# AGENCY REVIEW DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT – PHASE 5 CHELAN CHEVRON CLEANUP SITE ID: 6660 232 East Woodin Avenue

Chelan, Washington

April 27, 2021

Prepared for:
Washington State Department of Ecology
1250 West Alder Street
Union Gap, Washington 98903

Prepared by: Leidos, Inc. 11824 North Creek Parkway N, Suite 101 Bothell, Washington 98011

> On Behalf of: Resource Environmental, LLC 925 Salida Del Sol Drive Paso Robles, California 93446



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Russell S. Shropshire, PE Principal Engineer

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#### SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT – PHASE 5 CHELAN CHEVRON

#### 1. INTRODUCTION AND OBJECTIVES

Leidos, Inc. (Leidos), on behalf of Resource Environmental, LLC (RELLC), an environmental service provider to Chevron Environmental Management and Real Estate Company (Chevron), has prepared this report to summarize the results of Supplemental Remedial Investigation (SRI) activities performed between October 25 and December 18, 2020 at the Chelan Chevron site (the Site) in Chelan, Washington. SRI activities for the Site are being performed pursuant to the terms of Agreed Order No. DE 10629, which was entered into by Chevron and the Washington State Department of Ecology (Ecology) in June 2014.

The SRI activities summarized by this report represent a portion of the planned SRI Phase 5 activities, which were proposed by the following Ecology approved documents:

- Supplemental Remedial Investigation Workplan Phase 5, June 16, 2020, prepared by Arcadis (Arcadis, 2020); and
- Final Supplemental Remedial Investigation Work Plan Phase 5 Addendum 1, September 24, 2020, prepared by Leidos (hereafter referred to as Addendum 1 [Leidos, 2020b]).

Specifically, this report presents the work performed and findings of the following SRI Phase 5 investigation components:

- Shallow soil boring and sampling activities in three suspected petroleum source areas;
- Installation of soil vapor sampling probes at locations north of E. Woodin Avenue;
- Installation of pressure transducers to facilitate an in-depth evaluation of groundwater elevation trends across the Site;
- Collection and analysis of petroleum light non-aqueous phase (LNAPL) samples; and
- Completion of an LNAPL site characterization investigation using Ultra-Violet Optical Screening Tool (UVOST®) and Hydraulic Profiling (HP) technologies developed by Dakota Technologies (hereafter referred to as UVOST-HP).

Results of future SRI Phase 5 soil vapor sampling activities and the on-going groundwater elevation investigation will be presented in future reports submitted to Ecology.

The objective of SRI Phase 5 investigation activities is to address data gaps that have been identified based on the results of previous SRI activities conducted since 2013 to satisfy the requirements of Agreed Order No. DE 10629. References to previous SRI summary reports are included in Section 9.

#### 2. SOIL BORING AND SAMPLING ACTIVITIES

The first phase of SRI Phase 5 field work was conducted between October 25 and November 13, 2020 and consisted of the following investigation activities:

- 1. Utility locate and geophysical survey;
- 2. UVOST-HP boring preparation;
- 3. Shallow soil investigation at 221 E. Woodin Avenue;



- 4. Shallow soil investigation adjacent to 141 E. Woodin Avenue;
- 5. Shallow soil investigation at 136 E. Johnson Avenue; and
- 6. Installation of soil vapor sampling probes at two locations north of E. Woodin Avenue.

SRI Phase 5 investigation locations are shown on Figure 1. Additional details regarding the performance and results of these activities are provided in the following subsections.

#### 2.1 UTILITY LOCATE AND GEOPHYSICAL SURVEY

Prior to the start of any subsurface investigation activities, Leidos notified the Washington Utility Notification Center, and performed a private utility location and geophysical survey in order to finalize all of the proposed investigation boring locations. Utility location and geophysical survey field work was performed on a Sunday (October 25, 2020), in order to facilitate access to the Wells Fargo Bank drive-thru lane and other vehicle parking areas that otherwise would be inaccessible for this work. Utility locating and geophysical survey services were provided by Geophysical Survey LLC of Kennewick, Washington.

The utility location and geophysical survey performed included:

- Location of subsurface utilities in the vicinity of all proposed boring locations utilizing ground penetrating radar (GPR) and electromagnetic line locating methods;
- Relocation and marking of suspected underground storage tanks (USTs) on the property at 221 E. Woodin Avenue; and
- A GPR survey of the off-alley parking area on the property at 136 E. Johnson Avenue to investigate the potential presence of heating oil or diesel USTs that may serve as the source of diesel-range petroleum contamination that is present in the vicinity of monitoring well MW-27.

On the 136 E. Johnson Avenue property, one in-place UST was detected in the northwest portion of the property near the northwest corner of the building. This UST was estimated to be approximately 4 feet in diameter by 8 feet long. A fill port to the UST was also located at the ground surface. In the parking lot to the south of the building, the GPR survey also detected an area approximately 10 feet wide by 17 feet long, in the northern portion of the parking lot, which exhibited broken soil horizons and characteristics typical of fill material that was not similar to the surrounding soils.

For the geophysical survey work performed on the 136. E. Johnson Avenue property, Leidos also hoped to expand the survey onto the adjacent property to the west (128 E. Johnson Avenue), which is known to have a currently active diesel fuel UST, as well as at least one former diesel fuel UST. With assistance from the former property owner, Frontier Communications, Inc. (named as a potentially liable person [PLP] in 2018 for a release of hazardous substances at the Site), Leidos obtained approval by email from the new property owner (Ziply Fiber) to extend the geophysical survey onto the 128 E. Johnson Avenue property. However, at the time that the geophysical survey was conducted, access to perform the work was prevented by three Ziply Fiber service trucks that were parked on the property.

Additional details regarding the procedures and findings of the utility locate and geophysical survey are presented in the summary report prepared by Geophysical Survey LLC, which is included in Appendix A.



#### 2.2 SOIL BORING AND SAMPLING PROCEDURES

Soil boring and sampling activities were performed according to the procedures described in Section 3 of the Sampling and Analysis Plan (SAP) included in Addendum 1 (Leidos, 2020b). Borehole clearance and drilling activities were performed by Anderson Environmental Contracting, LLC (AEC) of Kelso, Washington.

#### 2.2.1 Borehole Clearance

Each soil boring location was initially cleared to a depth of at least 8 feet below ground surface (bgs) using a compressed air/vacuum excavation system (air-knife) to avoid damage to potential buried utility lines or other subsurface infrastructure. Within this interval, soil samples were collected, using a hand-auger, approximately every 2 feet for classification and field screening purposes. Use of the air-knife equipment was stopped at least 6 inches above the top of each sample interval in order to minimize disturbance of the soil interval to be sampled.

#### 2.2.2 Drilling and Sampling Methods

Below the borehole clearance interval (8 feet bgs), soil borings were advanced using a sonic drill rig. Using this equipment, AEC initially attempted to collect soil samples on a continuous basis using a 5-foot long split-core-barrel sampler, as was proposed in the Addendum 1 SAP. However, this technique was later abandoned due to problems with low sample recovery in the core-barrel. Several samples in the first few borings were retrieved with little to no recovery, especially in the upper 20 feet bgs. AEC attempted several modifications to the sample collection method, using different types of sonic drill bits to try to improve sample recovery. However, none were successful. Therefore, the drilling team switched over to conventional sonic drilling methods, by collecting the sample for each 5-foot interval into two 2.5-foot long core bags. This method worked better to improve sample recovery.

#### 2.2.3 Field Screening and Logging of Soil Samples

Soil samples were logged in the field in accordance with the Unified Soil Classification System and field screened for the presence of petroleum hydrocarbons by headspace vapor measurements using a photo-ionization detector (PID) and sheen testing per the procedures described in Section 3.3 of the Addendum 1 SAP.

#### 2.2.4 Soil Sample Analysis

Soil samples selected for laboratory analysis were submitted to Pace Analytical for the following analyses:

- Gasoline-range hydrocarbons (GRO) by Ecology NWTPH-Gx;
- Diesel-range hydrocarbons (DRO) and oil-range organics (ORO) by Ecology NWTPH-Dx:
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), ethylene dibromide (EDB), and ethylene dichloride (EDC) by USEPA method 8260; and
- Total lead by USEPA method 6010.

Select soil samples (such as those displaying strong field-screening indications of petroleum hydrocarbons, and those which were collected in the vicinity of undocumented USTs) were also submitted for the following additional analyses:



- Naphthalene, 1-methyl naphthalene, and 2-methly naphthalene by USEPA 8270;
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by USEPA method 8270 SIM;
- Polychlorinated biphenyls (PCBs) by USEPA method 8082; and
- Halogenated volatile organic compounds (HVOCs) by USEPA method 8260.

Field duplicate soil samples were collected at a rate of approximately one per each 20 soil samples and submitted for the above-referenced analyses to ensure QA/QC. Additional QA/QC samples included one trip blank to accompany each sample cooler, and equipment rinse samples to verify equipment decontamination procedures. Equipment rinse sampling was performed by collecting laboratory-supplied distilled water that was used as the final rinse following equipment decontamination procedures. Equipment rinse samples were collected at a rate of one per sample collection method, for a total of two samples. Trip blank and equipment rinse QA/QC samples were submitted for the following analysis:

- GRO by Ecology NWTPH-Gx; and
- BTEX, MTBE, EDB and EDC by USEPA method 8260.

#### 2.3 UVOST-HP BORING PREPARATION

Soil boring and sampling activities included the preparation of six boring locations (UHP-1 through UHP-6) for the UVOST-HP investigation (see Section 5). Preparation of the borings consisted of advancing a preliminary boring from the ground surface through the upper gravel-cobble interval that is typically encountered from approximately 6 to 15 feet bgs throughout much of the Site. This preparation step was required to allow the UVOST-HP equipment to be advanced through this interval without damage to the equipment.

Each UVOST-HP boring location was first cleared to 8 feet bgs using air-knife equipment, as previously described in Section 2.2.1. Following borehole clearance to 8 feet bgs, borings were advanced using sonic drilling equipment through the remainder of the gravel-cobble interval until encountering the approximate upper-contact with the underlying clayey silt interval, which was generally encountered at depths ranging from approximately 12.5 to 17.5 feet bgs. Each boring was then cased from approximately 0.5 foot bgs to the clayey silt contact with 4-inch diameter PVC well casing. Casings were fitted with standard 4-inch diameter expanding well plugs. At the ground surface, the cased and capped borings were covered with drilling sand and finished at the ground surface with a temporary concrete patch to facilitate access for completion of the UVOST-HP investigation activities in December 2020.

#### 2.4 SHALLOW SOIL INVESTIGATION AT 221 E. WOODIN AVENUE

As proposed in Addendum 1, a shallow soil investigation was performed on the property located at 221 E. Woodin Avenue (currently the location of Jerry's Auto Supply) in order to confirm whether suspected orphaned USTs are remaining on the property and to evaluate shallow soil conditions in the vicinity of the suspected UST basin.

#### 2.4.1 UST Confirmation Borings and Contents Sampling

On November 7, 2020, AEC used air-knife equipment to advance shallow "pothole" excavations at each of the three suspected UST locations identified by the geophysical survey. Steel USTs



were confirmed to be present at each of the suspected locations. For the purpose of this investigation, these USTs have been identified as follows (see Figure 2):

- The western-most UST on the 221 E. Woodin Avenue property was designated as UST-1. This UST was estimated to be approximately 4 feet in diameter and 12 feet long, based on GPR survey results. A capped fill port for the UST was located approximately 4 inches below the ground surface, which allowed access to the tank. Residual liquid was visible in the tank and a strong petroleum-like odor was observed. Measurements collected through the fill port indicate that the UST was approximately 4 feet in diameter, and that the top of the tank was approximately 2.5 feet below the ground surface. A disposable bailer was used to collect a sample of the residual liquid that was present in the bottom of the UST. This sample, which was assigned the sample ID 221E Woodin UST-1, was identified as weathered leaded gasoline by LNAPL forensics analysis (see Section 4 for additional details).
- The central UST encountered on the 221 E. Woodin Avenue property was identified as UST-2. This UST was estimated to be approximately 4 feet in diameter and 5 feet long, based on the GPR survey results. While air-knifing down to this UST, the top of the UST was readily perforated by the high-pressure air wand due to extensive corrosion of the tank walls. The top of the UST was encountered at approximately 3 feet bgs. No evidence of residual liquid in the UST was present. Due to the extensive corrosion of the tank walls, a hand-auger was able to be inserted into the UST to collect a sample of the debris at the bottom of the tank, at a depth of approximately 6 feet bgs. This sample (221EW-UST2-S-201108) was submitted for laboratory analysis, as previously described for soil samples in Section 2.2.4. Laboratory results for this sample indicate that it contained: gasoline-range organics (GRO); diesel-range organics (DRO); heavy-range organics (HRO); benzene, toluene, ethylbenzene, and xylenes (BTEX); naphthalenes; tetrachloroethene (PCE); lead; and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) at concentrations exceeding MTCA Method A cleanup levels. Laboratory analytical results for this samples are summarized in Table 1 and the laboratory report is included in Appendix C.
- The eastern-most UST encountered was identified as UST-3. This UST was estimated to be approximately 5 feet in diameter and 14 feet long, based on the GPR survey results. However, later measurements of the tank's top and bottom depths indicate that this UST was approximately 3.5 feet in diameter. Measurements of the tank's top and bottom depths (33 inches and 75.5 inches bgs, respectively) were made by accessing the tank through an existing fill or vent pipe. No evidence of residual liquid material in the UST was observed. Leidos was not able to assess the extent of tank-bottom debris materials that may have been present due to access limitations through the fill/vent pipe. No samples were able to be collected from UST-3.

#### 2.4.2 UST Basin Delineation Borings

In addition to the UST confirmation borings, Leidos completed three shallow soil borings (SRI5-4, SRI5-5, and SRI5-6) on the property at 221 E. Woodin Avenue in order to evaluate shallow soil conditions in the vicinity of the UST basin and former pump island area. Borehole clearance activities for these borings were conducted on November 7, 2020 and the borings were completed using sonic drilling equipment the following day.



Soil conditions encountered in the three borings at the 221 E. Woodin Avenue property consisted of the following three lithologic intervals: an upper layer of silty soil extending to depths of 7.5 to 10 feet bgs; a middle layer of sand and silt with gravel extending to depths of 15 to 16.5 feet bgs; and a lower layer of clay-rich silt extending to the drilled depths of 25 to 30 feet bgs. Boring logs are presented in Appendix B.

Field screening results indicate that petroleum impacts were first encountered at depths of approximately 15 to 16.5 feet bgs in each of the three borings, at the uppermost contact with the clay-rich silt interval, and extended to depths of at least 20 feet bgs. In each of the borings, elevated PID readings (>1,600 ppm) were measured from samples collected at the top of this silt layer. The samples were described as having a moderate to strong hydrocarbon odor, with a slight to heavy sheen.

Based on field screening results, 14 soil samples (including one duplicate sample) were submitted for laboratory analysis. Soil sampling results are summarized in Table 1 and results for selected indicator compounds (GRO, DRO and benzene) are also presented on Figure 3. As these results indicate, GRO, BTEX, naphthalenes and EDB were detected in the vicinity of the UST basin at concentrations exceeding MTCA Method A cleanup levels, beginning at depths as shallow as 14.5 feet bgs. GRO was detected at concentrations of up to 20,600 mg/kg, and benzene was detected at concentrations of up to 64 mg/kg in this area. These concentrations are on the order of the highest concentrations of these contaminants ever detected at the Site. Concentrations of GRO in soil in 6 of the 14 soil samples collected in this area were above 7,000 mg/kg, which suggests that this area continues to serve as a source of the mobile gasoline LNAPL still being observed in nearby monitoring wells. Laboratory analytical reports for soil sample analyses are presented in Appendix C.

The results of the shallow soil investigation on the 221 E. Woodin Avenue property provide further, and conclusive, evidence that historical service station operations on this property have contributed to petroleum impacts to the Site. Soil sampling results from soil borings SRI5-4, SRI5-5, and SRI5-6 indicate that this area is a significant source for the petroleum impacts to the eastern portion of the Site and is likely a primary source for the continuing presence of mobile LNAPL in monitoring wells in this area.

#### 2.5 SHALLOW SOIL INVESTIGATION ADJACENT TO 141 E WOODIN AVENUE

In the western portion of the Site, west of Emerson Street, Leidos conducted a shallow soil boring investigation in the street and sidewalk right-of-way adjacent to the property at 141 E. Woodin Avenue. This work was performed in order to further delineate shallow soil impacts in the vicinity of four orphaned USTs present in this area, which had been previously confirmed during the SRI Phase 4 field activities conducted by Leidos in October/November 2018. At that time, soil samples collected of the gravelly sand material encountered near the base of the UST basin showed no evidence of petroleum impacts (Leidos, 2019). Therefore, the intent of the SRI Phase 5 investigation activities in this area was to evaluate the potential for petroleum impacts at, and immediately below, the upper contact with the clayey silt soil horizon that is typically encountered at approximately 15 feet bgs throughout the Site.

As proposed in Addendum 1, three soil boring (SRI5-1 through SRI-3) were originally completed in this area on November 10, 2020. Based on field screening results from these borings, which provided indications of significant petroleum impact beginning at depths as



shallow as 10 feet bgs, two additional contingency borings (SRI-5-10 and SRI5-11) were also completed in this area on November 12. These contingency borings were added to further delineate the extent of shallow petroleum impacts further east and northeast of the UST basin. Approximate locations for each of the borings completed are shown on Figure 1.

Soil conditions encountered in the five borings at the 141 E. Woodin Avenue area consisted of the following three lithologic intervals: an upper layer of silty soil extending to depths of 3 to 5 feet bgs; a middle layer of sand with gravel extending to depths of 10 to 14.75 feet bgs; and a lower layer of clay-rich silt extending to the drilled depths of 25 to 35 feet bgs. Boring logs are presented in Appendix B.

Field screening results for the borings in the 141 E. Woodin Avenue area indicate that petroleum impacts were first encountered at the uppermost contact with the clay-rich silt unit at approximately 10 to 14.75 feet bgs. In each of these borings, elevated PID readings (between 1,370 and >15,000 ppm) were measured from samples collected at the top of this silt layer. The samples were described as having a moderate to strong hydrocarbon odor, with a slight to heavy sheen.

A total of 23 soil samples (including two duplicate samples) were submitted for analysis from the five soil borings completed in this area. Soil sampling results are summarized in Table 1 and results for selected indicator compounds (GRO, DRO and benzene) are also presented on Figure 3. As these results indicate, GRO was detected in all five of the borings at concentrations on the order of those exceeding residual saturation levels for LNAPL. Heavy GRO impacts in this area were found to begin at depths as shallow as 10 feet bgs. These concentration data are consistent with the presence of gasoline LNAPL at monitoring well MW-21 since 2016.

The results of the shallow soil investigation adjacent to the 141 E. Woodin Avenue property provide additional evidence that historical service station operations at this property have contributed to gasoline-range petroleum impacts to the central portion of the Site, including the continuing presence of mobile LNAPL in this area.

#### 2.6 SHALLOW SOIL INVESTIGATION AT 136 E. JOHNSON AVENUE

As proposed in Addendum 1, the SRI Phase 5 field activities also included a shallow soil boring investigation on the property located at 136 E. Johnson Avenue, in order to further delineate the lateral and vertical extents of petroleum impacts in the vicinity of monitoring well MW-27. This area was identified for additional investigation due to the long-term presence of diesel-range LNAPL in monitoring well MW-27, the source of which has remained a data gap that had not yet been addressed.

Three soil borings (SRI5-7, SRI5-8, and SRI5-9) were completed in this area between November 10 and 11, 2020 (see Figure 1). Soil borings SRI5-7 and SRI5-8 were completed along the western boundary of the 136 E. Johnson Avenue property in order to evaluate potential impacts to soil to the west of monitoring well MW-27, and in the vicinity of the former and current diesel-fuel USTs on the adjacent Ziply Fiber property (formerly Frontier Communications) to the west. The location of soil boring SRI5-7 was also placed to assess the potential for petroleum contaminant contribution from a suspected heating oil UST located approximately 60 feet to the north on the 136 E. Johnson Avenue Property. This suspected UST was previously identified during the geophysical survey performed on the property on October 25, 2020 (see Section 2.1).



Soil boring SRI5-9 was placed along the eastern boundary of the 136 E. Johnson Avenue Property, in order to investigate the eastern portion of the property, immediately adjacent to the U.S. Postal Service property located at 144 E. Johnson Avenue.

Soil conditions encountered in the three borings at the 136 E. Johnson Avenue property consisted of the following three lithologic intervals: an upper layer of silty soil extending to a depth of 5.5 feet bgs; a middle layer of sand and silt with gravel extending to depths of 14.5 to 15 feet bgs; and a lower layer of clay-rich silt extending to the drilled depths of 25 to 30 feet bgs. Boring logs are presented in Appendix B.

Field screening results for the borings on the 136 E. Johnson Avenue property indicate that petroleum impacts were encountered only in soil borings SRI5-8 and SRI5-9. At these locations, indications of petroleum impact were first encountered at the uppermost contact with the clayrich silt unit at approximately 14.5 to 15 feet bgs. In both borings, elevated PID readings (>120 ppm) were measured from samples collected at the top of this silt layer. The samples from this interval in these two borings were described as having a moderate to strong hydrocarbon odor, with a moderate to heavy sheen.

Based on field screening results, 9 soil samples were submitted for analysis from the three soil borings completed on the 136 E. Johnson Avenue property. Soil sampling results are summarized in Table 1 and results for selected indicator compounds (GRO, DRO and benzene) are also presented on Figure 3. As these results indicate, GRO, DRO naphthalenes, and cPAHs were detected in soil borings SRI5-8 and SRI5-9 at concentrations exceeding MTCA Method A cleanup levels. These results indicate that in the vicinity of monitoring well MW-27 heavy petroleum impacts are present extending laterally approximately east to west across at least the southern half of the 146 E. Johnson Avenue property. Benzene and xylenes were also detected above cleanup levels in soil boring SRI5-9, adjacent to the U.S. Postal Service property at 144 E. Johnson Avenue. Minor detections of petroleum constituents were detected in boring SRI5-7, but they are all below cleanup levels.

Soil sampling results for soil boring SRI5-8 and SRI5-9 differ considerably from the other SRI Phase 5 sampling results due to the predominance of DRO in these soil samples. DRO was detected in soil boring SRI5-8 at a concentration of 4,530 mg/kg in the sample collected at 14.5 feet bgs (near the upper contact with clay-rich silt). In soil boring SRI5-9, DRO was detected at concentrations of 35,800 mg/kg (15 feet bgs) and 8,820 mg/kg (19 feet bgs). These concentrations are consistent with the long-term and continuing presence of diesel-range LNAPL in nearby monitoring well MW-27.

Impacted soils in this vicinity appear to be primarily present in the uppermost portion of the clayrich silt interval, which is first encountered at a depth of approximately 15 feet bgs in this area of the Site. Concentrations then generally decrease downward into the silt unit. These borings were free of impacts (below cleanup levels) by depths of 29.5 feet (SRI5-8) and 27 feet (SRI5-9). This pattern of distribution of petroleum concentrations is similar to that seen in data from other areas of the Site. This general pattern suggests that petroleum contamination in source areas migrates downward in the vadose zone to this low-permeability layer. This condition may lead to pooling of LNAPL on this clay-rich silt layer, and then lateral migration along the upper portion of this layer, in addition to gradual infiltration downward into the silt or more rapidly via macropore transport.



#### 2.7 SOIL VAPOR SAMPLING PROBE INSTALLATION

SRI Phase 5 field activities conducted during the November 2020 field event also included construction of two soil vapor sampling probes (SVP-1and SVP-2), which were installed to assess soil vapor conditions in the vicinity of shallow soil impacts present in the vicinity of monitoring wells MW-44 and MW-21, respectively. Soil vapor sampling probe locations are shown on Figure 1.

Soil vapor sampling probe SVP-1 was installed in the northwest corner of the parking lot on the property at 221 E. Woodin Avenue. As proposed in Addendum 1, this sampling probe was constructed with the top of the screen set at a depth of 5 feet bgs in order to be representative of shallow soil conditions near the structures at 217 and 221 E. Woodin Avenue, which do not have subgrade basement areas.

Soil vapor sampling probe SVP-2 was installed in the sidewalk along the north side of E. Woodin Avenue, in the vicinity of the properties at 135 and 137 E. Woodin Avenue. This sampling probe was constructed with the top of the screen set at a depth of 9 feet bgs, in order to be representative of soil vapor conditions that would be present at the approximate bottom depth of the subgrade basement areas present in this vicinity of the Site.

Soil borings for the soil vapor sampling probe installations were completed by a combination of air-knife and hand-auger methods, as described in Section 2.2.1. Use of air-knife equipment for construction of these sampling probes is appropriate because sufficient post-installation time will be allowed prior to sampling for equilibrium of soil vapor conditions. Soil samples were collected for logging and field screening at approximately 2-foot intervals. In each soil vapor boring, one soil sample was collected for laboratory analysis from the same depth interval where the 6-inch vapor screen was placed. Analytical sample results for these soil samples are included in Table 1.

Soil vapor sampling probes were constructed using 6-inch long stainless steel screens equipped with a ¼-inch Swagelok® fitting (AMS, Inc. part number 21013), which were connected to ¼-inch diameter Teflon® tubing and capped at the ground surface using a stainless steel Swagelok® ball-valve. The vapor probe borings were backfilled with 2/12 Monterey sand from the bottom of the boring to a depth of approximately 6 inches above the top of the screen interval. Approximately 12 inches of dry granular bentonite were placed above the sand and the borings were then sealed with pre-hydrated bentonite to a depth of 18 inches bgs, and finished with an 8-inch diameter flush mount well box set in concrete. Boring logs showing the lithologies and vapor point construction details are included in Appendix B.

### 3. PRESSURE TRANSDUCER INSTALLATION FOR GROUNDWATER ELEVATION STUDY

Per the initial SRI-5 Work Plan (Arcadis, 2020a), the installation of data-logging pressure transducers was proposed to collect a higher resolution data set that is more conducive to evaluating hydraulic connectivity, and to provide better insight regarding how precipitation, lake level fluctuations, and other regional phenomena affect potentiometric surfaces in the water-bearing zones. To achieve this objective, Leidos installed a total of eight pressure transducers in the following existing monitoring well locations (see Figure 1).



- In the eastern portion of the Site, along E. Woodin Avenue, pressure transducers were installed in monitoring wells MW-15 and MW-17, which are both screened within the shallow perched aquifer. Past groundwater monitoring data from monitoring wells in this area of the Site indicate that the shallow perched aquifer does not appear to be affected by changes in the surface level elevation of Lake Chelan.
- In the western portion of the Site, along E. Woodin Avenue, pressure transducers were installed in monitoring wells MW-19 and MW-23. These wells are both screened in the shallow perched aquifer. Past groundwater monitoring data from monitoring wells in this area of the Site indicate that the shallow perched aquifer does appear to be moderately affected by changes in the surface level elevation of Lake Chelan.
- In the southern portion of the Site, along Wapato Avenue, pressure transducers were installed in monitoring wells MW-30 and MW-37, both of which are screened in the deeper water-table aquifer. Past groundwater monitoring data from these wells indicate that groundwater elevation levels in the deeper water-table aquifer are strongly affected by seasonal changes in the surface level elevation of Lake Chelan.
- In the southwestern portion of the Site, in the vicinity of Chelan Riverwalk Park, pressure transducers were installed in monitoring wells MW-39 and MW-40. These wells are screened within the standard range of the seasonal surface level elevation change of Lake Chelan (approximately 1,079 to 1,100 feet). However, past groundwater monitoring data from these monitoring wells indicate that the shallow perched aquifer may not be present in this portion of the Site.

Prior to transducer installation, monitoring wells were checked for water level and an assessment of sediment accumulation was made by "feeling" the bottom of the wells with a water level meter, and checking measured depth-to-bottom values against as-built depths for each monitoring well. Based on the results of this assessment, three monitoring wells (MW-15, MW-17, and MW-23) were redeveloped to remove accumulations of bottom sediment ranging from approximately 1 to 2 feet in thickness. These wells were redeveloped by alternately surging them with a weighted disposable bailer to suspend the sediment in the water column and then bailing the turbid water from the well until most of the sediment was removed.

Leidos utilized Rugged TROLL 200 data logging pressure transducers manufactured by In-Situ Inc. (In-Situ) in each of the eight monitoring wells. To facilitate installation of these units in the monitoring wells (where well lids need to be tightly capped to prevent surface water intrusion), non-vented transducers were used which require barometric compensation to correct for barometric pressure changes. Therefore, an In-Situ Rugged Baro TROLL data logger was also installed at the Site to collect ambient temperature and barometric pressure data.

As specified in the SAP for Addendum 1, pressure transducers were lowered to the bottom of each well using direct-read cables supplied by In-Situ. Each transducer was set to collect absolute pressure and temperature readings once every hour. Pressure transducer installation field activities, including monitoring well redevelopment, were performed between November 4 and 13, 2020.



Data recorded by the pressure transducers will be retrieved approximately every three months and the pressure transducer study is expected to be performed for a period of one year.

#### 4. LNAPL SAMPLING

The objective of the LNAPL sampling investigation was to complete a comprehensive evaluation of LNAPL types present throughout the Site, including further evaluation of chemical compositional differences through forensics analyses, and determination of physical properties that govern LNAPL transport in the subsurface.

LNAPL and groundwater<sup>1</sup> samples were collected from nine monitoring wells (MW-9, MW-10, MW-12, MW-16, MW-19, MW-21, MW-27, MW-44, and RW-2) December 6-8, 2020. At the time of the LNAPL sampling event, measurable LNAPL was also present in monitoring wells MW-22, MW-25, and MW-36. However, these wells were not sampled because they did not contain a sufficient volume of LNAPL for the analyses to be conducted. The following table provides a summary of LNAPL thickness measurements at the Site at the time of the LNAPL sampling event. A map showing LNAPL occurrence at the Site and LNAPL thickness measurements at the time of the sampling invent is also included as Figure 4.

Monitoring Well ID	Depth to LNAPL (feet)	Depth to Water (feet)	LNAPL Thickness (feet)
MW-9	36.51	37.77	2.26
MW-10	30.27	32.81	2.54
MW-12	26.61	32.57	5.96
MW-16	42.11	46.35	4.24
MW-19	28.68	30.80	2.12
MW-21	25.69	36.55	10.86
MW-22*	26.30	26.35	0.05
MW-25*	34.45	34.65	0.20
MW-27	24.99	33.96	8.97
MW-36*	33.31	33.39	0.08
MW-44	27.54	28.43	0.89
RW-2	41.14	42.60	1.46

#### Notes

\* - Indicates monitoring wells that were not sampled due to insufficient LNAPL volume.

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<sup>&</sup>lt;sup>1</sup> Groundwater samples were collected for interfacial tension analysis by ASTM Method D971.

LNAPL samples from each of the nine monitoring wells sampled were submitted for the following analyses:

- Forensics analysis;
- Physical properties; and
- Evaluation of fluorescence response to UVOST.

One additional LNAPL sample (221E Woodin UST-1) was collected from the westernmost UST encountered on the property at 221 E. Woodin Avenue (see Section 2.4.1 for additional details). This sample was also submitted for forensics analysis to allow comparison with the results of LNAPL samples collected from nearby monitoring wells.

#### 4.1 LNAPL FORENSICS ANALYSIS

LNAPL samples for forensics analysis were submitted to Microbial Insights, Inc. (Microbial Insights) of Knoxville, Tennessee for the following analyses:

- C3-C36 Whole Oil Fingerprint by ASTM D3328;
- C3-C12 Semi-Quantitative Characterization for gasoline-range petroleum products by EPA 8260 Modified;
- C8-C40 Full Scan Semi-Quantitative Characterization for diesel-range and heavier-end petroleum products by ASTM D5739; and
- EDB and Organic Lead.

Laboratory data reports, as well as a report presenting Microbial Insight's interpretation of the results, are provided in Appendix D. In summary, Microbial Insights drew the following conclusions based on the results of their work:

- With the exception of two samples from the western margin of the Site (MW-19 and MW-27), all of the LNAPL samples collected were identified as leaded gasoline.
- The LNAPL sample from monitoring well MW-19 was identified as a mix of degraded diesel or #2 fuel oil (home heating oil) and leaded gasoline. The leaded gasoline component of this sample was considered to be too degraded to establish any relationship to the other gasoline samples.
- The LNAPL sample from monitoring well MW-27 was identified as degraded diesel or #2 fuel oil.
- The following similarities and differences were identified between the gasoline LNAPL samples:
  - o LNAPL samples from monitoring wells MW-9, MW-10, and MW-16 were identified as similar based on C3-C36 GC/FID chromatogram results and lead concentrations ranging from 1.0 to 1.4 grams of lead per gallon (gPb/gal).
  - o The LNAPL sample collected at monitoring well RW-2 was identified as a different gasoline from that at monitoring wells MW-9, MW-10, and MW-16, based on a higher level of iso-octane and lower lead content.
  - LNAPL samples from monitoring wells MW-12 and MW-44 were identified as similar based on C3-C36 GC/FID chromatogram results and lower Octane Ratios and lead content.



- o The LNAPL sample from monitoring well MW-21 was identified as somewhat similar to the samples from MW-12 and MW-44, but with even lower Octane Ratio and lead content. This sample had the lowest aromatic hydrocarbon content of all the gasoline samples, suggesting that it is the most water washed.
- O Results for the LNAPL sample collected from UST-1 on the 221 E. Woodin Avenue property indicate that water washing of this gasoline has been milder than the other samples and that it is the most evaporated. The lead content and alkyl lead composition of this sample was also different than the other gasoline samples, and this sample contained the manganese additive MMT.

Results of the SRI Phase 5 LNAPL forensics analyses are generally consistent with historical data for the Site, which indicate that the Site has been impacted predominantly by historical releases of leaded gasoline in the eastern portion of the Site (east of Emerson Street) and that both gasoline and diesel-range impacts are present in the area west of Emerson Street (in the area currently defined by monitoring wells MW-19, MW-22, and MW-27). This conclusion is also supported by historical soil and groundwater sampling results, and previous LNAPL forensics work. The presence of diesel-range LNAPL at the Site was previously confirmed by analysis of LNAPL samples from monitoring well MW-22 in 2003 (SAIC, 2006) and MW-27 in 2016.

Figure 5 presents a visual depiction of the distribution of LNAPL product types at the Site, which is based on interpretation of both current and historical LNAPL forensics results. Previous LNAPL forensics results presented in the 2006 RI/FS Report indicate that LNAPL from monitoring wells MW-10 and MW-12 are more similar than suggested by the recent work by Microbial Insights. The results of this earlier work also suggested more distinct areal differences in LNAPL composition across the Site, with an area of alkylate-rich LNAPL in the vicinity of the Chevron service station that was represented by LNAPL samples from monitoring wells MW-7, MW-10, MW-12 and MW-18, and an area of alkylate-poor LNAPL in the vicinity of Emerson Street that was represented by LNAPL samples from monitoring wells MW-15, MW-16, MW-25, and MW-36. This previous model of the compositional differences of LNAPL occurring across the Site aligns well with the more recent discovery of a gasoline LNAPL source from the former service station operations at 141 E. Woodin Avenue. However, the most recent LNAPL forensics results provided by Microbial Insights do not confirm a clear distinction between these two areas of LNAPL occurrence at the Site.

For the gasoline LNAPL sample collected from UST-1 at the 221 E. Woodin Avenue Property, weathering (water washing and evaporation) appear to be responsible for some of the differences between this sample and those collected from nearby monitoring wells, such as MW-12 and MW-44. However, compositional differences observed may also be due to gasoline formation changes that may have occurred during the operation period of the station.

Results of the SRI Phase 5 LNAPL forensics investigation have provided additional evidence to confirm previous results regarding the distribution of gasoline-range and diesel-range LNAPL at the Site, as well as to provide chemical compositional data for LNAPL in monitoring wells that had not been sampled previously (MW-19, MW-44 and RW-2). These data are important in confirming our understanding that the eastern portion of the Site appears to have been impacted by releases of leaded gasoline only, while the western margin of the Site has been impacted by



releases of both leaded gasoline and diesel or #2 heating oil. However, the forensics results for the gasoline LNAPL samples do not provide clear evidence to determine the specific sources from which they originated. Chemical similarities and differences between these samples do not appear to clearly align with their locations, which is likely the result of differences in: weathering; timing of releases; and commingling of products released from multiple sources.

#### 4.2 LNAPL PHYSICAL PROPERTIES ANALYSES

LNAPL samples for physical properties analysis were submitted to Integrated Geosciences Laboratories, LLC in Houston, Texas for the following analyses:

- Density by ASTM D1481;
- Viscosity by ASTM D445; and
- LNAPL/water and LNAPL/air interfacial tension by ASTM D971.

Density, viscosity, and interfacial tension are physical characteristics of LNAPL that govern the LNAPL behavior and transport in the subsurface, and are therefore considered integral components in the development and on-going enhancement of an LNAPL conceptual site model (CSM). Although these data provide an additional line of evidence regarding the differences between LNAPLs encountered in various areas of the Site, their primarily importance is for future evaluation of possible LNAPL recovery and/or cleanup strategies.

The laboratory analytical report for the LNAPL physical properties analyses performed by Integrated Geosciences is included in Appendix E, and discussions of the results are included in the following subsections.

#### 4.2.1 Density

Density is defined as the mass of a substance per unit volume. One way to express the density of a fluid is the specific gravity (S.G.), which is the ratio of the mass of a given volume of substance at a specified temperature to the mass of the same volume of water at the same temperature. If a NAPL has an S.G. less than water, generally less than 1.0, it is less dense than water (i.e., LNAPL) and will float on water. Density not only affects the buoyancy of a liquid, but also the subsurface mobility. The hydraulic conductivity of a porous medium is directly proportional to the density of the fluid in that medium. Therefore, if all other variables remain constant, hydraulic conductivity will increase in response to an increase in fluid density. The density of automotive gasoline generally ranges from 0.72 to 0.76 grams per cubic centimeter (g/cm³) and the density of # 2 fuel oil (i.e., diesel fuel) generally ranges from 0.87 to 0.95 g/cm³. (USEPA, 1995)

LNAPL physical properties results are summarized in Table 2 and LNAPL density results are also presented graphically in Chart 1. Density results indicate that seven of the LNAPL samples (MW-9, MW-10, MW-12, MW-16, MW-21, MW-44, and RW-2) generally fell within the standard range for automotive gasoline. The result for monitoring well MW-27 (0.8693 at 70°F) fell within the standard range for diesel fuel, and the result for monitoring well MW-19 (0.8295 at 70°F) fell in between these two ranges. This result is consistent with the LNAPL forensics results presented above, which indicate that LNAPL from monitoring well MW-19 consists of a mixture of gasoline and diesel-range petroleum products.



#### 4.2.2 Viscosity

Viscosity is the resistance of a fluid to flow. The lower the viscosity, the less energy is required for a fluid to flow. Viscosity is highly temperature dependent, with the viscosity of most fluids decreasing as their temperature increases. The hydraulic conductivity of a porous medium is inversely proportional to the viscosity of the fluid in that medium. Therefore, if all other variables remain constant, hydraulic conductivity will increase in response to a decrease in fluid viscosity. The viscosity of automotive gasoline generally ranges from 0.36 to 0.49 centipoise and the viscosity of # 2 fuel oil (i.e., diesel fuel) generally ranges from 1.15 to 1.97 centipoise (USEPA, 1995). However a review of other sources suggests that the viscosity of diesel LNAPL may be in the range of 4.9 centipoise.

Viscosity results for the nine LNAPL samples analyzed are presented in Table 2 and are also presented graphically in Chart 2. A summary of these results is as follows:

- For LNAPL samples collected from monitoring wells MW-9, MW-10, MW-12, MW-16, MW-21, MW-44, and RW-2, which have been identified as predominantly gasoline-range LNAPL, the viscosity results at 70°F ranged from 0.57 to 0.67 centipoise.
- For the LNAPL sample collected from monitoring well MW-19, which has been identified to be a mixture of gasoline-range and diesel-range product, the viscosity result at 70°F was 2.11 centipoise.
- For the LNAPL sample collected from monitoring well MW-27, which has been identified to be predominantly diesel-range product, the viscosity result at 70°F was 4.94 centipoise.

These viscosity analysis results are consistent with our understanding of the LNAPL types present in each of the monitoring wells sampled, based on the results of the LNAPL forensics analysis presented in Section 4.1.

#### 4.2.3 Interfacial Tension

Interfacial tension refers to the tensile force that exists in the interface separating two immiscible fluids. The greater the interfacial tension, the greater the stability of the interface between the liquids.

Interfacial tension is an important parameter in the evaluation of LNAPL transport in the subsurface. It takes pressure for LNAPL to move into or out of soil pores and this pressure is directly proportional to the interfacial tension between the fluids present in those pores. Therefore, interfacial tension governs the movement of LNAPL in the subsurface and the magnitude of residual LNAPL that will remain trapped within a porous medium.

Recovery of LNAPL may be enhanced by methods that reduce interfacial tension, such as injection of surfactants or cosolvents, which result in an increase in mobilization of entrapped LNAPL. Interfacial tension values for NAPL and water are typically between 5 and 35 dynes per centimeter (dynes/cm) [CH2MHILL, 1997].

Interfacial tension results are presented in Table 2, and a summary of the range of results is as follows:



- Air/Water Interfacial Tension 59.69 to 70.23 dynes/cm
- **Air/LNAPL Interfacial Tension** 20.74 to 27.66 dynes/cm
- LNAPL/Water Interfacial Tension 15.13 to 29.35 dynes/cm

#### 4.3 EVALUATION OF LNAPL FLUORESCENCE RESPONSE TO UVOST

In association with the LNAPL sample analyses summarized above, Leidos also submitted samples of LNAPL from each of the nine monitoring wells sampled to Dakota Technologies for evaluation of LNAPL fluorescence response to UVOST.

Analysis of the LNAPL samples was performed by Randy St. Germain of Dakota Technologies. UVOST logs presenting the results of this analysis are presented in Appendix F.

As indicated by the UVOST logs for the LNAPL samples, each of the samples showed significant fluorescence response to UVOST. These results confirm that any lack of fluorescence response observed in UVOST borings completed at the Site would not be due to the chemical composition of the LNAPLs present.

The results of the LNAPL analysis by Dakota Technologies can also be used as secondary lines of evidence regarding the chemical composition of LNAPLs present at the Site. UVOST can also be utilized to qualitatively evaluate LNAPL type through analysis of the fluorescence waveforms measured by the UVOST system. Similar petroleum products will generate similar fluorescence waveforms. These similarities and/or differences are most clearly identified with the use of cluster plots, which plot the average lifetime of the waveform versus the wavelength balance of the waveform for each data point. The results for similar products will plot in groups within the cluster plot. Cluster plot diagrams are included with the UVOST logs for the LNAPL samples. These cluster plots indicate:

- UVOST results for LNAPL samples collected from monitoring wells MW-9, MW-10, MW-12, MW-16, MW-21, and MW-44 all fall within the lower left portion of the cluster plot diagram, approximately within cell C3.
- The UVOST results for the LNAPL sample collected from monitoring well RW-2 plot slightly higher and further right within the cluster plot diagram. This result is consistent with the LNAPL forensics results presented in Section 4.1, which indicate that the LNAPL present in monitoring well RW-2 appears chemically dissimilar to other gasoline LNAPL samples collected at the Site.
- The UVOST results for the LNAPL samples collected at monitoring wells MW-19 and MW-27 plot still higher and further right than the results for the LNAPL sample from RW-2. These results are consistent with the greater intensity and increased lifetime of waveforms for LNAPLs containing diesel-range petroleum products.

#### 5. UVOST-HP INVESTIGATION

Arcadis initially proposed conducting additional investigation at the Site using Dakota Technologies' UVOST-HP technologies in order to further characterize the lateral and vertical distribution of LNAPL, and to develop a greater understanding of variations in hydraulic conductivity within the subsurface, which might be used to identify transport pathways for mobile LNAPL (Arcadis, 2020). As part of Addendum 1, Leidos proposed reducing the scale of



the UVOST-HP investigation from 12 to 6 boring locations, in order to evaluate the effectiveness of the UVOST-HP technologies at the Site prior to a potential larger-scale deployment (Leidos, 2020b).

Field activities associated with completion of the UVOST-HP investigation were completed December 17-18, 2020. UVOST-HP services and equipment were provided by Dakota Technologies, with direct-push drilling equipment support by AEC.

Six UVOST-HP borings were completed at the locations shown on Figure 1. At each location, the UVOST-HP tooling was first lowered from the ground surface to the upper silt contact, through the cased boring interval that had been previously set as described in Section 2.3. The tooling was then driven to a target depth of approximately 60 feet bgs, or refusal by the direct-push equipment, whichever came first.

A site characterization report, prepared by Dakota Technologies, which presents logs for each of the UVOST-HP borings is included as Appendix G. Appendix G also includes the results of additional review and advanced analysis of the UVOST-HP borings data, including cluster plots of the data, which were prepared by Randy St. Germain of Dakota Technologies. A description and discussion of results for each boring location is provided below.

- <u>UHP-1</u> Boring UHP-1 was completed in the southwest portion of the Site, in the parking lot adjacent to the Chelan Riverwalk Park. This boring was located approximately 5 feet west of existing monitoring well MW-39. Boring UHP-1 was previously cased to a depth of 12.5 feet bgs on November 9, 2020 by AEC using a sonic drill rig. Dakota was only able to advance the boring at this location to a depth of 20.4 feet bgs due to shallow refusal in the dense glacial unit. Within the driven interval, no indications of LNAPL fluorescence response were recorded.
- <u>UHP-2</u> Boring UHP-2 was completed in the south-central portion of the Site, approximately 10 feet south of existing monitoring well MW-38. This boring was previously cased to 12.5 feet bgs on November 9, 2020. Boring UHP-2 was driven from approximately 12.5 feet to 42.75 feet bgs, before encountering refusal. Within this interval, the UVOST operator made notations in the log of possible staining at depths of 15.92 feet and 19.57 feet bgs. Minor fluorescence response was noted at a depth of 38.46 feet bgs. The cluster plot for this log indicates that the waveform data for this point plotted significantly above and to the left of the other (background) waveform results for this boring. Its location in cell B4 is in the approximate area of the cluster plot where gasoline-range LNAPL would expect to be located. These results suggest that boring UHP-2 may have intercepted a thin interval of gasoline-range LNAPL at this depth. This interval appears to coincide with an area of increased hydraulic conductivity, which was encountered beginning at a depth of approximately 37 feet bgs at this boring location.
- <u>UHP-3</u> Boring UHP-3 was completed in the southern portion of the Site, in the parking lot south of the Wells Fargo Bank property. This boring was located approximately 3 feet east of existing monitoring well RW-2 and approximately 17 feet west of monitoring well MW-9. This boring was previously cased to a depth of 15 feet bgs on November 9, 2020. The UVOST-HP log for this boring shows no indications of LNAPL fluorescence response within the driven interval from 15 to 59 feet bgs. These results are surprising, given the presence of measurable LNAPL in both monitoring wells MW-9 and RW-2. At the time that the UHP-3 boring was completed, DTP/DTW measurements for MW-9



were 36.16 feet BTOC/38.09 feet BTOC (LNAPL thickness = 1.93 feet) and DTP/DTW measurements for RW-2 were 41.44 BTOC/42.69 feet BTOC (LNAPL thickness = 1.25 feet).

- <u>UHP-4</u> Boring UHP-4 was completed in the northwest portion of the Chelan Chevron service station property. This boring was located approximately 5 feet north of existing monitoring well RW-3. At this location, casing had been previous set to a depth of 17.5 feet on November 9, 2020. The UVOST-HP log for this boring shows no indications of LNAPL fluorescence response within the driven interval from 17.5 to 60 feet bgs. These results are consistent with previous sampling results for the boring for RW-3, which indicated several low to moderate detections of GRO and/or benzene at various depths between approximately 20 and 50 feet bgs. DTW in monitoring well RW-3 at the time of the UHP-4 boring was 29.44 feet BTOC.
- <u>UHP-5</u> Boring UHP-5 was completed in the eastern portion of the Site, in the drive-thru lane of the Wells Fargo Bank property (222 E. Woodin Avenue). This boring was located approximately 15 feet south of existing monitoring well RW-1 and approximately 12 feet north of existing monitoring well MW-10. At this location, the boring had previously been cased to a depth of 15 feet bgs on November 11, 2020. The UVOST-HP log for boring UHP-5 shows no indications of LNAPL fluorescence response within the driven interval from 15 to 60 feet bgs. This result is surprising, given the long-term recurrence of measurable LNAPL in monitoring well MW-10 and the detection of GRO at a concentration of 23,000 mg/kg in the boring for RW-1 at a depth of 33 feet bgs. At the time that the UHP-5 boring was completed, DTW in RW-1 was 34.43 feet BTOC. Monitoring well MW-10 contained LNAPL at a thickness of 1.32 feet and DTW was 31.87 feet BTOC.
- <u>UHP-6</u> Boring UHP-6 was completed along the north side of E. Woodin Avenue, south of the UST basin at the property at 221 E. Woodin Avenue. This boring was located approximately 5 feet to the west of existing monitoring well MW-44. Boring UHP-6 was previously cased to 13.25 feet bgs on November 10, 2020. The UVOST-HP log for this boring showed minor indications of LNAPL fluorescence response from approximately 15 to 17 feet bgs and again at approximately 30 feet bgs. These results are generally consistent with previous soil sampling data for monitoring well MW-44, which indicated that GRO concentrations of 15,000 mg/kg and 20,000 mg/kg were detected in soil samples collected at 14.5 feet and 16.5 feet bgs, respectively. Measurable LNAPL has also been present in monitoring well MW-44 since at least April 2019. At the time that the UHP-6 boring was completed, DTP/DTW measurements for MW-44 were 27.61 feet BTOC/28.03 feet BTOC (LNAPL thickness = 0.42 feet).

As previously concluded by Leidos based on the results of the UVOST boring investigation performed in 2016 for SRI Phase 2 (Leidos, 2017), Leidos does not recommend the use of the UVOST technology for further subsurface characterization at the Site. In our experience, implementation of this technology is not well suited, nor cost effective, at this Site due to the need to pre-drill each boring location through the gravel-cobble interval that is typically encountered above the clay-rich silt interval. In addition, the results of UVOST borings frequently provide no or very little useful data in comparison to traditional soil sampling methods that provide multiple lines of evidence (i.e., visual, field screening, laboratory results) regarding the presence of petroleum impacts at a boring location.



#### 7. INVESTIGATION-DERIVED WASTE MANAGEMENT

Regulated investigation-derived waste (IDW) generated in association with the SRI Phase 5 activities included:

- (14) Fourteen 55-gallon drums of waste soils generated during borehole clearance and sonic drilling and sampling activities;
- (3) Three 55-gallon drums (contained in 110 gallon over-packs) of waste water generated during monitoring well redevelopment and equipment decontamination activities; and
- (1) One 55-gallon drum of flammable liquid waste generated during LNAPL sampling activities.

Waste soils and water were characterized as non-hazardous waste based on waste characterization data collected as part of the SRI Phase 5 field activities. LNAPL waste was characterized as hazardous waste based on historical LNAPL waste characterization data for the Site. Off-site transportation and disposal for all regulated IDW were handled by Clean Harbors. All 18 regulated IDW drums were picked up on February 17, 2021. Waste soils and water were transported to the Clean Harbors Grassy Mountain LLC facility in Grantsville, Utah, and the flammable liquids waste drum was transported to the Emerald Services, Inc. facility in Tacoma, Washington. RELLC was the generator of record for all regulated IDW generated by the SRI Phase 5 field activities.

Non-regulated IDW, such as nitrile gloves, plastic sheeting, and bailers were bagged and disposed as standard municipal waste.

#### 8. SUMMARY AND CONCLUSIONS

The SRI Phase 5 field activities completed by Leidos between October 25 and December 18, 2020 were successful in furthering our understanding of this geologically and logistically complex multi-source contaminated Site. SRI results collected to date confirm that the Site has been significantly impacted by at least three petroleum sources other than the Chelan Chevron service station facility. These sources include:

- A former service station that was located on the property at 221 E. Woodin Avenue;
- A former service station that was located on the property at 141 E. Woodin Avenue; and
- One or more unknown sources of diesel or #2 heating oil that are expected to be located in the vicinity of the property at 136 E. Johnson Avenue.

Results of the SRI Phase 5 soil sampling investigations indicate that historical petroleum releases from each of these sources have been extensive enough to produce LNAPL saturation conditions in soil sufficient to serve as continuing sources of mobile LNAPL. Gasoline and/or diesel/#2 heating oil LNAPL is currently present in 12 monitoring wells distributed throughout the Site.

Results of LNAPL forensics analysis indicate that overlap or commingling of sources has occurred in the western portion of the Site (west of Emerson Street), as evidenced by the presence of mixed gasoline and diesel-range LNAPL in this area. These results also suggest some degree of commingling of gasoline LNAPL from the Chelan Chevron, 221 E. Woodin, and 141 E. Woodin sources, based on the lack of clearly definable differences in gasoline LNAPL composition in these areas. However, the ambiguity of these gasoline LNAPL forensics data



may also be attributable to differences in long-term degradation and weathering of these products.

Results of the SRI Phase 5 UVOST-HP investigation were consistent with the results of the 2016 SRI Phase 2 UVOST investigation, which indicate that significant intervals of LNAPL saturated soil are generally not present in the areas in close proximity to monitoring wells containing measurable LNAPL. Instead, LNAPL accumulation in these monitoring wells appears to be related to connections to thin intervals of higher permeability fine sands and coarse silts present in the clay-rich silt interval that allow LNAPL to drain to and collect in the low-pressure voids that are provided by these monitoring wells.

The indication of the possible presence of LNAPL in the UHP-2 boring is somewhat surprising, given the 2016 SRI Phase 2 soil sampling results associated with the installation of adjacent monitoring well MW-38 (Leidos, 2017). This would represent the southernmost indication of petroleum impacts to soil at the Site. However, this result should also not be considered anomalous, considering the long-term occurrence of LNAPL at monitoring well MW-16 to the north, and the previous detection of GRO at a concentration of 8,800 mg/kg in the soil boring for monitoring well MW-11 (soil boring B-11) at a depth of 26.5 feet bgs (SAIC, 2006).

Additional SRI data, including assessment of petroleum constituent levels in soil vapor in the vicinity of the 221 E. Woodin and 141 E. Woodin source areas, and groundwater elevation and contaminant concentration data are still in process. These data will be evaluated with the results of previous SRI activities to determine if additional data gaps remain that must be addressed prior to moving forward with the Supplemental Feasibility Study for the Site.



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#### **LIMITATIONS**

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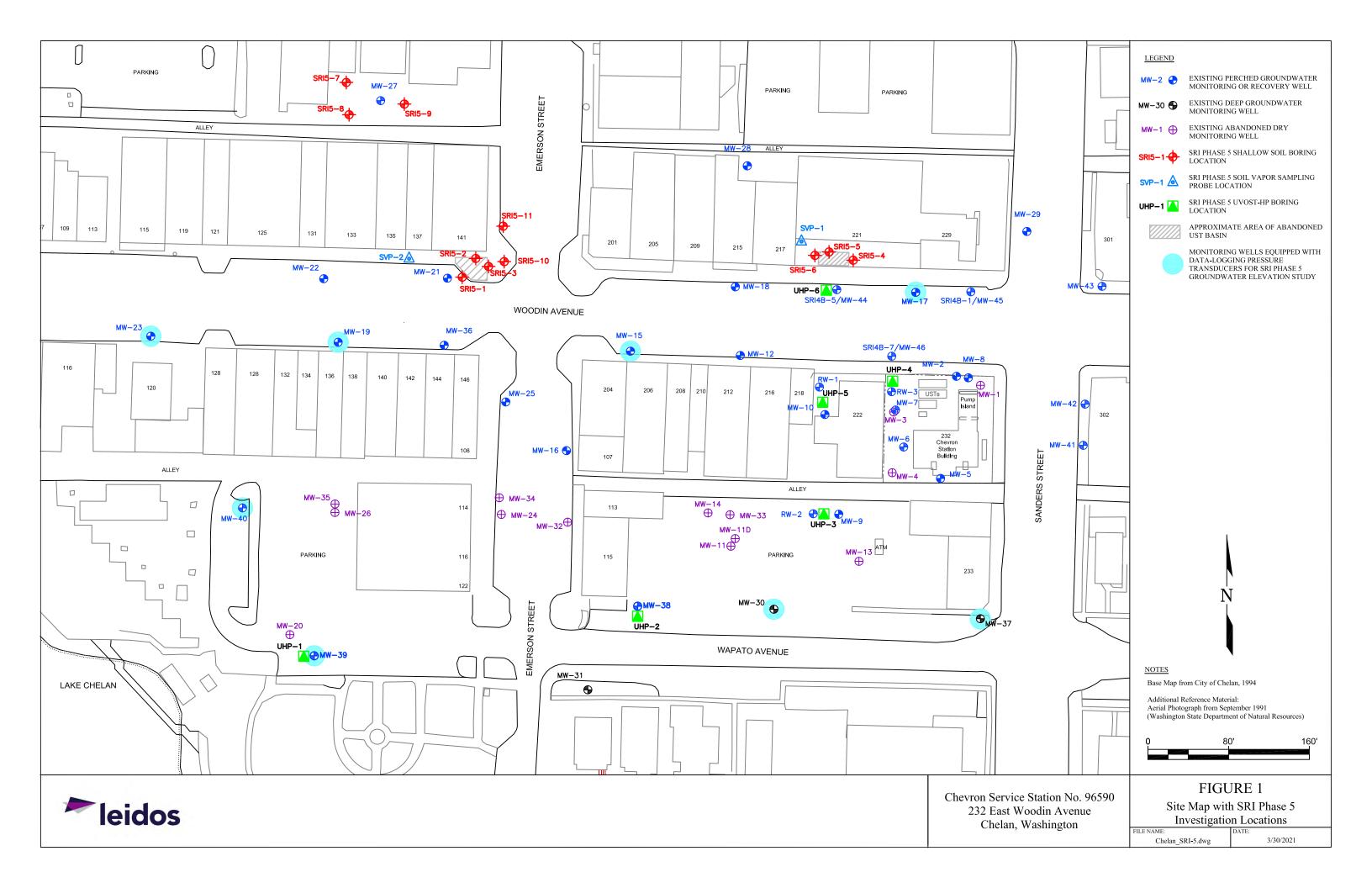
Recognizing reasonable limits of time and cost, this technical document cannot wholly eliminate uncertainty regarding the vertical and lateral extent of impacted environmental media.

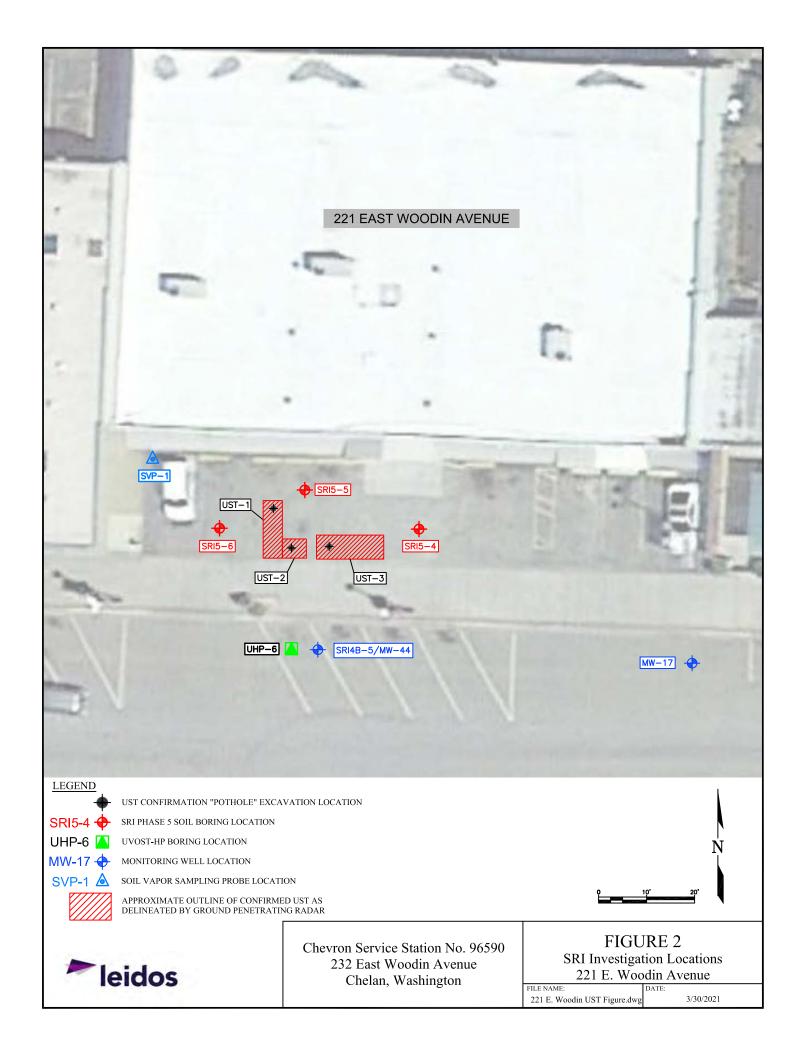
Opinions and recommendations presented in this technical document apply only to site conditions and features as they existed at the time of Leidos site visits or site work and cannot be applied to conditions and features of which Leidos is unaware and has not had the opportunity to evaluate.

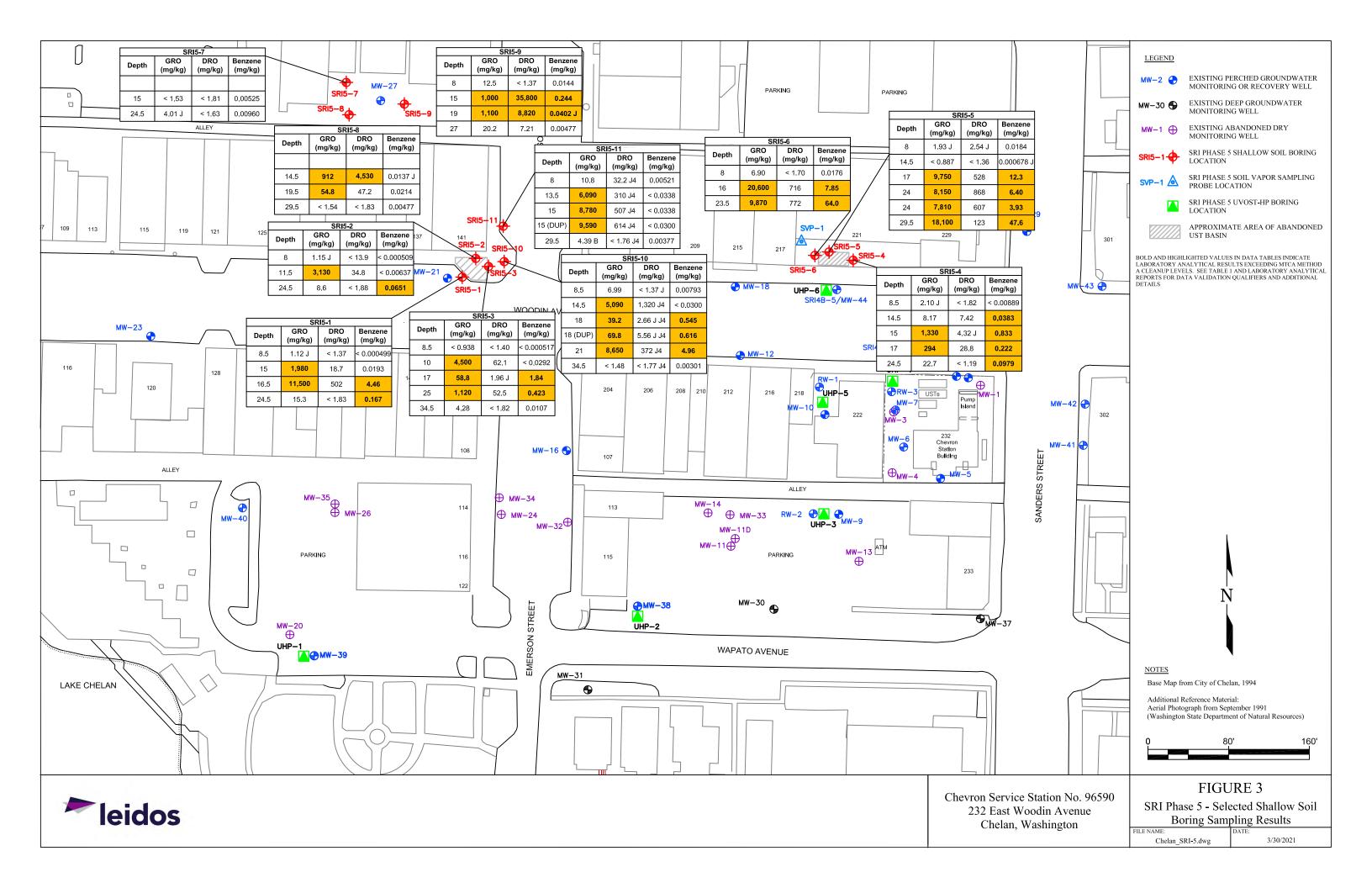
All sources of information on which Leidos has relied in making its conclusions (including direct field observations) are identified by reference in this technical document or in appendices attached to this technical document. Any information not listed by reference or in appendices has not been evaluated or relied on by Leidos in the context of this technical document. The conclusions, therefore, represent our professional opinion based on the identified sources of information.

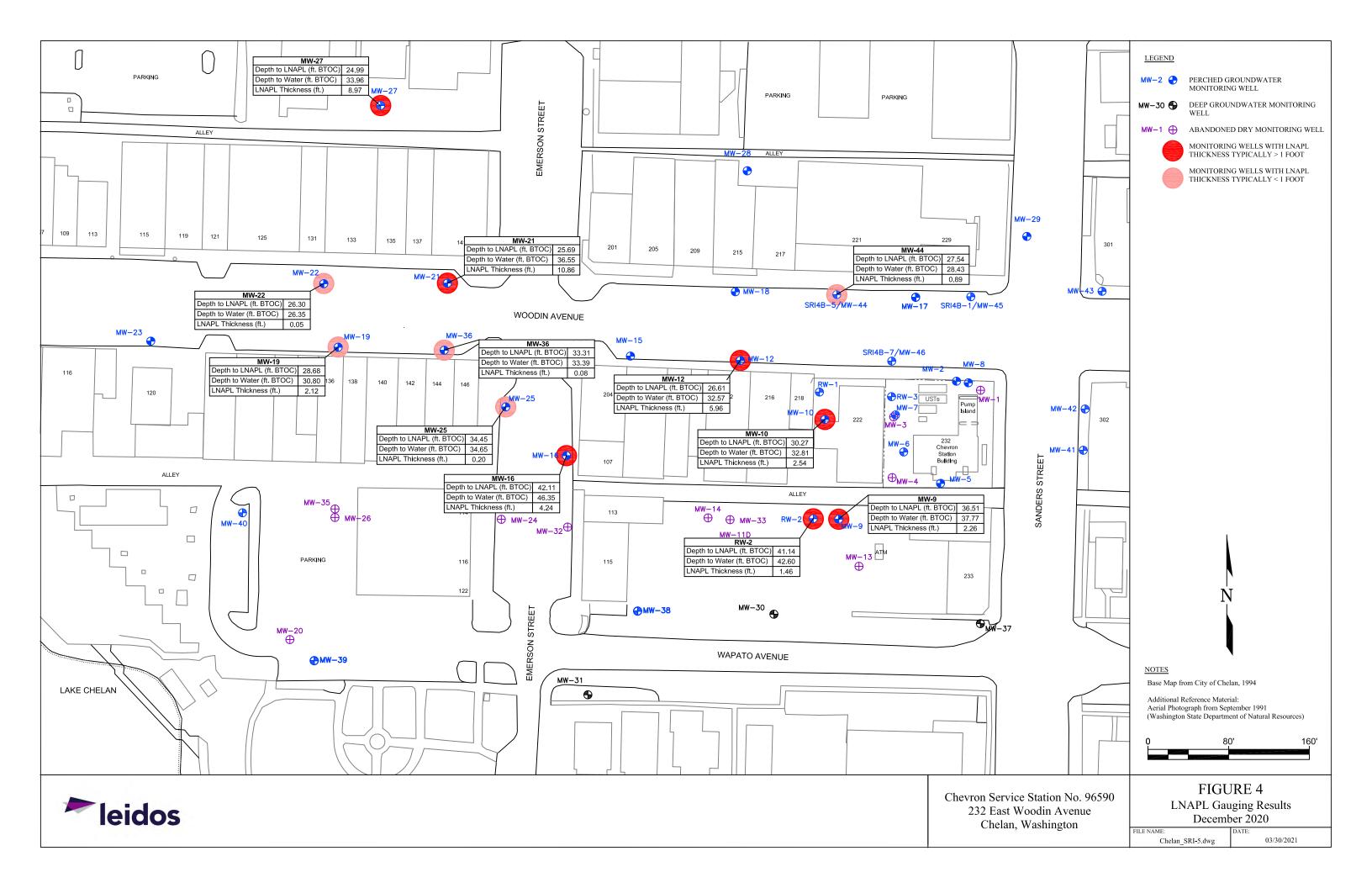


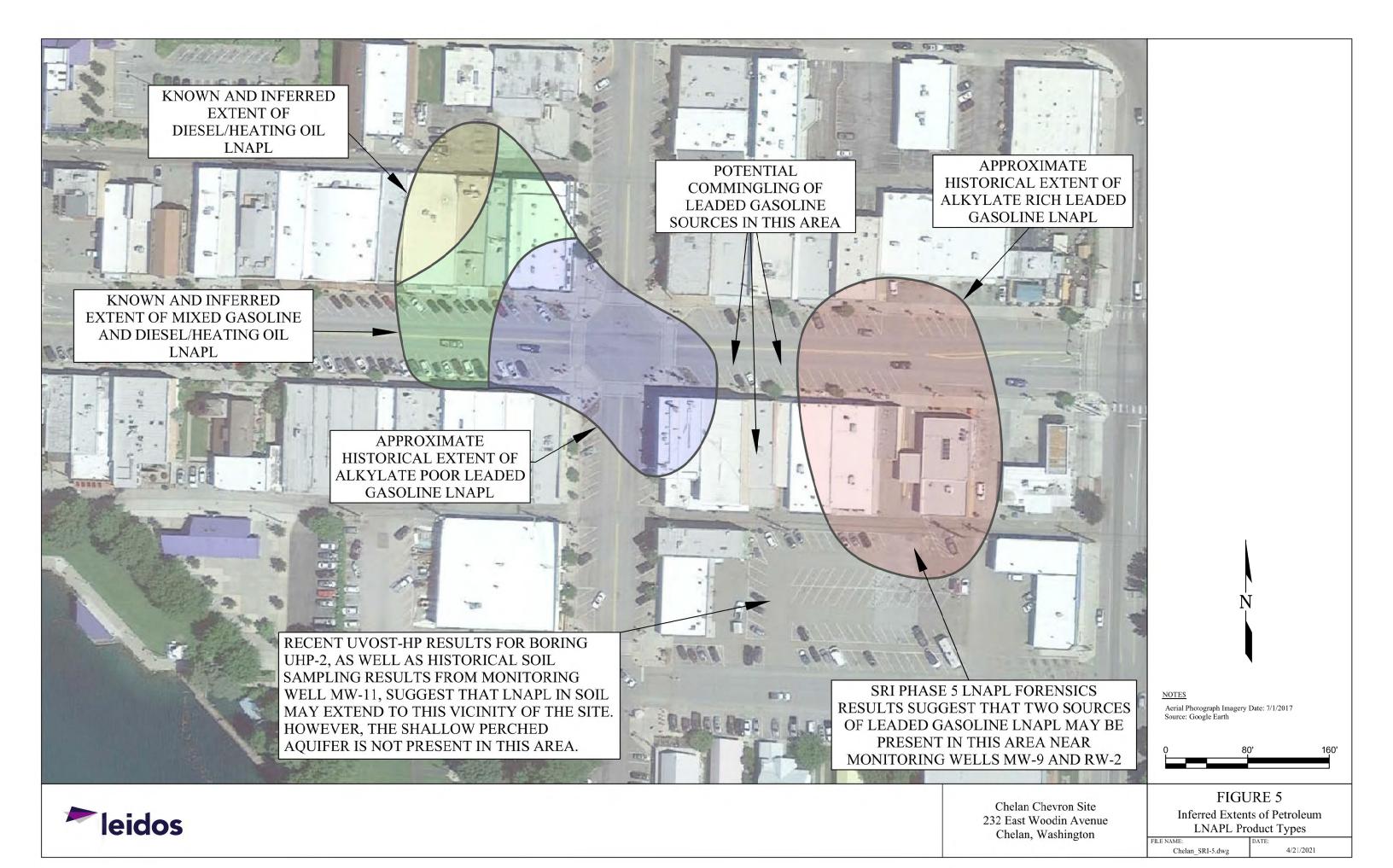














## Table 1 Summary of SRI Phase 5 Soil Sampling Results Chelan Chevron 232 East Woodin Avenue Chelan, Washington

Process	Chelan, Washington Inden																									
Property state   Prop	Laborato	ory Analyte		GRO	DRO	HRO	Benzene	Toluene	Ethylbenzene		МТВЕ	EDB	EDC	naphthalene	naphthalene		PCE	Lead	PCBs					Chrysene		(1,2,3-cd)
Part	MTCA Method	d A Cleanup I	_evel	30	2.000	2.000	0.03	7	6	9	0.1	0.005				<u> </u>	0.05	250	1			0.1 (Total Su	n of All Carcino	genic PAHs)		
Series Se		Sample						-		-				- (10000		,						(				
Mathematical Mat	SRI5-1	Беріп	Date																							
Part	SRI5-1-S-8.5-201105	8.5	11/5/2020	1.12 J	< 1.37	< 3.44	< 0.000499	< 0.00139	< 0.000787	< 0.000940	< 0.000374	< 0.000692	0.000959 J					2.30								
Part	SRI5-1-S-15-201110																_									
THE COLOR STATE OF THE COLOR STA			-		-												_									
Part		24.5	11/10/2020	15.3	< 1.83	< 4.59	0.167	0.423	0.0898	0.294	< 0.000641	< 0.00118	< 0.00119					4.99								
Part	SRI5-2-S-8-201105	8	11/5/2020	1.15 J	< 13.9	< 34.7	< 0.000509	< 0.00142	< 0.000803	0.00109 J	< 0.000381	< 0.000706	0.000707					4.03								
THE COLOR OF THE C	SRI5-2-S-11.5-201110	11.5	11/10/2020	3,130	34.8	< 4.39	< 0.00637	0.438	2.37	10.5	< 0.00477	< 0.00882	< 0.00884	0.0919	0.190	0.161	< 0.0122	15.9	< 0.0156	< 0.00228	< 0.00236	< 0.00202	< 0.00284	< 0.00306	< 0.00227	< 0.00239
March   Marc	SRI5-2-S-24.5-201110	24.5	11/10/2020	8.6	< 1.88	< 4.71	0.0651	0.157	0.170	0.208	< 0.000668	< 0.00124	< 0.00124					5.82								
Column		0.5	11/5/2020	< 0.020	- 1 40	< 2 FO	< 0.000E17	< 0.00144	< 0.000015	0.00122.1	< 0.000207	< 0.000717	0.000710					1 02								
Section   Part					-						_															
Marie No. 1968   1968   1969	SRI5-3-S-17-201110							•																		
Section   Sect	SRI5-3-S-25-201110		l de la companya de l																							
March   Marc	SRI5-3-S-34.5-201110	34.5	11/10/2020	4.28	< 1.82	< 4.55	0.0107	0.0248	0.00859	0.0421	< 0.000643	< 0.00119	< 0.00119					5.68								
Mark   Light	SRI5-4		/= /																							
Mark   1.   Mark																										
Mathematical Action																										
Marie   Mari								1			_															
RESESSION 8   11/7900   191   241	SRI5-4-S-24.5-201108				<del>-</del>																					
1		8	11/7/2020	1 93 1	2 5/1 1	< 1.27	0.0184	0.00266	< 0.00121	0.00280.1	< 0.000643	< 0.00119	< 0.00119					2 32								
RRS. S. L. T. S. L. T.		_																								
18   18   18   18   18   18   18   18	SRI5-5-S-17-201108				-									2.81	14.3	21.6	< 0.0522		< 0.0142	0.00287 J	< 0.00216	< 0.00184	< 0.00259	0.00281 J		< 0.00218
Section   Sect	SRI5-5-S-24-201108	24	11/8/2020	8,150	868	< 21.5	6.40	170	104	632	< 0.0233	< 0.0431	< 0.0432	11.5	24.3	38.3	< 0.0595	18.8	< 0.0153	0.00340 J	< 0.00232	< 0.00199	< 0.00279	0.00408 J	< 0.00223	< 0.00235
## See See See See See See See See See S	DUP-1-S-201108	24	11/8/2020		607	< 21.6			44.7	280	< 0.0236	< 0.0437	< 0.0439	3.10	18.9	30.0	< 0.0604		< 0.0154	0.00304 J	< 0.00233	< 0.00199	< 0.00280	0.00352 J	< 0.00224	< 0.00236
Second column   Second colum	SRI5-5-S-29.5-201108	29.5	11/8/2020	18,100	123	< 4.48	47.6	345	121	616	< 0.0249	< 0.0460	< 0.0462					18.4								
1865-5-1-2-1016   16   18/1020   1		0	11/7/2020	6.00	< 1.70	~ 1 2E	0.0176	0.0100	< 0.00135	< 0.00144	< 0.000E74	< 0.00106	< 0.00106					2 21								
Second   S																										
Help Help Help Help Help Help Help Help	SRI5-6-S-23.5-201108		l de la companya de										_													
Substitution   Subs	SRI5-7																									
SHS-8 H-5   1   1   1   2   1   1   1   1   2   1   1	SRI5-7-S-15-201111	15	11/11/2020	< 1.53	< 1.81	< 4.52		0.0197	0.00239 J	0.00883 BJ	< 0.000633	< 0.00117	< 0.00117					5.66								
1888   1888   1888   1888   1888   1878	SRI5-7-S-24.5-201111	24.5	11/11/2020	4.01 J	< 1.63	< 4.08	0.00960	0.0412	0.00386	0.0135	< 0.000569	< 0.00105	< 0.00106					3.40								
Signe Sign		145	11/11/2020	012	4 520	152.1	0.0127.1	0.0647	1 25	2.20	< 0.00505	< 0.00024	< 0.00036	04.1	44.7	0.61	< 0.0120	6.07	< 0.0160	0.0207	4 0 121	< 0.104	4 O 146	0.122	4 O 116	40.122
Signate   Sign																	_		< 0.0160	0.0387	< 0.121			0.123	< 0.116	< 0.123
SHE			-																							
Second Process   Seco	SRI5-9		,,,																							
Signe 5-12-2-2-111   19	SRI5-9-S-8-201110	8	11/10/2020	12.5	< 1.37	< 3.43	0.0144	0.0453	0.00372	0.0145	< 0.000370	< 0.000686	< 0.000687					1.46								
Sign   19   19   19   19   19   19   19   1	SRI5-9-S-15-201111													38.7	42.9	7.80	< 0.0334		< 0.0164	0.0368	< 0.00248	< 0.00212	< 0.00298	0.0662	< 0.00239	< 0.00251
Sign   1					-	_		_			_															
Ris-1os-1s-201112   8   11/12/202   5,090   1,37   4   4.3   0,00793   0,0023   0,00238   0,000373   0,000688		27	11/11/2020	20.2	7.21	< 4.39	0.00421	0.0140	0.00652	0.0245	< 0.000604	< 0.00112	< 0.00112					5.94								
Sirie   1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		8	11/12/2020	6.99	< 1.37 14	< 3.43	0.00793	0.0252	0,00202 1	0.00738 B	< 0.000371	< 0.000687	< 0.000688					2.18								
Sign   1.05-18-201112   18   11/12/202   39.2   2.66   J4   < 4.51   0.545   1.02   0.450   1.65   < 0.0125   < 0.0233   < 0.0233   < 0.0233   < 0.0233   < 0.0233   < 0.0234   < 0.025   < 0.025   < 0.025   < 0.025   < 0.00112   < 0.01121   < 0.000633   < 0.00121   < 0.00121   < 0.000633   < 0.00121   < 0.000633   < 0.00121   < 0.000633   < 0.00121   < 0.000633   < 0.00121   < 0.000633   < 0.00121   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.000633   < 0.	SRI5-10-S-14.5-201112																_									
Signature   11/12/202   11/12/202   11/12/202   11/12/202   11/12/202   1/1	SRI5-10-S-18-201112							•									<u> </u>									
SRIS-10-S-34.5-201112 34.5 11/12/200 41.8 4.71 4 4.43 0.00301 0.0106 0.00355 0.0101 4 0.000613 4.000114 0.000613 4.00061	DUP-2-201112																									
RIS-11-S-2-01112 8 11/12/202 6,090 310 14 8.27 4 0.00521 0.0194 0.00268 0.00744 0.00369 0.00684 0.000685	SRI5-10-S-21-201112		-		_																					
Signostic   1.5		34.5	11/12/2020	< 1.48	< 1.77 J4	< 4.43	0.00301	0.0106	0.00355 J	0.0161	< 0.000613	< 0.00113	< 0.00114					5.95								
School   1.5   1		Q	11/12/2020	10.8	32.2 14	25 /	0.00521	0.0194	0.00268	0.00744	< 0 000360	< 0.000684	< 0.000685					1 5/1								
SRIS-11-S-15-201112 15 11/12/200 8,780 507 J4 7.71	SRI5-11-S-13.5-201112				-						_															
SRIS-11-S-29.5-201112 29.5 11/12/202 4.39 B < 1.76 J4 6.31 J 0.00377 0.0216 0.00841 0.0451 < 0.000605 < 0.00112 < 0.00112 5.63	SRI5-11-S-15-201112		l de la companya de l						_					4.27			_		< 0.0153	< 0.00225	< 0.00232	< 0.00199		< 0.00301	< 0.00223	< 0.00235
SVP-1 SVP-1-S-5-201108 5 11/8/2020 < 1.47 < 1.74 < 4.36 < 0.000810 < 0.00226 < 0.00128 < 0.00153 < 0.000606 < 0.00112 < 0.00112 1.31 SVP-2 SVP-2 SVP-2-S-9-201109 9 11/9/2020 < 0.914 1.53 J < 3.44 < 0.000503 < 0.00140 < 0.000793 < 0.000948 < 0.000376 < 0.000697 < 0.000698 1.73	DUP-3-201112	15	11/12/2020	9,590	614 J4	5.67 J	< 0.0300	17.2	36.5	151	< 0.0225	< 0.0416	< 0.0418	3.56	5.88	9.20	< 0.0575	4.98	< 0.0151	< 0.00222	< 0.00229	< 0.00196	< 0.00276	< 0.00297	< 0.00220	< 0.00232
5 11/8/2020 < 1.47 < 1.74 < 4.36 < 0.000810 < 0.00226 < 0.00128 < 0.00153 < 0.000606 < 0.00112 1.31	SRI5-11-S-29.5-201112	29.5	11/12/2020	4.39 B	< 1.76 J4	6.31 J	0.00377	0.0216	0.00841	0.0451	< 0.000605	< 0.00112	< 0.00112					5.63								
SVP-2 SVP-2-S-9-201109 9 11/9/2020 < 0.914 1.53 J < 3.44 < 0.000503 < 0.00140 < 0.000793 < 0.000948 < 0.000376 < 0.000697 < 0.000698 1.73	SVP-1	-	44/0/2022	. 1 47	. 1 74		4.0.000040	4.0.00000	. 0.00430	4.0.00453	. 0.000000	. 0.00442	.0.00112					4.24								
SVP-2-S-9-201109 9 11/9/2020 < 0.914 1.53 J < 3.44 < 0.000503 < 0.00140 < 0.000793 < 0.000948 < 0.000376 < 0.000697 < 0.000698 1.73		5	11/8/2020	< 1.4/	< 1./4	< 4.36	< 0.000810	< 0.00226	< 0.00128	< 0.00153	< 0.000606	< 0.00112	< 0.00112					1.31								
JST-2 (221 E. Woodin Avenue)	SVP-2-S-9-201109	9	11/9/2020	< 0.914	1.53 J	< 3.44	< 0.000503	< 0.00140	< 0.000793	< 0.000948	< 0.000376	< 0.000697	< 0.000698					1,73								
			, 5, 2020					2.302.0	1.100,00	2.2003 70	2.2000.0		1.300030													
	221EW-UST2-S-201108	6	11/8/2020	13,600	11,000	6,340	12.1	113	65.4	584 V	< 0.0497	< 0.0922	< 0.0924	43.6	40.0	45.7	0.291 J	3130	< 0.0147	0.313	0.530	0.749	0.223	0.536	0.118	0.386

## Table 1 Summary of SRI Phase 5 Soil Sampling Results Chelan Chevron

#### 232 East Woodin Avenue Chelan, Washington

Laborato	ory Analyte		GRO	DRO	HRO	Benzene	Toluene	Ethylbenzene	Xylenes (total)	МТВЕ	EDB	EDC	1-Methyl- naphthalene	2-Methyl- naphthalene	Naphthalene	PCE	Lead	PCBs	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno (1,2,3-cd) pyrene
													Results F	Reported in mg	/kg dry weight										
MTCA Method	l A Cleanup	Level	30	2,000	2,000	0.03	7	6	9	0.1	0.005		5 (Total	Sum of All Nap	hthalenes)	0.05	250	1			0.1 (Total Su	n of All Carcino	genic PAHs)		
	Sample																								
Sample Identification	Depth	Date																							
UHP-1																									
UHP-1-S-8-201103	8	11/3/2020	1.42 J	< 1.70	< 4.27	< 0.000744	< 0.00207	< 0.00117	< 0.00140	< 0.000558	< 0.00103	< 0.00103					7.25								
UHP-1-S-12-201109	12	11/9/2020	< 1.48	< 1.76	< 4.42	0.00307	0.00721	< 0.00129	< 0.00154	< 0.000611	< 0.00113	< 0.00113					7.41								
UHP-2																									
UHP-2-S-9-201103	9	11/3/2020	< 0.892	< 1.36	< 3.41	< 0.000491	< 0.00137	< 0.000775	< 0.000926	< 0.000368	< 0.000682	< 0.000683					1.80								
UHP-2-S-12-201109	12	11/9/2020	2.18 J	< 1.80	< 4.51	0.0137	0.0571	0.00488	0.0175	< 0.000619	< 0.00115	< 0.00115					8.05								
UHP-3																									
UHP-3-S-7-201104	7	11/4/2020	1.49 J	< 1.41	5.90 J	< 0.000526	0.00271 J	< 0.000830	< 0.000991	0.000458 J	< 0.000730	< 0.000731					2.65								
UHP-3-S-12.5-201109	12.5	11/9/2020	< 1.62	< 1.88	< 4.70	0.00118 J	0.00628 J	< 0.00141	0.00228 J	< 0.000670	< 0.00124	< 0.00124					7.61								
UHP-3-S-17-201109	17	11/9/2020	< 1.74	< 1.97	< 4.92	< 0.000960	0.0102 J	< 0.00152	0.00405 J	< 0.000720	< 0.00133	< 0.00133					7.53								
UHP-4																									
UHP-4-S-8-201104	8	11/4/2020	< 1.17	< 1.57	11.1 J	< 0.000644	< 0.00179	< 0.00102	< 0.00121	< 0.000483	< 0.000894	< 0.000896					2.25								
UHP-4-S-14.5-201109	14.5	11/9/2020	< 0.946	< 1.40	< 3.51	< 0.000521	0.00161 J	< 0.000822	0.00293 J	< 0.000390	< 0.000723	< 0.000724					2.11								
UHP-4-S-17.5-201109	17.5	11/9/2020	< 1.14	1.91 J	< 3.86	< 0.000626	< 0.00174	< 0.000988	0.00130 J	< 0.000469	< 0.000868	< 0.000870					6.00								
UHP-5																									
UHP-5-S-7.5-201108	7.5	11/8/2020	< 0.911	< 1.38	< 3.44	0.000763 J	0.00153 J	< 0.000792	< 0.000945	< 0.000376	< 0.000696	< 0.000697					1.75								
UHP-5-S-14.5-201111	14.5	11/11/2020	< 1.44	< 1.76	< 4.40	0.00411	0.0222	0.00195 J	0.00696 J	< 0.000594	< 0.00110	< 0.00110					4.47								
UHP-6																									
UHP-6-S-13-201110	13	11/10/2020	11.9	< 1.38	< 3.46	0.0159	0.0476	0.00523	0.0213	< 0.000378	< 0.000699	< 0.000700					1.88								

### Symbols and Abbreviations: 87

- Bold and highlighted entries indicate results exceeding MTCA Method A cleanup levels

< 0.074 - Bold text indicates that detection limit was greater than MTCA Method A cleanup level due to necessary sample dilution by the laboratory

GRO = Gasoline-range organics

DRO = Diesel-range organics

HRO = Heavy-range organics

MTBE = Methyl tert-butyl ether

EDB = Ethylene dibromide (1,2-Dibromoethane)

EDC = Ethylene dichloride (1,2-Dichloroethane)

PCE = Tetrachloroethane

PCBs = Polychlorinated Biphenyls

PAHs = Polycyclic aromatic hydrocarbons

--- = Not Analyzed

#### **Laboratory Assigned Data Qualifiers:**

B = The same analyte is found in the associated blank.

J = The identification of the analyte is acceptable; the reported value is an estimate.

J4 = The associated batch QC was outside the established quality control range for accuracy.

V = The sample concentration is too high to evaluate accurate spike recoveries.

