQ and project specified objectives?
Yes / No / **NA**
Comments:

ii. If above LOQ or project specified objectives, what samples are affected?
Comments:

iii. Data quality or usability affected?
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate? **Yes** / No / NA
Comments: A key is provided on Page 3 of the SGS Laboratory Report.

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907)433-3228

Report Number: **1200742**

Client Project: **103798 Garrett's Tesoro**

Dear Alec Rizzo,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1200742**
Project Name/Site: **103798 Garrett's Tesoro**
Project Contact: **Alec Rizzo**

Refer to sample receipt form for information on sample condition.

LCS for HBN 1804716 [VXX/35447 (1552189) LCS

8260C - LCS recovery for dichlorodifluoromethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

1200742001MS (1552190) MS

8260C - MS recoveries for multiple analytes do not meet QC criteria.

1200742001MSD (1552191) MSD

8260C - MSD recoveries for dichlorodifluoromethane and trichlorofluoromethane do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.

8260C- MS/MSD RPD for naphthalene and 1,2,3-trichlorobenzene do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/09/2020 4:46:02PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIM (PAH)				
1200742001	103798-B7S5	XMS11943	Phenanthrene	BLC

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
103798-B7S5	1200742001	02/25/2020	02/25/2020	Soil/Solid (dry weight)
103798-STB	1200742002	02/25/2020	02/25/2020	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK101	Gasoline Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted

Print Date: 03/09/2020 4:46:05PM

Detectable Results Summary

Client Sample ID: **103798-B7S5**

Lab Sample ID: 1200742001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	15.1J	ug/Kg
2-Methylnaphthalene	29.6J	ug/Kg
Phenanthrene	27.0J	ug/Kg
Pyrene	8.66J	ug/Kg

Semivolatile Organic Fuels

Diesel Range Organics	16.8J	mg/Kg
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Print Date: 03/09/2020 4:46:06PM



Results of 103798-B7S5

Client Sample ID: 103798-B7S5
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200742001
Lab Project ID: 1200742

Collection Date: 02/25/20 14:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):74.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS11943
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 03/03/20 20:31
Container ID: 1200742001-A

Prep Batch: XXX42824
Prep Method: SW3550C
Prep Date/Time: 02/27/20 14:16
Prep Initial Wt./Vol.: 22.922 g
Prep Extract Vol: 5 mL

Results of 103798-B7S5

Client Sample ID: **103798-B7S5**
 Client Project ID: **103798 Garrett's Tesoro**
 Lab Sample ID: 1200742001
 Lab Project ID: 1200742

Collection Date: 02/25/20 14:00
 Received Date: 02/25/20 15:59
 Matrix: Soil/Solid (dry weight)
 Solids (%):74.6
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	16.8 J	26.5	8.23	mg/Kg	1		03/05/20 17:56

Surrogates

5a Androstane (surr)	90.6	50-150		%	1		03/05/20 17:56
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Batch Information

Analytical Batch: XFC15553
 Analytical Method: AK102
 Analyst: DSD
 Analytical Date/Time: 03/05/20 17:56
 Container ID: 1200742001-A

Prep Batch: XXX42833
 Prep Method: SW3550C
 Prep Date/Time: 03/02/20 13:38
 Prep Initial Wt./Vol.: 30.297 g
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	66.5 U	133	57.1	mg/Kg	1		03/05/20 17:56

Surrogates

n-Triacontane-d62 (surr)	79.7	50-150		%	1		03/05/20 17:56
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Batch Information

Analytical Batch: XFC15553
 Analytical Method: AK103
 Analyst: DSD
 Analytical Date/Time: 03/05/20 17:56
 Container ID: 1200742001-A

Prep Batch: XXX42833
 Prep Method: SW3550C
 Prep Date/Time: 03/02/20 13:38
 Prep Initial Wt./Vol.: 30.297 g
 Prep Extract Vol: 5 mL



Results of **103798-B7S5**

Client Sample ID: **103798-B7S5**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200742001
Lab Project ID: 1200742

Collection Date: 02/25/20 14:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):74.6
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.21 U	4.42	1.33	mg/Kg	1		03/03/20 16:21
Surrogates							
4-Bromofluorobenzene (surr)	85.6	50-150		%	1		03/03/20 16:21

Batch Information

Analytical Batch: VFC15092
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 03/03/20 16:21
Container ID: 1200742001-B

Prep Batch: VXX35460
Prep Method: SW5035A
Prep Date/Time: 02/25/20 14:00
Prep Initial Wt./Vol.: 61.635 g
Prep Extract Vol: 40.6587 mL



Results of 103798-B7S5

Client Sample ID: 103798-B7S5
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200742001
Lab Project ID: 1200742

Collection Date: 02/25/20 14:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):74.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 03/09/2020 4:46:07PM

J flagging is activated



Results of 103798-B7S5

Client Sample ID: 103798-B7S5
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200742001
Lab Project ID: 1200742

Collection Date: 02/25/20 14:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):74.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 103798-B7S5

Client Sample ID: **103798-B7S5**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200742001
Lab Project ID: 1200742

Collection Date: 02/25/20 14:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):74.6
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19811
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 02/26/20 16:58
Container ID: 1200742001-B

Prep Batch: VXX35447
Prep Method: SW5035A
Prep Date/Time: 02/25/20 14:00
Prep Initial Wt./Vol.: 61.635 g
Prep Extract Vol: 40.6587 mL

Results of 103798-STB

Client Sample ID: **103798-STB**
 Client Project ID: **103798 Garrett's Tesoro**
 Lab Sample ID: 1200742002
 Lab Project ID: 1200742

Collection Date: 02/25/20 10:00
 Received Date: 02/25/20 15:59
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.25 U	2.50	0.751	mg/Kg	1		03/03/20 12:32
Surrogates							
4-Bromofluorobenzene (surr)	79	50-150		%	1		03/03/20 12:32

Batch Information

Analytical Batch: VFC15092
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 03/03/20 12:32
 Container ID: 1200742002-A

Prep Batch: VXX35460
 Prep Method: SW5035A
 Prep Date/Time: 02/25/20 10:00
 Prep Initial Wt./Vol.: 49.929 g
 Prep Extract Vol: 25 mL



Results of 103798-STB

Client Sample ID: 103798-STB
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200742002
Lab Project ID: 1200742

Collection Date: 02/25/20 10:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 103798-STB

Client Sample ID: **103798-STB**
 Client Project ID: **103798 Garrett's Tesoro**
 Lab Sample ID: 1200742002
 Lab Project ID: 1200742

Collection Date: 02/25/20 10:00
 Received Date: 02/25/20 15:59
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	100 U	200	62.1	ug/Kg	1		02/26/20 16:43
Chloroform	2.00 U	4.01	1.00	ug/Kg	1		02/26/20 16:43
Chloromethane	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
cis-1,2-Dichloroethene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
cis-1,3-Dichloropropene	6.25 U	12.5	3.91	ug/Kg	1		02/26/20 16:43
Dibromochloromethane	2.50 U	5.01	1.50	ug/Kg	1		02/26/20 16:43
Dibromomethane	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
Dichlorodifluoromethane	25.1 U	50.1	15.0	ug/Kg	1		02/26/20 16:43
Ethylbenzene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
Freon-113	50.0 U	100	31.0	ug/Kg	1		02/26/20 16:43
Hexachlorobutadiene	10.0 U	20.0	6.21	ug/Kg	1		02/26/20 16:43
Isopropylbenzene (Cumene)	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
Methylene chloride	50.0 U	100	31.0	ug/Kg	1		02/26/20 16:43
Methyl-t-butyl ether	50.0 U	100	31.0	ug/Kg	1		02/26/20 16:43
Naphthalene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
n-Butylbenzene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
n-Propylbenzene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
o-Xylene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
P & M -Xylene	25.1 U	50.1	15.0	ug/Kg	1		02/26/20 16:43
sec-Butylbenzene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
Styrene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
tert-Butylbenzene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
Tetrachloroethene	6.25 U	12.5	3.91	ug/Kg	1		02/26/20 16:43
Toluene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
trans-1,2-Dichloroethene	12.5 U	25.0	7.81	ug/Kg	1		02/26/20 16:43
trans-1,3-Dichloropropene	6.25 U	12.5	3.91	ug/Kg	1		02/26/20 16:43
Trichloroethene	2.50 U	5.01	1.50	ug/Kg	1		02/26/20 16:43
Trichlorofluoromethane	25.1 U	50.1	15.0	ug/Kg	1		02/26/20 16:43
Vinyl acetate	50.0 U	100	31.0	ug/Kg	1		02/26/20 16:43
Vinyl chloride	0.401 U	0.801	0.250	ug/Kg	1		02/26/20 16:43
Xylenes (total)	37.5 U	75.1	22.8	ug/Kg	1		02/26/20 16:43
Surrogates							
1,2-Dichloroethane-D4 (surr)	100	71-136		%	1		02/26/20 16:43
4-Bromofluorobenzene (surr)	107	55-151		%	1		02/26/20 16:43
Toluene-d8 (surr)	100	85-116		%	1		02/26/20 16:43

Results of 103798-STB

Client Sample ID: **103798-STB**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200742002
Lab Project ID: 1200742

Collection Date: 02/25/20 10:00
Received Date: 02/25/20 15:59
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19811
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 02/26/20 16:43
Container ID: 1200742002-A

Prep Batch: VXX35447
Prep Method: SW5035A
Prep Date/Time: 02/25/20 10:00
Prep Initial Wt./Vol.: 49.929 g
Prep Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1804709 [SPT/10981]

Blank Lab ID: 1552170

QC for Samples:
1200742001

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10981

Analytical Method: SM21 2540G

Instrument:

Analyst: E.L

Analytical Date/Time: 2/26/2020 5:14:00PM

Print Date: 03/09/2020 4:46:09PM

Duplicate Sample Summary

Original Sample ID: 1200742001

Duplicate Sample ID: 1552171

QC for Samples:

1200742001

Analysis Date: 02/26/2020 17:14

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	74.6	74.9	%	0.36	(< 15)

Batch Information

Analytical Batch: SPT10981

Analytical Method: SM21 2540G

Instrument:

Analyst: E.L

Print Date: 03/09/2020 4:46:10PM

Method Blank

Blank ID: MB for HBN 1804716 [VXX/35447]

Blank Lab ID: 1552188

QC for Samples:

1200742001, 1200742002

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	1.00U	2.00	0.620	ug/Kg
1,1,2-Trichloroethane	0.400U	0.800	0.250	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	1.00U	2.00	0.620	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	0.500U	1.00	0.310	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	1.00U	2.00	0.620	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	10.0U	20.0	6.20	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg

Print Date: 03/09/2020 4:46:13PM



Method Blank

Blank ID: MB for HBN 1804716 [VXX/35447]

Blank Lab ID: 1552188

QC for Samples:

1200742001, 1200742002

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloroform	2.00U	4.00	0.620	ug/Kg
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	2.50U	5.00	0.620	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	2.50U	5.00	1.50	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	0.400U	0.800	0.250	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	71-136		%
4-Bromofluorobenzene (surr)	110	55-151		%
Toluene-d8 (surr)	100	85-116		%

Print Date: 03/09/2020 4:46:13PM



Method Blank

Blank ID: MB for HBN 1804716 [VXX/35447]
Blank Lab ID: 1552188

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200742001, 1200742002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19811
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 2/26/2020 2:00:00PM

Prep Batch: VXX35447
Prep Method: SW5035A
Prep Date/Time: 2/26/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 03/09/2020 4:46:13PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [VXX35447]

Blank Spike Lab ID: 1552189

Date Analyzed: 02/26/2020 14:15

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	834	111	(78-125)
1,1,1-Trichloroethane	750	851	113	(73-130)
1,1,2,2-Tetrachloroethane	750	816	109	(70-124)
1,1,2-Trichloroethane	750	828	110	(78-121)
1,1-Dichloroethane	750	832	111	(76-125)
1,1-Dichloroethene	750	855	114	(70-131)
1,1-Dichloropropene	750	856	114	(76-125)
1,2,3-Trichlorobenzene	750	644	86	(66-130)
1,2,3-Trichloropropane	750	768	102	(73-125)
1,2,4-Trichlorobenzene	750	669	89	(67-129)
1,2,4-Trimethylbenzene	750	744	99	(75-123)
1,2-Dibromo-3-chloropropane	750	837	112	(61-132)
1,2-Dibromoethane	750	836	111	(78-122)
1,2-Dichlorobenzene	750	785	105	(78-121)
1,2-Dichloroethane	750	770	103	(73-128)
1,2-Dichloropropane	750	835	111	(76-123)
1,3,5-Trimethylbenzene	750	760	101	(73-124)
1,3-Dichlorobenzene	750	772	103	(77-121)
1,3-Dichloropropane	750	792	106	(77-121)
1,4-Dichlorobenzene	750	758	101	(75-120)
2,2-Dichloropropane	750	876	117	(67-133)
2-Butanone (MEK)	2250	2610	116	(51-148)
2-Chlorotoluene	750	779	104	(75-122)
2-Hexanone	2250	2560	114	(53-145)
4-Chlorotoluene	750	786	105	(72-124)
4-Isopropyltoluene	750	668	89	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2610	116	(65-135)
Acetone	2250	2460	109	(36-164)
Benzene	750	842	112	(77-121)
Bromobenzene	750	816	109	(78-121)
Bromochloromethane	750	808	108	(78-125)
Bromodichloromethane	750	883	118	(75-127)
Bromoform	750	817	109	(67-132)
Bromomethane	750	836	112	(53-143)