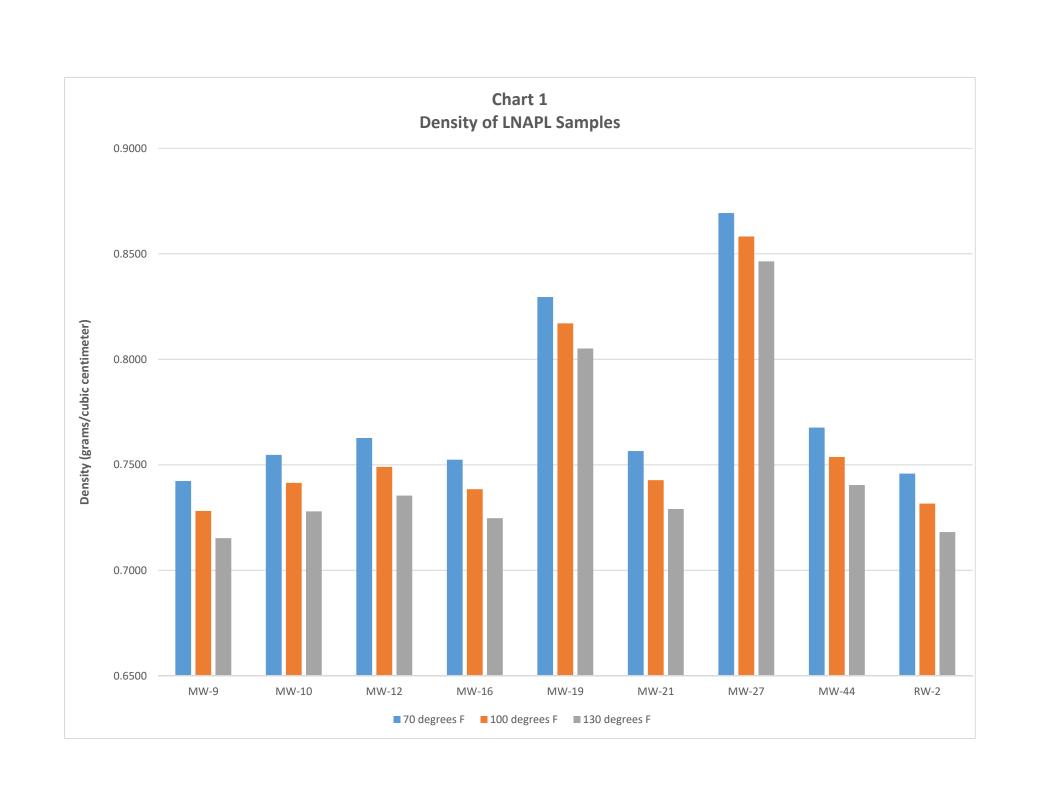
## Table 2 Summary of LNAPL Physical Properties Analytical Results Chelan Chevron

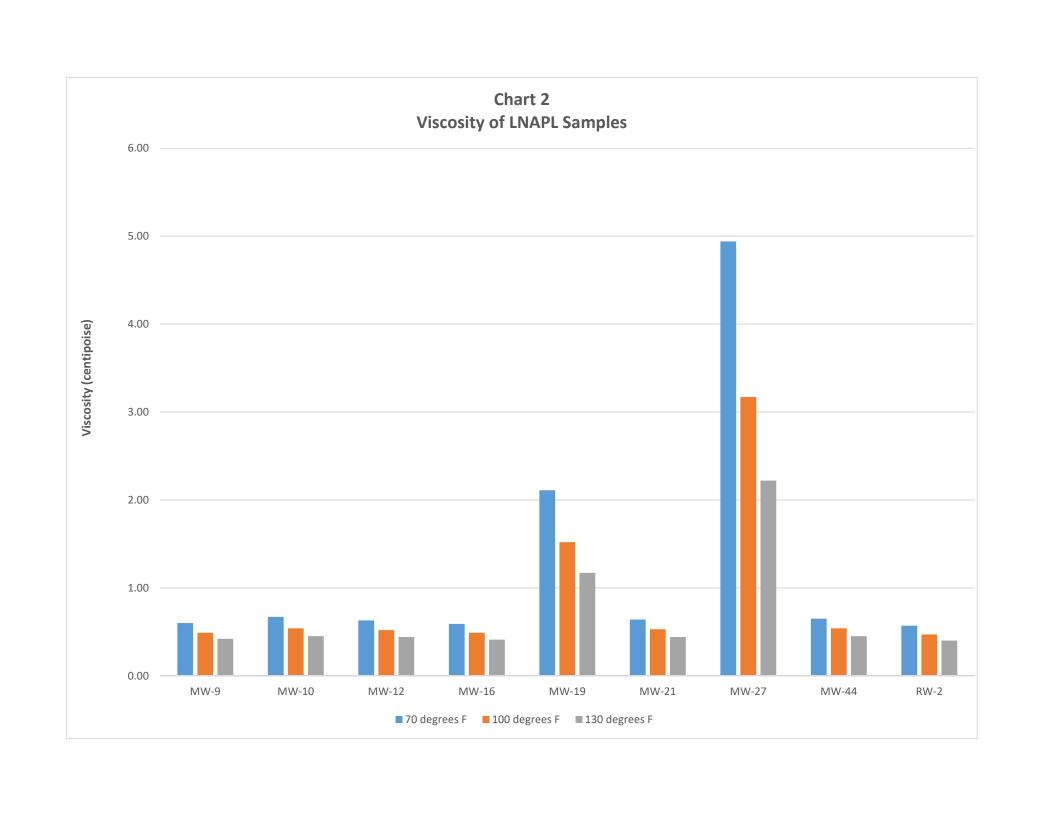
232 East Woodin Avenue Chelan, Washington

Sample		Sample	Sample	S	pecific Gravi	ity		Density				Visc	Interfacial Tension					
Location	Sample ID	Date	Time		(unitless)		(grams/cubic centimeter)			(centistokes)				(centipoise)		(dynes/centimeter)		
				70° F	100° F	130° F	70° F	100° F	130° F	70° F	100° F	130° F	70° F	100° F	130° F	<b>GW-Air</b>	LNAPL-Air	<b>GW-LNAPL</b>
Groundwater Samples																		
MW-9	MW-9-201207	12/7/2020	10:10	0.9984	0.9998	0.9958	0.9982	0.9928	0.9819	1.001	0.703	0.531	0.999	0.698	0.521	69.68		22.40
MW-10	MW-10-201206	12/6/2020	20:10	0.9987	1.0006	1.0008	0.9985	0.9936	0.9867	0.992	0.709	0.535	0.991	0.705	0.527	70.23		17.88
MW-12	MW-12-201207	12/7/2020	7:20	0.9982	1.0003	0.9990	0.9980	0.9934	0.9850	0.997	0.701	0.529	0.995	0.697	0.521	70.03		18.85
MW-16	MW-16-201207	12/7/2020	22:30	0.9983	0.9996	0.9985	0.9981	0.9927	0.9845	1.000	0.705	0.532	0.998	0.700	0.524	67.97		17.11
MW-19	MW-19-201207	12/7/2020	20:45	0.9984	0.9998	0.9976	0.9982	0.9928	0.9836	1.003	0.703	0.531	1.001	0.698	0.522	68.88		18.46
MW-21	MW-21-201208	12/8/2020	6:00	0.9981	0.9998	0.9985	0.9979	0.9928	0.9845	1.004	0.708	0.531	1.002	0.703	0.522	68.93		29.35
MW-27	MW-27-201208	12/8/2020	7:20	0.9983	1.0001	1.0001	0.9981	0.9931	0.9861	0.997	0.704	0.530	0.995	0.699	0.523	59.69		19.59
MW-44	MW-44-201207	12/7/2020	19:28	0.9984	0.9998	0.9972	0.9982	0.9928	0.9832	0.997	0.700	0.530	0.995	0.695	0.521	68.07		15.13
RW-2	RW-2-201207	12/7/2020	9:30	0.9986	1.0007	1.0000	0.9984	0.9938	0.9859	0.998	0.706	0.532	0.997	0.702	0.525	62.27		20.53
LNAPL Sample	es																	
MW-9	MW-9-201207	12/7/2020	10:10	0.7424	0.7331	0.7254	0.7423	0.7281	0.7152	0.81	0.67	0.58	0.60	0.49	0.42		22.24	22.40
MW-10	MW-10-201206	12/6/2020	20:10	0.7549	0.7466	0.7382	0.7547	0.7414	0.7279	0.88	0.73	0.62	0.67	0.54	0.45		22.41	17.88
MW-12	MW-12-201207	12/7/2020	7:20	0.7628	0.7542	0.7458	0.7627	0.7490	0.7354	0.83	0.70	0.59	0.63	0.52	0.44		22.58	18.85
MW-16	MW-16-201207	12/7/2020	22:30	0.7525	0.7436	0.7350	0.7524	0.7384	0.7247	0.78	0.66	0.56	0.59	0.49	0.41		20.74	17.11
MW-19	MW-19-201207	12/7/2020	20:45	0.8296	0.8227	0.8166	0.8295	0.8170	0.8051	2.55	1.86	1.46	2.11	1.52	1.17		25.05	18.46
MW-21	MW-21-201208	12/8/2020	6:00	0.7566	0.7479	0.7394	0.7565	0.7427	0.7290	0.85	0.71	0.61	0.64	0.53	0.44		21.52	29.35
MW-27	MW-27-201208	12/8/2020	7:20	0.8694	0.8642	0.8584	0.8693	0.8582	0.8464	5.68	3.69	2.62	4.94	3.17	2.22		27.66	19.59
MW-44	MW-44-201207	12/7/2020	19:28	0.7677	0.7589	0.7510	0.7676	0.7537	0.7404	0.85	0.71	0.61	0.65	0.54	0.45		22.90	15.13
RW-2	RW-2-201207	12/7/2020	9:30	0.7459	0.7367	0.7284	0.7458	0.7316	0.7181	0.76	0.64	0.55	0.57	0.47	0.40		21.86	20.53

### **Data Charts**







Appendix A: Utility Locate Report



Geophysical Survey LLC 711 S Tacoma Street Kennewick, Washington 99336

December 6, 2020

Russell Shropshire Leidos 18912 North Creek Parkway, Suite 101 Bothell, WA 98011

Re:

Utility Locate
Project #334893.TM.1.000.00.000000000
Chelan, WA

Mr. Shropshire:

Geophysical Survey LLC conducted utility locating at eleven locations in Chelan, Washington on October 25, 2020. The objectives of the survey was to detect and delineate subsurface utilities for boring clearance and to re-mark the underground storage tanks (USTs) at the northwest corner of E Woodin Avenue and N Emerson Street and at 221 E. Woodin Avenue.

#### Methodology

#### **Ground-Penetrating Radar**

Ground-penetrating radar (GPR) uses a transducer to transmit FM frequency electromagnetic energy into the ground. Interfaces in the subsurface, defined by contrasts in dielectric constants, magnetic susceptibility, and to some extent, electrical conductivity, reflect the transmitted energy. The GPR system then measures the travel time between transmitted pulses and arrival of reflected energy. Buried objects such as pipes, barrels, foundations, and buried wires can cause all or a portion of the transmitted energy to be reflected back towards a receiving antenna. Geologic features such as crossbedding, lateral and vertical changes in soil properties, and rock interfaces can also cause reflections of a portion of the EM energy.

The dielectric constant and magnetic susceptibility of the medium primarily control the velocity of the EM energy. Values of EM velocities, for depth calculations, are determined by measurement, experience in an area, by ties to known buried reflectors, and from knowledge of the subsurface medium.

The depth of investigation is a function of the transmit power, receiver sensitivity, frequency of the antenna, and attenuation of the transmitted energy due to the geologic medium. The maximum depth of investigation may vary significantly as a result of the changing soil conditions. High attenuation, and consequent smaller penetration depths, of the EM energy typically occurs where the soil conductivity is greater than 25 milli-

siemens per meter and/or in areas with numerous reflective interfaces. Depth of investigation is also affected by highly conductive material, such as metal drums and pipes that essentially reflect all the energy. The method cannot "see" directly below areas of highly reflective material because all of the energy is reflected.

#### Electromagnetic Line Locating

Utility line locating equipment operates through the principles of electromagnetics (EM), designed to detect underground utilities constructed of electrically conductive materials. An active signal is applied to the underground utility by means of a radio frequency (RF) transmitter and then traced with a receiver. With direct coupling, an RF signal is applied to a cable or pipe where there is access to a contact point. With no access to the utility, the indirect mode is used. A transmitter is placed on the ground surface above the conductor and the signal is induced through earth onto the pipe or cable.

The active signal is created from current flowing from the transmitter, along the conductor (utility line), and back to the transmitter thru the ground. The signal can also return thru other utility lines. This type of return can distort the electromagnetic field and cause erroneous locations.

Passive signals include power transmission (60Hz) and radio transmission (15kHz-27kHz). 60Hz signals are present in conductors carrying electric current and from utilities carrying return current (indirect induction). Radio signals are created by high power, low frequency communication transmitters. Conductive utilities re-radiate the signal. A receiver is used to trace power and radio transmissions.

#### FIELD SURVEY

#### Mapping Control

A Trimble Pro6H GPS with sub-foot level accuracy was used mapping subsurface utility lines and scan area extents.

#### GPR Data Acquisition

GPR data were acquired with a Geophysical Survey Systems, Inc. (GSSI) SIRG1 control unit and a 350 MHz antenna. GPR data were collected at 18 scans/foot with a 57 nano-Second window (approximately 9 feet with a dielectric constant of 8).

#### RESULTS AND INTERPRETATION

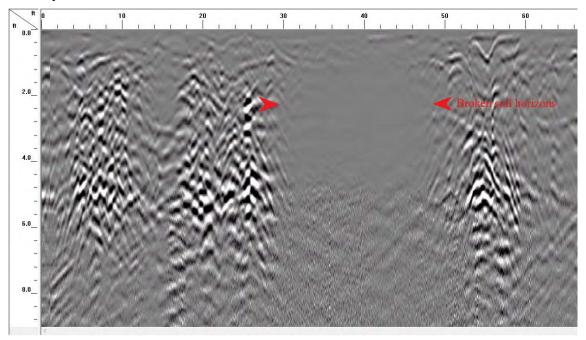
#### **E Woodin Avenue and N Emerson Street:**

Three underground storage tanks were re-marked. The approximate size of the tanks from west to east are 4 x 6 feet, 3.5 x 6 feet and 5 x 12 feet. A fourth tank detected during drilling in 2018 between the tank to the west and the center tank was not detected in GPR data. The tank would be located below the north south utility line at a depth of 2.7 feet. The results from this area are shown on Figure 1.

#### 136 Johnson Avenue:

One UST was detected at the northwest corner of the northwest corner of the building. The UST is approximately 4 x 8 feet. A fill port was located at the surface of the UST location.

An area approximately 10 x 17 feet was detected with GPR which exhibited broken soil horizons and characteristics typical of fill material. The area is shown below in image GPR Data 1. The area is shown in Figure 2 as a hatched anomaly labeled as a GPR anomaly.



**GPR Data 1** 

#### 221 E Woodin Avenue

Three underground storage tanks (USTs) were re-marked. The approximate size of the tanks from west to east are 4 x 12 feet, 4 x 5 feet and 5 x 14 feet. The results from this area are shown on Figure 3.

Utilities were marked out at four other locations for boring clearance, the results are shown on Figures 4-7.

#### **CLOSURE**

Geophysical surveys performed as part of this survey may or may not successfully detect or delineate any or all subsurface objects or features present. Locations, depths and scale of buried objects or subsurface features mapped as a result of this survey are a result of geophysical interpretation, and should be considered as confirmed, actual, or accurate only where recovered by excavation or drilling.

Geophysical Survey LLC performed this work in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No warranty, express or implied, beyond exercise of reasonable care and professional diligence, is made. This report is intended for use only in accordance with the purposes of the study described within.

Respectfully,

Geophysical Survey LLC

Mark Villa L.G.

Geophysicist

#### Utility Locate Chelan, WA

#### LIST OF FIGURES

Figure 1	Utility Map E Woodin Ave & N Emerson St.
Figure 2	Utility Map 136 Johnson Ave.
Figure 3	Utility Map 221 E Woodin Ave.
Figure 4	Utility Map Wells Fargo Parking Lot
Figure 5	Utility Map Edward Jones Parking Lot
Figure 6	Utility Map E Wapato Ave.
Figure 7	Utility Map 232 E Woodin Ave.

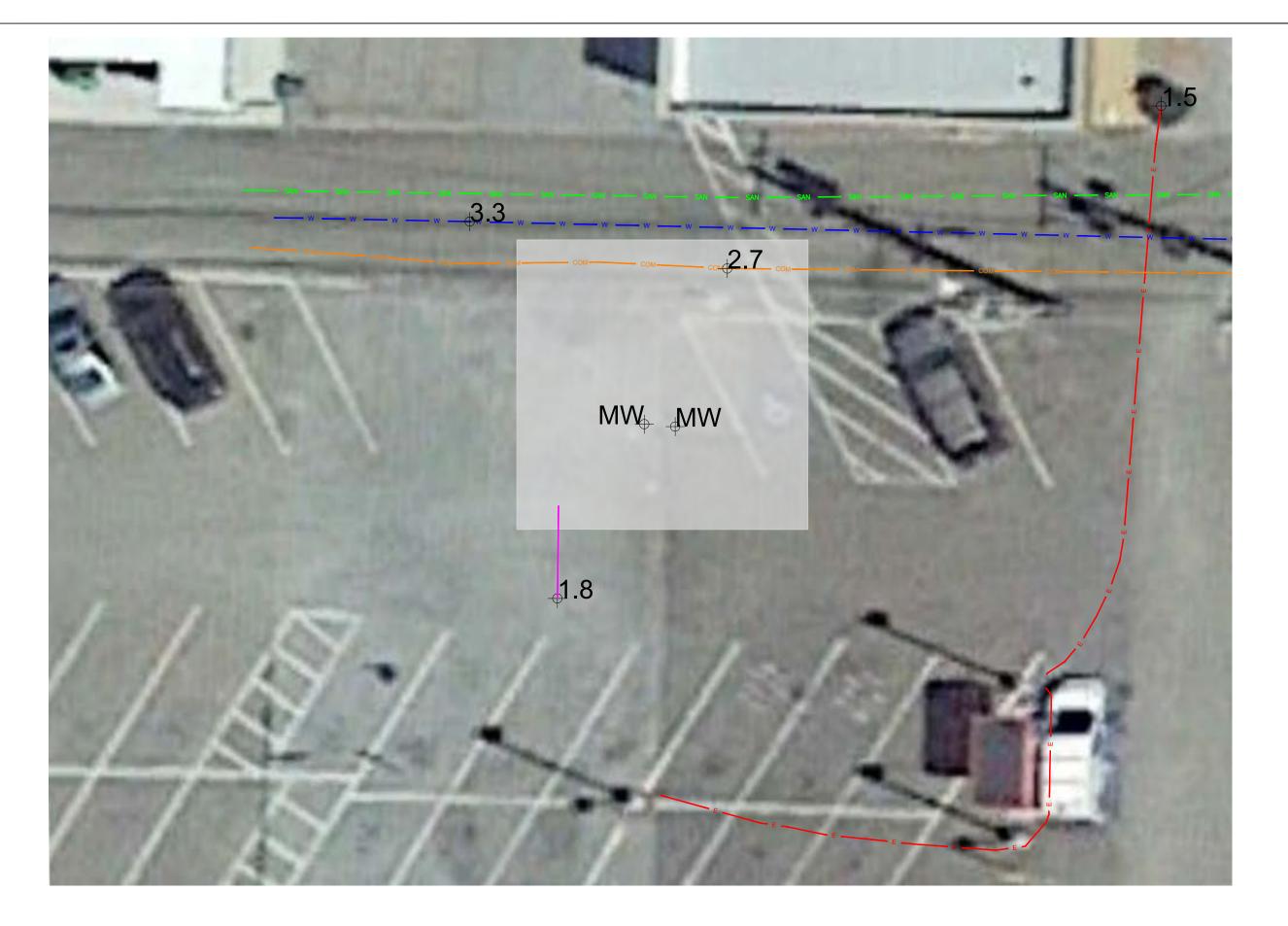


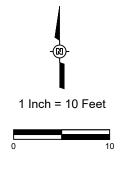
**Utility Map** Chelan, WA





FIGURE 3 Utility Map Chelan, WA

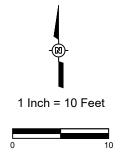


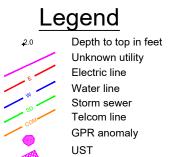




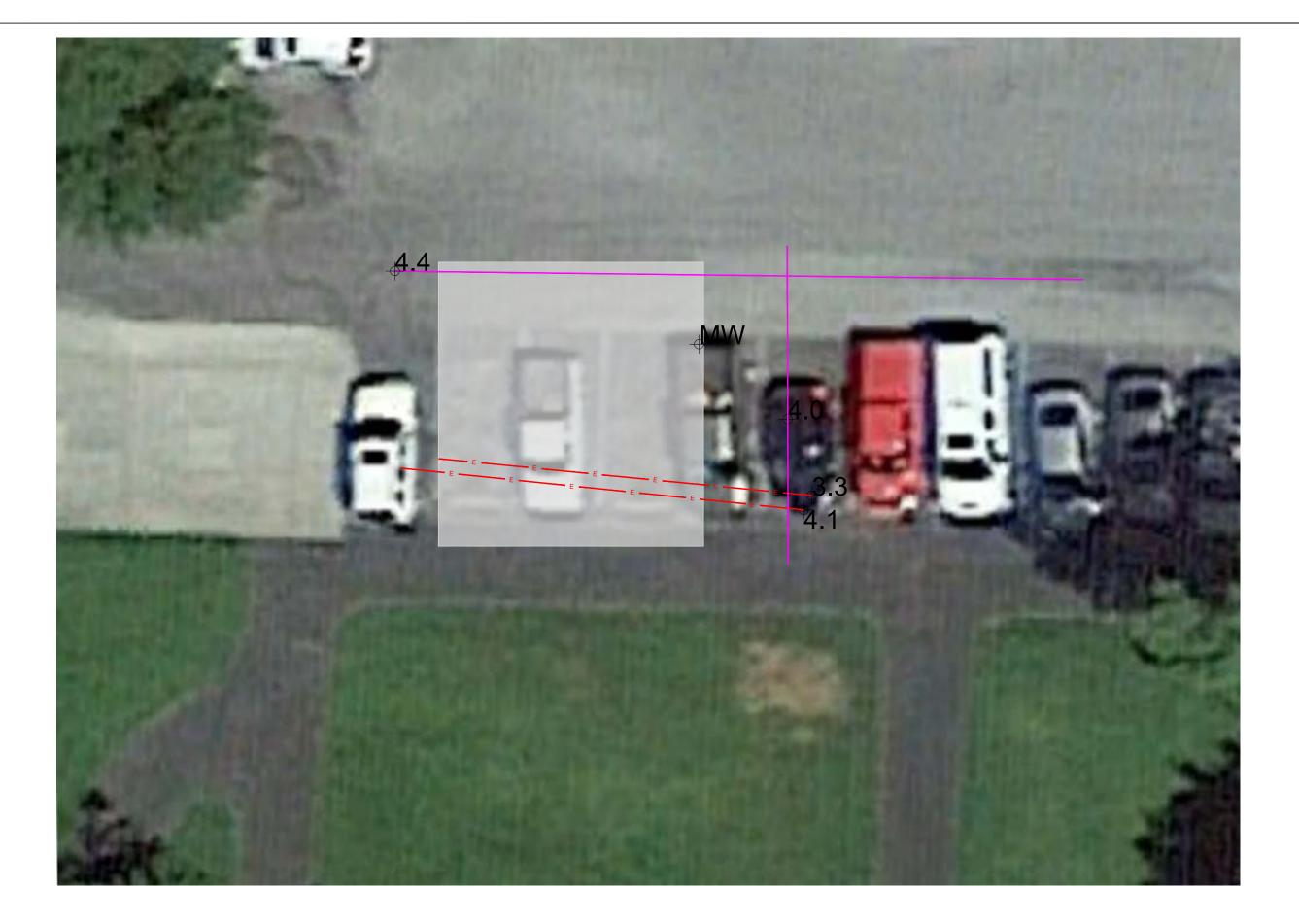


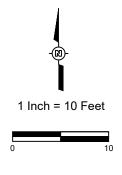






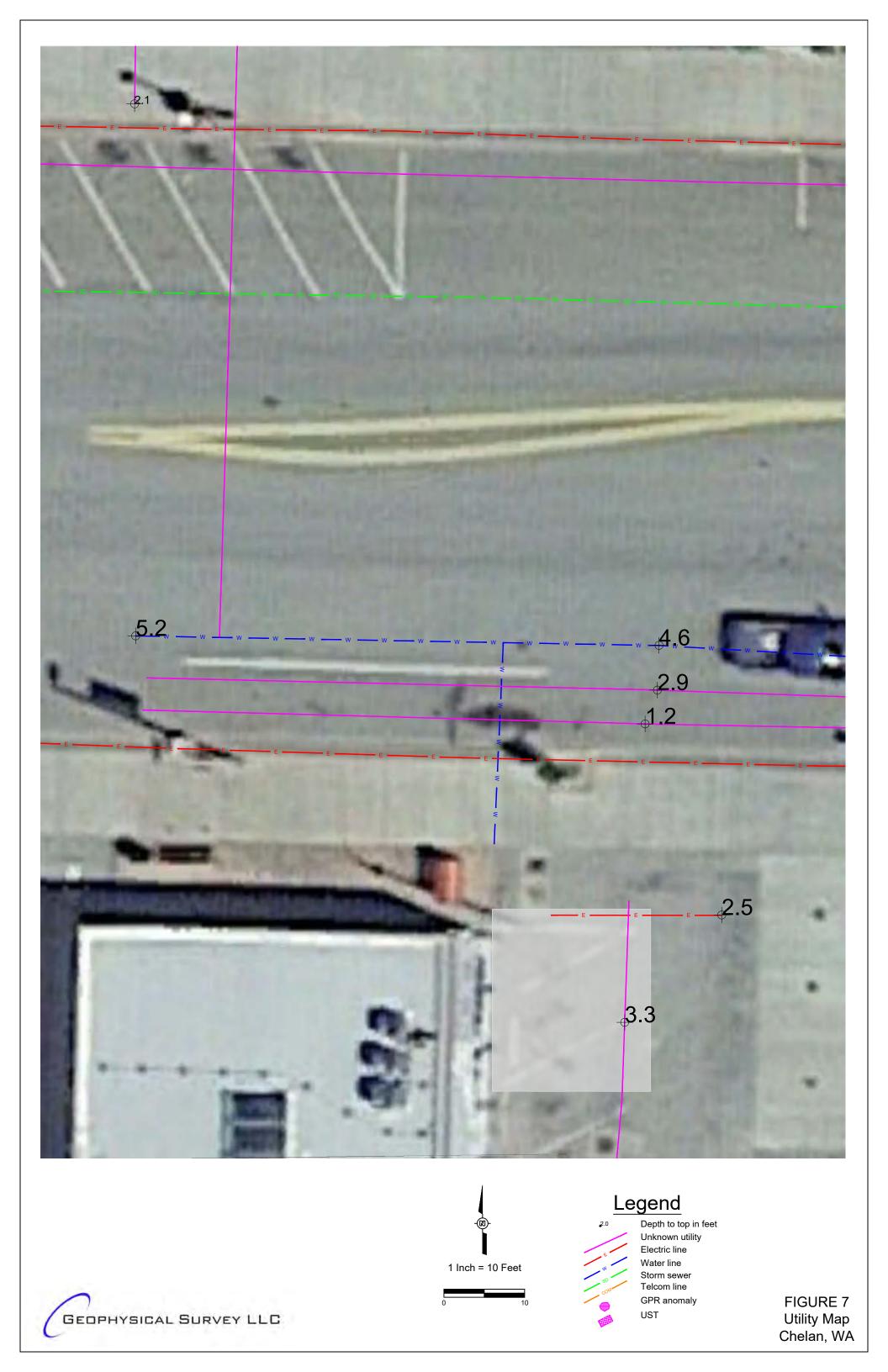












Appendix B: Boring Logs





Driller: AEC Drilling Drill Method: Air Knife/Sonic Project: Chevron Service Station #96590 Logged By: TD Client: RELLC Date Started: 11/5/2020 Location: 232 East Woodin Ave, Chelan, WA Date Completed: 11/10/2020 Total Boring Depth: 25 ft SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE GRAPHIC LOG U.S.C.S. SYMBOL DEPTH (ft) LITHOLOGY/DESCRIPTION Asphalt, 5 inches ML damp 1.1 (ML) 2 - 2.5': Medium brown, coarse (almost very fine sand) SILT with ~5% gravel (up to 1.5 inches), soft; no odor, no sheen 3 SW-1.0 moist SM (SW-SM) 4 - 4.5': Medium light brown, very fine to coarse SAND with ~5% silt and 10% gravel (up to 1.5 inches), medium dense; no odor, no sheen 5 moist 8.0 6 (SW-SM) 6 - 6.5': SAA with ~5% gravel (up to 0.5 inches); no odor, no sheen M A few cobbles in sand, up to 7 inches at 7 feet 8 SW moist 0.9 (SW) 8.5 - 9': Medium yellowish-gray, fine to very coarse SAND with ~10% gravel (up to 1 inch), SRI5-1-8. dense; no odor, no sheen (SW) 9 - 9.5' (sonic bag): Brown to orange-brown, very fine to very coarse SAND with trace (~1-2%) silt and 12% gravel (up to 4 inches), dense; no odor, no sheen (SW) 9.5 - 10' (sonic bag): Light brown, very fine to coarse SAND with ~10% gravel (up to 2 inchés), dense; no odor, no sheen moist 1.7 10 (Slough) 10 - 13' (sonic bag): Likely slough of sand, gravel, silt, and anthropogenic debris Slough



Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/5/2020
Date Completed: 11/10/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth; 25 ft

	ZOZ Last		diri Ave,	Chelan,	WA	Date (	Completed: 11/10/2020 Total Boring Depth: 25 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
				Slough		- 12— - - - 13—	(Slough) 10 - 13' (sonic bag): Likely slough of sand, gravel, silt, and anthropogenic debris (continued)  (SW/GW) 13 - 14.75' (sonic bag): Very fine to very coarse SAND and GRAVEL (up to 4.5 inches) with ~4% silt, very dense; very weak to no HC odor, no sheen
moist	2.5			SW/GW		14 — - -	
moist	12.8 1370		SRI5-1-15	ML		 15 <i></i> - -	(ML) 14.75 - 15' (sonic bag): Medium light brown to greenish-gray SILT, slight plasticity, firm; moderate to strong HC odor, slight sheen (ML) 15 - 16.5' (sonic bag): Medium greenish-gray, coarse SILT, no clay, firm to stiff; strong HC odor, moderate to heavy sheen
moist	2173		rö			16 —	
moist	2532		SRI5-1-16.5			- 17 — -	(ML/CL) 16.5 - 20' (sonic bag): Medium gray-brown SILT with clay, medium plasticity (rolls up to 4 inches), firm; weak HC odor, no to slight sheen
moist to damp	3650					- 18 <i>-</i> - -	
moist to damp	76.8			ML/CL		- 19 <i>-</i> - -	
moist to damp	111.7					20 — - -	(ML/CL) 20 - 25' (sonic bag): SAA; no odor, no sheen
moist to damp	80.6					21 — - - -	



Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/5/2020
Date Completed: 11/10/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth; 25 ft

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Completed: 11/10/2020 Total Boring Depth: 25 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist to damp	44.8					-	(ML/CL) 20 - 25' (sonic bag): Medium gray-brown SILT with clay, medium plasticity (rolls up to 4 inches), firm; no odor, no sheen
moist to damp	81.4					23 <i>-</i> -	
moist to damp	17.5		1.5	ML/CL		- - 24 <i>-</i> -	
moist to damp	24.5		SRI5-1-24.5			-	
						25 <b>-</b> - -	Bottom of borehole at 25.0 feet.
						26— -	
						27 —	
						28—	
						29 —	
						30-	
						31 —	
						32— -	
						33	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/5/2020 Date Completed: 11/10/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic Total Boring Depth: 25 ft

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 11/10/2020 Total Boring Depth: 25 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	ОЕРТН (ft)	LITHOLOGY/DESCRIPTION
						-	Asphalt, 4 inches
moist	1.6	m <sub>2</sub>		ML		 1  2 	(ML) 2 - 2.5': Medium dark brown SILT with 15% gravel (up to 1 inch), firm; no odor, no sheen
						3	
					*****	_	Some gravel/rock up to 4 inches at 3.5 feet
moist	2.3	W.		SW- SM		4— -	(SW-SM) 4 - 4.25': Medium dark brown, very fine to coarse SAND with ~7% silt and 10% gravel (up to 2 inches), medium dense; no odor, no sheen
						5— 5— -	Cobbles up to 10 inches between 4 and 5.75 feet
moist	1.5	m		ML		6— - -	(ML) 6 - 6.5': Medium dark brown, sandy SILT with very fine to fine sand and ~10% gravel (up to 2 inches), firm; no odor, no sheen
						7— - -	
moist	1.6	W.	SRI5-2-8			8— - -	(SW) 8 - 8.5': Medium yellowish-gray, very fine to very coarse SAND with ~10% gravel (up to 1.5 inches), dense; no odor, no sheen
moist	6.7			SW		9— - -	(SW) 8 - 10' (sonic bag): Medium brown, fine to very coarse SAND with 12% gravel (up to 4 inches), dense; no odor, no sheen
moist	9.6					10 — -	(SW) 10 - 11.25' (sonic bag): SAA; no odor, no sheen



Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/5/2020
Date Completed: 11/10/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth; 25 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
moist moist	66.9 3450		SRI5-2-11.5	SW		- - - 12-	(ML/CL) 11.25 - 15' (sonic bag): Medium greenish-gray SILT, changing downward at 12 feet t medium gray silt with ~25% clay (clay is light gray), medium plasticity, firm; moderate to stron HC odor, slight to moderate sheen
moist	2902					- - -	
moist	1819			ML/CL		13— - -	
moist	2120					14 — - -	
	1740					- 15— -	(ML?) 15 - 20' (disturbed material in sonic bag, partial slough): Mixed sand and gravel from above, medium gray SILT with some clay (less then above); moderate HC odor, moderate
	(2789)					- 16	sheen
	(1797)					- 17—	
				ML?		- - 18—	
						- - 19—	
	47.4					-	
moist	47.4					20— - - -	(ML/CL) 20 - 22' (sonic bag): Medium light brown SILT with clay laminations, medium plasticity, firm; weak HC odor (decreasing with depth), no sheen
moist	46.9			ML/CL		21— - -	
						22	



Project: Chevron Service Station #96590 Client: RELLC Logged By: TD
Date Started: 11/5/2020
Date Completed: 11/10/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth: 25 ft

Client: RI Location:	ELLC 232 East	Woo	din Ave,	Chelan,	WA	Date 9	Started: 11/5/2020 Drill Method: Air Knife/Sonic Completed: 11/10/2020 Total Boring Depth: 25 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
moist	65.1					-	(ML/CL) 22 - 25' (sonic bag): Medium light brown SILT with clay laminations, medium plasticity, firm; no HC odor, no sheen
moist	47.9			ML/CL		- - 23 — - -	
moist	47.9		10			24 —	
			SRI5-2-24.5			- -	
moist	66.4		SRI			25 <b>—</b>	Bottom of borehole at 25.0 feet.
						-	Bottom of boteriole at 25.0 feet.
						26 — -	
						27 —	
						28-	
						29 —	
						30-	
						31 — -	
						32-	
						33	



Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/5/2020
Date Completed: 11/10/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth: 35 ft

MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						_ - - 1—	Asphalt, 3.5 inches
moist	0.9	m		ML		- - 2— - - 3—	(ML) 2 - 2.5': Medium brown SILT with ~5% gravel (up to 1 inch), firm; no odor, no sheen
dry	1.1	an s		SW			(SW) 4 - 4.5': Light gray-brown, very fine to very coarse SAND with ~25% fine gravel (up to 0.7 inches) with ~4% silt (looks like decomposed granite), medium dense; no odor, no sheen
moist	1.1	m		SW/SM SW/GW			(SW-SM) 6 - 6.5': Medium gray-brown, very fine to very coarse SAND with ~20% gravel (up to 1.5 inches) with ~7% silt (looks like decomposed granite), medium dense; no odor, no sheen  (SW/GW) 7 - 8': Large gravel (up to 6 inches)
moist moist	0.9 7.2	W.	SRI5-3-8.5	SW/GW		8	(SW) 8.5 - 9': Medium gray, very fine to coarse SAND with ~8% gravel (up to 2 inches), dense; no odor, no sheen  (SW) 9 - 10' (sonic bag): Medium gray-brown, very fine to very coarse SAND with trace (<1%) silt and ~20% gravel (up to 5 inches), dense; no odor, no sheen
moist	2558			ML/CL		10 — - - -	(ML/CL) 10 - 15' (sonic bag): Medium dark greenish-gray, grading down to gray SILT with some clay laminations, coarser silt at top, medium plasticity (rolls up to 4 inches), firm; strong HC odor moderate to heavy sheen



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/5/2020

Client: RI Location:	ELLC 232 East	Woo	din Ave,	Chelan,	WA	Date S Date C	Started: 11/5/2020 Drill Method: Air Knife/Sonic Completed: 11/10/2020 Total Boring Depth: 35 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	2444	U)				_	(ML/CL) 10 - 15' (sonic bag): Medium dark greenish-gray SILT, grading down at 11 feet to gray SILT with some clay in lamination, coarser silt at top, medium plasticity (rolls up to 4 inches),
moist	2148					- 12- -	firm; strong HC odor, moderate to heavy sheen (continued)
moist	1941			ML/CL		13— -	
moist	1204					- 14 — -	
moist moist	1254 13.8					- 15 <del></del> -	(ML) 15 - 20' (sonic bag): Medium dark greenish-gray, grading down to brown-gray SILT with clay content increasing with depth, firm; moderate to weak HC odor, moderate (between 15-18 feet) to slight to no (between 18-20 feet) sheen
moist	11.3			ML		16 <del></del> -	
moist	436		SRI5-3-17			17— 	(ML/CL) 20 - 24.5' (sonic bag): Medium light gray-brown SILT with clay laminations, firm; weak to no HC odor, very slight to no sheen
moist	382					 18 <del></del> 	
moist	224			ML/CL		- 19 <i>-</i> - -	
moist moist	1289 31.3					20 — - - - 21 —	
moist	16.6					 - -	



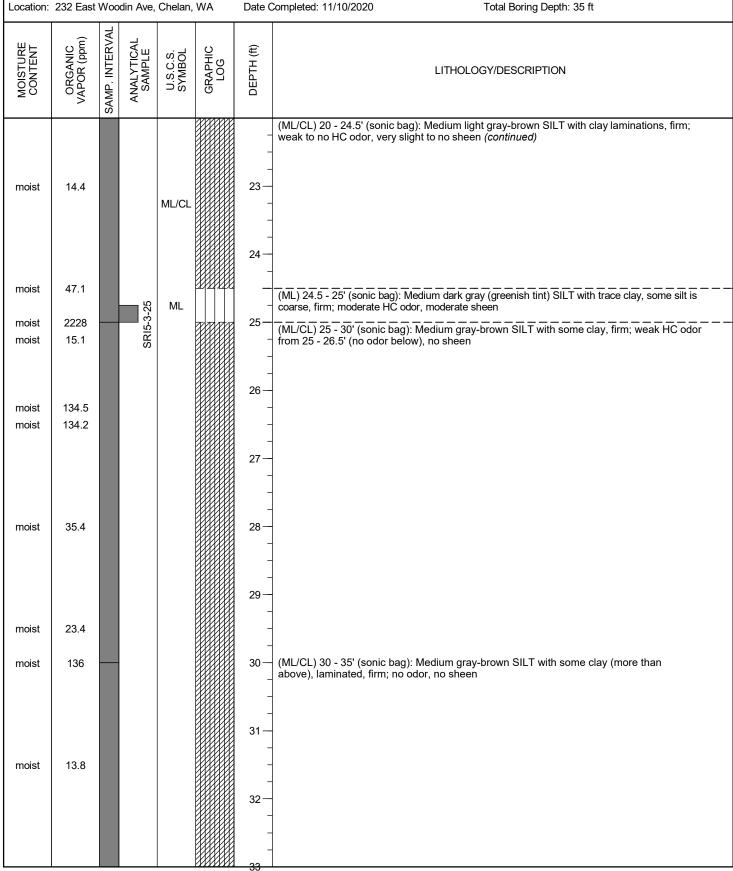
Project: Chevron Service Station #96590

Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/5/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic Total Boring Depth: 35 ft





Logged By: TD

Driller: AFC Drilling

Chevron Se ELLC 232 East	ervice Woo	e Station din Ave,	#96590 Chelan,	WA	Logge Date S Date O	d By: TD Driller: AEC Drilling Started: 11/5/2020 Drill Method: Air Knife/Sonic Completed: 11/10/2020 Total Boring Depth: 35 ft
ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
14.5		34.5			- - 34 — -	(ML/CL) 30 - 35' (sonic bag): Medium gray-brown SILT with some clay (more then above), laminated, firm; no odor, no sheen (continued)
		SRI5-3-3			35 <b>—</b> -	Bottom of borehole at 35.0 feet.
					36—	
					37—	
					38-	
					- - 39-	
					40—	
					- - - 41	
					- - - 42	
					- - -	
					43—	
	ORGANIC OAPOR (ppm)	ORGANIC ORGANIC STATE (SAMP. INTERVAL	ORGANIC ORGANIC (ppm) SAMP. INTERVAL SAMPLE SAMPLE	ORGANIC VAPOR (ppm) SAMP. INTERVAL SAMPLE SAMPLE SAMPLE SAMPLE SYMBOL	14.5	232 East Woodin Ave, Chelan, WA  Date of Chela



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/7/2020

MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						- - - 1-	Asphalt, 5 inches
moist	1.1	m				2- 2- - - 3-	(ML) 2 - 2.5': Medium dark brown SILT, firm; no odor, no sheen
moist	0.8	M				4	(ML) 4 - 4.5': Medium light brown SILT, firm; no odor, no sheen
moist	0.7	m		ML		5— - - 6— -	(ML) 6 - 6.5': Medium light brown, very fine sandy SILT, very coarse silty grading to very fine sand with minor coarser sand, trace gravel (<5%, up to 0.75 inches), firm; no odor, no sheen
						7	
moist	0.9	W.	SRI5-4-8.5			9-	(ML) 8.5 - 9': Medium light brown, very fine sandy SILT with 20% coarser sand; no odor, no sheen
moist	4.0					10-	(ML) 9 - 10' (sonic core): Medium brown SILT with ~15% gravel (up to 1 inch), firm to stiff; no odor, no sheen  (SP-SM) 10 - 12.5' (sonic bag): Medium brown, very fine to medium SAND with ~7% coarse silt and
				SP- SM		-	10% gravel (up to 1 inch), medium dense; no odor, no sheen



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/7/2020

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
moist	10.1					- - 12-	(SP-SM) 10 - 12.5' (sonic bag): Medium brown, very fine to medium SAND with ~7% coarse silt and 10% gravel (up to 1 inch), medium dense; no odor, no sheen (continued)
				SP- SM		- - - 13 –	(SP-SM) 12.5 - 14' (sonic bag): Medium brown, very fine to medium SAND with ~10% silt and ~5% gravel (up to 0.5 inches), dense; no odor, no sheen
	1.6		SRI5-4-14	SM		- 14 — - -	(SM) 14 - 15' (sonic bag): Medium dark brown, very fine to coarse SAND with ~15% silt and 20% gravel (up to 1.5 inches), dense; no odor, no sheen
moist	522		SRI5-4-15 S			15 <i>-</i> -	(ML) 15 - 18' (sonic core & bag): Medium gray SILT, low to no plasticity, firm to stiff; moderate HC odor, slight sheen (weaker with depth)
moist	1655		SRIS	ML		- 16 — - -	
moist	558		SRI5-4-17			17 — - -	
damp						18— - -	(ML/CL) 18 - 20' (sonic bag): Medium gray SILT with ~20% light gray clay as laminated layers in silt, clay layers with medium plasticity, firm; very weak HC odor, no sheen
damp	12.8			ML/CL		19 — - - -	
moist	498			ML		20 <del>-</del> - -	(ML) 20 - 21' (sonic bag): Medium gray SILT with rare gravel (up to 0.7 inches), firm; moderate to weak HC odor, no sheen
				ML?		21	(ML?) 21 - 23' (disturbed material): Likely all soft slough of medium gray silt and sand



Project: Chevron Service Station #96590 Client: RELLC Logged By: TD
Date Started: 11/7/2020
Date Completed: 11/8/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth: 25 ft

Client: RE Location:	ELLC 232 East	Woo	din Ave,	Chelan,	WA		Date S Date (	Started: 11/7/2020 Drill Method: Air Knife/Sonic Completed: 11/8/2020 Total Boring Depth: 25 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC	POG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
wet	(240)					T	-	(ML?) 21 - 23' (disturbed material): Likely all soft slough of silt and sand (continued)
				ML?			-	
							23-	(ML/CL) 23 - 25' (sonic bag): Medium gray SILT with ~20% clay, firm; no odor, no sheen
moist	40.0			NAL (OL			-	
to damp	13.6		1-24.5	ML/CL			24 — -	
			SRI5-4-24.5				25 <b>—</b>	
							-	Bottom of borehole at 25.0 feet.
							- 26 —	-
							-	
							27 —	
							-	
							28-	
							-	
							29-	
							-	
							30-	
							-	
							31 — -	
							32-	
							JZ - -	
							- - 33	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/7/2020 Date Completed: 11/8/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth: 30 ft

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Completed: 11/8/2020 Total Boring Depth: 30 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						-	Asphalt, 6 inches
				ML		- 1- - -	(ML) Medium dark brown SILT with some gravel/rock up to 5 inches
moist	2.5	S. S				2	(ML) 2.5 - 3': Medium dark brown SILT with minor rock (up to 2 inches) and minor plant (roots) debris, firm; no odor, no sheen
moist	2.6	any.		ML		- 4 - -	(ML) 4 - 4.5': Medium light brown SILT, firm; no odor, no sheen
moist	2.0					5 — - - 6 — -	(ML) 6 - 6.5': Medium light brown, very fine sandy, very coarse SILT with trace gravel (up to 0.3 inches), firm; no odor, no sheen
moist	2.2	m				7- - -	(ML) 7 - 7.5' (very soft interval, that opened up in borehole with no airknife activity, fill): Medium light brown, very fine sandy SILT with ~10% coarser sand and ~5% gravel (up to 1 inch), soft; no odor, no sheen
moist moist	1.4 1.8	an a	SRI5-5-8	SM		8 8	(SM) 8 - 8.5': Medium light brown silty very fine SAND, with 10-15% coarser sand and fine gravel up to 0.5 inch, loose/soft, no odor, no sheen
moist	2.2		3	ML SW		9	(ML) 8.5 - 9.5' (sonic core): Medium light brown, very fine, sandy SILT with trace coarser sand and ~5% gravel (up to 0.5 inches), stiff; no odor, no sheen  (SW) 9.5 - 10' (sonic core): Gray-brown to orange (oxidized), fine to very coarse SAND with ~25% gravel (up to 1.5 inches), very dense; no odor, no sheen  No recovery
		$\bigcirc$				- - 11	

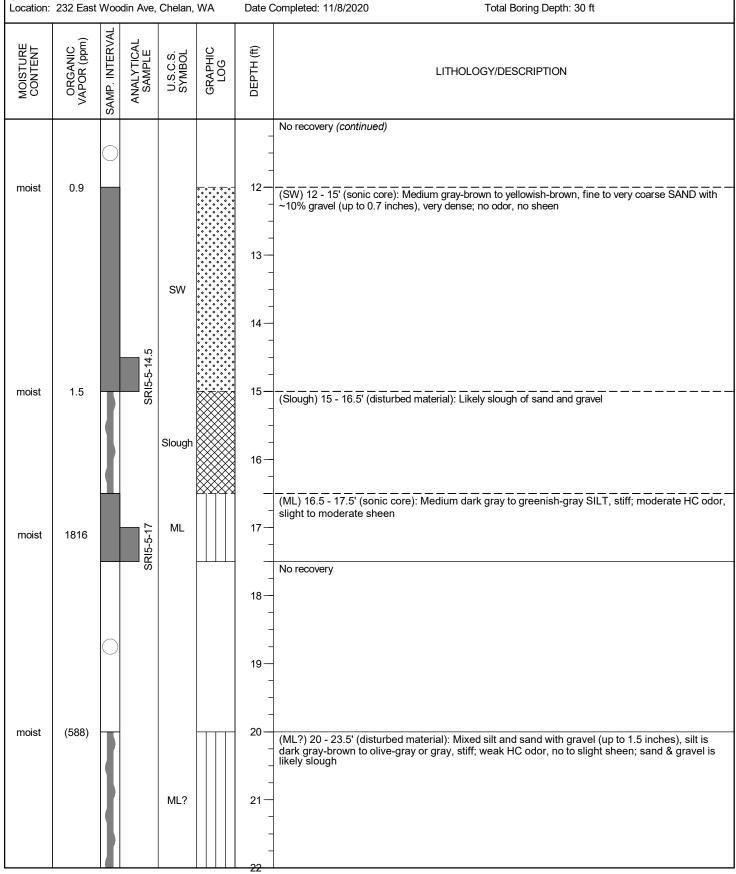


Project: Chevron Service Station #96590

Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/7/2020





Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/7/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA		Completed: 11/8/2020 Drill Method: Air Khille/Sonic Total Boring Depth: 30 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	(1915)			ML?		23-	(ML?) 20 - 23.5' (disturbed material): Mixed silt and sand with gravel (up to 1.5 inches), silt is dark gray-brown to olive-gray or gray, stiff; weak HC odor, no to slight sheen (continued)
moist	1678		SRI5-5-24	ML		24 —	(ML) 23.5 - 25' (sonic core): Medium gray or olive gray SILT, stiff to firm; moderate HC odor, slight to moderate sheen
moist	1626	}				25— -	(ML?) 25 - 27' (disturbed material): Mixed SAND and GRAVEL with some silt; moderate to weak HC odor, moderate sheen, sand & gravel is likely slough
	(1781)			ML?		26	
damp	1790					27 — - - -	(ML/CL) 27 - 30' (sonic core): Medium brownish-gray SILT with ~20% clay, firm to stiff; moderate HC odor, moderate to heavy sheen
4	4704			ML/CL		28	
damp	1724		SRI5-5-29.5			29 — - - - 30 —	
						- - 31 —	Bottom of borehole at 30.0 feet.
						32-	
						33	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/7/2020 Date Completed: 11/8/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic Total Boring Depth: 25 ft

Location:	232 East	Woo	din Ave,	, Chelan,	WA	Date (	Completed: 11/8/2020 Total Boring Depth: 25 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	3.8	ans.				  1   2 	Asphalt, 6 inches  (ML) 2 - 2.5': Medium dark brown SILT with trace sand and gravel (up to 0.5 inches) and trace plant (root) debris, firm; no odor, no sheen
damp	2.6	W.		ML		3	(ML) 4 - 4.5': Medium light gray-brown SILT, firm; no odor, no sheen
moist	2.2	m.				5— - - 6— - - 7—	Some large rock/gravel (up to 4 inches) at 5.5 feet  (ML) 6 - 6.5': Medium brown, very coarse SILT with ~20% very fine sand, trace coarser sand and trace fine gravel (up to 0.4 inches), firm; no odor, no sheen
moist moist	1.6	Sus S	SRI5-6-8	SM/GM		8— 8— - -	(SM/GM) 8 - 8.25': Medium brown, silty, very fine SAND with 10% coarser sand and gravel (up to 0.5 inches), medium dense to loose; no odor, no sheen Large rocks at 8.25 feet  (ML) 8.75 - 10' (sonic core): Medium dark brown SILT with ~15% very fine sand and some
	5					- - 10 — - - -	coarser sand and gravel (up to 1 inch), firm to stiff; no odor, no sheen  No recovery



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/7/2020

rure Tent	ANIC (ppm)	TERVAL	TICAL PLE	c.s. Bol	7HIC	.н (ft)		
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEРТН (ft)	LITHOLOGY/DESCRIPTION	
						-	No recovery (continued)	
moist	3.3					12 <b>-</b> - -	(ML) 12 - 15' (sonic core): Medium gray-brown SILT with ~20% very fine to coarse sand and ~20% gravel (up to 3.5 inches), firm; no odor, no sheen	
				ML		13— - -		
						- 14 <i>-</i>		
moist	1.8		SRI5-6-16	ML?		15—	(ML?) 15 - 16' (disturbed material): Medium dark brown SILT with minor clay, with ~20% very fine to coarse sand and gravel (up to 1.5 inches); no odor, no sheen	
moist	1632					- - 16—	(ML) 16 - 18': Medium gray to olive-gray (greenish near top) SILT, firm to stiff; moderate to	
moist	1515			SRI5-	NT SRIS-	ML		- 17-
moist	1568					- - -		
						18— - - -	No recovery	
						19— - -		
				ML?		20 <del></del> 	(ML?) 20 - 21' (disturbed material): Likely slough of brown silt and sand/gravel	
moist to damp	1633			W.E.		21 <del>-</del>	21 - 25' (sonic core): Medium dark gray SILT with minor clay zones, stiff to firm; moderate to weak HC odor, moderate to heavy sheen (both decreasing with depth)	
						-		



Project: Chevron Service Station #96590 Client: RELLC Logged By: TD
Date Started: 11/7/2020
Date Completed: 11/8/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth: 25 ft

Client: RE Location:	232 East	Woo	din Ave,	Chelan,	WA		ate S	Started: 11/7/2020 Drill Method: Air Knife/Sonic Completed: 11/8/2020 Total Boring Depth: 25 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC		DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist to	1716						- - - 23—	21 - 25' (sonic core): Medium dark gray SILT with minor clay zones, stiff to firm; moderate to weak HC odor, moderate to heavy sheen <i>(continued)</i>
чатр	amp		SRI5-6-23.5				- - - 24 <del></del>	
moist to damp	510						- - 25 <b>-</b>	Bottom of borehole at 25.0 feet.
						:	- - - 26	
						:	- - 27 <del></del> -	
						:	- - 28 <del>-</del> -	
						:	- 29 <del></del> -	
						;	- 30 — -	
						;	- 31 <del></del> - -	
						;	- 32 — - -	
							- <del>33</del> -	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/10/2020 Date Completed: 11/11/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Completed: 11/11/2020 Total Boring Depth: 25 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEРТН (ft)	LITHOLOGY/DESCRIPTION
						-	Asphalt, 4 inches
moist	2.1	any.		ML		- 1- - - - 2- -	(ML) 2 - 2.5': Dark brown SILT, soft; no odor, no sheen
damp	5.3	ans				3— - - 4—	(ML) 4 - 4.5': Light orange-brown SILT with 5% gravel (up to 0.7 inches), firm; no odor, no sheen
moist	4.9	000			Brother.	5- -	(SM) 5.5 - 6': Medium yellow-brown, silty, very fine to coarse SAND with ~20% gravel (up to 1.5
		SW.		SM	Tribyt  Original  Tribyt  Original  Tribyt  Tribyt	6 — - - - 7 —	inches), medium dense; no odor, no sheen  Large rock/cobble at 7.25 feet. Refusal with air knife
damp	0.5						(ML) 7.25 - 8.5' (sonic core): Medium dark brown SILT with ~20% gravel (up to 2.5 inches), firm; no odor, no sheen
damp	0.8					8 8 -	
damp	0.8			ML		9	(ML) 8.5 - 11': SAA, but medium dark orange-brown to medium dark brown, firm; no odor, no sheen
damp	1.2					10	



Project: Chevron Service Station #96590 Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/10/2020 Date Completed: 11/11/2020 Driller: AEC Drilling Drill Method: Air Knife/Sonic

Total Boring Depth: 25 ft SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE GRAPHIC LOG U.S.C.S. SYMBOL DEPTH (ft) LITHOLOGY/DESCRIPTION (Rock) 11 - 12' (sonic bag): solid rock(s) Rock 12 (GW) 12 - 14' (sonic bag): Medium gray rock/gravel (up to 4 inches) with some sand and pulverized rock (silt) moist GW 13 1.1 14 moist 3.3 SW/GW (SW/GW) 14 - 15': Medium dark yellow-brown, fine to very coarse SAND with some gravel (up to 1 inch) increasing downward; no odor, no sheen moist to SRI5-7-15 15 0.7 damp (ML) 15 - 20' (sonic bag): Brown-gray, laminated SILT with ~10% clay layers, some silt is coarse, firm; no odor, no sheen moist to 1.5 damp 16 moist to 1.2 damp ML 18 19 moist to 1.5 damp 20 (Slough) 20 - 24.5' (disturbed material): Mostly slough, dark brown SILT with gravel (up to 5 inches) and some sand Slough 21



Project: Chevron Service Station #96590

Logged By: TD

Driller: AEC Drilling

Client: RI Location:	ELLC 232 East	Woo	odin Ave,	Chelan,	WA	Date (	Started: 11/10/2020 Drill Method: Air Knife/Sonic Completed: 11/11/2020 Total Boring Depth: 25 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	(1.7)			Slough		- - 23- - -	(Slough) 20 - 24.5' (disturbed material): Mostly slough, dark brown SILT with gravel (up to 5 inches) and some sand (continued)
moist	0.5		SRI5-7-24.5	ML		24 — — — 25 —	(ML) 24.5 - 25' (sonic bag): Medium dark gray SILT, firm; no odor, no sheen  Bottom of borehole at 25.0 feet.
						- 26 — -	
						27 — - - -	
						28 — - - - - 29 —	
						30-	
						31 <del>-</del> -	
						32 - - - - -33	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/10/2020 Date Completed: 11/11/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic Total Boring Depth: 30 ft

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Completed: 11/11/2020 Total Boring Depth: 30 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						_	Asphalt, 4 inches
						1— 1— -	
moist	7.7	W.		ML		2-	(ML) 2 - 2.5': Dark brown SILT, firm; no odor, no sheen
		5				-	
						3- 3- -	
damp	12.6					4	(MI) 4 A 51-1 inht annum brown CHT firms no adap no share
·		SUN				-	(ML) 4 - 4.5': Light orange-brown SILT, firm; no odor, no sheen
						5 <del></del>	
moist	4.8	Sun		SM		-	(SM) 5.75 - 6': Medium dark brown, silty, gravelly, very fine to coarse SAND, gravel is up to 1.5
						6-	inches; no odor, no sheen
		W.					(SW) 6.75 - 7': Medium dark brown GRAVEL (up to 2 inches) with some fine to very coarse sand, dense; no odor, no sheen
moist	5.0					7— - -	Refusal at 7 feet with hand auger (SW) 7 - 10' (sonic bag): Medium brown, fine to very coarse SAND with ~15% gravel (up to 3 inches), dense; no odor, no sheen
moist	8.7					8-	
						-	
				SW		9—	
						-	
moist	3.2					- 10 <i>-</i>	
HIOISE	0.2					-	(SW) 10 - 14.5' (sonic bag): Medium brown, fine to very coarse SAND with ~20% gravel (up to 3 inches) and trace silt (<3%), dense; no odor, no sheen
						-	
					P. * . * . * . * .	<del>- 11</del>	1



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/10/2020 Date Completed: 11/11/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth: 30 ft

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date 0	Completed: 11/11/2020 Total Boring Depth: 30 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	35					-	(SW) 10 - 14.5' (sonic bag): Medium brown, fine to very coarse SAND with ~20% gravel (up to 3 inches) and trace silt (<3%), dense; no odor, no sheen (continued)
moist	43					- 12 — -	
moist	26			SW		- 13 <i>-</i>	
						-	
moist	79					- 14 <i>-</i>	
moist	210		1.5			_	
moist	312		SRI5-8-14.5			- 15 <i>-</i>	(ML/CL) 14.5 - 15' (sonic bag): Medium green-gray (oxidized to brown-yellow in top inch) laminated SILT with some clay layers, firm; moderate HC odor, moderate sheen
			SR			-	(ML/CL) 15 - 17.5' (sonic bag): Medium greenish-gray SILT with clay (increasing with depth), some silt is coarse, firm; weak to moderate HC odor, moderate to slight sheen (decreasing with depth)
moist	218					-	
moist	219					16 <del></del> -	
moist	52					- 17 — -	
moist	86					- 18 <i>-</i>	(ML/CL) 17.5 - 20' (sonic bag): SAA; Medium gray SILT with clay, weak HC odor, slight to no sheen
moist	00			ML/CL		-	
				IVIL/CL		-	
moist	252		rĊ			19 <i>-</i>	
moist to damp	250		SRI5-8-19.5			20 — 	(ML/CL) 20 - 25' (sonic bag, slightly disturbed material): Medium gray-brown SILT with clay, firm; weak HC odor (decreasing with depth), no sheen
						21 —	
						-	
						22	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/10/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic

Client: RI Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Started: 11/10/2020 Drill Method: Air Knife/Sonic Completed: 11/11/2020 Total Boring Depth: 30 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
moist to damp	12.0					- - - 23—	(ML/CL) 20 - 25' (sonic bag, slightly disturbed material): Medium gray-brown SILT with clay, firm; weak HC odor (decreasing with depth), no sheen (continued)
moist to damp	17.7					- 24 — -	
moist to	16.7			ML/CL		25 — - - - 26 —	(ML/CL) 25 - 30' (sonic bag, slightly disturbed material): Medium brown-gray SILT with clay, firm; weak to no odor, no sheen
damp	10.1			IWL/ 02		 - - 27 —	
moist to damp	1.7					- 28 — -	
moist to damp	3.7		SRI5-8-29.5			29 — - - - - 30 —	Bottom of borehole at 30.0 feet.
						- - 31—	DOLOTT OF DOTGLOIC AL 30.0 TEEL.
						32 — - -	
						33	



Driller: AEC Drilling Drill Method: Air Knife/Sonic

Project: Chevron Service Station #96590 Logged By: TD
Client: RELLC Date Started: 11/10/2020
Location: 232 Fact Woodin Ave. Chelan, WA
Date Completed: 11/11/2020

Total Boring Depth: 30 ft Location: 232 East Woodin Ave, Chelan, WA Date Completed: 11/11/2020 SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE GRAPHIC LOG U.S.C.S. SYMBOL DEPTH (ft) LITHOLOGY/DESCRIPTION Asphalt, 3 inches (ML) moist 4.4 (ML) 2 - 2.5': Dark brown SILT, soft to firm; no odor, no sheen ML 3 damp 5.2 (ML) 4 - 4.5': Light yellow-brown SILT, firm; no odor, no sheen M 5 (SM) 3.2 SM (SM) 6 - 6.5': Medium brown, very fine to coarse SAND with ~15% coarse silt and 20% gravel (up to M 2.5 inches), dense; no gravel, no sheen (SW) moist (SW) 7 - 7.5': Medium brown, very fine to coarse SAND with ~20% gravel (up to 2 inches), dense; SW no odor, no sheen moist (SP) 7.5 - 7.75': Medium brown, very fine to medium SAND with ~10% gravel (up to 1 inch), dense; no odor, no sheen 5.3 SP 8 SRI5-9-8 (SP) 8-8.25': SAA moist 1.7 (SW/SP) 8.5 - 10' (sonic bag): Medium brown SAND (interbedded very fine to medium and very fine to very coarse) with gravel (up to 2.5 inches) and trace silt, dense, no HC odor, no SW/SP sheen moist 0.2 10 (SW) 10 - 15' (sonic bag): Medium brown, very fine to very coarse SAND with ~20% gravel (up to 4 inches), dense; no odor, no sheen SW



Project: Chevron Service Station #96590

Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD

Date Started: 11/10/2020 Date Completed: 11/11/2020 Driller: AEC Drilling Drill Method: Air Knife/Sonic

Total Boring Depth: 30 ft SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE MOISTURE CONTENT GRAPHIC LOG U.S.C.S. SYMBOL DEPTH (ft) LITHOLOGY/DESCRIPTION (SW) 10 - 15' (sonic bag): Medium brown, very fine to very coarse SAND with ~20% gravel (up to 4 1.8 moist inches), dense, no odor, no sheen (continued) 12 moist 0.9 moist 1.3 SW 13 14 14.5 - 15': Rock/gravel moist 2.4 SRI5-9-15 15 (ML/CL) 15 - 17' (sonic bag): Greenish-gray SILT with clay, firm; strong HC odor, heavy sheen moist to 122 16 damp ML/CL moist to 9.2 17 damp (ML/CL) 17 - 18' (sonic bag): Grayish-brown SILT with clay, firm; moderate HC odor, moderate sheen moist to 9.4 18 damp (ML) 18 - 20' (sonic bag): Greenish-gray SILT, stiff; strong HC odor, heavy sheen moist to 310 SRI5-9-19 ML 19 damp moist to 199 (ML?) 20 - 26.5' (disturbed material): Mixed silt and sand with gravel (up to 4 inches); silt damp has HC odor, no sheen; sand & gravel is likely slough ML? 21



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/10/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic

Client: RELL Location: 23	.C 2 East W	oodin Ave	, Chelan,	WA	Date 9 Date 0	Started: 11/10/2020 Drill Method: Air Knife/Sonic Completed: 11/11/2020 Total Boring Depth: 30 ft
MOISTURE	VAPOR (ppm)	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	2.5	SRI5-9-27	ML?		23 — 24 — 25 — 25 — 26 — 31 — 32 — 33 — 33 — 33 — 33 — 33 — 33	(ML/CL) 26.5 - 27.5' (sonic bag): Gray-brown SILT with clay, mostly firm; very weak HC odor, no sheen  (ML/CL) 26.5 - 27.5' (sonic bag): Gray-brown SILT with clay, mostly firm; very weak HC odor, no sheen  No recovery  Bottom of borehole at 30.0 feet.



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/11/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date 0	Completed: 11/11/2020 Drill Method: Air Knile/Sonic Total Boring Depth: 35 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	ОЕРТН (ft)	LITHOLOGY/DESCRIPTION
moist	0.6			ML			Asphalt, 4 inches  (ML) 2 - 2.5': Dark brown SILT, soft to firm; no odor, no sheen
moist	1.0	W.		SM		4 —	(SM) 5 - 5.5': Dark brown, silty, very fine to coarse SAND with 10% gravel (up to 2.5 inches), medium dense; no odor, no sheen  (SW) 5.5 - 7.5' (sonic bag): Gray-brown, very fine to very coarse SAND with~25% gravel (up to 3 inches), dense; no odor, no sheen  Cobbles encountered at 6 feet
moist	3.4					- 7— -	
moist	5.8		SRI5-10-8	SW		8— 8—	(SW) 7.5 - 10' (sonic bag): SAA with slightly finer sand with 20% gravel (up to 4 inches); no odor, no sheen
moist	7.3					- 9- - - 10- - - -	(SW) 10 - 12.5' (sonic bag): SAA sand with ~25% gravel (up to 5 inches); no odor, no sheen



Project: Chevron Service Station #96590 Logged By: TD Driller: AEC Drilling Client: RELLC Date Started: 11/11/2020 Drill Method: Air Knife/Sonic Location: 232 East Woodin Ave, Chelan, WA Date Completed: 11/12/2020 Total Boring Depth: 35 ft SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE MOISTURE CONTENT GRAPHIC LOG DEPTH (ft) U.S.C.S. SYMBOL LITHOLOGY/DESCRIPTION (SW) 10 - 12.5' (sonic bag): SAA sand with ~25% gravel (up to 5 inches); no odor, no sheen (continued) moist 12 6.0 (SW) 12.5 - 14.5' (sonic bag): SAA, sand with some gravel (up to 2 inches); no odor, no sheen SW 143 moist 13 moist 104 14 5-10-14. (ML/CL) 14.5 - 15' (sonic bag): Medium greenish-gray (oxidized to yellow-brown in top inch) SILT with some clay (lighter greenish-gray), laminated, firm; strong HC odor, heavy sheen moist to 15 >15K damp (ML/CL) 15 - 16.5' (sonic bag): Medium greenish-gray SILT with clay layers, firm; strong HC odor, heavy sheen moist to >15K 16 damp moist to >15K damp (ML/CL) 16.5 - 18.5' (sonic bag): Medium gray SILT with clay layers, firm; moderate HC odor, moderate sheen moist to 1660 17 damp moist to SRI5-10-18 2980 18 damp ML/CL (ML/CL) 18.5 - 20' (sonic bag): Medium gray-brown SILT with clay layers, firm; weak HC odor, no to slight sheen moist to 754 19 damp moist to 513 20 damp (ML/CL) 20 - 21.5' (sonic bag): Greenish-gray SILT with some clay, firm; strong HC odor, heavy to moderate sheen moist to >15K 21 SRI5-10-2 damp More strongly greenish, coarse silt in sampled zone at 21-21.5'

slight to no sheen

(ML/CL) 21.5 - 25' (sonic bag): Gray brown SILT with some clay, firm; weak or no HC odor,



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/11/2020 Date Completed: 11/12/2020

Location:	232 East	VV 00	din Ave,	Chelan,	VVA	Date	Completed: 11/12/2020 Total Boring Depth: 35 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist to damp	>15K					-	(ML/CL) 21.5 - 25' (sonic bag): Gray brown SILT with some clay, firm; weak or no HC odor, slight to no sheen <i>(continued)</i>
moist to damp	780					- 23- - -	
moist to damp	398					- 24 <i>-</i>	
moist to damp	390					25—	(ML/CL) 25 - 30' (sonic bag): Medium light brown SILT with some clay layers, medium plasticity (rolls up to 2 inches), firm; no odor, no sheen
moist to damp	38.4					- 26 — -	
moist to damp	42.5			ML/CL		27 —	
moist to damp	38.0			WIL/GL		- 28 — -	
moist to damp	37.9					- 29 — -	
moist to damp	19.1 21.5					- 30 — -	(ML/CL) 30 - 35' (sonic bag): Medium light brown SILT with ~35-40% clay layers, firm; no odor, no sheen
moist to damp	38.8					31 — - - - 32 —	
						- - - 33	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/11/2020 Date Completed: 11/12/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic

Location: 232 East Woodin Ave, Chelan, WA Total Boring Depth: 35 ft SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE GRAPHIC LOG DEPTH (ft) U.S.C.S. SYMBOL LITHOLOGY/DESCRIPTION moist to 29.5 (ML/CL) 30 - 35' (sonic bag): Medium light brown SILT with ~35-40% clay layers, firm; no odor, no sheen (continued) damp ML/CL 34 SRI5-10-34.5 moist to 33.6 damp 35 Bottom of borehole at 35.0 feet. 36 37 38 39 40 41 42 43



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/12/2020 Date Completed: 11/12/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic Total Boring Depth: 30 ft

Location:	232 East	VVOO	din Ave,	, Chelan,	WA	Date (	Completed: 11/12/2020 Total Boring Depth: 30 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						-	Asphalt, 4 inches
						- 1- -	
moist	7.6	m		ML		2— - -	(ML) 2 - 2.5': Dark brown SILT, soft to firm; no odor, no sheen
						3- -	
moist	5.1	M				- 4 - -	(SW) 3.75 - 4.25': Yellow-brown, medium to very coarse SAND with ~25% gravel (up to 3 inches); no odor, no sheen
moist	4.2	m				5— 5—	(SW) 5 - 5.5': Yellow-brown, very fine to very coarse SAND with ~20% gravel (up to 2 inches); no odor, no sheen
	23.5					6— 6	
						7— -	Airknife/hand auger refusal on rock at 7.5 feet
moist	23.5		<u>~</u> %	SW		- - 8—	(SW) 7.5 - 12.5' (sonic bag): Yellow-brown, very fine to very coarse SAND with 20% gravel (up to 6 inches), mixed with zones of pulverized rock, dense; no odor, no sheen
			SRI5-11-8			- - 9—	
moist	25.6					- - 10 — - -	



Project: Chevron Service Station #96590

Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD

Date Started: 11/12/2020 Date Completed: 11/12/2020 Driller: AEC Drilling Drill Method: Air Knife/Sonic

Total Boring Depth: 30 ft SAMP. INTERVAL ORGANIC VAPOR (ppm) ANALYTICAL SAMPLE GRAPHIC LOG U.S.C.S. SYMBOL DEPTH (ft) LITHOLOGY/DESCRIPTION 12 22.5 moist SW moist 55.8 (SW) 12.5 - 13.5' (sonic bag): Yellow-brown, very fine to very coarse SAND with ~25% gravel (up to 4 inches); no odor, no sheen 13 970 moist SRI5-11-13. (ML/CL) 13.5 - 14' (sonic bag): Medium greenish-gray SILT with some clay, soft; strong HC odor, slight sheen moist >15K 14 ML/CL SRI5-11-15 15 (ML) 15 - 15.75' (sonic bag): Greenish-gray coarse SILT, firm; strong HC odor, slight to moderate sheen moist >15K ML (ML?) No recovery, some slough 16 ML? 17 (ML/CL) 17.5 - 25' (sonic bag): Medium gray-brown SILT with some clay, firm; no odor, no sheen (very slight sheen at 17.5') moist to 54.8 18 wet moist to 42.0 19 wet ML/CL moist to 43.2 20 wet moist to 49.9 21 wet



Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/12/2020
Date Completed: 11/12/2020

Driller: AEC Drilling
Drill Method: Air Knife/Sonic
Total Boring Depth; 30 ft

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Completed: 11/12/2020 Total Boring Depth: 30 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist to wet	72.8					- - - 23 —	(ML/CL) 17.5 - 25' (sonic bag): Medium gray-brown SILT with some clay, firm; no odor, no sheen (continued)
moist to wet	50.5			ML/CL		- 24 — -	
damp to wet	81.2			ML		25 — - -	(ML) 25 - 26' (sonic bag): Gray-brown SILT with some brown very fine SAND, firm; no odor, no sheen
damp to wet	40.0					26 <del></del>	(ML/CL) 26 - 30' (sonic bag): Gray-brown SILT with some clay, medium plasticity (rolls up to 4 inches), firm; no odor, no sheen
damp to wet	52.2			ML/CL		27 — - - - 28 — -	
damp to	39.8		SRI5-11-29.5			29 <del></del> -	
wet	39.0		SR			30-	Bottom of borehole at 30.0 feet.
						31 — -	
						32 — - -	
						- 	



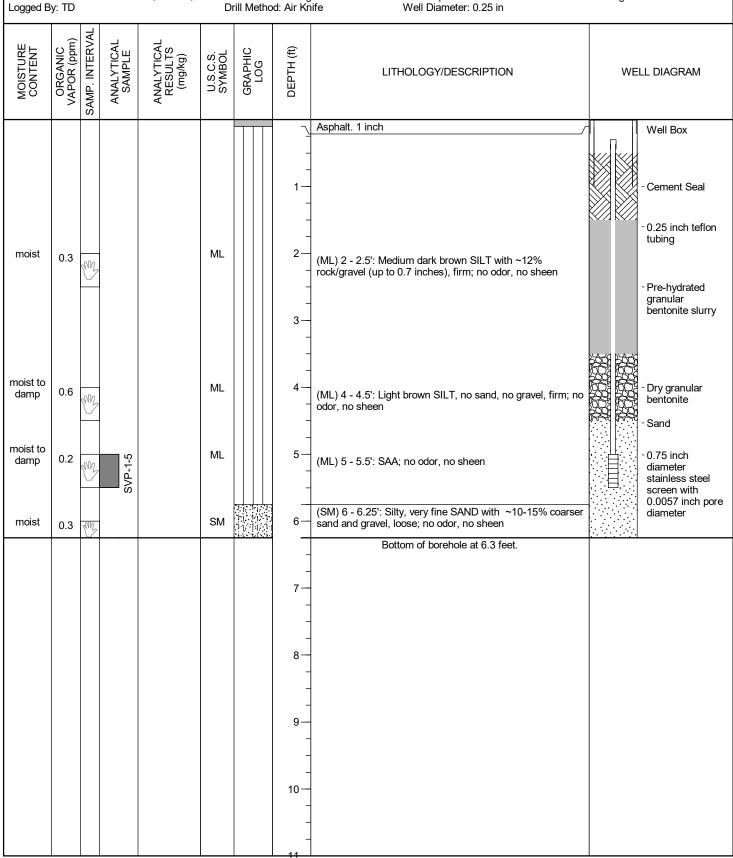
#### Soil Vapor Well: SVP-1

Project: Chevron Service Station #96590 Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA Logged By: TD

Date Started: 11/8/2020
Date Completed: 11/8/2020
Driller: AEC Drilling
Drill Method: Air Knife

Total Boring Depth: 6.25 ft Hole Diameter: 3.25 in Well Depth: 5.5 ft Well Diameter: 0.25 in Well Screen: 0.5 in Filter Pack: Sand Well Casing: Teflon





#### Soil Vapor Well: SVP-2

Project: Chevron Service Station #96590 Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Date Started: 11/9/2020
Date Completed: 11/9/2020
Driller: AEC Drilling

Total Boring Depth: 10.3 ft Hole Diameter: 3.25 in Well Depth: 5.5 ft Well Screen: 0.5 in Filter Pack: Sand Well Casing: Teflon

MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	ANALYTICAL RESULTS (mg/kg)	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WE	LL DIAGRAM
moist dry to moist	1.2				SM		- 1- 2- 3- 4-	Concrete, 5 inches  (SM) 2 - 2.5': Medium yellow-brown, very fine to fine SAND with ~15% silt and ~8% coarser sand and gravel (up to 0.4 inches), loose; no odor, no sheen  (SM) 4 - 4.5': Light brown, very fine to fine SAND with ~20% coarse silt and ~20% coarser sand and fine gravel		Well Box  - Cement Seal  - 0.25 inch teflon tubing
moist	1.7				SW- SM		5 —	(up to 0.4 inches), loose; no odor, no sheen  (SW-SM) 6.75 - 7.25': Medium yellow-brown, very fine to		- Pre-hydrated granular bentonite slurry
moist	1.3		SVP-2-9		sw		8— - 9— - 10—	(SW) 9 - 9.5': Medium dark orange-brown, fine to very coarse SAND with ~10% gravel (up to 1 inch, one rock a few inches), dense; no odor, no sheen  Bottom of borehole at 10.3 feet.		- Dry granulated bentonite - Sand - 0.75 inch diameter stainless steel screen with 0.0057 inch pore diameter



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/3/2020 Date Completed: 12/17/2020

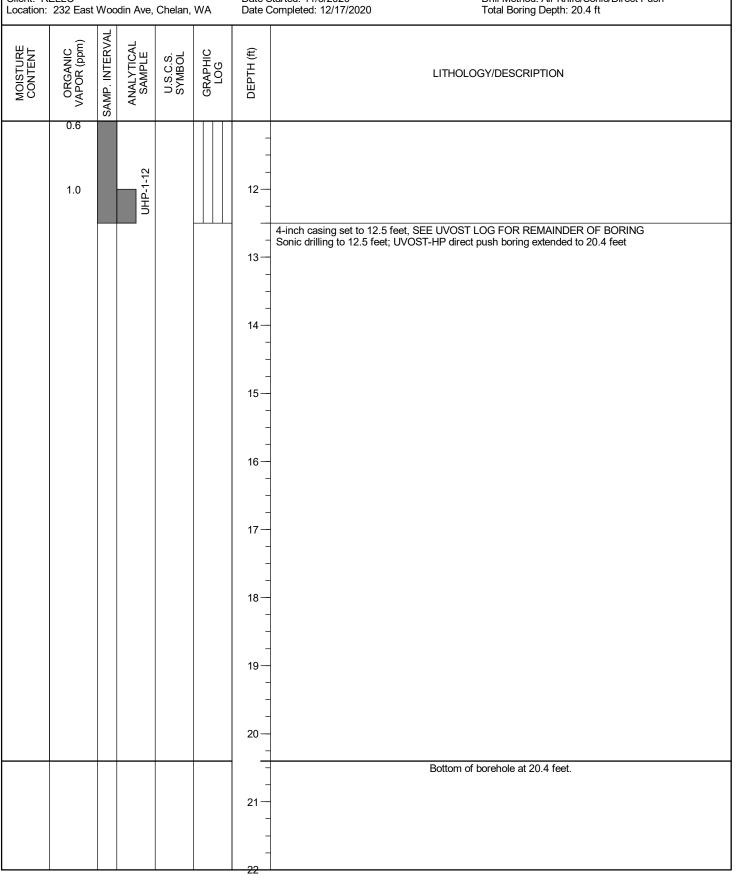
Location.	ZUZ Lasi	VV 000	iiii Ave,	Chelan,	VVA	Date C	Completed: 12/17/2020 Total Boring Depth: 20.4 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
							Asphalt. 3 inches
moist	0.2	m		ML		- 1- - - 2- -	(ML) 2 - 2.5': Medium yellow-brown SILT with ~15% gravel (up to 1 inch), soft; no odor, no sheen
moist	0.4	an,		ML		3— - - 4— -	cobble (~8 inches) at 3.8 feet (ML) 4 - 4.5': Medium yellow-brown SILT with ~15% gravel and ~15% very fine to medium sand, soft; no odor, no sheen
moist	0.3	m		ML		5— - - 6— - - 7—	(ML) 6 - 6.5': Light brown-gray SILT, no gravel, no sand, firm; no odor, no sheen
moist	0.4	m	UHP-1-8	ML		8— -	(ML) 8 - 8.5': SAA
moist	0.7			ML		9-	(ML) 8 - 10' (sonic core): Medium brown, laminated SILT with ~10% clay (lighter gray) layers, firm; no odor, no sheen
moist	0.6			ML		10 <del>-</del> -	(ML) 10 - 12.5': SAA; no odor, no sheen
						11	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/3/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push





Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/3/2020
Date Completed: 12/18/2020

Location:	232 East	Wood	din Ave,	Chelan,	WA	Date C	Completed: 12/18/2020 Total Boring Depth: 42.7 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						_	Asphalt, 3 inches
moist	0.0	em,		ML		1— 1— - 2— -	(ML) 2 - 2.5': Medium dark brown, mostly coarse SILT with ~5% very fine sand, firm; no odor, no sheen
						3— - -	
moist	0.9	ans.		ML	• • • • • • • • • • • • • • • • • • • •	4-	Begin to become rocky at 3.8 feet  (ML) 4 - 4.25': Medium olive-gray, coare SILT with ~7% very fine to fine sand and 20% rocks (up to 3 inches), firm; no odor, no sheen  At 4 feet hit large rock covering entire area of hole. Refusal. Moved 5 feet south and retry. Continue rocky/cobbles/sand.
damp	0.8	m		SW		5 — 6 — 7 —	(SW) 6 - 6.25': Medium light brown, gravelly, fine to very coarse SAND with trace silt, gravel up to 3 inches, loose; no odor, no sheen  Large cobbles continue to ~7 feet
dry to moist	0.5 0.7	an,	UHP-2-9	SW		8— 8— - 9— -	(SW) 9 - 9.5': SAA, gravel up to 1.5 inches; no odor, no sheen
				SW		10 — - - - 11	(SW) 8 - 10' (sonic core): Medium brown, fine to very coarse SAND with ~15% gravel (up to 2 inches), medium dense; no odor, no sheen



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/3/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
moist	0.4			SP		-	(SP) 11 - 11.75': Very fine to fine SAND with a little medium sand, loose; no odor, no sheen
moist	0.3		UHP-2-12	ML		12 <i>-</i> -	(ML) 11.75 - 12.5': Medium gray SILT with some light gray clay layers, firm; no odor, no sheen
						 13	4-inch casing set to 12.5 feet, SEE UVOST LOG FOR REMAINDER OF BORING Sonic drilling to 12.5 feet; UVOST-HP direct push boring extended to 42.7 feet
						- 14 <i>-</i> -	
						- - 15—	
						16 — -	
						- 17 — -	
						- - 18—	
						19 <i>-</i> -	
						20 — -	
						21 — - -	
						- - <del>- 22</del> -	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/3/2020 Date Completed: 12/18/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date 0	Completed: 12/18/2020 Total Boring Depth: 42.7 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - - 23—	
						- 24 — -	
						25— -	
						26 — -	-
						27 — - -	
						28 — - -	
						29 — - - -	-
						30 — - - - 31 —	
						31—	-
						- - - - -	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/3/2020 Date Completed: 12/18/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/18/2020 Total Boring Depth: 42.7 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						34—	
						- 35 <i>-</i> -	
						36 — - -	
						37— - - - 38—	
						39—	
						- 40 — -	
						- 41 — - -	
						42 — - - -	Bottom of borehole at 42.7 feet.
						43 — - - - 44	



Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/4/2020
Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 58.8 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						_	Asphalt, 2 inches
				ML		- 1— - -	(ML) Dark brown SILT with minor rock
damp	0.3	W.		ML		2	(ML) 2 - 2.5': Medium dark brown SILT with ~15% rock/gravel (up to 1 inch), firm; no odor, no sheen
						-	Becoming more rocky at 2.5 feet
	1.0	SWS				3	(GM) 3.5 - 4.25': Medium brown, sandy GRAVEL (up to 4 inches) with 12-15% silt, sand is very fine
moist	0.2	SW.				4-	to coarse, dense; no odor, no sheen
		7				-	
moist	0.5			GM		5— 5— -	
moist	0.5	m.		SW		6— - -	(SW) 5.75 - 6.25': Medium olive-gray, fine to very coarse SAND with ~20% gravel (up to 2 inches), dense; no odor, no sheen Lots of gravel/cobble (up to 6-7 inches) below 6 feet
damp	1.4	ans.	UHP-3-7	GW- GM		7—	(GW-GM) 7 - 7.25': Medium dark yellow-brown, sandy GRAVEL with ~7% silt, sand is very fine to very coarse, gravel is up to 12 inches, very dense; no odor, no sheen Refusal at 7.25 feet
	0.8		D			8-	(ML/GM) 7 - 9' (sonic core): Dark brown SILT with ~25% gravel (up to 4 inches), firm; no odor, no sheen Possible slough from above
moist	1.3			ML/GM		- - 9	
5161						- -	(ML/GM) 9 - 10': Light brown SILT with ~30% gravel (up to 2.5 inches) with pulverized rock, soft, loose; no odor, no sheen
dry to moist	2.1			SW		10 — -	(SW) 10 - 12.25': Medium gray-brown, very fine to very coarse SAND with ~20-25% gravel (up to 5 inches) and ~3-5% coarse silt, dense; no odor, no sheen
						_ 	



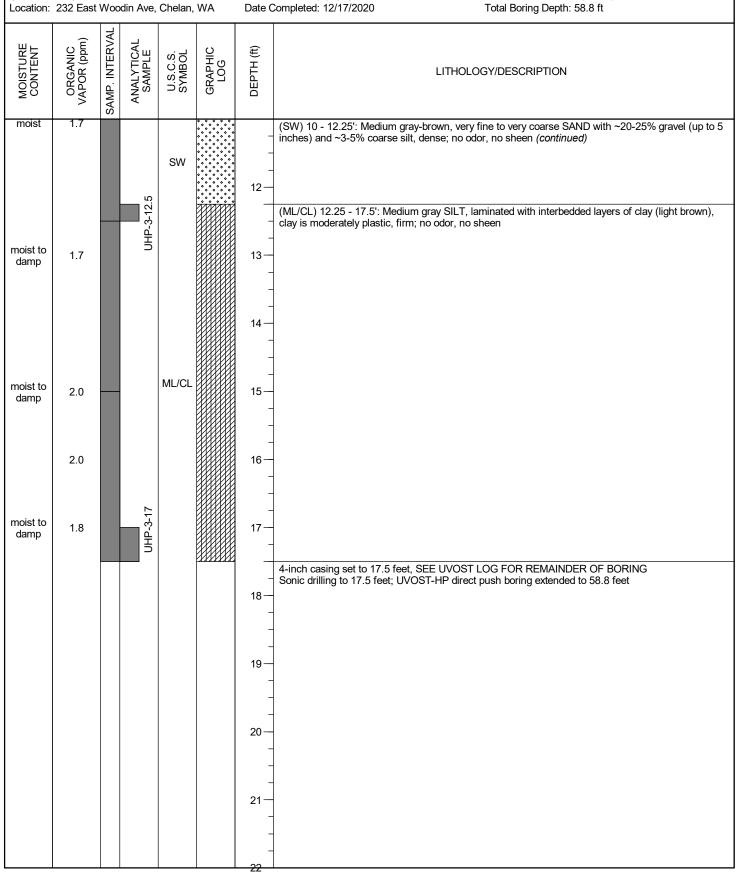
Project: Chevron Service Station #96590

Client: RELLC

Logged By: TD

Date Started: 11/4/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push





Project: Chevron Service Station #96590
Client: RELLC
Location: 232 Fast Woodin Ave. Chelan, WA

Logged By: TD
Date Started: 11/4/2020
Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 58.8 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						- - 23-	
						- 24 — -	
						- 25— - -	
						26 — - -	
						27 — - - -	
						28— - - - 29—	
						- - - 30—	
						- - 31—	
						32—	
						- - - 33	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/4/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 58.8 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - 34—	
						35— -	
						- 36 — -	
						37 — - -	
						38 <del></del>	
						39 <i>-</i>	
						40 — - -	
						41—	
						42 — - - - 43 —	
						- - - 44	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/4/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 58.8 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH</b> (ft)	LITHOLOGY/DESCRIPTION
						- - 45 —	
						- 46 — -	
						- 47 — - -	
						- 48 — - -	
						49 — - -	
						50 — - -	
						51— - - - 52—	
						53—	
						- - 54 —	
						- - - <del>55</del>	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/4/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Client: R Location:	232 East	Woo	din Ave,	Chelan,	WA	Date S Date C	Started: 11/4/2020 Drill Method: Air Knife/Sonic/Direct Push Completed: 12/17/2020 Total Boring Depth: 58.8 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						- - 56	
						57 — - -	
						58 — - -	
						59 — - - - 60 —	Bottom of borehole at 58.8 feet.
						61—	
						62—	
						63 — -	
						64 — - -	
						65 — - - - -	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/4/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Location:	232 East	T . I	ain Ave,	Chelan,	VVA	Date	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						_	Asphalt, 4 inches
				GW		- 1- - -	(GW) 0.3 - 1.75': Large cobbles (up to 10 inches) with fine to very coarse sand
moist	3.0	any.		ML		2— - - 3—	(ML) 2 - 2.5': Dark brown SILT, firm; no odor, no sheen
moist	3.3	any.		ML		- 4 — - -	(ML) 4 - 4.5': Medium dark brown SILT, firm; no odor, no sheen
moist	2.5	m		ML		5 —	(ML) 6 - 6.5': Medium gray-brown SILT, firm, no plasticity; no odor, no sheen
moist	3.1	ann	UHP-4-8	ML		7— - - 8— -	(ML) 8 - 8.5': Medium olive-gray, coarse SILT with ~5% very fine sand and ~10% gravel (up to 1 inch), firm; no odor, no sheen
moist	0.7			SW		9	(SW) 8 - 9' (sonic core): Medium brown SILT with ~10% very fine sand and ~15% gravel (up to 2.5 inches), firm; no odor, no sheen  (SW) 9 - 10': Light brown, very fine to very coarse SAND with ~4% silt and ~15% gravel (up to 3 inches), dense; no odor, no sheen  (SM) 10 - 11': (Possible slough) Light gray-brown, silty, very fine SAND with ~15% gravel (up to 1 inch), pulverized rock, loose; no odor, no sheen



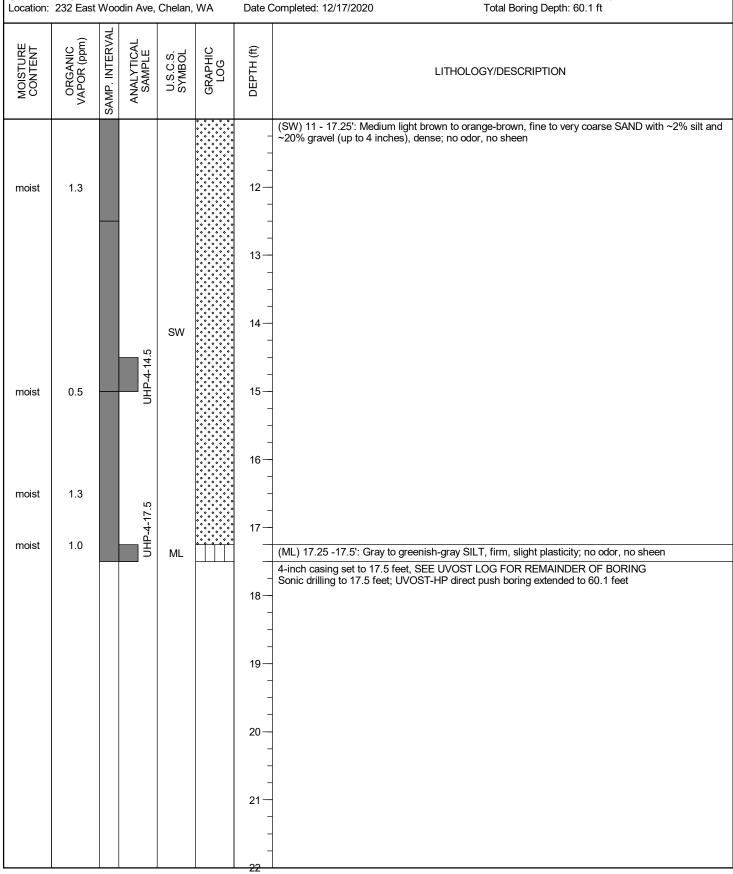
Project: Chevron Service Station #96590 Client: RELLC

Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/4/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Total Boring Depth: 60.1 ft





Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/4/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date (	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						- - - 23	
						- - - 24	
						- - 25—	
						- 26 — -	
						27 — 	
						 28  	
						29— - -	
						30 — - -	
						31 —	
						32 — - - - - - -	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/4/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date 0	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						- - - 34 —	
						- - 35—	
						- 36 —	
						37—	
						- 38 — -	
						39 — - -	
						40 —	
						41— - - 42—	
						42—	
						- - - <del>44</del>	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/4/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Client: R Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Started: 11/4/2020 Drill Method: Air Knife/Sonic/Direct Push Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						- - - 45 —	
						46 — -	
						47 — - -	
						48 — - - - 49 —	
						- - 50—	
						51 —	
						52— - -	
						53 — - -	
						54 — - - - - - -	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/4/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - - 56 —	
						- 57 <i>-</i> -	
						58 <i>-</i> -	
						59 —	
						- 60 <u>-</u> -	Bottom of borehole at 60.1 feet.
						61 <del></del> 61	
						62— - -	
						63 — - -	
						- 64 — - -	
						65 <del></del> 	
						-66	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/8/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date 0	Completed: 12/17/2020 Total Boring Depth: 60 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
							Asphalt, 3 inches
moist	3.0	an		ML		- 1— - - 2— - -	(ML) 2 - 2.5': Dark brown SILT, soft to firm; no odor, no sheen
moist to damp	2.6	an		ML		3— 4— 5—	(ML) 4 - 4.5': Medium brown SILT, firm; no odor, no sheen
moist	2.7	ans.		ML		6— -	Cobbles start at 5.5 feet  (ML) 6 - 6.25': Dark brown SILT with ~5% very fine to medium sand, some gravel (up to a few inches), firm; no odor, no sheen
moist	1.7	m	10	SW		7— -	(SW) 7 - 7.5': Medium brown, gravelly, fine to very coarse SAND, with trace silt and ~25% gravel (up to a few inches, max 12 inches), dense; no odor, no sheen
moist	1.1	m	UHP-5-7.5			8— 8—	(SW) 7.5 - 8': SAA; no odor, no sheen  No recovery
moist	0.1			GM SW			(GM) 9.25 - 10': dry, pulverized rock (up to 3.5 inches), gray silt matrix between gravel, with some very fine to medium sand (possible slough); no odor, no sheen  (SW) 10 - 14.5': Medium yellow-brown, gravelly, fine to very coarse SAND, gravel up to 4 inches, trace silt with large rocks/gravel; no odor, no sheen



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/8/2020 Date Completed: 12/17/2020

Location:	232 Easi	VV 00	uiii Ave,	Chelan,	VVA	Date	Completed: 12/17/2020 Total Boring Depth: 60 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
moist	0.1					- - 12—	(SW) 10 - 14.5': Medium yellow-brown, gravelly, fine to very coarse SAND, gravel up to 4 inches, trace silt with large rocks/gravel; no odor, no sheen (continued)
moist	0.6			SW		- 13 <del></del> -	
moist	0.3		UHP-5-14.5	ML/CL		14 — - - - 15 —	(ML/CL) 14.5 - 15': Light brown-gray SILT with clay laminations, firm; no odor, no sheen
						- - - 16—	4-inch casing set to 15 feet, SEE UVOST LOG FOR REMAINDER OF BORING Sonic drilling to 15 feet; UVOST-HP direct push boring extended to 60.0 feet
						- - 17 — - -	
						 18 - -	
						19 — - - 20 —	
						- 21 — -	
						- <del>22</del>	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/8/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date 0	Completed: 12/17/2020 Total Boring Depth: 60 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						- - - 23—	
						  24	
						- 25— -	
						26 — -	
						27 — - - -	
						28 — - - -	
						29 — - - - 30 —	
						- - 31 —	
						- 32—	
						- - 33	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/8/2020 Date Completed: 12/17/2020

Location:	232 East	VVOO	ain Ave,	Chelan,	VVA	Date	Completed: 12/17/2020 Total Boring Depth: 60 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						-	
						34 <i>-</i>	
						- 35—	
						36—	
						- -	
						37 — - -	
						38— -	
						39 <del></del>	
						40—	
						- - 41 <i>-</i>	
						-	
						42 — - -	
						43— - -	
						44	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/8/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 60 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - 45 —	
						- 46 — -	
						- 47 — -	
						- 48 — - -	
						49 — - -	
						50 — - -	
						51— - - - 52—	
						53 —	
						- - 54 —	
						- - - 55	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/8/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 60 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						- - 56—	
						- 57 — -	
						- 58 — - -	
						- 59 — - -	
						60-	Bottom of borehole at 60.0 feet.
						61 <del></del> 	
						62 <del>-</del> -	
						63 <i>-</i>	
						64 — - -	
						- 65 — - -	
						66	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/9/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Location:	ELLC 232 East	Wood	din Ave,	Chelan,	WA		Started: 11/9/2020 Drill Method: Air Knife/Sonic/Direct Push Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
						-	Asphalt, 5 inches
moist	1.4	Sun		ML		1— 1— 2— - 3—	(ML) 2 - 2.5': Dark brown SILT with minor plant debris and ~5% sand and gravel, firm; no odor, no sheen
moist	1.2	M		ML		- - 4- - - - 5-	(ML) 4 - 4.5': Light brown SILT, firm; no odor, no sheen
moist	1.6	any.		SM		- - 6- - - - 7-	(SM) 6 - 6.5': Medium light brown, very fine SAND with ~10% coarser sand and gravel (up to 1 inch) and ~25% coarse silt, loose; no odor, no sheen
moist	2.8	ans.				8— 8—	(SW) 8.25 - 8.75': Medium light brown, very fine to very coarse SAND with gravel up to 2 inches, dense; no odor, no sheen
moist	0.9			SW SP		- 9 <del>\</del> -	(SW) 8 - 9' (sonic core): Medium brown very fine to very coarse SAND with 4-5% silt, 10% gravel (up to 1.5 inches), dense; no odor, no sheen  (SP) 9 - 10': Light brown, very fine to fine SAND with ~3% coarse silt and 4% gravel (up to 0.5 inches), medium dense; no odor, no sheen
moist	2.0			SW		- 10 — - - -	(SW) 10 - 12.75': Medium yellow-brown, very fine to very coarse SAND with ~4% silt and 10% gravel (up to 2 inches), dense; no odor, globular (organic) sheen



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/9/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Location:	232 East		din Ave,	Chelan,	WA	Date (	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DЕРТН (ft)	LITHOLOGY/DESCRIPTION
moist	1.6	3		SW		- - -	(SW) 10 - 12.75': Medium yellow-brown, very fine to very coarse SAND with ~4% silt and 10% gravel (up to 2 inches), dense; no odor, globular (organic) sheen (continued)
			6-13			12 - -	
moist	1.6		UHP-6-13	SP		13-	(SP) 12.75 - 13.25': Very fine to medium SAND with trace (<1%) coarse silt and ~10% coarser san and gravel (up to 0.7 inches), dense; no odor, no sheen  4-inch casing set to 13.25 feet, SEE UVOST LOG FOR REMAINDER OF BORING
						14 <i>-</i> -	Sonic drilling to 13.25 feet; UVOST-HP direct push boring extended to 60.1 feet
						- - 15—	
						- - -	
						16 <del></del> -	
						17 <del>-</del>	
						18-	
						- - 19—	
						-	
						20 <del>-</del> -	
						21 <del>-</del> -	
						- - <del>22</del>	



Project: Chevron Service Station #96590 Client: RELLC

Logged By: TD Date Started: 11/9/2020

Driller: AEC Drilling Drill Method: Air Knife/Sonic/Direct Push

Client: R Location:	ELLC 232 East	Woo	din Ave,	Chelan,	WA	Date S Date C	Started: 11/9/2020 Drill Method: Air Knife/Sonic/Direct Push Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - - 23—	
						24— - -	
						25 — - - - 26 —	
						- - - 27 —	
						28— -	
						29 — - - - 30 —	
						31—	
						32— 	
						- 	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/9/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						34—	
						- 35— -	
						- 36 — -	
						- 37 — - -	
						38— - -	
						39 — - -	
						40 —	
						41— - - 42—	
						- - - 43	
						- - - 44	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/9/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - 45	
						- 46 — -	
						- 47 — - -	
						- 48 — - -	
						49— - - 50—	
						50 - - 51—	
						- - 52 —	
						- 53 — -	
						54 — - -	
						- - 55	



Project: Chevron Service Station #96590 Client: RELLC Location: 232 East Woodin Ave, Chelan, WA

Logged By: TD Date Started: 11/9/2020 Date Completed: 12/17/2020

Location:	232 East	Woo	din Ave,	Chelan,	WA	Date C	Completed: 12/17/2020 Total Boring Depth: 60.1 ft
MOISTURE	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	<b>DEPTH (ft)</b>	LITHOLOGY/DESCRIPTION
						- - 56—	
						- - 57 —	
						- 58 — - -	
						59 — - - -	
						60 <u> —                                   </u>	Bottom of borehole at 60.1 feet.
						61 <del></del> 	
						62 <del></del>	
						63 — - -	
						64 —	
						65 — - - - -	

Appendix C: Laboratory Analysis Reports – Pace Analytical





# ANALYTICAL REPORT

November 23, 2020

### Leidos Inc.- Bothell, WA

Sample Delivery Group: L1285650 Samples Received: 11/13/2020

Project Number:

WA-02 Chelan Description:

96590 Site:

Report To: Russ Shropshire

18939 120th Avenue NE

Suite 112

Bothell, WA 98011

Entire Report Reviewed By:

Buar Ford

Brian Ford

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.