Print Date: 03/09/2020 4:46:14PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [VXX35447]

Blank Spike Lab ID: 1552189

Date Analyzed: 02/26/2020 14:15

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon disulfide	1130	1420	126	(63-132)
Carbon tetrachloride	750	864	115	(70-135)
Chlorobenzene	750	797	106	(79-120)
Chloroethane	750	834	111	(59-139)
Chloroform	750	799	106	(78-123)
Chloromethane	750	867	116	(50-136)
cis-1,2-Dichloroethene	750	836	112	(77-123)
cis-1,3-Dichloropropene	750	888	118	(74-126)
Dibromochloromethane	750	801	107	(74-126)
Dibromomethane	750	834	111	(78-125)
Dichlorodifluoromethane	750	1430	191	* (29-149)
Ethylbenzene	750	807	108	(76-122)
Freon-113	1130	1400	125	(66-136)
Hexachlorobutadiene	750	624	83	(61-135)
Isopropylbenzene (Cumene)	750	762	102	(68-134)
Methylene chloride	750	731	98	(70-128)
Methyl-t-butyl ether	1130	1200	107	(73-125)
Naphthalene	750	769	103	(62-129)
n-Butylbenzene	750	653	87	(70-128)
n-Propylbenzene	750	774	103	(73-125)
o-Xylene	750	808	108	(77-123)
P & M -Xylene	1500	1620	108	(77-124)
sec-Butylbenzene	750	658	88	(73-126)
Styrene	750	834	111	(76-124)
tert-Butylbenzene	750	754	100	(73-125)
Tetrachloroethene	750	792	106	(73-128)
Toluene	750	789	105	(77-121)
trans-1,2-Dichloroethene	750	855	114	(74-125)
trans-1,3-Dichloropropene	750	865	115	(71-130)
Trichloroethene	750	866	115	(77-123)
Trichlorofluoromethane	750	722	96	(62-140)
Vinyl acetate	750	900	120	(50-151)
Vinyl chloride	750	1010	134	(56-135)
Xylenes (total)	2250	2420	108	(78-124)

Print Date: 03/09/2020 4:46:14PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [VXX35447]
Blank Spike Lab ID: 1552189
Date Analyzed: 02/26/2020 14:15

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	98.9	99	(71-136)
4-Bromofluorobenzene (surr)	750	103	103	(55-151)
Toluene-d8 (surr)	750	99.1	99	(85-116)

Batch Information

Analytical Batch: **VMS19811**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **KAJ**

Prep Batch: **VXX35447**
Prep Method: **SW5035A**
Prep Date/Time: **02/26/2020 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1200742001
 MS Sample ID: 1552190 MS
 MSD Sample ID: 1552191 MSD

Analysis Date: 02/26/2020 16:58
 Analysis Date: 02/26/2020 14:55
 Analysis Date: 02/26/2020 15:10
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	17.7U	815	891	109	815	932	114	78-125	4.40	(< 20)
1,1,1-Trichloroethane	22.1U	815	945	116	815	932	114	73-130	1.40	(< 20)
1,1,2,2-Tetrachloroethane	1.77U	815	870	107	815	903	111	70-124	3.80	(< 20)
1,1,2-Trichloroethane	0.705U	815	865	106	815	922	113	78-121	6.30	(< 20)
1,1-Dichloroethane	22.1U	815	913	112	815	916	112	76-125	0.35	(< 20)
1,1-Dichloroethene	22.1U	815	962	118	815	948	116	70-131	1.60	(< 20)
1,1-Dichloropropene	22.1U	815	948	116	815	933	114	76-125	1.70	(< 20)
1,2,3-Trichlorobenzene	44.2U	815	528	65 *	815	712	87	66-130	29.50 *	(< 20)
1,2,3-Trichloropropane	1.77U	815	824	101	815	846	104	73-125	2.60	(< 20)
1,2,4-Trichlorobenzene	22.1U	815	609	75	815	728	89	67-129	17.70	(< 20)
1,2,4-Trimethylbenzene	44.2U	815	830	102	815	828	102	75-123	0.07	(< 20)
1,2-Dibromo-3-chloropropane	88.5U	815	814	100	815	929	114	61-132	13.20	(< 20)
1,2-Dibromoethane	0.885U	815	877	107	815	937	115	78-122	6.60	(< 20)
1,2-Dichlorobenzene	22.1U	815	835	102	815	846	104	78-121	1.30	(< 20)
1,2-Dichloroethane	1.77U	815	811	100	815	840	103	73-128	3.50	(< 20)
1,2-Dichloropropane	8.85U	815	897	110	815	905	111	76-123	0.82	(< 20)
1,3,5-Trimethylbenzene	22.1U	815	843	103	815	830	102	73-124	1.60	(< 20)
1,3-Dichlorobenzene	22.1U	815	847	104	815	843	103	77-121	0.60	(< 20)
1,3-Dichloropropane	8.85U	815	838	103	815	893	109	77-121	6.40	(< 20)
1,4-Dichlorobenzene	22.1U	815	831	102	815	836	102	75-120	0.57	(< 20)
2,2-Dichloropropane	22.1U	815	972	119	815	960	118	67-133	1.30	(< 20)
2-Butanone (MEK)	221U	2453	2493	102	2453	2842	116	51-148	13.00	(< 20)
2-Chlorotoluene	22.1U	815	871	107	815	854	105	75-122	2.00	(< 20)
2-Hexanone	88.5U	2453	2520	103	2453	2882	118	53-145	13.30	(< 20)
4-Chlorotoluene	22.1U	815	879	108	815	863	106	72-124	1.70	(< 20)
4-Isopropyltoluene	88.5U	815	725	89	815	721	88	73-127	0.70	(< 20)
4-Methyl-2-pentanone (MIBK)	221U	2453	2574	105	2453	2842	116	65-135	10.20	(< 20)
Acetone	221U	2453	2292	94	2453	2627	107	36-164	13.50	(< 20)
Benzene	11.1U	815	906	111	815	914	112	77-121	0.88	(< 20)
Bromobenzene	22.1U	815	910	112	815	898	110	78-121	1.40	(< 20)
Bromochloromethane	22.1U	815	871	107	815	895	110	78-125	2.70	(< 20)
Bromodichloromethane	1.77U	815	956	117	815	969	119	75-127	1.40	(< 20)
Bromoform	22.1U	815	846	104	815	910	112	67-132	7.30	(< 20)
Bromomethane	17.7U	815	1070	131	815	954	117	53-143	11.30	(< 20)
Carbon disulfide	88.5U	1224	1676	137 *	1224	1568	129	63-132	6.30	(< 20)
Carbon tetrachloride	11.1U	815	956	117	815	950	117	70-135	0.57	(< 20)
Chlorobenzene	22.1U	815	863	106	815	887	109	79-120	2.70	(< 20)

Print Date: 03/09/2020 4:46:15PM

Matrix Spike Summary

Original Sample ID: 1200742001
 MS Sample ID: 1552190 MS
 MSD Sample ID: 1552191 MSD

Analysis Date: 02/26/2020 16:58
 Analysis Date: 02/26/2020 14:55
 Analysis Date: 02/26/2020 15:10
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroethane	177U	815	980	120	815	934	115	59-139	4.70	(< 20)
Chloroform	3.54U	815	867	106	815	871	107	78-123	0.44	(< 20)
Chloromethane	22.1U	815	1039	127	815	1080	133	50-136	3.90	(< 20)
cis-1,2-Dichloroethene	22.1U	815	912	112	815	917	112	77-123	0.58	(< 20)
cis-1,3-Dichloropropene	11.1U	815	950	117	815	971	119	74-126	2.10	(< 20)
Dibromochloromethane	4.42U	815	849	104	815	895	110	74-126	5.40	(< 20)
Dibromomethane	22.1U	815	877	107	815	913	112	78-125	4.10	(< 20)
Dichlorodifluoromethane	44.2U	815	1877	231 *	815	1756	215 *	29-149	7.20	(< 20)
Ethylbenzene	22.1U	815	867	106	815	887	109	76-122	2.40	(< 20)
Freon-113	88.5U	1224	1555	128	1224	1542	126	66-136	1.50	(< 20)
Hexachlorobutadiene	17.7U	815	791	97	815	704	86	61-135	11.80	(< 20)
Isopropylbenzene (Cumene)	22.1U	815	803	99	815	842	103	68-134	4.70	(< 20)
Methylene chloride	88.5U	815	811	100	815	823	101	70-128	1.50	(< 20)
Methyl-t-butyl ether	88.5U	1224	1243	102	1224	1322	108	73-125	6.10	(< 20)
Naphthalene	22.1U	815	657	81	815	857	105	62-129	26.30 *	(< 20)
n-Butylbenzene	22.1U	815	706	87	815	689	85	70-128	2.40	(< 20)
n-Propylbenzene	22.1U	815	874	107	815	857	105	73-125	2.10	(< 20)
o-Xylene	22.1U	815	871	107	815	894	110	77-123	2.50	(< 20)
P & M -Xylene	44.2U	1635	1743	107	1635	1769	108	77-124	1.50	(< 20)
sec-Butylbenzene	22.1U	815	716	88	815	720	88	73-126	0.45	(< 20)
Styrene	22.1U	815	891	109	815	920	113	76-124	3.20	(< 20)
tert-Butylbenzene	22.1U	815	827	101	815	808	99	73-125	2.20	(< 20)
Tetrachloroethene	11.1U	815	826	101	815	834	102	73-128	0.96	(< 20)
Toluene	22.1U	815	862	106	815	873	107	77-121	1.10	(< 20)
trans-1,2-Dichloroethene	22.1U	815	1003	123	815	945	116	74-125	5.90	(< 20)
trans-1,3-Dichloropropene	11.1U	815	924	113	815	973	119	71-130	5.20	(< 20)
Trichloroethene	4.42U	815	949	116	815	948	116	77-123	0.04	(< 20)
Trichlorofluoromethane	44.2U	815	1318	162 *	815	1201	147 *	62-140	9.30	(< 20)
Vinyl acetate	88.5U	815	932	114	815	1000	123	50-151	7.10	(< 20)
Vinyl chloride	0.705U	815	1080	132	815	1064	130	56-135	1.50	(< 20)
Xylenes (total)	66.5U	2453	2614	107	2453	2654	109	78-124	1.90	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		815	775	95	815	803	99	71-136	3.70	
4-Bromofluorobenzene (surr)		1354	942	69	1354	914	67	55-151	3.10	
Toluene-d8 (surr)		815	820	101	815	823	101	85-116	0.35	

Print Date: 03/09/2020 4:46:15PM

Matrix Spike Summary

Original Sample ID: 1200742001
 MS Sample ID: 1552190 MS
 MSD Sample ID: 1552191 MSD

Analysis Date:
 Analysis Date: 02/26/2020 14:55
 Analysis Date: 02/26/2020 15:10
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS19811
 Analytical Method: SW8260C
 Instrument: VRA Agilent GC/MS 7890B/5977A
 Analyst: KAJ
 Analytical Date/Time: 2/26/2020 2:55:00PM

Prep Batch: VXX35447
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 2/26/2020 6:00:00AM
 Prep Initial Wt./Vol.: 61.64g
 Prep Extract Vol: 25.00mL

Print Date: 03/09/2020 4:46:15PM



Method Blank

Blank ID: MB for HBN 1804836 [VXX/35460]

Blank Lab ID: 1552619

QC for Samples:

1200742001, 1200742002

Matrix: Soil/Solid (dry weight)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	77.5	50-150		%

Batch Information

Analytical Batch: VFC15092

Analytical Method: AK101

Instrument: Agilent 7890A PID/FID

Analyst: ST

Analytical Date/Time: 3/3/2020 11:57:00AM

Prep Batch: VXX35460

Prep Method: SW5035A

Prep Date/Time: 3/3/2020 8:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 03/09/2020 4:46:17PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [VXX35460]
 Blank Spike Lab ID: 1552620
 Date Analyzed: 03/03/2020 11:22

Spike Duplicate ID: LCSD for HBN 1200742 [VXX35460]
 Spike Duplicate Lab ID: 1552621
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001, 1200742002

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	12.4	99	12.5	11.6	93	(60-120)	6.60	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	78.3	78	1.25	81.7	82	(50-150)	4.20	
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Batch Information

Analytical Batch: **VFC15092**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35460**
 Prep Method: **SW5035A**
 Prep Date/Time: **03/03/2020 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 03/09/2020 4:46:19PM

Method Blank

Blank ID: MB for HBN 1804721 [XXX/42824]
 Blank Lab ID: 1552204

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1200742001

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
2-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
Acenaphthene	12.5U	25.0	6.25	ug/Kg
Acenaphthylene	12.5U	25.0	6.25	ug/Kg
Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/Kg
Chrysene	12.5U	25.0	6.25	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/Kg
Fluoranthene	12.5U	25.0	6.25	ug/Kg
Fluorene	12.5U	25.0	6.25	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/Kg
Naphthalene	10.0U	20.0	5.00	ug/Kg
Phenanthrene	12.5U	25.0	6.25	ug/Kg
Pyrene	12.5U	25.0	6.25	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	82.5	58-103		%
Fluoranthene-d10 (surr)	89.2	54-113		%

Batch Information

Analytical Batch: XMS11943
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 3/3/2020 5:05:00PM

Prep Batch: XXX42824
 Prep Method: SW3550C
 Prep Date/Time: 2/27/2020 2:16:01PM
 Prep Initial Wt./Vol.: 22.5 g
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [XXX42824]
 Blank Spike Lab ID: 1552205
 Date Analyzed: 03/03/2020 17:26

Spike Duplicate ID: LCSD for HBN 1200742 [XXX42824]
 Spike Duplicate Lab ID: 1552206
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001

Results by 8270D SIM (PAH)

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	111	88.1	79	111	90.0	81	(43-111)	2.10	(< 20)
2-Methylnaphthalene	111	86.4	78	111	88.2	79	(39-114)	2.00	(< 20)
Acenaphthene	111	88.3	80	111	91.0	82	(44-111)	2.90	(< 20)
Acenaphthylene	111	90.9	82	111	95.1	86	(39-116)	4.50	(< 20)
Anthracene	111	90.3	81	111	93.9	85	(50-114)	4.00	(< 20)
Benzo(a)Anthracene	111	87.8	79	111	90.2	81	(54-122)	2.70	(< 20)
Benzo[a]pyrene	111	85.5	77	111	88.0	79	(50-125)	2.90	(< 20)
Benzo[b]Fluoranthene	111	86.1	78	111	87.6	79	(53-128)	1.60	(< 20)
Benzo[g,h,i]perylene	111	86.5	78	111	89.3	80	(49-127)	3.30	(< 20)
Benzo[k]fluoranthene	111	91.7	83	111	95.3	86	(56-123)	3.90	(< 20)
Chrysene	111	91.5	82	111	94.5	85	(57-118)	3.20	(< 20)
Dibenzo[a,h]anthracene	111	82.6	74	111	85.6	77	(50-129)	3.50	(< 20)
Fluoranthene	111	94.7	85	111	97.7	88	(55-119)	3.10	(< 20)
Fluorene	111	92.0	83	111	95.7	86	(47-114)	4.00	(< 20)
Indeno[1,2,3-c,d] pyrene	111	89.2	80	111	91.9	83	(49-130)	3.00	(< 20)
Naphthalene	111	85.9	77	111	86.5	78	(38-111)	0.73	(< 20)
Phenanthrene	111	90.9	82	111	93.9	85	(49-113)	3.20	(< 20)
Pyrene	111	95.9	86	111	98.6	89	(55-117)	2.80	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	111	82.9	83	111	83.7	84	(58-103)	0.95	
Fluoranthene-d10 (surr)	111	84.2	84	111	86	86	(54-113)	2.10	

Batch Information

Analytical Batch: XMS11943
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD

Prep Batch: XXX42824
 Prep Method: SW3550C
 Prep Date/Time: 02/27/2020 14:16
 Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1804790 [XXX/42833]

Blank Lab ID: 1552489

QC for Samples:
1200742001

Matrix: Soil/Solid (dry weight)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	105	60-120		%

Batch Information

Analytical Batch: XFC15553

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: DSD

Analytical Date/Time: 3/5/2020 3:55:00PM

Prep Batch: XXX42833

Prep Method: SW3550C

Prep Date/Time: 3/2/2020 1:38:59PM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 03/09/2020 4:46:24PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [XXX42833]
 Blank Spike Lab ID: 1552490
 Date Analyzed: 03/05/2020 16:25

Spike Duplicate ID: LCSD for HBN 1200742 [XXX42833]
 Spike Duplicate Lab ID: 1552491
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	833	956	115	833	984	118	(75-125)	2.90	(< 20)
Surrogates									
5a Androstane (surr)	16.7	114	114	16.7	115	115	(60-120)	1.40	

Batch Information

Analytical Batch: **XFC15553**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **DSD**

Prep Batch: **XXX42833**
 Prep Method: **SW3550C**
 Prep Date/Time: **03/02/2020 13:38**
 Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

Print Date: 03/09/2020 4:46:27PM

Method Blank

Blank ID: MB for HBN 1804790 [XXX/42833]

Blank Lab ID: 1552489

QC for Samples:
1200742001

Matrix: Soil/Solid (dry weight)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	50.0U	100	43.0	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	85.9	60-120		%

Batch Information

Analytical Batch: XFC15553

Analytical Method: AK103

Instrument: Agilent 7890B F

Analyst: DSD

Analytical Date/Time: 3/5/2020 3:55:00PM

Prep Batch: XXX42833

Prep Method: SW3550C

Prep Date/Time: 3/2/2020 1:38:59PM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 03/09/2020 4:46:28PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200742 [XXX42833]
 Blank Spike Lab ID: 1552490
 Date Analyzed: 03/05/2020 16:25

Spike Duplicate ID: LCSD for HBN 1200742
 [XXX42833]
 Spike Duplicate Lab ID: 1552491
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1200742001

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	833	897	108	833	909	109	(60-120)	1.30	(< 20)

Surrogates

n-Triacontane-d62 (surr)	16.7	101	101	16.7	104	104	(60-120)	3.20	
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Batch Information

Analytical Batch: **XFC15553**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B F**
 Analyst: **DSD**

Prep Batch: **XXX42833**
 Prep Method: **SW3550C**
 Prep Date/Time: **03/02/2020 13:38**
 Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

Print Date: 03/09/2020 4:46:30PM



e-Sample Receipt Form

SGS Workorder #:

1200742



1 2 0 0 7 4 2

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	Exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	Yes	1 front
DOD: Were samples received in COC corresponding coolers?	N/A	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.	No	Cooler ID: 1 @ 0.0 °C Therm. ID: D63
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	Yes	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	Yes	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		

Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1200742001-A	No Preservative Required	OK			
1200742001-B	Methanol field pres. 4 C	OK			
1200742002-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Alec Rizzo
Title: Environmental Staff
Date: 4/3/2020

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America Inc.
Laboratory Report Number: 1200742
Laboratory Report Date: 3/9/2020

Contaminated Site Name: Tesoro - Garretts
ADEC File Number: 2100.26.078
Hazard Identification Number: 23603

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA

Comments:

- b. Correct analyses requested? **Yes** / **No** / NA

Comments: *Although not included in our work plan, Sample B7S5 was also analyzed for RRO by AK 103.*

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes / No / NA

Comments: *The cooler temperature blank was 0.0° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes**/ No / NA

Comments:

- c. Sample condition documented - broken, leaking (MeOH), zero headspace (VOC vials)? **Yes**/ No / NA

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? Yes / No / **NA**

Comments: *No discrepancies were noted.*

- e. Data quality or usability affected?

Comments: *See above.*

4. Case Narrative

- a. Present and understandable? **Yes**/ No / NA

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes**/ No / NA

Comments: *The following discrepancies, errors, or QC failures were noted in the case narrative:*

- 8260C - LCS recovery for dichlorodifluoromethane does not meet QC criteria. This analyte was not detected above the LOQ in the associate samples.
- 8260C - MS recoveries for multiple analytes do not meet QC criteria.
- 8260C - MSD recoveries for dichlorodifluoromethane and trichlorofluoromethane do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.
- 8260C - MS/MSD RPD for naphthalene and 1,2,3-trichlorobenzene do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.

- c. Were all corrective actions documented? Yes/**No**/ NA

Comments: *See above.*

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes**/ No / NA

Comments:

- b. All applicable holding times met? **Yes** / No / NA

Comments:

- c. All soils reported on a dry weight basis? **Yes** / No / NA

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? Yes / **No** / NA

Comments: *The LOQs for 1,2,3-trichloropropane, 1,2-dibromoethane, and dibromochloromethane are greater than the ADEC cleanup levels.*

- e. Data quality or usability affected?

Comments: *There is a potential that these target analytes are present at concentrations in the associated samples greater than the ADEC cleanup levels, but less than the LOQs; however, these analytes were not detected at estimated concentrations in the project samples.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / No / NA

Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes / No / NA

Comments:

- iii. If above LOQ or project specified objectives, what samples are affected?

Comments: *NA*

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes / No / **NA**

Comments:

- v. Data quality or usability affected?

Comments: *See above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes / No / NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments: *EPA 8260C - the LCS recovery for dichlorodifluoromethane does not meet QC criteria (biased high).*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from LCS/LCSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Each sample.*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / NA

Comments: *The analyte was not detected in the associated parent sample, therefore, flagging is not required*

- vii. Data quality or usability affected?

Comments: *No, see above.*

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics - One MS/MSD reported per matrix, analysis, and 20 samples?

Yes / No / NA

Comments:

- ii. Metals/Inorganics - One MS and one MSD reported per matrix, analysis and 20 samples? **Yes / No / NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments: *See Section 4.b.*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from MS/MSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA**

Comments: *MS/MSD RPD for naphthalene and 1,2,3-trichlorobenzene do not meet QC criteria.*

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Each sample.*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / NA

Comments: *The analytes were not detected in the parent samples*

- vii. Data quality or usability affected?

Comments: *No, see above.*

d. Surrogates - Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses - field, QC, and laboratory samples? **Yes / No / NA**

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes / No / NA**

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined? **Yes / No / NA**

Comments:

- iv. Data quality or usability affected?

Comments: *No, See above.*

e. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? **Yes / No / NA**

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes / No / NA**

Comments: *Only one cooler was used to transport the samples.*

iii. All results less than LOQ and project specified objectives? **Yes** / No / NA
Comments:

iv. If above LOQ or project specified DQOs, what samples are affected?
Comments: *NA*

v. Data quality or usability affected?
Comments: *No, see above.*

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / **No** / NA
Comments: *A field duplicate was not included with laboratory report.*

ii. Were the field duplicates submitted blind to the lab? **Yes** / No / **NA**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified project objectives? (Recommended: 30% for water, 50% for soil) **Yes** / No / **NA**
Comments:

iv. Data quality or usability affected?
Comments: *NA*

g. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below).

Yes / **No** / NA

Comments: *A decontamination or equipment blank was not included in our ADEC-approved work plan.*

i. All results less than LOQ and project specified objectives?
Yes / No / **NA**
Comments:

ii. If above LOQ or project specified objectives, what samples are affected?
Comments:

iii. Data quality or usability affected?
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate? **Yes** / No / NA
Comments: *A key is provided on Page 4 of the SGS Laboratory Report.*

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907)433-3228

Report Number: **1200920**

Client Project: **103798 Garrett's Tesoro**

Dear Alec Rizzo,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1200920**
Project Name/Site: **103798 Garrett's Tesoro**
Project Contact: **Alec Rizzo**

Refer to sample receipt form for information on sample condition.

103798-B7MW (1200920001) PS

8270D SIM - PAH LCS/LCSD RPD for several analytes do not meet QC criteria. The associated samples were re-extracted past hold time and results are comparable. In hold data is reported.
AK102 - LCS/LCSD recoveries for diesel range organics does not meet QC criteria. The sample was re-extracted outside of hold time with LCS/LCSD recoveries within criteria. Results are comparable. In hold data is reported.

LCS for HBN 1804977 [XXX/4285 (1553170) LCS

AK102 - LCS recovery for diesel range organics does not meet QC criteria.

LCSD for HBN 1804977 [XXX/4285 (1553171) LCSD

AK102 - LCS recovery for diesel range organics does not meet QC criteria.
AK103 - Surrogate recovery for n-triacontane does not meet QC criteria.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/30/2020 6:05:13PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
SW8260C				
1200920001	103798-B7MW	VMS19833	n-Butylbenzene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 03/30/2020 6:05:14PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
103798-B7MW	1200920001	03/07/2020	03/09/2020	Water (Surface, Eff., Ground)
103798-WTB	1200920002	03/07/2020	03/09/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 03/30/2020 6:05:16PM

Detectable Results Summary

Client Sample ID: **103798-B7MW**

Lab Sample ID: 1200920001

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.150	ug/L
Diesel Range Organics	0.744	mg/L
1,2,4-Trimethylbenzene	1.32	ug/L
1,3,5-Trimethylbenzene	0.493J	ug/L
Naphthalene	0.476J	ug/L
n-Butylbenzene	1.09	ug/L

Print Date: 03/30/2020 6:05:17PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518
 t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group



Results of 103798-B7MW

Client Sample ID: 103798-B7MW
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200920001
Lab Project ID: 1200920

Collection Date: 03/07/20 11:05
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11954
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 03/16/20 19:00
Container ID: 1200920001-C

Prep Batch: XXX42858
Prep Method: SW3520C
Prep Date/Time: 03/12/20 10:03
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of 103798-B7MW

Client Sample ID: **103798-B7MW**
 Client Project ID: **103798 Garrett's Tesoro**
 Lab Sample ID: 1200920001
 Lab Project ID: 1200920

Collection Date: 03/07/20 11:05
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.744		0.588	0.176	mg/L	1		03/25/20 20:17
Surrogates								
5a Androstane (surr)	58.2		50-150		%	1		03/25/20 20:17

Batch Information

Analytical Batch: XFC15560
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 03/25/20 20:17
 Container ID: 1200920001-A

Prep Batch: XXX42855
 Prep Method: SW3535A
 Prep Date/Time: 03/11/20 10:13
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL



Results of **103798-B7MW**

Client Sample ID: **103798-B7MW**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200920001
Lab Project ID: 1200920

Collection Date: 03/07/20 11:05
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		03/11/20 18:55
Surrogates							
4-Bromofluorobenzene (surr)	77.3	50-150		%	1		03/11/20 18:55

Batch Information

Analytical Batch: VFC15095
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 03/11/20 18:55
Container ID: 1200920001-E

Prep Batch: VXX35473
Prep Method: SW5030B
Prep Date/Time: 03/11/20 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-B7MW

Client Sample ID: 103798-B7MW
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200920001
Lab Project ID: 1200920

Collection Date: 03/07/20 11:05
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 03/30/2020 6:05:18PM

J flagging is activated

Results of 103798-B7MW

Client Sample ID: **103798-B7MW**
 Client Project ID: **103798 Garrett's Tesoro**
 Lab Sample ID: 1200920001
 Lab Project ID: 1200920