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Sc: Sample Chain of Custody



















#### SAMPLE SUMMARY

Collected by

Collected by

Collected by

Collected by

Collected by

Tom Dube

Tom Dube

Tom Dube

Tom Dube

ONITI	AD NI	ATION	1/ / / /
ONEL	-AB. IV	ATION	וטועעו

Collected date/time Received date/time

11/13/20 09:00

11/13/20 09:00

11/13/20 09:00

11/13/20 09:00

11/03/20 13:30

11/04/20 14:40

11/04/20 08:50

11/05/20 08:40

UHP-1-S-8-201103 L1285650-01 Solid			Tom Dube	11/03/20 09:30	11/13/20 09:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:04	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/03/20 09:30	11/17/20 14:49	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/03/20 09:30	11/17/20 05:01	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	1	11/16/20 23:34	11/17/20 09:36	JDG	Mt. Juliet, TN



Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:07	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/03/20 13:30	11/17/20 15:12	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/03/20 13:30	11/17/20 05:21	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	1	11/16/20 23:34	11/17/20 10:42	JDG	Mt. Juliet, TN

#### UHP-3-S-7-201104 L1285650-03 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:10	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/04/20 14:40	11/17/20 15:34	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/04/20 14:40	11/17/20 05:42	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	1	11/16/20 23:34	11/17/20 20:12	TJD	Mt. Juliet, TN

#### UHP-4-S-8-201104 L1285650-04 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:12	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/04/20 08:50	11/17/20 15:57	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/04/20 08:50	11/17/20 06:03	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	1	11/16/20 23:34	11/17/20 20:25	TJD	Mt. Juliet, TN

#### SRI5-1-S-8.5-201105 L1285650-05 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:15	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/05/20 08:40	11/17/20 16:19	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/05/20 08:40	11/17/20 06:23	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	1	11/16/20 23:34	11/17/20 11:08	JDG	Mt. Juliet, TN





















### SAMPLE SUMMARY

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Collected date/time Received date/time

			Conceted by	Conceted date/time	MCCCIVCU UU	ter time
SRI5-2-S-8-201105 L1285650-06 Solid			Tom Dube	11/05/20 11:37	11/13/20 09:0	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:18	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/05/20 11:37	11/17/20 16:41	DWR	Mt. Juliet, Ti
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/05/20 11:37	11/17/20 06:43	ADM	Mt. Juliet, Ti
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	10	11/16/20 23:34	11/17/20 21:17	TJD	Mt. Juliet, Ti
			Collected by	Collected date/time	Received da	te/time
SRI5-3-S-8.5-201105 L1285650-07 Solid			Tom Dube	11/05/20 14:12	11/13/20 09:0	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TI
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:26	EL	Mt. Juliet, T
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/05/20 14:12	11/17/20 17:07	DWR	Mt. Juliet, T
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1	11/05/20 14:12	11/17/20 07:04	ADM	Mt. Juliet, T
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	1	11/16/20 23:34	11/17/20 10:55	JDG	Mt. Juliet, TI
			Collected by	Collected date/time	Received da	te/time
SRI5-4-S-8.5-201107 L1285650-08 Solid			Tom Dube	11/07/20 08:14	11/13/20 09:0	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, Ti
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:29	EL	Mt. Juliet, Ti
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579747	28.2	11/07/20 08:14	11/20/20 11:35	ADM	Mt. Juliet, T
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1577432	1.13	11/07/20 08:14	11/17/20 07:24	ADM	Mt. Juliet, TI

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:31	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579747	30.5	11/07/20 09:42	11/20/20 11:55	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	1.22	11/07/20 09:42	11/21/20 10:10	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1578128	1	11/18/20 13:47	11/19/20 01:44	CLG	Mt. Juliet, TN

WG1578128

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11/18/20 13:47

Collected by

Collected by

Tom Dube

Tom Dube

11/19/20 01:31

11/07/20 09:42

11/07/20 10:45

CLG

11/13/20 09:00

11/13/20 09:00

Collected date/time Received date/time

Collected date/time Received date/time

Mt. Juliet, TN

#### SRI5-6-S-8-201107 L1285650-10 Solid

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Method	Batch	Dilution	Preparation	Analysis	Analyst	Location			
			date/time	date/time					
Total Solids by Method 2540 G-2011	WG1579044	1	11/20/20 03:30	11/20/20 03:39	KBC	Mt. Juliet, TN			
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:34	EL	Mt. Juliet, TN			
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579747	26.5	11/07/20 10:45	11/20/20 12:16	ADM	Mt. Juliet, TN			
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	1.06	11/07/20 10:45	11/21/20 10:29	BMB	Mt. Juliet, TN			
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1578128	1	11/18/20 13:47	11/19/20 02:22	CLG	Mt. Juliet, TN			

























			Collected by	Collected date/time	Received da	
TP2-S-9.75-201105 L1285650-11 Solid			Tom Dube	11/05/20 11:23	11/13/20 09:0	)()
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579045	1	11/20/20 03:20	11/20/20 03:28	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1576797	1	11/17/20 05:52	11/19/20 18:37	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1577750	25	11/05/20 11:23	11/17/20 17:29	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1578177	1	11/05/20 11:23	11/18/20 21:35	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1577257	10	11/16/20 23:34	11/17/20 21:43	TJD	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
TB-1-201103 L1285650-12 GW			Tom Dube	11/03/20 12:00	11/13/20 09:0	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1576494	1	11/14/20 19:09	11/14/20 19:09	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1576892	1	11/15/20 15:03	11/15/20 15:03	ACG	Mt. Juliet, TN

SAMPLE SUMMARY























All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

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Brian Ford Project Manager

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Collected date/time: 11/03/20 09:30

## SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	78.0		1	11/20/2020 03:39	<u>WG1579044</u>

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	7.25		0.267	0.641	1	11/19/2020 18:04	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1.42	J	1.35	3.98	25	11/17/2020 14:49	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/17/2020 14:49	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000744	0.00159	1	11/17/2020 05:01	WG1577432
Toluene	U		0.00207	0.00797	1	11/17/2020 05:01	WG1577432
Ethylbenzene	U		0.00117	0.00398	1	11/17/2020 05:01	WG1577432
Total Xylenes	U		0.00140	0.0104	1	11/17/2020 05:01	WG1577432
Methyl tert-butyl ether	U		0.000558	0.00159	1	11/17/2020 05:01	WG1577432
1,2-Dichloroethane	U		0.00103	0.00398	1	11/17/2020 05:01	WG1577432
1,2-Dibromoethane	U		0.00103	0.00398	1	11/17/2020 05:01	WG1577432
(S) Toluene-d8	119			75.0-131		11/17/2020 05:01	WG1577432
(S) 4-Bromofluorobenzene	113			67.0-138		11/17/2020 05:01	WG1577432
(S) 1,2-Dichloroethane-d4	94.8			70.0-130		11/17/2020 05:01	WG1577432



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.70	5.13	1	11/17/2020 09:36	WG1577257
Residual Range Organics (RRO)	U		4.27	12.8	1	11/17/2020 09:36	WG1577257
(S) o-Terphenyl	47.4			18.0-148		11/17/2020 09:36	WG1577257

#### ONE LAB. NATIONWIDE.

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	97.5		1	11/20/2020 03:39	WG1579044

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#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.80		0.213	0.513	1	11/19/2020 18:07	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		0.892	2.63	25	11/17/2020 15:12	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	99.7			77.0-120		11/17/2020 15:12	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000491	0.00105	1	11/17/2020 05:21	WG1577432
Toluene	U		0.00137	0.00526	1	11/17/2020 05:21	WG1577432
Ethylbenzene	U		0.000775	0.00263	1	11/17/2020 05:21	WG1577432
Total Xylenes	U		0.000926	0.00684	1	11/17/2020 05:21	WG1577432
Methyl tert-butyl ether	U		0.000368	0.00105	1	11/17/2020 05:21	WG1577432
l,2-Dichloroethane	U		0.000683	0.00263	1	11/17/2020 05:21	WG1577432
1,2-Dibromoethane	U		0.000682	0.00263	1	11/17/2020 05:21	WG1577432
(S) Toluene-d8	120			75.0-131		11/17/2020 05:21	WG1577432
(S) 4-Bromofluorobenzene	135			67.0-138		11/17/2020 05:21	WG1577432
(S) 1,2-Dichloroethane-d4	95.3			70.0-130		11/17/2020 05:21	WG1577432



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.36	4.10	1	11/17/2020 10:42	WG1577257
Residual Range Organics (RRO)	U		3.41	10.3	1	11/17/2020 10:42	WG1577257
(S) o-Terphenyl	63.8			18.0-148		11/17/2020 10:42	WG1577257

ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	94.5		1	11/20/2020 03:39	WG1579044



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.65		0.220	0.529	1	11/19/2020 18:10	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1.49	J	0.955	2.82	25	11/17/2020 15:34	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	98.6			77.0-120		11/17/2020 15:34	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	<u>Qualifier</u>	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Senzene	U		0.000526	0.00113	1	11/17/2020 05:42	WG1577432
luene	0.00271	J	0.00146	0.00563	1	11/17/2020 05:42	WG1577432
hylbenzene	U		0.000830	0.00282	1	11/17/2020 05:42	WG1577432
tal Xylenes	U		0.000991	0.00732	1	11/17/2020 05:42	WG1577432
thyl tert-butyl ether	0.000458	<u>J</u>	0.000394	0.00113	1	11/17/2020 05:42	WG1577432
Dichloroethane	U		0.000731	0.00282	1	11/17/2020 05:42	WG1577432
Dibromoethane	U		0.000730	0.00282	1	11/17/2020 05:42	WG1577432
S) Toluene-d8	129			75.0-131		11/17/2020 05:42	WG1577432
S) 4-Bromofluorobenzene	110			67.0-138		11/17/2020 05:42	WG1577432
S) 1,2-Dichloroethane-d4	93.3			70.0-130		11/17/2020 05:42	WG1577432



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.41	4.23	1	11/17/2020 20:12	WG1577257
Residual Range Organics (RRO)	5.90	<u>J</u>	3.52	10.6	1	11/17/2020 20:12	WG1577257
(S) o-Terphenyl	63.2			18.0-148		11/17/2020 20:12	WG1577257

Collected date/time: 11/04/20 08:50

# SAMPLE RESULTS - 04

#### ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	84.6		1	11/20/2020 03:39	WG1579044



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.25		0.246	0.591	1	11/19/2020 18:12	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.17	3.45	25	11/17/2020 15:57	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/17/2020 15:57	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000644	0.00138	1	11/17/2020 06:03	WG1577432
Toluene	U		0.00179	0.00690	1	11/17/2020 06:03	WG1577432
Ethylbenzene	U		0.00102	0.00345	1	11/17/2020 06:03	WG1577432
Total Xylenes	U		0.00121	0.00897	1	11/17/2020 06:03	WG1577432
Methyl tert-butyl ether	U		0.000483	0.00138	1	11/17/2020 06:03	WG1577432
1,2-Dichloroethane	U		0.000896	0.00345	1	11/17/2020 06:03	WG1577432
1,2-Dibromoethane	U		0.000894	0.00345	1	11/17/2020 06:03	WG1577432
(S) Toluene-d8	89.4			75.0-131		11/17/2020 06:03	WG1577432
(S) 4-Bromofluorobenzene	109			67.0-138		11/17/2020 06:03	WG1577432
(S) 1,2-Dichloroethane-d4	95.8			70.0-130		11/17/2020 06:03	WG1577432



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### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (drv)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.57	4.73	1	11/17/2020 20:25	WG1577257
Residual Range Organics (RRO)	11.1	<u>J</u>	3.93	11.8	1	11/17/2020 20:25	WG1577257
(S) o-Terphenyl	65.4			18.0-148		11/17/2020 20:25	WG1577257

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#### ONE LAB. NATIONWIDE.

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	96.7		1	11/20/2020 03:39	WG1579044



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.30		0.215	0.517	1	11/19/2020 18:15	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1.12	J	0.906	2.67	25	11/17/2020 16:19	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	99.2			77.0-120		11/17/2020 16:19	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000499	0.00107	1	11/17/2020 06:23	WG1577432
Toluene	U		0.00139	0.00534	1	11/17/2020 06:23	WG1577432
Ethylbenzene	U		0.000787	0.00267	1	11/17/2020 06:23	WG1577432
Total Xylenes	U		0.000940	0.00694	1	11/17/2020 06:23	WG1577432
Methyl tert-butyl ether	U		0.000374	0.00107	1	11/17/2020 06:23	WG1577432
1,2-Dichloroethane	0.000959	<u>J</u>	0.000693	0.00267	1	11/17/2020 06:23	WG1577432
1,2-Dibromoethane	U		0.000692	0.00267	1	11/17/2020 06:23	WG1577432
(S) Toluene-d8	103			75.0-131		11/17/2020 06:23	WG1577432
(S) 4-Bromofluorobenzene	108			67.0-138		11/17/2020 06:23	WG1577432
(S) 1.2-Dichloroethane-d4	93.8			70.0-130		11/17/2020 06:23	WG1577432



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.37	4.13	1	11/17/2020 11:08	WG1577257
Residual Range Organics (RRO)	U		3.44	10.3	1	11/17/2020 11:08	WG1577257
(S) o-Terphenyl	65.2			18.0-148		11/17/2020 11:08	WG1577257

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	95.8		1	11/20/2020 03:39	WG1579044

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	4.03		0.217	0.522	1	11/19/2020 18:18	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1.15	<u>J</u>	0.924	2.72	25	11/17/2020 16:41	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	99.3			77.0-120		11/17/2020 16:41	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000509	0.00109	1	11/17/2020 06:43	WG1577432
Toluene	U		0.00142	0.00545	1	11/17/2020 06:43	WG1577432
Ethylbenzene	U		0.000803	0.00272	1	11/17/2020 06:43	WG1577432
Total Xylenes	0.00109	J	0.000959	0.00708	1	11/17/2020 06:43	WG1577432
Methyl tert-butyl ether	U		0.000381	0.00109	1	11/17/2020 06:43	WG1577432
1,2-Dichloroethane	U		0.000707	0.00272	1	11/17/2020 06:43	WG1577432
1,2-Dibromoethane	U		0.000706	0.00272	1	11/17/2020 06:43	WG1577432
(S) Toluene-d8	104			75.0-131		11/17/2020 06:43	WG1577432
(S) 4-Bromofluorobenzene	123			67.0-138		11/17/2020 06:43	WG1577432
(S) 1,2-Dichloroethane-d4	93.8			70.0-130		11/17/2020 06:43	WG1577432



#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	*	· · · · ·					
	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		13.9	41.7	10	11/17/2020 21:17	WG1577257
Residual Range Organics (RRO)	U		34.7	104	10	11/17/2020 21:17	WG1577257
(S) o-Terphenyl	46.8			18.0-148		11/17/2020 21:17	WG1577257

#### Sample Narrative:

L1285650-06 WG1577257: Dilution due to matrix impact during concentration procedure.

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	95.1		1	11/20/2020 03:39	WG1579044

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.82		0.219	0.526	1	11/19/2020 18:26	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		0.938	2.77	25	11/17/2020 17:07	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	98.4			77.0-120		11/17/2020 17:07	WG1577750



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000517	0.00111	1	11/17/2020 07:04	WG1577432
Toluene	U		0.00144	0.00553	1	11/17/2020 07:04	WG1577432
Ethylbenzene	U		0.000815	0.00277	1	11/17/2020 07:04	WG1577432
Total Xylenes	0.00122	<u>J</u>	0.000974	0.00719	1	11/17/2020 07:04	WG1577432
Methyl tert-butyl ether	U		0.000387	0.00111	1	11/17/2020 07:04	WG1577432
1,2-Dichloroethane	U		0.000718	0.00277	1	11/17/2020 07:04	WG1577432
1,2-Dibromoethane	U		0.000717	0.00277	1	11/17/2020 07:04	WG1577432
(S) Toluene-d8	104			75.0-131		11/17/2020 07:04	WG1577432
(S) 4-Bromofluorobenzene	114			67.0-138		11/17/2020 07:04	WG1577432
(S) 1,2-Dichloroethane-d4	95.6			70.0-130		11/17/2020 07:04	WG1577432



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.40	4.21	1	11/17/2020 10:55	WG1577257
Residual Range Organics (RRO)	U		3.50	10.5	1	11/17/2020 10:55	WG1577257
(S) o-Terphenyl	57.5			18.0-148		11/17/2020 10:55	WG1577257

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	73.1		1	11/20/2020 03:39	WG1579044



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.63		0.285	0.684	1	11/19/2020 18:29	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	2.10	J	1.62	4.78	28.2	11/20/2020 11:35	WG1579747
(S) a,a,a-Trifluorotoluene(FID)	106			77.0-120		11/20/2020 11:35	WG1579747



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	<u>Qualifier</u>	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00889		0.000894	0.00191	1.13	11/17/2020 07:24	WG1577432
oluene	0.0111		0.00249	0.00957	1.13	11/17/2020 07:24	WG1577432
Ethylbenzene	U		0.00141	0.00479	1.13	11/17/2020 07:24	WG1577432
otal Xylenes	U		0.00168	0.0125	1.13	11/17/2020 07:24	WG1577432
Methyl tert-butyl ether	U		0.000671	0.00191	1.13	11/17/2020 07:24	WG1577432
2-Dichloroethane	0.00148	J	0.00124	0.00479	1.13	11/17/2020 07:24	WG1577432
2-Dibromoethane	U		0.00124	0.00479	1.13	11/17/2020 07:24	WG1577432
(S) Toluene-d8	99.3			75.0-131		11/17/2020 07:24	WG1577432
(S) 4-Bromofluorobenzene	114			67.0-138		11/17/2020 07:24	WG1577432
(S) 1,2-Dichloroethane-d4	94.7			70.0-130		11/17/2020 07:24	WG1577432



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.82	5.47	1	11/19/2020 01:31	WG1578128
Residual Range Organics (RRO)	U		4.56	13.7	1	11/19/2020 01:31	WG1578128
(S) o-Terphenyl	77.4			18.0-148		11/19/2020 01:31	WG1578128

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	78.3		1	11/20/2020 03:39	WG1579044

### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.32		0.266	0.639	1	11/19/2020 18:31	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	6.90		1.55	4.59	30.5	11/20/2020 11:55	WG1579747
(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120		11/20/2020 11:55	WG1579747



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	0.0176		0.000859	0.00184	1.22	11/21/2020 10:10	WG1580286
ene	0.0188		0.00240	0.00919	1.22	11/21/2020 10:10	WG1580286
ylbenzene	U		0.00135	0.00459	1.22	11/21/2020 10:10	WG1580286
al Xylenes	0.00280	J	0.00161	0.0119	1.22	11/21/2020 10:10	WG1580286
hyl tert-butyl ether	U		0.000643	0.00184	1.22	11/21/2020 10:10	WG1580286
Dichloroethane	U		0.00119	0.00459	1.22	11/21/2020 10:10	WG1580286
ibromoethane	U		0.00119	0.00459	1.22	11/21/2020 10:10	WG1580286
) Toluene-d8	104			75.0-131		11/21/2020 10:10	WG1580286
4-Bromofluorobenzene	98.3			67.0-138		11/21/2020 10:10	WG1580286
1,2-Dichloroethane-d4	89.5			70.0-130		11/21/2020 10:10	WG1580286



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### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.70	5.11	1	11/19/2020 01:44	WG1578128
Residual Range Organics (RRO)	U		4.25	12.8	1	11/19/2020 01:44	WG1578128
(S) o-Terphenyl	78.5			18.0-148		11/19/2020 01:44	WG1578128



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### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	78.0		1	11/20/2020 03:39	WG1579044



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.31		0.267	0.641	1	11/19/2020 18:34	WG1576797



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1.93	<u>J</u>	1.39	4.10	26.5	11/20/2020 12:16	WG1579747
(S) a,a,a-Trifluorotoluene(FID)	107			77.0-120		11/20/2020 12:16	WG1579747



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	0.00184		0.000766	0.00164	1.06	11/21/2020 10:29	WG1580286
oluene	0.00266	<u>J</u>	0.00213	0.00820	1.06	11/21/2020 10:29	WG1580286
thylbenzene	U		0.00121	0.00410	1.06	11/21/2020 10:29	WG1580286
Total Xylenes	U		0.00144	0.0107	1.06	11/21/2020 10:29	WG1580286
Methyl tert-butyl ether	U		0.000574	0.00164	1.06	11/21/2020 10:29	WG1580286
2-Dichloroethane	U		0.00106	0.00410	1.06	11/21/2020 10:29	WG1580286
2-Dibromoethane	U		0.00106	0.00410	1.06	11/21/2020 10:29	WG1580286
(S) Toluene-d8	105			75.0-131		11/21/2020 10:29	WG1580286
(S) 4-Bromofluorobenzene	97.5			67.0-138		11/21/2020 10:29	WG1580286
(S) 1,2-Dichloroethane-d4	90.3			70.0-130		11/21/2020 10:29	WG1580286



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	2.54	<u>J</u>	1.70	5.13	1	11/19/2020 02:22	WG1578128
Residual Range Organics (RRO)	U		4.27	12.8	1	11/19/2020 02:22	WG1578128
(S) o-Terphenyl	75.2			18.0-148		11/19/2020 02:22	WG1578128

Collected date/time: 11/05/20 11:23

### SAMPLE RESULTS - 11

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L1285650

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	94.0		1	11/20/2020 03:28	WG1579045

# <sup>2</sup>Tc

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.71		0.221	0.532	1	11/19/2020 18:37	WG1576797



Ss

#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	0.978	J	0.961	2.83	25	11/17/2020 17:29	WG1577750
(S) a,a,a-Trifluorotoluene(FID)	99.5			77.0-120		11/17/2020 17:29	WG1577750



СQс

Gl

#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000529	0.00113	1	11/18/2020 21:35	WG1578177
Toluene	U		0.00147	0.00567	1	11/18/2020 21:35	WG1578177
Ethylbenzene	U		0.000835	0.00283	1	11/18/2020 21:35	WG1578177
Total Xylenes	U		0.000997	0.00737	1	11/18/2020 21:35	WG1578177
Methyl tert-butyl ether	U		0.000397	0.00113	1	11/18/2020 21:35	WG1578177
1,2-Dichloroethane	U		0.000735	0.00283	1	11/18/2020 21:35	WG1578177
1,2-Dibromoethane	U		0.000734	0.00283	1	11/18/2020 21:35	WG1578177
(S) Toluene-d8	105			75.0-131		11/18/2020 21:35	WG1578177
(S) 4-Bromofluorobenzene	98.1			67.0-138		11/18/2020 21:35	WG1578177
(S) 1,2-Dichloroethane-d4	87.8			70.0-130		11/18/2020 21:35	WG1578177



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#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		14.1	42.5	10	11/17/2020 21:43	WG1577257
Residual Range Organics (RRO)	U		35.4	106	10	11/17/2020 21:43	WG1577257
(S) o-Terphenyl	68.3			18.0-148		11/17/2020 21:43	WG1577257

#### Sample Narrative:

L1285650-11 WG1577257: Dilution due to matrix impact during concentration procedure.

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Collected date/time: 11/03/20 12:00

#### L1285650

#### Volatile Organic Compounds (GC) by Method NWTPHGX

<u> </u>	'						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	52.3	<u>B J</u>	31.6	100	1	11/14/2020 19:09	WG1576494
(S) a,a,a-Trifluorotoluene(FID)	96.0			78.0-120		11/14/2020 19:09	WG1576494

# <sup>1</sup>Cp



# <sup>3</sup>Ss

Cn

### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		0.0941	1.00	1	11/15/2020 15:03	WG1576892
Toluene	U		0.278	1.00	1	11/15/2020 15:03	WG1576892
Ethylbenzene	U		0.137	1.00	1	11/15/2020 15:03	WG1576892
Total Xylenes	U		0.174	3.00	1	11/15/2020 15:03	WG1576892
Methyl tert-butyl ether	U		0.101	1.00	1	11/15/2020 15:03	WG1576892
1,2-Dichloroethane	U		0.0819	1.00	1	11/15/2020 15:03	WG1576892
1,2-Dibromoethane	U		0.126	1.00	1	11/15/2020 15:03	WG1576892
(S) Toluene-d8	107			80.0-120		11/15/2020 15:03	WG1576892
(S) 4-Bromofluorobenzene	96.4			77.0-126		11/15/2020 15:03	WG1576892
(S) 1,2-Dichloroethane-d4	92.3			70.0-130		11/15/2020 15:03	WG1576892













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Total Solids by Method 2540 G-2011

L1285650-01,02,03,04,05,06,07,08,09,10

#### Method Blank (MB)

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 %
 %

 Total Solids
 0.000



<sup>2</sup>Tc

# <sup>3</sup>Ss

#### L1285650-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1285650-01 11/20/20 03:39 • (DUP) R3595469-3 11/20/20 03:39

	Original Resul	t DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	78.0	77.6	1	0.525		10





#### Laboratory Control Sample (LCS)

(LCS) R3595469-2 11/20/20 03:39

(LC3) K3333403-2 11/20/2	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	





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L1285650-11

#### Total Solids by Method 2540 G-2011

#### Method Blank (MB)

(MB) R3595464-1	11/20/20	03:28	
		MR Result	MR Q

MB RDL MB Qualifier MB MDL % % %

Analyte Total Solids 0.000



#### L1285651-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1285651-04 11/20/20 03:28 • (DUP) R3595464-3 11/20/20 03:28

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	85.2	83.8	1	1.67		10

#### Laboratory Control Sample (LCS)

(LCS) R3595464-2 11/20/20 03:28



Ss











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Metals (ICP) by Method 6010D

L1285650-01,02,03,04,05,06,07,08,09,10,11

#### Method Blank (MB)

(MB) R3595294-7 11/20/2	20 01:30			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Lead	U		0.208	0.500









(LCS) R3595294-2 11/19/20	O 17:21				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Lead	100	98.2	98.2	80.0-120	

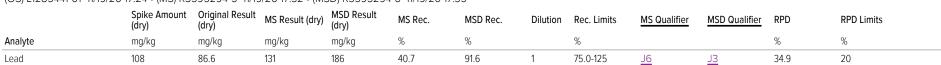


<sup>†</sup>Cn





(OS) L1285441-01 11/19/20 17:24 • (MS) R3595294-5 11/19/20 17:32 • (MSD) R3595294-6 11/19/20 17:35











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1285650-12

#### Method Blank (MB)

(MB) R3593192-2 11/14/20	0 14:20			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Gasoline Range Organics-NWTPH	43.0	<u>J</u>	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	95.6			78.0-120







#### Laboratory Control Sample (LCS)

(LCS) R3593192-1 11/14/2	0 13:19				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Gasoline Range Organics-NWTPH	5500	5100	92.7	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			87.0	78.0-120	







### L1284361-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1284361-01 11/14/20	23:10 • (MS) R3	3593192-3 11/14	l/20 23:58 • (l	MSD) R3593192	2-4 11/15/20 00	D:45							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Gasoline Range Organics-NWTPH	5500	879	4780	4560	70.9	66.9	1	10.0-155			4.71	21	
(S) a,a,a-Trifluorotoluene(FID)					84.0	83.5		78.0-120					

PAGE:



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Volatile Organic Compounds (GC) by Method NWTPHGX

L1285650-01,02,03,04,05,06,07,11

#### Method Blank (MB)

(MB) R3594074-3 11/17/2	0 12:22			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a.a.a-Trifluorotoluene(FID)	101			77.0-120









(LCS) R3594074-2 11/17/2	20 11:37				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	6.50	118	71.0-124	
(S) a.a.a-Trifluorotoluene(FID)			102	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1285650-08,09,10

### Method Blank (MB)

(MB) R3595748-2 11/20/2	20 09:23			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	111			77.0-120







### Laboratory Control Sample (LCS)

(LCS) R3595748-1 11/20/	20 08:41				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	5.68	103	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			104	77.0-120	







### L1285600-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(O3) L1265600-01 11/20/2	(IVIS) F	(3393/46-3 11/	20/20 19.32 • (	M20) K3595/	40-4 11/20/20	19.55						
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Gasoline Range Organics-NWTPH	145	1.21	92.7	117	63.1	79.6	25	10.0-149			22.9	27
(S) a,a,a-Trifluorotoluene(FID)					106	103		77.0-120				



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Volatile Organic Compounds (GC/MS) by Method 8260D

L1285650-12

### Method Blank (MB)

(S) 1,2-Dichloroethane-d4

(S) Toluene-d8

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

(MB) R3593222-2 11/15/20	0 10:48			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Ethylbenzene	U		0.137	1.00
Methyl tert-butyl ether	U		0.101	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	107			80.0-120
(S) 4-Bromofluorobenzene	99.6			77.0-126

## Laboratory Control Sample (LCS)

93.9

(LCS) R3593222-1 11/15	5/20 10:08				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Benzene	5.00	5.54	111	70.0-123	
1,2-Dibromoethane	5.00	4.92	98.4	80.0-122	
1,2-Dichloroethane	5.00	4.81	96.2	70.0-128	
Ethylbenzene	5.00	4.71	94.2	79.0-123	
Methyl tert-butyl ether	5.00	5.16	103	68.0-125	
Toluene	5.00	5.22	104	79.0-120	
Xylenes, Total	15.0	14.7	98.0	79.0-123	

















70.0-130

80.0-120

77.0-126

70.0-130

104

95.4

94.1

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1285650-01,02,03,04,05,06,07,08

### Method Blank (MB)

/A 4 D	DOE00047.0	11/10/20 22:21
(INIR	1 R359391/-2	11/16/20 23:21

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650













### Laboratory Control Sample (LCS)

89.4

78.4

107

(LCS) R3593917-1	11/16/20	22:20
------------------	----------	-------

(S) Toluene-d8

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	mg/kg	mg/kg	%	%
Benzene	0.125	0.122	97.6	70.0-123
1,2-Dibromoethane	0.125	0.127	102	74.0-128
1,2-Dichloroethane	0.125	0.132	106	65.0-131
Ethylbenzene	0.125	0.122	97.6	74.0-126
Methyl tert-butyl ether	0.125	0.140	112	66.0-132
Toluene	0.125	0.119	95.2	75.0-121
Xylenes, Total	0.375	0.368	98.1	72.0-127
(S) Toluene-d8			100	75.0-131
(S) 4-Bromofluorobenzene			127	67.0-138
(S) 1,2-Dichloroethane-d4			106	70.0-130







### L1285650-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

75.0-131

67.0-138

70.0-130

LCS Qualifier

(OS) L1285650-08 11/17/20 07:24 • (MS) R3593917-3 11/17/20 08:05 • (MSD) R3593917-4 11/17/20 08:25

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	0.239	0.00889	0.295	0.307	120	125	1.13	10.0-149			3.94	37
1,2-Dibromoethane	0.239	U	0.274	0.305	115	128	1.13	10.0-148			10.5	34
1,2-Dichloroethane	0.239	0.00148	0.273	0.278	114	116	1.13	10.0-148			1.85	35
Ethylbenzene	0.239	U	0.293	0.302	123	126	1.13	10.0-160			2.85	38
Methyl tert-butyl ether	0.239	U	0.269	0.269	113	113	1.13	11.0-147			0.000	35
Toluene	0.239	0.0111	0.385	0.359	156	146	1.13	10.0-156			6.83	38

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1285650-01,02,03,04,05,06,07,08

### L1285650-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1285650-08 11/17/20 07:24 • (MS) R3593917-3 11/17/20 08:05 • (MSD) R3593917-4 11/17/20 08:25

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Xylenes, Total	0.717	U	0.872	0.889	122	124	1.13	10.0-160			1.92	38
(S) Toluene-d8					113	102		75.0-131				
(S) 4-Bromofluorobenzene					125	108		67.0-138				
(S) 1.2-Dichloroethane-d4					98.6	99.6		70.0-130				



















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Volatile Organic Compounds (GC/MS) by Method 8260D

98.8

83.4

### Method Blank (MB)

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

(MB) R3594816-3 11/18/	20 17:48						
	MB Result	MB Qualifier	MB MDL	MB RDL			
Analyte	mg/kg		mg/kg	mg/kg			
Benzene	U		0.000467	0.00100			
1,2-Dibromoethane	U		0.000648	0.00250			
1,2-Dichloroethane	U		0.000649	0.00250			
Ethylbenzene	U		0.000737	0.00250			
Methyl tert-butyl ether	U		0.000350	0.00100			
Toluene	U		0.00130	0.00500			
Xylenes, Total	U		0.000880	0.00650			
(S) Toluene-d8	107			75.0-131			

### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

67.0-138

70.0-130

	1 (	,		'		,					
(LCS) R3594816-1 11/18/2	20 16:13 • (LCSD)	R3594816-2	11/18/20 16:32								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
Benzene	0.125	0.110	0.106	88.0	84.8	70.0-123			3.70	20	
1,2-Dibromoethane	0.125	0.117	0.116	93.6	92.8	74.0-128			0.858	20	
1,2-Dichloroethane	0.125	0.113	0.110	90.4	88.0	65.0-131			2.69	20	
Ethylbenzene	0.125	0.118	0.114	94.4	91.2	74.0-126			3.45	20	
Methyl tert-butyl ether	0.125	0.119	0.119	95.2	95.2	66.0-132			0.000	20	
Toluene	0.125	0.116	0.112	92.8	89.6	75.0-121			3.51	20	
Xylenes, Total	0.375	0.350	0.336	93.3	89.6	72.0-127			4.08	20	
(S) Toluene-d8				102	103	75.0-131					
(S) 4-Bromofluorobenzene	2			101	101	67.0-138					
(S) 1,2-Dichloroethane-d4				89.9	90.1	70.0-130					

### L1284009-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1284009-01 11/18/20 22:13 • (MS) R3594816-4 11/19/20 00:26 • (MSD) R3594816-5 11/19/20 00:45

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	1.10	U	1.20	1.27	110	116	8	10.0-149			5.24	37
1,2-Dibromoethane	1.10	U	0.0142	0.0543	1.30	4.96	8	10.0-148	<u>J6</u>	<u>J3 J6</u>	117	34
1,2-Dichloroethane	1.10	U	U	U	0.000	0.000	8	10.0-148	<u>J6</u>	<u>J6</u>	0.000	35
Ethylbenzene	1.10	0.0153	2.70	3.30	245	300	8	10.0-160	<u>J5</u>	<u>J5</u>	20.1	38
Methyl tert-butyl ether	1.10	U	U	U	0.000	0.000	8	11.0-147	<u>J6</u>	<u>J6</u>	0.000	35
Toluene	1.10	U	11.0	13.8	1000	1260	8	10.0-156	<u>J5</u>	<u>J5</u>	22.8	38

ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

SDG: L1285650

DATE/TIME: 11/23/20 18:07

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1285650-11

### L1284009-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1284009-01 11/18/20 22:13 • (MS) R3594816-4 11/19/20 00:26 • (MSD) R3594816-5 11/19/20 00:45

` '	` '		,	,								
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Xylenes, Total	3.29	0.0255	12.9	15.7	391	478	8	10.0-160	<u>J5</u>	<u>J5</u>	20.1	38
(S) Toluene-d8					101	122		75.0-131				
(S) 4-Bromofluorobenzene					105	128		67.0-138				
(S) 1,2-Dichloroethane-d4					88.3	87.1		70.0-130				

# <sup>2</sup>Tc







# <sup>5</sup>Sr









OS: Non-target compounds too high to run at a lower dilution.

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

L1285650-09,10

### Method Blank (MB)

(S) 1,2-Dichloroethane-d4

(MB) R3595951-2 11/21/20	07:46					
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	mg/kg		mg/kg	mg/kg		
Benzene	U		0.000467	0.00100		
1,2-Dibromoethane	U		0.000648	0.00250		
1,2-Dichloroethane	U		0.000649	0.00250		
Ethylbenzene	U		0.000737	0.00250		
Methyl tert-butyl ether	U		0.000350	0.00100		
Toluene	U		0.00130	0.00500		
Xylenes, Total	U		0.000880	0.00650		
(S) Toluene-d8	107			75.0-131		
(S) 4-Bromofluorobenzene	96.7			67.0-138		

### Laboratory Control Sample (LCS)

(LCS) R3595951-1 11/21/	20 06:48				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Benzene	0.125	0.109	87.2	70.0-123	
1,2-Dibromoethane	0.125	0.118	94.4	74.0-128	
1,2-Dichloroethane	0.125	0.101	80.8	65.0-131	
Ethylbenzene	0.125	0.112	89.6	74.0-126	
Methyl tert-butyl ether	0.125	0.100	80.0	66.0-132	
Toluene	0.125	0.112	89.6	75.0-121	
Xylenes, Total	0.375	0.329	87.7	72.0-127	
(S) Toluene-d8			101	75.0-131	
(S) 4-Bromofluorobenzene	2		101	67.0-138	
(S) 1,2-Dichloroethane-d4			84.8	70.0-130	

### L1286265-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

70.0-130

(OS) L1286265-01 11/21	/20 14.16 • (IVIS) R3	5595951-5 11/2	1/20 10.20 • (1	M3D) K339393	1-4 11/21/20 10	.47						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	50.0	11.3	142	131	261	239	400	10.0-149	<u>J5</u>	<u>J5</u>	8.06	37
1,2-Dibromoethane	50.0	U	52.9	47.1	106	94.2	400	10.0-148			11.6	34
1,2-Dichloroethane	50.0	U	49.0	48.1	98.0	96.2	400	10.0-148			1.85	35
Ethylbenzene	50.0	6.42	108	99.2	203	186	400	10.0-160	<u>J5</u>	<u>J5</u>	8.49	38
Methyl tert-butyl ether	50.0	U	43.3	48.7	86.6	97.4	400	11.0-147			11.7	35
Toluene	50.0	23.2	250	217	454	388	400	10.0-156	<u>J5</u>	<u>J5</u>	14.1	38
Xylenes, Total	150	50.7	587	529	358	319	400	10.0-160	<u>J5</u>	<u>J5</u>	10.4	38

ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

SDG: L1285650 DATE/TIME: 11/23/20 18:07

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Ср

















(S) 1,2-Dichloroethane-d4

### QUALITY CONTROL SUMMARY

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1285650-09,10

### L1286265-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286265-01 11/21/20	(OS) L1286265-01 11/21/20 14:16 • (MS) R3595951-3 11/21/20 16:28 • (MSD) R3595951-4 11/21/20 16:47												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%	
(S) Toluene-d8					101	102		75.0-131					
(S) 4-Bromofluorobenzene					101	102		67.0-138					

70.0-130

91.1

87.6



















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Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT L1285650-01,02,03,04,05,06,07,11

### Method Blank (MB)

(MB) R3594118-1 11/17/20 0	8:57			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	68.9			18.0-148







### Laboratory Control Sample (LCS)

(LCS) R3594118-2 11/17/20	(LCS) R3594118-2 11/17/20 09:10												
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier								
Analyte	mg/kg	mg/kg	%	%									
Diesel Range Organics (DRO)	50.0	34.5	69.0	50.0-150									
(S) o-Terphenyl			64.9	18.0-148									







### L1284425-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1284425-02	11/17/20 11:40	(MAC) DOEQA110 0	11/17/20 12:01	(MACD) D2E0/110	2 / 11/17/2∩ 12·17
1031 L1204423-02	11/1//20 11.40 •	C-011 PECCEN (CIVI)	11/1//20 12.01 •	11112D1 K3334110	) <del>-4</del>   / //2U  2. /

(00) 21201120 02 11/11/2	0 11. 10 (1110) 110	303 1110 3 11/17	/20 12.01 (111	3D) 11000 1110 1	11/17/20 12.17							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Diesel Range Organics (DRO)	50.0	29.7	47.3	56.5	35.2	53.6	1	50.0-150	<u>J6</u>		17.7	20
(S) o-Terphenyl					49.8	59.3		18.0-148				





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Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

L1285650-08,09,10

### Method Blank (MB)

(MB) R3594873-1 11/18/20 22:59						
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	mg/kg		mg/kg	mg/kg		
Diesel Range Organics (DRO)	U		1.33	4.00		
Residual Range Organics (RRO)	U		3.33	10.0		
(S) o-Terphenyl	88.1			18.0-148		









### Laboratory Control Sample (LCS)

(LCS) R3594873-2 11/18/20 23:11										
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier					
Analyte	mg/kg	mg/kg	%	%						
Diesel Range Organics (DRO)	50.0	45.2	90.4	50.0-150						
(S) o-Terphenyl			96.5	18.0-148						











### **GLOSSARY OF TERMS**



The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

Appreviations and	Demittions
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

### Qualifier Description

В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCOUNT: PROJECT: SDG: DATE/TIME: PAGE: L1285650 11/23/20 18:07 Leidos Inc.- Bothell, WA 34 of 37





















### **ACCREDITATIONS & LOCATIONS**





### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















I ald a law on all H same			Billing Information:							nalvsis	Contai	ner / Preservati		Chain of Custody	Page of		
18939 120th Avenue NE Suite 112 Rothell WΔ 98011				Accounts Payable 18939 120th Avenue NE Suite 112 Bothell, WA 98011			plno		icage						_ Face A	Inalytical * for Testing & Innovetion	
Report to: Russ Shropshire			Email 10:	russell.s.shropshir	e@leidos.con	n	3	Syr	NO SIlica			Se Se			12065 Lebanon Rd Mount Juliet, TN 371		
Project Description: WA-02 Chilan		City/State Collected:	Chela	n WA	Please C		lea	Jim0		nI/Sy		Oml/Sy C O NoPres			Phone: 615-758-5859 Phone: 800-767-5859 Fax: 615-758-5859		
Phone: <b>425-482-3323</b>	Client Project			Lab Project # LEIDOSBWA	CHELAN		NoPres	40mlAmb/MeOH10ml/Sy	8ozCfr-NoPres	eOH10r	S	Admidmb/MeOH10ml/Syr BE, EDB, EDC OD 8270ESIM 402CIr-NoPres			SDG # 12	85650	
Collected by (print): Tom Dubé	Site/Facility I	96590		P.O. #	4647	16	8ozClr-NoPr	Amb/A		mp/M	NoPre	EDE SIM 4			Acctnum: LEID	tnum: LEIDOSBWA	
Collected by (signature):  Immediately Packed on Ice N Y	Rush? (Lab MUST Be N Same Day Five Da Next Day 5 Day (I Two Day 10 Day Three Day		Day (Rad Only)	ed) Quote #  Only) Date Results Needed		No.	Pb,Zn 6010 8	8260	NWTPHDX NOSGT	NWTPHGX 40mlAmb/MeOH10ml/Sy	8082 4ozCír-NoPres	260* 40miAmb/ NTBE ED Naph 8270ESIM			Template:T176 Prelogin: P807 PM: 110 - Brian PB:	112	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	of Cntrs	d'14	HVOCs 1	WTPH	WTPH	PCBs 80	VOCS 8260* BTEX, MT		W.	Shipped Via:	Sample # (lab only)	
UHP-1-8-8-201103	G	SS		11-3-2020	1930	2	X	I	X	X	۵	X				_0	
UHP-2-S-9-201103	6	SS	9.7.	11-3-20		-	X		X	X		X				-01	
UHP-3-5-7-201104	6	SS		11-4-20			X	-2	X	X		X			Mary and Silver	-03	
UHP-\$-5-8-201104	6	SS		11-4-20		-	X	-11	X	X		7511(6)		200		-04	
SRI5-1-S-8.5-201105	6	SS		1 2 2 3 1 1 1 2 3 1 T 1 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T	0840	-	X	7	V	X		X				-05	
SRI5-2-S-8-201105	The second secon	SS	2	11-5-20	1137	2	V		X	X	0.3	X				-66	
SRI5-3-8-8.5-201105		SS	198	11-5-20	170	-	X		X	X		X				47	
SRIB-4-8-8,5-201107	6	SS			0814	-	X		X	V		X		0.000		-68	
SRIS-5-5-8-201107	6	SS	7	11-7-20			X	100	X	v		X			100	-14	
SRI5-6-S-8-201107	6	SS		11-7-20	1045	-	X		X	X		X				70	
SS-SOII AIR-AIF F-FIITER  GW - Groundwater B - Bioassay  WW - WasteWater  DW - Drinking Water  OT - Other	ples returned	via:	EX, MTBE,	EDB, EDC, and n	-hexane by	EPA 82		02	P	pH Flow		TempOther		COC Seal COC Signe Bottles a Correct b	ple Receipt Che Present/Intact: d/Accurate: rrive intact: ottles used: t volume sent: If Applicable	A N N N N N N N N N N N N N N N N N N N	
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Honas De 11-12-		1-12-2		300	Received by: (Signature)					rip Blan	k Receiv	Peceived: Y@/No TBR		Preservation Correct/Checked: Y N RAD Screen <0.5 mR/hr:			
Relinquished by : (Signature)	Da	ite:	Time	Receive	ed by: (Signat	ture)			1	emp:	1000	Bottles Received		If preservat	ion required by Login	n: Date/Time	
Relinquished by: (Signature)		ite:	Time	Receive	ed for lab by:	(Signati	ature)			Date: Tim			m	Hold:		Condition: NCF /OK	

	15		Billing Info	rmation:		1000		1112	A	spalvsis /	Contai	ner / Preser	vative			Chain of Custody	Page Zo	
Leidos Inc Bothell, WA  18939 120th Avenue NE Suite 112 Rothell WA 98011 Report to: Russ Shropshire			18939 1 Suite 11	Accounts Payable 18939 120th Avenue NE Suite 112 Bothell, WA 98011					ia gel			Kluo			alto.	Pace/ National Co	Analytical of Teating & Inc.	
			Email To: russell.s.shropshire@leidos.com				ead	Syr	silia			50	S			12065 Lebanon Rd Mount Juliet, TN 37		
Project Description: WA-02 Chelan	1 Total	City/State Collected:	te d: Chelan, WA PTM			lease Circle:		0ml/	es No	nl/Sy	ke/iii	Dml/s E	NOPre			Phone: 615-758-585 Phone: 800-767-585 Fax: 615-758-5859		
Phone: <b>425-482-3323</b>	Client Proje	ct#		Lab Project # LEIDOSBWA-	CHELAN	V		40mlAmb/MeOH10ml/Syr	NoPre	0H10		40mlAmb/MeOH10ml/Syr MTBE, EDB, EDC 8270ESIM 40zCtr-NoPres				SDG#U2	8543	
Collected by (print):	Site/Facility	ID#		P.O. #			Clr-N	M/d	zClr-	MeC	res	M.	SA1001	185		Table #		
Tom Dubé		6590	Track of	P01024	1647	6	Boz	IAm	T 80	/qma	-NoP	ATBE MTBE 8270ESIM				Acctnum: LEID		
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Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	4	VOC	WTP	WTP	2BS 8	2000	AHS			Shipped Via:	Sample # (la	
TP2-S-9.75-201105	6	SS		11-5-20	1122	2	4	I	Z	1	P(		5			S. Hornes altroducts	11	
TB-1-201103	6	SS	W. C.	11-3-20		1.8	×		X	X		X				+	1	
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S-SOI AIR-Air F-Filter SW- Groundwater B-Bioassay WW- WasteWater WW- Drinking Water San	mples returne	8260 list=BT	EX, MTBE,	EDB, EDC, and n		EPA 82	60.			pH _ Flow _		Temp Other		COC Suff	Seal Pr Signed/ les arr ect bot icient	le Receipt Che esent/Intact: Accurate: ive intact: tles used: volume sent: If Applicabl	ONP Y	
Relincuished by : (Signature)	11-12-20				Time: Received by: (Signature)				Ī	Trip Blank Received: Yes / No HCL / MeoH TBR					VOA Zero Headspace: Preservation Correct/Checked: RAD Screen <0.5 mR/hr:			
Relinquished by : (Signature)					ed by: (Signat	ture)				Temp:	, so	And the second second	eceived:	If pre	If preservation required by Login: Date/Time			
Relinquished by : (Signature)	D	Pate:	Time	Receive	ed for lab by:	(Signatu	ire)			Date:	1	Time:	1.00	Hold:			Condition	



# ANALYTICAL REPORT

December 01, 2020

### Leidos Inc.- Bothell, WA

Sample Delivery Group: L1286649 Samples Received: 11/17/2020

Project Number:

WA-02 Chelan Description:

96590 Site:

Report To: Russ Shropshire

18939 120th Avenue NE

Suite 112

Bothell, WA 98011

Entire Report Reviewed By:

Buar Ford

Brian Ford

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.















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### \*

DIE 4 C 4E 204440 1 420CC 40 04 C-1;-l			Collected by Tom Dube	Collected date/time 11/10/20 10:11	Received date/time 11/17/20 09:00	
SRI5-1-S-15-201110 L1286649-01 Solid	Batch	Dilution				Location
MEHIOU	batcii	Dilution	Preparation date/time	Analysis date/time	Analyst	LUCALIUII
Fotal Solids by Method 2540 G-2011	WG1579976	1	11/21/20 05:27	11/21/20 05:35	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 04:59	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	1000	11/10/20 10:11	11/24/20 11:16	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	8	11/10/20 10:11	11/22/20 23:39	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 08:41	JN	Mt. Juliet, Ti
			Collected by	Collected date/time	Received da	te/time
SRI5-1-S-16.5-201110 L1286649-02 Solid			Tom Dube	11/10/20 10:47	11/17/20 09:0	00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579976	1	11/21/20 05:27	11/21/20 05:35	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:01	KMG	Mt. Juliet, Ti
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	5000	11/10/20 10:47	11/24/20 11:39	BMB	Mt. Juliet, TI
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	40	11/10/20 10:47	11/23/20 00:11	JHH	Mt. Juliet, T
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 08:54	JN	Mt. Juliet, T
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	5	11/23/20 10:30	11/24/20 14:18	TJD	Mt. Juliet, Ti
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 18:36	AMM	Mt. Juliet, TI
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580175	1	11/21/20 07:33	11/22/20 08:06	LEA	Mt. Juliet, T
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580175	20	11/21/20 07:33	11/23/20 00:32	AAT	Mt. Juliet, T
			Collected by	Collected date/time	Received da	te/time
SRI5-1-S-24.5-201110 L1286649-03 Solid			Tom Dube	11/10/20 11:00	11/17/20 09:0	00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579976	1	11/21/20 05:27	11/21/20 05:35	KBC	Mt. Juliet, TI
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:04	KMG	Mt. Juliet, T
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	26.3	11/10/20 11:00	11/24/20 12:06	BMB	Mt. Juliet, T
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1.05	11/10/20 11:00	11/22/20 23:20	DWR	Mt. Juliet, T
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 09:06	JN	Mt. Juliet, T
			Collected by	Collected date/time	Received da	te/time
SRI5-2-S-11.5-201110 L1286649-04 Solid			Tom Dube	11/10/20 14:03	11/17/20 09:0	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579976	1	11/21/20 05:27	11/21/20 05:35	KBC	Mt. Juliet, Ti
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:12	KMG	Mt. Juliet, Tl
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	2500	11/10/20 14:03	11/24/20 12:28	BMB	Mt. Juliet, TI
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	8	11/10/20 14:03	11/23/20 00:30	JHH	Mt. Juliet, Tl
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 12:36	TJD	Mt. Juliet, Tl
Polychlorinated Biphenyls (GC) by Method 8082 A Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580730 WG1580175	1 1	11/23/20 08:21 11/21/20 07:33	11/23/20 18:46 11/22/20 08:23	AMM LEA	Mt. Juliet, Tl Mt. Juliet, Tl
CDIE 2 C 24 E 201440   420CC 40 OF C-11-1			Collected by Tom Dube	Collected date/time 11/10/20 14:36	Received date/time 11/17/20 09:00	
SRI5-2-S-24.5-201110 L1286649-05 Solid	Patch	Dilution				
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579976	1	11/21/20 05:27	11/21/20 05:35	KBC	Mt. Juliet, T
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:15	KMG	Mt. Juliet, T
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	25	11/10/20 14:36	11/24/20 12:51	BMB	Mt. Juliet, T
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581823	1	11/10/20 14:36	11/24/20 14:39	ACG	Mt. Juliet, Ti
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 09:19	JN	Mt. Juliet, Th

SAMPLE SUMMARY



















### SAMPLE SUMMARY

ONE LAB.	<b>NATIONWIDE</b>

SRI5-3-S-10-201110 L1286649-06 Solid			Collected by Tom Dube	Collected date/time 11/10/20 15:23	Received date/time 11/17/20 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579976	1	11/21/20 05:27	11/21/20 05:35	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:17	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581218	500	11/10/20 15:23	11/23/20 23:45	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	40	11/10/20 15:23	11/23/20 00:49	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 12:24	TJD	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 18:56	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580175	1	11/21/20 07:33	11/22/20 08:40	LEA	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
SRI5-3-S-17-201110 L1286649-07 Solid			Tom Dube	11/10/20 15:45	11/17/20 09:0	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
Total Calida by Mathad 2540 C 2014	WC4E70077	4	date/time	date/time	KDC	MA Julius TAI
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:20	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581218	25	11/10/20 15:45	11/24/20 00:07	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580991	1	11/10/20 15:45	11/23/20 12:33	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581349	1	11/10/20 15:45	11/23/20 15:26	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 09:32	JN	Mt. Juliet, TN
			Collected by		Received date/time	
SRI5-3-S-25-201110 L1286649-08 Solid			Tom Dube	11/10/20 16:16	11/17/20 09:0	00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:22	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	500	11/10/20 16:16	11/24/20 13:13	BMB	Mt. Juliet, TN
/olatile Organic Compounds (GC/MS) by Method 8260D	WG1580991	1	11/10/20 16:16	11/23/20 12:53	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581349	10	11/10/20 16:16	11/23/20 16:04	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 12:49	TJD	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
SRI5-3-S-34.5-201110 L1286649-09 Solid			Tom Dube	11/10/20 16:44	11/17/20 09:0	00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:25	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	25	11/10/20 16:44	11/24/20 13:36	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	1	11/10/20 16:44	11/24/20 04:06	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 09:44	JN	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
SRI5-4-S-14.5-201108 L1286649-10 Solid			Tom Dube	11/08/20 09:25	11/17/20 09:0	00





















Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:27	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579992	25	11/08/20 09:25	11/20/20 21:07	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	1	11/08/20 09:25	11/21/20 12:42	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 01:16	JN	Mt. Juliet, TN

### SAMPLE SUMMARY

Collected by

11/21/20 08:28

11/08/20 10:11

11/08/20 10:11

11/21/20 00:59

Collected by

Collected by

Collected by

Tom Dube

Tom Dube

Tom Dube

11/24/20 05:32

11/21/20 18:05

11/21/20 14:54

11/23/20 01:42

11/08/20 11:00

11/08/20 13:03

11/08/20 13:23

KMG

BMB

 $\mathsf{BMB}$ 

JN

11/17/20 09:00

11/17/20 09:00

11/17/20 09:00

Collected date/time Received date/time

Collected date/time Received date/time

Collected date/time Received date/time

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

ONE	LAR	NATI	ON	WID

Collected date/time Received date/time

SRI5-4-S-15-201108 L1286649-11 Solid			Tom Dube	11/08/20 09:40	11/17/20 09:00	)
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:30	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579992	500	11/08/20 09:40	11/20/20 23:01	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	40	11/08/20 09:40	11/21/20 14:35	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 01:29	JN	Mt. Juliet, TN
			Collected by	Collected date/time	Received date	e/time
SRI5-4-S-17-201108 L1286649-12 Solid			Tom Dube	11/08/20 10:11	11/17/20 09:00	)
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Volatile Organic Compounds (GC) by Method NWTPHGX Volatile Organic Compounds (GC/MS) by Method 8260D

Metals (ICP) by Method 6010D

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 04:46	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579992	100	11/08/20 11:00	11/20/20 23:48	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580624	1	11/08/20 11:00	11/22/20 10:57	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 01:54	JN	Mt. Juliet, TN

WG1580070

WG1580333

WG1580286

WG1580176

1

100

40

1

### SRI5-5-S-14.5-201108 L1286649-14 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:35	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1579992	25	11/08/20 13:03	11/20/20 21:38	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	1	11/08/20 13:03	11/21/20 13:01	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 02:07	JN	Mt. Juliet, TN

### SRI5-5-S-17-201108 L1286649-15 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579977	1	11/21/20 05:15	11/21/20 05:24	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:43	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580333	5000	11/08/20 13:23	11/21/20 18:28	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580395	40	11/08/20 13:23	11/22/20 12:06	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580806	800	11/08/20 13:23	11/22/20 19:38	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	5	11/21/20 00:59	11/23/20 04:01	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 19:06	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	1	11/21/20 07:38	11/22/20 05:19	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	20	11/21/20 07:38	11/23/20 16:08	AAT	Mt. Juliet, TN











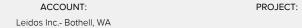












11/23/20 16:32

11/08/20 14:12

11/08/20 16:05

AAT

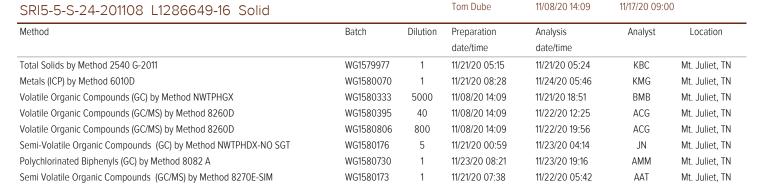
11/17/20 09:00

Collected date/time Received date/time

ONE LAB. NATIONWIDE.



Mt. Juliet, TN



WG1580173

20

SAMPLE SUMMARY

Collected by

11/21/20 07:38

Collected by

Collected by

Collected by

Tom Dube

Tom Dube

Tom Dube







<sup>4</sup> Cn
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### DUP-1-S-201108 L1286649-17 Solid

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:48	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580333	5000	11/08/20 14:12	11/21/20 19:14	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580395	40	11/08/20 14:12	11/22/20 12:44	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580825	400	11/08/20 14:12	11/22/20 22:05	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	5	11/21/20 00:59	11/23/20 04:27	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 19:26	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	1	11/21/20 07:38	11/22/20 06:05	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	20	11/21/20 07:38	11/23/20 16:56	AAT	Mt. Juliet, TN

### SRI5-5-S-29.5-201108 L1286649-18 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:51	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580333	10000	11/08/20 14:45	11/21/20 19:37	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	40	11/08/20 14:45	11/21/20 15:32	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580624	1000	11/08/20 14:45	11/22/20 11:16	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 02:20	JN	Mt. Juliet, TN

Collected date/time	Received date/time
11/08/20 14:45	11/17/20 09:00

# SRI5-6-S-16-201108 L1286649-19 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:53	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580603	5000	11/08/20 16:05	11/22/20 16:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580395	40	11/08/20 16:05	11/22/20 13:03	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580806	400	11/08/20 16:05	11/22/20 20:16	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	5	11/21/20 00:59	11/23/20 05:17	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 19:36	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	1	11/21/20 07:38	11/22/20 08:45	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	20	11/21/20 07:38	11/23/20 17:19	AAT	Mt. Juliet, TN

Collected date/time Received date/time

11/17/20 09:00

### SAMPLE SUMMARY

Collected by

Collected by

Collected by

Collected by

Tom Dube

Tom Dube

Tom Dube

Collected date/time Received date/time

Collected date/time Received date/time

Collected date/time Received date/time

Collected date/time Received date/time

11/17/20 09:00

11/17/20 09:00

11/17/20 09:00

11/11/20 12:12

11/11/20 14:08

11/11/20 14:20

SRI5-6-S-23.5-201108 L1286649-20 Solid			Tom Dube	11/08/20 16:30	11/17/20 09:0	0
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580070	1	11/21/20 08:28	11/24/20 05:56	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580603	5000	11/08/20 16:30	11/22/20 16:34	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580286	40	11/08/20 16:30	11/21/20 15:50	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580624	1000	11/08/20 16:30	11/22/20 11:35	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	5	11/21/20 00:59	11/23/20 04:52	JN	Mt. Juliet, TN

### Collected by Collected date/time Received date/time Tom Dube 11/11/20 11:34 11/17/20 09:00 SRI5-7-S-15-201111 L1286649-21 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:22	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	25	11/11/20 11:34	11/24/20 13:58	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	1	11/11/20 11:34	11/24/20 04:25	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	1	11/25/20 20:25	11/26/20 09:07	CAG	Mt. Juliet, TN

### SRI5-7-S-24.5-201111 L1286649-22 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:24	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581738	28.5	11/11/20 12:12	11/24/20 14:20	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	1.14	11/11/20 12:12	11/24/20 04:44	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	1	11/25/20 20:25	11/26/20 10:27	CAG	Mt. Juliet, TN

### SRI5-8-S-14.5-201111 L1286649-23 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:27	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	100	11/11/20 14:08	11/23/20 19:51	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	8	11/11/20 14:08	11/23/20 01:08	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	20	11/25/20 20:25	11/29/20 05:25	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 19:46	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580419	1	11/22/20 16:36	11/23/20 02:00	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580419	50	11/22/20 16:36	11/24/20 13:55	LEA	Mt. Juliet, TN

### SRI5-8-S-19.5-201111 L1286649-24 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:35	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	100	11/11/20 14:20	11/23/20 20:12	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	8	11/11/20 14:20	11/24/20 06:19	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	1	11/25/20 20:25	11/26/20 09:21	CAG	Mt. Juliet, TN











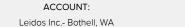












### SAMPLE SUMMARY

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SRI5-8-S-29.5-201111 L1286649-25 Solid			Collected by Tom Dube	Collected date/time 11/11/20 15:09	Received da: 11/17/20 09:0	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:37	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	25	11/11/20 15:09	11/23/20 20:32	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	1	11/11/20 15:09	11/24/20 05:03	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	1	11/25/20 20:25	11/26/20 09:47	CAG	Mt. Juliet, TN
			Collected by	Collected date/time		
SRI5-9-S-8-201110 L1286649-26 Solid			Tom Dube	11/10/20 16:25	11/17/20 09:0	0
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579978	1	11/21/20 05:01	11/21/20 05:01	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:40	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	25	11/10/20 16:25	11/23/20 20:53	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	1	11/10/20 16:25	11/24/20 05:22	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 09:57	JN	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
SRI5-9-S-15-201111 L1286649-27 Solid			Tom Dube	11/11/20 16:09	11/17/20 09:0	0
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:42	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	250	11/11/20 16:09	11/23/20 21:14	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	20	11/11/20 16:09	11/23/20 01:27	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	200	11/25/20 20:25	11/26/20 12:40	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 19:55	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580740	1	11/23/20 13:11	11/24/20 14:36	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580740	20	11/23/20 13:11	11/25/20 05:22	JNJ	Mt. Juliet, TN
SRI5-9-S-19-201111 L1286649-28 Solid			Collected by Tom Dube	Collected date/time 11/11/20 16:27	Received da: 11/17/20 09:0	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:45	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	500	11/11/20 16:27	11/23/20 21:35	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581275	40	11/11/20 16:27	11/24/20 06:38	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	50	11/25/20 20:25	11/29/20 05:50	JN	Mt. Juliet, TN
CDIE 0 C 07 00444 14000040 00 0 111			Collected by Tom Dube	Collected date/time 11/11/20 16:38	Received da: 11/17/20 09:0	
SRI5-9-S-27-201111 L1286649-29 Solid  Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	MC1EZOOZO	4	44/00/00 00 00	44/00/00 04 05	I/DC	A 41 I II I TAI



















Volatile Organic Compounds (GC) by Method NWTPHGX

Volatile Organic Compounds (GC/MS) by Method 8260D

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Total Solids by Method 2540 G-2011

Metals (ICP) by Method 6010D

WG1579979

WG1580071

WG1581226

WG1581275

WG1582400

1

1

25

1

11/22/20 03:06

11/20/20 17:28

11/11/20 16:38

11/11/20 16:38

11/25/20 20:25

11/22/20 04:05

11/24/20 06:48

11/23/20 21:56

11/24/20 05:41

11/26/20 07:47

KBC

KMG

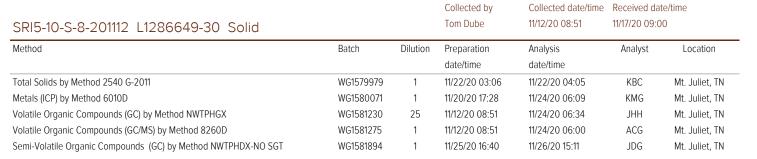
ACG

ACG

CAG

Mt. Juliet, TN

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Collected by

Tom Dube

SAMPLE SUMMARY



















### SRI5-10-S-14.5-201112 L1286649-31 Solid

SRI5-10-S-18-201112 L1286649-32 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:50	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581230	500	11/12/20 09:09	11/24/20 06:55	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	40	11/12/20 09:09	11/23/20 01:46	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 15:24	JN	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	5	11/25/20 16:40	11/27/20 11:07	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 20:07	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580740	1	11/23/20 13:11	11/24/20 14:53	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580740	20	11/23/20 13:11	11/25/20 05:39	JNJ	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
Tom Dube	11/12/20 09:43	11/17/20 09:00

### 11/17/20 09:00

Collected date/time Received date/time

11/17/20 09:00

11/12/20 09:09

Batch	Dilution	Preparation	Analysis	Analyst	Location
		date/time	date/time		
WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN
WG1580071	1	11/20/20 17:28	11/24/20 06:53	KMG	Mt. Juliet, TN
WG1582038	50	11/12/20 09:43	11/24/20 21:40	BMB	Mt. Juliet, TN
WG1581290	20	11/12/20 09:43	11/24/20 04:40	ACG	Mt. Juliet, TN
WG1581894	1	11/25/20 16:40	11/26/20 15:37	JDG	Mt. Juliet, TN
	WG1579979 WG1580071 WG1582038 WG1581290	WG1579979 1 WG1580071 1 WG1582038 50 WG1581290 20	WG1579979         1         11/22/20 03:06           WG1580071         1         11/20/20 17:28           WG1582038         50         11/12/20 09:43           WG1581290         20         11/12/20 09:43	date/time         date/time           WG1579979         1         11/22/20 03:06         11/22/20 04:05           WG1580071         1         11/20/20 17:28         11/24/20 06:53           WG1582038         50         11/12/20 09:43         11/24/20 21:40           WG1581290         20         11/12/20 09:43         11/24/20 04:40	date/time         date/time           WG1579979         1         11/22/20 03:06         11/22/20 04:05         KBC           WG1580071         1         11/20/20 17:28         11/24/20 06:53         KMG           WG1582038         50         11/12/20 09:43         11/24/20 21:40         BMB           WG1581290         20         11/12/20 09:43         11/24/20 04:40         ACG

Collected by	Collected date/time	Received date/time
Tom Dube	11/12/20 00:00	11/17/20 09:00

DUP-2-201112 L1286649-33 Solid			Tom Dube	11/12/20 00:00	11/17/20 09:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:56	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581230	25	11/12/20 00:00	11/24/20 07:37	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	1	11/12/20 00:00	11/24/20 02:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 15:49	JN	Mt. Juliet, TN

### Collected by Collected date/time Received date/time Tom Dube 11/17/20 09:00 SRI5-10-S-21-201112 L1286649-34 Solid 11/12/20 10:31

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 06:58	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1582038	5000	11/12/20 10:31	11/24/20 22:02	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	40	11/12/20 10:31	11/24/20 04:59	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 16:02	JN	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	5	11/25/20 16:40	11/27/20 11:33	JN	Mt. Juliet, TN



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SRI5-10-S-34.5-201112 L1286649-35 Solid			Collected by Tom Dube	Collected date/time 11/12/20 11:10	Received da 11/17/20 09:		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 07:06	KMG	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1582038	25	11/12/20 11:10	11/24/20 20:53	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	1	11/12/20 11:10	11/24/20 03:06	ACG	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 16:15	JDG	Mt. Juliet, TN	
			Collected by	Collected date/time	Received da	ate/time	
SRI5-11-S-8-201112 L1286649-36 Solid			Tom Dube	11/12/20 13:40	11/17/20 09:	00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579979	1	11/22/20 03:06	11/22/20 04:05	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 07:09	KMG	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581230	25	11/12/20 13:40	11/24/20 08:39	JHH	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	1	11/12/20 13:40	11/24/20 03:25	ACG	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 16:28	JN	Mt. Juliet, TN	
			Collected by	Collected date/time	Received da	ate/time	
SRI5-11-S-13.5-201112 L1286649-37 Solid			Tom Dube	11/12/20 13:50	11/17/20 09:0	00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Fotal Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1579980 WG1580071	1	11/20/20 17:28	11/24/20 07:11	KMG	Mt. Juliet, TN	
/olatile Organic Compounds (GC) by Method NWTPHGX	WG1581230	500	11/12/20 13:50	11/24/20 09:00	JHH	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	40	11/12/20 13:50	11/24/20 05:18	ACG	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 16:40	JN	Mt. Juliet, TN	
			Collected by	Collected date/time	Received da	ate/time	
SRI5-11-S-15-201112 L1286649-38 Solid			Tom Dube	11/12/20 14:28	11/17/20 09:0	00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Fotal Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 07:14	KMG	Mt. Juliet, TN	
/olatile Organic Compounds (GC) by Method NWTPHGX	WG1582038	5000	11/12/20 14:28	11/24/20 22:26	BMB	Mt. Juliet, TN	
/olatile Organic Compounds (GC/MS) by Method 8260D	WG1580778	40	11/12/20 14:28	11/23/20 02:05	JHH	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 17:44	JN	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	5	11/25/20 16:40	11/27/20 12:24	JN	Mt. Juliet, TN	
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 20:17	AMM	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1581271	1	11/24/20 16:29	11/25/20 02:46	JNJ	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1581271	10	11/24/20 16:29	11/25/20 07:05	JNJ	Mt. Juliet, TN	
DUP-3-201112 L1286649-39 Solid			Collected by Tom Dube	Collected date/time 11/12/20 12:00		Received date/time 11/17/20 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1579380 WG1580071	1	11/20/20 17:28	11/24/20 07:16	KMG	Mt. Juliet, TN	
/olatile Organic Compounds (GC) by Method NWTPHGX	WG1582210	5000	11/12/20 12:00	11/25/20 16:58	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1582210	40	11/12/20 12:00	11/23/20 02:24	JHH	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 16:53	JN	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	5	11/25/20 16:40	11/27/20 11:58	JN	Mt. Juliet, TN	
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 20:26	AMM	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1581271	1	11/24/20 16:29	11/25/20 03:04	JNJ	Mt. Juliet, TN	
ACCOUNT:	PROJECT:		SDG:	DAT	E/TIME:		
Laidea La Dalla II MAA			11200010	40 (04	10.0 AF 40		





















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DUP-3-201112 L1286649-39 Solid			Collected by Tom Dube	Collected date/time 11/12/20 12:00	Received dat 11/17/20 09:0		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1581271	10	11/24/20 16:29	11/25/20 07:22	JNJ	Mt. Juliet, TN	
SRI5-11-S-29.5-201112 L1286649-40 Solid			Collected by Tom Dube	Collected date/time 11/12/20 14:56	Received dat 11/17/20 09:0		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580071	1	11/20/20 17:28	11/24/20 07:19	KMG	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1582038	25	11/12/20 14:56	11/24/20 21:16	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	1	11/12/20 14:56	11/24/20 03:44	ACG	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1581894	1	11/25/20 16:40	11/26/20 17:06	JDG	Mt. Juliet, TN	
UHP-1-S-12-201109 L1286649-41 Solid			Collected by Tom Dube	Collected date/time 11/09/20 08:55	Received dat 11/17/20 09:0		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 22:44	EL	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25	11/09/20 08:55	11/21/20 23:46	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1	11/09/20 08:55	11/22/20 17:46	DWR	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 02:33	JN	Mt. Juliet, TN	
UHP-2-S-12-201109 L1286649-42 Solid			Collected by Tom Dube	Collected date/time 11/09/20 11:32		Received date/time 11/17/20 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 22:47	EL	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25	11/09/20 11:32	11/22/20 00:08	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1	11/09/20 11:32	11/22/20 18:05	DWR	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 02:45	JN	Mt. Juliet, TN	
			Collected by	Collected date/time	Received dat		
UHP-3-S-12.5-201109 L1286649-43 Solid	Datab	Diletter	Tom Dube	11/09/20 13:38	11/17/20 09:0		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 22:50	EL	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25	11/09/20 13:38	11/22/20 00:31	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1	11/09/20 13:38	11/22/20 18:24	DWR	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580611	1	11/22/20 07:43	11/23/20 08:01	JN	Mt. Juliet, TN	
UHP-3-S-17-201109 L1286649-44 Solid			Collected by Tom Dube	Collected date/time 11/09/20 13:45	Received dat 11/17/20 09:0		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN	
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 22:52	EL	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25	11/09/20 13:45	11/22/20 00:53	BMB	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1	11/09/20 13:45	11/22/20 18:43	DWR	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580611	1	11/22/20 07:43	11/23/20 08:14	JN	Mt. Juliet, TN	

















### SAMPLE SUMMARY

Collected by

Collected by

Collected by

Tom Dube

Tom Dube

1ARY	ONE LAB. NATIONWI
IAKI	ONE ENDING CONTRACTOR

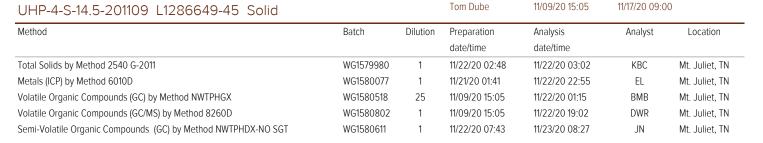
Collected date/time Received date/time

Collected date/time Received date/time

11/09/20 15:13

11/08/20 11:22

11/17/20 09:00





















### UHP-4-S-17.5-201109 L1286649-46 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579980	1	11/22/20 02:48	11/22/20 03:02	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 22:58	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25	11/09/20 15:13	11/22/20 01:38	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1	11/09/20 15:13	11/22/20 19:21	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580611	1	11/22/20 07:43	11/23/20 08:40	JN	Mt. Juliet, TN



### UHP-5-S-7.5-201108 L1286649-47 Solid

UHP-5-S-14.5-201111 L1286649-48 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579981	1	11/22/20 02:24	11/22/20 02:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 22:13	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25	11/08/20 11:22	11/21/20 19:39	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1	11/08/20 11:22	11/22/20 17:09	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 03:11	JN	Mt. Juliet, TN

Collec	ted by	Collected date/time	Received date/time
Tom D	ube	11/11/20 09:21	11/17/20 09:00

11/10/20 08:22

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579981	1	11/22/20 02:24	11/22/20 02:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 23:00	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	25	11/11/20 09:21	11/23/20 22:17	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	1	11/11/20 09:21	11/24/20 04:03	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1582400	1	11/25/20 20:25	11/26/20 08:01	CAG	Mt. Juliet, TN

9	KBC	Mt. Juliet, TN
0	EL	Mt. Juliet, TN
,	ACG	Mt. Juliet, TN
_		

UHP-6-S-13-201110	L1286649-49	Solid

0111-0-3-13 201110 E12000+3 +3 3011d						
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579981	1	11/22/20 02:24	11/22/20 02:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 23:03	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581226	25	11/10/20 08:22	11/23/20 22:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581290	1	11/10/20 08:22	11/24/20 00:20	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580726	1	11/23/20 10:30	11/24/20 10:10	JN	Mt. Juliet, TN

Collected by

Tom Dube

Collected date/time Received date/time

11/17/20 09:00

### SAMPLE SUMMARY

Collected by

Collected by

Tom Dube

Tom Dube

	NAT	

NO	IE LAB.	NATION	WIDE

Collected date/time Received date/time

Collected date/time Received date/time

11/17/20 09:00

11/17/20 09:00

11/08/20 08:40

11/09/20 13:48

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579981	1	11/22/20 02:24	11/22/20 02:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 23:11	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	27.3	11/08/20 08:40	11/21/20 20:02	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1.09	11/08/20 08:40	11/22/20 17:27	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	1	11/21/20 00:59	11/23/20 02:58	JN	Mt. Juliet, TN





















### SVP-2-S-9-201109 L1286649-51 Solid

SVP-1-S-5-201108 L1286649-50 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579981	1	11/22/20 02:24	11/22/20 02:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580077	1	11/21/20 01:41	11/22/20 23:13	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	25.3	11/09/20 13:48	11/22/20 02:00	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580802	1.01	11/09/20 13:48	11/22/20 19:40	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580611	1	11/22/20 07:43	11/23/20 08:52	JN	Mt. Juliet, TN

### Collected by Collected date/time Received date/time Tom Dube 11/08/20 12:40 11/17/20 09:00 221EW-UST2-S-201108 L1286649-52 Solid

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Total Solids by Method 2540 G-2011	WG1579981	1	11/22/20 02:24	11/22/20 02:39	KBC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1581511	1	11/23/20 23:26	11/24/20 02:54	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1580518	1230	11/08/20 12:40	11/22/20 02:45	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1580488	98.4	11/08/20 12:40	11/22/20 06:00	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1580176	250	11/21/20 00:59	11/24/20 06:59	JN	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1580730	1	11/23/20 08:21	11/23/20 20:36	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	10	11/21/20 07:38	11/23/20 18:06	AAT	Mt. Juliet, TN

r olychlorillated biphenyls (Ge) by Method 6062 A	W01300730		11/23/20 00.21	11/23/20 20.30	///IAIIAI	Wit. Julict, TIV
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1580173	10	11/21/20 07:38	11/23/20 18:06	AAT	Mt. Juliet, TN
			Collected by	Collected date/time		
ED 4 204442 142000040 E2 CVV			Tom Duhe	11/12/20 08:35	11/17/20 09:0	10

ER-1-201112 L1286649-53 GW Tom Dube	11/12/20 08:35	11/17/20 09:00

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581412	1	11/23/20 23:30	11/23/20 23:30	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581391	1	11/23/20 20:01	11/23/20 20:01	JCP	Mt. Juliet, TN

volatile Organic Compounds (GC) by Method NWTPHGX	WG1581412	I	11/23/20 23:30	11/23/20 23:30	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581391	1	11/23/20 20:01	11/23/20 20:01	JCP	Mt. Juliet, TN
			Collected by	Collected date/time	Received date	e/time

ER-2-201112 L1286649-54 GW			Tom Dube	11/12/20 12:15	11/17/20 09:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location

meaned	Baten	Dilation	· · cparation	7 41 41 3 13	,a.y 5 c	20041011
			date/time	date/time		
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1581412	1	11/23/20 23:55	11/23/20 23:55	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1581391	1	11/23/20 20:21	11/23/20 20:21	JCP	Mt. Juliet, TN

PCW-1-W-201113 L1286649-55 GW			Collected by Tom Dube	Collected date/time 11/13/20 10:10	Received date, 11/17/20 09:00	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location

			date/time	date/time	•	
Wet Chemistry by Method 9040C	WG1578810	1	11/21/20 15:00	11/21/20 15:00	JIC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1580736	1	11/23/20 04:26	11/23/20 18:06	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1582001	100	11/24/20 22:17	11/24/20 22:17	ADM	Mt. Juliet, TN

ONE	ΙΔΒ	ΝΔΤΙ	ON	WIDE
OINE	LAD.	IVAII	OIN	VVIDE

SAMPLE SUMI	MARY		ONE LAB. NATIO
	Collected by	Collected date/time	Received date/time
	Taran Darkan	11/12/20 10:25	11/17/20 00:00









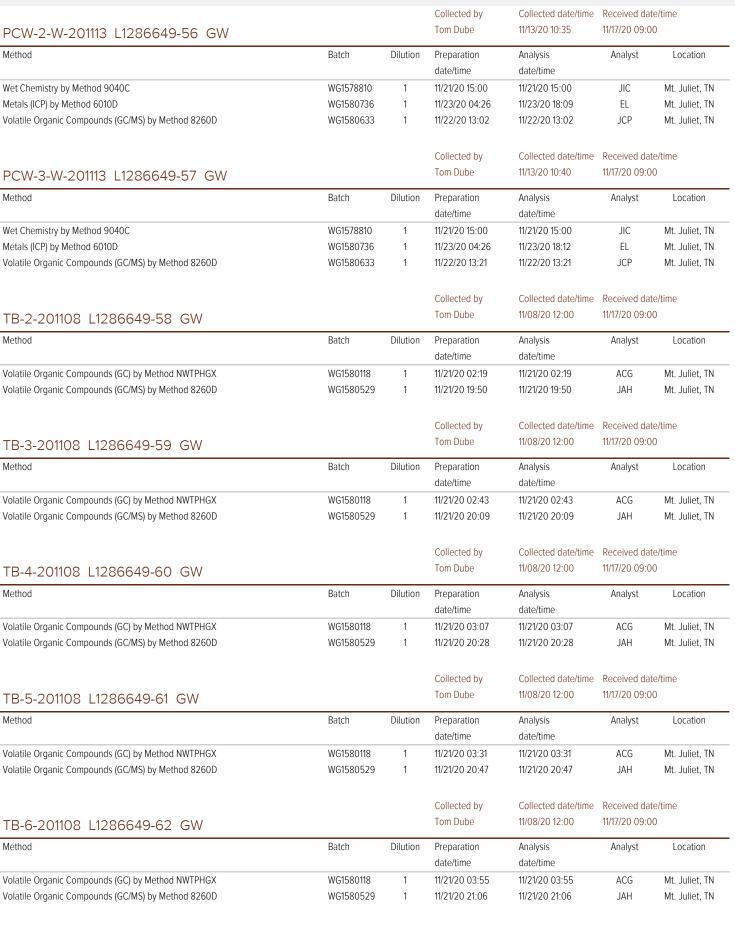












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<sup>2</sup>Tc















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford Project Manager

Buar Ford

Collected date/time: 11/10/20 10:11

## SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

## Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	76.1		1	11/21/2020 05:35	WG1579976

### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	26.9		0.273	0.657	1	11/24/2020 04:59	WG1580070



### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1980		58.5	172	1000	11/24/2020 11:16	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	97.3			77.0-120		11/24/2020 11:16	WG1581738



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Gl

### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0193		0.00645	0.0138	8	11/22/2020 23:39	WG1580802
Toluene	2.78		0.0179	0.0690	8	11/22/2020 23:39	WG1580802
Ethylbenzene	4.12		0.0102	0.0345	8	11/22/2020 23:39	WG1580802
Total Xylenes	26.2		0.0121	0.0897	8	11/22/2020 23:39	WG1580802
Methyl tert-butyl ether	U		0.00483	0.0138	8	11/22/2020 23:39	WG1580802
1,2-Dichloroethane	U		0.00895	0.0345	8	11/22/2020 23:39	WG1580802
1,2-Dibromoethane	U		0.00893	0.0345	8	11/22/2020 23:39	WG1580802
(S) Toluene-d8	102			75.0-131		11/22/2020 23:39	WG1580802
(S) 4-Bromofluorobenzene	222	<u>J1</u>		67.0-138		11/22/2020 23:39	WG1580802
(S) 1,2-Dichloroethane-d4	101			70.0-130		11/22/2020 23:39	WG1580802



### Sample Narrative:

L1286649-01 WG1580802: Surrogate failure due to matrix interference.

### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	18.7		1.75	5.26	1	11/24/2020 08:41	WG1580726
Residual Range Organics (RRO)	U		4.38	13.1	1	11/24/2020 08:41	WG1580726
(S) o-Terphenyl	56.0			18.0-148		11/24/2020 08:41	WG1580726

Metals (ICP) by Method 6010D

Analyte

Copper

Lead Nickel

Zinc

Analyte

Gasoline Range Organics-NWTPH

(S) a,a,a-Trifluorotoluene(FID)

## SAMPLE RESULTS - 02

### ONE LAB. NATIONWIDE.

### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	78.9		1	11/21/2020 05:35	WG1579976

RDL (dry)

mg/kg

2.54

0.634

2.54

6.34

RDL (dry)

77.0-120

mg/kg

798

Dilution

Dilution

5000

1

1

Analysis

date / time

11/24/2020 05:01

11/24/2020 05:01

11/24/2020 05:01

11/24/2020 05:01

Analysis

date / time

11/24/2020 11:39

11/24/2020 11:39

Batch

WG1580070

WG1580070

WG1580070

WG1580070

Batch

WG1581738

WG1581738





# Ss

# Cn













### Volatile Organic Compounds (GC/MS) by Method 8260D

Result (dry)

mg/kg

28.8

4.79

21.6

59.3

Volatile Organic Compounds (GC) by Method NWTPHGX Result (dry)

mg/kg

11500

94.3

Qualifier

Qualifier

MDL (dry)

mg/kg

0.507

0.264

0.167

1.05

MDL (dry)

mg/kg

270

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	4.26		0.0298	0.0638	40	11/23/2020 00:11	WG1580778
Bromobenzene	U		0.0574	0.798	40	11/23/2020 00:11	WG1580778
Bromodichloromethane	U		0.0463	0.160	40	11/23/2020 00:11	WG1580778
Bromoform	U		0.0747	1.60	40	11/23/2020 00:11	WG1580778
Bromomethane	U		0.126	0.798	40	11/23/2020 00:11	WG1580778
Carbon tetrachloride	U		0.0573	0.319	40	11/23/2020 00:11	WG1580778
Chlorobenzene	U		0.0134	0.160	40	11/23/2020 00:11	WG1580778
Chlorodibromomethane	U		0.0391	0.160	40	11/23/2020 00:11	WG1580778
Chloroethane	U		0.109	0.319	40	11/23/2020 00:11	WG1580778
Chloroform	U		0.0657	0.160	40	11/23/2020 00:11	WG1580778
Chloromethane	U	<u>C3</u>	0.278	0.798	40	11/23/2020 00:11	WG1580778
2-Chlorotoluene	U		0.0552	0.160	40	11/23/2020 00:11	WG1580778
4-Chlorotoluene	U		0.0287	0.319	40	11/23/2020 00:11	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.249	1.60	40	11/23/2020 00:11	WG1580778
1,2-Dibromoethane	U		0.0413	0.160	40	11/23/2020 00:11	WG1580778
Dibromomethane	U		0.0479	0.319	40	11/23/2020 00:11	WG1580778
1,2-Dichlorobenzene	U		0.0271	0.319	40	11/23/2020 00:11	WG1580778
1,3-Dichlorobenzene	U		0.0383	0.319	40	11/23/2020 00:11	WG1580778
1,4-Dichlorobenzene	U		0.0447	0.319	40	11/23/2020 00:11	WG1580778
Dichlorodifluoromethane	U		0.103	0.160	40	11/23/2020 00:11	WG1580778
1,1-Dichloroethane	U		0.0313	0.160	40	11/23/2020 00:11	WG1580778
1,2-Dichloroethane	U		0.0415	0.160	40	11/23/2020 00:11	WG1580778
1,1-Dichloroethene	U		0.0386	0.160	40	11/23/2020 00:11	WG1580778
cis-1,2-Dichloroethene	U		0.0469	0.160	40	11/23/2020 00:11	WG1580778
trans-1,2-Dichloroethene	U		0.0664	0.319	40	11/23/2020 00:11	WG1580778
1,2-Dichloropropane	U		0.0906	0.319	40	11/23/2020 00:11	WG1580778
1,1-Dichloropropene	U		0.0517	0.160	40	11/23/2020 00:11	WG1580778
1,3-Dichloropropane	U		0.0319	0.319	40	11/23/2020 00:11	WG1580778
cis-1,3-Dichloropropene	U		0.0483	0.160	40	11/23/2020 00:11	WG1580778
trans-1,3-Dichloropropene	U		0.0728	0.319	40	11/23/2020 00:11	WG1580778
2,2-Dichloropropane	U		0.0881	0.160	40	11/23/2020 00:11	WG1580778
Ethylbenzene	38.3		0.0471	0.160	40	11/23/2020 00:11	WG1580778
Hexachloro-1,3-butadiene	U		0.383	1.60	40	11/23/2020 00:11	WG1580778
Methylene Chloride	U	<u>C3</u>	0.424	1.60	40	11/23/2020 00:11	WG1580778
Methyl tert-butyl ether	0.0314	J	0.0223	0.0638	40	11/23/2020 00:11	WG1580778

### SAMPLE RESULTS - 02

- 02 ONE LAB. NATIONWIDE.

L1286649

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0605	0.160	40	11/23/2020 00:11	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0444	0.160	40	11/23/2020 00:11	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0482	0.160	40	11/23/2020 00:11	WG1580778
Tetrachloroethene	U		0.0571	0.160	40	11/23/2020 00:11	WG1580778
Toluene	67.7		0.0830	0.319	40	11/23/2020 00:11	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.468	0.798	40	11/23/2020 00:11	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.281	0.798	40	11/23/2020 00:11	WG1580778
1,1,1-Trichloroethane	U		0.0589	0.160	40	11/23/2020 00:11	WG1580778
1,1,2-Trichloroethane	U		0.0381	0.160	40	11/23/2020 00:11	WG1580778
Trichloroethene	U		0.0373	0.0638	40	11/23/2020 00:11	WG1580778
Trichlorofluoromethane	U		0.0528	0.160	40	11/23/2020 00:11	WG1580778
1,2,3-Trichloropropane	U		0.103	0.798	40	11/23/2020 00:11	WG1580778
Vinyl chloride	U		0.0740	0.160	40	11/23/2020 00:11	WG1580778
Xylenes, Total	203		0.0562	0.415	40	11/23/2020 00:11	WG1580778
(S) Toluene-d8	119			75.0-131		11/23/2020 00:11	WG1580778
(S) 4-Bromofluorobenzene	131			67.0-138		11/23/2020 00:11	WG1580778
(S) 1,2-Dichloroethane-d4	125			70.0-130		11/23/2020 00:11	WG1580778





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### Sample Narrative:

L1286649-02 WG1580778: Non-target compounds too high to run at a lower dilution.

### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	502		8.43	25.4	5	11/24/2020 14:18	WG1580726
Residual Range Organics (RRO)	U		4.22	12.7	1	11/24/2020 08:54	WG1580726
(S) o-Terphenyl	73.7			18.0-148		11/24/2020 14:18	WG1580726
(S) o-Terphenyl	75.2			18.0-148		11/24/2020 08:54	WG1580726

### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0150	0.0431	1	11/23/2020 18:36	WG1580730
PCB 1221	U		0.0150	0.0431	1	11/23/2020 18:36	WG1580730
PCB 1232	U		0.0150	0.0431	1	11/23/2020 18:36	WG1580730
PCB 1242	U		0.0150	0.0431	1	11/23/2020 18:36	WG1580730
PCB 1248	U		0.00936	0.0216	1	11/23/2020 18:36	WG1580730
PCB 1254	U		0.00936	0.0216	1	11/23/2020 18:36	WG1580730
PCB 1260	U		0.00936	0.0216	1	11/23/2020 18:36	WG1580730
(S) Decachlorobiphenyl	63.7			10.0-135		11/23/2020 18:36	WG1580730
(S) Tetrachloro-m-xylene	74.9			10.0-139		11/23/2020 18:36	WG1580730

### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	U		0.00219	0.00761	1	11/22/2020 08:06	WG1580175
Benzo(a)pyrene	U		0.00227	0.00761	1	11/22/2020 08:06	WG1580175
Benzo(b)fluoranthene	U		0.00194	0.00761	1	11/22/2020 08:06	WG1580175
Benzo(k)fluoranthene	U		0.00273	0.00761	1	11/22/2020 08:06	WG1580175
Chrysene	U		0.00294	0.00761	1	11/22/2020 08:06	WG1580175
Dibenz(a,h)anthracene	U		0.00218	0.00761	1	11/22/2020 08:06	WG1580175
Indeno(1,2,3-cd)pyrene	U		0.00229	0.00761	1	11/22/2020 08:06	WG1580175
Naphthalene	10.2		0.103	0.507	20	11/23/2020 00:32	WG1580175
1-Methylnaphthalene	2.83		0.00569	0.0254	1	11/22/2020 08:06	WG1580175
2-Methylnaphthalene	5.54		0.108	0.507	20	11/23/2020 00:32	WG1580175

SRI5-1-S-16.5-201110 Collected date/time: 11/10/20 10:47

### SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	<u> </u>	, ,					
	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
(S) Nitrobenzene-d5	2240	<u>J1</u>		14.0-149		11/22/2020 08:06	WG1580175
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/23/2020 00:32	WG1580175
(S) 2-Fluorobiphenyl	73.3	<u>J7</u>		34.0-125		11/23/2020 00:32	WG1580175
(S) 2-Fluorobiphenyl	72.6			34.0-125		11/22/2020 08:06	WG1580175
(S) p-Terphenyl-d14	78.1			23.0-120		11/22/2020 08:06	WG1580175
(S) p-Terphenyl-d14	95.5	<u>J7</u>		23.0-120		11/23/2020 00:32	WG1580175



















L1286649-02 WG1580175: Surrogate failure due to matrix interference

# SAMPLE RESULTS - 03



Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	72.5		1	11/21/2020 05:35	WG1579976



### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	4.99		0.287	0.689	1	11/24/2020 05:04	WG1580070



### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	15.3		1.55	4.58	26.3	11/24/2020 12:06	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/24/2020 12:06	WG1581738



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### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.167		0.000853	0.00183	1.05	11/22/2020 23:20	WG1580802
oluene	0.423		0.00237	0.00914	1.05	11/22/2020 23:20	WG1580802
thylbenzene	0.0898		0.00135	0.00458	1.05	11/22/2020 23:20	WG1580802
otal Xylenes	0.294		0.00161	0.0119	1.05	11/22/2020 23:20	WG1580802
lethyl tert-butyl ether	U		0.000641	0.00183	1.05	11/22/2020 23:20	WG1580802
2-Dichloroethane	U		0.00119	0.00458	1.05	11/22/2020 23:20	WG1580802
2-Dibromoethane	U		0.00118	0.00458	1.05	11/22/2020 23:20	WG1580802
(S) Toluene-d8	106			75.0-131		11/22/2020 23:20	WG1580802
(S) 4-Bromofluorobenzene	99.7			67.0-138		11/22/2020 23:20	WG1580802
(S) 1,2-Dichloroethane-d4	85.3			70.0-130		11/22/2020 23:20	WG1580802



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# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	•	, , ,					
	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.83	5.52	1	11/24/2020 09:06	WG1580726
Residual Range Organics (RRO)	U		4.59	13.8	1	11/24/2020 09:06	WG1580726
(S) o-Terphenyl	62.0			18.0-148		11/24/2020 09:06	WG1580726

# SAMPLE RESULTS - 04

### ONE LAB. NATIONWIDE.

L1286649

### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	75.8		1	11/21/2020 05:35	WG1579976

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### Metals (ICP) by Method 6010D

	Result (dry) Qua	alifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	34.4		0.528	2.64	1	11/24/2020 05:12	WG1580070
Lead	15.9		0.274	0.660	1	11/24/2020 05:12	WG1580070
Nickel	26.9		0.174	2.64	1	11/24/2020 05:12	WG1580070
Zinc	74.0		1.10	6.60	1	11/24/2020 05:12	WG1580070



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## Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	3130		144	426	2500	11/24/2020 12:28	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	99.4			77.0-120		11/24/2020 12:28	WG1581738



### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.00637	0.0136	8	11/23/2020 00:30	WG1580778
Bromobenzene	U		0.0123	0.170	8	11/23/2020 00:30	WG1580778
Bromodichloromethane	U		0.00988	0.0341	8	11/23/2020 00:30	WG1580778
Bromoform	U		0.0159	0.341	8	11/23/2020 00:30	WG1580778
Bromomethane	U		0.0269	0.170	8	11/23/2020 00:30	WG1580778
Carbon tetrachloride	U		0.0122	0.0681	8	11/23/2020 00:30	WG1580778
Chlorobenzene	U		0.00286	0.0341	8	11/23/2020 00:30	WG1580778
Chlorodibromomethane	U		0.00835	0.0341	8	11/23/2020 00:30	WG1580778
Chloroethane	U		0.0232	0.0681	8	11/23/2020 00:30	WG1580778
Chloroform	U		0.0140	0.0341	8	11/23/2020 00:30	WG1580778
Chloromethane	U	<u>C3</u>	0.0593	0.170	8	11/23/2020 00:30	WG1580778
2-Chlorotoluene	U		0.0118	0.0341	8	11/23/2020 00:30	WG1580778
4-Chlorotoluene	U		0.00613	0.0681	8	11/23/2020 00:30	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.0531	0.341	8	11/23/2020 00:30	WG1580778
1,2-Dibromoethane	U		0.00882	0.0341	8	11/23/2020 00:30	WG1580778
Dibromomethane	U		0.0102	0.0681	8	11/23/2020 00:30	WG1580778
1,2-Dichlorobenzene	U		0.00579	0.0681	8	11/23/2020 00:30	WG1580778
1,3-Dichlorobenzene	U		0.00818	0.0681	8	11/23/2020 00:30	WG1580778
1,4-Dichlorobenzene	U		0.00954	0.0681	8	11/23/2020 00:30	WG1580778
Dichlorodifluoromethane	U		0.0220	0.0341	8	11/23/2020 00:30	WG1580778
1,1-Dichloroethane	U		0.00669	0.0341	8	11/23/2020 00:30	WG1580778
1,2-Dichloroethane	U		0.00884	0.0341	8	11/23/2020 00:30	WG1580778
1,1-Dichloroethene	U		0.00826	0.0341	8	11/23/2020 00:30	WG1580778
cis-1,2-Dichloroethene	U		0.0100	0.0341	8	11/23/2020 00:30	WG1580778
trans-1,2-Dichloroethene	U		0.0142	0.0681	8	11/23/2020 00:30	WG1580778
1,2-Dichloropropane	U		0.0194	0.0681	8	11/23/2020 00:30	WG1580778
1,1-Dichloropropene	U		0.0110	0.0341	8	11/23/2020 00:30	WG1580778
1,3-Dichloropropane	U		0.00683	0.0681	8	11/23/2020 00:30	WG1580778
cis-1,3-Dichloropropene	U		0.0103	0.0341	8	11/23/2020 00:30	WG1580778
trans-1,3-Dichloropropene	U		0.0155	0.0681	8	11/23/2020 00:30	WG1580778
2,2-Dichloropropane	U		0.0187	0.0341	8	11/23/2020 00:30	WG1580778
Ethylbenzene	2.37		0.0100	0.0341	8	11/23/2020 00:30	WG1580778
Hexachloro-1,3-butadiene	U		0.0818	0.341	8	11/23/2020 00:30	WG1580778
Methylene Chloride	U	<u>C3</u>	0.0904	0.341	8	11/23/2020 00:30	WG1580778
Methyl tert-butyl ether	U		0.00477	0.0136	8	11/23/2020 00:30	WG1580778

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 ACCOUNT:
 PROJECT:
 SDG:
 DATE/TIME:

 Leidos Inc.- Bothell, WA
 L1286649
 12/01/20 15:43

#### ONE LAB. NATIONWIDE.

1286649

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0129	0.0341	8	11/23/2020 00:30	WG1580778
1,1,2,2-Tetrachloroethane	U		0.00947	0.0341	8	11/23/2020 00:30	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0103	0.0341	8	11/23/2020 00:30	WG1580778
Tetrachloroethene	U		0.0122	0.0341	8	11/23/2020 00:30	WG1580778
Toluene	0.438		0.0177	0.0681	8	11/23/2020 00:30	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.0998	0.170	8	11/23/2020 00:30	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.0600	0.170	8	11/23/2020 00:30	WG1580778
1,1,1-Trichloroethane	U		0.0126	0.0341	8	11/23/2020 00:30	WG1580778
1,1,2-Trichloroethane	U		0.00814	0.0341	8	11/23/2020 00:30	WG1580778
Trichloroethene	U		0.00795	0.0136	8	11/23/2020 00:30	WG1580778
Trichlorofluoromethane	U		0.0113	0.0341	8	11/23/2020 00:30	WG1580778
1,2,3-Trichloropropane	U		0.0221	0.170	8	11/23/2020 00:30	WG1580778
Vinyl chloride	U		0.0158	0.0341	8	11/23/2020 00:30	WG1580778
Xylenes, Total	10.5		0.0120	0.0886	8	11/23/2020 00:30	WG1580778
(S) Toluene-d8	122			75.0-131		11/23/2020 00:30	WG1580778
(S) 4-Bromofluorobenzene	231	<u>J1</u>		67.0-138		11/23/2020 00:30	WG1580778
(S) 1,2-Dichloroethane-d4	109			70.0-130		11/23/2020 00:30	WG1580778



















#### Sample Narrative:

L1286649-04 WG1580778: Non-target compounds too high to run at a lower dilution.

#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	34.8		1.75	5.28	1	11/24/2020 12:36	WG1580726
Residual Range Organics (RRO)	U		4.39	13.2	1	11/24/2020 12:36	WG1580726
(S) o-Terphenyl	64.2			18.0-148		11/24/2020 12:36	WG1580726

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0156	0.0449	1	11/23/2020 18:46	WG1580730
PCB 1221	U		0.0156	0.0449	1	11/23/2020 18:46	WG1580730
PCB 1232	U		0.0156	0.0449	1	11/23/2020 18:46	WG1580730
PCB 1242	U		0.0156	0.0449	1	11/23/2020 18:46	WG1580730
PCB 1248	U		0.00974	0.0224	1	11/23/2020 18:46	WG1580730
PCB 1254	U		0.00974	0.0224	1	11/23/2020 18:46	WG1580730
PCB 1260	U		0.00974	0.0224	1	11/23/2020 18:46	WG1580730
(S) Decachlorobiphenyl	50.8			10.0-135		11/23/2020 18:46	WG1580730
(S) Tetrachloro-m-xylene	70.1			10.0-139		11/23/2020 18:46	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	U		0.00228	0.00792	1	11/22/2020 08:23	WG1580175
Benzo(a)pyrene	U		0.00236	0.00792	1	11/22/2020 08:23	WG1580175
Benzo(b)fluoranthene	U		0.00202	0.00792	1	11/22/2020 08:23	WG1580175
Benzo(k)fluoranthene	U		0.00284	0.00792	1	11/22/2020 08:23	WG1580175
Chrysene	U		0.00306	0.00792	1	11/22/2020 08:23	WG1580175
Dibenz(a,h)anthracene	U		0.00227	0.00792	1	11/22/2020 08:23	WG1580175
Indeno(1,2,3-cd)pyrene	U		0.00239	0.00792	1	11/22/2020 08:23	WG1580175
Naphthalene	0.161		0.00538	0.0264	1	11/22/2020 08:23	WG1580175
1-Methylnaphthalene	0.0919		0.00592	0.0264	1	11/22/2020 08:23	WG1580175
2-Methylnaphthalene	0.190		0.00563	0.0264	1	11/22/2020 08:23	WG1580175
(S) Nitrobenzene-d5	364	J1		14.0-149		11/22/2020 08:23	WG1580175

SRI5-2-S-11.5-201110 Collected date/time: 11/10/20 14:03

Sample Narrative:

#### SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-04 WG1580175: Surrogate failure due to matrix interference

	· ·	,	-					
	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg	mg/kg		date / time		
(S) 2-Fluorobiphenyl	75.2			34.0-125		11/22/2020 08:23	WG1580175	
(S) p-Terphenyl-d14	77.5			23.0-120		11/22/2020 08:23	WG1580175	























#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	70.7		1	11/21/2020 05:35	<u>WG1579976</u>



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.82		0.294	0.707	1	11/24/2020 05:15	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	8.61		1.62	4.77	25	11/24/2020 12:51	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		11/24/2020 12:51	WG1581738



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0651		0.000892	0.00191	1	11/24/2020 14:39	WG1581823
luene	0.157		0.00248	0.00955	1	11/24/2020 14:39	WG1581823
thylbenzene	0.170		0.00141	0.00477	1	11/24/2020 14:39	WG1581823
otal Xylenes	0.208		0.00168	0.0124	1	11/24/2020 14:39	WG1581823
thyl tert-butyl ether	U		0.000668	0.00191	1	11/24/2020 14:39	WG1581823
Dichloroethane	U		0.00124	0.00477	1	11/24/2020 14:39	WG1581823
-Dibromoethane	U		0.00124	0.00477	1	11/24/2020 14:39	WG1581823
(S) Toluene-d8	99.9			75.0-131		11/24/2020 14:39	WG1581823
S) 4-Bromofluorobenzene	102			67.0-138		11/24/2020 14:39	WG1581823
S) 1,2-Dichloroethane-d4	92.8			70.0-130		11/24/2020 14:39	WG1581823



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.88	5.66	1	11/24/2020 09:19	WG1580726
Residual Range Organics (RRO)	U		4.71	14.1	1	11/24/2020 09:19	WG1580726
(S) o-Terphenyl	61.6			18.0-148		11/24/2020 09:19	WG1580726

#### ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	79.9		1	11/21/2020 05:35	WG1579976



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	27.3		0.501	2.50	1	11/24/2020 05:17	WG1580070
Lead	17.8		0.260	0.626	1	11/24/2020 05:17	WG1580070
Nickel	21.7		0.165	2.50	1	11/24/2020 05:17	WG1580070
Zinc	53.5		1.04	6.26	1	11/24/2020 05:17	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	4500		26.4	78.2	500	11/23/2020 23:45	WG1581218
(S) a,a,a-Trifluorotoluene(FID)	88.8			77.0-120		11/23/2020 23:45	WG1581218



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.0292	0.0625	40	11/23/2020 00:49	WG1580778
Bromobenzene	U		0.0563	0.782	40	11/23/2020 00:49	WG1580778
Bromodichloromethane	U		0.0453	0.156	40	11/23/2020 00:49	WG1580778
Bromoform	U		0.0732	1.56	40	11/23/2020 00:49	WG1580778
Bromomethane	U		0.123	0.782	40	11/23/2020 00:49	WG1580778
Carbon tetrachloride	U		0.0561	0.313	40	11/23/2020 00:49	WG1580778
Chlorobenzene	U		0.0131	0.156	40	11/23/2020 00:49	WG1580778
Chlorodibromomethane	U		0.0383	0.156	40	11/23/2020 00:49	WG1580778
Chloroethane	U		0.106	0.313	40	11/23/2020 00:49	WG1580778
Chloroform	U		0.0644	0.156	40	11/23/2020 00:49	WG1580778
Chloromethane	U	<u>C3</u>	0.272	0.782	40	11/23/2020 00:49	WG1580778
2-Chlorotoluene	U		0.0541	0.156	40	11/23/2020 00:49	WG1580778
4-Chlorotoluene	U		0.0281	0.313	40	11/23/2020 00:49	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.244	1.56	40	11/23/2020 00:49	WG1580778
1,2-Dibromoethane	U		0.0405	0.156	40	11/23/2020 00:49	WG1580778
Dibromomethane	U		0.0469	0.313	40	11/23/2020 00:49	WG1580778
1,2-Dichlorobenzene	U		0.0266	0.313	40	11/23/2020 00:49	WG1580778
1,3-Dichlorobenzene	U		0.0375	0.313	40	11/23/2020 00:49	WG1580778
1,4-Dichlorobenzene	U		0.0438	0.313	40	11/23/2020 00:49	WG1580778
Dichlorodifluoromethane	U		0.101	0.156	40	11/23/2020 00:49	WG1580778
1,1-Dichloroethane	U		0.0306	0.156	40	11/23/2020 00:49	WG1580778
1,2-Dichloroethane	U		0.0407	0.156	40	11/23/2020 00:49	WG1580778
1,1-Dichloroethene	U		0.0378	0.156	40	11/23/2020 00:49	WG1580778
cis-1,2-Dichloroethene	U		0.0460	0.156	40	11/23/2020 00:49	WG1580778
trans-1,2-Dichloroethene	U		0.0650	0.313	40	11/23/2020 00:49	WG1580778
1,2-Dichloropropane	U		0.0888	0.313	40	11/23/2020 00:49	WG1580778
1,1-Dichloropropene	U		0.0507	0.156	40	11/23/2020 00:49	WG1580778
1,3-Dichloropropane	U		0.0313	0.313	40	11/23/2020 00:49	WG1580778
cis-1,3-Dichloropropene	U		0.0474	0.156	40	11/23/2020 00:49	WG1580778
trans-1,3-Dichloropropene	U		0.0713	0.313	40	11/23/2020 00:49	WG1580778
2,2-Dichloropropane	U		0.0863	0.156	40	11/23/2020 00:49	WG1580778
Ethylbenzene	3.71		0.0461	0.156	40	11/23/2020 00:49	WG1580778
Hexachloro-1,3-butadiene	U		0.375	1.56	40	11/23/2020 00:49	WG1580778
Methylene Chloride	U	<u>C3</u>	0.416	1.56	40	11/23/2020 00:49	WG1580778
Methyl tert-butyl ether	U		0.0219	0.0625	40	11/23/2020 00:49	WG1580778



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ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

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L1286649 12/01/20 15:43 26 of 189 Collected date/time: 11/10/20 15:23

#### SAMPLE RESULTS - 06

#### ONE LAB. NATIONWIDE.

L1286649

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0593	0.156	40	11/23/2020 00:49	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0435	0.156	40	11/23/2020 00:49	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0472	0.156	40	11/23/2020 00:49	WG1580778
Tetrachloroethene	U		0.0560	0.156	40	11/23/2020 00:49	WG1580778
Toluene	0.433		0.0813	0.313	40	11/23/2020 00:49	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.458	0.782	40	11/23/2020 00:49	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.275	0.782	40	11/23/2020 00:49	WG1580778
1,1,1-Trichloroethane	U		0.0577	0.156	40	11/23/2020 00:49	WG1580778
1,1,2-Trichloroethane	U		0.0374	0.156	40	11/23/2020 00:49	WG1580778
Trichloroethene	U		0.0366	0.0625	40	11/23/2020 00:49	WG1580778
Trichlorofluoromethane	U		0.0518	0.156	40	11/23/2020 00:49	WG1580778
1,2,3-Trichloropropane	U		0.101	0.782	40	11/23/2020 00:49	WG1580778
Vinyl chloride	U		0.0726	0.156	40	11/23/2020 00:49	WG1580778
Xylenes, Total	11.3		0.0550	0.407	40	11/23/2020 00:49	WG1580778
(S) Toluene-d8	91.7			75.0-131		11/23/2020 00:49	WG1580778
(S) 4-Bromofluorobenzene	98.6			67.0-138		11/23/2020 00:49	WG1580778
(S) 1,2-Dichloroethane-d4	111			70.0-130		11/23/2020 00:49	WG1580778



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#### Sample Narrative:

L1286649-06 WG1580778: Non-target compounds too high to run at a lower dilution.

#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	62.1		1.66	5.01	1	11/24/2020 12:24	WG1580726
Residual Range Organics (RRO)	U		4.17	12.5	1	11/24/2020 12:24	WG1580726
(S) o-Terphenyl	69.2			18.0-148		11/24/2020 12:24	WG1580726

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0148	0.0426	1	11/23/2020 18:56	WG1580730
PCB 1221	U		0.0148	0.0426	1	11/23/2020 18:56	WG1580730
PCB 1232	U		0.0148	0.0426	1	11/23/2020 18:56	WG1580730
PCB 1242	U		0.0148	0.0426	1	11/23/2020 18:56	WG1580730
PCB 1248	U		0.00924	0.0213	1	11/23/2020 18:56	WG1580730
PCB 1254	U		0.00924	0.0213	1	11/23/2020 18:56	WG1580730
PCB 1260	U		0.00924	0.0213	1	11/23/2020 18:56	WG1580730
(S) Decachlorobiphenyl	60.5			10.0-135		11/23/2020 18:56	WG1580730
(S) Tetrachloro-m-xylene	75.9			10.0-139		11/23/2020 18:56	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	U		0.00217	0.00751	1	11/22/2020 08:40	WG1580175
Benzo(a)pyrene	U		0.00224	0.00751	1	11/22/2020 08:40	WG1580175
Benzo(b)fluoranthene	U		0.00191	0.00751	1	11/22/2020 08:40	WG1580175
Benzo(k)fluoranthene	U		0.00269	0.00751	1	11/22/2020 08:40	WG1580175
Chrysene	U		0.00290	0.00751	1	11/22/2020 08:40	WG1580175
Dibenz(a,h)anthracene	U		0.00215	0.00751	1	11/22/2020 08:40	WG1580175
Indeno(1,2,3-cd)pyrene	U		0.00227	0.00751	1	11/22/2020 08:40	WG1580175
Naphthalene	0.203		0.00511	0.0250	1	11/22/2020 08:40	WG1580175
1-Methylnaphthalene	0.115		0.00562	0.0250	1	11/22/2020 08:40	WG1580175
2-Methylnaphthalene	0.242		0.00534	0.0250	1	11/22/2020 08:40	WG1580175
(S) Nitrobenzene-d5	330	J1		14.0-149		11/22/2020 08:40	WG1580175

Sample Narrative:

Collected date/time: 11/10/20 15:23

L1286649-06 WG1580175: Surrogate failure due to matrix interference

#### SAMPLE RESULTS - 06

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	•	, ,					
	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
(S) 2-Fluorobiphenyl	73.1			34.0-125		11/22/2020 08:40	WG1580175
(S) p-Terphenvl-d14	72.1			23.0-120		11/22/2020 08:40	WG1580175





















ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	69.9		1	11/21/2020 05:24	<u>WG1579977</u>

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	6.28		0.297	0.715	1	11/24/2020 05:20	WG1580070



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#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	58.8		1.65	4.85	25	11/24/2020 00:07	WG1581218
(S) a,a,a-Trifluorotoluene(FID)	99.6			77.0-120		11/24/2020 00:07	WG1581218



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	1.84		0.000906	0.00194	1	11/23/2020 12:33	WG1580991
Toluene	2.52		0.00252	0.00970	1	11/23/2020 12:33	WG1580991
Ethylbenzene	0.441		0.00143	0.00485	1	11/23/2020 15:26	WG1581349
Total Xylenes	2.10		0.00171	0.0126	1	11/23/2020 15:26	WG1581349
Methyl tert-butyl ether	U		0.000679	0.00194	1	11/23/2020 12:33	WG1580991
1,2-Dichloroethane	U		0.00126	0.00485	1	11/23/2020 12:33	WG1580991
1,2-Dibromoethane	U		0.00126	0.00485	1	11/23/2020 12:33	WG1580991
(S) Toluene-d8	93.3			75.0-131		11/23/2020 12:33	WG1580991
(S) Toluene-d8	108			<i>75.0-131</i>		11/23/2020 15:26	WG1581349
(S) 4-Bromofluorobenzene	112			67.0-138		11/23/2020 12:33	WG1580991
(S) 4-Bromofluorobenzene	106			67.0-138		11/23/2020 15:26	WG1581349
(S) 1,2-Dichloroethane-d4	97.2			70.0-130		11/23/2020 12:33	WG1580991
(S) 1,2-Dichloroethane-d4	109			70.0-130		11/23/2020 15:26	WG1581349



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	1.96	J	1.90	5.72	1	11/24/2020 09:32	WG1580726
Residual Range Organics (RRO)	U		4.76	14.3	1	11/24/2020 09:32	WG1580726
(S) o-Terphenyl	59.3			18.0-148		11/24/2020 09:32	WG1580726

#### ONE LAB. NATIONWIDE.

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	81.6		1	11/21/2020 05:24	WG1579977



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	6.95		0.255	0.613	1	11/24/2020 05:22	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1120		25.6	75.7	500	11/24/2020 13:13	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	98.6			77.0-120		11/24/2020 13:13	WG1581738



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.423		0.000707	0.00151	1	11/23/2020 12:53	WG1580991
Toluene	5.35		0.0197	0.0757	10	11/23/2020 16:04	WG1581349
Ethylbenzene	4.70		0.0112	0.0379	10	11/23/2020 16:04	WG1581349
Total Xylenes	25.6		0.0133	0.0985	10	11/23/2020 16:04	WG1581349
Methyl tert-butyl ether	0.00245		0.000530	0.00151	1	11/23/2020 12:53	WG1580991
1,2-Dichloroethane	U		0.000983	0.00379	1	11/23/2020 12:53	WG1580991
1,2-Dibromoethane	U		0.00982	0.0379	10	11/23/2020 16:04	WG1581349
(S) Toluene-d8	91.3			75.0-131		11/23/2020 12:53	WG1580991
(S) Toluene-d8	103			75.0-131		11/23/2020 16:04	WG1581349
(S) 4-Bromofluorobenzene	250	<u>J1</u>		67.0-138		11/23/2020 12:53	WG1580991
(S) 4-Bromofluorobenzene	112			67.0-138		11/23/2020 16:04	WG1581349
(S) 1,2-Dichloroethane-d4	117			70.0-130		11/23/2020 12:53	WG1580991
(S) 1,2-Dichloroethane-d4	111			70.0-130		11/23/2020 16:04	WG1581349



#### Sample Narrative:

L1286649-08 WG1580991: EDB not reportable at lower dilution due to matrix interference.

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	52.5		1.63	4.90	1	11/24/2020 12:49	WG1580726
Residual Range Organics (RRO)	14.6		4.08	12.3	1	11/24/2020 12:49	WG1580726
(S) o-Terphenyl	60.8			18.0-148		11/24/2020 12:49	WG1580726

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	73.2		1	11/21/2020 05:24	<u>WG1579977</u>

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.68		0.284	0.683	1	11/24/2020 05:25	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	4.28	J	1.56	4.59	25	11/24/2020 13:36	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	102			77.0-120		11/24/2020 13:36	WG1581738



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0107		0.000858	0.00184	1	11/24/2020 04:06	WG1581275
Toluene	0.0248		0.00239	0.00918	1	11/24/2020 04:06	WG1581275
Ethylbenzene	0.00859		0.00135	0.00459	1	11/24/2020 04:06	WG1581275
Total Xylenes	0.0421		0.00162	0.0119	1	11/24/2020 04:06	WG1581275
Methyl tert-butyl ether	U		0.000643	0.00184	1	11/24/2020 04:06	WG1581275
1,2-Dichloroethane	U		0.00119	0.00459	1	11/24/2020 04:06	WG1581275
1,2-Dibromoethane	U		0.00119	0.00459	1	11/24/2020 04:06	WG1581275
(S) Toluene-d8	113			75.0-131		11/24/2020 04:06	WG1581275
(S) 4-Bromofluorobenzene	92.0			67.0-138		11/24/2020 04:06	WG1581275
(S) 1,2-Dichloroethane-d4	106			70.0-130		11/24/2020 04:06	WG1581275



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.82	5.47	1	11/24/2020 09:44	WG1580726
Residual Range Organics (RRO)	U		4.55	13.7	1	11/24/2020 09:44	WG1580726
(S) o-Terphenyl	68.8			18.0-148		11/24/2020 09:44	WG1580726

ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	96.6		1	11/21/2020 05:24	<u>WG1579977</u>

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	4.00		0.215	0.518	1	11/24/2020 05:27	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	8.17	В	0.914	2.69	25	11/20/2020 21:07	WG1579992
(S) a,a,a-Trifluorotoluene(FID)	98.4			77.0-120		11/20/2020 21:07	WG1579992



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

<u> </u>	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0383		0.000503	0.00108	1	11/21/2020 12:42	WG1580286
Toluene	0.132		0.00140	0.00539	1	11/21/2020 12:42	WG1580286
Ethylbenzene	0.0142		0.000794	0.00269	1	11/21/2020 12:42	WG1580286
Total Xylenes	0.0469		0.000949	0.00701	1	11/21/2020 12:42	WG1580286
Methyl tert-butyl ether	U		0.000377	0.00108	1	11/21/2020 12:42	WG1580286
1,2-Dichloroethane	U		0.000700	0.00269	1	11/21/2020 12:42	WG1580286
1,2-Dibromoethane	U		0.000698	0.00269	1	11/21/2020 12:42	WG1580286
(S) Toluene-d8	106			75.0-131		11/21/2020 12:42	WG1580286
(S) 4-Bromofluorobenzene	99.5			67.0-138		11/21/2020 12:42	WG1580286
(S) 1,2-Dichloroethane-d4	85.0			70.0-130		11/21/2020 12:42	WG1580286



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	7.42		1.38	4.14	1	11/23/2020 01:16	WG1580176
Residual Range Organics (RRO)	U		3.45	10.4	1	11/23/2020 01:16	WG1580176
(S) o-Terphenyl	81.0			18.0-148		11/23/2020 01:16	WG1580176







Collected date/time: 11/08/20 09:40

#### SAMPLE RESULTS - 11

#### ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	82.0		1	11/21/2020 05:24	WG1579977

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	28.3		0.254	0.610	1	11/24/2020 05:30	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1330		25.8	76.4	500	11/20/2020 23:01	WG1579992
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		11/20/2020 23:01	WG1579992



#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.833		0.0286	0.0611	40	11/21/2020 14:35	WG1580286
luene	18.0		0.0795	0.306	40	11/21/2020 14:35	WG1580286
nylbenzene	11.6		0.0451	0.153	40	11/21/2020 14:35	WG1580286
tal Xylenes	61.4		0.0538	0.397	40	11/21/2020 14:35	WG1580286
thyl tert-butyl ether	U		0.0214	0.0611	40	11/21/2020 14:35	WG1580286
Dichloroethane	U		0.0397	0.153	40	11/21/2020 14:35	WG1580286
Dibromoethane	U		0.0396	0.153	40	11/21/2020 14:35	WG1580286
S) Toluene-d8	102			75.0-131		11/21/2020 14:35	WG1580286
) 4-Bromofluorobenzene	104			67.0-138		11/21/2020 14:35	WG1580286
6) 1,2-Dichloroethane-d4	85.6			70.0-130		11/21/2020 14:35	WG1580286



#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	4.32	<u>J</u>	1.62	4.88	1	11/23/2020 01:29	WG1580176
Residual Range Organics (RRO)	U		4.06	12.2	1	11/23/2020 01:29	WG1580176
(S) o-Terphenyl	65.0			18.0-148		11/23/2020 01:29	WG1580176



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#### ONE LAB. NATIONWIDE.

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	79.5		1	11/21/2020 05:24	<u>WG1579977</u>



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.24		0.262	0.629	1	11/24/2020 05:32	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	294		5.27	15.6	100	11/21/2020 18:05	WG1580333
(S) a,a,a-Trifluorotoluene(FID)	99.0			77.0-120		11/21/2020 18:05	WG1580333



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	0.222		0.0291	0.0622	40	11/21/2020 14:54	WG1580286
ene	2.78		0.0809	0.311	40	11/21/2020 14:54	WG1580286
ylbenzene	1.57		0.0459	0.156	40	11/21/2020 14:54	WG1580286
al Xylenes	7.33		0.0548	0.404	40	11/21/2020 14:54	WG1580286
hyl tert-butyl ether	U		0.0218	0.0622	40	11/21/2020 14:54	WG1580286
Dichloroethane	U		0.0404	0.156	40	11/21/2020 14:54	WG1580286
Dibromoethane	U		0.0403	0.156	40	11/21/2020 14:54	WG1580286
) Toluene-d8	102			75.0-131		11/21/2020 14:54	WG1580286
4-Bromofluorobenzene	100			67.0-138		11/21/2020 14:54	WG1580286
1,2-Dichloroethane-d4	86.1			70.0-130		11/21/2020 14:54	WG1580286



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	28.8		1.67	5.03	1	11/23/2020 01:42	WG1580176
Residual Range Organics (RRO)	U		4.19	12.6	1	11/23/2020 01:42	WG1580176
(S) o-Terphenyl	77.5			18.0-148		11/23/2020 01:42	WG1580176

ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	74.4		1	11/21/2020 05:24	<u>WG1579977</u>

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	4.58		0.280	0.672	1	11/24/2020 04:46	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	22.7	В	6.02	17.8	100	11/20/2020 23:48	WG1579992
(S) a,a,a-Trifluorotoluene(FID)	97.7			77.0-120		11/20/2020 23:48	WG1579992



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0979		0.000830	0.00178	1	11/22/2020 10:57	WG1580624
oluene	0.369		0.00231	0.00888	1	11/22/2020 10:57	WG1580624
thylbenzene	0.0592		0.00131	0.00444	1	11/22/2020 10:57	WG1580624
otal Xylenes	0.234		0.00156	0.0115	1	11/22/2020 10:57	WG1580624
ethyl tert-butyl ether	U		0.000622	0.00178	1	11/22/2020 10:57	WG1580624
-Dichloroethane	U		0.00115	0.00444	1	11/22/2020 10:57	WG1580624
-Dibromoethane	U		0.00115	0.00444	1	11/22/2020 10:57	WG1580624
(S) Toluene-d8	106			75.0-131		11/22/2020 10:57	WG1580624
'S) 4-Bromofluorobenzene	97.3			67.0-138		11/22/2020 10:57	WG1580624
(S) 1,2-Dichloroethane-d4	91.5			70.0-130		11/22/2020 10:57	WG1580624



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#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.79	5.38	1	11/23/2020 01:54	WG1580176
Residual Range Organics (RRO)	U		4.48	13.4	1	11/23/2020 01:54	WG1580176
(S) o-Terphenyl	54.3			18.0-148		11/23/2020 01:54	WG1580176

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ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	97.8		1	11/21/2020 05:24	WG1579977

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.07		0.213	0.511	1	11/24/2020 05:35	WG1580070



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#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		0.887	2.61	25	11/20/2020 21:38	WG1579992
(S) a,a,a-Trifluorotoluene(FID)	97.3			77.0-120		11/20/2020 21:38	WG1579992



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.000678	J	0.000488	0.00105	1	11/21/2020 13:01	WG1580286
Toluene	0.00339	<u>J</u>	0.00136	0.00523	1	11/21/2020 13:01	WG1580286
Ethylbenzene	0.00153	<u>J</u>	0.000771	0.00261	1	11/21/2020 13:01	WG1580286
Total Xylenes	0.00681		0.000920	0.00680	1	11/21/2020 13:01	WG1580286
Methyl tert-butyl ether	U		0.000366	0.00105	1	11/21/2020 13:01	WG1580286
1,2-Dichloroethane	U		0.000679	0.00261	1	11/21/2020 13:01	WG1580286
1,2-Dibromoethane	U		0.000678	0.00261	1	11/21/2020 13:01	WG1580286
(S) Toluene-d8	105			75.0-131		11/21/2020 13:01	WG1580286
(S) 4-Bromofluorobenzene	96.6			67.0-138		11/21/2020 13:01	WG1580286
(S) 1,2-Dichloroethane-d4	82.4			70.0-130		11/21/2020 13:01	WG1580286



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.36	4.09	1	11/23/2020 02:07	WG1580176
Residual Range Organics (RRO)	U		3.40	10.2	1	11/23/2020 02:07	WG1580176
(S) o-Terphenyl	93.8			18.0-148		11/23/2020 02:07	WG1580176

#### ONE LAB. NATIONWIDE.

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	82.9		1	11/21/2020 05:24	WG1579977

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#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	28.3		0.482	2.41	1	11/24/2020 05:43	WG1580070
Lead	35.1		0.251	0.603	1	11/24/2020 05:43	WG1580070
Nickel	17.6		0.159	2.41	1	11/24/2020 05:43	WG1580070
Zinc	51.6		1.00	6.03	1	11/24/2020 05:43	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	9750		246	729	5000	11/21/2020 18:28	WG1580333
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		11/21/2020 18:28	WG1580333



#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry) Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg	mg/kg	mg/kg		date / time	
Benzene	12.3	0.0273	0.0583	40	11/22/2020 12:06	WG1580395
Bromobenzene	U	0.0525	0.729	40	11/22/2020 12:06	WG1580395
Bromodichloromethane	U	0.0423	0.146	40	11/22/2020 12:06	WG1580395
Bromoform	U	0.0682	1.46	40	11/22/2020 12:06	WG1580395
Bromomethane	U	0.115	0.729	40	11/22/2020 12:06	WG1580395
Carbon tetrachloride	U	0.0523	0.292	40	11/22/2020 12:06	WG1580395
Chlorobenzene	U	0.0122	0.146	40	11/22/2020 12:06	WG1580395
Chlorodibromomethane	U	0.0357	0.146	40	11/22/2020 12:06	WG1580395
Chloroethane	U	0.0991	0.292	40	11/22/2020 12:06	WG1580395
Chloroform	U	0.0601	0.146	40	11/22/2020 12:06	WG1580395
Chloromethane	U	0.254	0.729	40	11/22/2020 12:06	WG1580395
2-Chlorotoluene	U	0.0504	0.146	40	11/22/2020 12:06	WG1580395
4-Chlorotoluene	U	0.0262	0.292	40	11/22/2020 12:06	WG1580395
1,2-Dibromo-3-Chloropropane	U	0.227	1.46	40	11/22/2020 12:06	WG1580395
1,2-Dibromoethane	U	0.0378	0.146	40	11/22/2020 12:06	WG1580395
Dibromomethane	U	0.0437	0.292	40	11/22/2020 12:06	WG1580395
1,2-Dichlorobenzene	U	0.0248	0.292	40	11/22/2020 12:06	WG1580395
1,3-Dichlorobenzene	U	0.0350	0.292	40	11/22/2020 12:06	WG1580395
1,4-Dichlorobenzene	U	0.0408	0.292	40	11/22/2020 12:06	WG1580395
Dichlorodifluoromethane	U	0.0939	0.146	40	11/22/2020 12:06	WG1580395
1,1-Dichloroethane	U	0.0286	0.146	40	11/22/2020 12:06	WG1580395
1,2-Dichloroethane	U	0.0379	0.146	40	11/22/2020 12:06	WG1580395
1,1-Dichloroethene	U	0.0353	0.146	40	11/22/2020 12:06	WG1580395
cis-1,2-Dichloroethene	U	0.0429	0.146	40	11/22/2020 12:06	WG1580395
trans-1,2-Dichloroethene	U	0.0606	0.292	40	11/22/2020 12:06	WG1580395
1,2-Dichloropropane	U	0.0828	0.292	40	11/22/2020 12:06	WG1580395
1,1-Dichloropropene	U	0.0472	0.146	40	11/22/2020 12:06	WG1580395
1,3-Dichloropropane	U	0.0292	0.292	40	11/22/2020 12:06	WG1580395
cis-1,3-Dichloropropene	U	0.0442	0.146	40	11/22/2020 12:06	WG1580395
trans-1,3-Dichloropropene	U	0.0665	0.292	40	11/22/2020 12:06	WG1580395
2,2-Dichloropropane	U	0.0805	0.146	40	11/22/2020 12:06	WG1580395
Ethylbenzene	122	0.860	2.92	800	11/22/2020 19:38	WG1580806
Hexachloro-1,3-butadiene	U	0.350	1.46	40	11/22/2020 12:06	WG1580395
Methylene Chloride	U	0.388	1.46	40	11/22/2020 12:06	WG1580395
Methyl tert-butyl ether	U	0.0204	0.0583	40	11/22/2020 12:06	WG1580395

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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg	<u> </u>	mg/kg	mg/kg		date / time	<del></del>
1,1,1,2-Tetrachloroethane	U		0.0553	0.146	40	11/22/2020 12:06	WG1580395
1,1,2,2-Tetrachloroethane	U		0.0405	0.146	40	11/22/2020 12:06	WG1580395
1,1,2-Trichlorotrifluoroethane	U		0.0440	0.146	40	11/22/2020 12:06	WG1580395
Tetrachloroethene	U		0.0522	0.146	40	11/22/2020 12:06	WG1580395
Toluene	195		1.52	5.83	800	11/22/2020 19:38	WG1580806
1,2,3-Trichlorobenzene	U		0.427	0.729	40	11/22/2020 12:06	WG1580395
1,2,4-Trichlorobenzene	U		0.257	0.729	40	11/22/2020 12:06	WG1580395
1,1,1-Trichloroethane	U		0.0538	0.146	40	11/22/2020 12:06	WG1580395
1,1,2-Trichloroethane	U		0.0348	0.146	40	11/22/2020 12:06	WG1580395
Trichloroethene	U		0.0341	0.0583	40	11/22/2020 12:06	WG1580395
Trichlorofluoromethane	U		0.0483	0.146	40	11/22/2020 12:06	WG1580395
1,2,3-Trichloropropane	U		0.0945	0.729	40	11/22/2020 12:06	WG1580395
Vinyl chloride	U		0.0676	0.146	40	11/22/2020 12:06	WG1580395
Xylenes, Total	682		1.03	7.58	800	11/22/2020 19:38	WG1580806
(S) Toluene-d8	94.3			75.0-131		11/22/2020 12:06	WG1580395
(S) Toluene-d8	105			75.0-131		11/22/2020 19:38	WG1580806
(S) 4-Bromofluorobenzene	107			67.0-138		11/22/2020 12:06	WG1580395
(S) 4-Bromofluorobenzene	92.7			67.0-138		11/22/2020 19:38	WG1580806
(S) 1,2-Dichloroethane-d4	96.9			70.0-130		11/22/2020 12:06	WG1580395
(S) 1,2-Dichloroethane-d4	114			70.0-130		11/22/2020 19:38	WG1580806



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	528		8.02	24.1	5	11/23/2020 04:01	WG1580176
Residual Range Organics (RRO)	U		20.0	60.3	5	11/23/2020 04:01	WG1580176
(S) o-Terphenyl	63.5			18.0-148		11/23/2020 04:01	WG1580176

#### Sample Narrative:

L1286649-15 WG1580176: Dilution due to matrix.

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0142	0.0410	1	11/23/2020 19:06	WG1580730
PCB 1221	U		0.0142	0.0410	1	11/23/2020 19:06	WG1580730
PCB 1232	U		0.0142	0.0410	1	11/23/2020 19:06	WG1580730
PCB 1242	U		0.0142	0.0410	1	11/23/2020 19:06	WG1580730
PCB 1248	U		0.00890	0.0205	1	11/23/2020 19:06	WG1580730
PCB 1254	U		0.00890	0.0205	1	11/23/2020 19:06	WG1580730
PCB 1260	U		0.00890	0.0205	1	11/23/2020 19:06	WG1580730
(S) Decachlorobiphenyl	65.2			10.0-135		11/23/2020 19:06	WG1580730
(S) Tetrachloro-m-xylene	75.9			10.0-139		11/23/2020 19:06	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.00287	<u>J</u>	0.00209	0.00723	1	11/22/2020 05:19	WG1580173
Benzo(a)pyrene	U		0.00216	0.00723	1	11/22/2020 05:19	WG1580173
Benzo(b)fluoranthene	U		0.00184	0.00723	1	11/22/2020 05:19	WG1580173
Benzo(k)fluoranthene	U		0.00259	0.00723	1	11/22/2020 05:19	WG1580173
Chrysene	0.00281	<u>J</u>	0.00280	0.00723	1	11/22/2020 05:19	WG1580173
Dibenz(a,h)anthracene	U		0.00207	0.00723	1	11/22/2020 05:19	WG1580173
Indeno(1,2,3-cd)pyrene	U		0.00218	0.00723	1	11/22/2020 05:19	WG1580173
Naphthalene	21.6		0.0984	0.482	20	11/23/2020 16:08	WG1580173

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Collected date/time: 11/08/20 13:23

#### SAMPLE RESULTS - 15

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1-Methylnaphthalene	2.81		0.00541	0.0241	1	11/22/2020 05:19	WG1580173
2-Methylnaphthalene	14.3		0.103	0.482	20	11/23/2020 16:08	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/23/2020 16:08	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/22/2020 05:19	WG1580173
(S) 2-Fluorobiphenyl	68.1	<u>J7</u>		34.0-125		11/23/2020 16:08	WG1580173
(S) 2-Fluorobiphenyl	90.5			34.0-125		11/22/2020 05:19	WG1580173
(S) p-Terphenyl-d14	103			23.0-120		11/22/2020 05:19	WG1580173
(S) p-Terphenyl-d14	145	J7		23.0-120		11/23/2020 16:08	WG1580173



















L1286649-15 WG1580173: Surrogate failure due to matrix interference

#### ONE LAB. NATIONWIDE.

L1286649

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	77.0		1	11/21/2020 05:24	WG1579977

#### Metals (ICP) by Method 6010D

	Result (dry) Qua	alifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	33.9		0.519	2.60	1	11/24/2020 05:46	WG1580070
Lead	18.8		0.270	0.649	1	11/24/2020 05:46	WG1580070
Nickel	20.3		0.171	2.60	1	11/24/2020 05:46	WG1580070
Zinc	65.8		1.08	6.49	1	11/24/2020 05:46	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	8150		281	832	5000	11/21/2020 18:51	WG1580333
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/21/2020 18:51	WG1580333



## Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	6.40		0.0311	0.0665	40	11/22/2020 12:25	WG1580395
Bromobenzene	U		0.0599	0.832	40	11/22/2020 12:25	WG1580395
Bromodichloromethane	U		0.0482	0.166	40	11/22/2020 12:25	WG1580395
Bromoform	U		0.0778	1.66	40	11/22/2020 12:25	WG1580395
Bromomethane	U		0.131	0.832	40	11/22/2020 12:25	WG1580395
Carbon tetrachloride	U		0.0597	0.333	40	11/22/2020 12:25	WG1580395
Chlorobenzene	U		0.0140	0.166	40	11/22/2020 12:25	WG1580395
Chlorodibromomethane	U		0.0407	0.166	40	11/22/2020 12:25	WG1580395
Chloroethane	U		0.113	0.333	40	11/22/2020 12:25	WG1580395
Chloroform	U		0.0685	0.166	40	11/22/2020 12:25	WG1580395
Chloromethane	U		0.289	0.832	40	11/22/2020 12:25	WG1580395
2-Chlorotoluene	U		0.0575	0.166	40	11/22/2020 12:25	WG1580395
I-Chlorotoluene	U		0.0299	0.333	40	11/22/2020 12:25	WG1580395
,2-Dibromo-3-Chloropropane	U		0.259	1.66	40	11/22/2020 12:25	WG1580395
,2-Dibromoethane	U		0.0431	0.166	40	11/22/2020 12:25	WG1580395
Dibromomethane	U		0.0499	0.333	40	11/22/2020 12:25	WG1580395
,2-Dichlorobenzene	U		0.0283	0.333	40	11/22/2020 12:25	WG1580395
,3-Dichlorobenzene	U		0.0399	0.333	40	11/22/2020 12:25	WG1580395
,4-Dichlorobenzene	U		0.0466	0.333	40	11/22/2020 12:25	WG1580395
Dichlorodifluoromethane	U		0.107	0.166	40	11/22/2020 12:25	WG1580395
,1-Dichloroethane	U		0.0326	0.166	40	11/22/2020 12:25	WG1580395
l,2-Dichloroethane	U		0.0432	0.166	40	11/22/2020 12:25	WG1580395
,1-Dichloroethene	U		0.0402	0.166	40	11/22/2020 12:25	WG1580395
cis-1,2-Dichloroethene	U		0.0489	0.166	40	11/22/2020 12:25	WG1580395
rans-1,2-Dichloroethene	U		0.0692	0.333	40	11/22/2020 12:25	WG1580395
,2-Dichloropropane	U		0.0945	0.333	40	11/22/2020 12:25	WG1580395
l,1-Dichloropropene	U		0.0539	0.166	40	11/22/2020 12:25	WG1580395
,3-Dichloropropane	U		0.0333	0.333	40	11/22/2020 12:25	WG1580395
cis-1,3-Dichloropropene	U		0.0504	0.166	40	11/22/2020 12:25	WG1580395
rans-1,3-Dichloropropene	U		0.0758	0.333	40	11/22/2020 12:25	WG1580395
2,2-Dichloropropane	U		0.0918	0.166	40	11/22/2020 12:25	WG1580395
thylbenzene	104		0.981	3.33	800	11/22/2020 19:56	WG1580806
Hexachloro-1,3-butadiene	U		0.399	1.66	40	11/22/2020 12:25	WG1580395
Methylene Chloride	U		0.442	1.66	40	11/22/2020 12:25	WG1580395
Methyl tert-butyl ether	U		0.0233	0.0665	40	11/22/2020 12:25	WG1580395

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ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

SDG: L1286649

DATE/TIME: 12/01/20 15:43

PAGE: 40 of 189

#### ONE LAB. NATIONWIDE.

Collected date/time: 11/08/20 14:09

L1286649

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0630	0.166	40	11/22/2020 12:25	WG1580395
1,1,2,2-Tetrachloroethane	U		0.0462	0.166	40	11/22/2020 12:25	WG1580395
1,1,2-Trichlorotrifluoroethane	U		0.0502	0.166	40	11/22/2020 12:25	WG1580395
Tetrachloroethene	U		0.0595	0.166	40	11/22/2020 12:25	WG1580395
Toluene	170		1.73	6.65	800	11/22/2020 19:56	WG1580806
1,2,3-Trichlorobenzene	U		0.487	0.832	40	11/22/2020 12:25	WG1580395
1,2,4-Trichlorobenzene	U		0.293	0.832	40	11/22/2020 12:25	WG1580395
1,1,1-Trichloroethane	U		0.0614	0.166	40	11/22/2020 12:25	WG1580395
1,1,2-Trichloroethane	U		0.0397	0.166	40	11/22/2020 12:25	WG1580395
Trichloroethene	U		0.0389	0.0665	40	11/22/2020 12:25	WG1580395
Trichlorofluoromethane	U		0.0550	0.166	40	11/22/2020 12:25	WG1580395
1,2,3-Trichloropropane	U		0.108	0.832	40	11/22/2020 12:25	WG1580395
Vinyl chloride	U		0.0772	0.166	40	11/22/2020 12:25	WG1580395
Xylenes, Total	632		1.17	8.65	800	11/22/2020 19:56	WG1580806
(S) Toluene-d8	97.9			75.0-131		11/22/2020 12:25	WG1580395
(S) Toluene-d8	106			75.0-131		11/22/2020 19:56	WG1580806
(S) 4-Bromofluorobenzene	105			67.0-138		11/22/2020 12:25	WG1580395
(S) 4-Bromofluorobenzene	93.6			67.0-138		11/22/2020 19:56	WG1580806
(S) 1,2-Dichloroethane-d4	107			70.0-130		11/22/2020 12:25	WG1580395
(S) 1,2-Dichloroethane-d4	114			70.0-130		11/22/2020 19:56	WG1580806













#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	868		8.63	26.0	5	11/23/2020 04:14	WG1580176
Residual Range Organics (RRO)	U		21.5	64.9	5	11/23/2020 04:14	WG1580176
(S) o-Terphenyl	82.7			18.0-148		11/23/2020 04:14	WG1580176

#### Sample Narrative:

L1286649-16 WG1580176: Dilution due to matrix.

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0153	0.0441	1	11/23/2020 19:16	WG1580730
PCB 1221	U		0.0153	0.0441	1	11/23/2020 19:16	WG1580730
PCB 1232	U		0.0153	0.0441	1	11/23/2020 19:16	WG1580730
PCB 1242	U		0.0153	0.0441	1	11/23/2020 19:16	WG1580730
PCB 1248	U		0.00958	0.0221	1	11/23/2020 19:16	WG1580730
PCB 1254	U		0.00958	0.0221	1	11/23/2020 19:16	WG1580730
PCB 1260	U		0.00958	0.0221	1	11/23/2020 19:16	WG1580730
(S) Decachlorobiphenyl	66.3			10.0-135		11/23/2020 19:16	WG1580730
(S) Tetrachloro-m-xylene	74.4			10.0-139		11/23/2020 19:16	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.00340	<u>J</u>	0.00225	0.00779	1	11/22/2020 05:42	WG1580173
Benzo(a)pyrene	U		0.00232	0.00779	1	11/22/2020 05:42	WG1580173
Benzo(b)fluoranthene	U		0.00199	0.00779	1	11/22/2020 05:42	WG1580173
Benzo(k)fluoranthene	U		0.00279	0.00779	1	11/22/2020 05:42	WG1580173
Chrysene	0.00408	<u>J</u>	0.00301	0.00779	1	11/22/2020 05:42	WG1580173
Dibenz(a,h)anthracene	U		0.00223	0.00779	1	11/22/2020 05:42	WG1580173
Indeno(1,2,3-cd)pyrene	U		0.00235	0.00779	1	11/22/2020 05:42	WG1580173
Naphthalene	38.3		0.106	0.519	20	11/23/2020 16:32	WG1580173

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Sample Narrative:

#### SAMPLE RESULTS - 16

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-16 WG1580173: Surrogate failure due to matrix interference

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1-Methylnaphthalene	11.5		0.117	0.519	20	11/23/2020 16:32	WG1580173
2-Methylnaphthalene	24.3		0.111	0.519	20	11/23/2020 16:32	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/23/2020 16:32	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/22/2020 05:42	WG1580173
(S) 2-Fluorobiphenyl	69.0	<u>J7</u>		34.0-125		11/23/2020 16:32	WG1580173
(S) 2-Fluorobiphenyl	91.3			34.0-125		11/22/2020 05:42	WG1580173
(S) p-Terphenyl-d14	100			23.0-120		11/22/2020 05:42	WG1580173
(S) p-Terphenyl-d14	146	J7		23.0-120		11/23/2020 16:32	WG1580173



















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#### SAMPLE RESULTS - 17 L1286649

ONE LAB. NATIONWIDE.

Collected date/time: 11/08/20 14:12

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	76.7		1	11/21/2020 05:01	WG1579978

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#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	36.1		0.521	2.61	1	11/24/2020 05:48	WG1580070
Lead	16.0		0.271	0.651	1	11/24/2020 05:48	WG1580070
Nickel	21.1		0.172	2.61	1	11/24/2020 05:48	WG1580070
Zinc	67.0		1.08	6.51	1	11/24/2020 05:48	WG1580070



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## Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	7810	В	285	844	5000	11/21/2020 19:14	WG1580333
(S) a,a,a-Trifluorotoluene(FID)	113			77.0-120		11/21/2020 19:14	WG1580333



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	3.93		0.0315	0.0675	40	11/22/2020 12:44	WG1580395
Bromobenzene	U		0.0607	0.844	40	11/22/2020 12:44	WG1580395
Bromodichloromethane	U		0.0489	0.169	40	11/22/2020 12:44	WG1580395
Bromoform	U		0.0790	1.69	40	11/22/2020 12:44	WG1580395
Bromomethane	U		0.133	0.844	40	11/22/2020 12:44	WG1580395
Carbon tetrachloride	U		0.0606	0.337	40	11/22/2020 12:44	WG1580395
Chlorobenzene	U		0.0142	0.169	40	11/22/2020 12:44	WG1580395
Chlorodibromomethane	U		0.0413	0.169	40	11/22/2020 12:44	WG1580395
Chloroethane	U		0.115	0.337	40	11/22/2020 12:44	WG1580395
Chloroform	U		0.0695	0.169	40	11/22/2020 12:44	WG1580395
Chloromethane	U		0.294	0.844	40	11/22/2020 12:44	WG1580395
2-Chlorotoluene	U		0.0584	0.169	40	11/22/2020 12:44	WG1580395
4-Chlorotoluene	U		0.0304	0.337	40	11/22/2020 12:44	WG1580395
1,2-Dibromo-3-Chloropropane	U		0.263	1.69	40	11/22/2020 12:44	WG1580395
1,2-Dibromoethane	U		0.0437	0.169	40	11/22/2020 12:44	WG1580395
Dibromomethane	U		0.0506	0.337	40	11/22/2020 12:44	WG1580395
1,2-Dichlorobenzene	U		0.0287	0.337	40	11/22/2020 12:44	WG1580395
1,3-Dichlorobenzene	U		0.0405	0.337	40	11/22/2020 12:44	WG1580395
1,4-Dichlorobenzene	U		0.0472	0.337	40	11/22/2020 12:44	WG1580395
Dichlorodifluoromethane	U		0.109	0.169	40	11/22/2020 12:44	WG1580395
1,1-Dichloroethane	U		0.0331	0.169	40	11/22/2020 12:44	WG1580395
1,2-Dichloroethane	U		0.0439	0.169	40	11/22/2020 12:44	WG1580395
1,1-Dichloroethene	U		0.0408	0.169	40	11/22/2020 12:44	WG1580395
cis-1,2-Dichloroethene	U		0.0496	0.169	40	11/22/2020 12:44	WG1580395
trans-1,2-Dichloroethene	U		0.0702	0.337	40	11/22/2020 12:44	WG1580395
1,2-Dichloropropane	U		0.0958	0.337	40	11/22/2020 12:44	WG1580395
1,1-Dichloropropene	U		0.0547	0.169	40	11/22/2020 12:44	WG1580395
1,3-Dichloropropane	U		0.0337	0.337	40	11/22/2020 12:44	WG1580395
cis-1,3-Dichloropropene	U		0.0511	0.169	40	11/22/2020 12:44	WG1580395
trans-1,3-Dichloropropene	U		0.0769	0.337	40	11/22/2020 12:44	WG1580395
2,2-Dichloropropane	U		0.0931	0.169	40	11/22/2020 12:44	WG1580395
Ethylbenzene	44.7		0.498	1.69	400	11/22/2020 22:05	WG1580825
Hexachloro-1,3-butadiene	U		0.405	1.69	40	11/22/2020 12:44	WG1580395
Methylene Chloride	U		0.449	1.69	40	11/22/2020 12:44	WG1580395
Methyl tert-butyl ether	U		0.0236	0.0675	40	11/22/2020 12:44	WG1580395

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ONE LAB. NATIONWIDE.

Collected date/time: 11/08/20 14:12

L1286649

#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0639	0.169	40	11/22/2020 12:44	WG1580395
1,1,2,2-Tetrachloroethane	U		0.0469	0.169	40	11/22/2020 12:44	WG1580395
1,1,2-Trichlorotrifluoroethane	U		0.0510	0.169	40	11/22/2020 12:44	WG1580395
Tetrachloroethene	U		0.0604	0.169	40	11/22/2020 12:44	WG1580395
Toluene	50.4		0.877	3.37	400	11/22/2020 22:05	WG1580825
1,2,3-Trichlorobenzene	U		0.494	0.844	40	11/22/2020 12:44	WG1580395
1,2,4-Trichlorobenzene	U		0.297	0.844	40	11/22/2020 12:44	WG1580395
1,1,1-Trichloroethane	U		0.0623	0.169	40	11/22/2020 12:44	WG1580395
1,1,2-Trichloroethane	U		0.0403	0.169	40	11/22/2020 12:44	WG1580395
Trichloroethene	U		0.0395	0.0675	40	11/22/2020 12:44	WG1580395
Trichlorofluoromethane	U		0.0558	0.169	40	11/22/2020 12:44	WG1580395
1,2,3-Trichloropropane	U		0.109	0.844	40	11/22/2020 12:44	WG1580395
Vinyl chloride	U		0.0783	0.169	40	11/22/2020 12:44	WG1580395
Xylenes, Total	280		0.594	4.39	400	11/22/2020 22:05	WG1580825
(S) Toluene-d8	97.9			75.0-131		11/22/2020 12:44	WG1580395
(S) Toluene-d8	101			75.0-131		11/22/2020 22:05	WG1580825
(S) 4-Bromofluorobenzene	104			67.0-138		11/22/2020 12:44	WG1580395
(S) 4-Bromofluorobenzene	111			67.0-138		11/22/2020 22:05	WG1580825
(S) 1,2-Dichloroethane-d4	95.8			70.0-130		11/22/2020 12:44	WG1580395
(S) 1,2-Dichloroethane-d4	89.4			70.0-130		11/22/2020 22:05	WG1580825

# <sup>3</sup>Ss <sup>4</sup>Cn

# <sup>6</sup>Qc







#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	607		8.66	26.1	5	11/23/2020 04:27	WG1580176
Residual Range Organics (RRO)	U		21.6	65.1	5	11/23/2020 04:27	WG1580176
(S) o-Terphenyl	79.1			18.0-148		11/23/2020 04:27	WG1580176

#### Sample Narrative:

L1286649-17 WG1580176: Dilution due to matrix.

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0154	0.0443	1	11/23/2020 19:26	WG1580730
PCB 1221	U		0.0154	0.0443	1	11/23/2020 19:26	WG1580730
PCB 1232	U		0.0154	0.0443	1	11/23/2020 19:26	WG1580730
PCB 1242	U		0.0154	0.0443	1	11/23/2020 19:26	WG1580730
PCB 1248	U		0.00962	0.0222	1	11/23/2020 19:26	WG1580730
PCB 1254	U		0.00962	0.0222	1	11/23/2020 19:26	WG1580730
PCB 1260	U		0.00962	0.0222	1	11/23/2020 19:26	WG1580730
(S) Decachlorobiphenyl	77.2			10.0-135		11/23/2020 19:26	WG1580730
(S) Tetrachloro-m-xylene	85.7			10.0-139		11/23/2020 19:26	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.00304	<u>J</u>	0.00225	0.00782	1	11/22/2020 06:05	WG1580173
Benzo(a)pyrene	U		0.00233	0.00782	1	11/22/2020 06:05	WG1580173
Benzo(b)fluoranthene	U		0.00199	0.00782	1	11/22/2020 06:05	WG1580173
Benzo(k)fluoranthene	U		0.00280	0.00782	1	11/22/2020 06:05	WG1580173
Chrysene	0.00352	J	0.00302	0.00782	1	11/22/2020 06:05	WG1580173
Dibenz(a,h)anthracene	U		0.00224	0.00782	1	11/22/2020 06:05	WG1580173
Indeno(1,2,3-cd)pyrene	U		0.00236	0.00782	1	11/22/2020 06:05	WG1580173
Naphthalene	30.0		0.106	0.521	20	11/23/2020 16:56	WG1580173

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Collected date/time: 11/08/20 14:12

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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1-Methylnaphthalene	3.10		0.00585	0.0261	1	11/22/2020 06:05	WG1580173
2-Methylnaphthalene	18.9		0.111	0.521	20	11/23/2020 16:56	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/22/2020 06:05	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/23/2020 16:56	WG1580173
(S) 2-Fluorobiphenyl	63.6	<u>J7</u>		34.0-125		11/23/2020 16:56	WG1580173
(S) 2-Fluorobiphenyl	84.0			34.0-125		11/22/2020 06:05	WG1580173
(S) p-Terphenyl-d14	146	<u>J7</u>		23.0-120		11/23/2020 16:56	WG1580173
(S) p-Terphenyl-d14	93.4			23.0-120		11/22/2020 06:05	WG1580173



















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L1286649-17 WG1580173: Surrogate failure due to matrix interference

#### ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	74.3		1	11/21/2020 05:01	WG1579978

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	18.4		0.280	0.673	1	11/24/2020 05:51	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	18100		602	1780	10000	11/21/2020 19:37	WG1580333
(S) a,a,a-Trifluorotoluene(FID)	99.8			77.0-120		11/21/2020 19:37	WG1580333



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	47.6		0.0332	0.0711	40	11/21/2020 15:32	WG1580286
Toluene	345		2.31	8.88	1000	11/22/2020 11:16	WG1580624
Ethylbenzene	121		1.31	4.44	1000	11/22/2020 11:16	WG1580624
Total Xylenes	616		1.56	11.5	1000	11/22/2020 11:16	WG1580624
Methyl tert-butyl ether	U		0.0249	0.0711	40	11/21/2020 15:32	WG1580286
1,2-Dichloroethane	U		0.0462	0.178	40	11/21/2020 15:32	WG1580286
1,2-Dibromoethane	U		0.0460	0.178	40	11/21/2020 15:32	WG1580286
(S) Toluene-d8	104			75.0-131		11/21/2020 15:32	WG1580286
(S) Toluene-d8	103			75.0-131		11/22/2020 11:16	WG1580624
(S) 4-Bromofluorobenzene	105			67.0-138		11/21/2020 15:32	WG1580286
(S) 4-Bromofluorobenzene	95.9			67.0-138		11/22/2020 11:16	WG1580624
(S) 1,2-Dichloroethane-d4	104			70.0-130		11/21/2020 15:32	WG1580286
(S) 1,2-Dichloroethane-d4	96.4			70.0-130		11/22/2020 11:16	WG1580624



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	123		1.79	5.38	1	11/23/2020 02:20	WG1580176
Residual Range Organics (RRO)	U		4.48	13.5	1	11/23/2020 02:20	WG1580176
(S) o-Terphenyl	74.8			18.0-148		11/23/2020 02:20	WG1580176

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#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	78.1		1	11/21/2020 05:01	WG1579978

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#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	29.4		0.512	2.56	1	11/24/2020 05:53	WG1580070
Lead	33.7		0.266	0.640	1	11/24/2020 05:53	WG1580070
Nickel	17.7		0.169	2.56	1	11/24/2020 05:53	WG1580070
Zinc	58.5		1.07	6.40	1	11/24/2020 05:53	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	20600	<u>J3</u>	278	823	5000	11/22/2020 16:13	WG1580603
(S) a,a,a-Trifluorotoluene(FID)	108			77.0-120		11/22/2020 16:13	WG1580603



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	7.85		0.0308	0.0659	40	11/22/2020 13:03	WG1580395
Bromobenzene	U		0.0593	0.823	40	11/22/2020 13:03	WG1580395
Bromodichloromethane	U		0.0477	0.165	40	11/22/2020 13:03	WG1580395
Bromoform	U		0.0770	1.65	40	11/22/2020 13:03	WG1580395
Bromomethane	U		0.130	0.823	40	11/22/2020 13:03	WG1580395
Carbon tetrachloride	U		0.0591	0.329	40	11/22/2020 13:03	WG1580395
Chlorobenzene	U		0.0138	0.165	40	11/22/2020 13:03	WG1580395
Chlorodibromomethane	U		0.0403	0.165	40	11/22/2020 13:03	WG1580395
Chloroethane	U		0.112	0.329	40	11/22/2020 13:03	WG1580395
Chloroform	U		0.0678	0.165	40	11/22/2020 13:03	WG1580395
Chloromethane	U		0.286	0.823	40	11/22/2020 13:03	WG1580395
2-Chlorotoluene	U		0.0570	0.165	40	11/22/2020 13:03	WG1580395
4-Chlorotoluene	U		0.0296	0.329	40	11/22/2020 13:03	WG1580395
1,2-Dibromo-3-Chloropropane	U		0.257	1.65	40	11/22/2020 13:03	WG1580395
l,2-Dibromoethane	U		0.0426	0.165	40	11/22/2020 13:03	WG1580395
Dibromomethane	U		0.0494	0.329	40	11/22/2020 13:03	WG1580395
1,2-Dichlorobenzene	U		0.0280	0.329	40	11/22/2020 13:03	WG1580395
1,3-Dichlorobenzene	U		0.0395	0.329	40	11/22/2020 13:03	WG1580395
1,4-Dichlorobenzene	U		0.0461	0.329	40	11/22/2020 13:03	WG1580395
Dichlorodifluoromethane	U		0.106	0.165	40	11/22/2020 13:03	WG1580395
1,1-Dichloroethane	U		0.0323	0.165	40	11/22/2020 13:03	WG1580395
1,2-Dichloroethane	U		0.0428	0.165	40	11/22/2020 13:03	WG1580395
1,1-Dichloroethene	U		0.0398	0.165	40	11/22/2020 13:03	WG1580395
cis-1,2-Dichloroethene	U		0.0484	0.165	40	11/22/2020 13:03	WG1580395
trans-1,2-Dichloroethene	U		0.0685	0.329	40	11/22/2020 13:03	WG1580395
1,2-Dichloropropane	U		0.0935	0.329	40	11/22/2020 13:03	WG1580395
1,1-Dichloropropene	U		0.0533	0.165	40	11/22/2020 13:03	WG1580395
1,3-Dichloropropane	U		0.0329	0.329	40	11/22/2020 13:03	WG1580395
cis-1,3-Dichloropropene	U		0.0499	0.165	40	11/22/2020 13:03	WG1580395
trans-1,3-Dichloropropene	U		0.0751	0.329	40	11/22/2020 13:03	WG1580395
2,2-Dichloropropane	U		0.0909	0.165	40	11/22/2020 13:03	WG1580395
Ethylbenzene	90.7		0.486	1.65	400	11/22/2020 20:16	WG1580806
Hexachloro-1,3-butadiene	U		0.395	1.65	40	11/22/2020 13:03	WG1580395
Methylene Chloride	U		0.438	1.65	40	11/22/2020 13:03	WG1580395
				0.0659			

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ONE LAB. NATIONWIDE.

Collected date/time: 11/08/20 16:05

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0624	0.165	40	11/22/2020 13:03	WG1580395
1,1,2,2-Tetrachloroethane	U		0.0458	0.165	40	11/22/2020 13:03	WG1580395
1,1,2-Trichlorotrifluoroethane	U		0.0497	0.165	40	11/22/2020 13:03	WG1580395
Tetrachloroethene	U		0.0589	0.165	40	11/22/2020 13:03	WG1580395
Toluene	102		0.856	3.29	400	11/22/2020 20:16	WG1580806
1,2,3-Trichlorobenzene	U		0.482	0.823	40	11/22/2020 13:03	WG1580395
1,2,4-Trichlorobenzene	U		0.290	0.823	40	11/22/2020 13:03	WG1580395
1,1,1-Trichloroethane	U		0.0607	0.165	40	11/22/2020 13:03	WG1580395
1,1,2-Trichloroethane	U		0.0393	0.165	40	11/22/2020 13:03	WG1580395
Trichloroethene	U		0.0385	0.0659	40	11/22/2020 13:03	WG1580395
Trichlorofluoromethane	U		0.0545	0.165	40	11/22/2020 13:03	WG1580395
1,2,3-Trichloropropane	U		0.107	0.823	40	11/22/2020 13:03	WG1580395
Vinyl chloride	U		0.0764	0.165	40	11/22/2020 13:03	WG1580395
Xylenes, Total	672		0.580	4.28	400	11/22/2020 20:16	WG1580806
(S) Toluene-d8	84.2			75.0-131		11/22/2020 13:03	WG1580395
(S) Toluene-d8	108			75.0-131		11/22/2020 20:16	WG1580806
(S) 4-Bromofluorobenzene	100			67.0-138		11/22/2020 13:03	WG1580395
(S) 4-Bromofluorobenzene	93.1			67.0-138		11/22/2020 20:16	WG1580806
(S) 1,2-Dichloroethane-d4	91.6			70.0-130		11/22/2020 13:03	WG1580395
(S) 1,2-Dichloroethane-d4	114			70.0-130		11/22/2020 20:16	WG1580806

















#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	716		8.51	25.6	5	11/23/2020 05:17	WG1580176
Residual Range Organics (RRO)	U		21.3	64.0	5	11/23/2020 05:17	WG1580176
(S) o-Terphenyl	73.9			18.0-148		11/23/2020 05:17	WG1580176

#### Sample Narrative:

L1286649-19 WG1580176: Dilution due to matrix.

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0151	0.0435	1	11/23/2020 19:36	WG1580730
PCB 1221	U		0.0151	0.0435	1	11/23/2020 19:36	WG1580730
PCB 1232	U		0.0151	0.0435	1	11/23/2020 19:36	WG1580730
PCB 1242	U		0.0151	0.0435	1	11/23/2020 19:36	WG1580730
PCB 1248	U		0.00945	0.0218	1	11/23/2020 19:36	WG1580730
PCB 1254	U		0.00945	0.0218	1	11/23/2020 19:36	WG1580730
PCB 1260	U		0.00945	0.0218	1	11/23/2020 19:36	WG1580730
(S) Decachlorobiphenyl	58.8			10.0-135		11/23/2020 19:36	WG1580730
(S) Tetrachloro-m-xylene	69.5			10.0-139		11/23/2020 19:36	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.00501	<u>J</u>	0.00221	0.00768	1	11/22/2020 08:45	WG1580173
Benzo(a)pyrene	U		0.00229	0.00768	1	11/22/2020 08:45	WG1580173
Benzo(b)fluoranthene	U		0.00196	0.00768	1	11/22/2020 08:45	WG1580173
Benzo(k)fluoranthene	U		0.00275	0.00768	1	11/22/2020 08:45	WG1580173
Chrysene	0.00588	<u>J</u>	0.00297	0.00768	1	11/22/2020 08:45	WG1580173
Dibenz(a,h)anthracene	U		0.00220	0.00768	1	11/22/2020 08:45	WG1580173
Indeno(1,2,3-cd)pyrene	U		0.00232	0.00768	1	11/22/2020 08:45	WG1580173
Naphthalene	32.0		0.104	0.512	20	11/23/2020 17:19	WG1580173

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Collected date/time: 11/08/20 16:05

#### SAMPLE RESULTS - 19

ONE LAB. NATIONWIDE.

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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg	mg/kg		date / time		
1-Methylnaphthalene	17.0		0.115	0.512	20	11/23/2020 17:19	WG1580173	
2-Methylnaphthalene	36.1		0.109	0.512	20	11/23/2020 17:19	WG1580173	
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/23/2020 17:19	WG1580173	
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/22/2020 08:45	WG1580173	
(S) 2-Fluorobiphenyl	99.4	<u>J7</u>		34.0-125		11/23/2020 17:19	WG1580173	
(S) 2-Fluorobiphenyl	95.9			34.0-125		11/22/2020 08:45	WG1580173	
(S) p-Terphenyl-d14	227	<u>J7</u>		23.0-120		11/23/2020 17:19	WG1580173	
(S) n-Ternhenvl-d14	101			23 0-120		11/22/2020 08:45	WG1580173	



















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L1286649-19 WG1580173: Surrogate failure due to matrix interference

#### ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	72.5		1	11/21/2020 05:01	WG1579978

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	20.4		0.287	0.689	1	11/24/2020 05:56	WG1580070



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	9870	<u>J3</u>	311	919	5000	11/22/2020 16:34	WG1580603
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120		11/22/2020 16:34	WG1580603



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	64.0		0.0344	0.0735	40	11/21/2020 15:50	WG1580286
Toluene	202		2.39	9.19	1000	11/22/2020 11:35	WG1580624
Ethylbenzene	109		0.0542	0.184	40	11/21/2020 15:50	WG1580286
Total Xylenes	320		1.62	12.0	1000	11/22/2020 11:35	WG1580624
Methyl tert-butyl ether	U		0.0257	0.0735	40	11/21/2020 15:50	WG1580286
1,2-Dichloroethane	U		0.0478	0.184	40	11/21/2020 15:50	WG1580286
1,2-Dibromoethane	1.79		0.0476	0.184	40	11/21/2020 15:50	WG1580286
(S) Toluene-d8	112			75.0-131		11/21/2020 15:50	WG1580286
(S) Toluene-d8	105			<i>75.0-131</i>		11/22/2020 11:35	WG1580624
(S) 4-Bromofluorobenzene	114			67.0-138		11/21/2020 15:50	WG1580286
(S) 4-Bromofluorobenzene	94.8			67.0-138		11/22/2020 11:35	WG1580624
(S) 1,2-Dichloroethane-d4	98.7			70.0-130		11/21/2020 15:50	WG1580286
(S) 1,2-Dichloroethane-d4	95.8			70.0-130		11/22/2020 11:35	WG1580624

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#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	772		9.17	27.6	5	11/23/2020 04:52	WG1580176
Residual Range Organics (RRO)	U		22.9	68.9	5	11/23/2020 04:52	WG1580176
(S) o-Terphenyl	69.7			18.0-148		11/23/2020 04:52	WG1580176

#### Sample Narrative:

L1286649-20 WG1580176: Dilution due to matrix.

ONE LAB. NATIONWIDE.

## Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	73.6		1	11/21/2020 05:01	WG1579978

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.66		0.283	0.679	1	11/24/2020 06:22	WG1580071



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.53	4.52	25	11/24/2020 13:58	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		11/24/2020 13:58	WG1581738



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00525		0.000845	0.00181	1	11/24/2020 04:25	WG1581275
Toluene	0.0197		0.00235	0.00905	1	11/24/2020 04:25	WG1581275
Ethylbenzene	0.00239	<u>J</u>	0.00133	0.00452	1	11/24/2020 04:25	WG1581275
Total Xylenes	0.00883	BJ	0.00159	0.0118	1	11/24/2020 04:25	WG1581275
Methyl tert-butyl ether	U		0.000633	0.00181	1	11/24/2020 04:25	WG1581275
1,2-Dichloroethane	U		0.00117	0.00452	1	11/24/2020 04:25	WG1581275
1,2-Dibromoethane	U		0.00117	0.00452	1	11/24/2020 04:25	WG1581275
(S) Toluene-d8	110			75.0-131		11/24/2020 04:25	WG1581275
(S) 4-Bromofluorobenzene	93.4			67.0-138		11/24/2020 04:25	WG1581275
(S) 1,2-Dichloroethane-d4	108			70.0-130		11/24/2020 04:25	WG1581275



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#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg	Qualifici	mg/kg	mg/kg	Dilution	date / time	<u> Duten</u>
Diesel Range Organics (DRO)	U		1.81	5.43	1	11/26/2020 09:07	WG1582400
Residual Range Organics (RRO)	U		4.52	13.6	1	11/26/2020 09:07	WG1582400
(S) o-Terphenyl	103			18.0-148		11/26/2020 09:07	WG1582400

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ONE LAB. NATIONWIDE.

Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	81.5		1	11/21/2020 05:01	<u>WG1579978</u>

#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	3.40		0.255	0.613	1	11/24/2020 06:24	WG1580071



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	4.01	J	1.38	4.06	28.5	11/24/2020 14:20	WG1581738
(S) a,a,a-Trifluorotoluene(FID)	102			77.0-120		11/24/2020 14:20	WG1581738



#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00960		0.000759	0.00163	1.14	11/24/2020 04:44	WG1581275
Toluene	0.0412		0.00211	0.00813	1.14	11/24/2020 04:44	WG1581275
Ethylbenzene	0.00386	<u>J</u>	0.00120	0.00406	1.14	11/24/2020 04:44	WG1581275
Total Xylenes	0.0135	В	0.00143	0.0106	1.14	11/24/2020 04:44	WG1581275
Methyl tert-butyl ether	U		0.000569	0.00163	1.14	11/24/2020 04:44	WG1581275
1,2-Dichloroethane	U		0.00106	0.00406	1.14	11/24/2020 04:44	WG1581275
l,2-Dibromoethane	U		0.00105	0.00406	1.14	11/24/2020 04:44	WG1581275
(S) Toluene-d8	113			75.0-131		11/24/2020 04:44	WG1581275
(S) 4-Bromofluorobenzene	89.4			67.0-138		11/24/2020 04:44	WG1581275
(S) 1,2-Dichloroethane-d4	106			70.0-130		11/24/2020 04:44	WG1581275



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#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.63	4.91	1	11/26/2020 10:27	WG1582400
Residual Range Organics (RRO)	U		4.08	12.3	1	11/26/2020 10:27	WG1582400
(S) o-Terphenyl	96.3			18.0-148		11/26/2020 10:27	WG1582400

Leidos Inc.- Bothell, WA

#### ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	73.9		1	11/21/2020 05:01	WG1579978



#### Metals (ICP) by Method 6010D

	Result (dry) Qualif	ier MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg	mg/kg	mg/kg		date / time	
Copper	32.9	0.541	2.71	1	11/24/2020 06:27	WG1580071
Lead	6.07	0.282	0.677	1	11/24/2020 06:27	WG1580071
Nickel	29.7	0.179	2.71	1	11/24/2020 06:27	WG1580071
Zinc	77.0	1.13	6.77	1	11/24/2020 06:27	WG1580071



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#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	912		6.11	18.0	100	11/23/2020 19:51	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120		11/23/2020 19:51	WG1581226



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0137	<u>J</u>	0.00674	0.0144	8	11/23/2020 01:08	WG1580778
Bromobenzene	U		0.0130	0.180	8	11/23/2020 01:08	WG1580778
Bromodichloromethane	U		0.0105	0.0361	8	11/23/2020 01:08	WG1580778
Bromoform	U		0.0169	0.361	8	11/23/2020 01:08	WG1580778
Bromomethane	U		0.0285	0.180	8	11/23/2020 01:08	WG1580778
Carbon tetrachloride	U		0.0129	0.0721	8	11/23/2020 01:08	WG1580778
Chlorobenzene	U		0.00303	0.0361	8	11/23/2020 01:08	WG1580778
Chlorodibromomethane	U		0.00883	0.0361	8	11/23/2020 01:08	WG1580778
Chloroethane	U		0.0245	0.0721	8	11/23/2020 01:08	WG1580778
Chloroform	U		0.0149	0.0361	8	11/23/2020 01:08	WG1580778
Chloromethane	U	<u>C3</u>	0.0627	0.180	8	11/23/2020 01:08	WG1580778
2-Chlorotoluene	U		0.0125	0.0361	8	11/23/2020 01:08	WG1580778
4-Chlorotoluene	U		0.00649	0.0721	8	11/23/2020 01:08	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.0562	0.361	8	11/23/2020 01:08	WG1580778
1,2-Dibromoethane	U		0.00934	0.0361	8	11/23/2020 01:08	WG1580778
Dibromomethane	U		0.0108	0.0721	8	11/23/2020 01:08	WG1580778
1,2-Dichlorobenzene	U		0.00613	0.0721	8	11/23/2020 01:08	WG1580778
1,3-Dichlorobenzene	U		0.00865	0.0721	8	11/23/2020 01:08	WG1580778
1,4-Dichlorobenzene	U		0.0101	0.0721	8	11/23/2020 01:08	WG1580778
Dichlorodifluoromethane	U		0.0233	0.0361	8	11/23/2020 01:08	WG1580778
1,1-Dichloroethane	U		0.00708	0.0361	8	11/23/2020 01:08	WG1580778
1,2-Dichloroethane	U		0.00936	0.0361	8	11/23/2020 01:08	WG1580778
1,1-Dichloroethene	U		0.00874	0.0361	8	11/23/2020 01:08	WG1580778
cis-1,2-Dichloroethene	U		0.0106	0.0361	8	11/23/2020 01:08	WG1580778
trans-1,2-Dichloroethene	U		0.0150	0.0721	8	11/23/2020 01:08	WG1580778
1,2-Dichloropropane	U		0.0206	0.0721	8	11/23/2020 01:08	WG1580778
1,1-Dichloropropene	U		0.0117	0.0361	8	11/23/2020 01:08	WG1580778
1,3-Dichloropropane	U		0.00723	0.0721	8	11/23/2020 01:08	WG1580778
cis-1,3-Dichloropropene	U		0.0109	0.0361	8	11/23/2020 01:08	WG1580778
trans-1,3-Dichloropropene	U		0.0164	0.0721	8	11/23/2020 01:08	WG1580778
2,2-Dichloropropane	U		0.0198	0.0361	8	11/23/2020 01:08	WG1580778
Ethylbenzene	1.25		0.0106	0.0361	8	11/23/2020 01:08	WG1580778
Hexachloro-1,3-butadiene	U		0.0865	0.361	8	11/23/2020 01:08	WG1580778
Methylene Chloride	U	<u>C3</u>	0.0957	0.361	8	11/23/2020 01:08	WG1580778
	U		0.00505	0.0144	8	11/23/2020 01:08	WG1580778

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ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

SDG: L1286649

DATE/TIME: 12/01/20 15:43

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#### ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0137	0.0361	8	11/23/2020 01:08	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0100	0.0361	8	11/23/2020 01:08	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0109	0.0361	8	11/23/2020 01:08	WG1580778
Tetrachloroethene	U		0.0129	0.0361	8	11/23/2020 01:08	WG1580778
Toluene	0.0647	<u>J</u>	0.0187	0.0721	8	11/23/2020 01:08	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.106	0.180	8	11/23/2020 01:08	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.0635	0.180	8	11/23/2020 01:08	WG1580778
1,1,1-Trichloroethane	U		0.0133	0.0361	8	11/23/2020 01:08	WG1580778
1,1,2-Trichloroethane	U		0.00862	0.0361	8	11/23/2020 01:08	WG1580778
Trichloroethene	U		0.00842	0.0144	8	11/23/2020 01:08	WG1580778
Trichlorofluoromethane	U		0.0119	0.0361	8	11/23/2020 01:08	WG1580778
1,2,3-Trichloropropane	U		0.0234	0.180	8	11/23/2020 01:08	WG1580778
Vinyl chloride	U		0.0167	0.0361	8	11/23/2020 01:08	WG1580778
Xylenes, Total	3.28		0.0127	0.0937	8	11/23/2020 01:08	WG1580778
(S) Toluene-d8	93.8			75.0-131		11/23/2020 01:08	WG1580778
(S) 4-Bromofluorobenzene	123			67.0-138		11/23/2020 01:08	WG1580778
(S) 1,2-Dichloroethane-d4	113			70.0-130		11/23/2020 01:08	WG1580778

















#### Sample Narrative:

#### Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	4530		36.0	108	20	11/29/2020 05:25	WG1582400
Residual Range Organics (RRO)	152	<u>J</u>	90.2	271	20	11/29/2020 05:25	WG1582400
(S) o-Terphenyl	0.000	<u>J7</u>		18.0-148		11/29/2020 05:25	WG1582400

#### Sample Narrative:

L1286649-23 WG1582400: Dilution due to matrix.

#### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0160	0.0460	1	11/23/2020 19:46	WG1580730
PCB 1221	U		0.0160	0.0460	1	11/23/2020 19:46	WG1580730
PCB 1232	U		0.0160	0.0460	1	11/23/2020 19:46	WG1580730
PCB 1242	U		0.0160	0.0460	1	11/23/2020 19:46	WG1580730
PCB 1248	U		0.00999	0.0230	1	11/23/2020 19:46	WG1580730
PCB 1254	U		0.00999	0.0230	1	11/23/2020 19:46	WG1580730
PCB 1260	U		0.00999	0.0230	1	11/23/2020 19:46	WG1580730
(S) Decachlorobiphenyl	71.8			10.0-135		11/23/2020 19:46	WG1580730
(S) Tetrachloro-m-xylene	80.7			10.0-139		11/23/2020 19:46	WG1580730

#### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.0387		0.00234	0.00812	1	11/23/2020 02:00	WG1580419
Benzo(a)pyrene	U		0.121	0.406	50	11/24/2020 13:55	WG1580419
Benzo(b)fluoranthene	U		0.104	0.406	50	11/24/2020 13:55	WG1580419
Benzo(k)fluoranthene	U		0.146	0.406	50	11/24/2020 13:55	WG1580419
Chrysene	0.123		0.00314	0.00812	1	11/23/2020 02:00	WG1580419
Dibenz(a,h)anthracene	U		0.116	0.406	50	11/24/2020 13:55	WG1580419
Indeno(1,2,3-cd)pyrene	U		0.123	0.406	50	11/24/2020 13:55	WG1580419
Naphthalene	8.61		0.276	1.35	50	11/24/2020 13:55	WG1580419

SRI5-8-S-14.5-201111 Collected date/time: 11/11/20 14:08

#### SAMPLE RESULTS - 23

LTS - 23 ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1-Methylnaphthalene	44.7		0.305	1.35	50	11/24/2020 13:55	WG1580419
2-Methylnaphthalene	94.1		0.290	1.35	50	11/24/2020 13:55	WG1580419
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/23/2020 02:00	WG1580419
(S) Nitrobenzene-d5	250	<u>J7</u>		14.0-149		11/24/2020 13:55	WG1580419
(S) 2-Fluorobiphenyl	0.000	<u>J2</u>		34.0-125		11/23/2020 02:00	WG1580419
(S) 2-Fluorobiphenyl	61.6	<u>J7</u>		34.0-125		11/24/2020 13:55	WG1580419
(S) p-Terphenyl-d14	244	<u>J1</u>		23.0-120		11/23/2020 02:00	WG1580419
(S) p-Terphenyl-d14	103	<u>J7</u>		23.0-120		11/24/2020 13:55	WG1580419



















L1286649-23 WG1580419: Surrogate failure due to matrix interference L1286649-23 WG1580419: IS/SURR failed on lower dilution.



#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	72.5		1	11/21/2020 05:01	WG1579978



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	4.87		0.287	0.690	1	11/24/2020 06:35	WG1580071



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	54.8		6.30	18.6	100	11/23/2020 20:12	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	109			77.0-120		11/23/2020 20:12	WG1581226



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0214		0.00694	0.0149	8	11/24/2020 06:19	WG1581275
Toluene	0.0579	<u>J</u>	0.0193	0.0743	8	11/24/2020 06:19	WG1581275
Ethylbenzene	0.0574		0.0110	0.0371	8	11/24/2020 06:19	WG1581275
Total Xylenes	0.101	В	0.0131	0.0966	8	11/24/2020 06:19	WG1581275
Methyl tert-butyl ether	U		0.00520	0.0149	8	11/24/2020 06:19	WG1581275
,2-Dichloroethane	U		0.00964	0.0371	8	11/24/2020 06:19	WG1581275
,2-Dibromoethane	U		0.00962	0.0371	8	11/24/2020 06:19	WG1581275
(S) Toluene-d8	107			75.0-131		11/24/2020 06:19	WG1581275
(S) 4-Bromofluorobenzene	95.4			67.0-138		11/24/2020 06:19	WG1581275
(S) 1,2-Dichloroethane-d4	112			70.0-130		11/24/2020 06:19	WG1581275



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	47.2		1.83	5.52	1	11/26/2020 09:21	WG1582400
Residual Range Organics (RRO)	U		4.59	13.8	1	11/26/2020 09:21	WG1582400
(S) o-Terphenyl	91.2			18.0-148		11/26/2020 09:21	WG1582400

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	72.8		1	11/21/2020 05:01	WG1579978



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#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.35		0.286	0.686	1	11/24/2020 06:37	WG1580071



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.54	4.54	25	11/23/2020 20:32	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	108			77.0-120		11/23/2020 20:32	WG1581226



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00477		0.000847	0.00181	1	11/24/2020 05:03	WG1581275
Toluene	0.0261		0.00236	0.00907	1	11/24/2020 05:03	WG1581275
Ethylbenzene	0.00312	<u>J</u>	0.00134	0.00454	1	11/24/2020 05:03	WG1581275
Total Xylenes	0.0107	<u>B J</u>	0.00160	0.0118	1	11/24/2020 05:03	WG1581275
Methyl tert-butyl ether	U		0.000635	0.00181	1	11/24/2020 05:03	WG1581275
1,2-Dichloroethane	U		0.00118	0.00454	1	11/24/2020 05:03	WG1581275
1,2-Dibromoethane	U		0.00118	0.00454	1	11/24/2020 05:03	WG1581275
(S) Toluene-d8	110			75.0-131		11/24/2020 05:03	WG1581275
(S) 4-Bromofluorobenzene	89.5			67.0-138		11/24/2020 05:03	WG1581275
(S) 1,2-Dichloroethane-d4	108			70.0-130		11/24/2020 05:03	WG1581275



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.83	5.49	1	11/26/2020 09:47	WG1582400
Residual Range Organics (RRO)	U		4.57	13.7	1	11/26/2020 09:47	WG1582400
(S) o-Terphenyl	76.2			18.0-148		11/26/2020 09:47	WG1582400

ONE LAB. NATIONWIDE.

#### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	97.2		1	11/21/2020 05:01	WG1579978



#### Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.46		0.214	0.514	1	11/24/2020 06:40	WG1580071



#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	12.5		0.897	2.65	25	11/23/2020 20:53	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	98.4			77.0-120		11/23/2020 20:53	WG1581226



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#### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0144		0.000494	0.00106	1	11/24/2020 05:22	WG1581275
Toluene	0.0453		0.00138	0.00529	1	11/24/2020 05:22	WG1581275
Ethylbenzene	0.00372		0.000780	0.00265	1	11/24/2020 05:22	WG1581275
Total Xylenes	0.0145		0.000931	0.00688	1	11/24/2020 05:22	WG1581275
Methyl tert-butyl ether	U		0.000370	0.00106	1	11/24/2020 05:22	WG1581275
1,2-Dichloroethane	U		0.000687	0.00265	1	11/24/2020 05:22	WG1581275
1,2-Dibromoethane	U		0.000686	0.00265	1	11/24/2020 05:22	WG1581275
(S) Toluene-d8	113			75.0-131		11/24/2020 05:22	WG1581275
(S) 4-Bromofluorobenzene	93.3			67.0-138		11/24/2020 05:22	WG1581275
(S) 1,2-Dichloroethane-d4	107			70.0-130		11/24/2020 05:22	WG1581275



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.37	4.11	1	11/24/2020 09:57	WG1580726
Residual Range Organics (RRO)	U		3.43	10.3	1	11/24/2020 09:57	WG1580726
(S) o-Terphenyl	68.7			18.0-148		11/24/2020 09:57	WG1580726

### ONE LAB. NATIONWIDE.

L1286649

# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	72.0		1	11/22/2020 04:05	WG1579979



# Metals (ICP) by Method 6010D

	Result (dry) Qua	alifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	40.9		0.555	2.78	1	11/24/2020 06:42	WG1580071
Lead	6.99		0.289	0.694	1	11/24/2020 06:42	WG1580071
Nickel	26.3		0.183	2.78	1	11/24/2020 06:42	WG1580071
Zinc	83.7		1.15	6.94	1	11/24/2020 06:42	WG1580071



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1000		15.8	46.6	250	11/23/2020 21:14	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120		11/23/2020 21:14	WG1581226



# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.244		0.0174	0.0373	20	11/23/2020 01:27	WG1580778
Bromobenzene	U		0.0336	0.466	20	11/23/2020 01:27	WG1580778
Bromodichloromethane	U		0.0270	0.0933	20	11/23/2020 01:27	WG1580778
Bromoform	U		0.0436	0.933	20	11/23/2020 01:27	WG1580778
Bromomethane	U		0.0735	0.466	20	11/23/2020 01:27	WG1580778
Carbon tetrachloride	U		0.0336	0.187	20	11/23/2020 01:27	WG1580778
Chlorobenzene	U		0.00783	0.0933	20	11/23/2020 01:27	WG1580778
Chlorodibromomethane	U		0.0228	0.0933	20	11/23/2020 01:27	WG1580778
Chloroethane	U		0.0634	0.187	20	11/23/2020 01:27	WG1580778
Chloroform	U		0.0384	0.0933	20	11/23/2020 01:27	WG1580778
Chloromethane	U	<u>C3</u>	0.162	0.466	20	11/23/2020 01:27	WG1580778
2-Chlorotoluene	U		0.0323	0.0933	20	11/23/2020 01:27	WG1580778
4-Chlorotoluene	U		0.0168	0.187	20	11/23/2020 01:27	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.145	0.933	20	11/23/2020 01:27	WG1580778
1,2-Dibromoethane	U		0.0242	0.0933	20	11/23/2020 01:27	WG1580778
Dibromomethane	U		0.0280	0.187	20	11/23/2020 01:27	WG1580778
1,2-Dichlorobenzene	U		0.0159	0.187	20	11/23/2020 01:27	WG1580778
1,3-Dichlorobenzene	U		0.0224	0.187	20	11/23/2020 01:27	WG1580778
1,4-Dichlorobenzene	U		0.0261	0.187	20	11/23/2020 01:27	WG1580778
Dichlorodifluoromethane	U		0.0601	0.0933	20	11/23/2020 01:27	WG1580778
1,1-Dichloroethane	U		0.0183	0.0933	20	11/23/2020 01:27	WG1580778
1,2-Dichloroethane	U		0.0242	0.0933	20	11/23/2020 01:27	WG1580778
1,1-Dichloroethene	U		0.0226	0.0933	20	11/23/2020 01:27	WG1580778
cis-1,2-Dichloroethene	U		0.0274	0.0933	20	11/23/2020 01:27	WG1580778
trans-1,2-Dichloroethene	U		0.0388	0.187	20	11/23/2020 01:27	WG1580778
1,2-Dichloropropane	U		0.0530	0.187	20	11/23/2020 01:27	WG1580778
1,1-Dichloropropene	U		0.0302	0.0933	20	11/23/2020 01:27	WG1580778
1,3-Dichloropropane	U		0.0187	0.187	20	11/23/2020 01:27	WG1580778
cis-1,3-Dichloropropene	U		0.0282	0.0933	20	11/23/2020 01:27	WG1580778
trans-1,3-Dichloropropene	U		0.0425	0.187	20	11/23/2020 01:27	WG1580778
2,2-Dichloropropane	U		0.0515	0.0933	20	11/23/2020 01:27	WG1580778
Ethylbenzene	2.61		0.0274	0.0933	20	11/23/2020 01:27	WG1580778
Hexachloro-1,3-butadiene	U		0.224	0.933	20	11/23/2020 01:27	WG1580778
Methylene Chloride	U	<u>C3</u>	0.248	0.933	20	11/23/2020 01:27	WG1580778
Methyl tert-butyl ether	U		0.0131	0.0373	20	11/23/2020 01:27	WG1580778

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ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

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SDG: DATE/TIME: L1286649 12/01/20 15:43 Collected date/time: 11/11/20 16:09

# SAMPLE RESULTS - 27

### ONE LAB. NATIONWIDE.

WG1580778

11/23/2020 01:27

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	<del></del>
1,1,1,2-Tetrachloroethane	U		0.0354	0.0933	20	11/23/2020 01:27	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0259	0.0933	20	11/23/2020 01:27	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0282	0.0933	20	11/23/2020 01:27	WG1580778
Tetrachloroethene	U		0.0334	0.0933	20	11/23/2020 01:27	WG1580778
Toluene	1.24		0.0485	0.187	20	11/23/2020 01:27	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.274	0.466	20	11/23/2020 01:27	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.164	0.466	20	11/23/2020 01:27	WG1580778
1,1,1-Trichloroethane	U		0.0345	0.0933	20	11/23/2020 01:27	WG1580778
1,1,2-Trichloroethane	U		0.0222	0.0933	20	11/23/2020 01:27	WG1580778
Trichloroethene	U		0.0218	0.0373	20	11/23/2020 01:27	WG1580778
Trichlorofluoromethane	U		0.0308	0.0933	20	11/23/2020 01:27	WG1580778
1,2,3-Trichloropropane	U		0.0604	0.466	20	11/23/2020 01:27	WG1580778
Vinyl chloride	U		0.0433	0.0933	20	11/23/2020 01:27	WG1580778
Xylenes, Total	11.8		0.0328	0.242	20	11/23/2020 01:27	WG1580778
(S) Toluene-d8	93.5			75.0-131		11/23/2020 01:27	WG1580778
(S) 4-Bromofluorobenzene	99.8			67.0-138		11/23/2020 01:27	WG1580778

















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### Sample Narrative:

(S) 1,2-Dichloroethane-d4

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# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	35800		369	1110	200	11/26/2020 12:40	WG1582400
Residual Range Organics (RRO)	U		924	2780	200	11/26/2020 12:40	WG1582400
(S) o-Terphenyl	0.000	<u>J7</u>		18.0-148		11/26/2020 12:40	WG1582400

70.0-130

### Sample Narrative:

L1286649-27 WG1582400: Dilution due to matrix.

### Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0164	0.0472	1	11/23/2020 19:55	WG1580730
PCB 1221	U		0.0164	0.0472	1	11/23/2020 19:55	WG1580730
PCB 1232	U		0.0164	0.0472	1	11/23/2020 19:55	WG1580730
PCB 1242	U		0.0164	0.0472	1	11/23/2020 19:55	WG1580730
PCB 1248	U		0.0102	0.0236	1	11/23/2020 19:55	WG1580730
PCB 1254	U		0.0102	0.0236	1	11/23/2020 19:55	WG1580730
PCB 1260	U		0.0102	0.0236	1	11/23/2020 19:55	WG1580730
(S) Decachlorobiphenyl	65.9			10.0-135		11/23/2020 19:55	WG1580730
(S) Tetrachloro-m-xylene	69.0			10.0-139		11/23/2020 19:55	WG1580730

### Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.0368		0.00240	0.00833	1	11/24/2020 14:36	WG1580740
Benzo(a)pyrene	U		0.00248	0.00833	1	11/24/2020 14:36	WG1580740
Benzo(b)fluoranthene	U		0.00212	0.00833	1	11/24/2020 14:36	WG1580740
Benzo(k)fluoranthene	U		0.00298	0.00833	1	11/24/2020 14:36	WG1580740
Chrysene	0.0662		0.00322	0.00833	1	11/24/2020 14:36	WG1580740
Dibenz(a,h)anthracene	U		0.00239	0.00833	1	11/24/2020 14:36	WG1580740
Indeno(1,2,3-cd)pyrene	U		0.00251	0.00833	1	11/24/2020 14:36	WG1580740
Naphthalene	7.80		0.113	0.555	20	11/25/2020 05:22	WG1580740

SRI5-9-S-15-201111 Collected date/time: 11/11/20 16:09

# SAMPLE RESULTS - 27

ONE LAB. NATIONWIDE.

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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1-Methylnaphthalene	38.7		0.125	0.555	20	11/25/2020 05:22	WG1580740
2-Methylnaphthalene	42.9		0.119	0.555	20	11/25/2020 05:22	WG1580740
(S) Nitrobenzene-d5	942	<u>J1</u>		14.0-149		11/24/2020 14:36	WG1580740
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/25/2020 05:22	WG1580740
(S) 2-Fluorobiphenyl	8.91	<u>J2</u>		34.0-125		11/24/2020 14:36	WG1580740
(S) 2-Fluorobiphenyl	0.000	<u>J7</u>		34.0-125		11/25/2020 05:22	WG1580740
(S) p-Terphenyl-d14	66.2			23.0-120		11/24/2020 14:36	WG1580740
(S) p-Terphenyl-d14	80.4	<u>J7</u>		23.0-120		11/25/2020 05:22	WG1580740



















L1286649-27 WG1580740: Surrogate failure due to matrix interference L1286649-27 WG1580740: IS/SURR failed on lower dilution.

### ONE LAB. NATIONWIDE.

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# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	79.9		1	11/22/2020 04:05	<u>WG1579979</u>



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	3.11		0.260	0.625	1	11/24/2020 06:45	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	1110		26.0	77.0	500	11/23/2020 21:35	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	105			77.0-120		11/23/2020 21:35	WG1581226



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0402	J	0.0288	0.0616	40	11/24/2020 06:38	WG1581275
Toluene	0.228	<u>J</u>	0.0800	0.308	40	11/24/2020 06:38	WG1581275
Ethylbenzene	1.27		0.0454	0.154	40	11/24/2020 06:38	WG1581275
Total Xylenes	5.33		0.0542	0.400	40	11/24/2020 06:38	WG1581275
Methyl tert-butyl ether	U		0.0215	0.0616	40	11/24/2020 06:38	WG1581275
1,2-Dichloroethane	U		0.0400	0.154	40	11/24/2020 06:38	WG1581275
1,2-Dibromoethane	U		0.0399	0.154	40	11/24/2020 06:38	WG1581275
(S) Toluene-d8	104			75.0-131		11/24/2020 06:38	WG1581275
(S) 4-Bromofluorobenzene	102			67.0-138		11/24/2020 06:38	WG1581275
(S) 1,2-Dichloroethane-d4	112			70.0-130		11/24/2020 06:38	WG1581275



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### Sample Narrative:

L1286649-28 WG1581275: Non-target compounds too high to run at a lower dilution.

# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	8820		83.2	250	50	11/29/2020 05:50	WG1582400
Residual Range Organics (RRO)	291	<u>J</u>	208	625	50	11/29/2020 05:50	WG1582400
(S) o-Terphenyl	0.000	J7		18.0-148		11/29/2020 05:50	WG1582400

### Sample Narrative:

L1286649-28 WG1582400: Dilution due to matrix.

# ONE LAB. NATIONWIDE.

# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	75.9		1	11/22/2020 04:05	<u>WG1579979</u>

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.94		0.274	0.659	1	11/24/2020 06:48	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	20.2		1.46	4.31	25	11/23/2020 21:56	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	105			77.0-120		11/23/2020 21:56	WG1581226



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00421		0.000805	0.00172	1	11/24/2020 05:41	WG1581275
Toluene	0.0140		0.00224	0.00862	1	11/24/2020 05:41	WG1581275
Ethylbenzene	0.00652		0.00127	0.00431	1	11/24/2020 05:41	WG1581275
Total Xylenes	0.0245		0.00152	0.0112	1	11/24/2020 05:41	WG1581275
Methyl tert-butyl ether	U		0.000604	0.00172	1	11/24/2020 05:41	WG1581275
1,2-Dichloroethane	U		0.00112	0.00431	1	11/24/2020 05:41	WG1581275
1,2-Dibromoethane	U		0.00112	0.00431	1	11/24/2020 05:41	WG1581275
(S) Toluene-d8	108			75.0-131		11/24/2020 05:41	WG1581275
(S) 4-Bromofluorobenzene	99.2			67.0-138		11/24/2020 05:41	WG1581275
(S) 1,2-Dichloroethane-d4	108			70.0-130		11/24/2020 05:41	WG1581275



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	7.21		1.75	5.27	1	11/26/2020 07:47	WG1582400
Residual Range Organics (RRO)	U		4.39	13.2	1	11/26/2020 07:47	WG1582400
(S) o-Terphenyl	96.5			18.0-148		11/26/2020 07:47	WG1582400

### ONE LAB. NATIONWIDE.

### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	97.1		1	11/22/2020 04:05	<u>WG1579979</u>

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.18		0.214	0.515	1	11/24/2020 06:09	WG1580071



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	6.99		0.900	2.65	25	11/24/2020 06:34	WG1581230
(S) a,a,a-Trifluorotoluene(FID)	102			77.0-120		11/24/2020 06:34	WG1581230



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00793		0.000495	0.00106	1	11/24/2020 06:00	WG1581275
Toluene	0.0252		0.00138	0.00530	1	11/24/2020 06:00	WG1581275
Ethylbenzene	0.00202	<u>J</u>	0.000782	0.00265	1	11/24/2020 06:00	WG1581275
Total Xylenes	0.00738	В	0.000934	0.00690	1	11/24/2020 06:00	WG1581275
Methyl tert-butyl ether	U		0.000371	0.00106	1	11/24/2020 06:00	WG1581275
1,2-Dichloroethane	U		0.000688	0.00265	1	11/24/2020 06:00	WG1581275
1,2-Dibromoethane	U		0.000687	0.00265	1	11/24/2020 06:00	WG1581275
(S) Toluene-d8	110			75.0-131		11/24/2020 06:00	WG1581275
(S) 4-Bromofluorobenzene	90.6			67.0-138		11/24/2020 06:00	WG1581275
(S) 1,2-Dichloroethane-d4	105			70.0-130		11/24/2020 06:00	WG1581275



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U	<u>J4</u>	1.37	4.12	1	11/26/2020 15:11	WG1581894
Residual Range Organics (RRO)	U		3.43	10.3	1	11/26/2020 15:11	WG1581894
(S) o-Terphenyl	64.4			18.0-148		11/26/2020 15:11	WG1581894

### ONE LAB. NATIONWIDE.

L1286649

# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	73.8		1	11/22/2020 04:05	WG1579979

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	34.4		0.542	2.71	1	11/24/2020 06:50	WG1580071
Lead	19.8		0.282	0.678	1	11/24/2020 06:50	WG1580071
Nickel	28.9		0.179	2.71	1	11/24/2020 06:50	WG1580071
Zinc	71.9		1.13	6.78	1	11/24/2020 06:50	WG1580071



Ss

# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	5090		29.9	88.4	500	11/24/2020 06:55	WG1581230
(S) a,a,a-Trifluorotoluene(FID)	99.3			77.0-120		11/24/2020 06:55	WG1581230



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.0330	0.0707	40	11/23/2020 01:46	WG1580778
Bromobenzene	U		0.0636	0.884	40	11/23/2020 01:46	WG1580778
Bromodichloromethane	U		0.0512	0.177	40	11/23/2020 01:46	WG1580778
Bromoform	U		0.0827	1.77	40	11/23/2020 01:46	WG1580778
Bromomethane	U		0.139	0.884	40	11/23/2020 01:46	WG1580778
Carbon tetrachloride	U		0.0634	0.353	40	11/23/2020 01:46	WG1580778
Chlorobenzene	U		0.0148	0.177	40	11/23/2020 01:46	WG1580778
Chlorodibromomethane	U		0.0433	0.177	40	11/23/2020 01:46	WG1580778
Chloroethane	U		0.120	0.353	40	11/23/2020 01:46	WG1580778
Chloroform	U		0.0728	0.177	40	11/23/2020 01:46	WG1580778
Chloromethane	U	<u>C3</u>	0.307	0.884	40	11/23/2020 01:46	WG1580778
2-Chlorotoluene	U		0.0611	0.177	40	11/23/2020 01:46	WG1580778
4-Chlorotoluene	U		0.0318	0.353	40	11/23/2020 01:46	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.276	1.77	40	11/23/2020 01:46	WG1580778
1,2-Dibromoethane	U		0.0458	0.177	40	11/23/2020 01:46	WG1580778
Dibromomethane	U		0.0530	0.353	40	11/23/2020 01:46	WG1580778
1,2-Dichlorobenzene	U		0.0300	0.353	40	11/23/2020 01:46	WG1580778
1,3-Dichlorobenzene	U		0.0424	0.353	40	11/23/2020 01:46	WG1580778
1,4-Dichlorobenzene	U		0.0495	0.353	40	11/23/2020 01:46	WG1580778
Dichlorodifluoromethane	U		0.114	0.177	40	11/23/2020 01:46	WG1580778
1,1-Dichloroethane	U		0.0346	0.177	40	11/23/2020 01:46	WG1580778
1,2-Dichloroethane	U		0.0459	0.177	40	11/23/2020 01:46	WG1580778
1,1-Dichloroethene	U		0.0428	0.177	40	11/23/2020 01:46	WG1580778
cis-1,2-Dichloroethene	U		0.0520	0.177	40	11/23/2020 01:46	WG1580778
trans-1,2-Dichloroethene	U		0.0735	0.353	40	11/23/2020 01:46	WG1580778
1,2-Dichloropropane	U		0.100	0.353	40	11/23/2020 01:46	WG1580778
1,1-Dichloropropene	U		0.0573	0.177	40	11/23/2020 01:46	WG1580778
1,3-Dichloropropane	U		0.0353	0.353	40	11/23/2020 01:46	WG1580778
cis-1,3-Dichloropropene	U		0.0535	0.177	40	11/23/2020 01:46	WG1580778
trans-1,3-Dichloropropene	U		0.0806	0.353	40	11/23/2020 01:46	WG1580778
2,2-Dichloropropane	U		0.0975	0.177	40	11/23/2020 01:46	WG1580778
Ethylbenzene	27.2		0.0521	0.177	40	11/23/2020 01:46	WG1580778
Hexachloro-1,3-butadiene	U		0.424	1.77	40	11/23/2020 01:46	WG1580778
Methylene Chloride	U	<u>C3</u>	0.470	1.77	40	11/23/2020 01:46	WG1580778
Methyl tert-butyl ether	U		0.0247	0.0707	40	11/23/2020 01:46	WG1580778

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ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

SDG: L1286649

DATE/TIME: 12/01/20 15:43

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### ONE LAB. NATIONWIDE.

L1286649

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0670	0.177	40	11/23/2020 01:46	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0491	0.177	40	11/23/2020 01:46	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0534	0.177	40	11/23/2020 01:46	WG1580778
Tetrachloroethene	U		0.0633	0.177	40	11/23/2020 01:46	WG1580778
Toluene	5.76		0.0919	0.353	40	11/23/2020 01:46	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.518	0.884	40	11/23/2020 01:46	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.311	0.884	40	11/23/2020 01:46	WG1580778
1,1,1-Trichloroethane	U		0.0652	0.177	40	11/23/2020 01:46	WG1580778
1,1,2-Trichloroethane	U		0.0422	0.177	40	11/23/2020 01:46	WG1580778
Trichloroethene	U		0.0413	0.0707	40	11/23/2020 01:46	WG1580778
Trichlorofluoromethane	U		0.0585	0.177	40	11/23/2020 01:46	WG1580778
1,2,3-Trichloropropane	U		0.115	0.884	40	11/23/2020 01:46	WG1580778
Vinyl chloride	U		0.0820	0.177	40	11/23/2020 01:46	WG1580778
Xylenes, Total	116		0.0622	0.459	40	11/23/2020 01:46	WG1580778
(S) Toluene-d8	106			75.0-131		11/23/2020 01:46	WG1580778
(S) 4-Bromofluorobenzene	114			67.0-138		11/23/2020 01:46	WG1580778
(S) 1,2-Dichloroethane-d4	109			70.0-130		11/23/2020 01:46	WG1580778

















### Sample Narrative:

L1286649-31 WG1580778: Non-target compounds too high to run at a lower dilution.

# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	1320	<u>J4</u>	9.01	27.1	5	11/27/2020 11:07	WG1581894
Residual Range Organics (RRO)	U		4.51	13.6	1	11/26/2020 15:24	WG1581894
(S) o-Terphenyl	101			18.0-148		11/27/2020 11:07	WG1581894
(S) o-Terphenyl	78.0			18.0-148		11/26/2020 15:24	WG1581894

# Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0160	0.0461	1	11/23/2020 20:07	WG1580730
PCB 1221	U		0.0160	0.0461	1	11/23/2020 20:07	WG1580730
PCB 1232	U		0.0160	0.0461	1	11/23/2020 20:07	WG1580730
PCB 1242	U		0.0160	0.0461	1	11/23/2020 20:07	WG1580730
PCB 1248	U		0.0100	0.0230	1	11/23/2020 20:07	WG1580730
PCB 1254	U		0.0100	0.0230	1	11/23/2020 20:07	WG1580730
PCB 1260	U		0.0100	0.0230	1	11/23/2020 20:07	WG1580730
(S) Decachlorobiphenyl	66.6			10.0-135		11/23/2020 20:07	WG1580730
(S) Tetrachloro-m-xylene	<i>7</i> 5.5			10.0-139		11/23/2020 20:07	WG1580730

# Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	U		0.00234	0.00813	1	11/24/2020 14:53	WG1580740
Benzo(a)pyrene	U		0.00243	0.00813	1	11/24/2020 14:53	WG1580740
Benzo(b)fluoranthene	U		0.00207	0.00813	1	11/24/2020 14:53	WG1580740
Benzo(k)fluoranthene	U		0.00291	0.00813	1	11/24/2020 14:53	WG1580740
Chrysene	U		0.00314	0.00813	1	11/24/2020 14:53	WG1580740
Dibenz(a,h)anthracene	U		0.00233	0.00813	1	11/24/2020 14:53	WG1580740
Indeno(1,2,3-cd)pyrene	U		0.00245	0.00813	1	11/24/2020 14:53	WG1580740
Naphthalene	15.9		0.111	0.542	20	11/25/2020 05:39	WG1580740
1-Methylnaphthalene	7.20		0.122	0.542	20	11/25/2020 05:39	WG1580740
2-Methylnaphthalene	14.9		0.116	0.542	20	11/25/2020 05:39	WG1580740

SRI5-10-S-14.5-201112 Collected date/time: 11/12/20 09:09

# SAMPLE RESULTS - 31

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
(S) Nitrobenzene-d5	1350	<u>J1</u>		14.0-149		11/24/2020 14:53	WG1580740
(S) Nitrobenzene-d5	0.000	<u>J7</u>		14.0-149		11/25/2020 05:39	WG1580740
(S) 2-Fluorobiphenyl	62.0	<u>J7</u>		34.0-125		11/25/2020 05:39	WG1580740
(S) 2-Fluorobiphenyl	63.7			34.0-125		11/24/2020 14:53	WG1580740
(S) p-Terphenyl-d14	68.1			23.0-120		11/24/2020 14:53	WG1580740
(S) p-Terphenyl-d14	77.2	J7		23.0-120		11/25/2020 05:39	WG1580740



















L1286649-31 WG1580740: Surrogate failure due to matrix interference L1286649-31 WG1580740: IS/SURR failed on lower dilution.

Total Solids

### SAMPLE RESULTS - 32 L1286649

Batch

WG1579979

### ONE LAB. NATIONWIDE.

Total Solids by Method 2540 G-2011

Total conde by Meti	100 20 10 0 2	-011		
	Result	Qualifier	Dilution	Analysis
Analyte	%			date / time

73.8





	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.14		0.282	0.678	1	11/24/2020 06:53	WG1580071

11/22/2020 04:05



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	39.2	<u>B</u>	3.05	8.96	50	11/24/2020 21:40	WG1582038
(S) a,a,a-Trifluorotoluene(FID)	95.0			77.0-120		11/24/2020 21:40	WG1582038



# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.545		0.0167	0.0358	20	11/24/2020 04:40	WG1581290
Toluene	1.02		0.0466	0.179	20	11/24/2020 04:40	WG1581290
Ethylbenzene	0.450		0.0263	0.0896	20	11/24/2020 04:40	WG1581290
Total Xylenes	1.65		0.0315	0.233	20	11/24/2020 04:40	WG1581290
Methyl tert-butyl ether	U		0.0125	0.0358	20	11/24/2020 04:40	WG1581290
,2-Dichloroethane	U		0.0233	0.0896	20	11/24/2020 04:40	WG1581290
1,2-Dibromoethane	U		0.0233	0.0896	20	11/24/2020 04:40	WG1581290
(S) Toluene-d8	107			75.0-131		11/24/2020 04:40	WG1581290
(S) 4-Bromofluorobenzene	99.5			67.0-138		11/24/2020 04:40	WG1581290
(S) 1,2-Dichloroethane-d4	94.4			70.0-130		11/24/2020 04:40	WG1581290



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Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
mg/kg		mg/kg	mg/kg		date / time	
0.545		0.0167	0.0358	20	11/24/2020 04:40	WG1581290
1.02		0.0466	0.179	20	11/24/2020 04:40	WG1581290
0.450		0.0263	0.0896	20	11/24/2020 04:40	WG1581290
1.65		0.0315	0.233	20	11/24/2020 04:40	WG1581290
U		0.0125	0.0358	20	11/24/2020 04:40	WG1581290
U		0.0233	0.0896	20	11/24/2020 04:40	WG1581290
U		0.0233	0.0896	20	11/24/2020 04:40	WG1581290
107			75.0-131		11/24/2020 04:40	WG1581290
99.5			67.0-138		11/24/2020 04:40	WG1581290
94.4			70.0-130		11/24/2020 04:40	WG1581290
	mg/kg 0.545 1.02 0.450 1.65 U U U 107 99.5	mg/kg 0.545 1.02 0.450 1.65 U U U 99.5	mg/kg mg/kg 0.545 0.0167 1.02 0.0466 0.450 0.0263 1.65 0.0315 U 0.0125 U 0.0233 U 0.0233 107 99.5	mg/kg         mg/kg         mg/kg           0.545         0.0167         0.0358           1.02         0.0466         0.179           0.450         0.0263         0.0896           1.65         0.0315         0.233           U         0.0125         0.0358           U         0.0233         0.0896           U         0.0233         0.0896           107         75.0-131           99.5         67.0-138	mg/kg         mg/kg         mg/kg           0.545         0.0167         0.0358         20           1.02         0.0466         0.179         20           0.450         0.0263         0.0896         20           1.65         0.0315         0.233         20           U         0.0125         0.0358         20           U         0.0233         0.0896         20           U         0.0233         0.0896         20           107         75.0-131         99.5	mg/kg         mg/kg         mg/kg         date / time           0.545         0.0167         0.0358         20         11/24/2020 04:40           1.02         0.0466         0.179         20         11/24/2020 04:40           0.450         0.0263         0.0896         20         11/24/2020 04:40           1.65         0.0315         0.233         20         11/24/2020 04:40           U         0.0125         0.0358         20         11/24/2020 04:40           U         0.0233         0.0896         20         11/24/2020 04:40           U         0.0233         0.0896         20         11/24/2020 04:40           107         75.0-131         11/24/2020 04:40           99.5         67.0-138         11/24/2020 04:40



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	2.66	<u>J J4</u>	1.80	5.42	1	11/26/2020 15:37	WG1581894
Residual Range Organics (RRO)	U		4.51	13.6	1	11/26/2020 15:37	WG1581894
(S) o-Terphenyl	53.3			18.0-148		11/26/2020 15:37	WG1581894

ONE LAB. NATIONWIDE.

# Total Solids by Method 2540 G-2011

Collected date/time: 11/12/20 00:00

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	72.3		1	11/22/2020 04:05	<u>WG1579979</u>

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	6.15		0.288	0.691	1	11/24/2020 06:56	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	69.8		1.58	4.66	25	11/24/2020 07:37	WG1581230
(S) a,a,a-Trifluorotoluene(FID)	98.6			77.0-120		11/24/2020 07:37	WG1581230



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.616		0.000871	0.00187	1	11/24/2020 02:47	WG1581290
Toluene	1.11		0.00243	0.00933	1	11/24/2020 02:47	WG1581290
Ethylbenzene	0.450		0.00137	0.00466	1	11/24/2020 02:47	WG1581290
Total Xylenes	1.71		0.00164	0.0121	1	11/24/2020 02:47	WG1581290
Methyl tert-butyl ether	U		0.000653	0.00187	1	11/24/2020 02:47	WG1581290
1,2-Dichloroethane	U		0.00121	0.00466	1	11/24/2020 02:47	WG1581290
1,2-Dibromoethane	U		0.00121	0.00466	1	11/24/2020 02:47	WG1581290
(S) Toluene-d8	104			75.0-131		11/24/2020 02:47	WG1581290
(S) 4-Bromofluorobenzene	105			67.0-138		11/24/2020 02:47	WG1581290
(S) 1.2-Dichloroethane-d4	96.1			70.0-130		11/24/2020 02:47	WG1581290

# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	5.56	<u>J4</u>	1.84	5.53	1	11/26/2020 15:49	WG1581894
Residual Range Organics (RRO)	U		4.60	13.8	1	11/26/2020 15:49	WG1581894
(S) o-Terphenyl	64.8			18.0-148		11/26/2020 15:49	WG1581894

ACCOUNT: PROJECT: DATE/TIME: PAGE: SDG: Leidos Inc.- Bothell, WA L1286649 12/01/20 15:43 69 of 189

### ONE LAB. NATIONWIDE.

# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	80.8		1	11/22/2020 04:05	WG1579979

# Metals (ICP) by Method 6010D

	Result (ary)	Qualifier	MDL (ary)	RDL (ary)	Dilution	Analysis	Batcn
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.11		0.257	0.619	1	11/24/2020 06:58	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	8650		259	765	5000	11/24/2020 22:02	WG1582038
(S) a,a,a-Trifluorotoluene(FID)	97.8			77.0-120		11/24/2020 22:02	WG1582038



# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	4.96		0.0286	0.0612	40	11/24/2020 04:59	WG1581290
luene	57.7		0.0796	0.306	40	11/24/2020 04:59	WG1581290
thylbenzene	36.0		0.0452	0.153	40	11/24/2020 04:59	WG1581290
otal Xylenes	202		0.0539	0.398	40	11/24/2020 04:59	WG1581290
lethyl tert-butyl ether	U		0.0214	0.0612	40	11/24/2020 04:59	WG1581290
2-Dichloroethane	U		0.0398	0.153	40	11/24/2020 04:59	WG1581290
-Dibromoethane	U		0.0397	0.153	40	11/24/2020 04:59	WG1581290
(S) Toluene-d8	92.9			75.0-131		11/24/2020 04:59	WG1581290
S) 4-Bromofluorobenzene	104			67.0-138		11/24/2020 04:59	WG1581290
(S) 1,2-Dichloroethane-d4	97.2			70.0-130		11/24/2020 04:59	WG1581290



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Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
mg/kg		mg/kg	mg/kg		date / time	
4.96		0.0286	0.0612	40	11/24/2020 04:59	WG1581290
57.7		0.0796	0.306	40	11/24/2020 04:59	WG1581290
36.0		0.0452	0.153	40	11/24/2020 04:59	WG1581290
202		0.0539	0.398	40	11/24/2020 04:59	WG1581290
U		0.0214	0.0612	40	11/24/2020 04:59	WG1581290
U		0.0398	0.153	40	11/24/2020 04:59	WG1581290
U		0.0397	0.153	40	11/24/2020 04:59	WG1581290
92.9			75.0-131		11/24/2020 04:59	WG1581290
104			67.0-138		11/24/2020 04:59	WG1581290
97.2			70.0-130		11/24/2020 04:59	WG1581290
	mg/kg 4.96 57.7 36.0 202 U U U 92.9 104	mg/kg 4.96 57.7 36.0 202 U U U 92.9	mg/kg         mg/kg           4.96         0.0286           57.7         0.0796           36.0         0.0452           202         0.0539           U         0.0214           U         0.0398           U         0.0397           92.9         104	mg/kg         mg/kg         mg/kg           4.96         0.0286         0.0612           57.7         0.0796         0.306           36.0         0.0452         0.153           202         0.0539         0.398           U         0.0214         0.0612           U         0.0398         0.153           U         0.0397         0.153           92.9         75.0-131           104         67.0-138	mg/kg         mg/kg         mg/kg           4.96         0.0286         0.0612         40           57.7         0.0796         0.306         40           36.0         0.0452         0.153         40           202         0.0539         0.398         40           U         0.0214         0.0612         40           U         0.0398         0.153         40           U         0.0397         0.153         40           92.9         75.0-131         67.0-138	mg/kg         mg/kg         mg/kg         date / time           4.96         0.0286         0.0612         40         11/24/2020 04:59           57.7         0.0796         0.306         40         11/24/2020 04:59           36.0         0.0452         0.153         40         11/24/2020 04:59           202         0.0539         0.398         40         11/24/2020 04:59           U         0.0214         0.0612         40         11/24/2020 04:59           U         0.0398         0.153         40         11/24/2020 04:59           U         0.0397         0.153         40         11/24/2020 04:59           92.9         75.0-131         11/24/2020 04:59           104         67.0-138         11/24/2020 04:59



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	_
Diesel Range Organics (DRO)	372	<u>J4</u>	8.23	24.7	5	11/27/2020 11:33	WG1581894
Residual Range Organics (RRO)	7.74	J	4.12	12.4	1	11/26/2020 16:02	WG1581894
(S) o-Terphenyl	53.7			18.0-148		11/26/2020 16:02	WG1581894
(S) o-Terphenyl	52.0			18.0-148		11/27/2020 11:33	WG1581894



# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	75.1		1	11/22/2020 04:05	WG1579979

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.95		0.277	0.666	1	11/24/2020 07:06	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.48	4.38	25	11/24/2020 20:53	WG1582038
(S) a,a,a-Trifluorotoluene(FID)	95.1			77.0-120		11/24/2020 20:53	WG1582038



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00301		0.000817	0.00175	1	11/24/2020 03:06	WG1581290
Toluene	0.0106		0.00228	0.00875	1	11/24/2020 03:06	WG1581290
Ethylbenzene	0.00355	<u>J</u>	0.00129	0.00438	1	11/24/2020 03:06	WG1581290
Total Xylenes	0.0161		0.00154	0.0114	1	11/24/2020 03:06	WG1581290
Methyl tert-butyl ether	U		0.000613	0.00175	1	11/24/2020 03:06	WG1581290
l,2-Dichloroethane	U		0.00114	0.00438	1	11/24/2020 03:06	WG1581290
1,2-Dibromoethane	U		0.00113	0.00438	1	11/24/2020 03:06	WG1581290
(S) Toluene-d8	104			75.0-131		11/24/2020 03:06	WG1581290
(S) 4-Bromofluorobenzene	109			67.0-138		11/24/2020 03:06	WG1581290
(S) 1,2-Dichloroethane-d4	94.3			70.0-130		11/24/2020 03:06	WG1581290



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Piesel Range Organics (DRO)	U	<u>J4</u>	1.77	5.33	1	11/26/2020 16:15	WG1581894
Residual Range Organics (RRO)	U		4.43	13.3	1	11/26/2020 16:15	WG1581894
(S) o-Terphenyl	55.8			18.0-148		11/26/2020 16:15	WG1581894

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Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	97.5		1	11/22/2020 04:05	WG1579979



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.54		0.213	0.513	1	11/24/2020 07:09	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	10.8		0.895	2.64	25	11/24/2020 08:39	WG1581230
(S) a,a,a-Trifluorotoluene(FID)	98.9			77.0-120		11/24/2020 08:39	WG1581230



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00521		0.000493	0.00105	1	11/24/2020 03:25	WG1581290
Toluene	0.0194		0.00137	0.00527	1	11/24/2020 03:25	WG1581290
Ethylbenzene	0.00268		0.000778	0.00264	1	11/24/2020 03:25	WG1581290
Total Xylenes	0.00744		0.000928	0.00686	1	11/24/2020 03:25	WG1581290
Methyl tert-butyl ether	U		0.000369	0.00105	1	11/24/2020 03:25	WG1581290
1,2-Dichloroethane	U		0.000685	0.00264	1	11/24/2020 03:25	WG1581290
1,2-Dibromoethane	U		0.000684	0.00264	1	11/24/2020 03:25	WG1581290
(S) Toluene-d8	104			75.0-131		11/24/2020 03:25	WG1581290
(S) 4-Bromofluorobenzene	105			67.0-138		11/24/2020 03:25	WG1581290
(S) 1,2-Dichloroethane-d4	95.2			70.0-130		11/24/2020 03:25	WG1581290



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	32.2	<u>J4</u>	1.36	4.10	1	11/26/2020 16:28	WG1581894
Residual Range Organics (RRO)	25.4		3.42	10.3	1	11/26/2020 16:28	WG1581894
(S) o-Terphenyl	39.5			18.0-148		11/26/2020 16:28	WG1581894

# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	73.3		1	11/22/2020 03:02	<u>WG1579980</u>

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	9.86		0.284	0.682	1	11/24/2020 07:11	WG1580071



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	6090		30.5	90.3	500	11/24/2020 09:00	WG1581230
(S) a,a,a-Trifluorotoluene(FID)	97.8			77.0-120		11/24/2020 09:00	WG1581230



# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.0338	0.0722	40	11/24/2020 05:18	WG1581290
Toluene	0.937		0.0939	0.361	40	11/24/2020 05:18	WG1581290
Ethylbenzene	12.0		0.0533	0.181	40	11/24/2020 05:18	WG1581290
Total Xylenes	41.0		0.0636	0.469	40	11/24/2020 05:18	WG1581290
Methyl tert-butyl ether	U		0.0253	0.0722	40	11/24/2020 05:18	WG1581290
1,2-Dichloroethane	U		0.0469	0.181	40	11/24/2020 05:18	WG1581290
1,2-Dibromoethane	U		0.0468	0.181	40	11/24/2020 05:18	WG1581290
(S) Toluene-d8	99.4			75.0-131		11/24/2020 05:18	WG1581290
(S) 4-Bromofluorobenzene	106			67.0-138		11/24/2020 05:18	WG1581290
(S) 1,2-Dichloroethane-d4	94.9			70.0-130		11/24/2020 05:18	WG1581290



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Analyte	mg/kg	mg/kg	mg/kg		date / time	
Benzene	U	0.0338	0.0722	40	11/24/2020 05:18	WG1581290
Toluene	0.937	0.0939	0.361	40	11/24/2020 05:18	WG1581290
Ethylbenzene	12.0	0.0533	0.181	40	11/24/2020 05:18	WG1581290
Total Xylenes	41.0	0.0636	0.469	40	11/24/2020 05:18	WG1581290
Methyl tert-butyl ether	U	0.0253	0.0722	40	11/24/2020 05:18	WG1581290
1,2-Dichloroethane	U	0.0469	0.181	40	11/24/2020 05:18	WG1581290
1,2-Dibromoethane	U	0.0468	0.181	40	11/24/2020 05:18	WG1581290
(S) Toluene-d8	99.4		75.0-131		11/24/2020 05:18	WG1581290
(S) 4-Bromofluorobenzene	106		67.0-138		11/24/2020 05:18	WG1581290
(S) 1,2-Dichloroethane-d4	94.9		70.0-130		11/24/2020 05:18	WG1581290



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	310	<u>J4</u>	1.81	5.46	1	11/26/2020 16:40	WG1581894
Residual Range Organics (RRO)	8.27	J	4.54	13.6	1	11/26/2020 16:40	WG1581894
(S) o-Terphenyl	46.2			18.0-148		11/26/2020 16:40	WG1581894

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### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	77.1		1	11/22/2020 03:02	<u>WG1579980</u>

# Metals (ICP) by Method 6010D

	Result (dry)	ualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	29.7		0.519	2.60	1	11/24/2020 07:14	WG1580071
Lead	4.55		0.270	0.649	1	11/24/2020 07:14	WG1580071
Nickel	24.4		0.171	2.60	1	11/24/2020 07:14	WG1580071
Zinc	65.4		1.08	6.49	1	11/24/2020 07:14	WG1580071



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	8780		278	824	5000	11/24/2020 22:26	WG1582038
(S) a,a,a-Trifluorotoluene(FID)	97.5			77.0-120		11/24/2020 22:26	WG1582038



# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.0308	0.0659	40	11/23/2020 02:05	WG1580778
Bromobenzene	U		0.0593	0.824	40	11/23/2020 02:05	WG1580778
Bromodichloromethane	U		0.0478	0.165	40	11/23/2020 02:05	WG1580778
Bromoform	U		0.0771	1.65	40	11/23/2020 02:05	WG1580778
Bromomethane	U		0.130	0.824	40	11/23/2020 02:05	WG1580778
Carbon tetrachloride	U		0.0592	0.330	40	11/23/2020 02:05	WG1580778
Chlorobenzene	U		0.0138	0.165	40	11/23/2020 02:05	WG1580778
Chlorodibromomethane	U		0.0404	0.165	40	11/23/2020 02:05	WG1580778
Chloroethane	U		0.112	0.330	40	11/23/2020 02:05	WG1580778
Chloroform	U		0.0679	0.165	40	11/23/2020 02:05	WG1580778
Chloromethane	U	<u>C3</u>	0.287	0.824	40	11/23/2020 02:05	WG1580778
2-Chlorotoluene	U		0.0570	0.165	40	11/23/2020 02:05	WG1580778
4-Chlorotoluene	U		0.0297	0.330	40	11/23/2020 02:05	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.257	1.65	40	11/23/2020 02:05	WG1580778
1,2-Dibromoethane	U		0.0427	0.165	40	11/23/2020 02:05	WG1580778
Dibromomethane	U		0.0494	0.330	40	11/23/2020 02:05	WG1580778
1,2-Dichlorobenzene	U		0.0280	0.330	40	11/23/2020 02:05	WG1580778
1,3-Dichlorobenzene	U		0.0395	0.330	40	11/23/2020 02:05	WG1580778
1,4-Dichlorobenzene	U		0.0461	0.330	40	11/23/2020 02:05	WG1580778
Dichlorodifluoromethane	U		0.106	0.165	40	11/23/2020 02:05	WG1580778
1,1-Dichloroethane	U		0.0323	0.165	40	11/23/2020 02:05	WG1580778
1,2-Dichloroethane	U		0.0428	0.165	40	11/23/2020 02:05	WG1580778
1,1-Dichloroethene	U		0.0399	0.165	40	11/23/2020 02:05	WG1580778
cis-1,2-Dichloroethene	U		0.0484	0.165	40	11/23/2020 02:05	WG1580778
trans-1,2-Dichloroethene	U		0.0685	0.330	40	11/23/2020 02:05	WG1580778
1,2-Dichloropropane	U		0.0936	0.330	40	11/23/2020 02:05	WG1580778
1,1-Dichloropropene	U		0.0534	0.165	40	11/23/2020 02:05	WG1580778
1,3-Dichloropropane	U		0.0330	0.330	40	11/23/2020 02:05	WG1580778
cis-1,3-Dichloropropene	U		0.0499	0.165	40	11/23/2020 02:05	WG1580778
trans-1,3-Dichloropropene	U		0.0751	0.330	40	11/23/2020 02:05	WG1580778
2,2-Dichloropropane	U		0.0910	0.165	40	11/23/2020 02:05	WG1580778
Ethylbenzene	52.9		0.0486	0.165	40	11/23/2020 02:05	WG1580778
Hexachloro-1,3-butadiene	U		0.395	1.65	40	11/23/2020 02:05	WG1580778
Methylene Chloride	U	<u>C3</u>	0.438	1.65	40	11/23/2020 02:05	WG1580778
Methyl tert-butyl ether	U		0.0231	0.0659	40	11/23/2020 02:05	WG1580778







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Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0624	0.165	40	11/23/2020 02:05	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0458	0.165	40	11/23/2020 02:05	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0498	0.165	40	11/23/2020 02:05	WG1580778
Tetrachloroethene	U		0.0590	0.165	40	11/23/2020 02:05	WG1580778
Toluene	26.0		0.0857	0.330	40	11/23/2020 02:05	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.483	0.824	40	11/23/2020 02:05	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.290	0.824	40	11/23/2020 02:05	WG1580778
1,1,1-Trichloroethane	U		0.0608	0.165	40	11/23/2020 02:05	WG1580778
1,1,2-Trichloroethane	U		0.0394	0.165	40	11/23/2020 02:05	WG1580778
Trichloroethene	U		0.0386	0.0659	40	11/23/2020 02:05	WG1580778
Trichlorofluoromethane	U		0.0545	0.165	40	11/23/2020 02:05	WG1580778
1,2,3-Trichloropropane	U		0.107	0.824	40	11/23/2020 02:05	WG1580778
Vinyl chloride	U		0.0765	0.165	40	11/23/2020 02:05	WG1580778
Xylenes, Total	213		0.0580	0.428	40	11/23/2020 02:05	WG1580778
(S) Toluene-d8	126			75.0-131		11/23/2020 02:05	WG1580778
(S) 4-Bromofluorobenzene	126			67.0-138		11/23/2020 02:05	WG1580778
(S) 1,2-Dichloroethane-d4	115			70.0-130		11/23/2020 02:05	WG1580778



















### Sample Narrative:

L1286649-38 WG1580778: Non-target compounds too high to run at a lower dilution.

# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	507	<u>J4</u>	8.63	26.0	5	11/27/2020 12:24	WG1581894
Residual Range Organics (RRO)	7.71	<u>J</u>	4.32	13.0	1	11/26/2020 17:44	WG1581894
(S) o-Terphenyl	56.9			18.0-148		11/26/2020 17:44	WG1581894
(S) o-Terphenyl	50.2			18.0-148		11/27/2020 12:24	WG1581894

# Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0153	0.0441	1	11/23/2020 20:17	WG1580730
PCB 1221	U		0.0153	0.0441	1	11/23/2020 20:17	WG1580730
PCB 1232	U		0.0153	0.0441	1	11/23/2020 20:17	WG1580730
PCB 1242	U		0.0153	0.0441	1	11/23/2020 20:17	WG1580730
PCB 1248	U		0.00958	0.0221	1	11/23/2020 20:17	WG1580730
PCB 1254	U		0.00958	0.0221	1	11/23/2020 20:17	WG1580730
PCB 1260	U		0.00958	0.0221	1	11/23/2020 20:17	WG1580730
(S) Decachlorobiphenyl	61.9			10.0-135		11/23/2020 20:17	WG1580730
(S) Tetrachloro-m-xylene	72.5			10.0-139		11/23/2020 20:17	WG1580730

# Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	U		0.00225	0.00779	1	11/25/2020 02:46	WG1581271
Benzo(a)pyrene	U		0.00232	0.00779	1	11/25/2020 02:46	WG1581271
Benzo(b)fluoranthene	U		0.00199	0.00779	1	11/25/2020 02:46	WG1581271
Benzo(k)fluoranthene	U		0.00279	0.00779	1	11/25/2020 02:46	WG1581271
Chrysene	U		0.00301	0.00779	1	11/25/2020 02:46	WG1581271
Dibenz(a,h)anthracene	U		0.00223	0.00779	1	11/25/2020 02:46	WG1581271
Indeno(1,2,3-cd)pyrene	U		0.00235	0.00779	1	11/25/2020 02:46	WG1581271
Naphthalene	10.9		0.0530	0.260	10	11/25/2020 07:05	WG1581271
1-Methylnaphthalene	4.27		0.00583	0.0260	1	11/25/2020 02:46	WG1581271
2-Methylnaphthalene	6.68		0.0554	0.260	10	11/25/2020 07:05	WG1581271

SRI5-11-S-15-201112 Collected date/time: 11/12/20 14:28

Sample Narrative:

# SAMPLE RESULTS - 38

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-38 WG1581271: Surrogate failure due to matrix interference

Seriii Volatile Organ	ne compounds	(00/10/0)	by Method	10270L-311	VI			
	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg	mg/kg		date / time		
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/25/2020 07:05	WG1581271	
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/25/2020 02:46	WG1581271	
(S) 2-Fluorobiphenyl	65.2			34.0-125		11/25/2020 02:46	WG1581271	
(S) 2-Fluorobiphenyl	59.2			34.0-125		11/25/2020 07:05	WG1581271	
(S) p-Terphenyl-d14	75.3			23.0-120		11/25/2020 07:05	WG1581271	
(S) p-Terphenyl-d14	69.9			23.0-120		11/25/2020 02:46	WG1581271	



















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ONE LAB. NATIONWIDE.

Collected date/time: 11/12/20 12:00

# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	78.0		1	11/22/2020 03:02	WG1579980

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# Metals (ICP) by Method 6010D

Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
mg/kg		mg/kg	mg/kg		date / time	
29.8		0.513	2.56	1	11/24/2020 07:16	WG1580071
4.98		0.267	0.641	1	11/24/2020 07:16	WG1580071
23.5		0.169	2.56	1	11/24/2020 07:16	WG1580071
64.1		1.07	6.41	1	11/24/2020 07:16	WG1580071
	mg/kg 29.8 4.98 23.5	mg/kg 29.8 4.98 23.5	mg/kg         mg/kg           29.8         0.513           4.98         0.267           23.5         0.169	mg/kg         mg/kg         mg/kg           29.8         0.513         2.56           4.98         0.267         0.641           23.5         0.169         2.56	mg/kg         mg/kg         mg/kg           29.8         0.513         2.56         1           4.98         0.267         0.641         1           23.5         0.169         2.56         1	mg/kg         mg/kg         mg/kg         date / time           29.8         0.513         2.56         1         11/24/2020 07:16           4.98         0.267         0.641         1         11/24/2020 07:16           23.5         0.169         2.56         1         11/24/2020 07:16



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	9590		272	803	5000	11/25/2020 16:58	WG1582210
(S) a,a,a-Trifluorotoluene(FID)	99.2			77.0-120		11/25/2020 16:58	WG1582210



# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.0300	0.0643	40	11/23/2020 02:24	WG1580778
Bromobenzene	U		0.0578	0.803	40	11/23/2020 02:24	WG1580778
Bromodichloromethane	U		0.0466	0.161	40	11/23/2020 02:24	WG1580778
Bromoform	U		0.0752	1.61	40	11/23/2020 02:24	WG1580778
Bromomethane	U		0.127	0.803	40	11/23/2020 02:24	WG1580778
Carbon tetrachloride	U		0.0577	0.321	40	11/23/2020 02:24	WG1580778
Chlorobenzene	U		0.0135	0.161	40	11/23/2020 02:24	WG1580778
Chlorodibromomethane	U		0.0394	0.161	40	11/23/2020 02:24	WG1580778
Chloroethane	U		0.109	0.321	40	11/23/2020 02:24	WG1580778
Chloroform	U		0.0662	0.161	40	11/23/2020 02:24	WG1580778
Chloromethane	U	<u>C3</u>	0.280	0.803	40	11/23/2020 02:24	WG1580778
2-Chlorotoluene	U		0.0556	0.161	40	11/23/2020 02:24	WG1580778
4-Chlorotoluene	U		0.0289	0.321	40	11/23/2020 02:24	WG1580778
1,2-Dibromo-3-Chloropropane	U		0.251	1.61	40	11/23/2020 02:24	WG1580778
1,2-Dibromoethane	U		0.0416	0.161	40	11/23/2020 02:24	WG1580778
Dibromomethane	U		0.0482	0.321	40	11/23/2020 02:24	WG1580778
1,2-Dichlorobenzene	U		0.0273	0.321	40	11/23/2020 02:24	WG1580778
1,3-Dichlorobenzene	U		0.0386	0.321	40	11/23/2020 02:24	WG1580778
1,4-Dichlorobenzene	U		0.0450	0.321	40	11/23/2020 02:24	WG1580778
Dichlorodifluoromethane	U		0.103	0.161	40	11/23/2020 02:24	WG1580778
1,1-Dichloroethane	U		0.0315	0.161	40	11/23/2020 02:24	WG1580778
1,2-Dichloroethane	U		0.0418	0.161	40	11/23/2020 02:24	WG1580778
1,1-Dichloroethene	U		0.0389	0.161	40	11/23/2020 02:24	WG1580778
cis-1,2-Dichloroethene	U		0.0472	0.161	40	11/23/2020 02:24	WG1580778
trans-1,2-Dichloroethene	U		0.0668	0.321	40	11/23/2020 02:24	WG1580778
1,2-Dichloropropane	U		0.0913	0.321	40	11/23/2020 02:24	WG1580778
1,1-Dichloropropene	U		0.0521	0.161	40	11/23/2020 02:24	WG1580778
1,3-Dichloropropane	U		0.0321	0.321	40	11/23/2020 02:24	WG1580778
cis-1,3-Dichloropropene	U		0.0487	0.161	40	11/23/2020 02:24	WG1580778
trans-1,3-Dichloropropene	U		0.0733	0.321	40	11/23/2020 02:24	WG1580778
2,2-Dichloropropane	U		0.0887	0.161	40	11/23/2020 02:24	WG1580778
Ethylbenzene	36.5		0.0474	0.161	40	11/23/2020 02:24	WG1580778
Hexachloro-1,3-butadiene	U		0.386	1.61	40	11/23/2020 02:24	WG1580778
Methylene Chloride	U	<u>C3</u>	0.427	1.61	40	11/23/2020 02:24	WG1580778
Methyl tert-butyl ether	U		0.0225	0.0643	40	11/23/2020 02:24	WG1580778

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ONE LAB. NATIONWIDE.

Collected date/time: 11/12/20 12:00

1/12/20 12:00

Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.0609	0.161	40	11/23/2020 02:24	WG1580778
1,1,2,2-Tetrachloroethane	U		0.0447	0.161	40	11/23/2020 02:24	WG1580778
1,1,2-Trichlorotrifluoroethane	U		0.0485	0.161	40	11/23/2020 02:24	WG1580778
Tetrachloroethene	U		0.0575	0.161	40	11/23/2020 02:24	WG1580778
Toluene	17.2		0.0835	0.321	40	11/23/2020 02:24	WG1580778
1,2,3-Trichlorobenzene	U	<u>C4</u>	0.471	0.803	40	11/23/2020 02:24	WG1580778
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.283	0.803	40	11/23/2020 02:24	WG1580778
1,1,1-Trichloroethane	U		0.0593	0.161	40	11/23/2020 02:24	WG1580778
1,1,2-Trichloroethane	U		0.0384	0.161	40	11/23/2020 02:24	WG1580778
Trichloroethene	U		0.0376	0.0643	40	11/23/2020 02:24	WG1580778
Trichlorofluoromethane	U		0.0532	0.161	40	11/23/2020 02:24	WG1580778
1,2,3-Trichloropropane	U		0.104	0.803	40	11/23/2020 02:24	WG1580778
Vinyl chloride	U		0.0746	0.161	40	11/23/2020 02:24	WG1580778
Xylenes, Total	151		0.0566	0.418	40	11/23/2020 02:24	WG1580778
(S) Toluene-d8	96.8			75.0-131		11/23/2020 02:24	WG1580778
(S) 4-Bromofluorobenzene	110			67.0-138		11/23/2020 02:24	WG1580778
(S) 1,2-Dichloroethane-d4	111			70.0-130		11/23/2020 02:24	WG1580778

















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### Sample Narrative:

L1286649-39 WG1580778: Non-target compounds too high to run at a lower dilution.

# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	614	<u>J4</u>	8.52	25.6	5	11/27/2020 11:58	WG1581894
Residual Range Organics (RRO)	5.67	<u>J</u>	4.27	12.8	1	11/26/2020 16:53	WG1581894
(S) o-Terphenyl	67.3			18.0-148		11/27/2020 11:58	WG1581894
(S) o-Terphenyl	71.8			18.0-148		11/26/2020 16:53	WG1581894

# Polychlorinated Biphenyls (GC) by Method 8082 A

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0151	0.0436	1	11/23/2020 20:26	WG1580730
PCB 1221	U		0.0151	0.0436	1	11/23/2020 20:26	WG1580730
PCB 1232	U		0.0151	0.0436	1	11/23/2020 20:26	WG1580730
PCB 1242	U		0.0151	0.0436	1	11/23/2020 20:26	WG1580730
PCB 1248	U		0.00946	0.0218	1	11/23/2020 20:26	WG1580730
PCB 1254	U		0.00946	0.0218	1	11/23/2020 20:26	WG1580730
PCB 1260	U		0.00946	0.0218	1	11/23/2020 20:26	WG1580730
(S) Decachlorobiphenyl	66.7			10.0-135		11/23/2020 20:26	WG1580730
(S) Tetrachloro-m-xylene	81.7			10.0-139		11/23/2020 20:26	WG1580730

# Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	U		0.00222	0.00769	1	11/25/2020 03:04	WG1581271
Benzo(a)pyrene	U		0.00229	0.00769	1	11/25/2020 03:04	WG1581271
Benzo(b)fluoranthene	U		0.00196	0.00769	1	11/25/2020 03:04	WG1581271
Benzo(k)fluoranthene	U		0.00276	0.00769	1	11/25/2020 03:04	WG1581271
Chrysene	U		0.00297	0.00769	1	11/25/2020 03:04	WG1581271
Dibenz(a,h)anthracene	U		0.00220	0.00769	1	11/25/2020 03:04	WG1581271
Indeno(1,2,3-cd)pyrene	U		0.00232	0.00769	1	11/25/2020 03:04	WG1581271
Naphthalene	9.20		0.0523	0.256	10	11/25/2020 07:22	WG1581271
1-Methylnaphthalene	3.56		0.00576	0.0256	1	11/25/2020 03:04	WG1581271
2-Methylnaphthalene	5.88		0.0547	0.256	10	11/25/2020 07:22	WG1581271

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ONE LAB. NATIONWIDE.

Collected date/time: 11/12/20 12:00

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/25/2020 03:04	WG1581271
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/25/2020 07:22	WG1581271
(S) 2-Fluorobiphenyl	52.8			34.0-125		11/25/2020 07:22	WG1581271
(S) 2-Fluorobiphenyl	59.3			34.0-125		11/25/2020 03:04	WG1581271
(S) p-Terphenyl-d14	61.9			23.0-120		11/25/2020 03:04	WG1581271
(S) p-Terphenyl-d14	69.7			23.0-120		11/25/2020 07:22	WG1581271



















L1286649-39 WG1581271: Surrogate failure due to matrix interference



# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	75.5		1	11/22/2020 03:02	<u>WG1579980</u>



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	5.63		0.276	0.663	1	11/24/2020 07:19	WG1580071



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	4.39	В	1.47	4.32	25	11/24/2020 21:16	WG1582038
(S) a,a,a-Trifluorotoluene(FID)	95.3			77.0-120		11/24/2020 21:16	WG1582038



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00377		0.000808	0.00173	1	11/24/2020 03:44	WG1581290
Toluene	0.0216		0.00225	0.00865	1	11/24/2020 03:44	WG1581290
Ethylbenzene	0.00841		0.00127	0.00432	1	11/24/2020 03:44	WG1581290
Total Xylenes	0.0451		0.00152	0.0112	1	11/24/2020 03:44	WG1581290
Methyl tert-butyl ether	U		0.000605	0.00173	1	11/24/2020 03:44	WG1581290
1,2-Dichloroethane	U		0.00112	0.00432	1	11/24/2020 03:44	WG1581290
1,2-Dibromoethane	U		0.00112	0.00432	1	11/24/2020 03:44	WG1581290
(S) Toluene-d8	107			75.0-131		11/24/2020 03:44	WG1581290
(S) 4-Bromofluorobenzene	104			67.0-138		11/24/2020 03:44	WG1581290
(S) 1,2-Dichloroethane-d4	95.6			70.0-130		11/24/2020 03:44	WG1581290



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U	<u>J4</u>	1.76	5.30	1	11/26/2020 17:06	WG1581894
Residual Range Organics (RRO)	6.31	<u>J</u>	4.41	13.3	1	11/26/2020 17:06	WG1581894
(S) o-Terphenyl	69.1			18.0-148		11/26/2020 17:06	WG1581894

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# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	75.4		1	11/22/2020 03:02	WG1579980

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	7.41		0.276	0.663	1	11/22/2020 22:44	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.48	4.36	25	11/21/2020 23:46	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	99.8			77.0-120		11/21/2020 23:46	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00307		0.000815	0.00175	1	11/22/2020 17:46	WG1580802
Toluene	0.00721	J	0.00227	0.00873	1	11/22/2020 17:46	WG1580802
Ethylbenzene	U		0.00129	0.00436	1	11/22/2020 17:46	WG1580802
Total Xylenes	U		0.00154	0.0113	1	11/22/2020 17:46	WG1580802
Methyl tert-butyl ether	U		0.000611	0.00175	1	11/22/2020 17:46	WG1580802
,2-Dichloroethane	U		0.00113	0.00436	1	11/22/2020 17:46	WG1580802
2-Dibromoethane	U		0.00113	0.00436	1	11/22/2020 17:46	WG1580802
(S) Toluene-d8	105			75.0-131		11/22/2020 17:46	WG1580802
(S) 4-Bromofluorobenzene	94.8			67.0-138		11/22/2020 17:46	WG1580802
(S) 1,2-Dichloroethane-d4	87.1			70.0-130		11/22/2020 17:46	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.76	5.30	1	11/23/2020 02:33	WG1580176
Residual Range Organics (RRO)	U		4.42	13.3	1	11/23/2020 02:33	WG1580176
(S) o-Terphenyl	59.8			18.0-148		11/23/2020 02:33	WG1580176

### ONE LAB. NATIONWIDE.

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### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	73.9		1	11/22/2020 03:02	<u>WG1579980</u>

# <sup>2</sup>Tc

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	8.05		0.282	0.677	1	11/22/2020 22:47	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	2.18	<u>J</u>	1.50	4.42	25	11/22/2020 00:08	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		11/22/2020 00:08	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0137		0.000826	0.00177	1	11/22/2020 18:05	WG1580802
luene	0.0571		0.00230	0.00884	1	11/22/2020 18:05	WG1580802
thylbenzene	0.00488		0.00130	0.00442	1	11/22/2020 18:05	WG1580802
otal Xylenes	0.0175		0.00156	0.0115	1	11/22/2020 18:05	WG1580802
lethyl tert-butyl ether	U		0.000619	0.00177	1	11/22/2020 18:05	WG1580802
2-Dichloroethane	U		0.00115	0.00442	1	11/22/2020 18:05	WG1580802
2-Dibromoethane	U		0.00115	0.00442	1	11/22/2020 18:05	WG1580802
(S) Toluene-d8	106			75.0-131		11/22/2020 18:05	WG1580802
(S) 4-Bromofluorobenzene	94.3			67.0-138		11/22/2020 18:05	WG1580802
(S) 1,2-Dichloroethane-d4	89.1			70.0-130		11/22/2020 18:05	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.80	5.42	1	11/23/2020 02:45	WG1580176
Residual Range Organics (RRO)	U		4.51	13.5	1	11/23/2020 02:45	WG1580176
(S) o-Terphenyl	76.1			18.0-148		11/23/2020 02:45	WG1580176

Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	70.8		1	11/22/2020 03:02	WG1579980



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	7.61		0.294	0.706	1	11/22/2020 22:50	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.62	4.79	25	11/22/2020 00:31	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	99.8			77.0-120		11/22/2020 00:31	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00118	J	0.000894	0.00191	1	11/22/2020 18:24	WG1580802
oluene	0.00628	J	0.00249	0.00957	1	11/22/2020 18:24	WG1580802
Ethylbenzene	U		0.00141	0.00479	1	11/22/2020 18:24	WG1580802
otal Xylenes	0.00228	J	0.00169	0.0124	1	11/22/2020 18:24	WG1580802
lethyl tert-butyl ether	U		0.000670	0.00191	1	11/22/2020 18:24	WG1580802
2-Dichloroethane	U		0.00124	0.00479	1	11/22/2020 18:24	WG1580802
2-Dibromoethane	U		0.00124	0.00479	1	11/22/2020 18:24	WG1580802
(S) Toluene-d8	107			75.0-131		11/22/2020 18:24	WG1580802
(S) 4-Bromofluorobenzene	97.2			67.0-138		11/22/2020 18:24	WG1580802
(S) 1,2-Dichloroethane-d4	91.4			70.0-130		11/22/2020 18:24	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.88	5.65	1	11/23/2020 08:01	WG1580611
Residual Range Organics (RRO)	U		4.70	14.1	1	11/23/2020 08:01	WG1580611
(S) o-Terphenyl	69.1			18.0-148		11/23/2020 08:01	WG1580611

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# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	67.7		1	11/22/2020 03:02	WG1579980

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	7.53		0.307	0.739	1	11/22/2020 22:52	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.74	5.14	25	11/22/2020 00:53	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/22/2020 00:53	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	U		0.000960	0.00206	1	11/22/2020 18:43	WG1580802
oluene	0.0102	<u>J</u>	0.00267	0.0103	1	11/22/2020 18:43	WG1580802
Ethylbenzene	U		0.00152	0.00514	1	11/22/2020 18:43	WG1580802
otal Xylenes	0.00405	<u>J</u>	0.00181	0.0134	1	11/22/2020 18:43	WG1580802
Methyl tert-butyl ether	U		0.000720	0.00206	1	11/22/2020 18:43	WG1580802
2-Dichloroethane	U		0.00133	0.00514	1	11/22/2020 18:43	WG1580802
2-Dibromoethane	U		0.00133	0.00514	1	11/22/2020 18:43	WG1580802
(S) Toluene-d8	106			75.0-131		11/22/2020 18:43	WG1580802
(S) 4-Bromofluorobenzene	94.1			67.0-138		11/22/2020 18:43	WG1580802
(S) 1,2-Dichloroethane-d4	88.8			70.0-130		11/22/2020 18:43	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.97	5.91	1	11/23/2020 08:14	WG1580611
Residual Range Organics (RRO)	U		4.92	14.8	1	11/23/2020 08:14	WG1580611
(S) o-Terphenyl	72.1			18.0-148		11/23/2020 08:14	WG1580611



# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	94.9		1	11/22/2020 03:02	WG1579980



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	2.11		0.219	0.527	1	11/22/2020 22:55	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		0.946	2.79	25	11/22/2020 01:15	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/22/2020 01:15	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000521	0.00112	1	11/22/2020 19:02	WG1580802
Toluene	0.00161	<u>J</u>	0.00145	0.00558	1	11/22/2020 19:02	WG1580802
Ethylbenzene	U		0.000822	0.00279	1	11/22/2020 19:02	WG1580802
Total Xylenes	0.00293	<u>J</u>	0.000982	0.00725	1	11/22/2020 19:02	WG1580802
Methyl tert-butyl ether	U		0.000390	0.00112	1	11/22/2020 19:02	WG1580802
1,2-Dichloroethane	U		0.000724	0.00279	1	11/22/2020 19:02	WG1580802
1,2-Dibromoethane	U		0.000723	0.00279	1	11/22/2020 19:02	WG1580802
(S) Toluene-d8	106			75.0-131		11/22/2020 19:02	WG1580802
(S) 4-Bromofluorobenzene	95.4			67.0-138		11/22/2020 19:02	WG1580802
(S) 1,2-Dichloroethane-d4	89.1			70.0-130		11/22/2020 19:02	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.40	4.22	1	11/23/2020 08:27	WG1580611
Residual Range Organics (RRO)	U		3.51	10.5	1	11/23/2020 08:27	WG1580611
(S) o-Terphenyl	77.7			18.0-148		11/23/2020 08:27	WG1580611

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### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	86.3		1	11/22/2020 03:02	<u>WG1579980</u>



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	6.00		0.241	0.579	1	11/22/2020 22:58	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.14	3.35	25	11/22/2020 01:38	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		11/22/2020 01:38	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	U		0.000626	0.00134	1	11/22/2020 19:21	WG1580802
uene	U		0.00174	0.00670	1	11/22/2020 19:21	WG1580802
nylbenzene	U		0.000988	0.00335	1	11/22/2020 19:21	WG1580802
al Xylenes	0.00130	<u>J</u>	0.00118	0.00871	1	11/22/2020 19:21	WG1580802
nyl tert-butyl ether	U		0.000469	0.00134	1	11/22/2020 19:21	WG1580802
ichloroethane	U		0.000870	0.00335	1	11/22/2020 19:21	WG1580802
ibromoethane	U		0.000868	0.00335	1	11/22/2020 19:21	WG1580802
Toluene-d8	107			75.0-131		11/22/2020 19:21	WG1580802
4-Bromofluorobenzene	95.0			67.0-138		11/22/2020 19:21	WG1580802
1,2-Dichloroethane-d4	88.1			70.0-130		11/22/2020 19:21	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	1.91	<u>J</u>	1.54	4.64	1	11/23/2020 08:40	WG1580611
Residual Range Organics (RRO)	U		3.86	11.6	1	11/23/2020 08:40	WG1580611
(S) o-Terphenyl	80.6			18.0-148		11/23/2020 08:40	WG1580611

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### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	%			date / time	
Total Solids	96.7		1	11/22/2020 02:39	WG1579981



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.75		0.215	0.517	1	11/22/2020 22:13	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		0.911	2.69	25	11/21/2020 19:39	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/21/2020 19:39	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.000763	J	0.000502	0.00107	1	11/22/2020 17:09	WG1580802
Toluene	0.00153	<u>J</u>	0.00140	0.00537	1	11/22/2020 17:09	WG1580802
Ethylbenzene	U		0.000792	0.00269	1	11/22/2020 17:09	WG1580802
Total Xylenes	U		0.000945	0.00698	1	11/22/2020 17:09	WG1580802
Methyl tert-butyl ether	U		0.000376	0.00107	1	11/22/2020 17:09	WG1580802
1,2-Dichloroethane	U		0.000697	0.00269	1	11/22/2020 17:09	WG1580802
1,2-Dibromoethane	U		0.000696	0.00269	1	11/22/2020 17:09	WG1580802
(S) Toluene-d8	106			75.0-131		11/22/2020 17:09	WG1580802
(S) 4-Bromofluorobenzene	95.1			67.0-138		11/22/2020 17:09	WG1580802
(S) 1,2-Dichloroethane-d4	83.6			70.0-130		11/22/2020 17:09	WG1580802



# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.38	4.14	1	11/23/2020 03:11	WG1580176
Residual Range Organics (RRO)	U		3.44	10.3	1	11/23/2020 03:11	WG1580176
(S) o-Terphenyl	84.0			18.0-148		11/23/2020 03:11	WG1580176

DATE/TIME: 12/01/20 15:43

### ONE LAB. NATIONWIDE.

### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	75.7		1	11/22/2020 02:39	WG1579981

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	4.47		0.275	0.661	1	11/22/2020 23:00	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.44	4.25	25	11/23/2020 22:17	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	107			77.0-120		11/23/2020 22:17	WG1581226



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.00411		0.000793	0.00170	1	11/24/2020 04:03	WG1581290
oluene	0.0222		0.00221	0.00849	1	11/24/2020 04:03	WG1581290
thylbenzene	0.00195	<u>J</u>	0.00125	0.00425	1	11/24/2020 04:03	WG1581290
otal Xylenes	0.00696	J	0.00149	0.0110	1	11/24/2020 04:03	WG1581290
ethyl tert-butyl ether	U		0.000594	0.00170	1	11/24/2020 04:03	WG1581290
-Dichloroethane	U		0.00110	0.00425	1	11/24/2020 04:03	WG1581290
2-Dibromoethane	U		0.00110	0.00425	1	11/24/2020 04:03	WG1581290
(S) Toluene-d8	104			75.0-131		11/24/2020 04:03	WG1581290
S) 4-Bromofluorobenzene	107			67.0-138		11/24/2020 04:03	WG1581290
(S) 1,2-Dichloroethane-d4	92.9			70.0-130		11/24/2020 04:03	WG1581290



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.76	5.29	1	11/26/2020 08:01	WG1582400
Residual Range Organics (RRO)	U		4.40	13.2	1	11/26/2020 08:01	WG1582400
(S) o-Terphenyl	88.4			18.0-148		11/26/2020 08:01	WG1582400

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# Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	96.3		1	11/22/2020 02:39	WG1579981



# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.88		0.216	0.519	1	11/22/2020 23:03	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	11.9		0.915	2.70	25	11/23/2020 22:37	WG1581226
(S) a,a,a-Trifluorotoluene(FID)	98.6			77.0-120		11/23/2020 22:37	WG1581226



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	0.0159		0.000504	0.00108	1	11/24/2020 00:20	WG1581290
oluene	0.0476		0.00140	0.00540	1	11/24/2020 00:20	WG1581290
Ethylbenzene	0.00523		0.000795	0.00270	1	11/24/2020 00:20	WG1581290
Total Xylenes	0.0213		0.000950	0.00701	1	11/24/2020 00:20	WG1581290
Methyl tert-butyl ether	U		0.000378	0.00108	1	11/24/2020 00:20	WG1581290
2-Dichloroethane	U		0.000700	0.00270	1	11/24/2020 00:20	WG1581290
2-Dibromoethane	U		0.000699	0.00270	1	11/24/2020 00:20	WG1581290
(S) Toluene-d8	104			75.0-131		11/24/2020 00:20	WG1581290
(S) 4-Bromofluorobenzene	104			67.0-138		11/24/2020 00:20	WG1581290
(S) 1,2-Dichloroethane-d4	98.5			70.0-130		11/24/2020 00:20	WG1581290



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.38	4.15	1	11/24/2020 10:10	WG1580726
Residual Range Organics (RRO)	U		3.46	10.4	1	11/24/2020 10:10	WG1580726
(S) o-Terphenyl	73.9			18.0-148		11/24/2020 10:10	WG1580726







### ONE LAB. NATIONWIDE.

### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	76.5		1	11/22/2020 02:39	WG1579981

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.31		0.272	0.654	1	11/22/2020 23:11	WG1580077



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.47	4.34	27.3	11/21/2020 20:02	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	99.9			77.0-120		11/21/2020 20:02	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
enzene	U		0.000810	0.00173	1.09	11/22/2020 17:27	WG1580802
luene	U		0.00226	0.00867	1.09	11/22/2020 17:27	WG1580802
hylbenzene	U		0.00128	0.00434	1.09	11/22/2020 17:27	WG1580802
otal Xylenes	U		0.00153	0.0113	1.09	11/22/2020 17:27	WG1580802
ethyl tert-butyl ether	U		0.000606	0.00173	1.09	11/22/2020 17:27	WG1580802
Dichloroethane	U		0.00112	0.00434	1.09	11/22/2020 17:27	WG1580802
Dibromoethane	U		0.00112	0.00434	1.09	11/22/2020 17:27	WG1580802
S) Toluene-d8	106			75.0-131		11/22/2020 17:27	WG1580802
) 4-Bromofluorobenzene	94.1			67.0-138		11/22/2020 17:27	WG1580802
S) 1,2-Dichloroethane-d4	86.6			70.0-130		11/22/2020 17:27	WG1580802



	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.74	5.23	1	11/23/2020 02:58	WG1580176
Residual Range Organics (RRO)	U		4.36	13.1	1	11/23/2020 02:58	WG1580176
(S) o-Terphenyl	77.1			18.0-148		11/23/2020 02:58	WG1580176

ONE LAB. NATIONWIDE.

L1286649

### Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	96.8		1	11/22/2020 02:39	WG1579981

# <sup>2</sup>Tc

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Lead	1.73		0.215	0.517	1	11/22/2020 23:13	WG1580077



# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		0.914	2.70	25.3	11/22/2020 02:00	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		11/22/2020 02:00	WG1580518



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# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U		0.000503	0.00108	1.01	11/22/2020 19:40	WG1580802
oluene	U		0.00140	0.00538	1.01	11/22/2020 19:40	WG1580802
Ethylbenzene	U		0.000793	0.00270	1.01	11/22/2020 19:40	WG1580802
Total Xylenes	U		0.000948	0.00699	1.01	11/22/2020 19:40	WG1580802
Methyl tert-butyl ether	U		0.000376	0.00108	1.01	11/22/2020 19:40	WG1580802
2-Dichloroethane	U		0.000698	0.00270	1.01	11/22/2020 19:40	WG1580802
2-Dibromoethane	U		0.000697	0.00270	1.01	11/22/2020 19:40	WG1580802
(S) Toluene-d8	105			75.0-131		11/22/2020 19:40	WG1580802
(S) 4-Bromofluorobenzene	96.4			67.0-138		11/22/2020 19:40	WG1580802
(S) 1,2-Dichloroethane-d4	88.4			70.0-130		11/22/2020 19:40	WG1580802



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	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	1.53	<u>J</u>	1.37	4.13	1	11/23/2020 08:52	WG1580611
Residual Range Organics (RRO)	U		3.44	10.3	1	11/23/2020 08:52	WG1580611
(S) o-Terphenyl	81.4			18.0-148		11/23/2020 08:52	WG1580611

### ONE LAB. NATIONWIDE.



	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	80.3		1	11/22/2020 02:39	WG1579981

# Metals (ICP) by Method 6010D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Copper	380		0.498	2.49	1	11/24/2020 02:54	WG1581511
Lead	3130		0.259	0.623	1	11/24/2020 02:54	WG1581511
Nickel	60.3		0.164	2.49	1	11/24/2020 02:54	WG1581511
Zinc	675		1.04	6.23	1	11/24/2020 02:54	WG1581511



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# Volatile Organic Compounds (GC) by Method NWTPHGX

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	13600		60.3	178	1230	11/22/2020 02:45	WG1580518
(S) a,a,a-Trifluorotoluene(FID)	89.4			77.0-120		11/22/2020 02:45	WG1580518



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Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg	_	mg/kg	mg/kg		date / time	
Benzene	12.1		0.0665	0.142	98.4	11/22/2020 06:00	WG1580488
Bromobenzene	U		0.128	1.78	98.4	11/22/2020 06:00	WG1580488
Bromodichloromethane	U		0.103	0.356	98.4	11/22/2020 06:00	WG1580488
Bromoform	U		0.166	3.56	98.4	11/22/2020 06:00	WG1580488
Bromomethane	U	<u>J4 J5</u>	0.280	1.78	98.4	11/22/2020 06:00	WG1580488
Carbon tetrachloride	U		0.128	0.711	98.4	11/22/2020 06:00	WG1580488
Chlorobenzene	U		0.0299	0.356	98.4	11/22/2020 06:00	WG1580488
Chlorodibromomethane	U		0.0870	0.356	98.4	11/22/2020 06:00	WG1580488
Chloroethane	U		0.241	0.711	98.4	11/22/2020 06:00	WG1580488
Chloroform	U		0.146	0.356	98.4	11/22/2020 06:00	WG1580488
Chloromethane	U	<u>J3</u>	0.619	1.78	98.4	11/22/2020 06:00	WG1580488
2-Chlorotoluene	U	<u>J3</u> <u>J5</u>	0.123	0.356	98.4	11/22/2020 06:00	WG1580488
4-Chlorotoluene	U	_	0.0641	0.711	98.4	11/22/2020 06:00	WG1580488
1,2-Dibromo-3-Chloropropane	U		0.555	3.56	98.4	11/22/2020 06:00	WG1580488
1,2-Dibromoethane	U		0.0922	0.356	98.4	11/22/2020 06:00	WG1580488
Dibromomethane	U		0.107	0.711	98.4	11/22/2020 06:00	WG1580488
1,2-Dichlorobenzene	U		0.0604	0.711	98.4	11/22/2020 06:00	WG1580488
1,3-Dichlorobenzene	U		0.0853	0.711	98.4	11/22/2020 06:00	WG1580488
1,4-Dichlorobenzene	U		0.0996	0.711	98.4	11/22/2020 06:00	WG1580488
Dichlorodifluoromethane	U		0.228	0.356	98.4	11/22/2020 06:00	WG1580488
1,1-Dichloroethane	U		0.0698	0.356	98.4	11/22/2020 06:00	WG1580488
1,2-Dichloroethane	U		0.0924	0.356	98.4	11/22/2020 06:00	WG1580488
1,1-Dichloroethene	U		0.0862	0.356	98.4	11/22/2020 06:00	WG1580488
cis-1,2-Dichloroethene	U		0.104	0.356	98.4	11/22/2020 06:00	WG1580488
trans-1,2-Dichloroethene	U		0.147	0.711	98.4	11/22/2020 06:00	WG1580488
1,2-Dichloropropane	U		0.202	0.711	98.4	11/22/2020 06:00	WG1580488
1,1-Dichloropropene	U		0.115	0.356	98.4	11/22/2020 06:00	WG1580488
1,3-Dichloropropane	U		0.0713	0.711	98.4	11/22/2020 06:00	WG1580488
cis-1,3-Dichloropropene	U		0.108	0.356	98.4	11/22/2020 06:00	WG1580488
trans-1,3-Dichloropropene	U		0.162	0.711	98.4	11/22/2020 06:00	WG1580488
2,2-Dichloropropane	U		0.197	0.356	98.4	11/22/2020 06:00	WG1580488
Ethylbenzene	65.4		0.105	0.356	98.4	11/22/2020 06:00	WG1580488
Hexachloro-1,3-butadiene	U		0.853	3.56	98.4	11/22/2020 06:00	WG1580488
Methylene Chloride	U		0.944	3.56	98.4	11/22/2020 06:00	WG1580488
Methyl tert-butyl ether	U		0.0497	0.142	98.4	11/22/2020 06:00	WG1580488

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(S) 1,2-Dichloroethane-d4

# SAMPLE RESULTS - 52

ONE LAB. NATIONWIDE.

WG1580488

11/22/2020 06:00

Collected date/time: 11/08/20 12:40

Volatile Organic Compounds (GC/MS) by Method 8260D

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.135	0.356	98.4	11/22/2020 06:00	WG1580488
1,1,2,2-Tetrachloroethane	U	<u>J5</u>	0.0989	0.356	98.4	11/22/2020 06:00	WG1580488
1,1,2-Trichlorotrifluoroethane	U	<u>C3</u>	0.107	0.356	98.4	11/22/2020 06:00	WG1580488
Tetrachloroethene	0.291	<u>J</u>	0.128	0.356	98.4	11/22/2020 06:00	WG1580488
Toluene	113		0.185	0.711	98.4	11/22/2020 06:00	WG1580488
1,2,3-Trichlorobenzene	U		1.04	1.78	98.4	11/22/2020 06:00	WG1580488
1,2,4-Trichlorobenzene	U		0.626	1.78	98.4	11/22/2020 06:00	WG1580488
1,1,1-Trichloroethane	U		0.131	0.356	98.4	11/22/2020 06:00	WG1580488
1,1,2-Trichloroethane	U		0.0849	0.356	98.4	11/22/2020 06:00	WG1580488
Trichloroethene	U		0.0831	0.142	98.4	11/22/2020 06:00	WG1580488
Trichlorofluoromethane	U		0.118	0.356	98.4	11/22/2020 06:00	WG1580488
1,2,3-Trichloropropane	U		0.230	1.78	98.4	11/22/2020 06:00	WG1580488
Vinyl chloride	U		0.165	0.356	98.4	11/22/2020 06:00	WG1580488
Xylenes, Total	584	<u>V</u>	0.125	0.925	98.4	11/22/2020 06:00	WG1580488
(S) Toluene-d8	93.8			75.0-131		11/22/2020 06:00	WG1580488
(S) 4-Bromofluorobenzene	125			67.0-138		11/22/2020 06:00	WG1580488

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# Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	11000		415	1250	250	11/24/2020 06:59	WG1580176
Residual Range Organics (RRO)	6340		1040	3120	250	11/24/2020 06:59	WG1580176
(S) o-Terphenyl	0.000	<u>J7</u>		18.0-148		11/24/2020 06:59	WG1580176

70.0-130

# Polychlorinated Biphenyls (GC) by Method 8082 A

95.4

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
PCB 1016	U		0.0147	0.0424	1	11/23/2020 20:36	WG1580730
PCB 1221	U		0.0147	0.0424	1	11/23/2020 20:36	WG1580730
PCB 1232	U		0.0147	0.0424	1	11/23/2020 20:36	WG1580730
PCB 1242	U		0.0147	0.0424	1	11/23/2020 20:36	WG1580730
PCB 1248	U		0.00920	0.0212	1	11/23/2020 20:36	WG1580730
PCB 1254	U		0.00920	0.0212	1	11/23/2020 20:36	WG1580730
PCB 1260	U		0.00920	0.0212	1	11/23/2020 20:36	WG1580730
(S) Decachlorobiphenyl	55.7			10.0-135		11/23/2020 20:36	WG1580730
(S) Tetrachloro-m-xylene	57.2			10.0-139		11/23/2020 20:36	WG1580730

# Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Benzo(a)anthracene	0.313		0.0216	0.0748	10	11/23/2020 18:06	WG1580173
Benzo(a)pyrene	0.530		0.0223	0.0748	10	11/23/2020 18:06	WG1580173
Benzo(b)fluoranthene	0.749		0.0191	0.0748	10	11/23/2020 18:06	WG1580173
Benzo(k)fluoranthene	0.223		0.0268	0.0748	10	11/23/2020 18:06	WG1580173
Chrysene	0.536		0.0289	0.0748	10	11/23/2020 18:06	WG1580173
Dibenz(a,h)anthracene	0.118		0.0214	0.0748	10	11/23/2020 18:06	WG1580173
Indeno(1,2,3-cd)pyrene	0.386		0.0226	0.0748	10	11/23/2020 18:06	WG1580173
Naphthalene	45.7		0.0508	0.249	10	11/23/2020 18:06	WG1580173
1-Methylnaphthalene	43.6		0.0559	0.249	10	11/23/2020 18:06	WG1580173
2-Methylnaphthalene	40.0		0.0532	0.249	10	11/23/2020 18:06	WG1580173
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/23/2020 18:06	WG1580173
(S) 2-Fluorobiphenyl	0.000	<u>J2</u>		34.0-125		11/23/2020 18:06	WG1580173
(S) p-Terphenyl-d14	110			23.0-120		11/23/2020 18:06	WG1580173



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221EW-UST2-S-201108 Collected date/time: 11/08/20 12:40

# SAMPLE RESULTS - 52

ONE LAB. NATIONWIDE.

L1286649

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	

Sample Narrative:

L1286649-52 WG1580173: Surrogate failure due to matrix interference



















ONE LAB. NATIONWIDE.

Collected date/time: 11/12/20 08:35

#### L1286649

#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	46.3	ВЈ	31.6	100	1	11/23/2020 23:30	WG1581412
(S) a,a,a-Trifluorotoluene(FID)	100			78.0-120		11/23/2020 23:30	WG1581412









	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		0.0941	1.00	1	11/23/2020 20:01	WG1581391
Toluene	U		0.278	1.00	1	11/23/2020 20:01	WG1581391
Ethylbenzene	U		0.137	1.00	1	11/23/2020 20:01	WG1581391
Total Xylenes	U		0.174	3.00	1	11/23/2020 20:01	WG1581391
Methyl tert-butyl ether	U		0.101	1.00	1	11/23/2020 20:01	WG1581391
1,2-Dichloroethane	U		0.0819	1.00	1	11/23/2020 20:01	WG1581391
1,2-Dibromoethane	U		0.126	1.00	1	11/23/2020 20:01	WG1581391
(S) Toluene-d8	99.9			80.0-120		11/23/2020 20:01	WG1581391
(S) 4-Bromofluorobenzene	102			77.0-126		11/23/2020 20:01	WG1581391
(S) 1,2-Dichloroethane-d4	93.5			70.0-130		11/23/2020 20:01	WG1581391













ONE LAB. NATIONWIDE.

Collected date/time: 11/12/20 12:15

#### L1286649

#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	51.8	<u>B J</u>	31.6	100	1	11/23/2020 23:55	WG1581412
(S) a,a,a-Trifluorotoluene(FID)	99.3			78.0-120		11/23/2020 23:55	WG1581412

# Ср







Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
ug/l		ug/l	ug/l		date / time	
U		0.0941	1.00	1	11/23/2020 20:21	WG1581391
U		0.278	1.00	1	11/23/2020 20:21	WG1581391
U		0.137	1.00	1	11/23/2020 20:21	WG1581391
U		0.174	3.00	1	11/23/2020 20:21	WG1581391
U		0.101	1.00	1	11/23/2020 20:21	WG1581391
U		0.0819	1.00	1	11/23/2020 20:21	WG1581391
U		0.126	1.00	1	11/23/2020 20:21	WG1581391
99.4			80.0-120		11/23/2020 20:21	WG1581391
99.6			77.0-126		11/23/2020 20:21	WG1581391
94.8			70.0-130		11/23/2020 20:21	WG1581391
	Ug/I U U U U U U U U 99.4	U U U U U U U U 99.4	Ug/l U 0.0941 U 0.278 U 0.137 U 0.174 U 0.101 U 0.0819 U 0.126 99.4 99.6	ug/l         ug/l         ug/l           U         0.0941         1.00           U         0.278         1.00           U         0.137         1.00           U         0.174         3.00           U         0.101         1.00           U         0.0819         1.00           U         0.126         1.00           99.4         80.0-120           99.6         77.0-126	ug/l         ug/l         ug/l           U         0.0941         1.00         1           U         0.278         1.00         1           U         0.137         1.00         1           U         0.174         3.00         1           U         0.101         1.00         1           U         0.0819         1.00         1           U         0.126         1.00         1           99.4         80.0-120           99.6         77.0-126	ug/l         ug/l         ug/l         date / time           U         0.0941         1.00         1         11/23/2020 20:21           U         0.278         1.00         1         11/23/2020 20:21           U         0.137         1.00         1         11/23/2020 20:21           U         0.174         3.00         1         11/23/2020 20:21           U         0.101         1.00         1         11/23/2020 20:21           U         0.0819         1.00         1         11/23/2020 20:21           U         0.126         1.00         1         11/23/2020 20:21           99.4         80.0-120         11/23/2020 20:21           99.6         77.0-126         11/23/2020 20:21













ONE LAB. NATIONWIDE.

#### L1286649

#### Wet Chemistry by Method 9040C

Collected date/time: 11/13/20 10:10

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.99	<u>T8</u>	1	11/21/2020 15:00	WG1578810





L1286649-55 WG1578810: 7.99 at 20.9C

# <sup>3</sup>Ss

#### Metals (ICP) by Method 6010D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Copper	22.1		3.68	10.0	1	11/23/2020 18:06	WG1580736
Lead	11.9		2.99	6.00	1	11/23/2020 18:06	WG1580736
Nickel	6.79	<u>J</u>	1.61	10.0	1	11/23/2020 18:06	WG1580736
Zinc	38.8	<u>J</u>	6.52	50.0	1	11/23/2020 18:06	WG1580736



Cn

# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		9.41	100	100	11/24/2020 22:17	WG1582001
(S) Toluene-d8	99.9			80.0-120		11/24/2020 22:17	WG1582001
(S) 4-Bromofluorobenzene	104			77.0-126		11/24/2020 22:17	WG1582001
(S) 1,2-Dichloroethane-d4	104			70.0-130		11/24/2020 22:17	WG1582001



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#### Sample Narrative:

L1286649-55 WG1582001: Elevated RL due to foamy matrix.

Collected date/time: 11/13/20 10:35

# SAMPLE RESULTS - 56

ONE LAB. NATIONWIDE.

#### Wet Chemistry by Method 9040C

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.50	<u>T8</u>	1	11/21/2020 15:00	<u>WG1578810</u>





L1286649-56 WG1578810: 7.5 at 19.8C

# Ss

#### Metals (ICP) by Method 6010D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Copper	112		3.68	10.0	1	11/23/2020 18:09	WG1580736
Lead	37.6		2.99	6.00	1	11/23/2020 18:09	WG1580736
Nickel	51.9		1.61	10.0	1	11/23/2020 18:09	WG1580736
Zinc	184		6.52	50.0	1	11/23/2020 18:09	WG1580736



Cn



### Volatile Organic Compounds (GC/MS) by Method 8260D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	1.65		0.0941	1.00	1	11/22/2020 13:02	WG1580633
(S) Toluene-d8	100			80.0-120		11/22/2020 13:02	WG1580633
(S) 4-Bromofluorobenzene	95.6			77.0-126		11/22/2020 13:02	WG1580633
(S) 1,2-Dichloroethane-d4	74.0			70.0-130		11/22/2020 13:02	WG1580633



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ONE LAB. NATIONWIDE.

Collected date/time: 11/13/20 10:40

#### Wet Chemistry by Method 9040C

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
pH	9.88	<u>T8</u>	1	11/21/2020 15:00	WG1578810





L1286649-57 WG1578810: 9.88 at 19.8C



#### Metals (ICP) by Method 6010D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Copper	25.9		3.68	10.0	1	11/23/2020 18:12	WG1580736
Lead	18.5		2.99	6.00	1	11/23/2020 18:12	WG1580736
Nickel	10.7		1.61	10.0	1	11/23/2020 18:12	WG1580736
Zinc	40.3	<u>J</u>	6.52	50.0	1	11/23/2020 18:12	WG1580736



СQс

# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	40.6		0.0941	1.00	1	11/22/2020 13:21	WG1580633
(S) Toluene-d8	101			80.0-120		11/22/2020 13:21	WG1580633
(S) 4-Bromofluorobenzene	95.0			77.0-126		11/22/2020 13:21	WG1580633
(S) 1,2-Dichloroethane-d4	79.4			70.0-130		11/22/2020 13:21	WG1580633





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ONE LAB. NATIONWIDE.