Collection Date: 03/07/20 11:05
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Chloromethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		03/12/20 19:25
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		03/12/20 19:25
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Freon-113	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:25
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:25
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:25
Naphthalene	0.476 J	1.00	0.310	ug/L	1		03/12/20 19:25
n-Butylbenzene	1.09	1.00	0.310	ug/L	1		03/12/20 19:25
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
o-Xylene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		03/12/20 19:25
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Styrene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Toluene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:25
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:25
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		03/12/20 19:25
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		03/12/20 19:25
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		03/12/20 19:25
4-Bromofluorobenzene (surr)	101	85-114		%	1		03/12/20 19:25
Toluene-d8 (surr)	99.1	89-112		%	1		03/12/20 19:25

Results of 103798-B7MW

Client Sample ID: **103798-B7MW**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200920001
Lab Project ID: 1200920

Collection Date: 03/07/20 11:05
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19833
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 03/12/20 19:25
Container ID: 1200920001-H

Prep Batch: VXX35477
Prep Method: SW5030B
Prep Date/Time: 03/12/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **103798-WTB**

Client Sample ID: **103798-WTB**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200920002
Lab Project ID: 1200920

Collection Date: 03/07/20 10:00
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		03/11/20 18:20
Surrogates							
4-Bromofluorobenzene (surr)	71.5	50-150		%	1		03/11/20 18:20

Batch Information

Analytical Batch: VFC15095
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 03/11/20 18:20
Container ID: 1200920002-A

Prep Batch: VXX35473
Prep Method: SW5030B
Prep Date/Time: 03/11/20 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 103798-WTB

Client Sample ID: 103798-WTB
Client Project ID: 103798 Garrett's Tesoro
Lab Sample ID: 1200920002
Lab Project ID: 1200920

Collection Date: 03/07/20 10:00
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 03/30/2020 6:05:18PM

J flagging is activated



Results of 103798-WTB

Client Sample ID: **103798-WTB**
 Client Project ID: **103798 Garrett's Tesoro**
 Lab Sample ID: 1200920002
 Lab Project ID: 1200920

Collection Date: 03/07/20 10:00
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Chloromethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		03/12/20 19:10
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		03/12/20 19:10
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Freon-113	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:10
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:10
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:10
Naphthalene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
o-Xylene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		03/12/20 19:10
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Styrene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Toluene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		03/12/20 19:10
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		03/12/20 19:10
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		03/12/20 19:10
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		03/12/20 19:10
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		03/12/20 19:10
4-Bromofluorobenzene (surr)	101	85-114		%	1		03/12/20 19:10
Toluene-d8 (surr)	99.2	89-112		%	1		03/12/20 19:10

Print Date: 03/30/2020 6:05:18PM

J flagging is activated

Results of 103798-WTB

Client Sample ID: **103798-WTB**
Client Project ID: **103798 Garrett's Tesoro**
Lab Sample ID: 1200920002
Lab Project ID: 1200920

Collection Date: 03/07/20 10:00
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19833
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 03/12/20 19:10
Container ID: 1200920002-D

Prep Batch: VXX35477
Prep Method: SW5030B
Prep Date/Time: 03/12/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1805016 [VXX/35473]

Blank Lab ID: 1553311

QC for Samples:

1200920001, 1200920002

Matrix: Water (Surface, Eff., Ground)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	69.5	50-150		%

Batch Information

Analytical Batch: VFC15095
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 3/11/2020 12:50:00PM

Prep Batch: VXX35473
Prep Method: SW5030B
Prep Date/Time: 3/11/2020 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/30/2020 6:05:20PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200920 [VXX35473]
 Blank Spike Lab ID: 1553312
 Date Analyzed: 03/11/2020 13:42

Spike Duplicate ID: LCSD for HBN 1200920 [VXX35473]
 Spike Duplicate Lab ID: 1553313
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200920001, 1200920002

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.878	88	1.00	0.940	94	(60-120)	6.90	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	79.2	79	0.0500	76.1	76	(50-150)	4.00	

Batch Information

Analytical Batch: **VFC15095**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35473**
 Prep Method: **SW5030B**
 Prep Date/Time: **03/11/2020 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1805049 [VXX/35477]

Blank Lab ID: 1553408

QC for Samples:

1200920001, 1200920002

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 03/30/2020 6:05:24PM

Method Blank

Blank ID: MB for HBN 1805049 [VXX/35477]

Blank Lab ID: 1553408

QC for Samples:

1200920001, 1200920002

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	98.3	85-114		%
Toluene-d8 (surr)	99.6	89-112		%



Method Blank

Blank ID: MB for HBN 1805049 [VXX/35477]
Blank Lab ID: 1553408

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1200920001, 1200920002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19833
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 3/12/2020 4:48:00PM

Prep Batch: VXX35477
Prep Method: SW5030B
Prep Date/Time: 3/12/2020 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/30/2020 6:05:24PM

Leaching Blank

Blank ID: LB for HBN 1805033 [TCLP/10535]
 Blank Lab ID: 1553363

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200920001, 1200920002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1-Dichloroethene	25.0U	50.0	15.5	ug/L
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
2-Butanone (MEK)	250U	500	155	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Carbon tetrachloride	25.0U	50.0	15.5	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
Chloroform	25.0U	50.0	15.5	ug/L
Hexachlorobutadiene	25.0U	50.0	15.5	ug/L
Tetrachloroethene	25.0U	50.0	15.5	ug/L
Trichloroethene	25.0U	50.0	15.5	ug/L
Vinyl chloride	25.0U	50.0	15.5	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	99.4	85-114		%
Toluene-d8 (surr)	98.9	89-112		%

Batch Information

Analytical Batch: VMS19833
 Analytical Method: SW8260C
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 3/12/2020 7:55:00PM

Prep Batch: VXX35477
 Prep Method: SW5030B
 Prep Date/Time: 3/12/2020 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200920 [VXX35477]
 Blank Spike Lab ID: 1553409
 Date Analyzed: 03/12/2020 17:34

Spike Duplicate ID: LCSD for HBN 1200920 [VXX35477]
 Spike Duplicate Lab ID: 1553410
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200920001, 1200920002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	28.6	95	30	28.9	96	(78-124)	1.10	(< 20)
1,1,1-Trichloroethane	30	29.1	97	30	28.3	94	(74-131)	2.70	(< 20)
1,1,2,2-Tetrachloroethane	30	27.7	92	30	27.6	92	(71-121)	0.38	(< 20)
1,1,2-Trichloroethane	30	28.8	96	30	28.8	96	(80-119)	0.21	(< 20)
1,1-Dichloroethane	30	28.4	95	30	28.0	93	(77-125)	1.40	(< 20)
1,1-Dichloroethene	30	28.5	95	30	27.8	93	(71-131)	2.50	(< 20)
1,1-Dichloropropene	30	29.2	97	30	28.6	96	(79-125)	2.00	(< 20)
1,2,3-Trichlorobenzene	30	29.1	97	30	28.8	96	(69-129)	0.90	(< 20)
1,2,3-Trichloropropane	30	27.9	93	30	28.1	94	(73-122)	0.75	(< 20)
1,2,4-Trichlorobenzene	30	29.5	98	30	29.1	97	(69-130)	1.20	(< 20)
1,2,4-Trimethylbenzene	30	30.0	100	30	29.3	98	(79-124)	2.40	(< 20)
1,2-Dibromo-3-chloropropane	30	27.7	92	30	27.6	92	(62-128)	0.37	(< 20)
1,2-Dibromoethane	30	28.9	96	30	28.9	96	(77-121)	0.09	(< 20)
1,2-Dichlorobenzene	30	28.1	94	30	28.1	94	(80-119)	0.31	(< 20)
1,2-Dichloroethane	30	27.0	90	30	26.5	88	(73-128)	1.90	(< 20)
1,2-Dichloropropane	30	29.2	97	30	29.0	97	(78-122)	0.92	(< 20)
1,3,5-Trimethylbenzene	30	30.1	100	30	29.5	98	(75-124)	2.10	(< 20)
1,3-Dichlorobenzene	30	28.7	96	30	28.2	94	(80-119)	1.70	(< 20)
1,3-Dichloropropane	30	28.4	95	30	28.5	95	(80-119)	0.28	(< 20)
1,4-Dichlorobenzene	30	28.8	96	30	28.6	95	(79-118)	0.73	(< 20)
2,2-Dichloropropane	30	29.9	100	30	29.0	97	(60-139)	3.00	(< 20)
2-Butanone (MEK)	90	85.7	95	90	86.6	96	(56-143)	1.10	(< 20)
2-Chlorotoluene	30	28.0	93	30	27.6	92	(79-122)	1.50	(< 20)
2-Hexanone	90	87.5	97	90	88.2	98	(57-139)	0.73	(< 20)
4-Chlorotoluene	30	28.5	95	30	27.6	92	(78-122)	3.10	(< 20)
4-Isopropyltoluene	30	30.3	101	30	29.2	97	(77-127)	3.80	(< 20)
4-Methyl-2-pentanone (MIBK)	90	92.0	102	90	91.6	102	(67-130)	0.42	(< 20)
Benzene	30	28.8	96	30	28.4	95	(79-120)	1.40	(< 20)
Bromobenzene	30	28.7	96	30	28.4	95	(80-120)	1.00	(< 20)
Bromochloromethane	30	28.5	95	30	28.0	94	(78-123)	1.60	(< 20)
Bromodichloromethane	30	29.0	97	30	28.6	95	(79-125)	1.50	(< 20)
Bromoform	30	28.9	96	30	29.0	97	(66-130)	0.28	(< 20)
Bromomethane	30	34.5	115	30	34.4	115	(53-141)	0.53	(< 20)
Carbon disulfide	45	41.1	91	45	40.0	89	(64-133)	2.60	(< 20)

Print Date: 03/30/2020 6:05:27PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1200920 [VXX35477]
 Blank Spike Lab ID: 1553409
 Date Analyzed: 03/12/2020 17:34

Spike Duplicate ID: LCSD for HBN 1200920 [VXX35477]
 Spike Duplicate Lab ID: 1553410
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200920001, 1200920002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	29.6	99	30	28.8	96	(72-136)	2.70	(< 20)
Chlorobenzene	30	27.3	91	30	27.1	91	(82-118)	0.57	(< 20)
Chloroethane	30	33.8	113	30	30.8	103	(60-138)	9.40	(< 20)
Chloroform	30	28.3	95	30	27.6	92	(79-124)	2.50	(< 20)
Chloromethane	30	30.9	103	30	29.6	99	(50-139)	4.10	(< 20)
cis-1,2-Dichloroethene	30	28.5	95	30	27.8	93	(78-123)	2.50	(< 20)
cis-1,3-Dichloropropene	30	29.8	99	30	29.4	98	(75-124)	1.50	(< 20)
Dibromochloromethane	30	29.0	97	30	28.9	97	(74-126)	0.07	(< 20)
Dibromomethane	30	28.5	95	30	28.6	95	(79-123)	0.04	(< 20)
Dichlorodifluoromethane	30	31.7	106	30	30.3	101	(32-152)	4.50	(< 20)
Ethylbenzene	30	28.9	96	30	28.8	96	(79-121)	0.18	(< 20)
Freon-113	45	43.1	96	45	42.0	93	(70-136)	2.50	(< 20)
Hexachlorobutadiene	30	31.9	106	30	30.1	100	(66-134)	6.00	(< 20)
Isopropylbenzene (Cumene)	30	29.6	99	30	28.6	95	(72-131)	3.40	(< 20)
Methylene chloride	30	29.0	97	30	28.4	95	(74-124)	2.00	(< 20)
Methyl-t-butyl ether	45	43.9	98	45	43.1	96	(71-124)	1.80	(< 20)
Naphthalene	30	29.8	100	30	29.4	98	(61-128)	1.60	(< 20)
n-Butylbenzene	30	30.7	102	30	29.5	98	(75-128)	3.90	(< 20)
n-Propylbenzene	30	29.2	97	30	28.9	96	(76-126)	0.91	(< 20)
o-Xylene	30	29.3	98	30	28.8	96	(78-122)	1.70	(< 20)
P & M -Xylene	60	58.6	98	60	57.9	97	(80-121)	1.10	(< 20)
sec-Butylbenzene	30	29.9	100	30	28.7	96	(77-126)	4.30	(< 20)
Styrene	30	29.7	99	30	29.3	98	(78-123)	1.40	(< 20)
tert-Butylbenzene	30	29.2	98	30	28.3	95	(78-124)	3.10	(< 20)
Tetrachloroethene	30	29.5	98	30	28.8	96	(74-129)	2.10	(< 20)
Toluene	30	27.8	93	30	27.6	92	(80-121)	0.71	(< 20)
trans-1,2-Dichloroethene	30	28.7	96	30	28.2	94	(75-124)	1.80	(< 20)
trans-1,3-Dichloropropene	30	29.6	99	30	29.6	99	(73-127)	0.08	(< 20)
Trichloroethene	30	29.1	97	30	28.4	95	(79-123)	2.40	(< 20)
Trichlorofluoromethane	30	32.4	108	30	30.9	103	(65-141)	4.80	(< 20)
Vinyl acetate	30	32.5	108	30	31.8	106	(54-146)	2.00	(< 20)
Vinyl chloride	30	31.9	106	30	30.6	102	(58-137)	4.40	(< 20)
Xylenes (total)	90	87.9	98	90	86.7	96	(79-121)	1.30	(< 20)

Print Date: 03/30/2020 6:05:27PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200920 [VXX35477]
 Blank Spike Lab ID: 1553409
 Date Analyzed: 03/12/2020 17:34

Spike Duplicate ID: LCSD for HBN 1200920 [VXX35477]
 Spike Duplicate Lab ID: 1553410
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200920001, 1200920002

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	98	98	30	96.7	97	(81-118)	1.30	
4-Bromofluorobenzene (surr)	30	99.6	100	30	99.5	100	(85-114)	0.09	
Toluene-d8 (surr)	30	99.3	99	30	98.2	98	(89-112)	1.20	

Batch Information

Analytical Batch: **VMS19833**
 Analytical Method: **SW8260C**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX35477**
 Prep Method: **SW5030B**
 Prep Date/Time: **03/12/2020 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 03/30/2020 6:05:27PM

Method Blank

Blank ID: MB for HBN 1804977 [XXX/42855]
 Blank Lab ID: 1553169

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200920001

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.253J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	70.1	60-120		%

Batch Information

Analytical Batch: XFC15560
 Analytical Method: AK102
 Instrument: Agilent 7890B F
 Analyst: JMG
 Analytical Date/Time: 3/25/2020 4:37:00PM

Prep Batch: XXX42855
 Prep Method: SW3535A
 Prep Date/Time: 3/11/2020 10:13:05AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 03/30/2020 6:05:29PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200920 [XXX42855]
 Blank Spike Lab ID: 1553170
 Date Analyzed: 03/25/2020 16:57

Spike Duplicate ID: LCSD for HBN 1200920 [XXX42855]
 Spike Duplicate Lab ID: 1553171
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200920001

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	13.3	67	* 20	12.6	63	* (75-125)	5.10	(< 20)
Surrogates									
5a Androstane (surr)	0.4	76.6	77	0.4	71.7	72	(60-120)	6.60	

Batch Information

Analytical Batch: **XFC15560**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX42855**
 Prep Method: **SW3535A**
 Prep Date/Time: **03/11/2020 10:13**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



SGS No
CHAIN OF

1200920



www.us.sgs.com

CLIENT: Garrett's Tesoro					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.					Page <u>1</u> of <u>1</u>										
CONTACT: Alex Rizzo and Dan McMahon					PHONE #: 907-433-3228 or 907-433-3223					Section 3										
PROJECT NAME: Garrett's Tesoro					PROJECT/PWSID/PERMIT#: 103798					Preservative										
REPORTS TO: Shannon and Wilson					E-MAIL: AJRW@shannonwilson.com					Analysis*										
INVOICE TO: Shannon & Wilson					QUOTE #: 3654279M					NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS										
P.O. #: _____					# CONTAINERS					REMARKS/LOC ID										
RESERVED for lab use	SAMPLE IDENTIFICATION			DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	#	MI (Multi-incremental)	HCL	HCL	HCL	4C								
① A-J	103798-B7MW			3/7/20	11:05	GW	10	Grab	X	X	X	X								
② A-F	103798-WTB			3/7/20	10:00	GW	6		X		X									
A-F	ARB 03/09/2020																			
Relinquished By: (1) [Signature]					Date 3/9/20	Time 0700	Received By: [Signature]					Section 4		DOD Project? Yes No		Data Deliverable Requirements:				
Relinquished By: (2) _____					Date _____	Time _____	Received By: _____					Cooler ID: _____								
Relinquished By: (3) _____					Date _____	Time _____	Received By: _____					Requested Turnaround Time and/or Special Instructions:								
Relinquished By: (4) [Signature]					Date 3/9/2020	Time 0826	Received For Laboratory By: [Signature]					Temp Blank °C: 2.6 1263		Chain of Custody Seal: (Circle)						
										or Ambient []		INTACT <input type="checkbox"/> BROKEN <input type="checkbox"/> ABSENT <input checked="" type="checkbox"/>								
Delivery Method: Hand Delivery <input checked="" type="checkbox"/> Commercial Delivery []																				

http://www.sgs.com/terms-and-conditions



e-Sample Receipt Form

SGS Workorder #:

1200920



1 2 0 0 9 2 0

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	N/A	absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.6 °C Therm. ID: D63
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
<p>If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.</p>		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
<p>Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.</p>		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
<input type="checkbox"/> N/A ***Exemption permitted for metals (e.g.200.8/6020A).		
Were proper containers (type/mass/volume/preservative***)used?	No	Samples 1A and 1B underpreserved; 2mL of HCl of lot #LW09-0463-15-17 added to samples 1A and 1B, pH correct
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1200920001-A	HCL to pH < 2	PA			
1200920001-B	HCL to pH < 2	PA			
1200920001-C	No Preservative Required	OK			
1200920001-D	No Preservative Required	OK			
1200920001-E	HCL to pH < 2	OK			
1200920001-F	HCL to pH < 2	OK			
1200920001-G	HCL to pH < 2	OK			
1200920001-H	HCL to pH < 2	OK			
1200920001-I	HCL to pH < 2	OK			
1200920001-J	HCL to pH < 2	OK			
1200920002-A	HCL to pH < 2	OK			
1200920002-B	HCL to pH < 2	OK			
1200920002-C	HCL to pH < 2	OK			
1200920002-D	HCL to pH < 2	OK			
1200920002-E	HCL to pH < 2	OK			
1200920002-F	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Alec Rizzo
Title: Environmental Staff
Date: 4/3/2020

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America Inc.
Laboratory Report Number: 1200920
Laboratory Report Date: 3/30/2020

Contaminated Site Name: Tesoro - Garretts
ADEC File Number: 2100.26.078
Hazard Identification Number: 23603

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved? **Yes** / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA

Comments:

- b. Correct analyses requested? **Yes** / No / NA

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes / No / NA

Comments: *The cooler temperature blank was 2.6° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes** / **No** / **NA**
Comments: *Samples 1A and 1B (B7MW) were under preserved. The laboratory added preservative to bottles to correct pH.*
- c. Sample condition documented - broken, leaking (MeOH), zero headspace (VOC vials)? **Yes** / **No** / **NA**
Comments:
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? **Yes** / **No** / **NA**
Comments: *See above.*
- e. Data quality or usability affected?
Comments: *The laboratory added preservative to the sample bottles, to correct pH. Therefore, data usability is unaffected.*

4. Case Narrative

- a. Present and understandable? **Yes** / **No** / **NA**
Comments:
- b. Discrepancies, errors or QC failures noted by the lab? **Yes** / **No** / **NA**
Comments: *The following discrepancies, errors, or QC failures were noted in the case narrative:*
- *8270D – Sample B7MW LCS/LCSD RPD for several analytes do not meet QC criteria. The associated samples were re-extracted past hold time and results are comparable. In hold data is reported.*
 - *AK 102 – Sample B7MW LCS/LCSD recoveries for diesel range organics does not meet QC criteria. The sample was re-extracted outside of hold time with LCS/LCSD recoveries within criteria. Results are comparable. In hold data is reported.*
 - *AK 102 – LCS/LCSD recovery for diesel range organics does not meet criteria.*
 - *AK 103 – LCSD surrogate recovery for n-triacontane does not meet QC criteria.*
- c. Were all corrective actions documented? **Yes** / **No** / **NA**
Comments: *See above.*
- d. What is the effect on data quality/usability, according to the case narrative?
Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA
Comments:
- b. All applicable holding times met? **Yes** / No / NA
Comments:
- c. All soils reported on a dry weight basis? Yes / No / **NA**
Comments:
- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? Yes / **No** / NA
Comments: *The LOQs for 1,2,3-trichloropropane are greater than the ADEC cleanup level.*
- e. Data quality or usability affected?
Comments: *There is a potential that 1,2,3-trichloropropane is present at concentrations in the associated samples greater than the ADEC cleanup levels, but less than the LOQs; however, this analyte was not detected at estimated concentrations in the project samples.*

6. QC Samples

- a. **Method Blank**
- i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / NA
Comments:
- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?
Yes / **No** / NA
Comments: *DRO was detected in the method blank at a concentration of 0.253 J mg/L.*
- iii. If above LOQ or project specified objectives, what samples are affected?
Comments: *Sample B7MW*

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes / No / NA

Comments: *When the reported sample concentration is within 10 times the reported blank concentration, the project samples are flagged "B". Typically, if the reported sample concentration is greater than the LOQ and less than 5 times the blank concentration, the sample concentration is qualified as non-detect at the reported sample concentration and flagged "B". In this case, based on professional judgement, the sample result has been reported at the detected concentration and flagged "B".*

- v. Data quality or usability affected?

Comments: *See above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / **NA**

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / **No** / NA

Comments: *LCS/LCSD recoveries for diesel range organics and several PAHs do not meet QC criteria.*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from LCS/LCSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / No / NA

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *NA*

- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / **NA**

Comments: *The sample was re-extracted outside of hold time with LCS/LCSD recoveries within criteria. According to the laboratory data package the PAH LCS/LCSD meets QC criteria. Therefore, flagging is not required.*

vii. Data quality or usability affected?

Comments: *No, see above.*

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics - One MS/MSD reported per matrix, analysis, and 20 samples?

Yes / No / **NA**

Comments:

ii. Metals/Inorganics - One MS and one MSD reported per matrix, analysis and 20 samples? Yes / No / **NA**

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) Yes / No / **NA**

Comments:

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from MS/MSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / No / NA

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *NA*

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / No / **NA**

Comments:

vii. Data quality or usability affected?

Comments:

d. Surrogates - Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses - field, QC, and laboratory samples? **Yes** / No / NA

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes** / No / NA

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined? **Yes / No / NA**

Comments:

- iv. Data quality or usability affected?

Comments: *No, See above.*

e. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? **Yes / No / NA**

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes / No / NA**

Comments: *Only one cooler was used to transport the samples each day.*

- iii. All results less than LOQ and project specified objectives? **Yes / No / NA**

Comments:

- iv. If above LOQ or project specified DQOs, what samples are affected?

Comments: *NA*

- v. Data quality or usability affected?

Comments: *No, see above.*

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes / No / NA

Comments: *A field duplicate was not included in this laboratory report.*

- ii. Were the field duplicates submitted blind to the lab? **Yes / No / NA**

Comments:

- iii. Precision – All relative percent differences (RPDs) less than specified project objectives? (Recommended: 30% for water, 50% for soil) **Yes / No / NA**

Comments:

- iv. Data quality or usability affected?

Comments: *NA*

- g. Decontamination or Equipment Blank** (if not applicable, a comment stating why must be entered below).

Yes / **No** / NA

Comments: *A decontamination or equipment blank was not included in our ADEC-approved work plan.*

- i.** All results less than LOQ and project specified objectives?

Yes / No / **NA**

Comments:

- ii.** If above LOQ or project specified objectives, what samples are affected?

Comments:

- iii.** Data quality or usability affected?

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a.** Defined and appropriate? **Yes** / No / NA

Comments: *A key is provided on Page 2 of the SGS Laboratory Report.*



Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907)433-3241

Report Number: **2190032**

Client Project: **103798-002 Garrett's Tesoro**

Dear Judy Hepner,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **2190032**
Project Name/Site: **103798-002 Garrett's Tesoro**
Project Contact: **Judy Hepner**

Refer to sample receipt form for information on sample condition.

2190032002MS (1548734) MS

8260C - MS recovery for toluene does not meet QC criteria. See LCS for accuracy.
8260C - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria. The sample was analyzed twice and results were confirmed.

2190032002MSD (1548735) MSD

8260C - MSD recoveries for several analytes do not meet QC criteria. See LCS for accuracy.
8260C - MS/MSD RPD for several analytes do not meet QC criteria.
8260C - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria. The sample was analyzed twice and results were confirmed.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 01/16/2020 3:45:49PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIM (PAH)				
1548763	1200069001MSD	XMS11910	Benzo[b]Fluoranthene	RP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
103798-TB	2190032001	12/30/2019	12/30/2019	Soil/Solid (dry weight)
103798-B558	2190032002	12/30/2019	12/30/2019	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel Range Organics (S)
AK101	Gasoline Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted

Print Date: 01/16/2020 3:45:54PM

Detectable Results Summary

Client Sample ID: **103798-B558**

Lab Sample ID: 2190032002

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	9.25J	ug/Kg
Diesel Range Organics	14.9J	mg/Kg
Methylene chloride	121J	ug/Kg
Toluene	363	ug/Kg

Print Date: 01/16/2020 3:45:56PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group



Results of **103798-TB**

Client Sample ID: **103798-TB**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 2190032001
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.26 U	2.52	0.755	mg/Kg	1		01/07/20 12:52
Surrogates							
4-Bromofluorobenzene (surr)	73.7	50-150		%	1		01/07/20 12:52

Batch Information

Analytical Batch: VFC15071
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/07/20 12:52
Container ID: 2190032001-A

Prep Batch: VXX35366
Prep Method: SW5035A
Prep Date/Time: 12/30/19 12:00
Prep Initial Wt./Vol.: 49.693 g
Prep Extract Vol: 25 mL



Results of 103798-TB

Client Sample ID: 103798-TB
Client Project ID: 103798-002 Garrett's Tesoro
Lab Sample ID: 2190032001
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 01/16/2020 3:45:57PM