Collected date/time: 11/08/20 12:00

L1286649

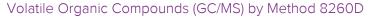
#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	44.1	<u>B J</u>	31.6	100	1	11/21/2020 02:19	WG1580118
(S) a,a,a-Trifluorotoluene(FID)	99.8			78.0-120		11/21/2020 02:19	WG1580118









	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		0.0941	1.00	1	11/21/2020 19:50	WG1580529
Toluene	U		0.278	1.00	1	11/21/2020 19:50	WG1580529
Ethylbenzene	U		0.137	1.00	1	11/21/2020 19:50	WG1580529
Total Xylenes	U		0.174	3.00	1	11/21/2020 19:50	WG1580529
Methyl tert-butyl ether	U		0.101	1.00	1	11/21/2020 19:50	WG1580529
1,2-Dichloroethane	U		0.0819	1.00	1	11/21/2020 19:50	WG1580529
1,2-Dibromoethane	U		0.126	1.00	1	11/21/2020 19:50	WG1580529
(S) Toluene-d8	96.6			80.0-120		11/21/2020 19:50	WG1580529
(S) 4-Bromofluorobenzene	111			77.0-126		11/21/2020 19:50	WG1580529
(S) 1,2-Dichloroethane-d4	100			70.0-130		11/21/2020 19:50	WG1580529













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Collected date/time: 11/08/20 12:00

#### L1286649

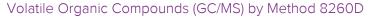
#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	45.2	ВЈ	31.6	100	1	11/21/2020 02:43	WG1580118
(S) a,a,a-Trifluorotoluene(FID)	99.7			78.0-120		11/21/2020 02:43	WG1580118

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	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		0.0941	1.00	1	11/21/2020 20:09	WG1580529
Toluene	U		0.278	1.00	1	11/21/2020 20:09	WG1580529
Ethylbenzene	U		0.137	1.00	1	11/21/2020 20:09	WG1580529
Total Xylenes	U		0.174	3.00	1	11/21/2020 20:09	WG1580529
Methyl tert-butyl ether	U		0.101	1.00	1	11/21/2020 20:09	WG1580529
1,2-Dichloroethane	U		0.0819	1.00	1	11/21/2020 20:09	WG1580529
1,2-Dibromoethane	U		0.126	1.00	1	11/21/2020 20:09	WG1580529
(S) Toluene-d8	100			80.0-120		11/21/2020 20:09	WG1580529
(S) 4-Bromofluorobenzene	100			77.0-126		11/21/2020 20:09	WG1580529
(S) 1,2-Dichloroethane-d4	93.9			70.0-130		11/21/2020 20:09	WG1580529













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Collected date/time: 11/08/20 12:00

#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	46.4	ВJ	31.6	100	1	11/21/2020 03:07	WG1580118
(S) a,a,a-Trifluorotoluene(FID)	100			78.0-120		11/21/2020 03:07	WG1580118







	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		0.0941	1.00	1	11/21/2020 20:28	WG1580529
Toluene	U		0.278	1.00	1	11/21/2020 20:28	WG1580529
Ethylbenzene	U		0.137	1.00	1	11/21/2020 20:28	WG1580529
Total Xylenes	U		0.174	3.00	1	11/21/2020 20:28	WG1580529
Methyl tert-butyl ether	U		0.101	1.00	1	11/21/2020 20:28	WG1580529
1,2-Dichloroethane	U		0.0819	1.00	1	11/21/2020 20:28	WG1580529
1,2-Dibromoethane	U		0.126	1.00	1	11/21/2020 20:28	WG1580529
(S) Toluene-d8	102			80.0-120		11/21/2020 20:28	WG1580529
(S) 4-Bromofluorobenzene	100			77.0-126		11/21/2020 20:28	WG1580529
(S) 1.2-Dichloroethane-d4	929			70.0-130		11/21/2020 20:28	WG1580529













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Collected date/time: 11/08/20 12:00

#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	38.9	ВJ	31.6	100	1	11/21/2020 03:31	WG1580118
(S) a,a,a-Trifluorotoluene(FID)	99.3			78.0-120		11/21/2020 03:31	WG1580118







	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Benzene	U		0.0941	1.00	1	11/21/2020 20:47	WG1580529
Toluene	U		0.278	1.00	1	11/21/2020 20:47	WG1580529
Ethylbenzene	U		0.137	1.00	1	11/21/2020 20:47	WG1580529
Total Xylenes	U		0.174	3.00	1	11/21/2020 20:47	WG1580529
Methyl tert-butyl ether	U		0.101	1.00	1	11/21/2020 20:47	WG1580529
1,2-Dichloroethane	U		0.0819	1.00	1	11/21/2020 20:47	WG1580529
1,2-Dibromoethane	U		0.126	1.00	1	11/21/2020 20:47	WG1580529
(S) Toluene-d8	102			80.0-120		11/21/2020 20:47	WG1580529
(S) 4-Bromofluorobenzene	100			77.0-126		11/21/2020 20:47	WG1580529
(S) 1.2-Dichloroethane-d4	90.1			70 0-130		11/21/2020 20:47	WG1580529













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Collected date/time: 11/08/20 12:00

#### Volatile Organic Compounds (GC) by Method NWTPHGX

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Gasoline Range Organics-NWTPH	42.5	<u>B J</u>	31.6	100	1	11/21/2020 03:55	WG1580118
(S) a,a,a-Trifluorotoluene(FID)	99.3			78.0-120		11/21/2020 03:55	WG1580118







# Volatile Organic Compounds (GC/MS) by Method 8260D

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	<del></del>
Benzene	U		0.0941	1.00	1	11/21/2020 21:06	WG1580529
Toluene	U		0.278	1.00	1	11/21/2020 21:06	WG1580529
Ethylbenzene	U		0.137	1.00	1	11/21/2020 21:06	WG1580529
Total Xylenes	U		0.174	3.00	1	11/21/2020 21:06	WG1580529
Methyl tert-butyl ether	U		0.101	1.00	1	11/21/2020 21:06	WG1580529
1,2-Dichloroethane	U		0.0819	1.00	1	11/21/2020 21:06	WG1580529
1,2-Dibromoethane	U		0.126	1.00	1	11/21/2020 21:06	WG1580529
(S) Toluene-d8	104			80.0-120		11/21/2020 21:06	WG1580529
(S) 4-Bromofluorobenzene	102			77.0-126		11/21/2020 21:06	WG1580529
(S) 1,2-Dichloroethane-d4	91.4			70.0-130		11/21/2020 21:06	WG1580529













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Total Solids by Method 2540 G-2011

L1286649-01,02,03,04,05,06

#### Method Blank (MB)

Total Solids

(MB) R3596280-1 11/21/20	05:35			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	%		%	%



L1286649-01 Original Sample (OS) • Duplicate (DUP)

0.000

(	'OSI	L1286649-01	11/21/20 05:35 •	(DUP	R3596280-3	11/21/20 05:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	76.1	75.6	1	0.667		10



Ss

(LCS) R3596280-2 11/21/
-------------------------

(LCS) R359628U-2 11/21/2	.C5) R359628U-2   11/21/20 U5.35										
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualific						
Analyte	%	%	%	%							
Total Solids	50.0	49.3	98.6	85.0-115							





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Total Solids by Method 2540 G-2011

L1286649-07,08,09,10,11,12,13,14,15,16

#### Method Blank (MB)

Total Solids

(MB) R3596279-1 11/21/20 05:24								
	MB Result	MB Qualifier	MB MDL	MB RDL				
Analyte	%		%	%				



#### L1286649-12 Original Sample (OS) • Duplicate (DUP)

0.000

	()	11200010	11/21/20 OF 2		\ D2E0C270 2	11/21/20 OF 2 1
- 1	( ).5	11/80049-1/	11/21/20 05:24	・・ロルリヒ	1 R.35990 / / 9-3	11/21/20 05:24

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	79.5	79 4	1	0.187		10



Ss

(LCS) R3596279-2 1	11/21/20	05:24
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(LCS) NOSSOZ73-2 11/21/2	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifi
Analyte	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	





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Total Solids by Method 2540 G-2011

L1286649-17,18,19,20,21,22,23,24,25,26

#### Method Blank (MB)

(MB) R3596275-1 11	1/21/20 05:01			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.000			

85.0-115



#### L1286649-23 Original Sample (OS) • Duplicate (DUP)

(OS) L1286649-23 11/21/20 05:01 • (DUP) R3596275-3 11/21/20 05:01											
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits					
Analyte	%	%		%		%					
Total Solids	73.9	74.9	1	1.42		10					





### Laboratory Control Sample (LCS)

Total Solids

50.0

(LCS) R3596275-2 11/21/20 05:01										
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier					
Analyte	%	%	%	%						

50.0

100







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Total Solids by Method 2540 G-2011

L1286649-27,28,29,30,31,32,33,34,35,36

#### Method Blank (MB)

(MB) R3596229-1 11/22/20 04:05 MB Result MB MDL MB RDL MB Qualifier % Analyte % % Total Solids 0.000



#### L1286649-34 Original Sample (OS) • Duplicate (DUP)

(OS) L1286649-34 11/22/20 04:05 - (DLIP) P3596229-3 11/22/20 04:05

(O3) L1200049-34 11/22/	20 04.03 • (DOF	) K3330223-	3 11/22/20	04.03		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	80.8	80.5	1	0.465		10



<sup>†</sup>Cn

# Laboratory Control Sample (LCS)

(LCS) R3596229-2 11/22/20 04:05

(200) 11000 0220 2 11/22/	Spike Amount		LCS Result	LCS Rec.	Rec. Limits
Analyte	%	%	%	%	%
otal Solids	50.0	50.0	50.0	100	85.0-115





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Total Solids by Method 2540 G-2011

L1286649-37,38,39,40,41,42,43,44,45,46

#### Method Blank (MB)

Total Solids

(MB) R3596227-1 11/22/20 03:02

MB Result MB Qualifier MB MDL MB RDL

Analyte % % % %



L1286649-45 Original Sample (OS) • Duplicate (DUP)

0.000

(OS) L1286649-45 11/22/20 03:02 • (DUP) R3596227-3 11/22/20 03:02

⁴Cn

Ss

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	
Analyte	%	%		%		%	
Total Solids	94 9	94.3	1	0.660		10	



Laboratory Control Sample (LCS)

(LCS) R3596227-2 11/22/20 03:02





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Total Solids by Method 2540 G-2011

L1286649-47,48,49,50,51,52

#### Method Blank (MB)

Total Solids

(MB) R3596226-1 11/22/20	002:39			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	%		%	%



L1286673-01 Original Sample (OS) • Duplicate (DUP)

0.000

(OC) 11206672 O1	11/22/20 02:20	DLID/ DOEDCOOC O	11/22/20 02:20
(OS) L1286673-01	11/22/20 02.39 • 1	DUF   K3330220-3	11/22/20 02.33

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	77.0	78.3	1	1.63		10



Ss

# <sup>6</sup>Qc

(LCS) R3596226-2	11/22/20 02:3	9
------------------	---------------	---

(LC3) K3390220-2 11/22/2	Spike Amount	ount L	LCS Result	LCS Rec.	Rec. Limits
Analyte	%	%	%	%	%
Total Solids	50.0		50.0	100	85.0-115





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Wet Chemistry by Method 9040C

L1286649-55,56,57

# L1286496-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1286496-01 11/21/20 15:00 • (DUP) R3595895-2 11/21/20 15:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	SU	SU		%		%
pH	6.39	6.39	1	0.000		1







#### Sample Narrative:

OS: 6.39 at 20C DUP: 6.39 at 20C





### L1287383-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1287383-01 11/21/20 15:00 • (DLIP) P3595895-3 11/21/20 15:00

(O3) L126/363-01 11/21/20	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
рН	7.97	7.94	1	0.377		1









### Sample Narrative:

OS: 7.97 at 20.2C DUP: 7.94 at 20.1C

#### Laboratory Control Sample (LCS)

(LCS) R3595895-1 11/21/20 15:00

#### Sample Narrative:

LCS: 10.06 at 20.1C

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Metals (ICP) by Method 6010D

L1286649-01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17,18,19,20

#### Method Blank (MB)

(MB) R3596799-1 11/24/20 04:41

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Zinc	U		0.832	5.00







#### Laboratory Control Sample (LCS)

(LCS) R3596799-2 11/24/20 04:44

(/					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Copper	100	97.3	97.3	80.0-120	
Lead	100	95.8	95.8	80.0-120	
Nickel	100	98.1	98.1	80.0-120	
Zinc	100	95.7	95.7	80.0-120	







### L1286649-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286649-13 11/24/20 04:46 • (MS) R3596799-5 11/24/20 04:54 • (MSD) R3596799-6 11/24/20 04:56

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Copper	134	29.7	164	161	99.8	97.8	1	75.0-125			1.64	20
Lead	134	4.58	140	136	100	98.0	1	75.0-125			2.32	20
Nickel	134	17.3	156	152	103	100	1	75.0-125			2.35	20
Zinc	134	63.6	191	188	94.4	92.6	1	75.0-125			1.34	20

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Metals (ICP) by Method 6010D

L1286649-21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40

#### Method Blank (MB)

(MB) R3596800-1	11/24/20 06:04

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Zinc	U		0.832	5.00









#### Laboratory Control Sample (LCS)

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Copper	100	104	104	80.0-120	
Lead	100	103	103	80.0-120	
Nickel	100	105	105	80.0-120	
Zinc	100	102	102	80.0-120	









# L1286649-30 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286649-30 11/24/20 06:09 • (MS) R3596800-5 11/24/20 06:16 • (MSD) R3596800-6 11/24/20 06:19

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Copper	103	17.8	117	117	95.9	95.9	1	75.0-125			0.0170	20
Lead	103	2.18	102	103	96.6	97.6	1	75.0-125			1.03	20
Nickel	103	7.80	109	111	98.5	99.9	1	75.0-125			1.30	20
Zinc	103	32.0	127	127	92.6	91.8	1	75.0-125			0.661	20





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Metals (ICP) by Method 6010D

L1286649-41,42,43,44,45,46,47,48,49,50,51

#### Method Blank (MB)

(MB) R3596130-	1 11/22/20 22:08
	MR Res

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Lead	U		0.208	0.500







#### Laboratory Control Sample (LCS)

(LCS) R3596130-2	11/22/20	22:10
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	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Lead	100	93.0	93.0	80.0-120	







(OS) L1286649-47 11/22/20 22:13 • (MS) R3596130-5 11/22/20 22:20 • (MSD) R3596130-6 11/22/20 22:23

(US) L1286649-47	11/22/20 22:13 • (IVIS) R	(3596130-5 11/	22/20 22:20 •	(INISD) K35901	30-6 11/22/20	22.23						
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Lead	103	1.75	101	107	96.4	102	1	75.0-125			5.06	20







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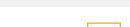
Metals (ICP) by Method 6010D

L1286649-52

#### Method Blank (MB)

(MB) P3596678-1 11/24/20 02:36

(IVID) R3390076-1 11/2	24/20 02.30			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Zinc	U		0.832	5.00







#### Laboratory Control Sample (LCS)

(LCS) R3596678-2 11/24/20 02:39

(/					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Copper	100	99.7	99.7	80.0-120	
Lead	100	97.3	97.3	80.0-120	
Nickel	100	99.2	99.2	80.0-120	
Zinc	100	97.6	97.6	80.0-120	





#### L1289115-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1289115-01 11/24/20 02:41 • (MS) R3596678-5 11/24/20 02:49 • (MSD) R3596678-6 11/24/20 02:51

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Copper	103	3.35	101	99.9	95.2	94.0	1	75.0-125			1.22	20
Lead	103	3.75	100	100	93.8	94.0	1	75.0-125			0.152	20
Nickel	103	3.57	103	102	96.6	96.1	1	75.0-125			0.471	20
Zinc	103	13.7	111	111	94.6	94.3	1	75.0-125			0.268	20





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Metals (ICP) by Method 6010D

L1286649-55,56,57

#### Method Blank (MB)

(MB) R3596664-1	11/23/20 16:53
-----------------	----------------

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Copper	U		3.68	10.0
Lead	U		2.99	6.00
Nickel	U		1.61	10.0
Zinc	U		6.52	50.0



1







#### Laboratory Control Sample (LCS)

(LCS) R3596664-2	11/23/20 16:56
------------------	----------------

( /					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Copper	1000	957	95.7	80.0-120	
Lead	1000	969	96.9	80.0-120	
Nickel	1000	992	99.2	80.0-120	
Zinc	1000	967	96.7	80.0-120	

# <sup>6</sup>Qc





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# L1286520-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

 $(OS)\,L1286520-01\ 11/23/20\ 16:59 \bullet (MS)\,R3596664-4\ 11/23/20\ 17:04 \bullet (MSD)\,R3596664-5\ 11/23/20\ 17:07$ 

(00) 2:20020 0: 1:,20/2	, ,			. ,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Copper	1000	4.63	969	960	96.4	95.6	1	75.0-125			0.879	20
Lead	1000	U	992	980	99.2	98.0	1	75.0-125			1.24	20
Nickel	1000	6.09	1030	1020	102	101	1	75.0-125			0.938	20
Zinc	1000	334	1320	1310	98.8	97.9	1	75.0-125			0.736	20

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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-10,11,13,14

#### Method Blank (MB)

(MB) R3595668-2 11/20/2	20 13:56			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	0.0518	<u>J</u>	0.0339	0.100
(S) a a a-Trifluorotoluene(FID)	96.9			77.0-120







(LCS) R3595668-1 11/20/2	20 12:30				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	6.11	111	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-12,15,16,17,18

#### Method Blank (MB)

(MB) R3595945-2 11/21/2	20 10:58			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	0.0943	<u>J</u>	0.0339	0.100
(S) a a a-Trifluorotoluene(FID)	96.3			77.0-120







(LCS) R3595945-1 11/21/2	20 08:56				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	5.84	106	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-41,42,43,44,45,46,47,50,51,52

#### Method Blank (MB)

(MB) R3595949-2 11/21/2	0 18:36			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120





(LCS) R3595949-1 11/21/2	20 17:51				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	5.44	98.9	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			99.1	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-19,20

#### Method Blank (MB)

(MB) R3596237-2 11/22/2	20 13:02			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	110			77.0-120







### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3596237-1 11/22/2	20 12:20 • (LCSE	D) R3596237-3	3 11/22/20 14:29	9						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Gasoline Range Organics-NWTPH	5.50	4.83	5.95	87.8	108	71.0-124		<u>J3</u>	20.8	20
(S) a,a,a-Trifluorotoluene(FID)				100	102	77.0-120				











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-06,07

#### Method Blank (MB)

(MB) R3596764-2 11/23/2	20 17:08			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120









(LCS) R3596764-1 11/23/2	20 16:23				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	5.83	106	71.0-124	
(S) a a a-Trifluorotoluene(FID)			105	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-23,24,25,26,27,28,29,48,49

### Method Blank (MB)

(MB) R3596766-2 11/23/2	20 17:57			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	109			77.0-120







### Laboratory Control Sample (LCS)

(LCS) R3596766-1 11/23/2	20 17:16				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	6.06	110	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	





# L1287732-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(US) L128//32-US 11/24/2	0 03:00 • (1015)	R3590/00-3 I	1/24/20 03:21 •	(IVISD) K3596	/66-4 11/24/20	03.42						
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Gasoline Range Organics-NWTPH	138	U	117	151	85.1	109	25	10.0-149			24.9	27
(S) a,a,a-Trifluorotoluene(FID)					103	106		77.0-120				



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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-30,31,33,36,37

#### Method Blank (MB)

(MB) R3597014-2 11/24/2	20 05:42			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	108			77.0-120







(LCS) R3597014-1 11/24/2	20 05:01				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	5.59	102	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-01,02,03,04,05,08,09,21,22

#### Method Blank (MB)

(MB) R3596985-2 11/24/20 06:49				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120







(LCS) R3596985-1 11/24/2	20 06:04				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	5.87	107	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-32,34,35,38,40

#### Method Blank (MB)

(MB) R3597143-2 11/24/20 15:09				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	0.0877	<u>J</u>	0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.0			77.0-120







(LCS) R3597143-1 11/24/2	0 11:40				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	6.26	114	71.0-124	
(S)			106	77.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-39

#### Method Blank (MB)

(MB) R3597722-2 11/25/20 14:59				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Gasoline Range Organics-NWTPH	0.0384	<u>J</u>	0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.2			77.0-120





(LCS) R3597722-1 11/25/2	20 14:18				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Gasoline Range Organics-NWTPH	5.50	6.12	111	71.0-124	
(S)			112	77.0-120	











#### WG1580118

# QUALITY CONTROL SUMMARY

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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-58,59,60,61,62

#### Method Blank (MB)

(MB) R3595883-2 11/21/2	20 00:43			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Gasoline Range Organics-NWTPH	46.1	7	31.6	100
(S) a.a.a-Trifluorotoluene(FID)	98.5			78.0-120







(LCS) R3595883-1 11/20/2	20 23:31				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Gasoline Range Organics-NWTPH	5500	4970	90.4	70.0-124	
(S) a.a.a-Trifluorotoluene(FID)			89.0	78.0-120	











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Volatile Organic Compounds (GC) by Method NWTPHGX

L1286649-53,54

#### Method Blank (MB)

(MB) R3597026-2 11/23/20 16:50				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Gasoline Range Organics-NWTPH	50.1	<u>J</u>	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	100			78.0-120





(LCS) R3597026-1 11/23/2	20 15:31				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Gasoline Range Organics-NWTPH	5500	5290	96.2	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			90.2	78.0-120	











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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-10,11,12,14,18,20

#### Method Blank (MB)

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

(MB) R3595951-2 11/21/	/20 07:46			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	107			75.0-131

# Laboratory Control Sample (LCS)

96.7

86.9

(LCS) R3595951-1 11/21/	/20 06:48				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Benzene	0.125	0.109	87.2	70.0-123	
1,2-Dibromoethane	0.125	0.118	94.4	74.0-128	
1,2-Dichloroethane	0.125	0.101	80.8	65.0-131	
Ethylbenzene	0.125	0.112	89.6	74.0-126	
Methyl tert-butyl ether	0.125	0.100	80.0	66.0-132	
Toluene	0.125	0.112	89.6	75.0-121	
Xylenes, Total	0.375	0.329	87.7	72.0-127	
(S) Toluene-d8			101	75.0-131	
(S) 4-Bromofluorobenzen	e		101	67.0-138	
(S) 1,2-Dichloroethane-d4			84.8	70.0-130	

#### L1286265-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

67.0-138

70.0-130

(OS) L1286265-01 11/21/20 14:16 • (MS) R3595951-3 11/21/20 16:28 • (MSD) R3595951-4 11/21/20 16:4/												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	50.0	11.3	142	131	261	239	400	10.0-149	<u>J5</u>	<u>J5</u>	8.06	37
1,2-Dibromoethane	50.0	U	52.9	47.1	106	94.2	400	10.0-148			11.6	34
1,2-Dichloroethane	50.0	U	49.0	48.1	98.0	96.2	400	10.0-148			1.85	35
Ethylbenzene	50.0	6.42	108	99.2	203	186	400	10.0-160	<u>J5</u>	<u>J5</u>	8.49	38
Methyl tert-butyl ether	50.0	U	43.3	48.7	86.6	97.4	400	11.0-147			11.7	35
Toluene	50.0	23.2	250	217	454	388	400	10.0-156	<u>J5</u>	<u>J5</u>	14.1	38
Xylenes, Total	150	50.7	587	529	358	319	400	10.0-160	<u>J5</u>	<u>J5</u>	10.4	38

ACCOUNT: Leidos Inc.- Bothell, WA PROJECT:

SDG: L1286649

DATE/TIME: 12/01/20 15:43

PAGE: 129 of 189

















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-10,11,12,14,18,20

### L1286265-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(													
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%	
(S) Toluene-d8					101	102		75.0-131					
(S) 4-Bromofluorobenzene					101	102		67.0-138					
(S) 1,2-Dichloroethane-d4					87.6	91.1		70.0-130					





















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-15,16,17,19

#### Method Blank (MB)

Method Blank (MB)				
(MB) R3596065-3 11/22/20	09:25			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
	U		0.000467	0.00100
	U		0.000900	0.0125
	U		0.000725	0.00250
	U		0.00117	0.0250
	U		0.00197	0.0125
	U		0.000898	0.00500
	U		0.000330	0.00350
	U		0.000612	0.00250
	U		0.00170	0.00500
	U		0.00103	0.00250
	U		0.00435	0.0125
	U		0.000865	0.00250
	U		0.000450	0.00500
	U		0.00390	0.0250
	U		0.000648	0.00250
Dibromomethane	U		0.000750	0.00500
1,2-Dichlorobenzene	U		0.000425	0.00500
1,3-Dichlorobenzene	U		0.000600	0.00500
1,4-Dichlorobenzene	U		0.000700	0.00500
Dichlorodifluoromethane	U		0.00161	0.00250
1,1-Dichloroethane	U		0.000491	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
1,1-Dichloroethene	U		0.000606	0.00250
	U		0.000734	0.00250
	U		0.00104	0.00500
	U		0.00142	0.00500
	U		0.000809	0.00250
	U		0.000501	0.00500
	U		0.000361	0.00350
	U		0.000737	0.00500
	U		0.00114	0.00300
	U		0.00600	0.00250
•	U		0.00664	0.0250
	U		0.000350	0.00100
	U		0.000948	0.00250
	U		0.000695	0.00250
	U		0.000896	0.00250
	U		0.000754	0.00250
	U		0.00733	0.0125
1,2,4-Trichlorobenzene	U		0.00440	0.0125



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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-15,16,17,19

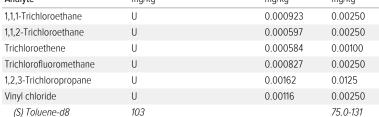
#### Method Blank (MB)

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

(MB) R3596065-3 11/2	22/20 09:25			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg







<sup>5</sup>Sr



## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

67.0-138

70.0-130

(LCS) R3596065-1 11/22/20 08:10 • (LCSD) R3596065-2 11/22/20 08:29

106

95.9

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.125	0.123	0.114	98.4	91.2	70.0-123			7.59	20
Bromobenzene	0.125	0.124	0.125	99.2	100	73.0-121			0.803	20
Bromodichloromethane	0.125	0.127	0.126	102	101	73.0-121			0.791	20
Bromoform	0.125	0.133	0.135	106	108	64.0-132			1.49	20
Bromomethane	0.125	0.122	0.119	97.6	95.2	56.0-147			2.49	20
Carbon tetrachloride	0.125	0.143	0.142	114	114	66.0-128			0.702	20
Chlorobenzene	0.125	0.124	0.125	99.2	100	76.0-128			0.803	20
Chlorodibromomethane	0.125	0.128	0.134	102	107	74.0-127			4.58	20
Chloroethane	0.125	0.125	0.120	100	96.0	61.0-134			4.08	20
Chloroform	0.125	0.130	0.127	104	102	72.0-123			2.33	20
Chloromethane	0.125	0.113	0.106	90.4	84.8	51.0-138			6.39	20
2-Chlorotoluene	0.125	0.132	0.122	106	97.6	75.0-124			7.87	20
4-Chlorotoluene	0.125	0.112	0.120	89.6	96.0	75.0-124			6.90	20
1,2-Dibromo-3-Chloropropane	0.125	0.125	0.123	100	98.4	59.0-130			1.61	20
1,2-Dibromoethane	0.125	0.129	0.131	103	105	74.0-128			1.54	20
Dibromomethane	0.125	0.123	0.124	98.4	99.2	75.0-122			0.810	20
l,2-Dichlorobenzene	0.125	0.119	0.124	95.2	99.2	76.0-124			4.12	20
1,3-Dichlorobenzene	0.125	0.121	0.126	96.8	101	76.0-125			4.05	20
1,4-Dichlorobenzene	0.125	0.119	0.122	95.2	97.6	77.0-121			2.49	20
Dichlorodifluoromethane	0.125	0.103	0.101	82.4	80.8	43.0-156			1.96	20
1,1-Dichloroethane	0.125	0.130	0.126	104	101	70.0-127			3.12	20
l,2-Dichloroethane	0.125	0.109	0.108	87.2	86.4	65.0-131			0.922	20
,1-Dichloroethene	0.125	0.114	0.110	91.2	88.0	65.0-131			3.57	20
cis-1,2-Dichloroethene	0.125	0.126	0.123	101	98.4	73.0-125			2.41	20

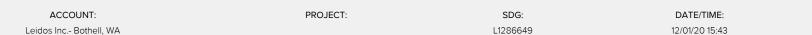
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(S) 1,2-Dichloroethane-d4

#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-15,16,17,19

#### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3596065-1 11/22/20 08:10 • (LCSD) R3596065-2 11/22/20 08:29

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
trans-1,2-Dichloroethene	0.125	0.131	0.127	105	102	71.0-125			3.10	20	
1,2-Dichloropropane	0.125	0.120	0.124	96.0	99.2	74.0-125			3.28	20	
1,1-Dichloropropene	0.125	0.127	0.126	102	101	73.0-125			0.791	20	
1,3-Dichloropropane	0.125	0.127	0.129	102	103	80.0-125			1.56	20	
cis-1,3-Dichloropropene	0.125	0.122	0.123	97.6	98.4	76.0-127			0.816	20	
trans-1,3-Dichloropropene	0.125	0.125	0.128	100	102	73.0-127			2.37	20	
2,2-Dichloropropane	0.125	0.147	0.150	118	120	59.0-135			2.02	20	
Hexachloro-1,3-butadiene	0.125	0.150	0.134	120	107	57.0-150			11.3	20	
Methylene Chloride	0.125	0.131	0.124	105	99.2	68.0-123			5.49	20	
Methyl tert-butyl ether	0.125	0.124	0.125	99.2	100	66.0-132			0.803	20	
1,1,1,2-Tetrachloroethane	0.125	0.116	0.121	92.8	96.8	74.0-129			4.22	20	
1,1,2,2-Tetrachloroethane	0.125	0.118	0.121	94.4	96.8	68.0-128			2.51	20	
Tetrachloroethene	0.125	0.149	0.150	119	120	70.0-136			0.669	20	
1,1,2-Trichlorotrifluoroethane	0.125	0.110	0.106	88.0	84.8	61.0-139			3.70	20	
1,2,3-Trichlorobenzene	0.125	0.123	0.123	98.4	98.4	59.0-139			0.000	20	
1,2,4-Trichlorobenzene	0.125	0.129	0.124	103	99.2	62.0-137			3.95	20	
1,1,1-Trichloroethane	0.125	0.132	0.132	106	106	69.0-126			0.000	20	
1,1,2-Trichloroethane	0.125	0.128	0.134	102	107	78.0-123			4.58	20	
Trichloroethene	0.125	0.145	0.141	116	113	76.0-126			2.80	20	
Trichlorofluoromethane	0.125	0.107	0.107	85.6	85.6	61.0-142			0.000	20	
1,2,3-Trichloropropane	0.125	0.117	0.123	93.6	98.4	67.0-129			5.00	20	
Vinyl chloride	0.125	0.120	0.115	96.0	92.0	63.0-134			4.26	20	
(S) Toluene-d8				103	105	75.0-131					
(S) 4-Bromofluorobenzene				102	104	67.0-138					

70.0-130



















99.1

96.1

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-52

#### Method Blank (MB)

Method Blank (MB)				
(MB) R3595965-2 11/21/20	23:08			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
Bromobenzene	U		0.000900	0.0125
Bromodichloromethane	U		0.000725	0.00250
Bromoform	U		0.00117	0.0250
Bromomethane	U		0.00197	0.0125
Carbon tetrachloride	U		0.000898	0.00500
Chlorobenzene	U		0.000210	0.00250
Chlorodibromomethane	U		0.000612	0.00250
Chloroethane	U		0.00170	0.00500
Chloroform	U		0.00103	0.00250
Chloromethane	U		0.00435	0.0125
2-Chlorotoluene	U		0.000865	0.00250
4-Chlorotoluene	U		0.000450	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00390	0.0250
1,2-Dibromoethane	U		0.000648	0.00250
Dibromomethane	U		0.000750	0.00500
1,2-Dichlorobenzene	U		0.000425	0.00500
1,3-Dichlorobenzene	U		0.000600	0.00500
1,4-Dichlorobenzene	U		0.000700	0.00500
Dichlorodifluoromethane	U		0.00161	0.00250
1,1-Dichloroethane	U		0.000491	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
1,1-Dichloroethene	U		0.000606	0.00250
cis-1,2-Dichloroethene	U		0.000734	0.00250
trans-1,2-Dichloroethene	U		0.00104	0.00500
1,2-Dichloropropane	U		0.00142	0.00500
1,1-Dichloropropene	U		0.000809	0.00250
1,3-Dichloropropane	U		0.000501	0.00500
cis-1,3-Dichloropropene	U		0.000757	0.00250
trans-1,3-Dichloropropene	U		0.00114	0.00500
2,2-Dichloropropane	U		0.00138	0.00250
Ethylbenzene	U		0.000737	0.00250
Hexachloro-1,3-butadiene	U		0.00600	0.0250
Methylene Chloride	U		0.00664	0.0250
Methyl tert-butyl ether	U		0.000350	0.00100
1,1,1,2-Tetrachloroethane	U		0.000948	0.00250
1,1,2,2-Tetrachloroethane	U		0.000695	0.00250
Tetrachloroethene	U		0.000896	0.00250
Toluene	U		0.00130	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000754	0.00250



















ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-52

#### Method Blank (MB)

(MB) R3595965-2 11/21/20	23:08				
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	mg/kg		mg/kg	mg/kg	
1,2,3-Trichlorobenzene	U		0.00733	0.0125	
1,2,4-Trichlorobenzene	U		0.00440	0.0125	
1,1,1-Trichloroethane	U		0.000923	0.00250	
1,1,2-Trichloroethane	U		0.000597	0.00250	
Trichloroethene	U		0.000584	0.00100	
Trichlorofluoromethane	U		0.000827	0.00250	
1,2,3-Trichloropropane	U		0.00162	0.0125	
Vinyl chloride	U		0.00116	0.00250	
Xylenes, Total	U		0.000880	0.00650	
(S) Toluene-d8	102			75.0-131	
(S) 4-Bromofluorobenzene	101			67.0-138	
(S) 1,2-Dichloroethane-d4	89.8			70.0-130	

# Laboratory Control Sample (LCS)

Dichlorodifluoromethane

1,1-Dichloroethane

0.125

0.125

0.148

0.118

118

94.4

43.0-156

70.0-127

Edbordtory Control	Gampie (E	<i>30</i> )			
(LCS) R3595965-1 11/21/20	21:46				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Benzene	0.125	0.143	114	70.0-123	
Bromobenzene	0.125	0.124	99.2	73.0-121	
Bromodichloromethane	0.125	0.137	110	73.0-121	
Bromoform	0.125	0.110	88.0	64.0-132	
Bromomethane	0.125	0.188	150	56.0-147	<u>J4</u>
Carbon tetrachloride	0.125	0.143	114	66.0-128	
Chlorobenzene	0.125	0.128	102	76.0-128	
Chlorodibromomethane	0.125	0.118	94.4	74.0-127	
Chloroethane	0.125	0.145	116	61.0-134	
Chloroform	0.125	0.144	115	72.0-123	
Chloromethane	0.125	0.105	84.0	51.0-138	
2-Chlorotoluene	0.125	0.128	102	75.0-124	
4-Chlorotoluene	0.125	0.127	102	75.0-124	
1,2-Dibromo-3-Chloropropane	0.125	0.109	87.2	59.0-130	
1,2-Dibromoethane	0.125	0.119	95.2	74.0-128	
Dibromomethane	0.125	0.137	110	75.0-122	
1,2-Dichlorobenzene	0.125	0.128	102	76.0-124	
1,3-Dichlorobenzene	0.125	0.128	102	76.0-125	
1,4-Dichlorobenzene	0.125	0.126	101	77.0-121	

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 12/01/20 15:43
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1,1,2-Trichloroethane

Trichlorofluoromethane 1,2,3-Trichloropropane

Trichloroethene

Vinyl chloride

Xylenes, Total

(S) Toluene-d8

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

#### QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-52

#### Laboratory Control Sample (LCS)

Laboratory Control		JJ)			
(LCS) R3595965-1 11/21/20	21:46				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
1,2-Dichloroethane	0.125	0.113	90.4	65.0-131	
1,1-Dichloroethene	0.125	0.105	84.0	65.0-131	
cis-1,2-Dichloroethene	0.125	0.148	118	73.0-125	
trans-1,2-Dichloroethene	0.125	0.136	109	71.0-125	
1,2-Dichloropropane	0.125	0.108	86.4	74.0-125	
1,1-Dichloropropene	0.125	0.145	116	73.0-125	
1,3-Dichloropropane	0.125	0.127	102	80.0-125	
cis-1,3-Dichloropropene	0.125	0.138	110	76.0-127	
trans-1,3-Dichloropropene	0.125	0.128	102	73.0-127	
2,2-Dichloropropane	0.125	0.151	121	59.0-135	
Ethylbenzene	0.125	0.134	107	74.0-126	
Hexachloro-1,3-butadiene	0.125	0.144	115	57.0-150	
Methylene Chloride	0.125	0.126	101	68.0-123	
Methyl tert-butyl ether	0.125	0.148	118	66.0-132	
1,1,1,2-Tetrachloroethane	0.125	0.126	101	74.0-129	
1,1,2,2-Tetrachloroethane	0.125	0.118	94.4	68.0-128	
Tetrachloroethene	0.125	0.131	105	70.0-136	
Toluene	0.125	0.129	103	75.0-121	
1,1,2-Trichlorotrifluoroethane	0.125	0.0949	75.9	61.0-139	
1,2,3-Trichlorobenzene	0.125	0.124	99.2	59.0-139	
1,2,4-Trichlorobenzene	0.125	0.134	107	62.0-137	
1,1,1-Trichloroethane	0.125	0.144	115	69.0-126	

#### L1286649-52 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

103

114

87.2

105

115

105

98.4

102

94.0

78.0-123

76.0-126

61.0-142

67.0-129

63.0-134

72.0-127

75.0-131

67.0-138

70.0-130

(OS) L1286649-52 11/22/20 06:00 • (MS) R3595965-3 11/22/20 06:20 • (MSD) R3595965-4 11/22/20 06:41

(03) 11200049-32 11/2	22/20 00.00 • (1013)	K3333303-3	11/22/20 00.20	, • (INIOD) KOOO	3303-4 11/22/	20 00.41						
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	17.8	12.1	31.5	32.5	109	115	98.4	10.0-149			3.16	37
Bromobenzene	17.8	U	19.7	21.3	111	120	98.4	10.0-156			7.77	38

ACCOUNT: Leidos Inc.- Bothell, WA

0.125

0.125

0.125

0.125

0.125

0.375

0.129

0.142

0.109

0.131

0.144

0.393

PROJECT:

SDG: L1286649 DATE/TIME: 12/01/20 15:43

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3













1,2,3-Trichlorobenzene

17.8

# QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

**RPD Limits** 

Volatile Organic Compounds (GC/MS) by Method 8260D

(dry)

L1286649-52

Dilution Rec. Limits

MS Qualifier

MSD Rec.

#### L1286649-52 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

17.6

22.4

MSD Result (dry)

(OS) L1286649-52 11/22/20 06:00 • (MS) R3595965-3 11/22/20 06:20 • (MSD) R3595965-4 11/22/20 06:41

Spike Amount Original Result MS Result (dry)

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MSD Qualifier RPD

23.8

40

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	(ury)	(ury)		(ury)								
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Bromodichloromethane	17.8	U	20.7	22.0	116	124	98.4	10.0-143			6.10	37
Bromoform	17.8	U	16.3	17.6	91.9	99.2	98.4	10.0-146			7.66	36
Bromomethane	17.8	U	28.5	28.2	160	159	98.4	10.0-149	<u>J5</u>	<u>J5</u>	1.02	38
Carbon tetrachloride	17.8	U	21.1	21.5	119	121	98.4	10.0-145			2.03	37
Chlorobenzene	17.8	U	17.8	18.8	100	106	98.4	10.0-152			5.53	39
Chlorodibromomethane	17.8	U	16.0	17.2	90.2	96.7	98.4	10.0-146			6.96	37
Chloroethane	17.8	U	18.9	19.5	107	110	98.4	10.0-146			3.01	40
Chloroform	17.8	U	22.8	23.3	128	131	98.4	10.0-146			1.88	37
Chloromethane	17.8	U	14.2	7.58	79.9	42.6	98.4	10.0-159		<u>J3</u>	60.9	37
2-Chlorotoluene	17.8	U	28.8	31.2	162	176	98.4	10.0-159	<u>J5</u>	<u>J5</u>	8.19	38
4-Chlorotoluene	17.8	U	18.9	20.2	107	114	98.4	10.0-155	_	_	6.64	39
1,2-Dibromo-3-Chloropropane	17.8	U	17.5	19.7	98.4	111	98.4	10.0-151			11.7	39
1,2-Dibromoethane	17.8	U	17.8	18.2	100	102	98.4	10.0-148			2.41	34
Dibromomethane	17.8	U	21.3	23.0	120	129	98.4	10.0-147			7.84	35
1,2-Dichlorobenzene	17.8	U	18.7	20.4	105	115	98.4	10.0-155			8.89	37
1,3-Dichlorobenzene	17.8	U	18.5	19.8	104	111	98.4	10.0-153			6.79	38
1,4-Dichlorobenzene	17.8	U	18.5	19.8	104	111	98.4	10.0-151			6.79	38
Dichlorodifluoromethane	17.8	U	23.6	21.0	133	118	98.4	10.0-160			11.7	35
1,1-Dichloroethane	17.8	U	17.2	17.9	96.7	101	98.4	10.0-147			4.12	37
1,2-Dichloroethane	17.8	U	17.1	17.9	95.9	101	98.4	10.0-148			4.96	35
1,1-Dichloroethene	17.8	U	16.5	16.8	92.7	94.3	98.4	10.0-155			1.74	37
cis-1,2-Dichloroethene	17.8	U	21.1	21.7	119	122	98.4	10.0-149			2.70	37
trans-1,2-Dichloroethene	17.8	U	18.8	18.9	106	107	98.4	10.0-150			0.766	37
1,2-Dichloropropane	17.8	U	17.1	17.1	95.9	95.9	98.4	10.0-148			0.000	37
1,1-Dichloropropene	17.8	U	21.0	22.8	118	128	98.4	10.0-153			8.58	35
1,3-Dichloropropane	17.8	U	17.6	18.5	99.2	104	98.4	10.0-154			4.80	35
cis-1,3-Dichloropropene	17.8	U	20.4	21.4	115	120	98.4	10.0-151			4.84	37
trans-1,3-Dichloropropene	17.8	U	17.1	17.8	95.9	100	98.4	10.0-148			4.15	37
2,2-Dichloropropane	17.8	U	21.5	23.3	121	131	98.4	10.0-138			7.74	36
Ethylbenzene	17.8	65.4	76.8	81.8	64.2	92.7	98.4	10.0-160			6.38	38
Hexachloro-1,3-butadiene	17.8	U	22.3	25.0	125	141	98.4	10.0-160			11.6	40
Methylene Chloride	17.8	U	16.5	16.3	92.7	91.9	98.4	10.0-141			0.881	37
Methyl tert-butyl ether	17.8	U	20.5	21.4	115	120	98.4	11.0-147			4.14	35
1,1,1,2-Tetrachloroethane	17.8	U	17.2	18.4	96.7	103	98.4	10.0-149			6.50	39
1,1,2,2-Tetrachloroethane	17.8	U	26.5	28.6	149	161	98.4	10.0-160		<u>J5</u>	7.87	35
Tetrachloroethene	17.8	0.291	16.3	16.8	90.2	92.7	98.4	10.0-156			2.62	39
Toluene	17.8	113	118	126	26.8	72.4	98.4	10.0-156			6.64	38
1,1,2-Trichlorotrifluoroethane	17.8	U	7.11	7.78	40.0	43.7	98.4	10.0-160			8.93	36





















126

98.4

10.0-160

99.2

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-52

#### L1286649-52 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286649-52 11/22/20 06:00 • (MS) R3595965-3 11/22/20 06:20 • (MSD) R3595965-4 11/22/20 06:41

(,	()			(								
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
1,2,4-Trichlorobenzene	17.8	U	18.9	21.8	107	123	98.4	10.0-160			14.2	40
1,1,1-Trichloroethane	17.8	U	19.8	22.0	111	124	98.4	10.0-144			10.4	35
1,1,2-Trichloroethane	17.8	U	24.9	25.7	140	145	98.4	10.0-160			3.43	35
Trichloroethene	17.8	U	20.0	21.0	112	118	98.4	10.0-156			4.95	38
Trichlorofluoromethane	17.8	U	17.6	18.2	99.2	102	98.4	10.0-160			3.23	40
1,2,3-Trichloropropane	17.8	U	21.1	21.8	119	123	98.4	10.0-156			3.37	35
Vinyl chloride	17.8	U	20.4	21.1	115	119	98.4	10.0-160			3.48	37
Xylenes, Total	53.4	584	586	632	2.71	89.4	98.4	10.0-160	$\vee$		7.60	38
(S) Toluene-d8					91.0	89.4		75.0-131				
(S) 4-Bromofluorobenzene					125	128		67.0-138				
(S) 1.2-Dichloroethane-d4					98.2	96.5		70.0-130				



















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-13,18,20

#### Method Blank (MB)

(MB) R3596055-3 11/22/2	0 03:43			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	94.7			67.0-138
(S) 1,2-Dichloroethane-d4	86.1			70.0-130

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3596055-1	11/22/20 02:27	• (LCSD) R3596055-2	11/22/20 02:46	
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	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
Benzene	0.125	0.119	0.117	95.2	93.6	70.0-123			1.69	20	
1,2-Dibromoethane	0.125	0.120	0.120	96.0	96.0	74.0-128			0.000	20	
1,2-Dichloroethane	0.125	0.114	0.117	91.2	93.6	65.0-131			2.60	20	
Ethylbenzene	0.125	0.124	0.119	99.2	95.2	74.0-126			4.12	20	
Methyl tert-butyl ether	0.125	0.121	0.119	96.8	95.2	66.0-132			1.67	20	
Toluene	0.125	0.120	0.116	96.0	92.8	75.0-121			3.39	20	
Xylenes, Total	0.375	0.356	0.344	94.9	91.7	72.0-127			3.43	20	
(S) Toluene-d8				101	102	75.0-131					
(S) 4-Bromofluorobenzene				98.6	99.9	67.0-138					
(S) 1,2-Dichloroethane-d4				88.8	89.6	70.0-130					



















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-02,04,06,23,27,31,38,39

#### Method Blank (MB)

(MB) R3596735-2 11/22/20	0 19:50			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
Bromobenzene	U		0.000900	0.0125
Bromodichloromethane	U		0.000725	0.00250
Bromoform	U		0.00117	0.0250
Bromomethane	U		0.00197	0.0125
Carbon tetrachloride	U		0.000898	0.00500
Chlorobenzene	U		0.000210	0.00250
Chlorodibromomethane	U		0.000612	0.00250
Chloroethane	U		0.00170	0.00500
Chloroform	U		0.00103	0.00250
Chloromethane	U		0.00435	0.0125
2-Chlorotoluene	U		0.000865	0.00250
4-Chlorotoluene	U		0.000450	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00390	0.0250
1,2-Dibromoethane	U		0.000648	0.00250
Dibromomethane	U		0.000750	0.00500
1,2-Dichlorobenzene	U		0.000425	0.00500
1,3-Dichlorobenzene	U		0.000600	0.00500
1,4-Dichlorobenzene	U		0.000700	0.00500
Dichlorodifluoromethane	U		0.00161	0.00250
1,1-Dichloroethane	U		0.000491	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
1,1-Dichloroethene	U		0.000606	0.00250
cis-1,2-Dichloroethene	U		0.000734	0.00250
trans-1,2-Dichloroethene	U		0.00104	0.00500
1,2-Dichloropropane	U		0.00142	0.00500
1,1-Dichloropropene	U		0.000809	0.00250
1,3-Dichloropropane	U		0.000501	0.00500
cis-1,3-Dichloropropene	U		0.000757	0.00250
trans-1,3-Dichloropropene	U		0.00114	0.00500
2,2-Dichloropropane	U		0.00138	0.00250
Ethylbenzene	U		0.000737	0.00250
Hexachloro-1,3-butadiene	U		0.00600	0.0250
Methylene Chloride	U		0.00664	0.0250
Methyl tert-butyl ether	U		0.000350	0.00100
1,1,1,2-Tetrachloroethane	U		0.000948	0.00250
1,1,2,2-Tetrachloroethane	U		0.000695	0.00250
Tetrachloroethene	U		0.000896	0.00250
Toluene	U		0.00130	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000754	0.00250



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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-02,04,06,23,27,31,38,39

#### Method Blank (MB)

(MB) R3596735-2 11/22/2	0 19:50				
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	mg/kg		mg/kg	mg/kg	
1,2,3-Trichlorobenzene	U		0.00733	0.0125	
1,2,4-Trichlorobenzene	U		0.00440	0.0125	
1,1,1-Trichloroethane	U		0.000923	0.00250	
1,1,2-Trichloroethane	U		0.000597	0.00250	
Trichloroethene	U		0.000584	0.00100	
Trichlorofluoromethane	U		0.000827	0.00250	
1,2,3-Trichloropropane	U		0.00162	0.0125	
Vinyl chloride	U		0.00116	0.00250	
Xylenes, Total	U		0.000880	0.00650	
(S) Toluene-d8	95.8			75.0-131	
(S) 4-Bromofluorobenzene	94.1			67.0-138	
(S) 1,2-Dichloroethane-d4	109			70.0-130	

Laboratory Contro	ol Sample (Lo	CS)			
(LCS) R3596735-1 11/22/	/20 18:35				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Benzene	0.125	0.106	84.8	70.0-123	
Bromobenzene	0.125	0.118	94.4	73.0-121	
Bromodichloromethane	0.125	0.121	96.8	73.0-121	
Bromoform	0.125	0.106	84.8	64.0-132	
Bromomethane	0.125	0.109	87.2	56.0-147	
Carbon tetrachloride	0.125	0.118	94.4	66.0-128	
Chlorobenzene	0.125	0.109	87.2	76.0-128	
Chlorodibromomethane	0.125	0.111	88.8	74.0-127	
Chloroethane	0.125	0.113	90.4	61.0-134	
Chloroform	0.125	0.109	87.2	72.0-123	
Chloromethane	0.125	0.0899	71.9	51.0-138	
2-Chlorotoluene	0.125	0.112	89.6	75.0-124	

ACCOUNT:

0.125

0.125

0.125

0.125

0.125

0.125

0.125

0.125

0.125

0.121

0.106

0.109

0.117

0.104

0.110

0.108

0.122

0.105

96.8

84.8

87.2

93.6

83.2

88.0

86.4

97.6

84.0

75.0-124

59.0-130

74.0-128

75.0-122

76.0-124

76.0-125

77.0-121

43.0-156

70.0-127

4-Chlorotoluene

1,2-Dibromoethane

Dibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1.4-Dichlorobenzene

1.1-Dichloroethane

Dichlorodifluoromethane

1,2-Dibromo-3-Chloropropane

PROJECT:

SDG:

DATE/TIME:

PAGE:















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-02,04,06,23,27,31,38,39

#### Laboratory Control Sample (LCS)

(LCS) R3596735-1 11/22/2	0 18:35				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
1,2-Dichloroethane	0.125	0.114	91.2	65.0-131	
1,1-Dichloroethene	0.125	0.112	89.6	65.0-131	
cis-1,2-Dichloroethene	0.125	0.0951	76.1	73.0-125	
trans-1,2-Dichloroethene	0.125	0.0963	77.0	71.0-125	
1,2-Dichloropropane	0.125	0.113	90.4	74.0-125	
1,1-Dichloropropene	0.125	0.115	92.0	73.0-125	
1,3-Dichloropropane	0.125	0.109	87.2	80.0-125	
cis-1,3-Dichloropropene	0.125	0.120	96.0	76.0-127	
trans-1,3-Dichloropropene	0.125	0.119	95.2	73.0-127	
2,2-Dichloropropane	0.125	0.109	87.2	59.0-135	
Ethylbenzene	0.125	0.108	86.4	74.0-126	
Hexachloro-1,3-butadiene	0.125	0.107	85.6	57.0-150	
Methylene Chloride	0.125	0.0963	77.0	68.0-123	
Methyl tert-butyl ether	0.125	0.101	80.8	66.0-132	
1,1,1,2-Tetrachloroethane	0.125	0.0990	79.2	74.0-129	
1,1,2,2-Tetrachloroethane	0.125	0.104	83.2	68.0-128	
Tetrachloroethene	0.125	0.109	87.2	70.0-136	
Toluene	0.125	0.103	82.4	75.0-121	
1,1,2-Trichlorotrifluoroethane	0.125	0.108	86.4	61.0-139	
1,2,3-Trichlorobenzene	0.125	0.0870	69.6	59.0-139	
1,2,4-Trichlorobenzene	0.125	0.0814	65.1	62.0-137	
1,1,1-Trichloroethane	0.125	0.116	92.8	69.0-126	
1,1,2-Trichloroethane	0.125	0.107	85.6	78.0-123	
Trichloroethene	0.125	0.119	95.2	76.0-126	
Trichlorofluoromethane	0.125	0.123	98.4	61.0-142	
1,2,3-Trichloropropane	0.125	0.124	99.2	67.0-129	
Vinyl chloride	0.125	0.107	85.6	63.0-134	
Xylenes, Total	0.375	0.301	80.3	72.0-127	
(S) Toluene-d8			95.0	75.0-131	
(S) 4-Bromofluorobenzene			98.0	67.0-138	



(S) 1,2-Dichloroethane-d4

105

70.0-130

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-01,03,41,42,43,44,45,46,47,50,51

#### Method Blank (MB)

(MB) R3596182-3 11/22/20	0 15:03					
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	mg/kg		mg/kg	mg/kg		
Benzene	U		0.000467	0.00100		
1,2-Dibromoethane	U		0.000648	0.00250		
1,2-Dichloroethane	U		0.000649	0.00250		
Ethylbenzene	U		0.000737	0.00250		
Methyl tert-butyl ether	U		0.000350	0.00100		
Toluene	U		0.00130	0.00500		
Xylenes, Total	U		0.000880	0.00650		
(S) Toluene-d8	108			75.0-131		
(S) 4-Bromofluorobenzene	96.1			67.0-138		
(S) 1,2-Dichloroethane-d4	85.6			70.0-130		

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3596182-1 11/22/	20 13:47 • (LCSD	) R3596182-2	11/22/20 14:06								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
Benzene	0.125	0.117	0.123	93.6	98.4	70.0-123			5.00	20	
1,2-Dibromoethane	0.125	0.117	0.125	93.6	100	74.0-128			6.61	20	
1,2-Dichloroethane	0.125	0.125	0.130	100	104	65.0-131			3.92	20	
Ethylbenzene	0.125	0.117	0.123	93.6	98.4	74.0-126			5.00	20	
Methyl tert-butyl ether	0.125	0.129	0.126	103	101	66.0-132			2.35	20	
Toluene	0.125	0.113	0.125	90.4	100	75.0-121			10.1	20	
Xylenes, Total	0.375	0.342	0.351	91.2	93.6	72.0-127			2.60	20	
(S) Toluene-d8				99.6	104	75.0-131					
(S) 4-Bromofluorobenzene				100	93.9	67.0-138					
(S) 1,2-Dichloroethane-d4				99.3	96.4	70.0-130					



















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-15,16,19

#### Method Blank (MB)

14:17			
MB Result	MB Qualifier	MB MDL	MB RDL
mg/kg		mg/kg	mg/kg
U		0.000737	0.00250
U		0.00130	0.00500
U		0.000880	0.00650
112			75.0-131
87.5			67.0-138
			70.0-130
	MB Result mg/kg U U U 1112 87.5	MB Result MB Qualifier mg/kg U U U 112 87.5	MB Result mg/kg         MB Qualifier mg/kg         MB MDL mg/kg           U         0.000737         0.00130           U         0.000880





### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3596258-1 11/22/2	0 13:01 • (LCSD)	) R3596258-2	11/22/20 13:20	)						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Ethylbenzene	0.125	0.133	0.137	106	110	74.0-126			2.96	20
Toluene	0.125	0.137	0.138	110	110	75.0-121			0.727	20
Xylenes, Total	0.375	0.403	0.384	107	102	72.0-127			4.83	20
(S) Toluene-d8				104	108	75.0-131				
(S) 4-Bromofluorobenzene				92.4	90.3	67.0-138				
(S) 1,2-Dichloroethane-d4				113	112	70.0-130				









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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-17

#### Method Blank (MB)

(MB) R3596172-2 11/22/20	0 20:53			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	103			75.0-131
(S) 4-Bromofluorobenzene	107			67.0-138
(S) 1,2-Dichloroethane-d4	94.9			70.0-130

# <sup>2</sup>Tc







(LCS) R3596172-1 11/22/20	0 19:57				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Ethylbenzene	0.125	0.128	102	74.0-126	
Toluene	0.125	0.121	96.8	75.0-121	
Xylenes, Total	0.375	0.383	102	72.0-127	
(S) Toluene-d8			102	75.0-131	
(S) 4-Bromofluorobenzene			104	67.0-138	
(S) 1,2-Dichloroethane-d4			95.8	70.0-130	









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Volatile Organic Compounds (GC/MS) by Method 8260D

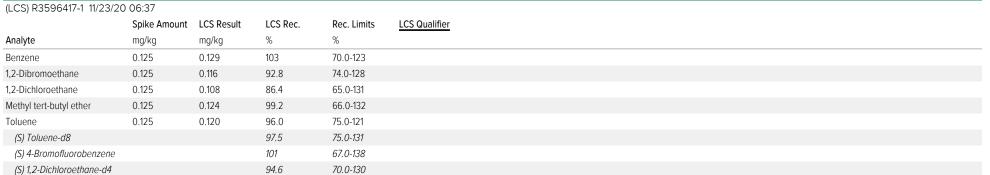
L1286649-07,08

#### Method Blank (MB)

(MB) R3596417-2 11/23/20	0 08:36			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	0.00136		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	0.00581		0.00130	0.00500
(S) Toluene-d8	102			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	92.5			70.0-130

# <sup>6</sup>Qc

# Laboratory Control Sample (LCS)



















12/01/20 15:43

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-09,21,22,24,25,26,28,29,30

#### Method Blank (MB)

(S) 1,2-Dichloroethane-d4

(MB) R3596816-3	11/23/20 23:02

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	U		0.00130	0.00500
Xylenes, Total	0.00100	<u>J</u>	0.000880	0.00650
(S) Toluene-d8	111			75.0-131
(S) 4-Bromofluorobenzene	92.7			67.0-138











# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

70.0-130

(LCS) R3596816-1 11/23/20 21:08 • (LCS)	D) R3596816-2 11/23/20 21:27
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(LCS) R3596816-1 11/23/2	0 21:08 • (LCSD	) R3596816-2	11/23/20 21:2/								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
Benzene	0.125	0.129	0.129	103	103	70.0-123			0.000	20	
1,2-Dibromoethane	0.125	0.131	0.128	105	102	74.0-128			2.32	20	
1,2-Dichloroethane	0.125	0.128	0.130	102	104	65.0-131			1.55	20	
Ethylbenzene	0.125	0.131	0.128	105	102	74.0-126			2.32	20	
Methyl tert-butyl ether	0.125	0.144	0.146	115	117	66.0-132			1.38	20	
Toluene	0.125	0.137	0.128	110	102	75.0-121			6.79	20	
Xylenes, Total	0.375	0.378	0.380	101	101	72.0-127			0.528	20	
(S) Toluene-d8				108	106	75.0-131					
(S) 4-Bromofluorobenzene				93.7	95.4	67.0-138					
(S) 1,2-Dichloroethane-d4				109	112	70.0-130					





### L1287850-26 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

|--|

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	0.207	0.0141	0.111	0.105	46.8	43.9	1.65	10.0-149			5.56	37
1,2-Dibromoethane	0.207	U	0.170	0.167	82.1	80.7	1.65	10.0-148			1.78	34
1,2-Dichloroethane	0.207	U	0.145	0.149	70.0	72.0	1.65	10.0-148			2.72	35
Ethylbenzene	0.207	0.0107	0.107	0.103	46.5	44.6	1.65	10.0-160			3.81	38
Methyl tert-butyl ether	0.207	0.0370	0.192	0.207	74.9	82.1	1.65	11.0-147			7.52	35
Toluene	0.207	0.0936	0.176	0.167	39.8	35.5	1.65	10.0-156			5.25	38
Xylenes, Total	0.619	0.0459	0.323	0.334	44.8	46.5	1.65	10.0-160			3.35	38

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-09,21,22,24,25,26,28,29,30

#### L1287850-26 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1287850-26 11/24/20 03:47 • (MS) R3596816-4 11/24/20 06:57 • (MSD) R3596816-5 11/24/20 07:33

(00) 11207000 20 11/2 1/2	0 00.17 (1110)1	1.0000010 1 11/	2 1/20 00.07	(11102) 1100000	710 0 11/2 1/20	07.00						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
(S) Toluene-d8					109	108		75.0-131				
(S) 4-Bromofluorobenzene					89.8	93.9		67.0-138				
(SL1.2 Dichloroothano dA					10.2	111		70 0 120				



















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-32,33,34,35,36,37,40,48,49

#### Method Blank (MB)

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

(MB) R3596867-3	11/23/20 23:23

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	104			75.0-131













# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

67.0-138

70.0-130

108 95.9

(LCS) R3596867-1 11/23/2	0 20:04 • (LCSI	D) R3596867.	-2 11/23/20 20:	22							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
Benzene	0.125	0.109	0.100	87.2	80.0	70.0-123			8.61	20	
1,2-Dibromoethane	0.125	0.143	0.132	114	106	74.0-128			8.00	20	
1,2-Dichloroethane	0.125	0.104	0.0961	83.2	76.9	65.0-131			7.90	20	
Ethylbenzene	0.125	0.123	0.114	98.4	91.2	74.0-126			7.59	20	
Methyl tert-butyl ether	0.125	0.125	0.116	100	92.8	66.0-132			7.47	20	
Toluene	0.125	0.120	0.109	96.0	87.2	75.0-121			9.61	20	
Xylenes, Total	0.375	0.365	0.343	97.3	91.5	72.0-127			6.21	20	
(S) Toluene-d8				106	106	75.0-131					
(S) 4-Bromofluorobenzene				103	102	67.0-138					
(S) 1.2-Dichloroethane-d4				99.9	96.1	70.0-130					



### L1286673-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286673-02 11/24/20 05:56 • (MS) R3596867-4 11/24/20 06:15 • (MSD) R3596867-5 11/24/20 06:33

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	1.33	3.49	3.66	3.62	12.8	10.3	8	10.0-149			0.939	37
1,2-Dibromoethane	1.33	U	0.737	1.02	55.3	76.3	8	10.0-148			32.0	34
1,2-Dichloroethane	1.33	U	0.749	0.730	56.2	54.7	8	10.0-148			2.54	35
Ethylbenzene	1.33	217	202	209	0.000	0.000	8	10.0-160	EV	<u>E V</u>	3.33	38
Methyl tert-butyl ether	1.33	U	0.844	0.884	63.3	66.3	8	11.0-147			4.55	35
Toluene	1.33	0.525	0.897	0.933	27.9	30.6	8	10.0-156			3.92	38

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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-32,33,34,35,36,37,40,48,49

#### L1286673-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286673-02 11/24/20 05:56 • (MS) R3596867-4 11/24/20 06:15 • (MSD) R3596867-5 11/24/20 06:33

(00) 11200070 02 11/2 1/2						00.00						
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Xylenes, Total	4.00	287	267	279	0.000	0.000	8	10.0-160	$\vee$	$\vee$	4.39	38
(S) Toluene-d8					71.3	72.3		75.0-131	<u>J2</u>	<u>J2</u>		
(S) 4-Bromofluorobenzene					84.7	86.9		67.0-138				
(S) 1,2-Dichloroethane-d4					108	106		70.0-130				



















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-07,08

#### Method Blank (MB)

(MB) R3596581-3 11/23/2	0 14:51					
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	mg/kg		mg/kg	mg/kg		
1,2-Dibromoethane	U		0.000648	0.00250		
Ethylbenzene	U		0.000737	0.00250		
Toluene	U		0.00130	0.00500		
Xylenes, Total	U		0.000880	0.00650		
(S) Toluene-d8	113			75.0-131		
(S) 4-Bromofluorobenzene	102			67.0-138		
(S) 1,2-Dichloroethane-d4	104			70.0-130		



(LCS) R3596581-1 11/23/20 13:35 • (LCSD) R3596581-2 11/23/20 13:5
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	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
1,2-Dibromoethane	0.125	0.127	0.135	102	108	74.0-128			6.11	20	
Ethylbenzene	0.125	0.127	0.137	102	110	74.0-126			7.58	20	
Toluene	0.125	0.121	0.126	96.8	101	75.0-121			4.05	20	
Xylenes, Total	0.375	0.359	0.414	95.7	110	72.0-127			14.2	20	
(S) Toluene-d8				107	108	75.0-131					
(S) 4-Bromofluorobenzene				102	105	67.0-138					
(S) 1,2-Dichloroethane-d4				115	112	70.0-130					



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Volatile Organic Compounds (GC/MS) by Method 8260D

99.1

103

93.6

L1286649-05

#### Method Blank (MB)

(S) Toluene-d8

(S) 4-Bromofluorobenzene

(S) 1,2-Dichloroethane-d4

(MB) R3596982-3 11/24	4/20 12:47			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

75.0-131

67.0-138

70.0-130

(LCS) R3596982-1	11/24/20 11:25 • (LCSD)	R3596982-2	11/24/20 11:46	
	Spike Amount	LCS Result	LCSD Result	LCS R

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%	
Benzene	0.125	0.138	0.136	110	109	70.0-123			1.46	20	
1,2-Dibromoethane	0.125	0.123	0.126	98.4	101	74.0-128			2.41	20	
1,2-Dichloroethane	0.125	0.115	0.113	92.0	90.4	65.0-131			1.75	20	
Ethylbenzene	0.125	0.126	0.127	101	102	74.0-126			0.791	20	
Methyl tert-butyl ether	0.125	0.133	0.130	106	104	66.0-132			2.28	20	
Toluene	0.125	0.125	0.125	100	100	75.0-121			0.000	20	
Xylenes, Total	0.375	0.366	0.371	97.6	98.9	72.0-127			1.36	20	
(S) Toluene-d8				98.2	98.8	75.0-131					
(S) 4-Bromofluorobenzene				102	102	67.0-138					
(S) 1,2-Dichloroethane-d4				95.1	95.4	70.0-130					















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-58,59,60,61,62

#### Method Blank (MB)

(MB) R3595971-2 11/21/20	18:21			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Ethylbenzene	U		0.137	1.00
Methyl tert-butyl ether	U		0.101	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	105			80.0-120
(S) 4-Bromofluorobenzene	96.8			77.0-126
(S) 1,2-Dichloroethane-d4	90.8			70.0-130

(LCS) R3595971-1 11/21/20	) 17:44				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Benzene	5.00	4.60	92.0	70.0-123	
1,2-Dibromoethane	5.00	4.84	96.8	80.0-122	
1,2-Dichloroethane	5.00	4.55	91.0	70.0-128	
Ethylbenzene	5.00	4.56	91.2	79.0-123	
Methyl tert-butyl ether	5.00	5.04	101	68.0-125	
Toluene	5.00	4.68	93.6	79.0-120	
Xylenes, Total	15.0	13.3	88.7	79.0-123	
(S) Toluene-d8			104	80.0-120	
(S) 4-Bromofluorobenzene			96.9	77.0-126	
(S) 1,2-Dichloroethane-d4			94.1	70.0-130	



















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Volatile Organic Compounds (GC/MS) by Method 8260D

84.6

70.0-130

L1286649-56,57

#### Method Blank (MB)

(S) 1,2-Dichloroethane-d4

(MB) R3596537-2 11/22/2	20 05:29			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
(S) Toluene-d8	126	<u>J1</u>		80.0-120
(S) 4-Bromofluorobenzene	111			77.0-126
(S) 1,2-Dichloroethane-d4	82.3			70.0-130









(LCS) R3596537-1 11/22/2	0 04:04				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Benzene	5.00	4.46	89.2	70.0-123	
(S) Toluene-d8			103	80.0-120	
(S) 4-Bromofluorobenzene			91.4	77.0-126	











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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-53,54

#### Method Blank (MB)

(MB) R3597092-2 11/23/2	MB) R3597092-2 11/23/20 18:59							
	MB Result	MB Qualifier	MB MDL	MB RDL				
Analyte	ug/l		ug/l	ug/l				
Benzene	U		0.0941	1.00				
1,2-Dibromoethane	U		0.126	1.00				
1,2-Dichloroethane	U		0.0819	1.00				
Ethylbenzene	U		0.137	1.00				
Methyl tert-butyl ether	U		0.101	1.00				
Toluene	U		0.278	1.00				
Xylenes, Total	U		0.174	3.00				
(S) Toluene-d8	99.6			80.0-120				
(S) 4-Bromofluorobenzene	102			77.0-126				
(S) 1,2-Dichloroethane-d4	93.4			70.0-130				

(LCS) R3597092-1 11/23/2	20 18:18				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Benzene	5.00	5.15	103	70.0-123	
1,2-Dibromoethane	5.00	4.86	97.2	80.0-122	
1,2-Dichloroethane	5.00	4.37	87.4	70.0-128	
Ethylbenzene	5.00	4.60	92.0	79.0-123	
Methyl tert-butyl ether	5.00	5.45	109	68.0-125	
Toluene	5.00	4.56	91.2	79.0-120	
Xylenes, Total	15.0	13.7	91.3	79.0-123	
(S) Toluene-d8			97.4	80.0-120	
(S) 4-Bromofluorobenzene			101	77.0-126	
(S) 1,2-Dichloroethane-d4			96.9	70.0-130	



















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Volatile Organic Compounds (GC/MS) by Method 8260D

L1286649-55

#### Method Blank (MB)

(MB) R3597262-4 11/24/2	0 16:55			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
(S) Toluene-d8	102			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	112			70.0-130











()		,								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	5.00	5.71	5.54	114	111	70.0-123			3.02	20
(S) Toluene-d8				102	101	80.0-120				
(S) 4-Bromofluorobenzene				103	102	77.0-126				
(S) 1,2-Dichloroethane-d4				118	109	70.0-130				











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#### Method Blank (MB)

(MB) R3595985-2 11/22/20 07:26 MB Result MB Qualifier MB MDL MB RDL Analyte mg/kg mg/kg mg/kg Diesel Range Organics (DRO) 1.33 4.00 Residual Range Organics (RRO) U 3.33 10.0 (S) o-Terphenyl 94.0 18.0-148







#### Laboratory Control Sample (LCS)

(LCS) R3595985-1 11/22/20 06:48												
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier							
Analyte	mg/kg	mg/kg	%	%								
Diesel Range Organics (DRO)	50.0	42.3	84.6	50.0-150								
(S) o-Terphenyl			86.8	18.0-148								







#### L1286045-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SQI1286649-10,11,12,13,14,15,16,17,18,19,20,41,42,47,50,52

(OS) | 1286045-03 11/23/20 03:24 • (MS) R3596187-1 11/23/20 03:36 • (MSD) R3596187-2 11/23/20 03:49



(00) 112000 10 00 11/20/2	0 00.2 (1110)	110000107 1 117	20/20 00.00	(11102) 1100001	37 2 11/20/20	00.10						
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Diesel Range Organics (DRO)	50.1	3.94	37.7	42.6	67.4	77.2	1	50.0-150			12.2	20
(S) o-Terphenyl					69.5	81.4		18.0-148				





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Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

L1286649-43,44,45,46,51

#### Method Blank (MB)

(MB) R3596261-1 11/23/20	06:46			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	88.7			18.0-148







(LCS) R3596261-2 11/23/2	20 06:58				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Diesel Range Organics (DRO)	50.0	46.6	93.2	50.0-150	
(S) o-Terphenyl			90.5	18.0-148	











Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT <u>L1286649-01,02,03,04,05,06,07,08,09,26,49</u>

#### Method Blank (MB)

(MB) R3596684-1 11/23/20	23:30			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	78.4			18.0-148









### Laboratory Control Sample (LCS)

(LCS) R3596684-2 11/23/2	S) R3596684-2 11/23/20 23:43											
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier							
Analyte	mg/kg	mg/kg	%	%								
Diesel Range Organics (DRO)	50.0	43.9	87.8	50.0-150								
(S) o-Terphenyl			89.2	18.0-148								







# L1285998-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1285998-24 11/24/20 10:23 • (MS) R3596684-3 11/24/20 13:01 • (MSD) R3596684-4 11/24/20 13:14



	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Diesel Range Organics (DRO)	50.4	U	49.2	47.4	97.6	93.5	1	50.0-150			3.84	20
(S) o-Terphenyl					65.6	64.8		18.0-148				



Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT <u>L1286649-30,31,32,33,34,35,36,37,38,39,40</u>

#### Method Blank (MB)

(MB) R3597746-1 11/26/20	04:03			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	74.6			18.0-148







### Laboratory Control Sample (LCS)

(LCS) R3597746-2 11/26/2	20 04:16				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Diesel Range Organics (DRO)	50.0	20.7	41.4	50.0-150	<u>J4</u>
(S) o-Terphenyl			41.7	18.0-148	







# L1286649-38 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1286649-38 11/26/20 17:44 • (MS) R3597746-3 11/26/20 17:57 • (MSD) R3597746-4 11/26/20 18:10



(00) 11200043 30 11/20/2	, ,	Original Result (dry)	,	,	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Diesel Range Organics (DRO)	65.0	729	1230	1060	770	514	1	50.0-150	EV	<u>E V</u>	15.1	20
(S) o-Terphenyl					95.4	73.8		18.0-148				







Diesel Range Organics (DRO)

(S) o-Terphenyl

Residual Range Organics (RRO) U

#### QUALITY CONTROL SUMMARY

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Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT L1286649-21,22,23,24,25,27,28,29,48

1.33

3.33

MB RDL

mg/kg

4.00

10.0

18.0-148

# Method Blank (MB)

(MB) R3597711-1 11/26/20 06:54

MB Result MB Qualifier MB MDL

Analyte mg/kg mg/kg

97.1









<sup>4</sup> Cn
-----------------



(LCS) R3597711-2 11/26/20 07:34

(LC3) K3397711-2 11/20/20	07.54				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Diesel Range Organics (DRO)	50.0	52.6	105	50.0-150	
(S) o-Terphenyl			129	18.0-148	











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Polychlorinated Biphenyls (GC) by Method 8082 A

L1286649-02,04,06,15,16,17,19,23,27,31,38,39,52

#### Method Blank (MB)

(MB) R3596723-1 11/23/2	0 16:34			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
(S) Decachlorobiphenyl	39.9			10.0-135
(S) Tetrachloro-m-xylene	49.2			10.0-139

#### Laboratory Control Sample (LCS)

(LCS) R3596723-2 11/23/2	S) R3596723-2 11/23/20 16:44									
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier					
Analyte	mg/kg	mg/kg	%	%						
PCB 1260	0.167	0.0954	57.1	37.0-145						
PCB 1016	0.167	0.109	65.3	36.0-141						
(S) Decachlorobiphenyl			57.8	10.0-135						
(S) Tetrachloro-m-xylene			70.3	10.0-139						

### L1286084-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

							<b>-</b>					
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
PCB 1260	0.167	U	0.122	0.145	73.1	86.8	1	10.0-160			17.2	38
PCB 1016	0.167	U	0.365	0.292	219	175	1	10.0-160	<u>J5 P</u>	<u>J5 P</u>	22.2	37
(S) Decachlorobiphenyl					70.6	106		10.0-135				
(S) Tetrachloro-m-xylene					76.4	83.9		10.0-139				

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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-15,16,17,19,52

#### Method Blank (MB)

(S) 2-Fluorobiphenyl (S) p-Terphenyl-d14

(S) p-Terphenyl-d14

(MB) R3596183-2 11/22/	20 02:13			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	139			14.0-149

34.0-125

23.0-120

23.0-120

### Laboratory Control Sample (LCS)

84.3

102

(LCS) R3596183-1 11/22/	/20 01:50				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Benzo(a)anthracene	0.080.0	0.0674	84.3	45.0-120	
Benzo(a)pyrene	0.080.0	0.0627	78.4	42.0-120	
Benzo(b)fluoranthene	0.080.0	0.0678	84.8	42.0-121	
Benzo(k)fluoranthene	0.080.0	0.0703	87.9	49.0-125	
Chrysene	0.080.0	0.0691	86.4	49.0-122	
Dibenz(a,h)anthracene	0.080.0	0.0625	78.1	47.0-125	
Indeno(1,2,3-cd)pyrene	0.080.0	0.0657	82.1	46.0-125	
Naphthalene	0.080.0	0.0716	89.5	50.0-120	
1-Methylnaphthalene	0.080.0	0.0709	88.6	51.0-121	
2-Methylnaphthalene	0.080.0	0.0696	87.0	50.0-120	
(S) Nitrobenzene-d5			144	14.0-149	
(S) 2-Fluorobiphenyl			96.5	34.0-125	

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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-02,04,06

#### Method Blank (MB)

(MB) R3596012-2 11/22/	/20 02:34			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	87.5			14.0-149
(S) 2-Fluorobiphenyl	73.1			34.0-125
(S) p-Terphenyl-d14	76.6			23.0-120

(LCS) R3596012-1 11/22	LCS) R3596012-1 11/22/20 02:16									
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier					
Analyte	mg/kg	mg/kg	%	%						
Benzo(a)anthracene	0.0800	0.0723	90.4	45.0-120						
Benzo(a)pyrene	0.0800	0.0640	80.0	42.0-120						
Benzo(b)fluoranthene	0.0800	0.0649	81.1	42.0-121						
Benzo(k)fluoranthene	0.0800	0.0692	86.5	49.0-125						
Chrysene	0.0800	0.0740	92.5	49.0-122						
Dibenz(a,h)anthracene	0.0800	0.0672	84.0	47.0-125						
Indeno(1,2,3-cd)pyrene	0.0800	0.0647	80.9	46.0-125						
Naphthalene	0.0800	0.0722	90.3	50.0-120						
1-Methylnaphthalene	0.0800	0.0713	89.1	51.0-121						
2-Methylnaphthalene	0.0800	0.0687	85.9	50.0-120						
(S) Nitrobenzene-d5			93.6	14.0-149						
(S) 2-Fluorobiphenyl			74.9	34.0-125						
(S) p-Terphenyl-d14			<i>78.3</i>	23.0-120						





















Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-02,04,06

#### L1285956-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1285956-02 11/22/20 04:20 • (MS) R3596012-3 11/22/20 04:38 • (MSD) R3596012-4 11/22/20 04:55

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzo(a)anthracene	0.0760	U	0.0621	0.0658	81.7	87.0	1	10.0-139			5.79	30
Benzo(a)pyrene	0.0760	U	0.0594	0.0660	78.2	87.3	1	10.0-141			10.5	31
Benzo(b)fluoranthene	0.0760	U	0.0567	0.0632	74.6	83.6	1	10.0-140			10.8	36
Benzo(k)fluoranthene	0.0760	U	0.0612	0.0650	80.5	86.0	1	10.0-137			6.02	31
Chrysene	0.0760	U	0.0645	0.0708	84.9	93.7	1	10.0-145			9.31	30
Dibenz(a,h)anthracene	0.0760	U	0.0560	0.0601	73.7	79.5	1	10.0-132			7.06	31
Indeno(1,2,3-cd)pyrene	0.0760	U	0.0546	0.0627	71.8	82.9	1	10.0-137			13.8	32
Naphthalene	0.0760	U	0.0641	0.0694	84.3	91.8	1	10.0-135			7.94	27
1-Methylnaphthalene	0.0760	U	0.0646	0.0692	85.0	91.5	1	10.0-142			6.88	28
2-Methylnaphthalene	0.0760	U	0.0602	0.0665	79.2	88.0	1	10.0-137			9.94	28
(S) Nitrobenzene-d5					81.7	88.7		14.0-149				
(S) 2-Fluorobiphenyl					68.9	78.7		34.0-125				
(S) p-Terphenyl-d14					74.5	80.6		23.0-120				



















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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

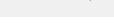
L1286649-23

#### Method Blank (MB)

(MB) R3596239-2 11/22/	20 20:56						
	MB Result	MB Qualifier	MB MDL	MB RDL			
Analyte	mg/kg		mg/kg	mg/kg			
Benzo(a)anthracene	U		0.00173	0.00600			
Benzo(a)pyrene	U		0.00179	0.00600			
Benzo(b)fluoranthene	U		0.00153	0.00600			
Benzo(k)fluoranthene	U		0.00215	0.00600			
Chrysene	U		0.00232	0.00600			
Dibenz(a,h)anthracene	U		0.00172	0.00600			
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600			
Naphthalene	U		0.00408	0.0200			
1-Methylnaphthalene	U		0.00449	0.0200			
2-Methylnaphthalene	U		0.00427	0.0200			
(S) Nitrobenzene-d5	87.3			14.0-149			
(S) 2-Fluorobiphenyl	58.8			34.0-125			
(S) p-Terphenyl-d14	76.6			23.0-120			

### Laboratory Control Sample (LCS)

(LCS) R3596239-1 11/22	2/20 20:33				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Benzo(a)anthracene	0.0800	0.0659	82.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0605	75.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0607	75.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0813	102	49.0-125	
Chrysene	0.0800	0.0729	91.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0611	76.4	47.0-125	
Indeno(1,2,3-cd)pyrene	0.0800	0.0644	80.5	46.0-125	
Naphthalene	0.0800	0.0706	88.3	50.0-120	
1-Methylnaphthalene	0.0800	0.0665	83.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0644	80.5	50.0-120	
(S) Nitrobenzene-d5			101	14.0-149	
(S) 2-Fluorobiphenyl			62.6	34.0-125	
(S) p-Terphenyl-d14			77.9	23.0-120	



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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-23

### L1287633-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1287633-01 11/22/20 21:20 • (MS) R3596239-3 11/22/20 21:43 • (MSD) R3596239-4 11/22/20 22:07

(03) 11207 033 01 11/22/	, ,			,			Diletien	De e Limite	MC OI'fi	MCD Olife	DDD	DDD Limite
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzo(a)anthracene	0.0764	U	0.0831	0.0628	109	81.3	1	10.0-139			27.8	30
Benzo(a)pyrene	0.0764	0.00211	0.0835	0.0634	107	79.4	1	10.0-141			27.4	31
Benzo(b)fluoranthene	0.0764	0.00247	0.0958	0.0639	122	79.6	1	10.0-140		<u>J3</u>	39.9	36
Benzo(k)fluoranthene	0.0764	U	0.0767	0.0641	100	83.0	1	10.0-137			17.9	31
Chrysene	0.0764	U	0.0836	0.0650	109	84.2	1	10.0-145			25.0	30
Dibenz(a,h)anthracene	0.0764	U	0.0620	0.0565	81.2	73.2	1	10.0-132			9.28	31
Indeno(1,2,3-cd)pyrene	0.0764	0.00189	0.0803	0.0604	103	75.8	1	10.0-137			28.3	32
Naphthalene	0.0764	U	0.0646	0.0653	84.6	84.6	1	10.0-135			1.08	27
1-Methylnaphthalene	0.0764	U	0.0635	0.0629	83.1	81.5	1	10.0-142			0.949	28
2-Methylnaphthalene	0.0764	U	0.0634	0.0650	83.0	84.2	1	10.0-137			2.49	28
(S) Nitrobenzene-d5					100	124		14.0-149				
(S) 2-Fluorobiphenyl					61.8	71.8		34.0-125				
(S) p-Terphenyl-d14					71.1	80.9		23.0-120				



















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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-27,31

### Method Blank (MB)

(MB) R3597082-2 11/24	1/20 08:50					
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	mg/kg		mg/kg	mg/kg		
Benzo(a)anthracene	U		0.00173	0.00600		
Benzo(a)pyrene	U		0.00179	0.00600		
Benzo(b)fluoranthene	U		0.00153	0.00600		
Benzo(k)fluoranthene	U		0.00215	0.00600		
Chrysene	U		0.00232	0.00600		
Dibenz(a,h)anthracene	U		0.00172	0.00600		
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600		
Naphthalene	U		0.00408	0.0200		
1-Methylnaphthalene	U		0.00449	0.0200		
2-Methylnaphthalene	U		0.00427	0.0200		
(S) Nitrobenzene-d5	66.4			14.0-149		
(S) 2-Fluorobiphenyl	63.1			34.0-125		
(S) p-Terphenyl-d14	76.7			23.0-120		

# Laboratory Control Sample (LCS)

(LCS) R3597082-1 11/24	.CS) R3597082-1 11/24/20 08:33						
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier		
Analyte	mg/kg	mg/kg	%	%			
Benzo(a)anthracene	0.080.0	0.0527	65.9	45.0-120			
Benzo(a)pyrene	0.080.0	0.0474	59.3	42.0-120			
Benzo(b)fluoranthene	0.0800	0.0487	60.9	42.0-121			
Benzo(k)fluoranthene	0.080.0	0.0547	68.4	49.0-125			
Chrysene	0.080.0	0.0567	70.9	49.0-122			
Dibenz(a,h)anthracene	0.0800	0.0482	60.3	47.0-125			
Indeno(1,2,3-cd)pyrene	0.080.0	0.0463	57.9	46.0-125			
Naphthalene	0.080.0	0.0466	58.3	50.0-120			
1-Methylnaphthalene	0.080.0	0.0485	60.6	51.0-121			
2-Methylnaphthalene	0.080.0	0.0473	59.1	50.0-120			
(S) Nitrobenzene-d5			58.3	14.0-149			
(S) 2-Fluorobiphenyl			54.0	34.0-125			
(S) p-Terphenyl-d14			59.4	23.0-120			



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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-27,31

### L1287485-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1287485-04 11/24/20 15:10 • (MS) R3597082-3 11/24/20 15:27 • (MSD) R3597082-4 11/24/20 15:45

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzo(a)anthracene	0.101	U	0.0655	0.0666	64.6	65.4	1	10.0-139			1.78	30
Benzo(a)pyrene	0.101	U	0.0639	0.0642	63.0	62.9	1	10.0-141			0.408	31
Benzo(b)fluoranthene	0.101	U	0.0605	0.0608	59.7	59.6	1	10.0-140			0.431	36
Benzo(k)fluoranthene	0.101	U	0.0632	0.0613	62.4	60.1	1	10.0-137			3.15	31
Chrysene	0.101	U	0.0751	0.0734	74.1	72.1	1	10.0-145			2.29	30
Dibenz(a,h)anthracene	0.101	U	0.0605	0.0604	59.7	59.2	1	10.0-132			0.216	31
Indeno(1,2,3-cd)pyrene	0.101	U	0.0589	0.0595	58.1	58.3	1	10.0-137			0.883	32
Naphthalene	0.101	0.0105	0.0427	0.0597	31.8	48.3	1	10.0-135		<u>J3</u>	33.2	27
1-Methylnaphthalene	0.101	U	0.0439	0.0536	43.3	52.6	1	10.0-142			19.8	28
2-Methylnaphthalene	0.101	U	0.0439	0.0554	43.3	54.4	1	10.0-137			23.2	28
(S) Nitrobenzene-d5					<i>75.6</i>	57.4		14.0-149				
(S) 2-Fluorobiphenyl					66.9	50.8		34.0-125				
(S) p-Terphenyl-d14					73.2	55.8		23.0-120				



















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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-38,39

### Method Blank (MB)

(MB) R3597187-2 11/24/2	20 22:11			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Benzo(a)anthracene	U		0.00175	0.00606
Benzo(a)pyrene	U		0.00181	0.00606
Benzo(b)fluoranthene	U		0.00155	0.00606
Benzo(k)fluoranthene	U		0.00217	0.00606
Chrysene	U		0.00234	0.00606
Dibenz(a,h)anthracene	U		0.00174	0.00606
Indeno(1,2,3-cd)pyrene	U		0.00183	0.00606
Naphthalene	U		0.00412	0.0202
1-Methylnaphthalene	U		0.00453	0.0202
2-Methylnaphthalene	U		0.00431	0.0202
(S) Nitrobenzene-d5	48.3			14.0-149
(S) 2-Fluorobiphenyl	44.2			34.0-125
(S) p-Terphenyl-d14	47.7			23.0-120

# Laboratory Control Sample (LCS)

(LCS) R3597123-1 11/24/	.CS) R3597123-1 11/24/20 18:33						
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier		
Analyte	mg/kg	mg/kg	%	%			
Benzo(a)anthracene	0.0812	0.0768	94.6	45.0-120			
Benzo(a)pyrene	0.0812	0.0722	88.9	42.0-120			
Benzo(b)fluoranthene	0.0812	0.0745	91.7	42.0-121			
Benzo(k)fluoranthene	0.0812	0.0841	104	49.0-125			
Chrysene	0.0812	0.0789	97.2	49.0-122			
Dibenz(a,h)anthracene	0.0812	0.0803	98.9	47.0-125			
Indeno(1,2,3-cd)pyrene	0.0812	0.0787	96.9	46.0-125			
Naphthalene	0.0812	0.0732	90.1	50.0-120			
1-Methylnaphthalene	0.0812	0.0811	99.9	51.0-121			
2-Methylnaphthalene	0.0812	0.0805	99.1	50.0-120			
(S) Nitrobenzene-d5			62.6	14.0-149			
(S) 2-Fluorobiphenyl			59.0	34.0-125			
(S) p-Terphenyl-d14			67.3	23.0-120			





















(S) p-Terphenyl-d14

# QUALITY CONTROL SUMMARY

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Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

L1286649-38,39

LCS Qualifier

### Laboratory Control Sample (LCS)

(LCS) R3597187-1 11/24/20 21:
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	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	mg/kg	mg/kg	%	%
Benzo(a)anthracene	0.0812	0.0696	85.7	45.0-120
Benzo(a)pyrene	0.0812	0.0617	76.0	42.0-120
Benzo(b)fluoranthene	0.0812	0.0682	84.0	42.0-121
Benzo(k)fluoranthene	0.0812	0.0716	88.2	49.0-125
Chrysene	0.0812	0.0766	94.3	49.0-122
Dibenz(a,h)anthracene	0.0812	0.0650	80.0	47.0-125
Indeno(1,2,3-cd)pyrene	0.0812	0.0642	79.1	46.0-125
Naphthalene	0.0812	0.0743	91.5	50.0-120
1-Methylnaphthalene	0.0812	0.0754	92.9	51.0-121
2-Methylnaphthalene	0.0812	0.0709	87.3	50.0-120
(S) Nitrobenzene-d5			72.4	14.0-149
(S) 2-Fluorobiphenyl			58.1	34.0-125















# L1285890-27 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

60.9

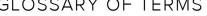
23.0-120

(OS) L1285890-27 11/24/20 22:28 • (MS) R3597187-3 11/24/20 22:45 • (MSD) R3597187-4 11/24/20 23:02

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzo(a)anthracene	0.0800	U	0.0639	0.0683	79.9	85.4	1	10.0-139			6.66	30
Benzo(a)pyrene	0.0800	U	0.0642	0.0682	80.3	85.3	1	10.0-141			6.04	31
Benzo(b)fluoranthene	0.0800	U	0.0627	0.0677	78.4	84.6	1	10.0-140			7.67	36
Benzo(k)fluoranthene	0.0800	U	0.0662	0.0712	82.8	89.0	1	10.0-137			7.28	31
Chrysene	0.0800	U	0.0697	0.0758	87.1	94.8	1	10.0-145			8.38	30
Dibenz(a,h)anthracene	0.0800	U	0.0589	0.0638	73.6	79.8	1	10.0-132			7.99	31
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0583	0.0630	72.9	78.8	1	10.0-137			7.75	32
Naphthalene	0.0800	U	0.0646	0.0686	80.7	85.8	1	10.0-135			6.01	27
1-Methylnaphthalene	0.0800	U	0.0666	0.0691	83.3	86.4	1	10.0-142			3.68	28
2-Methylnaphthalene	0.0800	U	0.0617	0.0656	77.1	82.0	1	10.0-137			6.13	28
(S) Nitrobenzene-d5					64.0	68.5		14.0-149				
(S) 2-Fluorobiphenyl					60.9	61.8		34.0-125				
(S) p-Terphenyl-d14					67.1	71.1		23.0-120				



### **GLOSSARY OF TERMS**





The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

Appreviations and	a Definitions
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
Qualifici	Description

В	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
C4	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Data is likely to show a low bias concerning the result.
Е	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.

ACCOUNT: PROJECT: SDG: DATE/TIME: PAGE: L1286649 12/01/20 15:43 Leidos Inc.- Bothell, WA 172 of 189

















# **GLOSSARY OF TERMS**

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
P	RPD between the primary and confirmatory analysis exceeded 40%.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



















# **ACCREDITATIONS & LOCATIONS**





### **State Accreditations**

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

### Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

#### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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Leid	os Inc Bothell, WA	-		Billing Int	ormation:		1			-	Analysis	/ Conta	iner / Pr	eservat	ive		Chain	of Custody	Page of 7
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	125-482-3323	Client Proje			Lab Project #		LI EI	NoPres	40mlAmb/MeOH10ml/Syr	NWTPHDX NOSGT 802Clr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr		E	402Clr-NoPres	NA C. CO.	dors	SDG #		8/2649
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SRIS	-2-5-24,5-201110	6	SS		11-10-20		3	X	X	X	X	X		X	X	X			-04
SRI5	-3-5-10-2011/03	6	SS		11-10-20		2	X		X	X		X						-05
SRI5	-3-5-17-201110	G	SS				2727	X	X	X	X	X		X	X	X			-06
	35-25-201110	G	SS		11-10-20	-	2	X		X	X		X		10	0			-07
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Leidos Inc Bothell, WA	1		Billing Inf	formation:					1	Analysis	/ Conta	iner / Pr	eservat	ive		Chain of Custo	dy Page 4 of
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Phone: 425-482-3323	Client Proj			Lab Project #			loPres	eOH10	NoPre	0H10m		OH 10	ZCIr-N	E E		SDG# U	28669
Collected by (print): Tom Dubé	Site/Facilit	96590		P.O.#	24647		BozClr-NoPre	mb/Med	3ozClr-	b/Med	oPres	mb/Me	SIM 40	ANTAC FINA		Table #	IDOCRIMA
Collected by (signature):    Collected by (signature):   C	Same	(Lab MUST Be Day Five Day 5 Day Day 10 Day	Notified)	Quote #	ults Needed	No.	n 6010	8260 40m	WTPHDX NOSGT 802Clr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Sy	PCBs 8082 4ozCfr-NoPres	8260* 40ml/Amb/MeOH10ml/Syr	cPAHs/Naph 8270ESIM 4ozCIr-NoPres	S BTEN		Acctnum: LEI Template:T1 Prelogin: P8I PM: 110 - Brid PB:	76925 07112
Sample ID	Comp/Gra	b Matrix *	Depth	Date	Time	Cntrs	Cu,Ni,F	100	WTP	WTP	CBs 8	SA	AHS/	100		Shipped Via:	Sample # (lab only
SRI5-10-5-14,5-20111	2 6	SS		11/12/2	0 0909	3	1000	X	Z			No.	-	P		Remarks	
SRI5-10-5-18-201112		SS		11/12/20			X		X	Х	X		X	r			-31
DUR-2-201112	G	SS		11/12/2		2	X		X	×	N INC.	X					-32
SRI5-10-5-21-201112	6	SS		The state of the s	the same of the sa	2	×		X	X					100		-53
SRI5-10-5-34,5-2011	2 6	SS		11/12/20	All the second states and the second	F HATELEY	X	1 20	X	X		X					-39
SRI5-11-5-8-2011Z	G	SS		11/12/2		2			X	X		X					-50
SRI5-11-5-13,5-20112		SS		11/12/2	The state of the s	2	X		X	X		X			0.0	2 2 2 2 2	- 54
SRI5-11-5-15-201112	6	SS		11/12/20		2	X		X	X		X					-31
Dup-3-201112	G	SS	E-48	11/12/2	0 1478		X	K	X	X	X	7.57	X				-30
SRIS-11-5-29,5-201112		SS			0 1200	3	X	X	X	X	X	X	X			1 500 F 340	139
SS - Soil AIR - Air F - Filter SW - Groundwater B - Bioassay NW - WasteWater DW - Drinking Water	ples returned		X, MTBE, I	EDB, EDC, and	n-hexane by I	PA 82	60.	*	^ 1	pH _ Flow_		Temp Other			COC Seal 1 COC Signed Bottles an	pple Receipt C Present/Intact d/Accurate: rrive intact: ottles used:	hecklist : NP Y N
U	PS X FedEx	Courier		Track	king #									T S	Sufficient	volume sent: If Applicab	ole ZY _N
Relinquished by: (Signature)		ate: 1 -16 - 2	Time:	Rece	ved by: (Signatu	ire)			Tr	ip Blank	Receive		/No D/Med	он	Preservati	Headspace: ion Correct/Ch 1 <0.5 mR/hr:	ecked: Y N
elinquished by : (Signature)	Da	ete:	Time:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ved by: (Signatu	re)			Tel	MPA:	2 °C	Bottle	R Receiv	ed:	If preservation	on required by Lo	gin: Date/Time
elinquished by : (Signature)	Da	ite:	Time:	Recei	ved for lab by: (				Da	6+13 ite:	28	Time:			Hold;		Condition: (NCF) / OK
	and the second	Detty Fig.			B. Ba	ua	2		11	1-17	-20	)	09	00			INCE / OK

Leidos Inc Bothell	1Λ/Δ		" in - styrical	Billing Int	formation:		11			set i	Analysis	/ Conta	iner / Preservativ	e			Chain of Custod	Page 5 o
18939 120th Avenue NE Suite 112 Rothell WA 98011	, , ,			18939 1 Suite 1:	its Payable 120th Avenue 12 , WA 98011	NE	Pres Chk		1	n gel							Pace National C	Analytical *
Report to: Russ Shropshire			A	Email To:	russell.s.shropsh	ire@leidos.con	n			silta			1				11	
Project Description:			Ten te		1-325			127	Syr		1		Syl				12065 Lebanon Rd Mount Juliet, TN 3	
WA-02 CH	elon		City/State Collected:	Chelon	WA	Please C		la.	Jm(	5	1/S		OPri OPri				Phone: 615-758-58 Phone: 800-767-58 Fax: 615-758-5859	
Phone: 425-482-3323		Client Projec	t#		Lab Project #		-	8ozClr-NoPres	H	Pre	101		記 Z					01//
Collected by Law					LEIDOSBW	A-CHELAN		No	Neo	-No	HO		B. B.				SDG# LIZ	01009
Collected by (print): Tom Dubí		Site/Facility II		M. Victory	P.O. #		1 - 52	5	N/q	ZCIr	/Me	pres	M A D				Table #	
Collected by (signature):		96		de l'ad		16476		802	IAm	T 80	dm j	No	Am				Acctnum: LEII	OSBWA
Don El	34	Same D	ab MUST Be	Notified)	Quote #			6010	40mlAmb/MeOH10ml/Syr	580	mIA	Clr	MTBE, EDB, EDC only				Template:T17	
Immediately	1	Next Da	y 5 Day		Date Resu	Its Needed	I	Zn 6	8260 4	NO	(40	403	14 A		1910		Prelogin: P80 PM: 110 - Brian	
Packed on Ice N y		Three D	ay	y (NBG OTHY)			No.	Pb,Z	82	PP	(9)	082	8260* X, X s/Naph				PB:	
Sample ID	comp/grab   Matrix *		Matrix *	Depth	Date	Time	Cntrs	Cu,Ni,Pb,	HVOCs 8	NWTPHDX NOSGT 802Clr-NoPres po	NWTPHGX 40mlAmb/MeOH10ml/syr	PCBs 8082 4ozClr-NoPres	VOCS 8260* 40ml/amb/MeOH10ml/Sy BTEX, MTBE, EDR, EDC en CPAHS/Naph 8270ESIM 40zCir-NoPres				Shipped Via:	
UHP-1-5-12-20110	9	6	SS		11/9/20	Lacre	12	200	Ē	z		PC		Toron Toron			Remarks	Sample # (lab o
UHP-Z-S-12-201	109	6	SS		11/9/20		-	X		X	X		X					-91
UHP-3-5-12,5-20	1109	G	SS		11/9/20			X		×	X		X				4900	-42
UHP-3-5-17-2011	09	G	SS		11/9/20	1	2	×		×	X		X				DOMAN TO SE	-43
UHP-4-5-145-20	Ilng	6	SS				-			×	X		X			Y.		-44
UHP-4-5-175-20	1109	G	SS		11/9/20		CHARAC	X		X	X		X					-45
UHP-5-S-7,5-20	1108	6	SS			1513	2	X		X	X		X					-46
UMP-5-5-14,5-20	1111	6	SS		11/8/20	5511	2	X		X	X		X		0.55	77-1		-47
UMP-6-5-13-2011	1011	6	SS		11/11/20	0921	2	X		X	X		X				- 8	-48
SVP-1-5-5-201108	6	6	SS		11/10/20	2280	2	X		X	X		X			- 1	11111111111	-49
				MTRF F	11/8/20	0840	2	X		X	X		X				The said	-50
vv - Groundwater B - Bioaccav		narks:*VOC 8260 list=BTEX, MTBE, EI		oo, coc, and r	-nexane by E	PA 826	00.			рН _		Temp	-	COC Seal	Sample 1 Pre	e Receipt Chesent/Intact:	NP Y	
/W - WasteWater W - Drinking Water	-			في المعقدين						Flow	1	Other		Bottles	arri	ccurate: ve intact:	1	
	Samples returned via:  UPS FedEx Courier			Trackir	ig#	10.0	10.5								ent vo	les used: olume sent:	1	
pushed by : (Signature) Date:		Time:			The same								VOA Zero	o Head		Y _		
Quished by (Signature)		-16-2	, laightature						Tri	p Blank	Receive	ed: Yes No HCL MeoH				Correct/Che 0.5 mR/hr:	Lked:	
nquished by : (Signature) Date:			Time:	1.2/2					7	MORO	- 00	TBR Bottles Received		If present	ation	equired by Logi	n: Date/Time	
linquished by : (Signature)	38		1000	178V.2						18	610	=\$	150		PICSCIVE	action 1	equired by Logi	n. Date/ finie
	-	Date:		Time:	CONTRACTOR OF THE PROPERTY OF	ed for lab by: (Si		e)	3128	Da		-	Time:		Hold:			Condition
	Joseph Control of the				B	Barre	22			11	-17	-26	0900	21				(NCF)/ OF

Leidos Inc Bothell, V	NΛ	The state of the s	Billing Inf	formation:		T				Analysis	/ Conta	iner / Pre	eservat	ive		Chain of Custod	y Page 6 of 7
18939 120th Avenue NE Suite 112 Bothell WA 98011	VA		18939 : Suite 1:	its Payable 120th Avenue 12 , WA 98011	NE	Pres Chk			No.							Pace	Analytical * Contactor Testing & Innovettor
Report to: Russ Shropshire			Email To:	russell.s.shropsh	ire@leidos.cor	n			Silice	Lux			(			12065 Lebanon Rd	nwan
Project Description:		City/State	5,1	100	1	44		/Syl	8	*		S.V.S.V.	sə.			Mount Juliet, TN 3 Phone: 615-758-50	7122 9500
WA-OZ Chelon		Collected:	Chelo	, WA	PT MT	CT ET		Oml	S	ml/s		Juni/	loPr	-		Phone: 800-767-51 Fax: 615-758-5859	
Phone: 425-482-3323  Collected by (print):	Client Projec			Lab Project #	A-CHELAN		Ir-NoPre	MeOH1	r-NoPre	OHIO	15	leOH10ml/Syr	4ozClr-NoPres	200		SDG#UZ	186649
Tom Dulc  Collected by (signature):		6590		P.O.# P610Z	46 476		892Clr	Amb/A	8ozCli	nb/Me	NoPres	IAmb/Me	4	ene en		Table # Acctnum: <b>LEI</b>	DOSBWA
Immediately Packed on Ice N y V	Same D  Next Da  Two Da	y 10 Da	ay	Quote # Date Resu	lts Needed	No.	Pb.Zn 6010	40m	WTPHDX NOSGT 802Clr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	CBs 8082 4ozClr-NoPres	60* 40ml/ MTBE	CPAHS/Naph 8270ESIM	Benz		Template: T17 Prelogin: P80 PM: 110 - Bria	7112
Sample ID	Three 0	Matrix *	Depth	Date	Time	of Cntrs	NI, Pb	. 0	WTPHE	WTPHG	.Bs 808	VOCs 826	AHS/N	8260	HA	PB: Shipped Via:	
SVP-2-5-9-201109	6	SS		11/9/20	12/12	15	Ü	Í	Z	31-110-1	PC	34	G C	100		Remarks	Sample # (lab only)
221EW-UST7-5-20	1108 6	SS		The second secon		2	X		X	X						12 11 11	-51
EK-1-201115	6	85'W		11/8/20		INTERPOSITION	X	X		700	X		X		100		-52
ER-1-201117	6	88 W		11/12/20		9				X		X					I-S3
PCW-1-W-201113	6	SENW	laza.	11/12/20	2121	-				X		X					-59
PCW-2-W-201113	6	SEWW	er er er	11/13/2	1070	5	X		13533 (a) (a)					X	X		-55
PCW-3-W-2011/3	6	SSWW	The state of	11/13/20		5	X							X	<b>&gt;</b>		-156
TB-2-201108	6	58'W		11/13/20	1040	5	×							X	X		-57
TB-3-201105	6	85 W		11/8/20	A STATE OF THE STA	2				Х				14.79			-58
18-4-201108	6	85 W			1500	2				X				Jaja			- 59
W - WasteWater  W - Drinking Water	marks:*VOC 82	60 list=BTEX	, MTBE, E	11/8/20 DB, EDC, and n	-hexane by E	2 PA 82	60.			pH _		Temp_Other			COC Seal	mple Receipt Ch Present/Intact: ed/Accurate: errive intact:	
r - Other San	ups FedEx	: _ Courier		Trackin	g#										Sufficien	oottles used: it volume sent: If Applicab	
inquished by : (Signature)		-16-00	-	30 Receive	ed by: (Signatu	re)			Tri	p Blank	Receiv	ed: (e)	2/Med		Preservat	Headspace: ion Correct/Che in <0.5 mR/hr:	ecked: Y N
inquished by : (Signature)	Date:		Time:		ed by: (Signatu	i.			ju	PA2	~ °C	-	Receive		f preservat	ion required by Log	in: Date/Time
	Date:		Time:		Bauco		e)		Dat //		. 2	Time:	091		Hold:		Condition:

			Billing Infor	rmation:			GET.		Α.	nalvsis	Contai	ner / Preservative			Chain of Custody	Page of
Leidos Inc Bothell, W 1893 9 120th Avenue NE Suite 112 Rothell WA 98011	А		18939 12 Suite 112	Payable 20th Aven 2 WA 98011		Pres Chk									Pace A National Cart	nalytical <sup>®</sup> the for Taeting & Inno
Report to:		1 48 6	Email To: ru	ussell.s.shro	pshire@leidos.com	n		-		-61			4		12065 Lebanon Rd	
Russ Shropshire						75		/SV		5		S S S S S S S S S S S S S S S S S S S			Mount Juliet, TN 3712 Phone: 615-758-5858	
Project Description: WA-OZ Chlon		City/State Collected:	Chelon	WA	Please C		UT.	0ml	es	mI/S		Oml, CO.			Phone: 800-767-5859 Fax: 615-758-5859	
Phone: 425-482-3323	Client Project	1#		Lab Project	t# BWA-CHELAN		8ozClr-NoPres	МеОН	Ir-NoPr	eOH10	52	NTR E, EDB EDC ONLY ph 8270ESIM 402CIr-NoPres	- 15 m	1	SDG # L121	3166
Collected by (print): Tom Dubé	Site/Facility I	76590		P.O. # POI	024647	6	BozClr	Amb/	8ozC	mp/M	NoPre	Amb/ ESIM			Acctnum: LEID	OSBWA
Collected by (signature):	Rush? (	Lab MUST Be	Notified)	Quote #		121	60108	40ml	OSGT	OmlAr	ozClr-	40ml/ TB E 8270			Template:T176 Prelogin: P807	
Immediately Packed on Ice N Y	- COMPANY TO THE PARTY OF THE P	9y 5 Day 10 Day		Date I	Results Needed	No. of	Zn	HVOCs 8260 40mlAmb/MeOH10ml/Syr	NWTPHDX NOSGT 8ozCir-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	PCBs 8082 4ozCir-NoPres	VOCS 8260*		145	PM: 110 - Brian I	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Cu,Ni,Pb,	HVOC	TWN	NW	PCBs (	VOCS PAH:			Shipped Via:	Sample # (lat
TB-5-20 1108	G	850		11/8/2	20 1200	Z				X		X				-101
18-6-201108	6	<b>D</b> (U)		11/8/		3			多又	X		X				-6
		-	757					. 10							4-	
	$\star$	290			me - I propriet to the					La L				z=018,		
		240	h							-				-21		
		11-	1	Tala-					1 35	700				<u>a</u> .(9)		
	4		16 -20	~	_	18.5			ME!	61				3		
				in the light									- 10-0	=		
	L					1										
* Matrix:  SS - Soil AIR - Air F - Filter  GW - Groundwater B - Bioassay  WW - WasteWater	emarks:*VOC 8	3260 list=BT	EX, MTBE, I	EDB, EDC, a	and n-hexane by	EPA 82	60.			pH .		Temp	COC Si Bottle	al Progned/A	e Receipt Che esent/Intact: Accurate: ive intact:	
DW - Drinking Water OT - Other	amples returned UPS KedEx	via: Courier		T	racking #					4872			Suffic	ient '	tles used: volume sent: If Applicable adspace:	
Relinquished by: (Signature)		nte: 11-16-	20 15	30	Received by: (Signat	ture)			T	rip Blan	k Receiv	ved: (es No HCV/ MeoH TBR	Preser	vation	n Correct/Checko.5 mR/hr:	ked: _Y
Relinquished by : (Signature)		ite:	Time:	R	Received by: (Signat	ture)			1	MARK STORY	2 00	Bottles Received:	If preser	rvation	required by Logir	: Date/Tin
Relinquished by : (Signature)	Da	ite:	Time:	R	Received for lab by:				1	Date:	2.0	Time:	Hold:			Condition NCF

The second secon	45°000 and the second s	enform to the year transmission of their solutions are entered, January and	BillingInfo	rmation:	merind a bullet home has every some an every second second second second second second second second second se		annorman bottomia	*** **********************************	A	ņalvsis	/ Conta	ner / P	ręservat	i <b>v</b> e	nandowek konnek omwasawy na wasawi ka yaya	Ch	hain of Custody	Page i of
Leidos Inc Bothell, WA				s Payable 20th Avenue N	E	Pres Chk	A decrease to assessment other state of the		50								Face.	Analytical®
Suite 112				WA 98011			1	Andrews or Tanana	5		and the second	The second second	President Company			1/		
Rothell WA 98011 Report to:	***************************************	**************************************	Email Tour	ussell.s.shropshire	(a) - : -1				13		-		No.	1				
Russ Shropshire			Linai (O. N	assems.smopsmire	ewieldos.com		de estado de la constanta de l	Syr	no silin	jan-	and a company of the	× ×	L'S	Ĩ		M	2065 Lebanon Rd ount Juliet, TN 37	
Project Description: WA-02 Chilan		City/State Collected:	Cheler	, wa	Please Ci	rcle: T ET	eş	eOH10ml/Syr		m1/5/	Management of the Control of the Con	omi/s	NoPre		+ M	Ph	none: 615-758-58: none: 800-767-58: x: 615-758-5859	
Phone: <b>425-482-3323</b>	Client Projec	t#		Lab Project # LEIDOSBWA-	CHELAN		NoPr	MeOH	802Clr-Nopres	eOH10	5	40mlAmb/MeOH10ml/Syr	4ozCir-NoPres		Arrhors	-	OG #	***************************************
Collected by (print): Tom Dubé	Site/Facility	76590		P.O.# P01024	16 471	6 -	BozClr	40mlAmb/M	802C	mp/m	402Clr-NoPres	mb/m	8270ESIM 2	13	1	-	oble #	OSBWA
Collected by (signature):	Rush?	Lab MUST Be	Notified)	Quote#	Manac 20002-1-10-20-20-20-20-20-20-20-20-20-20-20-20-20	***************************************	00	=	G	Z	1	1 2 1	10	d	d th	Te	mplate:T17	6925
Immediately Packed on Ice N Y	ž.		(Rad Only)	Date Result:	Needed	No.	b,Zn 6010		EDX NOSGT	NWTPHGX 40mlAmb/MeOH10ml/Syr	8082 4oz0	8260* 40	S/Naph 82	VOCE STEAL	18-2		elogin: <b>P80</b> ° <b>//: 110 - Bria</b> r 3:	
Sample ID	Comp/Grab	T	Depth	Date	Time	of Cntrs	Cu,Ni,Pb,Zn	TVOCS	NWTPHOX	WIPH	PCBs 8	VOCs 8	CPAHS/Naph	VO Ce	808		ipped Via:	Sample # (lab only)
SKIS-1-5-15-201110	G	SS	To the same of the	11-10-20	10 11	2	X	ngse	X	X	D.	X	W O	IT			······································	
SRI5-1-5-16.5-201110	6	SS	770	11-10-70		3	X	X	X	-		X	~	V	X	-	1	
58-I5-I-5-24,5-201110	L	SS		11-16-20	-	2	X			X	X	X	X	7		-		
5RIS-2-3-115-201110		SS		11-10-20		3	X	X	X	X		X	X	1	X			
SRIS-2-5-24,5-20111		SS		11-10-50		2	X	1	X		X	X	1	X	1			
SRI5-3-5-10-20/197	6	SS		11/18-20			X	X	X	X	X	X	X	X	X			
PI5-3-5-17-201110	G.	SS		1-10-20	523	5	X	-	X	X		X		1	11	-		
PI 535-25-201110	6	SS			1616		X		X	X		X		- Ki	170			
RI5-3-5-34,5-201110	G	SS		1-10-20			X		X	X	1	X	-					
SRI5-4-5-14,5-20108	6	SS		11-8-20		2	X		X	X	-	X	Control La					
Matrix: Rem S - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay				DB, EDC, and n-	hexane by E	PA 82	60.			I		Temp			COC Sea	Sample R l Preser ned/Accu	Receipt Che	NP Y N
NW - WasteWater	***************************************			1						Flow_		Othe			Bottles Correct	arrive bottles	intact: s used:	
	ples returned IPS FedEx	via: Courier		Tracking	g#											If	me sent: Applicable	2
Relinquished by : (Signature)	1	te: 1-16-20	Time:	Receive	d by: (Signatu	re)		and and an annual section of the sec	Tr	ip Blank	Receiv		s / No ICL / Med	ж	Preserva		pace: prrect/Chec mR/hr:	ked: Y N
Relinquished by : (Signature)		te:	Time:	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	d by: (Signatu	re)	**************************************	amiljan, maar san ya aay sawan	Te	mp:	°C	PROPERTY AND PROPERTY PORCE	BR es Receiv	ed:	If preserv	ation requ	uired by Logi	n: Date/Time
Relinquished by : (Signature)		te:	Trans:	5 P *	omisionima, aparametrici proposana	une, undono, ote lanere la un	entionates interessinguage	*** *****************		may purmanenta funciant a september	**************************************	Description of the second	or effortable of ones many alast	Mic some some angest	Minterest (2) december (2)	n. 20 to Indian y S. Ly J. Ly Market you may be 2000	retore a month of the construction of the cons	
a management of the control of the c	To an annual section of the section	no umanagangangangangangangangangangangangang	Time:	receive	d for lab by: (	oignatur	е)		Da	ite:		Time	::	ed kyli yer (hamiyen kirz) yesiç de	Hold:		М. Валинання в Винграм Андани	Condition: NCF / OK

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Leidos Inc Bothell, WA  18939 120th Avenue NE Suite 112 Rothell WA 98011			18939 12 Suite 112	s Payable 20th Avenu 2 WA 98011	e NE	Pres	And the state of t	And the second sec	الع وق		The state of the s	And the second s	and the property of 1999.	STATES AND A STATE AND A STAT	7(13)		Face National C	<b>Analytical<sup>®</sup></b> enter for Testing & Innovatio
Report to: Russ Shropshire	eneral la consecuencia de la colonia de la consecuencia della		Email To: ru	ussell.s.shrops	hire@leidos.cor	n	and carlo and control and cont	zhc,		j		Syr	es	7900-000-000-000-000-000-000-000-000-000	ENER		12065 Lebanon Rd Mount Juliet, TN 3 Phone: 615-758-58	
Project Description: WA -OZ Chelan	amenen amerikan keneralah keneralah di gemelah sama	City/State Collected:	Chelan	, WA	Prease C PT MT	Circle:	5	10ml/	es no	//J/m(		10m1/	NoPr		1		Phone: 800-767-58 Fax: 615-758-5859	
Phone: 425-482-3323	Client Project	#		Lab Project #	/A-CHELAN		BozClr-NoPres	40mlAmb/MeOH10ml/Syr	Ir-NoP	leOH10	CC CC	MeOH10ml/Syr	4ozCir		A TA	g.	SDG # Table #	
Collected by (print):	Site/Facility I	6590	JACKELLLANTENSTON OF THE STREET LIBER.	P.O. # Polo	24647	6	BozCli	Amb/	7802C	mb/N	Nopr	Amb/	ESIM	a		1	Acctnum: LEII	
Collected by (signature):	Same Da	ab MUST Be  ay Five 0	Day (Rad Only)	Quote # Date Re	sults Needed		Zn 6010	1	NWTPHDX NOSGT 802Cfr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	2 4o2Clr-NaPres	VOCs 8260* 40mlAmb/	cPAHs/Naph 8270ESIM 4ozCir-NoPres	2728	18年4	w	Template: <b>T17</b> Prelogin: <b>P80</b> PM: <b>110 - Bria</b>	7112
Immediately Packed on Ice N Y  Sample ID	Two Day Three D Comp/Grab	y 10 Da ay Matrix *	y (Rad Only)  Depth	Date	Time	No. of Cntrs	Cu,Ni,Pb,Zn	HVOCs 82	WIPHD	WTPHG	PCBs 8082	DCs 826	AHS/NE	16C3	HVOC	1 1	PB: Shipped Via:	Sample # (lab only)
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SRI5-5-5-14,5-201108	G	SS		11-8-20	1303	2	X		X	X		X						
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SRI5-5-5-29.5-201101	G	SS		11-8-70	1445	2	X		X	X		X		П				
PIS-6-5-16-201108	C.	SS		-8-20	1605	8	X	X	X.	X	X	X	X	X				
25-6-5-23,5-20108		SS		1-8-20		2	X		X	X		X		and or the second				
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Report to: Russ Shropshire			Email To: r	ussell.s.shr	opshire@	leidos.com		and the same of th	Syr		1		SVK		1	0.2		12065 Lebanon Rd Mount Juliet, TN 3 Phone: 615-758-58	7122
Project Description: WA-OZ Chilan		City/State Collected:	Chelon	WA		Please Ci	rcle: T ET	Si	10ml/	en en	ml/S		10m1/	NoPr	1	1		Phone: 800-767-58 Fax: 615-758-5859	59
Phone: <b>425-482-3323</b>	Client Proje	ct #		Lab Project		HELAN		8ozClr-NoPres	40mlAmb/MeOH10ml/Syr	8ozCir-NoPres	leOH10	25	40mlAmb/MeOH10ml/Syr	402Clr	- Vancour	N T		SDG #	X
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* Matrix: Rel SS - Soil AIR - Air F - Filter		8260 list=BT	EX, MTBE,				EPA 82	60.			pH _	anima m	Temp			COC Sec	al Pre	e Receipt Chesent/Intact:	ecklist NPYN YN
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Russ Shropshire		City/State		Arimondum	ECS A-Java-Gashacovypas vervi	01 6:		and the same of th	1/5/	9	SVI		550	res	14		Ph	ione: 615-758-58 ione: 800-767-58	58
Project Description: WA-OZ Chelon		Collected:	Chelon	, will		Please Ci		5	10m		) mi		87	No	EDG			x: 615-758-5859	
Phone: <b>425-482-3323</b>	Client Proje	ect#		Lab Proje		CHELAN		8ozOr-NoPres	40mlAmb/MeOH10ml/Syr	r-NoP	eOH10	UT:	40mlAmb/MeOH10ml/Syr	tozch-	子子		-	OG #	
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Russ Shropshire			We manhouse and a second						154	1	>		3	es			Mount Juliet, TN 3 Phone: 615-758-58	
Project Description:  WA -02 (helen		City/State Collected:	C	Lab Projec	I	ease Circl MT CT		20	10ml	res (1)C	S/Junc		Z Z	-NoPr			Phone: 800-767-58 Fax: 615-758-5859	
Phone: 425-482-3323	Client Proj	annes commercia diaman di Securia	,		WA-CHEL	AN		8ozClr-NoPres	40mlAmb/MeOH10ml/Syr	NWTPHDX NOSGT 802Clr-NoPres	40mlAmb/MeOH10ml/Syr	L/I	* 40mlAmb/MeOH10ml/Syr	CPAHS/Naph 8270ESIM 402Clr-NoPres			SDG #	
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UHP-3-5-17-201109	1	SS		11/9/	/	45	2	X		×	~		X					W 344
UHP-4-5-14,5-20110		SS		11/9/	-	05	2	X		×	X		X					Manus Harans
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Suite 112 Rothell WA 98011			Bothell,	WA 98011			9		Silita			and de special designation of the special design	Thermone	MrCorner, Miles			The same of the sa	
Report to:	en e		Email To: r	ussell.s.shrop	shire@leidos.co		1				ALCAP ESCALAR	-		A. relavaries			12065 Lebanon Rd	. जास्थ्यकाचा <u></u>
Russ Shropshire							Market Services	N.S.		2 5	AND THE PERSON OF THE PERSON O	300	5	of Professiona			Mount Juliet, TN 3	7122
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Login #: L1286649 Client: LEIDOSBWA Date: 11/17/2020 Evaluated by: Billy B.

Non-Conformance (check applicable items)

	Sufficient sample remains	Broken container: Chain	Broken container Client	Vials received with headspace. Trip I	Sample is biphasic. 2 Samp	Insufficient sample volume. Recei	pH not in range. Pleas	Improper container Pleas	Temperature not in Chain	Parameter(s) past holding 1 Login	Sample Integrity Chair
		Chain of Custody is missing	Client did not "X" analysis.	Trip Blank not received.	Sample ids on containers do not match ids on coc	Received additional samples not listed on coc.	Please specify TCLP requested.	Please specify Metals requested.	Chain of custody is incomplete	Login Clarification Needed	Chain of Custody Clarification
Carrier:	Temp./Cont. Rec./pH:	Date/Time:	Received by:	If no Chain of Custody:	Container lid not intact	Sample was frozen	Improper handling by carrier (FedEx / UPS / Cour	Insufficient packing material inside cooler	Insufficient packing material around container	If Broken Container:	

# Login Comments:

- Received 3 nathio vials for ER-1-201112 @0835 and ER-1-201112 @1215 but was not marked for analysis on COC. Sent vials to SVOCs.
- 2 ER-1-201112 @1215 was received with a label that reads ER-2-201112. Currently logged per container label.

			Contact: DMs	Client Conta	CD Initialchif
Time:1230	Date:11/18/20	Voice Mail	Email x	Call	lient informed by:

# Podin preparations

- EDB will be analyzed by 8260 rather than 8011, SV8011 not needed.
- 2) Log as ER-2-201112

Appendix D: Laboratory Analysis Reports – Microbial Insights





10515 Research Dr. Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133 Web: www.microbe.com

# **SITE LOGIC Report**

Petroleum Forensics Study

Contact: Russ Shropshire Phone: 425-482-3323

Address: Leidos, Inc.

18939 129th Avenue NE, Suite 112 Email: russell.s.shropshire@leidos.com

Bothell, WA 98011

MI Identifier: 075RL Report Date: February 15, 2021

**Project:** Chelan Chevron Site, #334893.TM.1.000.00.000

**Comments:** 

**NOTICE:** This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.



# Petroleum Forensics Study

Ten product samples, labeled MW-10-201206, MW-12-201207, RW-2-201207, MW-9-201207, MW-44-201207, MW-19-201207, MW-16-201207, MW-21-201208, MW-27-201208, and 22IE Woodin UST-1, were received on December 11, 2020 for characterization and comparison of petroleum products in the samples. The following analyses were performed:

Client ID	Lab ID	Date Collected	Date Received	Whole Oil	EDB and Organic Lead	C3-C12 PIANO	C8-C40 Full Scan
MW-10-201206	075RL-1	12/06/20	12/11/20	X	X	X	X
MW-12-201207	075RL-2	12/07/20	12/11/20	Х	X	Χ	Χ
RW-2-201207	075RL-3	12/07/20	12/11/20	Χ	X	X	Х
MW-9-201207	075RL-4	12/07/20	12/11/20	X	X	Χ	Х
MW-44-201207	075RL-5	12/07/20	12/11/20	X	X	Χ	Х
MW-19-201207	075RL-6	12/07/20	12/11/20	Χ	X	Χ	Х
MW-16-201207	075RL-7	12/07/20	12/11/20	Χ	X	Χ	Х
MW-21-201208	075RL-8	12/08/20	12/11/20	Χ	X	Χ	Χ
MW-27-201208	075RL-9	12/08/20	12/11/20	Χ	X	Χ	X
22IE Woodin UST-1	075RL-10	11/07/20	12/11/20	Х	X	Χ	X

- 1. C<sub>3</sub>-C<sub>36</sub> Whole-Oil Molecular Characterization Gas Chromatography "Fingerprint" by GC/FID *Appendix*
- 2. EDB, MMT, and alkyl lead concentrations by GC/ECD Appendix 2
- 3. C<sub>3</sub>-C<sub>12</sub> Quantitative Molecular Characterization by GC/MS- full scan mode *Appendix 3*
- 4. C8-C40 hydrocarbon semiquantitative analysis by GC/MS (ASTM D5739) Appendix 4

The complete laboratory data report is presented as appendices to this report.



# **Analytical Methodology**

### C3-C36 Whole Oil Fingerprint by GC/FID (ASTM D3328)

The analysis is used to generate a hydrocarbon fingerprint as a screening technique to identify unknown products and assess general weathering attributes by comparison to profiles of known hydrocarbon products. As prescribed by ASTM D3328, the method employs GC separation and flame ionization detector (FID) to provide a chromatographic fingerprint revealing the carbon range and general hydrocarbon composition. A flame photometric detector (FPD) may also be used for sulfur compounds.

### C3-C12 PIANO Quantitative Petroleum Characterization by GC/MS (EPA 8260 Modified)

This GC/MS method is used to determine the concentrations of 109 gasoline range compounds that include oxygenated additives—methyl tertiary butyl ether (MTBE), diisopropyl ether (DIPE), tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), along with lead scavenger additives—ethyl dibromide (EDB) and ethylene dichloride (EDC). This analysis also includes individual constituents of the five hydrocarbon classes—paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO). Samples are purged with conditions as prescribed in EPA Method 5030A. To bring all analytes within the range defined by the calibration curve, dilutions are performed as required.

### Oxygenated Blending Agents (EPA 1624 Modified)

The analysis is used to identify and quantify fuel oxygenates which may aid in age constraining and source investigations of unleaded gasoline. The method uses isotope dilution and GC/MS for analysis of volatile and semivolatile organic priority pollutants including oxygenated fuel additives such as ethanol, MTBE, DIPE, ETBE, and TAME. Isotope dilution employs stable, isotopically labeled analogs of the compounds of interest as internal standards in the analysis. Purge and trap is utilized as described in EPA 1624 to introduce compounds into the GC for separation ( $2.8 \cdot 0.4 \text{ m x } 2 \cdot 0.5 \text{ mm}$  I.D. glass, packed with 1% SP-1000 on Carbopak B, 60/80 mesh, or equivalent) and detection by MS. The GC/MS system is calibrated with internal standards. A compound is identified when its retention time and mass spectrum agree with the library retention time and spectrum.

### EDB and Organic Lead analysis by GC/ECD (EPA 8080 Modified)

Product samples are directly injected into a GC equipped with a 60-meter DB1 column. Tetramethyllead, trimethylethyllead, dimethyldiethyllead, methyltriethyllead, tetraethyllead, methylcyclopentadienyl manganese tricarbonyl, and ethylene dibromide are detected with an electron capture detector (ECD) interfaced to the GC.

### Parent and Alkylated PAHs (EPA 8270 SIM Modified)

Often used in risk assessment, the analysis provides a full panel of forensics grade polycyclic aromatic hydrocarbon (PAH) characterization to identify creosote and MGP residues or urban runoff and other pyrogenic products to distinguish them from petroleum products. As with EPA 8270, semivolatile compounds are analyzed by GC/MS (30m silicone-coated fused-silica capillary column - DB-5) with identification by comparison of mass spectra with mass spectra of authentic standards while quantitation is accomplished by comparing the response of a major (quantitation) ion relative to an internal standard.



To achieve low detection limits however, the GC/MS is operated in Selected Ion Monitoring (SIM) mode so that data is masses of interest rather than filtering over a large mass range thereby improving sensitivity.

### C8-C40 Full Scan Semi-Quantitative Characterization by GC/MS (ASTM D5739 Modified)

Extracts are diluted, then injected into a GC equipped with a 60-meter DB-1 column to separate the hydrocarbons, which are detected with a mass spectrometer (MS) in full scan mode, interfaced to the GC. Hydrocarbons in the C8 to C40 range are identified. By scanning the ion fragments shown in the following table, labeled chromatograms and numerical values of some hydrocarbons are generated. Aromatic hydrocarbons are identified by scanning over a large number of ion fragments, and the results are normalized in a bar diagram. This analysis also allows for tentative IDs of unknown compounds with NIST mass spectra library.

Ion (m/z)	Compound Class
TIC	All Compounds
85	n-Alkanes
113	Iso-Alkanes and Isoprenoids
83	Alkylcyclohexanes
134	C4-Benzenes
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatic Steranes
231	Triaromatic Steranes
Bar Diagram	Aromatic Hydrocarbons

### **Additional Analyses**

### Sulfur Content (ASTM D2622/D4927)

Crude oil typically contains between 0.5 and 5% sulfur. For environmental considerations, the sulfur content of petroleum products is subject to US EPA mandates and has decreased over time. Therefore, the sulfur content provides an opportunity for dating releases. The standard method for determining total sulfur content is Wavelength Dispersive X-Ray Fluorescence (WDXRF). As detailed in ASTM D2622, the source (X-ray tube) directly irradiates the sample and the resulting sample fluorescence is measured at characteristic wavelengths.

### **Viscosity (ASTM D445)**

The kinematic viscosity of liquid petroleum products, both transparent and opaque, is determined by measuring the time for a volume of liquid to flow under gravity through a calibrated glass capillary viscometer. The dynamic viscosity can be obtained by multiplying the kinematic viscosity by the density of the liquid.

### Specific Gravity (ASTM D1217)

Standard method for determining density and specific gravity of liquids by Bingham Pycnometer.



### **Surface Tension (ASTM D971)**

Standard method for the determination of interfacial tension against water by the Ring method. A force tensiometer measures the force required to raise the platinum the ring from the liquid surface.

### Simulated Distillation (ASTM D2887 or D86)

Simulated distillation is a GC technique to determine the boiling point range of petroleum products. For petroleum forensics, the boiling range provides useful information for identifying the fuel type present and the relative amount of each fuel type in a mixture. The GC is equipped with a non-polar chromatographic column and a FID. Sample hydrocarbons are separated in order of their boiling points which are correlated with the retention times, through a calibration curve obtained by running under the same conditions a known mixture of hydrocarbons, usually n-alkanes, covering the boiling range expected in the sample. Results are reported as a correlation between the boiling points and the percentages of the sample eluted from the column. Alternatively, ASTM D86 is the atmospheric distillation of petroleum products using a laboratory batch distillation unit to quantitatively determine the boiling range characteristic of the products such as automotive fuels with and without oxygenates, aviation fuels, and diesel fuels.



### **Results and Discussion**

The C<sub>3</sub>-C<sub>36</sub> GC/FID chromatograms of MW-10, MW-9, and MW-16 in Figs. 1 and 2 show hydrocarbons from 7 min to 50 min retention time in the carbon range C5-C12, indicative of a volatile product. A key to the full compound identifications is given in Appendix 1. Only traces of heavier hydrocarbons were detected. The hydrocarbons include trimethylpentanes, which are alkylate compounds that are blended into automobile gasoline to increase octane levels.

The gasoline compositions contain prominent n-alkanes and methylcycloalkanes, which are major constituents of straight run naphtha, the base stock for gasoline. Historic leaded gasoline was characterized by high naphtha contents, and the three samples did contain relatively high lead concentrations, as shown in Table 1. Table 1 also shows the similarity in the three samples of the Octane Ratio (iso-octane/methylcyclohexane), which is controlled by the formulation of the gasoline. Figs. 1 and 2 show the similarity of the hydrocarbon compositions in MW-10, MW-9, and MW-16, except that in MW-10, C5 and C6 hydrocarbons have been depleted by evaporation, and methylcyclohexane is reduced. All three samples have very low concentrations of BTEX (benzene, toluene, ethylbenzene, xylenes) and other aromatic hydrocarbons. This is likely due to loss of these soluble hydrocarbons by dissolution in groundwater (water washing). This may account for the lower methylcyclohexane in MW-10

The C<sub>3</sub>-C<sub>36</sub> chromatogram of RW-2 in Fig. 2 is dominated by iso-octane, and has a higher Octane Ratio than MW-10, MW-9, and MW-16, as shown in Table 1. This, combined with its lower lead content, indicates that RW-2 is a different gasoline from MW-10, MW-9, and MW-16. RW-2 also shows loss of aromatics by water washing.

The  $C_3$ - $C_{36}$  chromatograms of MW-12 and MW-44 in Fig. 3 are similar to each other. These samples have significantly lower Octane Ratios and lead contents than the samples above, as shown in Table 1, indicating that they contain a different gasoline. They are less water washed than the samples above.

The C3-C36 chromatogram of MW-21 in Fig. 4 shows some similarities to MW-12 and MW-44, but the gasoline in MW-21 has an even lower Octane Ratio and lead content. The C3-C12 GC/MS analysis, shown in Appendix 3, confirms the presence of iso-octane in MW-21. This sample had the lowest aromatic hydrocarbon content of all the gasoline samples, suggesting that it is the most water washed.

The C3-C36 chromatogram of 22IE Woodin UST-1 in Fig. 4 shows a very different hydrocarbon composition from the other gasoline samples. It contains relatively abundant BTEX hydrocarbons, indicating that water washing of this gasoline has been milder than the other samples. However, it is the most evaporated, with hydrocarbon below C7 being severely depleted. The main compositional difference from the samples above is the low lead content and its alkyl lead composition. In all the samples above, tetraethyl lead (TEL) dominates the alkyl lead composition, whereas in 22IE Woodin UST-1, TEL is minor with larger amount of other alkyl lead compounds. This indicates that 22IE Woodin UST-1 contains a different lead package than the other leaded gasoline samples. 22IE Woodin UST-1 also contains the manganese additive MMT.

The C3-C36 chromatogram of MW-19 in Fig. 5 shows gasoline hydrocarbons from 7 min to about 40 min retention time, but differs from the samples above in also showing heavier hydrocarbons from 40 min to 70 min in the carbon range C11-C24, indicative of a middle distillate such as diesel or #2 fuel oil. These products can have very similar hydrocarbon compositions and are difficult to distinguish in unknown samples. MW-19 contains a small concentration of TEL, indicating that the gasoline is leaded. The n-alkanes in the gasoline are significantly reduced compared to the samples above, probably by biodegradation. The Octane Ratio is very low, similar to MW-21, but the gasoline may be too degraded to establish any relationship to the other samples. The diesel/#2 fuel oil is dominated by isoalkanes (iC13, iC14, iC15, iC16, iC18, pristane, phytane). These hydrocarbons are more resistant to biodegradation than n-alkanes, which dominate fresh diesel and #2 fuel

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oil but are the most readily biodegraded hydrocarbons in petroleum products. The absence of n-alkanes indicates that the diesel/#2 fuel oil has been in the environment long enough to be significantly degraded.

The C3-C36 chromatogram of MW-27 is similar to MW-19 in showing a diesel/#2 fuel oil. However, there is only a trace of gasoline in MW-27, which was identified in the C3-C12 GC/MS analysis shown in Appendix 3. The hydrocarbon composition of the diesel/#2 fuel oil in MW-27 is very similar to MW-19. This is confirmed by the C8-C40 GC/MS analyses in Appendix 4, which show chromatograms of the individual hydrocarbon classes in the samples - n-alkanes, isoalkanes, alkylcyclohexanes, C4-alkylbenzenes, bicyclanes, steranes, terpanes, and aromatic hydrocarbons. In particular, the pristane/phytane ratios, which are inherited by petroleum products from the crude oil from which the products were refined, were similar (2.2 and 2.4). This, combined with the other compositional similarities, indicates that the two samples contain the same diesel or #2 fuel oil.



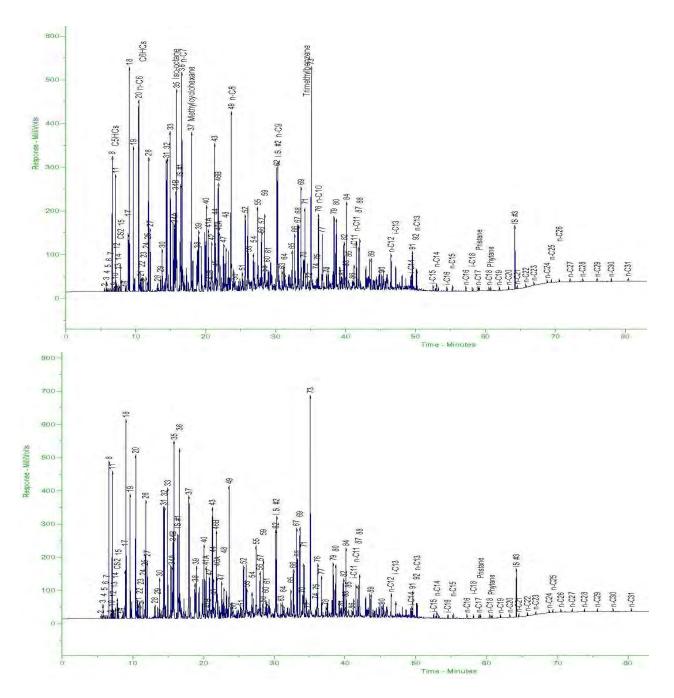


Figure 1. C3-C36 GC/FID hydrocarbon compositions in MW-9 (upper) and MW-16 (lower) product samples. Note the similarity.



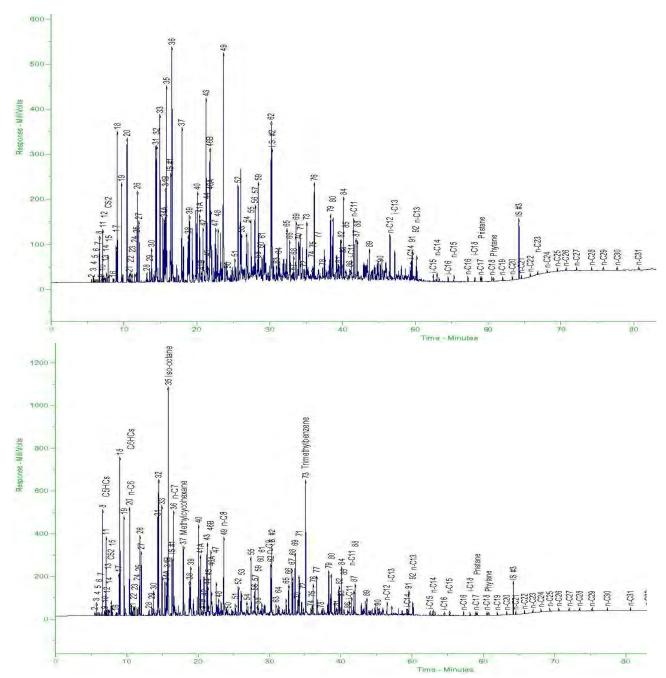


Figure 2. C3-C36 GC/FID hydrocarbon compositions in MW-10 (upper) and RW-2 (lower) product samples. Note the similarity of MW-10 to MW-9 and MW-16 in Fig. 1, and the much higher iso-octane in RW-2.



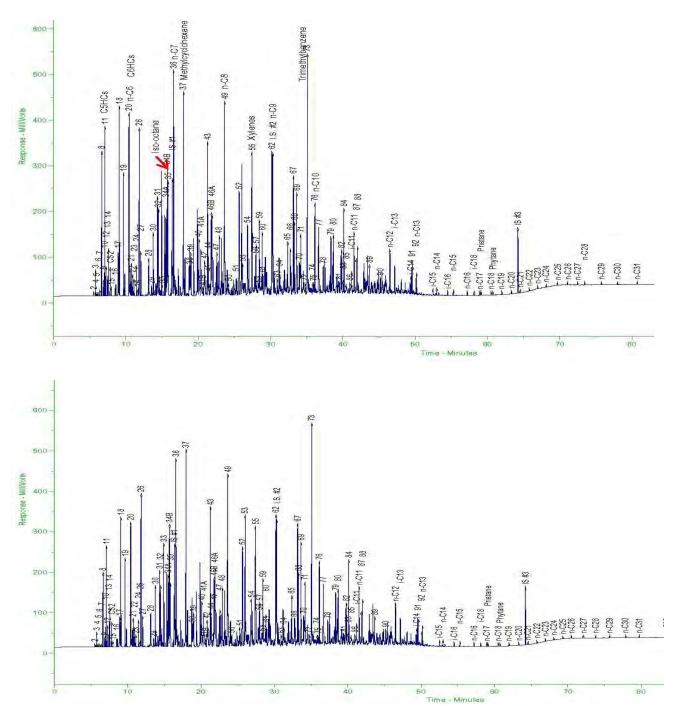


Figure 3.  $C_3$ - $C_{36}$  GC/FID hydrocarbon compositions in MW-12 (upper) and MW-44 (lower) product samples. Note their similarity and lower iso-octane than Figs. 1 and 2.



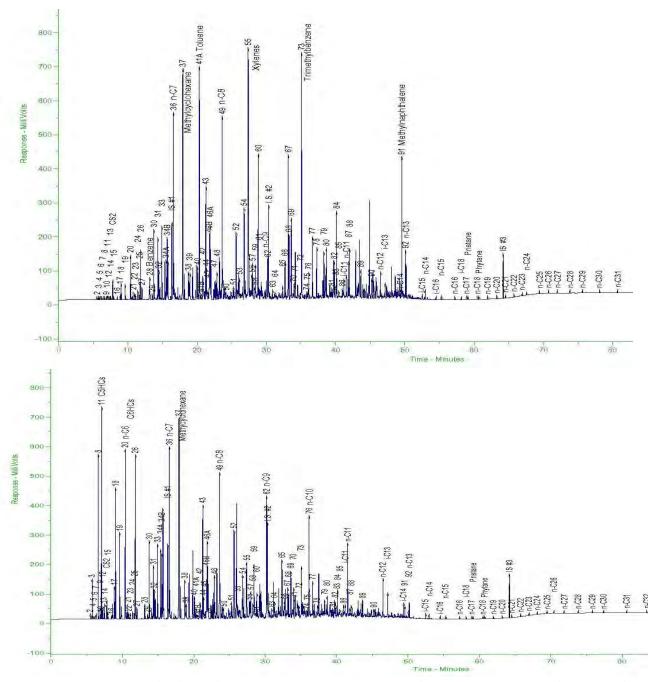


Figure 4.  $C_3$ - $C_{36}$  GC/FID hydrocarbon compositions in 21IE Woodin UST-1 (upper) and MW-21 (lower) product samples. Note the relative abundance of aromatics in Wooden and very low iso-octane in both samples.



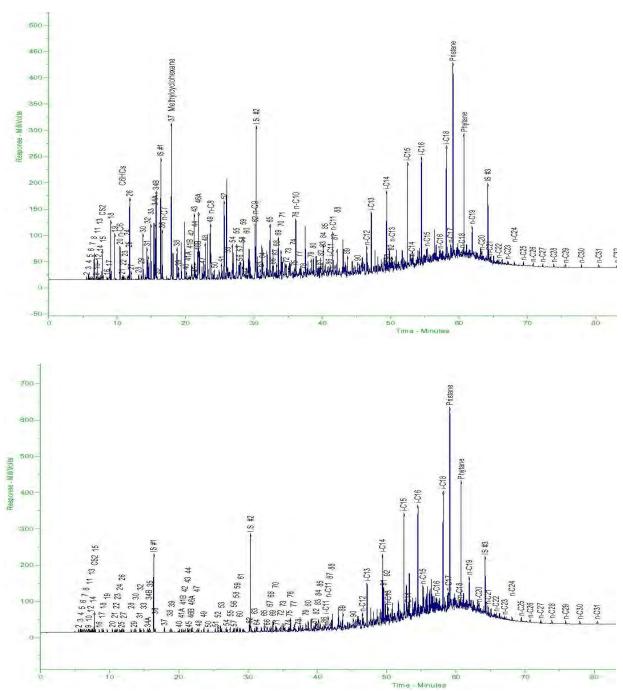


Figure 5.  $C_3$ - $C_{36}$  GC/FID hydrocarbon compositions in MW-19 (upper) and MW-27 (lower) product samples. Note the similarity of the composition of the diesel/#2 fuel oil.



Table 1: Gasoline and diesel source ratios and alkyl lead concentrations

Client ID	MW- 10	MW- 12	RW-2	MW- 9	MW- 44	MW- 19	MW- 16	MW- 21	MW- 27	22IE Woodin
										UST-1
Octane Ratio <sup>1</sup>	1.1	0.5	3.5	1.2	0.3	0.1	1.5	0.1	ND	0.2
EDB (mg/kg)	<0.7	2	<0.7	<0.7	8	<0.7	<0.7	2	<0.7	<0.7
TML (mg/kg)	<7	7	<7	<7	<7	<7	<7	<7	<7	<7
TMEL (mg/kg)	<7	<7	<7	<7	<7	<7	<7	<7	<7	22
DMDEL (mgkg)	<7	<7	26	<7	<7	<7	16	<7	<7	53
MTEL (mg/kg)	<7	<7	<7	<7	<7	<7	29	<7	<7	<7
TEL (mg/kg)	690	254	311	580	264	30	739	158	0	12
MMT (mg/kg)	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	16
Lead conc. (gPb/gal) <sup>2</sup>	1.2	0.4	0.6	1.0	0.5	0.05	1.4	0.3	0	0.17
Pristane/Phytane	ND	ND	ND	ND	ND	2.2	ND	ND	2.4	ND

<sup>&</sup>lt;sup>1</sup>iso-octane (2,2,4trimethylpentane)/methylcyclohexane

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<sup>&</sup>lt;sup>2</sup>Hydrocarbons have been lost from the gasolines by weathering, concentrating alkyl leads in the residue. Concentrations in the fresh gasoline may have been lower.



## Conclusion

The ten product samples discussed in this report contain the following six different petroleum products:

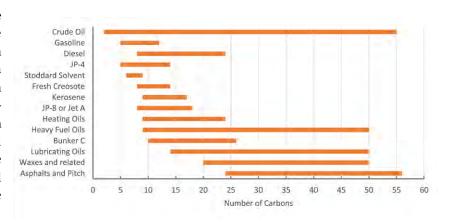
- 1. MW-10, MW-9, and MW-16 contains a leaded gasoline with lead concentrations in the range 1.0-1.4 gPb/gal.
- 2. RW-2 contains a leaded gasoline with a higher Octane Ratio, and a lead concentration of 0.6 gPb/gal.
- 3. MW-12 and MW-44 contains a leaded gasoline with an Octane Ratio lower than those above and lead concentrations in the range 0.4-0.5 gPb/gal.
- 4. MW-21 contains a leaded gasoline with an even lower Octane Ratio and a lead concentration of 0.3 gPb/gal.
- 5. 22IE Woodin UST-1 contains a leaded gasoline with a lead concentration of 0.17 gPb/gal. and a different alkyl lead package than the samples above.
- 6. MW-19 and MW-27 contain a degraded diesel or #2 fuel oil. MW-19 also contains a leaded gasoline, which may be too degraded to establish any relationship to the gasolines in the other samples.



## **General Reference Information**

## C3-C36 Whole Oil Fingerprint by GC/FID (ASTM D3328; Product Samples)

C3-C36 Whole Oil Fingerprint results are used as a screening method to evaluate the likely products present in the sample based on comparisons to chromatograms of known petroleum products. For more in depth analysis, the GC/MS methods C3-C12 Semi-**Ouantitative** Petroleum Characterization (PIANO) C8-C40 Full Scan Semi Quantitative Characterization are recommended. Below general are characteristics including the hydrocarbon size range for various petroleum products.



Automotive gasoline is a complex mixture of natural volatile hydrocarbons C4 – C12 that has been supplemented with refined hydrocarbon stocks rich in C5 – C7 olefins, low molecular weight monoaromatics (BTEX), octane boosters (e.g. isooctane), and other additives including oxygenates, organic lead compounds, and lead scavengers. Mineral spirits (C7 – C12) and Stoddard solvents (C8 – C14) are characterized by enrichment of n-paraffins, isoparaffins, and naphthenes with lower proportions of aromatics.

Kerosene, originally used for household heating and lighting, ranges from C6 to C16 and has been used as a jet fuel or primary component of jet fuels since the 1950s. JP-4 used for military planes prior to 1998 was a mixture of kerosene (C6 – C16) and light naphtha (C5 – C6). Diesel #1 (Arctic diesel) has a hydrocarbon range of C6 – C18. The primary aromatics in diesel #1 and kerosene are naphthalene as well as methylated naphthalenes and alkylated benzenes. Diesel #1 can at times be differentiated from kerosene by the presence of pristine (Pr) and phytane (Ph).

Diesel #2 has a hydrocarbon range of C8-C25, a mid-distillate. Paraffins are present in the highest proportion in Diesel #2 followed by isoparaffins and naphthenes. Polycyclic aromatic hydrocarbons (PAHs), most notably naphthalene and methylated homologues, are more abundant than BTEX and three ringed PAHs are also present. Please note that #2 fuel oil and home heating oil have a very similar hydrocarbon composition.

Heating oil #4 is a high boiling fraction with a hydrocarbon range from C20 to C35. Heating oil #6 (Bunker C) has a hydrocarbon range of C30 to greater than C35, however it is frequently diluted with lighter fractions. More specifically, heating oil #6 is often cut with mid distillates in the diesel #2 range C8-C25 or a light oil. The net effect is that the carbon range is from C8 to over C35. PAHs present in heating oil #6 span from naphthalene to the four ringed (fluroanthene, chrysene, and pyrene) and five ringed compounds (benzo(e)pyrene and benzo(b)fluroanthene).



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Lubricating oil and hydraulic fluids are composed primarily of branched and cyclic paraffins. PAHs are generally not present in unused fluids but are found in used lubricating oil. Chromatographs of both products tend to have a large unresolved complex mixture forming a hump in the plot. Creosote and coal tar oil are composed primarily of PAHs along with polar compounds like phenols and nitrogen-containing aromatics. Indene is the most abundant PAH generally followed by naphthalene, phenanthrene, and fluoranthene.

While semi-quantitative, the C3-C36 Whole Oil Fingerprint (GC/FID) report includes screening of over 90 gasoline range paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO). Since different hydrocarbons are more susceptible to environmental processes including evaporation, dissolution, and biodegradation than others, ratios of specific hydrocarbons and groups of hydrocarbons are used to assess the extent of weathering (Table 1). The bulk composition PIANO groups is also a useful tool for differentiating fuel types (Table 2).

Table 1. Examples of Changes in Weathering Ratios (Whole Oil Report)<sup>1</sup>

Process and Parameter	Fresh Gasoline	Ratio Trend
Evaporation		
n-Pentane / n-Heptane	0.5 - 2	Decreases with increasing evaporation
2-Methylpentane / 2-Methylheptane	3 - 8	Decreases with increasing evaporation
Waterwashing (Dissolution)		
Benzene / Cyclohexane	0.5 - 2	Decreases with increasing dissolution
Toluene / Methylcyclohexane	2 - 10	Decreases with increasing dissolution
Aromatics / Total Paraffins (n+iso+cyc)	0.9	Decreases with increasing dissolution
Aromatics / Naphthenes	7.8	Decreases with increasing dissolution
Biodegradation		
(C4 – C8 Para+Isopara) / C4 - C8 Olefins		
3-Methylhexane / n-Heptane	0.5 - 2.0	Increases with increasing biodegradation
Methylcyclohexane / n-Heptane	0.5 - 0.8	Increases with increasing biodegradation
Isoparaffins+Naphthenes / Paraffins	2 - 10	Increases with increasing biodegradation
(C4 - C8 Para + Isopara) / C4 - C8 Olefins		
Octane Rating		
2,2,4-Trimethylpentane / Methylcyclohexane		Low Octane (87) < 2.5, Intermediate 2.5-5, and
		Premium (92 octane) > 5

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Table 2. Bulk Composition of Freshly Dispensed Reference Fuels (Whole Oil Report)<sup>1</sup>

	Regular Leaded Range	Regular Unleaded Range	Unleaded Plus	Premium Unleaded	JP-4 Jet Fuel	Aviation Gasoline
PIANO Composition						
% Paraffinic	10.4 - 11	8.4 - 11.3	8.7 - 13.3	7.1 - 13.6	29.34	3.33
% Isoparaffinic	31.7 - 32.5	32.5 - 40.3	34.5 - 40.0	26.2 - 39.7	31.02	74.22
% Aromatic	44.1 - 45.3	32.9 - 43.7	40.0 - 42.9	43.4 - 59.8	23.90	21.92
% Naphthenic	7.5 - 8.0	3.2 - 9.7	3.6 - 6.6	1.2 - 5.3	13.16	0.51
% Olefinic	4.3 - 5.0	1.5 - 13.7	2.9 - 9.6	1.0 - 7.3	2.58	0.01

### Gasoline

### C3-C12 PIANO Quantitative Petroleum Characterization by GC/MS (EPA 8260 Modified, Product, Water, Soil)

Weathering processes including evaporation, dissolution, and biodegradation will alter the composition of a released gasoline. Since a specific hydrocarbon may be more susceptible to each of these environmental processes than another, the ratios of specific hydrocarbons and groups of hydrocarbons increase or decrease providing an estimate of the extent of weathering. In addition, the bulk composition of a sample revealing the major hydrocarbon groups is a useful tool for differentiating fuel types. Tables 3 and 4 below summarize trends in weathering ratios and bulk PIANO compositions.

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Table 3. Examples of Changes in Weathering Ratios (PIANO)<sup>1</sup>

Process and Parameter	Fresh Gasoline	Ratio Trend/Rationale
Evaporation		
n-Pentane / n-Heptane	0.5 - 2	Decreases with increasing evaporation
2-Methylpentane / 2-Methylheptane	3 - 8	Decreases with increasing evaporation
Waterwashing (Dissolution)		
Benzene / Cyclohexane	0.5 - 2	Decreases with increasing dissolution
Toluene / Methylcyclohexane	2 - 10	Decreases with increasing dissolution
Aromatics / Total Paraffins (n+iso+cyc)	0.9	Decreases with increasing dissolution
Aromatics / Naphthenes	7.8	Decreases with increasing dissolution
Biodegradation		
(C4 – C8 Para+Isopara) / C4-C8 Olefins	8.4	
3-Methylhexane / n-Heptane	0.5 - 2.0	Increases with increasing biodegradation
Methylcyclohexane / n-Heptane	0.5 - 0.8	Increases with increasing biodegradation
Isoparaffins+Naphthenes / Paraffins	2 - 10	Increases with increasing biodegradation
Diagnostic Ratios (Refining Properties)		
2,2,4-Trimethylpentane/(2,2,4-Trimethylpentane		
+Methylcyclohexane)		
2,2,4-Trimethylpentane/Total TMPs		Hydrofluoric acid alkylation = 0.54 – 0.73
		Sulfuric acid alkylation = 0.39 – 0.45
n-C9/Isopropylbenzene		
n-C10/1-Methyl-2-ethylbenzene		
n-C11/1,4-Dimethyl-2-ethylbenzene		
i-C5/(i-C5+n-C5)	>0.70	Isomerization of straight-chain molecules to
		higher-octane branched molecules for blending
		into gasoline or as a feed into alkylation units.
(2-methylhexane+2,3-dimethylpentane)/(3-		
methylhexane+2,4-dimethylpentane)		
Naphthalene/(Naphthalene+n-C12)		
Methylcyclohexane/(Methylcyclohexane+Toluene)		
Toluene/n-Octane		
Octane Rating		
2,2,4-Trimethylpentane / Methylcyclohexane		Low Octane (87) < 2.5, Intermediate 2.5-5, and Premium (92 octane) > 5
(2,2,4-trimethylpentane + Toluene)/ (n-C7+n-C8)		Value increases with octane rating



Table 4. Bulk PIANO Composition of Freshly Dispensed Gasolines and Gasolines in Environmental Samples<sup>1</sup>

	F	reshly Dispe	nsed Gasolin	Gasoline in Environmental Samples			
PIANO Composition	Regular Leaded Range	Regular Unleaded Range	Unleaded Plus Range	Premium Unleaded Range	Gasoline as Free Product Range	Gasoline in Soil Range	Gasoline in Water Range
% Paraffins	10.4 - 11	8.4 - 11.3	8.7 - 13.3	7.1 - 13.6	4.3 - 18.3	0 - 5.3	0.8 - 10.9
% Isoparaffins	31.7 - 32.5	32.5 - 40.3	34.5 - 40.0	26.2 - 39.7	20.9 - 40.2	0 - 31.6	2.2 - 56.9
% Aromatic	44.1 - 45.3	32.9 - 43.7	40.0 - 42.9	43.4 - 59.8	27.1 - 70.1	60.4 - 98.7	26.8 - 94.3
% Naphthenes	7.5 - 8.0	3.2 - 9.7	3.6 - 6.6	1.2 - 5.3	1.2 - 9.0	0 - 2.6	1.1 - 16.6
% Olefins	4.3 - 5.0	1.5 - 13.7	2.9 - 9.6	1.0 - 7.3	1.9 - 5.7	0.8 - 2.1	0.2 - 19.6

### Oxygenated Blending Agents<sup>4</sup>

Regulatory mandates for the introduction or elimination of fuel additives and blending agents can provide an important line of evidence when age dating hydrocarbon fuels. As lead additives were beginning to be phased out in the 1980s, oxygenates such as such as methyl tert-butyl ether (MTBE), tert-amyl-methyl ether (TAME), and ethanol were increasingly utilized. Although in use on the East Coast of the US in the early 1980s, national use of MTBE became widespread after 1987 and accelerated with the Clean Air Amendments of 1990. MTBE concentrations reached as high as 15 vol% in some locations but was reduced to 11 vol% MTBE in reformulated gasoline in 1995 (Gibbs, 1996). TAME was first used in gasoline in the early 1990s and while MTBE was dominant, TAME, ethyl tert-butyl ether (ETBE), and diisopropylether (DIPE) were all blended with gasoline by different refineries. Between 2000 and 2007, 23 states instituted partial or complete bans on MTBE blended gasolines resulting in the phase out of the oxygenate in the US.

### Organic Lead and Lead Scavengers<sup>4</sup>

Alkyl lead and lead scavengers are important additives for fingerprinting purposes and as time markers. As early as 1923, tetraethyl lead (TEL) was added to gasoline as an anti-knock agent. Beginning in 1960 with the introduction of tetramethyl lead (TML), combinations of TEM-TML sometimes called the Physical Mixture (PM) were used. Over the course of the 1960s, PM was replaced by the Reaction Mixture (RM) containing not only TML plus TEL but also the intermediates trimethyl ethyl lead (TMEL), dimethyl diethyl lead (DMDEL), and methyl triethyl lead (MTEL). In 1973, EPA mandated a phased reduction of the lead content of grades of gasoline and in 1974 required the availability of at least one grade of unleaded gasoline. With federal regulations, maximum levels gradually decreased to 1.0 g Pb/gal in 1980, 0.5 g Pb/gal in 1985 and 0.1 g Pb/gal in 1988 (Gibbs, 1993). During the lead phase out, TEL became the most abundant lead-alkyl additive with decreasing amounts of TML usage until about 1985-1987. While there were waivers, a number of states had completely eliminated the manufacture of leaded gasoline by the end of 1992. In 1996, EPA officially banned the use of leaded fuel for on-road vehicles. Note that TEL is still used as an antiknock additive in some aviation fuels.

Lead scavengers ethylene dibromide (EDB) and ethylene dichloride (EDC, also commonly known as 1,2-DCA) are also important markers. Beginning in 1928, EDB and EDC were introduced to combat the adverse effects of forming lead oxide deposits after fuel combustion. While the composition changed over the years, a typical mix for automotive gasoline additives in the 1980s consisted of about 62% TEL (or a redistribution reaction mixture of lead alkyls), 18% EDB, 18% EDC,



and 2% of other inactive ingredients. For aviation piston engines, lead is still permitted (TEL) and the scavenger consists entirely of EDB. Both EDB and EDC are soluble and will be dissolved into the aqueous phase. Lead alkyls will adsorb to the soil and are hydrolyzed by water. Therefore, without the presence of NAPL, the detection of lead scavengers in aqueous samples may be the only evidence for the release of a leaded gasoline.

### Methylcyclopentadienyl manganese tricarbonyl (MMT)<sup>4</sup>

Beginning in 1959, the organic manganese derivative known as MMT was used in combination with TEL as an antiknock additive and to boost octane without exceeding the lead concentration limit. As lead began to be phased out and with catalyst-equipped cars using unleaded gasoline, MMT was used alone. MMT was no longer used in unleaded gasoline after 1978. During the final lead phase out, MMT was permitted in leaded gasoline at a concentration of 0.1 g Mn/gal.

## Sulfur Containing Hydrocarbons<sup>4</sup>

In 1995 the EPA published a set of guidelines to further improve air quality by stipulating a gasoline formulation known as Reformulated gasoline I (RFG I). Along with regulating total aromatic content, benzene content, sulfur concentrations were also reduced. With RFG II in 2000, sulfur concentrations were further reduced enabling use of new emission control technologies. With the Tier 3 program, sulfur content of gasoline was limited to a maximum of 10 ppm in 2017 (https://www.epa.gov/gasoline-standards/gasoline-sulfur).

### **Heavier Hydrocarbons**

### C8-C40 Full Scan Semi-Quantitative Characterization (GC/MS)

GC/MS results provide more detailed information that can be used to identify the presence of various products, determine the degree of weathering, and can aid in age dating. Table 5 below summarizes the compound classes analyzed.

Table 5. Summary of Ion m/z Ratios and Corresponding Compound Classes.

Ion (m/z)	Compound Class
TIC	All
85	n-paraffins
113	Iso-paraffins
83	Alkylcyclohexanes
134	C3-C4 Monoaromatics
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatic Steranes
231	Triaromatic Steranes
Bar Diagram	Monoaromatic and Polyaromatic Hydrocarbon Distribution

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Various classes of petroleum hydrocarbons differ in their susceptibility to biodegradation. Table 6 below adapted from Kaplan et al 1997 summarizes the general trends in the chemical composition of example petroleum products as biodegradation proceeds from slightly degraded (1) to severely degraded (10).

Table 6. General Changes in Composition of Petroleum Fuels as Biodegradation Proceeds.<sup>1</sup>

Bunker C	Diesel	Gasoline	Level of Biodegradation	Chemical Composition as Biodegradation Increases			
	X	Χ	1	Abundant n-alkanes			
	X	Χ	2	Light end n-alkanes removed			
X	X	Χ	3	Middle range n-alkanes, olefins, benzene and toluene removed			
X	X	Χ	4	More than 90% of n-alkanes removed			
Х	Х	Х	5	Alkylcyclohexanes and alkybenzenes removed. Isoprenoids and C0-naphthalene reduced			
Х	Х		6	Isoprenoids, C1-naphthalenes, benzothiophene and alkylbenzothiophenes removed. C2-naphthalenes selectively reduced			
X	X		7	Phenanthrene, dibenzothiophenes and other PAH reduced			
Х			8	Tricyclic terpanes enriched. Regular steranes selectively removed, C31 to C35 homohopanes reduced			
X			9	Tricyclic terpanes, diasteranes and aromatic steranes abundant			
X			10	Aromatic steranes and demethylated hopanes* predominant			

The n-alkanes (m/z 85) are generally the most susceptible to biodegradation. Following release, the lighter end alkanes are biodegraded first leaving the mid-range and heavier alkanes as well as the alkylbenzenes (m/z 134), alkylcyclohexanes (m/z 83), and isoparaffins and isoparaffins and isoparaffin groups have been found to be especially important in estimating degree of biodegradation with the n-C17/pristane (Pr) ratio suggested for estimated the age of diesel release (Table 7). After moderate degradation, n-alkanes may no longer be detected and the alkylcyclohexanes and alkylbenzenes will be reduced and ultimately removed. As degradation continues to become more severe, the lower molecular weight isoprenoids are preferentially removed leaving the larger isoprenes (phytane and pristane). While biodegradation occurs, phytane and pristane have similar stability so the ratios of the larger isoprenoids are generally constant (Table 7).



Table 7. Additional Biodegradation Ratios for Heavier Hydrocarbons.

Fresh Diesel		Ratio Trend/Rationale
Biodegradation		
n-C17 / Pristane (Pr)	2.18	Decreases with biodegradation
n-C18 / Phytane (Ph)	3.27	Decreases with biodegradation
n-C17 / Farnesane	5.29	Decreases with biodegradation
n-C17 / 2,6,10-tmt	4.91	Decreases with biodegradation
n-C18 / nor-Pr	2.95	Decreases with biodegradation
n-C18 / Ph	3.27	Decreases with biodegradation
Pr / nor-Pr	1.55	Constant with biodegradation
Pr / Ph	1.72	Constant with biodegradation
Pr / 2,6,10-tmt	2.26	Constant with biodegradation
nor-Pr / Ph	1.11	Constant with biodegradation
nor-Pr / 2,6,10-tmt	1.46	Constant with biodegradation
Pr / Farnesane	2.43	Constant with biodegradation
nor-Pr / Farnesane	1.57	Constant with biodegradation

In addition to alkybenzenes, diesel fuel and heavier petroleum products also contain a wide range of PAH from naphthalenes and phenanthrenes to benzo(B+K)fluoranthene, and benzo(E+A)pyrene as well as the sulfur-containing aromatics, such as benzothiophene and dibenzothiophene. As summarized in Table 8, preferential biodegradation of alkylbenzenes and naphthalenes relative to alkylphenanthrenes leads to changes in ratios of these compounds in degraded diesel fuel. Likewise, preferential biodegradation is also evident with larger PAHs found in Bunker C.



Table 8. Biodegradation Ratios for Diesel and Bunker C<sup>1</sup>

Ratio	Fresh Diesel	Fresh Bunker C	Ratio Trend
Biodegradation			
C4-Alkylbenzenes/C2-Phenanthrenes	1.6		Decreases
C2-Naphthalenes/C2-Phenanthrenes	4.3		Decreases
C2-Dibenzothiophenes/C2-Phenanthrenes		0.4	Increases
1+9-Methylphenanthrene/2+3-methylphenanthrene		0.5	Increases

The terpanes (m/z 191) and steranes (m/z 217) are high-molecular- weight hydrocarbons commonly considered biomarkers (Peters and Moldowan 1993). Due to their particular structure (chiral centers and side chains), these biomarkers represent a large number of different chemical compounds as well as a set of isomers (or enantiomers) of the same compound which are used for stability considerations and comparison of fuel patterns. Although highly resistant, terpanes and steranes have been shown to be degraded to a degree under severe weathering conditions. After extensive degradation, regular steranes are selectively removed, C31 to C35-homohopanes are reduced, and tricyclic terpanes are enriched, (Table 6). Among the terpanes, the C30-pentacyclic terpane (hopane) and certain tricyclic terpanes are the most stable (Butler et al. 1991). Even under extensive degradation, these tricyclic terpanes, diasteranes, and monoaromatic steranes (MAS, m/z 253) and triaromatic steranes (TAS, m/z 231) are highly resistant and remain.

## Parent and Alkylated PAHs (EPA 8270 SIM Modified)

Often used in risk assessment, the analysis provides a full panel of forensics grade polycyclic aromatic hydrocarbon (PAH) characterization to identify creosote, MGP residues, and urban runoff. A number of diagnostic ratios have been developed to differentiate pyrogenic PAHs from petrogenic sources including phenanthrene/anthracene and fluoranthene/pyrene (Benlachen et al 1997). Wang et al (1999) proposed a Pyrogenic Index (PI) for the differentiation of pyrogenic products from petroleum products. The PI is the sum of other three- to six-ring EPA PAHs to the sum of 5 alkylated PAHs. The pyrogenic index values were determined to be 0.004 and 0.009-0.019 for the diesel and residues, but in a range of 0.8-2.0 for the six soot samples.

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SITE LOGIC Report

C3-C36 Whole Oil Molecular Characterization by GC/FID

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## Results

Table 1. Summary of the results obtained for Whole Oil Analysis.

Sample Information Type Sample Date MI ID	MW-10-201206 Product 12/06/2020 075RL-1	MW-12-201207 Product 12/07/2020 075RL-2	RW-2-201207 Product 12/07/2020 075RL-3	MW-9-201207 Product 12/07/2020 075RL-4	MW-44-201207 Product 12/07/2020 075RL-5
Evaporation					
n-Pentane / n-Heptane	0.11	0.39	0.39	0.27	0.27
2-Methylpentane / 2-Methylheptane	0.56	0.89	1.54	1.06	0.67
Waterwashing					
Benzene / Cyclohexane	0.24	0.61	0.15	0.15	0.78
Toluene + 2,3,3-Trimethylpentane /	0.45	0.31	0.94	0.40	0.25
Methylcyclohexane					
Aromatics / Total Paraffins (n+iso+cyc)	0.31	0.53	0.41	0.45	0.50
Aromatics / Naphthenes	1.72	2.22	2.68	2.38	2.06
Biodegradation					
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	63.12	15.63	45.72	42.42	17.81
3-Methylhexane / n-Heptane	0.69	0.00	1.04	0.71	0.54
Methylcyclohexane / n-Heptane	0.79	1.08	0.69	0.87	1.26
Isoparaffins + Naphthenes / Paraffins	3.20	2.71	4.52	3.51	3.19
Octane rating					
2,2,4,-Trimethylpentane / Methylcyclohexane	1.13	0.54	3.53	1.16	0.33
Relative percentages - Bulk hydrocarbon composition					
as PIANO					
% Paraffinic	17.88	16.97	12.63	15.02	15.33
% Isoparaffinic	43.79	30.94	46.55	40.06	33.23
% Aromatic	23.06	33.42	28.43	30.27	32.42
% Naphthenic	13.37	15.07	10.62	12.70	15.72
% Olefinic	1.90	3.59	1.78	1.95	3.30

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Table 2. Summary of the results obtained for Whole Oil Analysis.

Sample Information Type Sample Date MI ID	MW-19-201207 Product 12/07/2020 075RL-6	MW-16-201207 Product 12/07/2020 075RL-7	MW-21-201208 Product 12/08/2020 075RL-8	MW-27-201208 Product 12/08/2020 075RL-9	22IE Woodin UST-1 Product 11/07/2020 075RL-10
Evaporation					
n-Pentane / n-Heptane	0.19	0.45	0.64	0.28	0.00
2-Methylpentane / 2-Methylheptane	0.62	1.28	0.81	0.23	0.09
Waterwashing					
Benzene / Cyclohexane	0.09	0.26	0.17	0.09	0.29
Toluene + 2,3,3-Trimethylpentane /	0.00	0.49	0.04	0.04	1.03
Methylcyclohexane					
Aromatics / Total Paraffins (n+iso+cyc)	0.35	0.45	0.28	4.30	1.19
Aromatics / Naphthenes	1.03	2.55	1.11	29.53	3.82
Biodegradation					
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	110.19	31.50	30.62	0.00	70.71
3-Methylhexane / n-Heptane	1.13	0.75	0.42	0.77	0.38
Methylcyclohexane / n-Heptane	3.91	0.76	1.36	4.56	1.38
Isoparaffins + Naphthenes / Paraffins	4.46	3.41	2.43	1.97	3.12
Octane rating					
2,2,4,-Trimethylpentane / Methylcyclohexane	0.00	1.47	0.52	0.10	0.16
$Relative\ percentages\ -\ Bulk\ hydrocarbon\ composition$ as PIANO					
% Paraffinic	13.43	15.25	22.24	6.20	11.01
% Isoparaffinic	35.11	40.13	34.74	9.54	20.26
% Aromatic	25.46	30.43	21.52	79.19	53.70
% Naphthenic	24.81	11.91	19.34	2.68	14.04
% Olefinic	1.19	2.29	2.15	2.38	0.99



Table 3. Summary of the results obtained for Whole Oil Analysis.

	Sample Information	MW-10-201206	MW-12-201207	RW-2-201207	MW-9-201207	MW-44-201207
ı	Type	Product	Product	Product	$\mathbf{Product}$	Product
	Sample Date	12/06/2020	12/07/2020	12/07/2020	12/07/2020	12/07/2020
	MI ID	075RL-1	075RL-2	075RL-3	075RL-4	075RL-5
		Relative %	Relative %	Relative %	Relative %	Relative %
		area	area	area	area	area
1	Propane	0.00	0.00	0.00	0.00	0.00
2	Isobutane	0.00	0.01	0.01	0.00	0.00
3 4	Isobutene Putana/Mathanal	0.03 0.00	$0.16 \\ 0.00$	$0.13 \\ 0.00$	$0.05 \\ 0.00$	0.10 0.00
5	Butane/Methanol trans-2-Butene	0.00	0.00	0.00	0.00	0.00
6	cis-2-Butene	0.00	0.00	0.00	0.00	0.00
7	3-Methyl-1-butene	0.00	0.02	0.00	0.00	0.00
8	Isopentane	0.39	1.16	1.53	1.12	0.64
9	1-Pentene	0.00	0.11	0.04	0.02	0.07
10	2-Methyl-1-butene	0.03	0.17	0.04	0.02	0.16
11	Pentane	0.48	1.48	1.21	1.03	0.94
12	trans-2-Pentene	0.03	0.24	0.07	0.04	0.18
13	cis-2-Pentene/t-Butanol	0.02	0.13	0.05	0.02	0.10
14	2-Methyl-2-butene	0.07	0.45	0.06	0.04	0.40
15	2,2-Dimethylbutane	0.05	0.06	0.12	0.09	0.00
16	Cyclopentane	0.01	0.05	0.00	0.00	0.06
17	2,3-Dimethylbutane/MTBE	0.59	0.62	1.03	0.82	0.74
18	2-Methylpentane	2.00	2.40	3.42	2.82	1.79
19	3-Methylpentane	1.37	1.56	2.24	1.89	1.21
20	Hexane	2.18	2.73	2.72	2.81	2.04
21	trans-2-Hexene	0.08	0.41	0.06	0.15	0.38
22	3-Methylcyclopentene	0.15	0.26	0.16	0.22	0.38
23	3-Methyl-2-pentene	0.08	0.20	0.14	0.15	0.14
24	cis-2-Hexene	0.09	0.40	0.13	0.18	0.38
25	3-Methyl-trans-2-pentene	0.11	0.07	0.14	0.11	0.05
26	Methylcyclopentane	1.46	2.49	2.08	2.03	2.46
27 28	2,4-Dimethylpentane Benzene	$1.01 \\ 0.14$	0.71 0.61	$1.74 \\ 0.10$	$0.99 \\ 0.10$	$0.53 \\ 0.82$
29	5-Methyl-1-hexene	0.14	0.01	0.10	0.10	0.13
30	Cyclohexane	0.57	1.00	0.65	0.69	1.06
31	2-Methylhexane/TAME	2.47	1.65	2.95	2.27	1.38
32	2,3-Dimethylpentane	2.46	1.44	4.01	2.28	1.08
	3-Methylhexane	3.01	0.00	3.24	2.71	1.86
	A 1-trans-3-Dimethylcyclopentane	1.10	1.26	1.34	1.11	1.64
	B 1-cis-3-Dimethylcyclopentane	1.73	2.20	1.25	1.76	2.24
35	2,2,4-Trimethylpentane	3.84	2.23	7.63	3.87	1.42
36	n-Heptane	4.34	3.82	3.12	3.81	3.45
37	Methylcyclohexane	3.41	4.14	2.16	3.33	4.35
38	2,5-Dimethylhexane	0.85	0.47	1.21	0.70	0.53
39	2,4-Dimethylhexane	1.53	0.97	1.57	1.34	0.66
40	2,3,4-Trimethylpentane	1.96	1.45	3.07	1.93	1.24
	A Toluene/2,3,3-Trimethylpentane	1.54	1.29	2.04	1.32	1.10
	3 2,3,3-Trimethylpentane	0.23	0.16	0.12	0.20	0.16
42	2,3-Dimethylhexane	1.92	1.31	0.00	1.60	1.22
43	2-Methylheptane	3.55	2.69	2.23	2.66	2.66
44 45	v 1	$1.10 \\ 0.42$	0.67	0.82	0.84	0.84
	A 3-Ethyl-3-methylpentane	2.48	$0.25 \\ 2.34$	0.39 $1.33$	$0.34 \\ 2.40$	$0.41 \\ 2.44$
	3 1,4-Dimethylcyclohexane	2.48	1.40	1.96	1.90	$\frac{2.44}{1.27}$
47	,	1.06	0.77	1.01	0.86	0.72
48	2,2,5-Trimethylhexane	0.99	1.05	0.45	0.77	1.11
49	n-Octane	5.53	4.49	2.91	3.52	4.43
50	2,2-Dimethylheptane	0.39	0.35	0.18	0.30	0.37
51	2,4-Dimethylheptane	0.42	0.24	0.50	0.31	0.46
52	Ethylcyclohexane	2.58	2.52	1.16	1.88	2.65
02						
53	2,6-Dimethylheptane	1.40	0.55	0.93	0.69	3.46

 $(continued\ ...)$ 



Table 3 (continued). Summary of the results obtained for Whole Oil Analysis.

1	Sample Information	MW-10-201206	MW-12-201207	RW-2-201207	MW-9-201207	MW-44-201207
	Туре	Product	Product	Product	Product	Product
	Sample Date	12/06/2020	12/07/2020	12/07/2020	12/07/2020	12/07/2020
	MI ID	075RL-1	075RL-2	075RL-3	$075 \mathrm{RL-4}$	075 RL-5
		Relative %	Relative $\%$	Relative %	Relative $\%$	Relative %
		area	area	area	area	area
55	m+p Xylenes	1.44	2.52	1.79	1.59	2.33
56	4-Methyloctane	1.21	0.74	0.00	0.90	0.70
57	2-Methyloctane	1.44	0.86	1.73	1.05	0.82
58	3-Ethylheptane	0.40	0.00	0.24	0.30	0.21
59	3-Methyloctane	2.30	1.72	1.30	1.89	2.02
60	o-Xylene	0.40	1.28	0.20	0.32	0.79
61	1-Nonene	0.69	0.53	0.41	0.51	0.53
62	n-Nonane	3.33	2.73	1.70	2.39	2.73
63	Isopropylbenzene	0.32	0.30	0.34	0.38	0.23
64	3,3,5-Trimethylheptane	0.44	0.39	0.29	0.33	0.38
65	2,4,5-Trimethylheptane	1.28	1.17	0.57	0.91	1.21
66	n-Propylbenzene	0.90	0.91	0.97	1.10	0.61
67	1-Methyl-3-ethylbenzene	0.20	2.11	1.47	1.20	2.36
68	1-Methyl-4-ethylbenzene	0.57	1.33	1.13	1.20	1.44
69	1,3,5-Trimethylbenzene	1.81	2.28	2.19	2.35	2.48
70	3,3,4-Trimethylheptane	0.78	0.60	0.42	0.57	0.60
71	1-Methyl-2-ethylbenzene	1.00	1.17	1.22	1.56	1.34
72	3-Methylnonane	0.42	0.37	0.29	0.33	0.36
73	1,2,4-Trimethylbenzene	1.20	4.58	4.46	4.34	4.65
74	Isobutylbenzene	0.33	0.28	0.21	0.26	0.28
75	sec-Butylbenzene	0.47	0.37	0.33	0.37	0.36
76	n-Decane	2.01	1.71	0.98	1.46	1.73
77	1,2,3-Trimethylbenzene	0.21	1.59	1.49	1.41	1.43
78	Indan	0.56	0.63	0.26	0.50	0.61
79	1,3-Diethylbenzene	1.72	1.40	1.54	1.65	1.41
80	1,4-Diethylbenzene	1.34	1.40	1.27	1.38	1.44
81	n-Butylbenzene	0.43	0.26	0.23	0.32	0.25
82	1,3-Dimethyl-5-ethylbenzene	1.05	1.10	0.99	1.11	1.17
83	1,4-Dimethyl-2-ethylbenzene	0.34	0.26	0.19	0.26	0.26
84	1,3-Dimethyl-4-ethylbenzene	1.71	1.60	1.50	1.65	1.73
85	1,2-Dimethyl-4-ethylbenzene	0.29	0.26	0.40	0.60	0.69
86	Undecene	0.31	0.29	0.13	0.23	0.30
87	1,2,4,5-Tetramethylbenzene	0.88	0.69	0.74	0.83	0.70
88	1,2,3,5-Tetramethylbenzene	0.95	1.01	1.00	1.05	1.04
89	1,2,3,4-Tetramethylbenzene	0.80	0.69	0.60	0.72	0.71
90	Naphthalene	0.52	0.48	0.28	0.42	0.50
91	2-Methyl-naphthalene	0.51	0.51	0.58	0.59	0.46
	1-Methyl-naphthalene	0.22	0.23	0.27	0.30	0.22



Table 4. Summary of the results obtained for Whole Oil Analysis.

	Sample Information Type Sample Date MI ID	MW-19-201207 Product 12/07/2020 075RL-6 Relative %	MW-16-201207 Product 12/07/2020 075RL-7 Relative %	MW-21-201208 Product 12/08/2020 075RL-8 Relative %	MW-27-201208 Product 12/08/2020 075RL-9 Relative %	22IE Woodin UST-1 Product 11/07/2020 075RL-10 Relative %
		area	area	area	area	area
1	Propane	0.00	0.00	0.00	0.00	0.00
2	Isobutane	0.00	0.01	0.02	0.00	0.00
3	Isobutene	0.05	0.10	0.39	0.00	0.00
4	Butane/Methanol	0.00	0.00	0.00	0.00	0.00
5 6	trans-2-Butene cis-2-Butene	0.00	0.00	0.00	0.00	0.00
7	3-Methyl-1-butene	0.00 0.00	$0.00 \\ 0.01$	0.00 0.03	0.00 0.00	0.00 0.00
8	Isopentane	0.48	1.60	1.99	0.03	0.00
9	1-Pentene	0.48	0.02	0.12	0.00	0.00
10	2-Methyl-1-butene	0.01	0.04	0.04	0.00	0.00
11	Pentane	0.38	1.62	2.79	0.04	0.00
12	trans-2-Pentene	0.00	0.08	0.12	0.00	0.00
13	cis-2-Pentene/t-Butanol	0.00	0.04	0.05	0.00	0.00
14	2-Methyl-2-butene	0.04	0.10	0.19	0.00	0.00
15	2,2-Dimethylbutane	0.04	0.10	0.07	0.00	0.00
16	Cyclopentane	0.00	0.00	0.02	0.00	0.00
17	2,3-Dimethylbutane/MTBE	0.51	0.81	0.87	0.03	0.05
18	2-Methylpentane	1.74	3.12	2.41	0.06	0.22
19	3-Methylpentane	1.44	2.00	1.64	0.05	0.21
20	Hexane	1.06	3.01	3.50	0.06	0.79
21	trans-2-Hexene	0.03	0.20	0.26	0.00	0.08
22	3-Methylcyclopentene	0.05	0.25	0.13	0.00	0.08
23	3-Methyl-2-pentene	0.00	0.19	0.07	0.00	0.04
24	cis-2-Hexene	0.03	0.28	0.11	0.00	0.12
25	3-Methyl-trans-2-pentene	0.08	0.11	0.07	0.00	0.03
26	Methylcyclopentane	3.01	2.21	3.65	0.12	0.93
27	2,4-Dimethylpentane	0.23	1.10	0.23	0.02	0.21
28	Benzene	0.16	0.21	0.32	0.01	0.43
29	5-Methyl-1-hexene	0.10	0.22	0.08	0.00	0.07
30	Cyclohexane	1.85	0.81	1.90	0.10	1.47
31	2-Methylhexane/TAME	1.22	2.36	1.27	0.07	1.30
32	2,3-Dimethylpentane	0.91	2.33	0.69	0.06	0.61
33	3-Methylhexane	2.26	2.72	1.85	0.11	1.58
	A 1-trans-3-Dimethylcyclopentane	2.64	1.04	1.72	0.16	1.07
	3 1-cis-3-Dimethylcyclopentane	3.85	1.64	1.89	0.20	1.36
35	, ,	0.00	4.04	3.09	0.07	0.93
36	n-Heptane	2.01	3.62	4.37	0.14	4.19
37	Methylcyclohexane	7.84	2.76	5.95	0.65	5.79
38	2,5-Dimethylhexane	1.53	0.73	1.14	0.09	0.55
39 40	2,4-Dimethylhexane 2,3,4-Trimethylpentane	$0.59 \\ 0.42$	1.37 $2.05$	$0.46 \\ 0.60$	$0.06 \\ 0.06$	$0.61 \\ 1.07$
		0.42	1.34	0.23	0.00	5.98
	A Toluene/2,3,3-Trimethylpentane 3 2,3,3-Trimethylpentane	0.06	0.20	0.25	0.02	0.09
42	2,3-Dimethylhexane	1.18	1.55	0.85	0.17	1.14
43	2-Methylheptane	2.83	2.44	2.99	0.26	2.61
44		0.66	0.81	0.51	0.07	0.66
45	3.4-Dimethylhexane	0.23	0.33	0.15	0.04	0.23
	A 3-Ethyl-3-methylpentane	4.22	1.65	2.96	0.84	2.33
	3 1,4-Dimethylcyclohexane	1.10	1.88	0.96	0.14	1.44
	3-Methylheptane	0.19	0.81	0.00	0.12	0.38
48	2,2,5-Trimethylhexane	1.59	0.64	1.13	0.28	0.59
49	n-Octane	4.43	3.67	5.19	0.92	4.39
50	2,2-Dimethylheptane	0.55	0.26	0.38	0.14	0.26
51	2,4-Dimethylheptane	0.81	0.28	0.54	0.28	0.30
52	Ethylcyclohexane	4.51	1.57	3.25	1.31	1.98
53	2,6-Dimethylheptane	0.52	0.98	0.35	0.24	0.71
54	Ethylbenzene	1.62	1.02	1.27	0.54	2.52

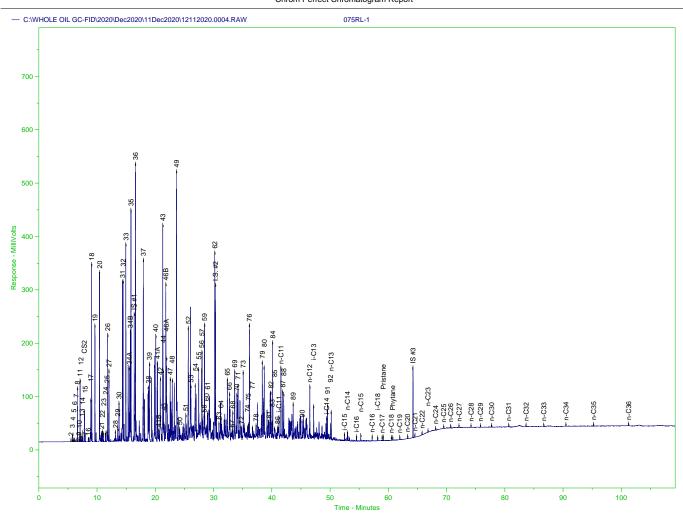
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Table 4 (continued). Summary of the results obtained for Whole Oil Analysis.