J flagging is activated



Results of 103798-TB

Client Sample ID: **103798-TB**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 2190032001
 Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
 Received Date: 12/30/19 15:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	101 U	201	62.4	ug/Kg	1		01/07/20 10:18
Chloroform	2.01 U	4.02	1.01	ug/Kg	1		01/07/20 10:18
Chloromethane	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
cis-1,2-Dichloroethene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
cis-1,3-Dichloropropene	6.30 U	12.6	3.92	ug/Kg	1		01/07/20 10:18
Dibromochloromethane	2.52 U	5.03	1.51	ug/Kg	1		01/07/20 10:18
Dibromomethane	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
Dichlorodifluoromethane	25.1 U	50.3	15.1	ug/Kg	1		01/07/20 10:18
Ethylbenzene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
Freon-113	50.5 U	101	31.2	ug/Kg	1		01/07/20 10:18
Hexachlorobutadiene	10.1 U	20.1	6.24	ug/Kg	1		01/07/20 10:18
Isopropylbenzene (Cumene)	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
Methylene chloride	50.5 U	101	31.2	ug/Kg	1		01/07/20 10:18
Methyl-t-butyl ether	50.5 U	101	31.2	ug/Kg	1		01/07/20 10:18
Naphthalene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
n-Butylbenzene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
n-Propylbenzene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
o-Xylene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
P & M -Xylene	25.1 U	50.3	15.1	ug/Kg	1		01/07/20 10:18
sec-Butylbenzene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
Styrene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
tert-Butylbenzene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
Tetrachloroethene	6.30 U	12.6	3.92	ug/Kg	1		01/07/20 10:18
Toluene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
trans-1,2-Dichloroethene	12.6 U	25.2	7.85	ug/Kg	1		01/07/20 10:18
trans-1,3-Dichloropropene	6.30 U	12.6	3.92	ug/Kg	1		01/07/20 10:18
Trichloroethene	2.52 U	5.03	1.51	ug/Kg	1		01/07/20 10:18
Trichlorofluoromethane	25.1 U	50.3	15.1	ug/Kg	1		01/07/20 10:18
Vinyl acetate	50.5 U	101	31.2	ug/Kg	1		01/07/20 10:18
Vinyl chloride	0.403 U	0.805	0.252	ug/Kg	1		01/07/20 10:18
Xylenes (total)	37.8 U	75.5	22.9	ug/Kg	1		01/07/20 10:18
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	71-136		%	1		01/07/20 10:18
4-Bromofluorobenzene (surr)	67.2	55-151		%	1		01/07/20 10:18
Toluene-d8 (surr)	95.6	85-116		%	1		01/07/20 10:18

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Results of 103798-TB

Client Sample ID: **103798-TB**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 2190032001
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19755
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/07/20 10:18
Container ID: 2190032001-A

Prep Batch: VXX35369
Prep Method: SW5035A
Prep Date/Time: 12/30/19 12:00
Prep Initial Wt./Vol.: 49.693 g
Prep Extract Vol: 25 mL



Results of 103798-B558

Client Sample ID: 103798-B558
Client Project ID: 103798-002 Garrett's Tesoro
Lab Sample ID: 2190032002
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):75.3
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11910
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 01/15/20 16:32
Container ID: 2190032002-A

Prep Batch: XXX42738
Prep Method: SW3550C
Prep Date/Time: 01/08/20 14:35
Prep Initial Wt./Vol.: 22.533 g
Prep Extract Vol: 5 mL



Results of 103798-B558

Client Sample ID: **103798-B558**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 2190032002
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):75.3
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	14.9 J	26.3	8.16	mg/Kg	1		01/16/20 12:10
Surrogates							
5a Androstane (surr)	84.9	50-150		%	1		01/16/20 12:10

Batch Information

Analytical Batch: XFC15525
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 01/16/20 12:10
Container ID: 2190032002-A

Prep Batch: XXX42736
Prep Method: SW3550C
Prep Date/Time: 01/08/20 10:37
Prep Initial Wt./Vol.: 30.251 g
Prep Extract Vol: 5 mL



Results of 103798-B558

Client Sample ID: **103798-B558**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 2190032002
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):75.3
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.00 U	3.99	1.20	mg/Kg	1		01/07/20 13:09
Surrogates							
4-Bromofluorobenzene (surr)	67.8	50-150		%	1		01/07/20 13:09

Batch Information

Analytical Batch: VFC15071
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/07/20 13:09
Container ID: 2190032002-B

Prep Batch: VXX35366
Prep Method: SW5035A
Prep Date/Time: 12/30/19 12:00
Prep Initial Wt./Vol.: 70.628 g
Prep Extract Vol: 42.44 mL



Results of 103798-B558

Client Sample ID: **103798-B558**
 Client Project ID: **103798-002 Garrett's Tesoro**
 Lab Sample ID: 2190032002
 Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
 Received Date: 12/30/19 15:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):75.3
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	15.9 U	31.9	9.89	ug/Kg	1		01/07/20 10:34
1,1,1-Trichloroethane	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,1,2,2-Tetrachloroethane	1.60 U	3.19	0.989	ug/Kg	1		01/07/20 10:34
1,1,2-Trichloroethane	0.640 U	1.28	0.399	ug/Kg	1		01/07/20 10:34
1,1-Dichloroethane	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,1-Dichloroethene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,1-Dichloropropene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,2,3-Trichlorobenzene	39.9 U	79.8	23.9	ug/Kg	1		01/07/20 10:34
1,2,3-Trichloropropane	1.60 U	3.19	0.989	ug/Kg	1		01/07/20 10:34
1,2,4-Trichlorobenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,2,4-Trimethylbenzene	39.9 U	79.8	23.9	ug/Kg	1		01/07/20 10:34
1,2-Dibromo-3-chloropropane	80.0 U	160	49.5	ug/Kg	1		01/07/20 10:34
1,2-Dibromoethane	0.800 U	1.60	0.495	ug/Kg	1		01/07/20 10:34
1,2-Dichlorobenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,2-Dichloroethane	1.60 U	3.19	0.989	ug/Kg	1		01/07/20 10:34
1,2-Dichloropropane	8.00 U	16.0	4.95	ug/Kg	1		01/07/20 10:34
1,3,5-Trimethylbenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,3-Dichlorobenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
1,3-Dichloropropane	8.00 U	16.0	4.95	ug/Kg	1		01/07/20 10:34
1,4-Dichlorobenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
2,2-Dichloropropane	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
2-Butanone (MEK)	200 U	399	124	ug/Kg	1		01/07/20 10:34
2-Chlorotoluene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
2-Hexanone	80.0 U	160	49.5	ug/Kg	1		01/07/20 10:34
4-Chlorotoluene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
4-Isopropyltoluene	80.0 U	160	39.9	ug/Kg	1		01/07/20 10:34
4-Methyl-2-pentanone (MIBK)	200 U	399	124	ug/Kg	1		01/07/20 10:34
Acetone	200 U	399	124	ug/Kg	1		01/07/20 10:34
Benzene	9.95 U	19.9	6.22	ug/Kg	1		01/07/20 10:34
Bromobenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
Bromochloromethane	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
Bromodichloromethane	1.60 U	3.19	0.989	ug/Kg	1		01/07/20 10:34
Bromoform	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34
Bromomethane	15.9 U	31.9	9.89	ug/Kg	1		01/07/20 10:34
Carbon disulfide	80.0 U	160	49.5	ug/Kg	1		01/07/20 10:34
Carbon tetrachloride	9.95 U	19.9	6.22	ug/Kg	1		01/07/20 10:34
Chlorobenzene	19.9 U	39.9	12.4	ug/Kg	1		01/07/20 10:34

Print Date: 01/16/2020 3:45:57PM

J flagging is activated



Results of 103798-B558

Client Sample ID: 103798-B558
Client Project ID: 103798-002 Garrett's Tesoro
Lab Sample ID: 2190032002
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):75.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 103798-B558

Client Sample ID: **103798-B558**
Client Project ID: **103798-002 Garrett's Tesoro**
Lab Sample ID: 2190032002
Lab Project ID: 2190032

Collection Date: 12/30/19 12:00
Received Date: 12/30/19 15:55
Matrix: Soil/Solid (dry weight)
Solids (%):75.3
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19755
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/07/20 10:34
Container ID: 2190032002-B

Prep Batch: VXX35369
Prep Method: SW5035A
Prep Date/Time: 12/30/19 12:00
Prep Initial Wt./Vol.: 70.628 g
Prep Extract Vol: 42.44 mL

Method Blank

Blank ID: MB for HBN 1803673 [SPT/10960]

Blank Lab ID: 1548803

QC for Samples:
2190032002

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10960

Analytical Method: SM21 2540G

Instrument:

Analyst: BRP

Analytical Date/Time: 1/8/2020 4:38:00PM

Print Date: 01/16/2020 3:45:59PM

Duplicate Sample Summary

Original Sample ID: 1200004001

Duplicate Sample ID: 1548804

QC for Samples:

Analysis Date: 01/08/2020 16:38

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	77.2	78.0	%	0.99	(< 15)

Batch Information

Analytical Batch: SPT10960

Analytical Method: SM21 2540G

Instrument:

Analyst: BRP

Print Date: 01/16/2020 3:46:02PM

Duplicate Sample Summary

Original Sample ID: 1200069001

Duplicate Sample ID: 1548805

QC for Samples:

2190032002

Analysis Date: 01/08/2020 16:38

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	91.5	91.6	%	0.09	(< 15)

Batch Information

Analytical Batch: SPT10960

Analytical Method: SM21 2540G

Instrument:

Analyst: BRP

Print Date: 01/16/2020 3:46:02PM

Method Blank

Blank ID: MB for HBN 1803633 [VXX/35366]

Blank Lab ID: 1548654

QC for Samples:

2190032001, 2190032002

Matrix: Soil/Solid (dry weight)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	80.1	50-150		%

Batch Information

Analytical Batch: VFC15071

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: ST

Analytical Date/Time: 1/7/2020 12:34:00PM

Prep Batch: VXX35366

Prep Method: SW5035A

Prep Date/Time: 1/7/2020 8:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 01/16/2020 3:46:06PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 2190032 [VXX35366]
 Blank Spike Lab ID: 1548655
 Date Analyzed: 01/07/2020 11:59

Spike Duplicate ID: LCSD for HBN 2190032 [VXX35366]
 Spike Duplicate Lab ID: 1548656
 Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	10.9	88	12.5	11.5	92	(60-120)	5.00	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	84.3	84	1.25	82.1	82	(50-150)	2.70	
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Batch Information

Analytical Batch: **VFC15071**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35366**
 Prep Method: **SW5035A**
 Prep Date/Time: **01/07/2020 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 01/16/2020 3:46:09PM

Method Blank

Blank ID: MB for HBN 1803653 [VXX/35369]

Blank Lab ID: 1548732

QC for Samples:

2190032001, 2190032002

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	1.00U	2.00	0.620	ug/Kg
1,1,2-Trichloroethane	0.400U	0.800	0.250	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	1.00U	2.00	0.620	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	0.500U	1.00	0.310	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	1.00U	2.00	0.620	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	10.0U	20.0	6.20	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg

Print Date: 01/16/2020 3:46:12PM



Method Blank

Blank ID: MB for HBN 1803653 [VXX/35369]

Blank Lab ID: 1548732

QC for Samples:

2190032001, 2190032002

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloroform	2.00U	4.00	0.620	ug/Kg
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	2.50U	5.00	0.620	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	40.9J	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	2.50U	5.00	1.50	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	0.400U	0.800	0.250	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	71-136		%
4-Bromofluorobenzene (surr)	107	55-151		%
Toluene-d8 (surr)	96.4	85-116		%

Print Date: 01/16/2020 3:46:12PM



Method Blank

Blank ID: MB for HBN 1803653 [VXX/35369]
Blank Lab ID: 1548732

Matrix: Soil/Solid (dry weight)

QC for Samples:
2190032001, 2190032002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19755
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: KAJ
Analytical Date/Time: 1/7/2020 8:01:00AM

Prep Batch: VXX35369
Prep Method: SW5035A
Prep Date/Time: 1/7/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 01/16/2020 3:46:12PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 2190032 [VXX35369]

Blank Spike Lab ID: 1548733

Date Analyzed: 01/07/2020 08:17

Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	820	109	(78-125)
1,1,1-Trichloroethane	750	801	107	(73-130)
1,1,2,2-Tetrachloroethane	750	821	109	(70-124)
1,1,2-Trichloroethane	750	798	106	(78-121)
1,1-Dichloroethane	750	700	93	(76-125)
1,1-Dichloroethene	750	706	94	(70-131)
1,1-Dichloropropene	750	793	106	(76-125)
1,2,3-Trichlorobenzene	750	682	91	(66-130)
1,2,3-Trichloropropane	750	805	107	(73-125)
1,2,4-Trichlorobenzene	750	708	94	(67-129)
1,2,4-Trimethylbenzene	750	753	100	(75-123)
1,2-Dibromo-3-chloropropane	750	743	99	(61-132)
1,2-Dibromoethane	750	793	106	(78-122)
1,2-Dichlorobenzene	750	760	101	(78-121)
1,2-Dichloroethane	750	783	104	(73-128)
1,2-Dichloropropane	750	828	110	(76-123)
1,3,5-Trimethylbenzene	750	727	97	(73-124)
1,3-Dichlorobenzene	750	755	101	(77-121)
1,3-Dichloropropane	750	788	105	(77-121)
1,4-Dichlorobenzene	750	763	102	(75-120)
2,2-Dichloropropane	750	770	103	(67-133)
2-Butanone (MEK)	2250	2520	112	(51-148)
2-Chlorotoluene	750	783	104	(75-122)
2-Hexanone	2250	2480	110	(53-145)
4-Chlorotoluene	750	770	103	(72-124)
4-Isopropyltoluene	750	717	96	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2200	98	(65-135)
Acetone	2250	2200	98	(36-164)
Benzene	750	780	104	(77-121)
Bromobenzene	750	794	106	(78-121)
Bromochloromethane	750	702	94	(78-125)
Bromodichloromethane	750	831	111	(75-127)
Bromoform	750	820	109	(67-132)
Bromomethane	750	717	96	(53-143)

Print Date: 01/16/2020 3:46:16PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 2190032 [VXX35369]

Blank Spike Lab ID: 1548733

Date Analyzed: 01/07/2020 08:17

Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon disulfide	1130	1100	98	(63-132)
Carbon tetrachloride	750	833	111	(70-135)
Chlorobenzene	750	765	102	(79-120)
Chloroethane	750	603	80	(59-139)
Chloroform	750	764	102	(78-123)
Chloromethane	750	700	93	(50-136)
cis-1,2-Dichloroethene	750	745	99	(77-123)
cis-1,3-Dichloropropene	750	841	112	(74-126)
Dibromochloromethane	750	794	106	(74-126)
Dibromomethane	750	737	98	(78-125)
Dichlorodifluoromethane	750	691	92	(29-149)
Ethylbenzene	750	769	102	(76-122)
Freon-113	1130	1160	103	(66-136)
Hexachlorobutadiene	750	733	98	(61-135)
Isopropylbenzene (Cumene)	750	777	104	(68-134)
Methylene chloride	750	799	107	(70-128)
Methyl-t-butyl ether	1130	1250	112	(73-125)
Naphthalene	750	712	95	(62-129)
n-Butylbenzene	750	722	96	(70-128)
n-Propylbenzene	750	766	102	(73-125)
o-Xylene	750	773	103	(77-123)
P & M -Xylene	1500	1540	102	(77-124)
sec-Butylbenzene	750	728	97	(73-126)
Styrene	750	789	105	(76-124)
tert-Butylbenzene	750	735	98	(73-125)
Tetrachloroethene	750	772	103	(73-128)
Toluene	750	756	101	(77-121)
trans-1,2-Dichloroethene	750	718	96	(74-125)
trans-1,3-Dichloropropene	750	780	104	(71-130)
Trichloroethene	750	868	116	(77-123)
Trichlorofluoromethane	750	684	91	(62-140)
Vinyl acetate	750	798	106	(50-151)
Vinyl chloride	750	685	91	(56-135)
Xylenes (total)	2250	2310	103	(78-124)

Print Date: 01/16/2020 3:46:16PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 2190032 [VXX35369]
 Blank Spike Lab ID: 1548733
 Date Analyzed: 01/07/2020 08:17

Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	96.9	97	(71-136)
4-Bromofluorobenzene (surr)	750	101	101	(55-151)
Toluene-d8 (surr)	750	100	100	(85-116)

Batch Information

Analytical Batch: **VMS19755**
 Analytical Method: **SW8260C**
 Instrument: **VQA 7890/5975 GC/MS**
 Analyst: **KAJ**

Prep Batch: **VXX35369**
 Prep Method: **SW5035A**
 Prep Date/Time: **01/07/2020 06:00**
 Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 01/16/2020 3:46:16PM

Matrix Spike Summary

Original Sample ID: 2190032002
 MS Sample ID: 1548734 MS
 MSD Sample ID: 1548735 MSD

Analysis Date: 01/07/2020 10:34
 Analysis Date: 01/07/2020 8:56
 Analysis Date: 01/07/2020 9:12
 Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
		Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	15.9U	705	699	99	705	930	132 *	78-125	28.50	* (< 20)
1,1,1-Trichloroethane	19.9U	705	753	107	705	961	136 *	73-130	24.30	* (< 20)
1,1,2,2-Tetrachloroethane	1.60U	705	738	105	705	923	131 *	70-124	22.20	* (< 20)
1,1,2-Trichloroethane	0.640U	705	688	98	705	880	125 *	78-121	24.40	* (< 20)
1,1-Dichloroethane	19.9U	705	656	93	705	838	119	76-125	24.30	* (< 20)
1,1-Dichloroethene	19.9U	705	695	99	705	851	121	70-131	20.30	* (< 20)
1,1-Dichloropropene	19.9U	705	733	104	705	934	132 *	76-125	24.10	* (< 20)
1,2,3-Trichlorobenzene	39.9U	705	604	86	705	1039	147 *	66-130	52.90	* (< 20)
1,2,3-Trichloropropane	1.60U	705	752	107	705	842	119	73-125	11.40	(< 20)
1,2,4-Trichlorobenzene	19.9U	705	610	87	705	995	141 *	67-129	47.90	* (< 20)
1,2,4-Trimethylbenzene	39.9U	705	655	93	705	875	124 *	75-123	28.80	* (< 20)
1,2-Dibromo-3-chloropropane	80.0U	705	653	93	705	912	129	61-132	33.10	* (< 20)
1,2-Dibromoethane	0.800U	705	683	97	705	869	123 *	78-122	24.10	* (< 20)
1,2-Dichlorobenzene	19.9U	705	668	95	705	903	128 *	78-121	29.90	* (< 20)
1,2-Dichloroethane	1.60U	705	714	101	705	899	128	73-128	22.90	* (< 20)
1,2-Dichloropropane	8.00U	705	740	105	705	975	138 *	76-123	27.40	* (< 20)
1,3,5-Trimethylbenzene	19.9U	705	625	89	705	801	114	73-124	24.70	* (< 20)
1,3-Dichlorobenzene	19.9U	705	672	95	705	890	126 *	77-121	27.70	* (< 20)
1,3-Dichloropropane	8.00U	705	680	96	705	867	123 *	77-121	24.30	* (< 20)
1,4-Dichlorobenzene	19.9U	705	673	96	705	892	127 *	75-120	28.00	* (< 20)
2,2-Dichloropropane	19.9U	705	736	104	705	935	133	67-133	23.80	* (< 20)
2-Butanone (MEK)	200U	2112	2151	101	2112	2869	136	51-148	28.80	* (< 20)
2-Chlorotoluene	19.9U	705	693	98	705	907	129 *	75-122	26.80	* (< 20)
2-Hexanone	80.0U	2112	2125	100	2112	2762	131	53-145	26.10	* (< 20)
4-Chlorotoluene	19.9U	705	685	97	705	895	127 *	72-124	26.60	* (< 20)
4-Isopropyltoluene	80.0U	705	612	87	705	805	114	73-127	27.10	* (< 20)
4-Methyl-2-pentanone (MIBK)	200U	2112	1926	91	2112	2550	120	65-135	27.90	* (< 20)
Acetone	200U	2112	1939	91	2112	2497	118	36-164	25.30	* (< 20)
Benzene	9.95U	705	697	99	705	915	130 *	77-121	27.10	* (< 20)
Bromobenzene	19.9U	705	733	104	705	923	131 *	78-121	23.00	* (< 20)
Bromochloromethane	19.9U	705	648	92	705	813	115	78-125	22.60	* (< 20)
Bromodichloromethane	1.60U	705	754	107	705	979	139 *	75-127	25.90	* (< 20)
Bromoform	19.9U	705	709	101	705	922	131	67-132	26.10	* (< 20)
Bromomethane	15.9U	705	732	104	705	919	130	53-143	22.70	* (< 20)
Carbon disulfide	80.0U	1057	1114	105	1057	1317	125	63-132	16.70	(< 20)
Carbon tetrachloride	9.95U	705	789	112	705	1004	142 *	70-135	24.10	* (< 20)
Chlorobenzene	19.9U	705	664	94	705	880	125 *	79-120	28.00	* (< 20)

Print Date: 01/16/2020 3:46:17PM

Matrix Spike Summary

Original Sample ID: 2190032002
 MS Sample ID: 1548734 MS
 MSD Sample ID: 1548735 MSD

Analysis Date: 01/07/2020 10:34
 Analysis Date: 01/07/2020 8:56
 Analysis Date: 01/07/2020 9:12
 Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroethane	160U	705	754	107	705	1158	164 *	59-139	42.20	* (< 20)
Chloroform	3.19U	705	704	100	705	902	128 *	78-123	24.60	* (< 20)
Chloromethane	19.9U	705	679	96	705	853	121	50-136	22.70	* (< 20)
cis-1,2-Dichloroethene	19.9U	705	712	101	705	847	120	77-123	17.50	(< 20)
cis-1,3-Dichloropropene	9.95U	705	749	106	705	991	140 *	74-126	27.70	* (< 20)
Dibromochloromethane	3.99U	705	688	98	705	874	124	74-126	23.80	* (< 20)
Dibromomethane	19.9U	705	683	97	705	846	120	78-125	21.40	* (< 20)
Dichlorodifluoromethane	39.9U	705	717	102	705	865	123	29-149	18.70	(< 20)
Ethylbenzene	19.9U	705	665	94	705	890	126 *	76-122	28.90	* (< 20)
Freon-113	80.0U	1057	1130	107	1057	1394	131	66-136	20.50	* (< 20)
Hexachlorobutadiene	15.9U	705	765	108	705	950	135	61-135	21.60	* (< 20)
Isopropylbenzene (Cumene)	19.9U	705	655	93	705	903	128	68-134	31.70	* (< 20)
Methylene chloride	121J	705	753	90	705	979	122	70-128	26.00	* (< 20)
Methyl-t-butyl ether	80.0U	1057	1048	99	1057	1434	135 *	73-125	30.90	* (< 20)
Naphthalene	19.9U	705	607	86	705	999	142 *	62-129	48.90	* (< 20)
n-Butylbenzene	19.9U	705	614	87	705	797	113	70-128	26.10	* (< 20)
n-Propylbenzene	19.9U	705	665	94	705	873	124	73-125	26.90	* (< 20)
o-Xylene	19.9U	705	668	95	705	900	128 *	77-123	29.60	* (< 20)
P & M -Xylene	39.9U	1408	1328	94	1408	1806	128 *	77-124	30.20	* (< 20)
sec-Butylbenzene	19.9U	705	615	87	705	801	114	73-126	26.30	* (< 20)
Styrene	19.9U	705	695	99	705	927	131 *	76-124	28.70	* (< 20)
tert-Butylbenzene	19.9U	705	629	89	705	829	118	73-125	27.30	* (< 20)
Tetrachloroethene	9.95U	705	667	95	705	859	122	73-128	25.40	* (< 20)
Toluene	363	705	655	41 *	705	857	70 *	77-121	26.90	* (< 20)
trans-1,2-Dichloroethene	19.9U	705	692	98	705	866	123	74-125	22.40	* (< 20)
trans-1,3-Dichloropropene	9.95U	705	677	96	705	867	123	71-130	24.60	* (< 20)
Trichloroethene	3.99U	705	786	111	705	1031	146 *	77-123	27.00	* (< 20)
Trichlorofluoromethane	39.9U	705	705	100	705	875	124	62-140	21.50	* (< 20)
Vinyl acetate	80.0U	705	687	97	705	888	126	50-151	25.60	* (< 20)
Vinyl chloride	0.640U	705	697	99	705	861	122	56-135	21.00	* (< 20)
Xylenes (total)	60.0U	2112	2005	95	2112	2709	128 *	78-124	30.00	* (< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		705	700	99	705	668	95	71-136	4.70	
4-Bromofluorobenzene (surr)		1175	324	28 *	1175	410	35 *	55-151	23.70	
Toluene-d8 (surr)		705	699	99	705	688	98	85-116	1.40	

Print Date: 01/16/2020 3:46:17PM

Matrix Spike Summary

Original Sample ID: 2190032002
 MS Sample ID: 1548734 MS
 MSD Sample ID: 1548735 MSD

Analysis Date:
 Analysis Date: 01/07/2020 8:56
 Analysis Date: 01/07/2020 9:12
 Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032001, 2190032002

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS19755
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: KAJ
 Analytical Date/Time: 1/7/2020 8:56:01AM

Prep Batch: VXX35369
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 1/7/2020 6:00:00AM
 Prep Initial Wt./Vol.: 70.63g
 Prep Extract Vol: 25.00mL

Print Date: 01/16/2020 3:46:17PM

Method Blank

Blank ID: MB for HBN 1803637 [XXX/42736]
 Blank Lab ID: 1548672

Matrix: Soil/Solid (dry weight)

QC for Samples:
 2190032002

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	93.9	60-120		%

Batch Information

Analytical Batch: XFC15525
 Analytical Method: AK102
 Instrument: Agilent 7890B F
 Analyst: JMG
 Analytical Date/Time: 1/16/2020 11:11:00AM

Prep Batch: XXX42736
 Prep Method: SW3550C
 Prep Date/Time: 1/8/2020 10:37:09AM
 Prep Initial Wt./Vol.: 30 g
 Prep Extract Vol: 5 mL

Print Date: 01/16/2020 3:46:19PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 2190032 [XXX42736]
 Blank Spike Lab ID: 1548673
 Date Analyzed: 01/16/2020 11:31

Spike Duplicate ID: LCSD for HBN 2190032
 [XXX42736]
 Spike Duplicate Lab ID: 1548674
 Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032002

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	833	857	103	833	897	108	(75-125)	4.60	(< 20)
Surrogates									
5a Androstane (surr)	16.7	108	108	16.7	112	112	(60-120)	3.90	

Batch Information

Analytical Batch: **XFC15525**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX42736**
 Prep Method: **SW3550C**
 Prep Date/Time: **01/08/2020 10:37**
 Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

Print Date: 01/16/2020 3:46:22PM

Method Blank

Blank ID: MB for HBN 1803660 [XXX/42738]
 Blank Lab ID: 1548760

Matrix: Soil/Solid (dry weight)