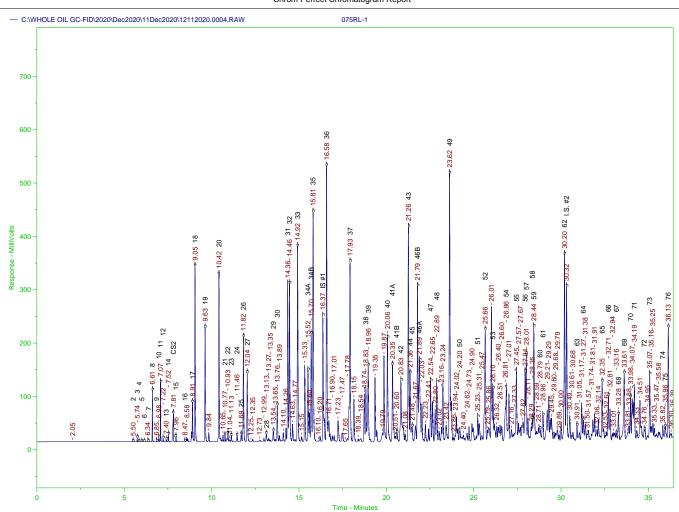
	Sample Information	MW-19-201207	MW-16-201207	MW-21-201208	MW-27-201208	22IE Woodin UST-1
1	Туре	Product	Product	Product	Product	Product
1	Sample Date	12/07/2020	12/07/2020	12/08/2020	12/08/2020	11/07/2020
1	MI ID	075RL-6	075RL-7	075RL-8	075RL-9	075RL-10
	WII ID	Relative %	Relative %	Relative %	Relative %	Relative %
		area	area	area	area	area
55	m+p Xylenes	1.95	1.65	3.07	0.64	9.13
56	4-Methyloctane	0.74	2.18	0.86	0.04	0.55
57	2-Methyloctane	0.74	0.00	1.29	0.29	0.84
58	3-Ethylheptane	0.86	0.28	0.59	0.53	0.32
59	3-Methyloctane	2.62	1.50	1.94	0.94	0.90
60	o-Xylene	0.63	0.48	0.83	0.30	3.52
61	1-Nonene	0.03	0.45	0.00	0.30	0.30
62	n-Nonane	2.69	2.08	3.46	1.47	0.98
63	Isopropylbenzene	0.37	0.33	0.27	0.29	0.25
	3,3,5-Trimethylheptane	0.57	0.33		0.29	0.23
64	2,4,5-Trimethylheptane	3.19	0.29	0.47 $2.08$	1.32	0.13
65	n-Propylbenzene	0.61			0.86	
66			1.13	0.57		0.88
67	1-Methyl-3-ethylbenzene	0.26	2.06	$0.82 \\ 0.84$	$0.45 \\ 1.31$	3.49
68	1-Methyl-4-ethylbenzene	0.85	1.29			1.43
69	1,3,5-Trimethylbenzene	2.31	2.40	1.79	3.33	1.94
70	3,3,4-Trimethylheptane	1.26	0.50	0.83	0.99	0.36
71	1-Methyl-2-ethylbenzene	0.66	1.25	0.46	0.63	0.44
72	3-Methylnonane	0.75	0.28	0.44	1.33	0.12
73	1,2,4-Trimethylbenzene	0.58	5.31	1.52	1.95	6.34
74	Isobutylbenzene	0.40	0.22	0.29	0.65	0.22
75	sec-Butylbenzene	0.67	0.33	0.43	1.16	0.19
76	n-Decane	2.87	1.25	2.93	3.57	0.65
77	1,2,3-Trimethylbenzene	0.63	1.25	1.27	2.13	1.68
78	Indan	0.56	0.40	0.51	1.49	1.30
79	1,3-Diethylbenzene	1.71	1.46	1.12	3.87	1.25
80	1,4-Diethylbenzene	0.87	1.24	0.62	4.00	1.23
81	n-Butylbenzene	0.56	0.21	0.35	1.39	0.26
82	$1,\!3\text{-}Dimethyl-5\text{-}ethylbenzene$	0.84	1.06	0.73	3.33	1.22
83	1,4-Dimethyl-2-ethylbenzene	0.65	0.22	0.36	1.75	0.34
84	1,3-Dimethyl-4-ethylbenzene	1.49	1.58	0.78	2.94	2.08
85	$1,\!2\text{-}Dimethyl-4\text{-}ethylbenzene$	0.92	0.50	0.82	5.49	0.22
86	Undecene	0.69	0.19	0.50	1.94	0.28
87	1,2,4,5-Tetramethylbenzene	0.54	0.75	0.30	2.06	0.95
88	1,2,3,5-Tetramethylbenzene	1.34	1.05	0.43	2.94	1.31
89	1,2,3,4-Tetramethylbenzene	1.20	0.63	0.65	5.80	0.86
90	Naphthalene	1.13	0.35	0.42	4.68	0.59
91	2-Methyl-naphthalene	0.91	0.48	0.29	13.47	2.77
92	1-Methyl-naphthalene	1.00	0.24	0.16	11.71	0.89





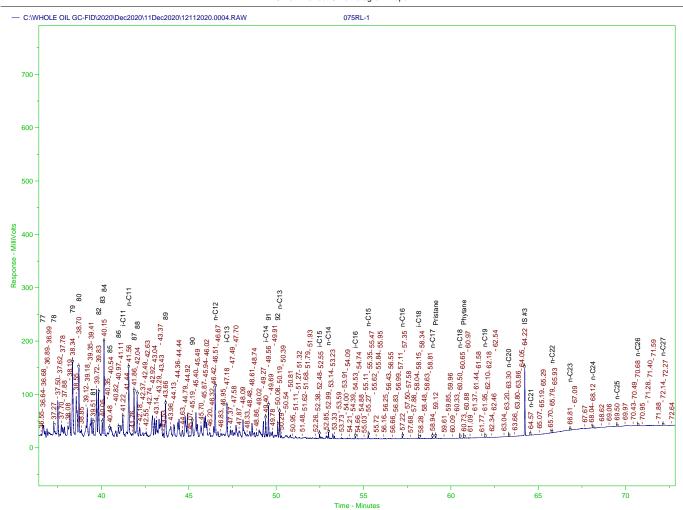
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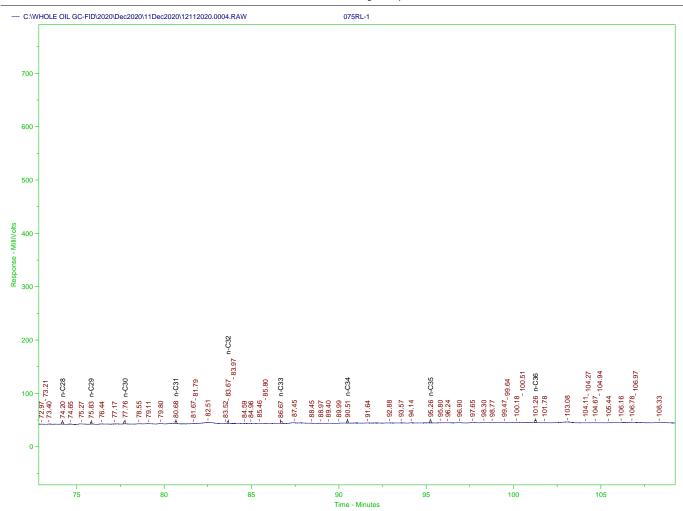


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Sample Name = 075RL-1

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12412020} \\ \textbf{2020} \\ \textbf{125:22} \ AM \\ \textbf{125:22} \ AM \\ \textbf{125:22} \ AM \\ \textbf{125:22} \ AM \\ \textbf{125:22} \ AM \\ \textbf{125:22} \ AM \\ \textbf{125:22} \ AM \\ \textbf{125:23} \\ \textbf{125:23} \\ \textbf{125:24} \\ \textbf{125:25} 

Method File Name = C:\1 - A Backup\C3442020.met Method Version = 22

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
	2.05	0.0003	200.97
2	5.50	0.0008	544.33
3	5.74	0.0141	9219.20
	6.34	0.0013	859.90
8	6.61	0.2008	131555.00
9	6.85	0.0014	942.47
10	6.98	0.0160	10455.27
11	7.07	0.2510	164428.30
12	7.22	0.0150	9825.41
13	7.40	0.0098	6402.12
14	7.52	0.0363	23769.18
CS2	7.81	0.2433	159406.00
15	7.96	0.0249	16343.78
16	8.47	0.0026	1728.80
10	8.58	0.0376	24651.77
17	8.91	0.3034	198795.40
18	9.05	1.0344	677716.20
19	9.63	0.7091	464618.70
10	9.84	0.0574	37592.84
20	10.42	1.1296	740088.40
20	10.65	0.0426	27918.57
21	10.03	0.0440	28800.14
22	10.77	0.0440	51062.49
22	11.04	0.0779	7815.72
23	11.13	0.0419	27467.31
24	11.46	0.0419	29730.74
25	11.69	0.0434	36557.03
26 26	11.82	0.0556	
26 27	12.04	0.7545	494346.10 343774.70
21	12.04	0.0030	1933.84
	12.25		
	12.73	0.0239 0.0226	15632.65 14812.32
	12.73	0.0226	17755.85
00			
28	13.13	0.0729	47792.14
	13.27	0.0272	17845.69
00	13.35	0.0147	9605.31
29	13.54	0.1051	68879.92
00	13.65	0.0183	12003.92
30	13.76	0.2978	195117.20
	13.89	0.0628	41140.08
	14.10	0.0733	48051.70
24	14.26	0.1104	72327.72
31	14.36	1.2819	839890.10
32	14.46	1.2766	836403.90
	14.63	0.1451	95046.73
00	14.77	0.0210	13750.22
33	14.92	1.5597	1021878.00
	15.15	0.0445	29144.57
044	15.33	0.6233	408365.40
34A	15.52	0.5719	374719.60
0.40	15.60	0.2312	151456.00
34B	15.70	0.8983	588570.20
35	15.81	1.9920	1305131.00
	16.10	0.0084	5487.39
	16.20	0.0519	34010.35
IS #1	16.37	1.2245	802273.20
36	16.58	2.2515	1475190.00
	16.71	0.2749	180085.90

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		ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	16.90	0.0483	31646.81
	17.01	0.0629	41234.88
	17.23	0.2497	163632.10
	17.47	0.1216	79669.84
	17.65	0.0035	2280.93
	17.78	0.0383	25116.97
37	17.93	1.7675	1158037.00
	18.15	0.4158	272442.30
	18.39		15355.17
		0.0234	
	18.54	0.0421	27553.94
	18.74	0.3868	253438.00
38	18.83	0.4424	289861.30
39	18.96	0.7953	521045.30
	19.35	0.6413	420173.10
	19.79	0.1223	80097.06
	19.87	0.8158	534509.90
40	20.06	1.0163	665893.40
11A	20.35	0.7990	523524.30
	20.51	0.0525	34422.90
11B			
	20.60	0.1200	78610.43
12	20.83	0.9969	653169.60
	21.08	0.0665	43552.67
13	21.26	1.8409	1206122.00
14	21.36	0.5721	374859.90
<del>15</del>	21.48	0.2191	143532.30
+0			
	21.67	0.2186	143238.10
16B	21.79	1.3008	852250.90
16A	21.89	1.2865	842898.20
	22.03	0.3316	217259.50
	22.23	0.1512	
			99076.16
	22.41	0.1071	70143.57
17	22.54	0.5471	358484.00
	22.65	0.3687	241589.80
	22.80	0.2632	172428.50
18	22.89	0.5131	336163.70
10			
	23.02	0.1192	78128.99
	23.16	0.1242	81345.26
	23.24	0.5244	343569.70
	23.42	0.2913	190860.80
19	23.62	2.8654	1877350.00
	23.86	0.0321	21058.67
	23.94	0.0459	30069.04
	24.02	0.3523	230818.90
50	24.20	0.2038	133515.80
	24.40	0.0894	58559.10
	24.62	0.1178	77169.13
	24.73	0.1325	86830.27
	24.90	0.4070	266670.70
51	25.23	0.2168	142054.40
	25.31	0.2229	146015.40
	25.47	0.0794	51990.45
-0			
52	25.66	1.3390	877290.80
	25.79	0.0974	63807.27
	25.86	0.2448	160359.40
	26.01	1.1981	784993.40
53	26.10	0.7232	473833.70
,,,			
	26.32	0.1454	95250.97
	26.40	0.1827	119710.50
	26.51	0.1695	111048.30
	26.60	0.1719	112597.90
	26.81	0.3609	236463.60
- 4			
54	26.86	0.6276	411176.80
	27.01	0.4470	292900.00
	27.16	0.1641	107500.60
	27.33	0.1607	105274.60
= E			
55	27.45	0.7460	488763.30
	27.57	0.1804	118210.00
	27.67	0.1880	123170.80
	27.82	0.4277	280195.60

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Chrom Perfect Chromatogram Report					
Peak Name	Ret. Time	Area %	Area		
57	28.01	0.7489	490647.30		
	28.11	0.2580	169014.60		
	28.29	0.1340	87770.49		
58	28.35	0.2092	137062.00		
59	28.44	1.1946	782704.70		
	28.59	0.1555	101862.70		
	28.71	0.1405	92062.73		
60	28.79	0.2084	136563.60		
61	28.96	0.3582	234677.80		
	29.21	0.4537	297262.30		
	29.29	0.4397	288075.10		
	29.45	0.4804	314785.40		
	29.60	0.0902	59101.01		
	29.68	0.0727	47664.84		
	29.79	0.1834	120135.60		
	29.89	0.0620	40595.66		
00	30.00	0.1899	124404.80		
62	30.20	1.7265	1131167.00		
I.S. #2	30.32	1.4512	950826.10		
	30.49	0.3060	200483.40		
	30.61	0.0602	39433.64		
60	30.68	0.1156	75745.05		
63	30.91	0.1657	108535.50		
	31.05	0.1291	84592.19		
64	31.17	0.3780	247687.70		
64	31.27	0.2302	150828.50		
	31.38	0.2176 0.0774	142557.50 50733.21		
	31.50 31.57	0.1774	87116.30		
	31.74	0.0721	47221.89		
	31.81 31.91	0.2447 0.2629	160344.40 172255.00		
	32.06	0.2629	110162.50		
	32.14	0.1661	196022.20		
65	32.35	0.2992	435523.10		
03	32.53	0.0607	39772.12		
	32.53	0.0807	63989.29		
66	32.71	0.4650	304657.90		
00	32.81	0.3632	237943.40		
	32.94	0.0747	48956.84		
	33.01	0.1664	109034.60		
67	33.16	0.1056	69199.98		
68	33.28	0.2950	193302.40		
69	33.61	0.9379	614516.40		
	33.81	0.1360	89124.06		
	33.88	0.1849	121141.80		
70	33.98	0.4064	266267.00		
	34.07	0.6764	443179.40		
71	34.19	0.5187	339833.40		
	34.33	0.1675	109731.40		
	34.51	0.6543	428676.00		
72	34.76	0.2173	142359.40		
	34.95	0.0864	56630.91		
73	35.07	0.6244	409116.40		
	35.16	0.1548	101433.10		
	35.25	0.1919	125743.10		
	35.33	0.1356	88817.30		
	35.47	0.1465	95981.16		
	35.58	0.2236	146489.20		
74	35.82	0.1697	111208.50		
75	35.96	0.2412	158052.90		
76	36.13	1.0439	683952.60		
	36.30	0.1488	97484.40		
	36.39	0.0685	44859.18		
	36.55	0.0961	62984.57		
77	36.64	0.1079	70711.63		
	36.68	0.2274	148970.60		
	36.89	0.1075	70453.80		
	36.99	0.2518	164960.40		
78	37.27	0.2913	190847.70		

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	37.50	0.3816	249994.60	
	37.62	0.0604	39585.81	
	37.70	0.1432	93834.23	
	37.78	0.1408	92265.89	
	37.88	0.1996	130799.40	
	38.08	0.1612	105586.50	
	38.19	0.3355	219807.20	
79	38.34	0.8919	584389.40	
	38.55	0.6294	412407.50	
80	38.70	0.6967	456493.20	
	38.85	0.1490	97609.10	
	39.12	0.2230	146120.40	
	39.18	0.3297	215996.90	
	39.35	0.1549	101490.90	
	39.41	0.2294	150277.00	
81	39.51	0.2252	147568.50	
01	39.72	0.5192	340155.40	
82	39.83	0.5432	355929.40	
83	40.05 40.15	0.1764	115554.20 570361.30	
84	40.15	0.8841	579261.20	
0.5	40.35	0.1003	65733.43	
85	40.48	0.1485	97285.91	
	40.54	0.2583	169210.80	
	40.82	0.1530	100218.70	
86	40.97	0.1616	105866.10	
	41.11	0.1905	124826.80	
i-C11	41.22	0.3421	224161.50	
	41.44	0.1300	85186.37	
n-C11	41.56	0.7679	503147.80	
	41.76	0.0673	44082.22	
87	41.86	0.4558	298645.70	
88	42.04	0.4928	322845.70	
00				
	42.18	0.1623	106315.30	
	42.37	0.1199	78586.55	
	42.49	0.0863	56572.98	
	42.55	0.0851	55734.78	
	42.63	0.0498	32622.95	
	42.74	0.0426	27924.18	
	42.92	0.4073	266858.60	
	43.04	0.2293	150225.00	
	43.14	0.2683	175771.20	
	43.29	0.1991	130459.10	
	43.37	0.1457	95445.35	
	43.43	0.2589	169598.50	
	43.53	0.0640	41958.00	
89	43.66	0.4140	271237.60	
	43.96	0.3302	216311.70	
	44.13	0.2795	183153.00	
	44.36	0.1771	116029.60	
	44.44	0.2655	173940.10	
	44.63	0.1321	86552.80	
	44.79	0.3339	218796.10	
	44.92	0.2505	164104.30	
	45.07	0.0547	35829.82	
90	45.19	0.2691	176324.80	
	45.40	0.3602	235969.40	
	45.49	0.1614	105746.80	
	45.70	0.2760	180839.20	
	45.87	0.2095	137264.80	
	45.94	0.2272	148874.20	
	46.02	0.1835	120204.30	
	46.20	0.1344	88033.07	
		0.0565		
	46.32		37002.63	
- C40	46.42	0.1199	78559.65	
n-C12	46.51	0.4829	316413.30	
	46.67	0.1252	82008.09	
	46.83	0.0957	62709.73	
	46.95	0.1216	79699.01	
i-C13	47.18	0.3913	256398.30	
1010	47.37	0.1155	75692.41	

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Peak Name	Chrom Perfect Chromatogram Report				
47.58 0.0925 60610.27 47.70 0.2284 149847.90 47.87 0.1829 119831.90 48.03 0.3280 214919.30 48.03 0.0738 51640.82 48.03 0.0738 51640.82 48.63 0.1080 10400.70 48.64 0.1080 10400.70 48.74 0.1122 73509.68 49.02 0.2557 167517.90 49.02 0.2557 167517.90 191 49.58 0.2035 172853.09 191 49.58 0.2035 172853.20 49.91 0.2035 172853.20 49.91 0.2035 172853.20 49.91 0.0091 59711.57 52 50.08 0.1158 75886.41 6.00 0.0911 59711.57 50.29 0.0350 22560.14 50.03 0.0193 12855.81 50.05 0.019 0.1951 127796.60 50.39 0.0193 12855.81 50.05 0.019 0.1951 127796.60 50.39 0.0193 12855.81 50.51 0.008 0.1118 73301.21 50.51 0.008 0.0193 12855.81 50.52 0.008 0.1118 73301.21 50.53 0.009 0.0193 12855.81 50.54 0.0119 0.0084 42848.52 50.55 0.009 0.0090 11951 127796.60 50.39 0.0193 12855.81 50.56 0.0090 0.0091 14399.69 50.57 0.0091 14399.69 50.58 0.0090 0.0091 14399.69 50.59 0.0090 0.0091 14399.69 50.50 0.0090 0.0091 14399.69 50.50 0.0090 0.0091 14399.69 50.50 0.0090 0.0091 14399.69 50.50 0.0090 0.0091 14399.69 50.50 0.0090 0.0091 14399.69 50.50 0.0090 0.0091 14399.69 50.50 0.0090 0.00	Peak Name				
47.70 0.2284 1.49647.90   47.87 0.12829 119831.90   48.09 0.3280 2.14919.30   48.03 0.3280 2.14919.30   48.133 0.0788 51640.82   48.44 0.1318 86381.14   48.65 0.1007 6599.187   49.02 0.2557 167517.90   49.02 0.2557 167517.90   49.02 0.2557 167517.90   49.127 0.1813 118794.10   91 49.56 0.2635 172635.20   49.86 0.0713 46738.32   49.87 0.0959 62811.55   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.03 0.0913 127768.50   76.04 0.1119 73301.21   76.03 0.0913 127768.50   76.04 0.1119 73301.21   76.03 0.0913 127768.50   76.04 0.1119 73301.21   76.03 0.0913 127768.50   76.04 0.1119 73301.21   76.05 0.95 0.0995 12786.03   76.11 0.0649 42549.52   76.05 0.095 0.0913 1342.45   76.06 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.16 0.0213 1342.45   76.17 0.0014   76.18 0.0014   7					
47.87					
48.09   0.3280   214919.30   48.33   0.0788   51640.82   48.48   0.1518   86831.14   48.61   0.1600   1.0400.70   48.74   0.1122   7.3509.68   49.02   0.2557   167517.30   65990.87   49.02   0.2557   167517.30   65990.87   49.02   0.2557   167517.30   65990.87   49.02   0.2557   167517.30   65990.87   49.02   0.2557   167517.30   65990.87   49.02   0.2557   167517.30   65990.87   49.02   0.0559   62811.56   62811					
48.33					
## 48.49					
48.61					
48.74					
49.02					
Heart   Hear		48.86	0.1007	65990.87	
i-C14 91 49.56 92 49.69 0.2035 133344.90 91 49.56 0.2635 172635.20 49.78 0.0959 6.6281.56 49.78 0.0991 59.711.57 92 50.08 0.1158 75.711 0.0911 127796.60 50.29 0.0350 2.2960.14 50.54 0.1119 73301.21 50.95 50.95 0.0193 12656.81 50.95 50.95 0.0193 12765.81 50.91 50.95 50.95 0.0193 12765.81 50.91 50.95 50.95 0.0193 12765.81 50.91 50.95 50.95 0.0193 12765.81 12778.03 12785.0			0.2557	167517.90	
91				118794.10	
49.78 49.78 0.0959 6.62811.56 49.71 92 50.08 0.1158 75.019 0.0951 127796.60 50.29 0.0350 2.2960.14 50.54 0.0193 12655.81 50.54 0.0193 12655.81 50.64 0.0193 12655.81 50.64 0.0193 12655.81 50.81 0.0649 42549.52 50.95 50.95 0.0195 51.11 0.0464 340.02.3 51.17 0.0171 11213.07 51.32 0.0251 164.07 51.48 0.0219 14359.49 51.62 0.0213 13942.45 51.62 0.0213 13942.45 51.68 0.0215 1440.76 151.93 0.0450 252.86 0.0142 282.81 51.93 151.93 0.0450 252.88 0.0050 327.82 52.38 0.0050 327.82 52.38 0.0050 327.82 53.33 0.0567 4383.34 0.0560 327.82 53.33 0.0567 4383.34 53.23 0.0567 4383.34 53.23 0.0567 4383.34 53.23 0.0567 4383.35 1-C14 52.99 0.0500 327.82 53.39 0.0501 327.82 53.59 0.0011 465.05 66.60 0.0037 245.06 66.77 37.12 66.75 66.75 0.0044 226.75 67.74 0.0044 226.75 67.74 0.0044 226.75 67.74 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 55.75 0.0046 30.06.82 50.06.83 0.0059 30.06.82 50.06.83 0.0059 30.06.82 50.06.83 0.0059 30.06.82 50.06.83 0.0059 30.06.82 50.06.83 0.00061 30.0006					
49.78 49.91 0.0991 5971.57 92 50.08 0.0191 0.1951 127796.60 50.39 0.0350 0.2980.14 50.039 0.0193 1.2655.81 50.81 50.81 50.81 50.81 50.95 50.95 0.0195 1.27755.03 51.11 0.0464 3.0409.23 51.27 0.0171 1.1213.07 51.32 0.0251 51.48 0.0219 1.4359.49 51.62 0.0213 1.399.49 51.62 0.0213 1.399.49 51.62 0.0215 1.4066.10 51.79 0.0189 1.2392.79 51.93 0.0450 2.2510.08 51.93 0.0450 2.2510.08 52.26 0.0142 2.285.17 6.161 52.28 0.0050 3.295.32 6.26 0.0402 2.2635.1.22 6.26 0.0402 2.264 0.041 0.0	91				
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51.11         0.0464         30409.23           51.27         0.0171         11213.07           51.32         0.0251         1640.76           51.48         0.0219         14359.49           51.62         0.0213         13942.45           51.68         0.0215         14056.10           51.79         0.0189         12392.79           61.93         0.0450         29510.08           52.26         0.0142         9289.17           62.38         0.0050         3295.32           1-C15         52.48         0.0357         23387.47           52.55         0.0402         26351.22           52.85         0.0466         29190.30           n-C14         52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.59         0.0051         3329.57           53.73         0.0051         3329.57           53.73         0.0174         11407.34           54.09         0.0071         4650.54           54.09         0.0071         4650.54           54.09         0.0071         4650.5					
51.27         0.0171         11213.07           51.32         0.0251         16440.76           51.48         0.0219         14359.49           51.62         0.0213         13942.45           51.68         0.0215         14056.10           51.79         0.0189         12392.79           51.93         0.0450         29810.08           52.26         0.0142         9289.17           52.38         0.0050         3295.32           i-C15         52.48         0.0357         2387.47           52.255         0.0402         26351.22           52.85         0.0446         29190.30           n-C14         52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.33         0.0248         16282.09           53.73         0.0174         11407.34           53.91         0.0031         205.80           54.09         0.0071         4865.54           54.09         0.0071         4865.54           54.99         0.0050         3285.83           i-C16         54.53         0.022 </td <td></td> <td></td> <td></td> <td></td>					
51.48         0.0219         14359.49           51.62         0.0213         13942.45           51.68         0.0215         14056.10           51.79         0.0189         12392.79           52.66         0.0142         9289.17           52.38         0.0050         3295.32           i-C15         52.48         0.0357         23387.47           52.85         0.0402         26351.22           52.85         0.0466         29190.30           n-C14         52.99         0.0500         32782.59           53.23         0.0357         23395.02           53.33         0.0248         16262.09           53.59         0.0051         3329.57           53.73         0.0174         11407.34           53.91         0.0071         4563           54.09         0.0071         4565.54           54.09         0.0071         4565.54           54.21         0.0101         6627.73           65.43         0.0222         14518.57           1-C16         54.53         0.0222         14518.57           65.03         0.0027         1775.34           55.03         0.0027 <td></td> <td></td> <td></td> <td></td>					
51.62         0.0213         13942.45           51.68         0.0215         14056.10           51.79         0.0189         12392.79           51.93         0.0450         2989.17           52.26         0.0142         9289.17           52.38         0.0050         3295.32           i-C15         52.48         0.0357         2337.47           52.55         0.0402         26351.22           52.85         0.0446         29190.30           63.14         0.0067         4363.34           53.14         0.0067         4363.34           63.33         0.0248         16262.09           53.59         0.0051         3329.57           53.73         0.0174         11407.34           53.91         0.0031         2005.80           54.09         0.0071         4650.54           54.09         0.0071         4650.54           54.39         0.0050         3255.83           i-C16         54.53         0.0222         14518.57           54.88         0.009         3395.46           55.11         0.0031         205.05           55.47         0.004         2275.58		51.32	0.0251	16440.76	
51.68         0.0215         14056.10           51.79         0.0189         12392.79           51.93         0.0450         29510.08           52.26         0.0142         9289.17           52.38         0.0050         3295.32           i-C15         52.48         0.0357         23387.47           52.85         0.0402         26351.22           52.85         0.0446         29190.30           n-C14         52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.33         0.0248         16262.09           53.59         0.0051         3329.57           53.73         0.0174         11407.34           54.00         0.0044         2898.53           54.09         0.0071         4565.54           54.21         0.0101         6627.73           54.23         0.0021         458.65           54.40         0.0022         14518.57           i-C16         54.53         0.0222         14518.57           54.88         0.0025         1610.75           54.88         0.0027 <td></td> <td></td> <td></td> <td></td>					
51.79         0.0189         12392.79           51.93         0.0450         29510.08           52.26         0.0142         9289.17           52.38         0.0050         3295.32           52.55         0.0402         26351.22           52.85         0.0402         26351.22           52.85         0.0406         29190.30           n-C14         52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.33         0.0248         16262.09           53.73         0.0174         11407.34           54.00         0.0041         2898.53           54.00         0.0044         2898.53           54.09         0.0071         4650.54           54.21         0.0101         6627.73           54.39         0.0050         3255.83           i-C16         54.53         0.0222         14518.57           54.48         0.0059         3895.46           55.03         0.0027         1775.34           n-C15         55.27         0.0283         1852.24           55.62         0.0057 <td></td> <td></td> <td></td> <td></td>					
51.93         0.0450         29510.08           52.26         0.0142         9289.17           52.38         0.0050         3295.32           i-C15         52.48         0.0357         23387.47           52.55         0.0402         26351.22           52.85         0.0446         29190.30           n-C14         52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.33         0.0248         16262.09           53.59         0.0051         3329.57           53.91         0.0071         4167.34           54.00         0.0044         2898.53           54.00         0.0044         2898.53           i-C16         54.53         0.0222         14518.57           54.421         0.0101         6627.73           54.439         0.0050         3255.83           i-C16         54.53         0.0222         14518.57           54.88         0.0059         3895.46           55.03         0.0027         1775.34           55.11         0.0034         2257.58           n-C15 <td></td> <td></td> <td></td> <td></td>					
52.26         0.0142         9289.17           52.38         0.0050         3295.32           i-C15         52.48         0.0357         23387.47           52.85         0.0402         26351.22           52.85         0.0446         29190.30           n-C14         52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.33         0.0248         16262.09           53.59         0.0051         3329.57           53.73         0.0174         11407.34           53.91         0.0031         2005.80           54.09         0.0071         4850.54           54.09         0.0071         4850.54           54.21         0.0101         6627.73           54.99         0.0050         3255.83           i-C16         54.63         0.0222         14518.57           54.88         0.0059         3895.46           55.11         0.0034         2257.58           n-C15         55.27         0.0283         18523.24           55.47         0.0044         2864.52           55.47					
FC15					
i-C15					
52.55         0.0402         26351.22           52.85         0.0446         29190.30           52.99         0.0500         32782.59           53.14         0.0067         4363.34           53.23         0.0357         23395.02           53.59         0.0051         3329.57           53.73         0.0174         11407.34           53.91         0.0031         2005.80           54.00         0.0044         2898.53           54.09         0.0071         4650.54           54.21         0.0101         6627.73           54.39         0.0050         3255.83           F-C16         54.53         0.0222         14518.57           54.66         0.0037         2450.66           54.74         0.0025         1610.75           54.88         0.0059         3895.46           55.03         0.0027         1775.34           n-C15         55.27         0.0283         18523.24           55.47         0.0044         2264.52           55.72         0.0047         3086.65           55.72         0.0047         3086.65           55.84         0.0046         3336.32	i-C15				
n-C14 52.85 0.0446 29190.30 32782.59 0.0500 32782.59 0.0500 32782.59 53.14 0.0067 4363.34 53.23 0.0357 23395.02 53.33 0.0248 16262.09 53.59 0.0051 3329.57 53.73 0.0174 11407.34 54.00 0.0044 2898.53 54.00 0.0044 2898.53 54.00 0.0044 2898.53 54.00 0.0011 66627.73 54.21 0.0101 6627.73 54.21 0.0101 6627.73 54.66 0.0037 2450.66 54.74 0.0025 1610.75 55.74 0.0025 1610.75 55.03 0.0027 1775.34 55.11 0.0034 2257.58 55.11 0.0034 2257.58 55.11 0.0034 2257.58 55.11 0.0034 2257.58 55.17 0.0028 1852.24 55.56 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.84 0.0042 2746.44 55.77 0.0044 2864.52 55.62 0.0057 3712.65 55.84 0.0046 3308.25 55.84 0.0046 3308.25 55.85 55.84 0.0046 3308.65 55.84 0.0046 3308.65 55.84 0.0046 3308.65 55.84 0.0046 3308.65 55.84 0.0046 3308.25 55.85 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.66 0.0036 22326.25 56.66 0.0036 22326.25 56.69 0.0057 3720.27 56.43 0.0059 3852.56 56.83 0.0038 2501.25 56.99 0.0012 770.04	1-013				
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53.23 0.0357 23395.02 53.33 0.0248 16262.09 53.59 0.0051 3329.57 53.73 0.0174 11407.34 53.91 0.0031 2005.80 54.00 0.0044 2898.53 54.09 0.0071 4650.54 54.21 0.0101 6627.73 54.39 0.0050 3255.83 i-C16 54.53 0.022 14518.57 54.66 0.0037 2450.66 54.74 0.0025 1610.75 54.88 0.0059 3895.46 55.03 0.0027 1775.34 55.11 0.0034 2257.58 n-C15 55.27 0.0283 18523.24 55.47 0.0044 2864.52 55.47 0.0044 2864.52 55.47 0.0044 2864.52 55.58 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.72 0.0047 3080.65 55.72 0.0047 3080.65 55.72 0.0047 3080.65 55.72 0.0047 3080.65 55.62 0.0057 3712.65 55.62 0.0057 3712.65 55.64 0.0046 3336.32 55.95 0.0021 1396.58 56.16 0.0039 2541.18 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.55 0.0060 3920.00 56.66 0.0036 2326.25 56.68 0.0036 2326.25 56.69 0.0012 770.04					
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53.73 0.0174 11407.34 53.91 0.0031 2005.80 54.00 0.0044 2898.53 54.09 0.0071 4650.54 54.21 0.0101 6627.73 54.39 0.0050 3255.83 654.66 0.0037 2450.66 54.74 0.0025 11610.75 54.88 0.0059 3895.46 55.03 0.0027 1775.34 55.11 0.0034 2257.58 55.57 0.0028 1822.24 55.35 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.72 0.0047 3080.65 55.72 0.0047 3080.65 55.84 0.0046 3036.32 55.95 0.0021 1396.58 56.16 0.0039 2541.18 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.55 0.0060 3920.00 56.66 0.0036 2326.25 56.83 0.0038 22501.25 56.99 0.0012 770.04 57.11 0.0048 3135.71					
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54.21 0.0101 6627.73 54.39 0.0050 3255.83 i-C16 54.53 0.0222 14518.57 54.66 0.0037 2450.66 54.74 0.0025 1610.75 54.88 0.0059 3895.46 55.03 0.0027 1775.34 55.11 0.0034 2257.58 n-C15 55.27 0.0283 18523.24 55.35 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.72 0.0047 3080.65 55.72 0.0047 3080.65 55.84 0.0046 3036.32 55.95 0.0021 1396.58 56.16 0.0039 2541.18 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.43 0.0059 3852.56 56.55 0.0060 3920.00 56.66 0.0036 2326.25 56.83 0.0038 2501.25 56.99 0.0012 770.04					
i-C16 54.39 0.0050 54.53 0.0222 14518.57 54.66 0.0037 2450.66 54.74 0.0025 1610.75 54.88 0.0059 3895.46 55.03 0.0027 1775.34 55.11 0.0034 2257.58 n-C15 55.27 0.0283 18523.24 55.35 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.72 0.0047 3080.65 55.84 0.0046 3036.32 55.95 0.0021 1396.58 56.16 0.0039 2541.18 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.43 0.0059 3852.56 56.66 0.0036 2326.25 56.83 0.0038 2326.25 56.99 0.0012 770.04 57.11					
i-C16 54.53 0.0222 14518.57 54.66 0.0037 2450.66 54.74 0.0025 1610.75 54.88 0.0059 3895.46 55.03 0.0027 1775.34 55.11 0.0034 2257.58 1.65.35 0.0042 2746.44 55.35 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.72 0.0047 3080.65 55.84 0.0046 3036.32 55.95 0.0021 1396.58 56.16 0.0039 2541.18 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.55 0.0060 3920.00 56.66 0.0036 2326.25 56.83 0.0038 2501.25 56.99 0.0012 770.04					
54.66       0.0037       2450.66         54.74       0.0025       1610.75         54.88       0.0059       3895.46         55.03       0.0027       1775.34         55.11       0.0034       2257.58         55.27       0.0283       18523.24         55.35       0.0042       2746.44         55.47       0.0044       2864.52         55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.99       0.0012       770.04         57.11       0.0048       3135.71	i-C16				
54.74       0.0025       1610.75         54.88       0.0059       3895.46         55.03       0.0027       1775.34         55.11       0.0034       2257.58         n-C15       55.27       0.0283       18523.24         55.35       0.0042       2746.44         55.47       0.0044       2864.52         55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71	1010				
54.88       0.0059       3895.46         55.03       0.0027       1775.34         55.11       0.0034       2257.58         55.27       0.0283       18523.24         55.35       0.0042       2746.44         55.47       0.0044       2864.52         55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
55.03       0.0027       1775.34         55.11       0.0034       2257.58         n-C15       55.27       0.0283       18523.24         55.35       0.0042       2746.44         55.47       0.0044       2864.52         55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
55.11       0.0034       2257.58         n-C15       55.27       0.0283       18523.24         55.35       0.0042       2746.44         55.47       0.0044       2864.52         55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
n-C15 55.27 0.0283 18523.24 55.35 0.0042 2746.44 55.47 0.0044 2864.52 55.62 0.0057 3712.65 55.72 0.0047 3080.65 55.84 0.0046 3036.32 55.95 0.0021 1396.58 56.16 0.0039 2541.18 56.25 0.0057 3720.27 56.43 0.0059 3852.56 56.55 0.0060 3920.00 56.66 0.0036 2326.25 56.83 0.0038 2501.25 56.99 0.0012 770.04 57.11 0.0048 3135.71					
55.47       0.0044       2864.52         55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71	n-C15				
55.62       0.0057       3712.65         55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71				2746.44	
55.72       0.0047       3080.65         55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71			0.0044	2864.52	
55.84       0.0046       3036.32         55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71			0.0057		
55.95       0.0021       1396.58         56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.16       0.0039       2541.18         56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.25       0.0057       3720.27         56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.43       0.0059       3852.56         56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.55       0.0060       3920.00         56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.66       0.0036       2326.25         56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.83       0.0038       2501.25         56.99       0.0012       770.04         57.11       0.0048       3135.71					
56.99       0.0012       770.04         57.11       0.0048       3135.71					
57.11 0.0048 3135.71					
	n-C16				
		J1.EE	3.3102	12000.10	

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	Chrom Perfec	ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	57.35	0.0035	2278.90
	57.50	0.0020	1336.19
	57.58	0.0032	2096.70
	57.68	0.0026	1677.18
	57.88	0.0006	384.12
	58.04	0.0024	1581.08
C4.0			
-C18	58.15	0.0112	7350.41
	58.28	0.0013	881.97
	58.34	0.0020	1281.83
	58.48	0.0032	2085.04
	58.63	0.0010	643.39
	58.81	0.0038	2485.59
n-C17	58.94	0.0133	8725.99
Pristane	59.12	0.0186	12178.73
notario	59.61	0.0011	690.96
	59.85	0.0031	2001.23
	59.96	0.0015	997.68
	60.09	0.0019	1230.32
	60.33	0.0018	1192.39
n-C18	60.50	0.0077	5031.60
	60.65	0.0014	916.63
Phytane	60.73	0.0076	4953.24
,	60.88	0.0028	1810.97
			1637.51
	60.97	0.0025	
	61.09	0.0040	2644.44
	61.37	0.0012	766.75
	61.44	0.0023	1512.53
	61.58	0.0010	662.41
	61.77	0.0014	893.64
ı-C19	61.95	0.0068	4435.74
1019	62.10	0.0019	1255.23
	62.18	0.0030	1952.74
	62.34	0.0009	583.90
	62.46	0.0007	477.22
	62.54	0.0010	651.87
	63.04	0.0046	3001.55
	63.20	0.0027	1797.87
i-C20	63.30	0.0043	2785.95
	63.66	0.0031	2020.86
	63.80	0.0023	1498.84
	63.86	0.0025	1642.20
	64.05	0.0023	3078.80
0 40			
S #3	64.22	0.3873	253778.00
-C21	64.57	0.0254	16636.57
	65.07	0.0392	25657.04
	65.19	0.0118	7746.35
	65.29	0.0148	9725.14
	65.70	0.0789	51680.38
-C22	65.79	0.0287	18780.27
GZZ			
COO	65.93 66.84	0.0425	27818.05
-C23	66.81	0.4089	267933.40
	67.09	0.1647	107920.80
	67.67	0.4265	279451.70
	68.04	0.2203	144347.10
-C24	68.12	0.1726	113076.00
	68.62	0.2476	162256.70
	69.06	0.3019	197769.30
-C25	69.50		292637.20
-C25		0.4466	
	69.97	0.2091	136977.20
	70.43	0.1485	97307.80
	70.49	0.1025	67182.73
-C26	70.68	0.1851	121276.10
	70.95	0.0559	36653.85
	71.28	0.1937	126933.40
	71.40	0.0954	62529.48
	71.59	0.0618	40479.18
	71.88	0.2047	134144.20
	72.14	0.1229	80528.80
n-C27			
I-C27	72.27	0.1584	103803.40

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	Childri enec	t Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	72.97	0.1922	125925.40
	73.21	0.0732	47959.98
	73.40	0.1995	130724.80
n-C28	74.20	0.1068	69978.16
	74.65	0.0776	50810.17
	75.27	0.0511	33452.74
n-C29	75.83	0.0015	970.48
020	76.44	0.0092	6034.81
	77.17	0.0017	1099.75
n-C30	77.76	0.0111	7276.10
1-030	77.76 78.55	0.0111	
			13032.31
	79.11	0.0293	19217.61
004	79.80	0.0205	13435.19
n-C31	80.68	0.0479	31358.59
	81.67	0.0081	5327.69
	81.79	0.0145	9484.23
	82.51	0.1871	122607.20
	83.52	0.0074	4846.21
n-C32	83.67	0.0051	3367.32
	83.97	0.0146	9578.04
	84.59	0.0056	3698.31
	84.96	0.0151	9878.08
	85.46	0.0185	12099.21
	85.80	0.0183	11979.06
n-C33	86.67	0.0100	6577.19
1-033	87.45	0.0657	43045.02
			8872.59
	88.45	0.0135	
	88.97	0.0052	3439.68
	89.40	0.0117	7652.49
	89.99	0.0005	332.60
n-C34	90.51	0.0017	1118.05
	91.64	0.0075	4912.12
	92.88	0.0210	13766.95
	93.57	0.0136	8897.64
	94.14	0.0102	6651.94
n-C35	95.26	0.0013	883.67
	95.80	0.0024	1561.58
	96.24	0.0057	3733.70
	96.90	0.0152	9980.97
	97.65	0.0114	7449.36
	98.30	0.0018	1190.99
	98.77		
		0.0009	612.98
	99.47	0.0012	805.76
	99.64	0.0008	503.08
	100.18	0.0185	12095.00
	100.51	0.0017	1106.61
n-C36	101.26	0.0084	5525.74
	101.78	0.0011	747.97
	103.08	0.1016	66568.93
	104.11	0.0015	983.58
	104.27	0.0006	372.39
	104.67	0.0012	807.53
	104.94	0.0012	635.70
	105.44	0.0066	4324.89
	106.16	0.0000	7377.10
	106.78	0.0236	15448.11
	106.97 108.33	0.0161 0.0005	10528.15 360.18

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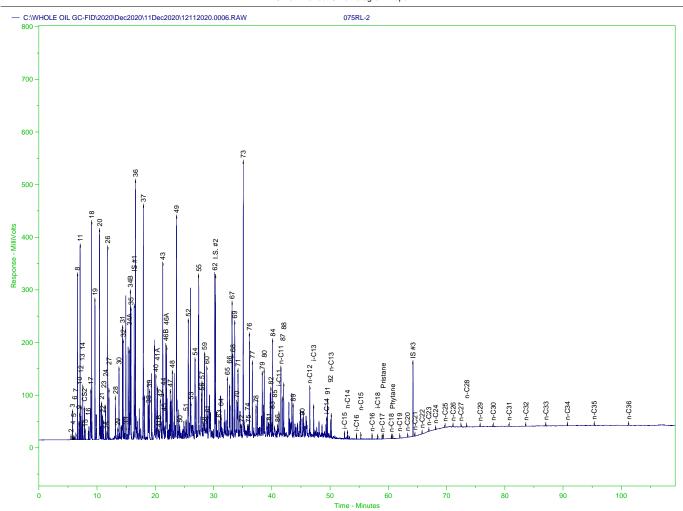
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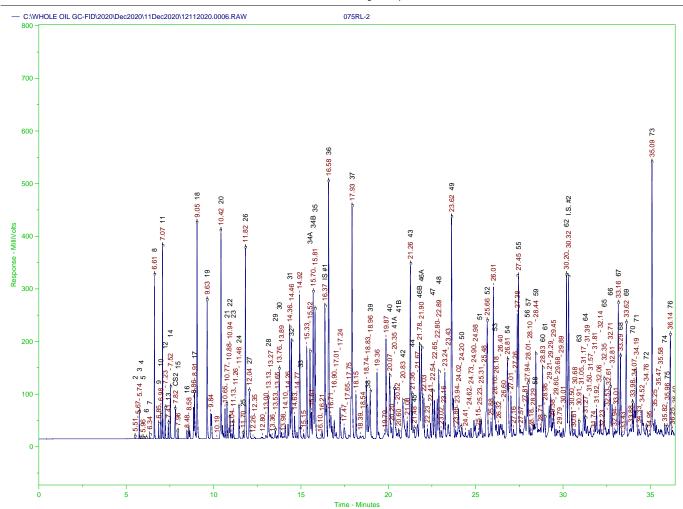
Page 7 of 7





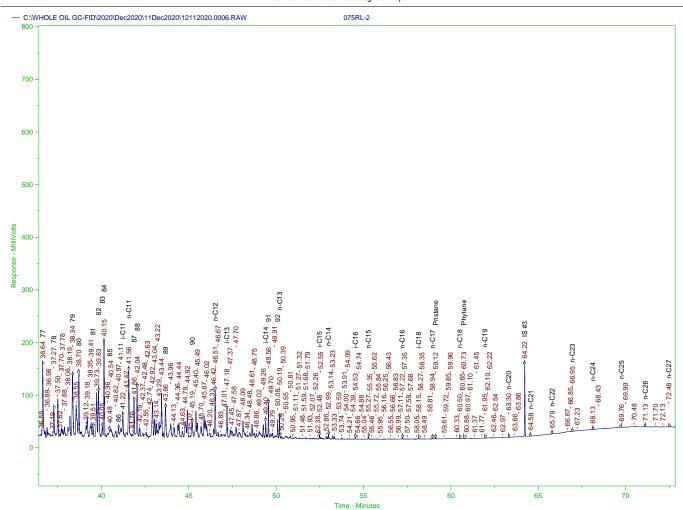
Printed on 12/14/2020 9:40:34 AM Page 1 of 1





Printed on 12/14/2020 9:40:52 AM Page 1 of 3

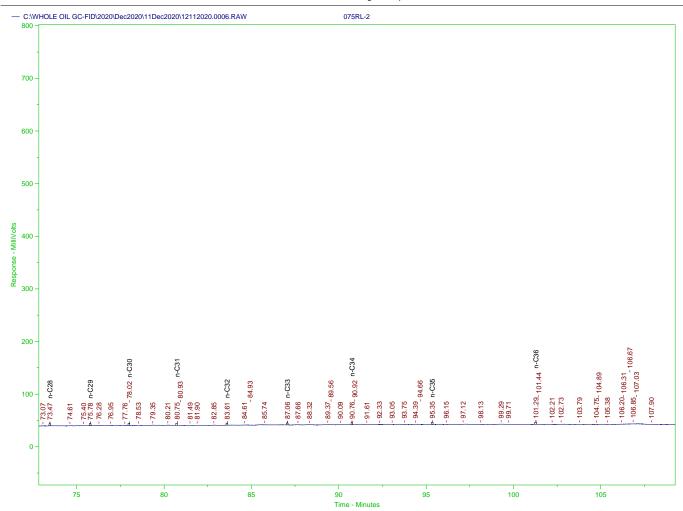




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Sample Name = 075RL-2

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{1212} \\ \textbf{2020} \\ \textbf{5:28:48} \ AM \\ \textbf{AM } \\ \textbf{1212} \\ \textbf{2020} \\ \textbf{5:28:48} \\ \textbf{AM } \\ \textbf{1212} \\ \textbf{2020} \\ \textbf{5:28:48} \\ \textbf{AM } \\ \textbf{122} \\ \textbf{12320} \\ \textbf{123$ 

Method File Name = C:\1 - A Backup\C3442020.met

Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.51	0.0052	3512.43
	5.67	0.0007	488.43
3	5.74	0.0881	59707.78
5	5.96	0.0020	1350.09
7	6.34	0.0121	8215.49
8	6.61	0.6211	420984.10
9	6.85	0.0571	38674.36
10	6.98	0.0938	63569.58
11	7.07	0.7928	537345.00
12	7.23	0.1286	87184.98
13	7.41	0.0709	48036.25
14	7.52	0.2422	164128.80
CS2	7.82	0.2554	173122.60
15	7.96	0.0348	23600.40
16	8.48 8.58	0.0255 0.1123	17259.59 76140.51
	8.86	0.1123	109808.80
17	8.91	0.1620	224874.60
18	9.05	1.2884	873227.50
19	9.63	0.8350	565935.10
13	9.84	0.2984	202230.00
	10.19	0.0014	933.17
20	10.42	1.4674	994512.10
	10.65	0.1911	129523.50
21	10.77	0.2197	148874.70
	10.88	0.0689	46671.31
22	10.94	0.1405	95211.85
	11.04	0.0358	24293.31
23	11.13	0.1049	71121.87
	11.26	0.0021	1432.84
24	11.46	0.2140	145015.40
25	11.70	0.0364	24691.01
26	11.82	1.3384	907073.10
27	12.04	0.3797	257334.10
	12.26	0.0034	2327.15
	12.35	0.0219	14845.04
	12.80	0.0313	21228.73
28	13.00 13.13	0.0412 0.3292	27949.93 223091.00
20	13.13	0.3292	24164.21
	13.36	0.0337	10941.14
29	13.53	0.0828	56132.83
23	13.65	0.0261	17686.82
30	13.76	0.5394	365556.80
	13.89	0.0510	34592.16
	13.98	0.0323	21888.38
	14.10	0.1124	76164.21
	14.26	0.1165	78948.58
31	14.36	0.8845	599502.20
32	14.46	0.7715	522915.80
	14.63	0.1863	126273.80
	14.77	0.0542	36715.00
	14.92	1.1321	767296.90
	15.15	0.0471	31932.78
	15.33	0.7362	498973.50
34A	15.52	0.6748	457368.10
	15.61	0.2154	145961.70
34B	15.70	1.1790	799090.70

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Chrom Perfect Chromatogram Report					
Peak Name	Ret. Time	Area %	Area		
35	15.81	1.1956	810290.30		
	16.10	0.0110	7469.84		
	16.21	0.0733	49711.84		
IS #1	16.37	1.3592	921199.10		
36	16.58	2.0517	1390516.00		
00	16.71	0.3305	223972.00		
	16.90	0.1441	97632.07		
		0.0747	50624.12		
	17.01 17.24	0.3259	220898.40		
	17.47	0.1630	110459.50		
	17.65	0.0043	2911.10		
0.7	17.75	0.0496	33598.23		
37	17.93	2.2239	1507219.00		
	18.15	0.4005	271444.40		
	18.39	0.0249	16873.18		
	18.54	0.0385	26126.95		
	18.74	0.4655	315519.10		
38	18.83	0.2545	172502.20		
39	18.96	0.5197	352208.60		
	19.36	0.6055	410378.70		
	19.79	0.0739	50117.55		
	19.87	0.9100	616752.30		
40	20.07	0.7774	526850.10		
	20.20	0.0990	67086.05		
41A	20.35	0.6948	470899.20		
	20.52	0.0521	35333.37		
41B	20.60	0.0866	58707.36		
42	20.83	0.7045	477505.50		
	21.08	0.1529	103614.80		
43	21.26	1.4447	979148.50		
44	21.36	0.3585	242992.50		
45	21.48	0.1341	90864.49		
43	21.46	0.1341			
46B			146265.70		
	21.78	0.7542	511171.60		
46A	21.90	1.2556	851009.20		
	22.03	0.3558	241162.20		
	22.23	0.0936	63445.95		
4-	22.41	0.1293	87641.38		
47	22.54	0.4156	281691.80		
	22.65	0.3404	230725.50		
	22.80	0.3242	219700.80		
48	22.89	0.5618	380780.40		
	23.02	0.0969	65646.42		
	23.16	0.1397	94654.20		
	23.24	0.5771	391151.60		
	23.43	0.2509	170060.00		
49	23.62	2.4129	1635345.00		
	23.86	0.0695	47135.13		
	23.94	0.0475	32164.04		
	24.02	0.3446	233550.80		
50	24.20	0.1892	128210.40		
	24.41	0.0827	56069.63		
	24.62	0.1145	77569.93		
	24.73	0.0903	61168.22		
	24.90	0.1844	124985.30		
	24.98	0.1365	92535.49		
	24.96 25.15	0.1363	44159.89		
E1					
51	25.23 25.31	0.1310	88751.66 157368.00		
	25.31 25.49	0.2320	157268.00		
F0	25.48	0.0658	44609.75		
52	25.66	1.3541	917771.80		
	25.88	0.2576	174600.30		
	26.01	1.3094	887449.80		
53	26.10	0.2970	201293.10		
	26.18	0.1788	121204.60		
	26.32	0.1283	86926.80		
	26.40	0.3212	217714.90		
	26.60	0.0936	63470.79		
54	26.81	1.2196	82hhU1.10		
54	26.81 27.01	1.2196 0.4090	826601.10 277212.50		

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Peak Name	Chrom Perfect Chromatogram Report				
Page	Peak Name				
55         27,38         1,0270         896020,80           27,57         0,1874         1,27004,40           56         27,811         0,4043         27,002,70           56         27,814         0,4043         27,002,70           57         28,01         0,4040         81,81           60         28,18         0,0539         36437,68           59         28,24         0,9242         6,26400,60           60         28,83         0,6851         464333,50           61         28,93         0,6851         464333,50           61         28,96         0,22824         191388,22           60         28,83         0,6851         464333,50           61         28,96         0,28244         191388,22           28,29         0,4077         2,78331,60           28,29         0,4077         2,78331,60           28,29         0,4077         2,78331,60           28,29         0,4077         2,78331,60           28,29         0,4077         2,78331,60           28,66         0,1067         7,2289,46           29,89         0,650         3,7280,20           40,80         1,006,50		27.16	0.1150	77916.85	
55         27.46         1.3517         916086.10           27.57         0.1874         127004.04           56         27.94         0.3956         28027.00           57         28.01         0.4594         311364.20           57         28.01         0.10103         8342.81           58         28.29         0.2433         3.3482.81           59         28.44         0.9242         62.440.61           60         28.83         0.6851         46.433.50           61         28.83         0.6851         46.333.50           61         28.96         0.2824         191388.20           61         28.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         280051.80           82.29         0.4132         28052.80           82.29         0.4132         28053.80 <td></td> <td>27.26</td> <td>0.0576</td> <td>39043.85</td>		27.26	0.0576	39043.85	
27.57		27.38		696020.80	
56   27.94   0.3958   288257.80   57   28.01   0.4594   311364.20   28.10   0.1010   6844.218   28.10   0.0539   36497.68   28.21   0.2544   6.2568.50	55			916086.10	
56         27,94         0,3958         268/257,90           57         28,10         0,4594         311364.20           28,18         0,0539         36497,68           59         28,44         0,2242         628-400,60           60         28,13         0,2281         1192668.50           61         28,28         0,2281         419138.20           61         28,28         0,2281         419138.20           61         28,28         0,2281         419138.20           61         28,28         0,2281         419138.20           61         29,21         0,4077         276331.80           61         29,28         0,4132         280051.80           62         29,38         0,1408         59426.99           62         29,60         0,0883         5983.61           63         29,66         0,1067         72289.46           62         30,20         1,4075         99457.80           1,5,82         30,20         1,5075         99457.80           1,5,82         30,20         1,5085         101838.20           1,5         30,60         0,162         3832.26           30,60 </td <td></td> <td></td> <td></td> <td>127004.40</td>				127004.40	
57         28.01         0.4594         31136420           28.10         0.1010         6844218           28.18         0.0539         3649768           59         28.44         0.9242         626400.60           60         28.871         0.2591         175582.20           61         28.962         0.2821         191886.00           61         28.962         0.2821         191886.00           62         29.293         0.4077         275331.60           62         29.294         0.4077         275331.60           62         29.294         0.4077         275831.60           62         29.45         0.3173         215038.00           62         29.46         0.0683         59836.61           29.89         0.0550         37280.20           29.89         0.0550         37280.20           1.8.22         30.32         1.5026         1918359.00           1.8.22         30.32         1.5026         1918359.00           1.8.22         30.32         1.5026         1918359.00           1.8.23         30.50         0.3025         2.05032.00           3.04         1.0127         7.872			0.4043	274002.70	
28.10         0.1010         684421.8           28.19         0.0539         36497.68           59         28.24         0.2843         192668.50           60         28.71         0.2591         175582.20           61         28.96         0.2824         191388.20           61         28.96         0.2824         191388.20           61         29.21         0.4077         276331.60           29.29         0.4132         280051.80           29.38         0.1408         59-426.59           29.46         0.3173         215038.00           29.47         0.4037         276331.60           29.48         0.3173         215038.00           29.89         0.0433         59836.61           29.89         0.0503         59836.61           29.89         0.0500         37289.20           20.50         29.289         0.0500         37289.20           20.50         30.01         0.1020         69160.41           8.1         29.279         0.0529         35832.67           1.5         20.00         3.7272.20         3.052           1.5         30.01         0.1020         69160.4	56	27.94	0.3958	268257.80	
28.19         0.0539         36497,68           59         28.44         0.9242         626400,60           60         28.871         0.2591         175582.20           60         28.83         0.6851         464335.50           61         28.96         0.2224         191388.20           61         28.96         0.2224         191388.20           29.21         0.4077         275331.60           29.26         0.4133         28051.80           29.27         0.4133         28051.80           29.28         0.1406         95428.30           29.29         0.1403         95428.30           29.29         0.01433         28058.61           29.29         0.020         1.872           29.89         0.0550         37280.20           18.82         30.20         1.4675         994575.80           18.82         30.32         1.5026         1018359.00           18.812         30.32         1.5026         1018359.00           30.61         0.0529         36832.67           63         30.91         0.1617         109865.60           31.57         0.4433         2.27840.60	57	28.01	0.4594	311364.20	
59         28.44         0.9242         626400.60           60         28.83         0.6851         14532.20           61         28.86         0.2824         191388.20           29.21         0.4077         276331.60           29.221         0.4077         276331.60           29.33         0.1408         9.95426.99           29.45         0.3173         215038.00           29.80         0.0833         59836.61           29.80         0.1069         72289.47           29.90         0.1079         72289.47           29.90         0.1069         72289.47           29.90         0.1079         98716.04           29.90         0.1069         98716.04           20.91         0.1020         98160.04           62         30.01         0.1020         98160.04           15.822         30.32         1.5026         1018359.00           15.842         30.32         1.5026         1018359.00           15.842         30.32         1.5026         1018359.00           30.61         0.0529         35832.67         1018359.00           30.62         30530         3.025         205032.00 <td></td> <td>28.10</td> <td>0.1010</td> <td>68442.18</td>		28.10	0.1010	68442.18	
59         28.41         0.9242         628400,60           60         28.83         0.6851         44433.50           61         28.86         0.2824         191388.20           61         28.96         0.2824         191388.20           29.29         0.4132         280061.80           29.98         0.1408         9.9426.99           29.96         0.0883         59836.61           29.98         0.0507         7228.946           29.99         0.1007         72728.946           29.99         0.0550         37.728.020           30.01         0.1029         69712.77           29.99         0.0550         37.728.020           62         30.20         1.4675         9.9457.80           1.S. #2         30.32         1.5026         101835.80           30.61         0.029         35324.73           30.61         0.029         35324.73           63         0.91         0.1617         90858.66           64         31.27         0.2085         141277.90           31.57         0.127         78854.38           31.59         0.1668         113033.30           31.57 <td></td> <td>28.18</td> <td>0.0539</td> <td>36497.68</td>		28.18	0.0539	36497.68	
60		28.29	0.2843	192668.50	
60   28.83   0.6851   444333.50   61   28.96   0.2824   191388.20   29.21   0.4077   276331.60   29.22   0.4132   2280051.80   29.38   0.1408   95426.99   29.945   0.3173   215038.00   29.68   0.1067   72228.46   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37228.00   29.98   0.0550   37280.20   29.99   0.1029   69712.77   29.98   0.0550   37280.20   29.98   0.0550   37280.20   29.98   0.0550   37280.20   29.98   0.0550   37280.20   29.98   0.0550   37280.20   29.98   0.0550   37280.20   29.98   0.0550   37280.20   29.99   0.1029   69712.77   29.98   0.0550   37280.20   29.99   0.1029   69712.77   29.90   0.1020   69710.00   29.90   0.1020   69710.00   29.90   0.1020   69710.00   29.90   0.1020   69710.00   29.90   0.1020   69710.00   29.90   0.1020   37890.00   29.90   0.102	59	28.44	0.9242	626400.60	
61		28.71	0.2591	175582.20	
29.21	60	28.83	0.6851	464333.50	
29.29	61	28.96	0.2824	191388.20	
29.38		29.21	0.4077	276331.60	
29.45   0.3173   215038.00   29.60   0.0883   59836.61   29.79   0.1029   69712.77   29.89   0.0550   37280.20   62   30.20   1.4675   598457.80   62   30.20   1.4675   598457.80   62   30.20   1.4675   598457.80   63   30.61   0.0529   35832.67   63   30.61   0.0529   35832.67   63   30.91   0.1617   109585.60   63   31.05   0.1018   69015.62   64   31.27   0.2085   141277.90   64   31.37   0.4123   272940.60   64   31.37   0.0684   44254.32   65   31.35   0.0684   44354.32   66   31.37   0.0684   44354.32   67   31.38   0.1814   0.1277   88643.88   68   31.92   0.0684   32279.93   69   32.23   0.0729   49392.62   60   32.21   0.0893   426279.50   60   32.21   0.0893   38595.92   61   32.21   0.0893   38595.92   62   32.35   0.0669   338595.92   63   32.31   0.0893   34943.00   64   32.71   0.4880   330753.30   65   32.31   0.0893   34943.00   66   32.71   0.4880   330753.30   67   33.16   0.1399   34932.62   68   33.29   0.7662   34943.00   69   33.62   1.2240   825986.60   70   33.98   0.3195   2.2444.10   69   33.62   1.2240   825986.60   70   33.98   0.3195   2.2444.10   71   34.19   0.6237   48544.10   71   34.19   0.6237   48540.60   72   34.67   0.0631   42774.86   73   3.00   0.0639   24997.90   74   34.39   0.0631   42774.86   75   33.36   0.1939   94832.61   76   33.49   0.0631   42774.86   77   34.49   0.6237   48540.60   78   34.52   0.5290   35850.60   79   33.98   0.3195   2.16531.40   71   34.19   0.6237   44850.60   72   34.76   0.1978   134067.50   74   34.39   0.1577   106893.30   75   35.56   0.1978   134067.50   76   35.86   0.1978   134067.50   77   34.76   0.1978   134067.50   78   35.56   0.1978   134067.50   79   35.56   0.1978   134067.50   70   35.56   0.1978   134067.50   71   34.19   0.6237   44850.60   72   34.76   0.1978   134067.50   73   35.56   0.1978   134067.50   74   35.56   0.1978   13417.70   75   35.56   0.1978   13417.70   76   35.57   0.1577   106893.30   77   36.56   0.1978   13417.70   78   36.56   0.1994   135133.10   79   36.57   0.1428   96787.77		29.29	0.4132	280051.80	
Page		29.38	0.1408	95426.99	
Page		29.45	0.3173	215038.00	
29.68         0.1067         72289.46           29.79         0.1029         69712.77           29.89         0.0550         37280.20           62         30.20         1.4675         994575.80           1.S.#2         30.32         1.5026         101839.00           30.61         0.0529         35852.67           30.88         0.1162         78721.73           63         30.91         0.1617         109585.60           4         31.17         0.4123         279404.60           4         31.27         0.2085         110955.62           4         31.39         0.1668         113033.30           31.50         0.0654         4354.32           4         31.57         0.1277         86543.88           31.57         0.1277         86543.88           31.53         0.0654         4354.32           31.54         0.4166         1804.41           42.2936.40         13.192         0.2748           48.293         0.07274         48543.22           46         32.23         0.0729         49392.62           45         32.23         0.0729         426279.50					
Page					
29.89   0.0550   37280.20   62   30.20   1.4675   994575.80   1.S. #2   30.32   1.5026   1018359.00   30.50   0.3025   205032.00   30.61   0.0529   35832.67   30.68   0.1162   78721.73   63   30.91   0.1617   109585.60   31.17   0.4123   279404.60   64   31.27   0.2085   141277.90   31.50   0.0654   44354.32   31.57   0.1277   86543.88   31.57   0.1277   86543.88   31.57   0.1277   86543.88   31.57   0.1277   86543.88   31.57   0.1277   86543.88   31.59   0.0654   44354.32   31.81   0.1814   1122936.40   31.81   0.1814   1122936.40   31.92   0.2748   186213.70   32.06   0.1456   99674.05   32.21   0.0729   43392.62   65   32.23   0.0729   43392.62   66   32.24   0.0881   127510.80   32.25   0.6290   426279.50   32.26   0.0669   33555.92   43.271   0.4880   330753.30   42774.86   33.01   0.1399   94832.61   66   32.71   0.480   330753.30   67   33.16   1.1306   766244.10   68   33.29   0.7162   48540.80   69   33.62   1.2240   829586.60   69   33.62   1.2240   829586.60   69   33.62   1.2240   829586.60   71   34.19   0.629   42677.80   70   33.98   0.3195   2.16531.40   71   34.19   0.629   42677.80   72   34.52   0.590   35556.70   74   35.62   0.5290   35850.70   75   35.58   0.0290   36957.71   76   34.52   0.5290   35850.70   77   33.98   0.3195   2.16531.40   78   34.67   0.1578   134675.50   79   34.52   0.5290   35850.70   70   33.98   0.3195   2.16531.40   71   34.19   0.6297   426748.80   71   34.52   0.590   35850.70   72   34.52   0.5290   35850.70   74   35.62   0.5290   35850.70   75   35.58   0.0208   2.4273.70   35.68   0.0208   2.4273.70   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.68   0.0208   37472.60   35.69   0.0067					
62 30.01 0.1020 69160.04 622 30.20 1.4675 994575.80 1.S. #2 30.32 1.5026 1018359.00 1.S. #2 30.50 0.3025 205032.00 30.61 0.0529 35832.67 30.68 0.1162 76721.73 63 30.68 0.1162 76721.73 63 30.61 0.0529 35832.67 63 30.91 0.1617 109585.60 31.05 0.1018 69015.62 31.17 0.4123 279404.60 431.37 0.2085 1141277.90 31.50 0.0664 31.39 0.16668 113033.30 31.50 0.0654 44354.32 31.57 0.2085 1141277.90 31.50 0.0654 44354.32 31.57 0.1277 86543.88 31.57 0.1277 86543.88 31.57 0.1277 86543.88 31.57 0.1277 86543.88 31.57 0.1277 86543.88 32.575.93 31.51 0.1514 1.22936.40 31.50 0.1514 1.22936.40 31.50 0.1514 1.22936.40 31.50 0.1514 1.22936.40 0.1456 98674.05 32.21 0.0729 48392.62 65 32.25 0.0529 426279.50 32.53 0.0569 33595.92 426279.50 32.61 0.0936 63447.01 666 32.71 0.4880 330753.30 32.94 0.0631 42774.86 32.281 0.3680 2.49443.00 32.94 0.0631 42774.86 32.94 0.0631 42774.86 33.30 0.1399 94832.61 67 33.46 0.1399 94832.61 67 68244.10 33.88 0.2609 24997.90 468279.50 32.88 0.2609 24997.90 476279.50 32.88 0.3609 24997.90 476279.50 33.88 0.3195 24997.90 4762774.86 33.49 0.0631 42774.86 48544.80 33.40 0.0399 94832.61 67 33.88 0.3195 22.24 0.0569 24997.90 468279.50 33.88 0.3195 22.24 0.0569 24997.90 468279.50 33.88 0.3195 22.24 0.0569 24997.90 468279.50 33.88 0.3195 22.24 0.0569 24997.90 468279.50 33.88 0.3195 22.24 0.0569 24997.90 468277.50 33.88 0.2609 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 46827.30 33.88 0.3195 22.24 0.0569 24997.90 42.22 34.76 0.0569 24.24 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78 0.0569 24.22 34.78					
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I.S. #2         30.32         1.5026         1018359.00           30.61         0.3025         205032.00           30.61         0.0529         38832.67           30.63         0.1162         78721.73           63         30.91         0.1617         109856.60           31.05         0.1018         68015.62           64         31.27         0.2085         141277.90           64         31.39         0.1668         113033.30           31.50         0.0654         44354.32           31.57         0.1277         86543.88           31.74         0.0485         32875.93           31.81         0.1814         122936.40           32.06         0.1456         98674.05           32.06         0.1456         98674.05           32.23         0.0729         428279.50           32.25         0.0569         38595.92           32.53         0.0569         38595.92           32.61         0.0936         63447.01           66         32.71         0.4880         330753.30           32.94         0.0631         42774.86           67         33.62         0.7162         48	62				
30.50   0.3025   205032.00   30.61   0.0529   35832.67   30.68   0.1162   78721.73   30.68   0.1162   78721.73   30.68   0.11617   109585.60   31.05   0.10118   68015.62   31.17   0.4123   279404.60   44.354.32   31.39   0.1668   113033.30   31.50   0.0654   44.354.32   31.50   0.0654   44.354.32   31.57   0.1277   86543.88   31.61   0.1277   86543.88   31.61   0.1814   1.22936.40   31.92   0.2748   186213.70   32.06   0.1456   98674.05   32.14   0.1881   1.27510.80   32.23   0.0729   49392.62   65   32.35   0.6290   426279.50   32.61   0.0936   63447.01   32.94   0.0631   42774.86   33.94   0.0631   32794   33.94   0.0631   32794   33.94   0.0631   33.94   0.0631   33.94   0.0631   33.94   0.0631   33.94   0.0631   33.94   0.0631   33.94   0.0631   33.94   0.0631   33.94					
30.61   0.0529   35832.67   30.68   0.1162   78721.73   30.68   0.1162   78721.73   30.91   0.1617   10.9585.60   31.05   0.1018   6.9015.62   31.17   0.4123   27.9404.60   31.37   0.2085   141277.90   31.50   0.1668   11.3033.30   31.50   0.0654   44.354.32   31.57   0.12277   86.543.88   31.57   0.12277   86.543.88   31.57   0.12277   86.543.88   31.81   0.1614   122936.40   31.92   0.2748   186.213.70   32.06   0.1456   98674.05   32.214   0.1881   127.7510.80   32.23   0.0729   4.9392.62	1.0. #2				
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31.39       0.1668       113033.30         31.57       0.0654       44354.32         31.57       0.1277       86543.88         31.74       0.0485       32875.93         31.81       0.1814       122936.40         31.92       0.2748       186213.70         32.06       0.1456       98674.05         32.14       0.1881       127510.80         32.23       0.0729       49392.62         65       32.53       0.0569       38595.92         32.61       0.0936       63447.01         66       32.71       0.4880       330755.30         32.81       0.3680       249443.00         32.281       0.3680       249443.00         32.294       0.0631       42774.86         33.01       0.1399       94832.61         68       33.29       0.7162       48540.80         69       33.62       1.2240       829586.60         69       33.62       1.2240       829586.60         70       33.98       0.3195       216531.40         71       34.19       0.6297       426748.80         72       34.76       0.1978       134067.50	0.4				
31.50	64				
31.57   0.1277   88543_88   31.74   0.0485   32875.93   31.74   0.0485   32875.93   31.81   0.1814   122936.40   31.92   0.2748   186213.70   32.06   0.1456   98674.05   32.14   0.1881   127510.80   32.23   0.0729   49392.62   32.53   0.0569   38595.92   32.53   0.0569   38595.92   32.53   0.0569   33695.92   32.81   0.3680   249443.00   32.81   0.3680   249443.00   32.81   0.3680   249443.00   33.01   0.1399   94832.61   67   33.01   0.1399   94832.61   68   33.29   0.7162   485404.80   33.43   0.0369   24997.90   69   33.62   1.1240   829586.60   69   33.88   0.2609   176827.30   70   33.98   0.3195   216531.40   34.07   0.5052   342417.80   71   34.19   0.6297   426748.80   34.33   0.1542   10.4536.90   34.52   0.5290   358506.70   72   34.76   0.1978   134067.50   34.95   0.0721   48836.64   73   35.09   2.4601   1667350.00   222293.70   35.58   0.2028   137472.60   74   35.58   0.2028   137472.60   74   35.58   0.2028   137472.60   74   35.96   0.1994   135133.10   76   35.96   0.1994   135133.10   76   35.95   0.1428   96787.77   76   36.25   0.1428   96787.77					
31,74         0,0485         32875,93           31,92         0,2748         186213,70           32,06         0,1456         98674,05           32,14         0,1881         127510,80           32,23         0,0729         49392,62           65         32,35         0,6290         426279,50           32,53         0,0569         38595,92           32,61         0,0936         63447,01           66         32,71         0,4880         330753,30           32,84         0,3680         249443,00           32,84         0,3680         249443,00           67         33,16         1,1306         766244,10           68         33,29         0,7162         485404,80           68         33,29         0,7162         485404,80           69         33,43         0,0369         24997,90           69         33,88         0,2609         176827,30           70         33,98         0,3195         216531,40           71         34,19         0,6297         426748,80           71         34,19         0,6297         426748,80           72         34,76         0,1978					
31.81         0.1814         122936.40           31.92         0.2748         186213.70           32.06         0.1456         98674.05           32.14         0.1881         127510.80           32.23         0.0729         49392.62           65         32.35         0.0569         38595.92           32.61         0.0936         63447.01           66         32.71         0.4880         330753.30           32.81         0.3680         249443.00           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         48504.80           69         33.62         1.2240         82956.60           60         33.88         0.2609         176827.30           70         33.98         0.3195         216531.40           71         34.97         0.5052         342417.80           71         34.19         0.6297         426748.80           72         34.76         0.1978         134067.50           72         34.76         0.1978         <					
31.92         0.2748         186213.70           32.06         0.1456         98674.05           32.14         0.1881         127510.80           32.23         0.0729         49392.62           65         32.55         0.0569         38595.92           32.53         0.0936         63447.01           66         32.71         0.4880         330753.30           32.81         0.3680         249443.00           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         485404.80           69         33.62         1.2240         829586.60           69         33.62         1.2240         829586.60           70         33.98         0.3195         216531.40           71         34.91         0.6297         426748.80           71         34.93         0.1542         104536.90           72         34.76         0.1978         134067.50           72         34.76         0.1978         134067.50           35.58         0.0721					
32.06         0.1456         98674.05           32.14         0.1881         127510.80           32.23         0.0729         49392.62           65         32.35         0.6290         426279.50           32.53         0.0569         38595.92           32.61         0.0936         63447.01           66         32.71         0.4880         330753.30           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         485404.80           69         33.62         1.2240         829586.60           69         33.62         1.2240         829586.60           70         33.98         0.3195         216531.40           71         34.97         0.5052         342417.80           71         34.93         0.1542         104536.90           72         34.76         0.1978         134067.50           72         34.76         0.1978         134067.50           74         35.59         0.0721         48836.64           73         35.					
32.14         0.1881         127510.80           32.23         0.0729         49392.62           65         32.35         0.6290         426279.50           32.53         0.0569         38595.92           32.61         0.0936         63447.01           66         32.71         0.4880         330753.30           32.81         0.3680         249443.00           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         485404.80           24997.90         33.43         0.0369         24997.90           69         33.62         1.2240         829586.60           70         33.88         0.2609         176827.30           71         34.19         0.6297         426748.80           71         34.19         0.6297         426748.80           72         34.76         0.1978         134067.50           72         34.76         0.1978         134067.50           74         35.59         2.4601         1667350.00           35.58					
65         32.23         0.0729         49392.62           65         32.53         0.0569         38595.92           32.61         0.0936         63447.01           66         32.71         0.4880         330753.30           32.94         0.0631         42774.86           67         33.01         0.1399         94832.61           68         33.29         0.7162         485404.80           68         33.29         0.7162         485404.80           69         33.62         1.2240         829586.60           70         33.98         0.3195         216531.40           70         33.98         0.3195         216531.40           71         34.93         0.1542         104536.90           72         34.76         0.1978         134067.50           72         34.76         0.1978         134067.50           73         35.09         2.4601         1667350.00           35.55         0.3280         222293.70           74         35.82         0.1503         101873.00           74         35.82         0.1503         101873.00           75         35.96         0.1926 <td></td> <td></td> <td></td> <td></td>					
65         32.35         0.6290         426279.50           32.61         0.0569         38595.92           66         32.71         0.4880         330753.30           32.81         0.3680         249443.00           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         485404.80           33.43         0.0369         24997.90           69         33.62         1.2240         829586.60           33.88         0.2609         176827.30           70         33.98         0.3195         216531.40           71         34.19         0.6297         426748.80           72         34.76         0.15290         358506.70           72         34.76         0.1978         134067.50           73         35.09         2.4601         1667350.00           35.58         0.0721         48836.64           73         35.59         2.4601         1667350.00           35.58         0.2028         137472.60           74         35.82					
32.53         0.0569         38595.92           32.61         0.0936         63447.01           66         32.71         0.4880         330753.30           32.81         0.3680         249443.00           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         485404.80           69         33.62         1.2240         82958.60           69         33.88         0.2609         176827.30           70         33.98         0.3195         216531.40           71         34.19         0.6297         426748.80           71         34.19         0.6297         426748.80           72         34.76         0.1542         104536.90           72         34.76         0.1978         134067.50           34.95         0.0721         48836.64           73         35.09         2.4601         1667350.00           35.58         0.2028         137472.60           74         35.82         0.1503         101873.00           75         3					
66         32.71         0.4880         33.0753.30           32.81         0.3680         249443.00           32.94         0.0631         42774.86           33.01         0.1399         94832.61           67         33.16         1.1306         766244.10           68         33.29         0.7162         485404.80           69         33.62         1.2240         829586.60           33.88         0.2609         176827.30           70         33.98         0.3195         216531.40           34.07         0.5052         342417.80           71         34.19         0.6297         426748.80           34.33         0.1542         104536.90           72         34.76         0.1978         134067.50           34.95         0.0721         4883.64           73         35.09         2.4601         1667350.00           35.55         0.3280         222293.70           35.58         0.2028         137472.60           74         35.82         0.1503         101873.00           75         35.96         0.1994         135133.10           76         36.14         0.9206	65				
66       32.71       0.4880       330753.30         32.81       0.3680       249443.00         32.94       0.0631       42774.86         33.01       0.1399       94832.61         67       33.16       1.1306       766244.10         68       33.29       0.7162       485404.80         69       33.62       1.2240       829586.60         69       33.88       0.2609       176827.30         70       33.98       0.3195       216531.40         34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         72       34.76       0.1978       134067.50         72       34.76       0.1978       134067.50         73       35.99       2.4601       1667350.00         35.25       0.3280       222293.70         35.58       0.2028       137472.60         74       35.82       0.1503       101873.00         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77					
32.81       0.3680       249443.00         32.94       0.0631       42774.86         33.01       0.1399       94832.61         67       33.16       1.1306       766244.10         68       33.29       0.7162       485404.80         69       33.43       0.0369       24997.90         69       33.62       1.2240       829586.60         70       33.98       0.2609       176827.30         70       33.98       0.3195       216531.40         71       34.19       0.6297       426748.80         71       34.19       0.6297       426748.80         72       34.76       0.1978       134067.50         72       34.76       0.1978       134067.50         73       35.09       2.4601       1667350.00         74       35.82       0.3280       222293.70         74       35.82       0.1503       101873.00         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77				63447.01	
32.94       0.0631       42774.86         33.01       0.1399       94832.61         67       33.16       1.1306       766244.10         68       33.29       0.7162       485404.80         69       33.62       1.2240       829586.60         70       33.98       0.3195       216531.40         70       34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         72       34.76       0.1978       134067.50         72       34.76       0.1978       134067.50         73       35.09       2.4601       1667350.00         35.25       0.3280       222293.70         35.58       0.2028       137472.60         74       35.82       0.1503       101883.30         75       35.96       0.1994       135133.10         76       36.25       0.1428       96787.77	66			330753.30	
33.01       0.1399       94832.61         67       33.16       1.1306       766244.10         68       33.29       0.7162       485404.80         69       33.62       1.2240       829586.60         33.88       0.2609       176827.30         70       33.98       0.3195       216531.40         34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         34.52       0.5290       358506.70         72       34.76       0.1978       134067.50         73       35.09       2.4601       1667350.00         35.25       0.3280       222293.70         35.47       0.1577       106893.30         74       35.82       0.1503       137472.60         74       35.82       0.1503       101873.00         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77			0.3680	249443.00	
67       33.16       1.1306       766244.10         68       33.29       0.7162       485404.80         33.43       0.0369       24997.90         69       33.62       1.2240       829586.60         33.88       0.2609       176827.30         70       33.98       0.3195       216531.40         34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         34.52       0.5290       358506.70         72       34.76       0.1978       134067.50         34.95       0.0721       48836.64         73       35.99       2.4601       1667350.00         35.25       0.3280       222293.70         35.47       0.1577       106893.30         74       35.82       0.1503       101873.00         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77					
68       33.29       0.7162       485404.80         69       33.62       1.2240       829586.60         70       33.88       0.2609       176827.30         70       33.98       0.3195       216531.40         34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         34.52       0.5290       358506.70         72       34.76       0.1978       134067.50         73       35.09       2.4601       1667350.00         35.25       0.3280       222293.70         35.47       0.1577       106893.30         74       35.58       0.2028       137472.60         75       35.96       0.1503       101873.00         76       36.14       0.9206       623948.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77		33.01	0.1399	94832.61	
69       33.43       0.0369       24997.90         69       33.62       1.2240       829586.60         70       33.98       0.2609       176827.30         70       33.98       0.3195       216531.40         34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         34.52       0.5290       358506.70         72       34.76       0.1978       134067.50         73       35.09       2.4601       1667350.00         35.25       0.3280       222293.70         35.47       0.1577       106893.30         74       35.82       0.1503       101873.00         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77	67	33.16	1.1306	766244.10	
69       33.62       1.2240       829586.60         70       33.88       0.2609       176827.30         70       33.98       0.3195       216531.40         34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         34.52       0.5290       358506.70         72       34.76       0.1978       134067.50         73       35.09       2.4601       1667350.00         35.25       0.3280       222293.70         35.47       0.1577       106893.30         74       35.82       0.2028       137472.60         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77	68	33.29	0.7162	485404.80	
70     33.88     0.2609     176827.30       70     33.98     0.3195     216531.40       34.07     0.5052     342417.80       71     34.19     0.6297     426748.80       34.33     0.1542     104536.90       34.52     0.5290     358506.70       72     34.76     0.1978     134067.50       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       74     35.82     0.2028     137472.60       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       76     36.25     0.1428     96787.77		33.43	0.0369	24997.90	
70     33.98     0.3195     216531.40       71     34.19     0.6297     426748.80       34.33     0.1542     104536.90       34.52     0.5290     358506.70       72     34.76     0.1978     134067.50       34.95     0.0721     48836.64       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       74     35.82     0.1503     137472.60       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       76     36.25     0.1428     96787.77	69	33.62	1.2240	829586.60	
70       33.98       0.3195       216531.40         71       34.07       0.5052       342417.80         71       34.19       0.6297       426748.80         34.33       0.1542       104536.90         34.52       0.5290       358506.70         72       34.76       0.1978       134067.50         34.95       0.0721       48836.64         73       35.09       2.4601       1667350.00         35.25       0.3280       222293.70         35.47       0.1577       106893.30         35.58       0.2028       137472.60         74       35.82       0.1503       101873.00         75       35.96       0.1994       135133.10         76       36.14       0.9206       623948.10         76       36.25       0.1428       96787.77				176827.30	
34.07     0.5052     342417.80       71     34.19     0.6297     426748.80       34.33     0.1542     104536.90       34.52     0.5290     358506.70       72     34.76     0.1978     134067.50       34.95     0.0721     48836.64       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       74     35.82     0.2028     137472.60       75     35.96     0.1503     101873.00       76     36.14     0.9206     623948.10       76     36.25     0.1428     96787.77	70			216531.40	
71     34.19     0.6297     426748.80       34.33     0.1542     104536.90       34.52     0.5290     358506.70       72     34.76     0.1978     134067.50       34.95     0.0721     48836.64       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       74     35.82     0.2028     137472.60       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       76     36.25     0.1428     96787.77					
34.33     0.1542     104536.90       34.52     0.5290     358506.70       72     34.76     0.1978     134067.50       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       74     35.82     0.2028     137472.60       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77	71				
34.52     0.5290     358506.70       72     34.76     0.1978     134067.50       34.95     0.0721     48836.64       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       74     35.82     0.2028     137472.60       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77	•				
72     34.76     0.1978     134067.50       34.95     0.0721     48836.64       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       35.58     0.2028     137472.60       74     35.82     0.1503     101873.00       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77					
34.95     0.0721     48836.64       73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       35.58     0.2028     137472.60       74     35.82     0.1503     101873.00       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77	72				
73     35.09     2.4601     1667350.00       35.25     0.3280     222293.70       35.47     0.1577     106893.30       35.58     0.2028     137472.60       74     35.82     0.1503     101873.00       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77	. –				
35.25 0.3280 222293.70 35.47 0.1577 106893.30 35.58 0.2028 137472.60 74 35.82 0.1503 101873.00 75 35.96 0.1994 135133.10 76 36.14 0.9206 623948.10 36.25 0.1428 96787.77	73				
35.47 0.1577 106893.30 35.58 0.2028 137472.60 74 35.82 0.1503 101873.00 75 35.96 0.1994 135133.10 76 36.14 0.9206 623948.10 36.25 0.1428 96787.77	10				
35.58     0.2028     137472.60       74     35.82     0.1503     101873.00       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77					
74     35.82     0.1503     101873.00       75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77					
75     35.96     0.1994     135133.10       76     36.14     0.9206     623948.10       36.25     0.1428     96787.77	7.4				
76     36.14     0.9206     623948.10       36.25     0.1428     96787.77					
36.25 0.1428 96787.77					
	/6				
36.40 0.1078 73084.84					
		36.40	0.1078	73084.84	

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
77	36.55 36.64	0.0559	37911.91 578458.80	
77	36.64	0.8535	578458.80	
	36.89	0.1168	79138.13	
	36.98	0.1368	92735.42	
70	37.19	0.0734	49737.20	
78	37.27	0.3405	230743.80	
	37.50	0.4414	299132.80	
	37.62	0.0631	42770.73	
	37.70	0.1118	75799.60	
	37.78	0.1147	77729.29	
	37.88	0.1965	133203.20	
	38.08	0.1476	100031.90	
	38.19	0.2857	193621.90	
79	38.34	0.7528	510192.20	
	38.55	0.4829	327281.30	
80	38.70	0.7541	511118.30	
00	39.12	0.2102	142435.40	
	39.18	0.2400	162681.50	
	39.35	0.1281	86811.24	
	39.41	0.1697	115026.90	
81	39.51	0.1393	94442.21	
	39.73	0.5127	347469.40	
82	39.83	0.5902	400004.30	
83	40.05	0.1408	95429.05	
84	40.15	0.8609	583477.10	
	40.36	0.0904	61235.73	
85	40.48	0.1400	94899.53	
05	40.54	0.2197	148906.50	
00	40.82	0.1453	98506.03	
86	40.97	0.1536	104096.10	
	41.11	0.1541	104463.90	
i-C11	41.22	0.3492	236675.20	
	41.42	0.1168	79177.64	
n-C11	41.56	0.7273	492905.30	
	41.76	0.0611	41391.42	
87	41.86	0.3684	249655.30	
88	42.04	0.5401	366076.90	
	42.19	0.1452	98438.40	
	42.37	0.1138	77104.36	
	42.48	0.0760	51489.17	
	42.55	0.0827	56061.71	
	42.63	0.0491	33308.23	
	42.74	0.0393	26666.56	
	42.92	0.4811	326084.40	
	43.04	0.2207	149555.30	
	43.14	0.1562	105832.20	
	43.22	0.0764	51804.43	
	43.29	0.1721	116634.10	
	43.44	0.6107	413934.30	
89	43.66	0.3694	250361.80	
	43.96	0.3327	225515.80	
	44.13	0.2400	162683.20	
	44.36	0.1580	107070.00	
	44.44	0.2052	139064.80	
	44.63	0.1207	81797.95	
	44.79	0.2822	191238.00	
	44.92	0.2785	188755.30	
	45.07	0.0510	34565.90	
90	45.19	0.2558	173380.50	
	45.40	0.3549	240512.30	
	45.49	0.1693	114743.80	
	45.70	0.2612	177016.60	
	45.87			
		0.4014	272066.60	
	46.02	0.1601	108522.90	
	46.20	0.1274	86356.10	
	46.33	0.0529	35873.64	
	46.42	0.0974	66045.85	
n-C12	46.51	0.4487	304090.40	
	46.67	0.1173	79503.66	
	46.83	0.0853	57787.88	

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time 47.01	Area % 0.1144	Area 77530.51	
i-C13	47.01	0.3495	236876.00	
1010	47.37	0.1110	75258.59	
	47.45	0.1326	89897.40	
	47.58	0.0756	51266.46	
	47.70	0.2007	136057.60	
	47.87	0.1557	105551.00	
	48.09	0.2910	197238.20	
	48.34	0.0704	47699.04	
	48.48 48.61	0.1171 0.1531	79342.96 103753.30	
	48.75	0.0991	67186.27	
	48.86	0.0696	47183.18	
	49.02	0.2287	155018.00	
	49.26	0.1470	99650.05	
i-C14	49.40	0.1779	120597.90	
91	49.56	0.2726	184760.10	
	49.70	0.0572	38777.26	
	49.79	0.0794	53839.31	
00	49.91	0.0771	52238.48	
92 n-C13	50.08 50.19	0.1224 0.1595	82955.59 108109.80	
11-013	50.19	0.0285	19287.53	
	50.39	0.0169	11441.50	
	50.55	0.0908	61509.42	
	50.81	0.0525	35607.21	
	50.95	0.0172	11633.62	
	51.11	0.0382	25921.70	
	51.27	0.0156	10558.70	
	51.32	0.0223	15091.67	
	51.48 51.50	0.0175	11845.77 11170.59	
	51.59 51.68	0.0165 0.0191	12944.96	
	51.79	0.0152	10296.52	
	51.93	0.0151	10248.61	
	52.07	0.0211	14332.83	
	52.26	0.0112	7590.54	
	52.38	0.0047	3163.11	
i-C15	52.48	0.0320	21675.08	
	52.55 53.86	0.0303	20556.47	
n-C14	52.86 52.99	0.0362 0.0396	24534.87 26841.10	
11-014	53.14	0.0057	3853.77	
	53.23	0.0256	17321.95	
	53.33	0.0225	15230.91	
	53.59	0.0038	2552.16	
	53.74	0.0135	9151.76	
	53.91	0.0026	1744.58	
	54.00	0.0034	2312.45	
	54.09 54.31	0.0051	3447.41	
	54.21 54.39	0.0076 0.0038	5163.35 2578.82	
i-C16	54.53	0.0036	12522.76	
1-010	54.66	0.0026	1779.37	
	54.74	0.0023	1528.77	
	54.88	0.0043	2897.27	
	55.04	0.0044	2985.31	
n-C15	55.27	0.0214	14510.57	
	55.35	0.0030	2047.98	
	55.46	0.0026	1756.78	
	55.62 55.72	0.0043	2906.16	
	55.72	0.0030	2041.97	
	55.84 55.95	0.0036 0.0016	2447.82 1105.51	
	56.16	0.0016	1870.68	
	56.25	0.0028	2848.92	
	56.43	0.0048	3227.38	
	56.55	0.0045	3061.24	
	56.66	0.0026	1761.04	
	56.83	0.0028	1889.34	

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	56.99	0.0009	611.75	
n C16	57.11 57.22	0.0029	1934.65	
n-C16	57.22 57.35	0.0136 0.0025	9251.02 1721.20	
	57.50	0.0025	997.97	
	57.58	0.0013	1312.06	
	57.68	0.0019	1447.71	
	58.05	0.0018	1252.37	
i-C18	58.15	0.0090	6098.88	
. • . •	58.27	0.0010	685.24	
	58.35	0.0015	1015.85	
	58.49	0.0015	1042.00	
	58.81	0.0019	1298.34	
n-C17	58.94	0.0088	5974.79	
Pristane	59.12	0.0121	8205.31	
	59.61	0.0012	807.82	
	59.72	0.0008	566.40	
	59.85	0.0017	1135.75	
	59.96	0.0010	667.30	
	60.33	0.0013	860.81	
n-C18	60.50	0.0055	3751.49	
- : <del>-</del>	60.65	0.0010	656.62	
Phytane	60.73	0.0056	3812.57	
,	60.88	0.0010	676.23	
	60.97	0.007	481.73	
	61.10	0.0007	636.73	
	61.37	0.0006	436.60	
	61.45	0.0010	681.88	
	61.77	0.0010	645.44	
n-C19	61.95	0.0056	3809.81	
616	62.10	0.0017	1132.46	
	62.22	0.0036	2409.21	
	62.46	0.0019	1275.46	
	62.54	0.0010	680.81	
	62.97	0.0005	323.12	
n-C20	63.30	0.0047	3162.23	
525	63.66	0.0028	1916.17	
	63.86	0.0012	820.08	
IS #3	64.22	0.3891	263698.10	
n-C21	64.58	0.0037	2539.68	
n-C22	65.79	0.0891	60371.50	
522	66.67	0.2252	152615.70	
	66.85	0.0732	49625.84	
n-C23	66.95	0.0414	28044.75	
	67.23	0.1509	102243.10	
n-C24	68.13	0.3976	269504.40	
	68.43	0.2066	140050.70	
n-C25	69.76	0.7687	521007.80	
- <del></del>	69.99	0.1010	68440.31	
	70.48	0.4221	286094.90	
n-C26	71.13	0.2335	158282.50	
	71.70	0.1790	121342.50	
	72.13	0.0695	47070.18	
n-C27	72.48	0.1032	69961.65	
	73.07	0.0499	33811.22	
n-C28	73.47	0.0190	12875.73	
5_5	74.61	0.0039	2638.72	
	75.40	0.0039	863.55	
n-C29	75.78	0.0013	3647.88	
520	76.28	0.0123	8344.71	
	76.95	0.0123	7814.05	
	77.76	0.0005	324.85	
n-C30	77.76 78.02	0.0011	741.34	
11 000	78.53	0.0110	9501.80	
	76.53 79.35	0.0140	29074.98	
	79.35 80.21	0.0429	12351.42	
n-C31	80.75	0.0026	1729.13	
11-031				
	80.93 81.49	0.0099 0.0067	6722.73 4558.87	
	81.90	0.0160	10832.56	

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Peak Name