QC for Samples:
 2190032002

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
2-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
Acenaphthene	12.5U	25.0	6.25	ug/Kg
Acenaphthylene	12.5U	25.0	6.25	ug/Kg
Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/Kg
Chrysene	12.5U	25.0	6.25	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/Kg
Fluoranthene	12.5U	25.0	6.25	ug/Kg
Fluorene	12.5U	25.0	6.25	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/Kg
Naphthalene	10.0U	20.0	5.00	ug/Kg
Phenanthrene	12.5U	25.0	6.25	ug/Kg
Pyrene	12.5U	25.0	6.25	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	80.7	58-103		%
Fluoranthene-d10 (surr)	85.9	54-113		%

Batch Information

Analytical Batch: XMS11910
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 1/15/2020 3:51:00PM

Prep Batch: XXX42738
 Prep Method: SW3550C
 Prep Date/Time: 1/8/2020 2:35:23PM
 Prep Initial Wt./Vol.: 22.5 g
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 2190032 [XXX42738]
 Blank Spike Lab ID: 1548761
 Date Analyzed: 01/15/2020 16:12

Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032002

Results by 8270D SIM (PAH)

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	95.7	86	(43-111)
2-Methylnaphthalene	111	94.4	85	(39-114)
Acenaphthene	111	115	103	(44-111)
Acenaphthylene	111	94.0	85	(39-116)
Anthracene	111	93.2	84	(50-114)
Benzo(a)Anthracene	111	94.9	85	(54-122)
Benzo[a]pyrene	111	92.0	83	(50-125)
Benzo[b]Fluoranthene	111	96.7	87	(53-128)
Benzo[g,h,i]perylene	111	94.0	85	(49-127)
Benzo[k]fluoranthene	111	97.6	88	(56-123)
Chrysene	111	97.1	87	(57-118)
Dibenzo[a,h]anthracene	111	94.5	85	(50-129)
Fluoranthene	111	101	91	(55-119)
Fluorene	111	97.8	88	(47-114)
Indeno[1,2,3-c,d] pyrene	111	100	90	(49-130)
Naphthalene	111	93.6	84	(38-111)
Phenanthrene	111	93.0	84	(49-113)
Pyrene	111	105	94	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111	81.2	81	(58-103)
Fluoranthene-d10 (surr)	111	84.1	84	(54-113)

Batch Information

Analytical Batch: **XMS11910**
 Analytical Method: **8270D SIM (PAH)**
 Instrument: **SVA Agilent 780/5975 GC/MS**
 Analyst: **DSD**

Prep Batch: **XXX42738**
 Prep Method: **SW3550C**
 Prep Date/Time: **01/08/2020 14:35**
 Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1200069001
 MS Sample ID: 1548762 MS
 MSD Sample ID: 1548763 MSD

Analysis Date: 01/15/2020 16:53
 Analysis Date: 01/15/2020 17:13
 Analysis Date: 01/15/2020 17:34
 Matrix: Soil/Solid (dry weight)

QC for Samples: 2190032002

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	13.6U	120	103	86	121	104	86	43-111	1.50	(< 20)
2-Methylnaphthalene	13.6U	120	102	85	121	104	86	39-114	1.30	(< 20)
Acenaphthene	13.6U	120	122	102	121	126	104	44-111	2.40	(< 20)
Acenaphthylene	13.6U	120	105	87	121	107	88	39-116	2.40	(< 20)
Anthracene	13.6U	120	101	84	121	105	87	50-114	3.50	(< 20)
Benzo(a)Anthracene	13.6U	120	103	86	121	104	86	54-122	0.61	(< 20)
Benzo(a)pyrene	13.6U	120	109	91	121	110	91	50-125	0.93	(< 20)
Benzo[b]Fluoranthene	13.6U	120	106	88	121	109	90	53-128	2.20	(< 20)
Benzo[g,h,i]perylene	13.6U	120	105	87	121	107	88	49-127	2.00	(< 20)
Benzo[k]fluoranthene	13.6U	120	110	92	121	110	91	56-123	0.19	(< 20)
Chrysene	13.6U	120	104	87	121	104	86	57-118	0.09	(< 20)
Dibenzo[a,h]anthracene	13.6U	120	106	88	121	107	88	50-129	1.20	(< 20)
Fluoranthene	13.6U	120	105	87	121	103	85	55-119	2.10	(< 20)
Fluorene	13.6U	120	105	87	121	106	88	47-114	1.20	(< 20)
Indeno[1,2,3-c,d] pyrene	13.6U	120	111	93	121	113	93	49-130	0.53	(< 20)
Naphthalene	10.9U	120	102	85	121	103	85	38-111	0.74	(< 20)
Phenanthrene	13.6U	120	99.8	83	121	103	85	49-113	3.20	(< 20)
Pyrene	13.6U	120	115	95	121	111	92	55-117	2.20	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		120	97.4	81	121	99.1	82	58-103	1.70	
Fluoranthene-d10 (surr)		120	98.4	82	121	96.6	80	54-113	1.80	

Batch Information

Analytical Batch: XMS11910
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 1/15/2020 5:13:00PM

Prep Batch: XXX42738
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 1/8/2020 2:35:23PM
 Prep Initial Wt./Vol.: 22.70g
 Prep Extract Vol: 5.00mL

Print Date: 01/16/2020 3:46:29PM

362656 Nsw 12/30/19

2190032

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1
Attn: Justin

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

2705 Saint Andrews Loop, Suite A
Pasco, WA 99301-3378
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

3990 Collins Way, Suite 100
Lake Oswego, OR 97035
(503) 223-6147

1321 Bannock Street, Suite 200
Denver, CO 80204
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	Analysis Parameters/Sample Container Description (include preservative if used)				Total Number of Containers	Remarks/Matrix	
103798-TB	① A	12:00	12/30/19			X					1	trip blank
103798-B558	② AB	12:22	12/30/19	X	X	X					2	soil

Project Information <u>002</u>		Sample Receipt	
Project Number: <u>103798-002</u>	Total Number of Containers	COC Seals/Intact? Y/N/NA	Received Good Cond./Cold
Project Name: <u>Garrett's Tesoro</u>			
Contact: <u>JCH/SKH</u>	Delivery Method:		(attach shipping bill, if any)
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Sampler: <u>JCH</u>			

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>JW</u> Time: <u>15:56</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: <u>Judy Hepner</u> Date: <u>12/30/19</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: <u>SWI</u>	Company: _____	Company: _____

Instructions	
Requested Turnaround Time: <u>Standard</u>	
Special Instructions:	

Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Time: _____	Signature: _____ Time: _____	Signature: <u>JAW</u> Time: <u>15:55</u>
Printed Name: _____ Date: _____	Printed Name: _____ Date: _____	Printed Name: <u>JAW</u> Date: <u>12/30/19</u>
Company: _____	Company: _____	Company: <u>SGS</u>

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File



e-Sample Receipt Form

SGS Workorder #:

2190032



2 1 9 0 0 3 2

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			<input checked="" type="checkbox"/>	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		<input type="checkbox"/>		
COC accompanied samples?		<input checked="" type="checkbox"/>		
DOD: Were samples received in COC corresponding coolers?		<input type="checkbox"/>		
<input checked="" type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		<input checked="" type="checkbox"/>	Cooler ID: 1 @ 2.3 °C	Therm. ID: D62
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		<input type="checkbox"/>	Cooler ID: @	Therm. ID:
		<input type="checkbox"/>	Cooler ID: @	Therm. ID:
		<input type="checkbox"/>	Cooler ID: @	Therm. ID:
		<input type="checkbox"/>	Cooler ID: @	Therm. ID:
*If >6°C, were samples collected <8 hours ago?		<input type="checkbox"/>		
If <0°C, were sample containers ice free?		<input type="checkbox"/>		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?		<input checked="" type="checkbox"/>		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		<input checked="" type="checkbox"/>		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)		<input checked="" type="checkbox"/>		
Were proper containers (type/mass/volume/preservative***) used?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	***Exemption permitted for metals (e.g,200.8/6020A).
Volatile / LL-Hg Requirements				
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		<input checked="" type="checkbox"/>		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		<input type="checkbox"/>		
Were all soil VOAs field extracted with MeOH+BFB?		<input checked="" type="checkbox"/>		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
2190032001-A	Methanol field pres. 4 C	OK			
2190032002-A	No Preservative Required	OK			
2190032002-B	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Judy Hepner

Title: Environmental Staff

Date: 1/28/2020

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America Inc.

Laboratory Report Number: 2190032

Laboratory Report Date: 1/16/2020

Contaminated Site Name: Tesoro - Garretts

ADEC File Number: 2100.26.078

Hazard Identification Number: 23603

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA

Comments:

- b. Correct analyses requested? **Yes** / No / NA

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes / No / NA

Comments: *The cooler temperature blank was 2.3° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes**/ No / NA

Comments:

- c. Sample condition documented - broken, leaking (MeOH), zero headspace (VOC vials)? **Yes**/ No / NA

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? **Yes** / No / **NA**

Comments: *No discrepancies were noted.*

- e. Data quality or usability affected?

Comments: *See above.*

4. Case Narrative

- a. Present and understandable? **Yes**/ No / NA

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes**/ No / NA

Comments: *The following discrepancies, errors, or QC failures were noted in the case narrative:*

- 8260C – MS/MSD surrogate recoveries for 4-bromofluorobenzene does not meet QC criteria. The sample was analyzed twice and results were confirmed.
- 8260C – MS recovery for toluene does not meet QC criteria. See LCS for accuracy.
- 8260C – MSD recoveries for several analytes do not meet QC criteria. See LCS for accuracy.
- 8260C – MS/MSD RPD for several analytes do not meet QC criteria.

- c. Were all corrective actions documented? **Yes**/**No** / NA

Comments: *See above.*

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes**/ No / NA

Comments:

- b. All applicable holding times met? **Yes**/ No / NA

Comments:

- c. All soils reported on a dry weight basis? **Yes** / No / NA

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? Yes **No** / NA

Comments: *The LOQs for 1,2,3-trichloropropane, 1,2-dibromoethane, and dibromochloromethane are greater than the ADEC cleanup levels.*

- e. Data quality or usability affected?

Comments: *There is a potential that these target analytes are present at concentrations in the associated samples greater than the ADEC cleanup levels, but less than the LOQs; however, these analytes were not detected at estimated concentrations in the project samples.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / No / NA

Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes / No / NA

Comments: *Although less than the LOQ, an estimated (J-flagged) concentration of methylene chloride (40.9 ug/kg) was detected.*

- iii. If above LOQ or project specified objectives, what samples are affected?

Comments: *Each sample.*

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes / No / NA

Comments: *When the reported sample concentration is within 10 times the reported blank concentration, the project samples are flagged "B". If both the sample concentration and method blank concentrations are reported at levels less than the LOQ, the sample concentration is reported as non-detect at the LOQ and flagged "B".*

- v. Data quality or usability affected?

Comments: *See above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA
Comments:
- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / **NA**
Comments:
- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / No / NA
Comments:
- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from LCS/LCSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / No / NA
Comments:
- v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:
- vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?
Yes / No / **NA**
Comments:
- vii. Data quality or usability affected?
Comments: *No, see above.*

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics - One MS/MSD reported per matrix, analysis, and 20 samples?
Yes / No / NA
Comments:
- ii. Metals/Inorganics - One MS and one MSD reported per matrix, analysis and 20 samples? **Yes** / No / **NA**
Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK petroleum methods: AK 101 60%-120%, AK 102 75%-125%, AK 103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / No / NA

Comments: *See Section 4.b.*

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits and project specified objectives, if applicable. RPD reported from MS/MSD, and/or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / **No** / NA

Comments: *See Section 4.b.*

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Sample B5S8.*

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes / **No** / NA

Comments: *The analytes were not detected in the parent samples or the LCS was used for accuracy requirements.*

vii. Data quality or usability affected?

Comments: *No, see above.*

d. Surrogates - Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses - field, QC, and laboratory samples? **Yes** / No / NA

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes** / **No** / NA

Comments: *EPA 8260C, the MS surrogate recovery for 4-bromofluorobenzene did not meet QC criteria.*

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined? **Yes** / **No** / NA

Comments: *The sample surrogate recovery are within criteria; therefore, flagging is not required.*

iv. Data quality or usability affected?

Comments: *No, See above.*

e. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? **Yes** / No / NA

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes** / **No** / NA

Comments: *Only one cooler was used to transport the samples each day.*

- iii. All results less than LOQ and project specified objectives? **Yes** / No / NA

Comments:

- iv. If above LOQ or project specified DQOs, what samples are affected?

Comments:

- v. Data quality or usability affected?

Comments: *No, see above.*

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes / **No** / NA

Comments: *A field duplicate was not submitted with this lab report.*

- ii. Were the field duplicates submitted blind to the lab? **Yes** / No / **NA**

Comments:

- iii. Precision – All relative percent differences (RPDs) less than specified project objectives? (Recommended: 30% for water, 50% for soil) **Yes** / No / **NA**

Comments:

- iv. Data quality or usability affected?

Comments: *See above.*

g. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below).

Yes / **No** / NA

Comments: *A decontamination or equipment blank was not included in our ADEC-approved work plan.*

- i. All results less than LOQ and project specified objectives?

Yes / No / **NA**

Comments:

Laboratory Report Number: 2190032

ii. If above LOQ or project specified objectives, what samples are affected?
Comments:

iii. Data quality or usability affected?
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate? **Yes** / No / NA

Comments: *A key is provided on Page 4 of the SGS Laboratory Report.*

APPENDIX E

**IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL/ENVIRONMENTAL REPORT**



Date: April 2020
To: Shoreside Petroleum Inc.

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland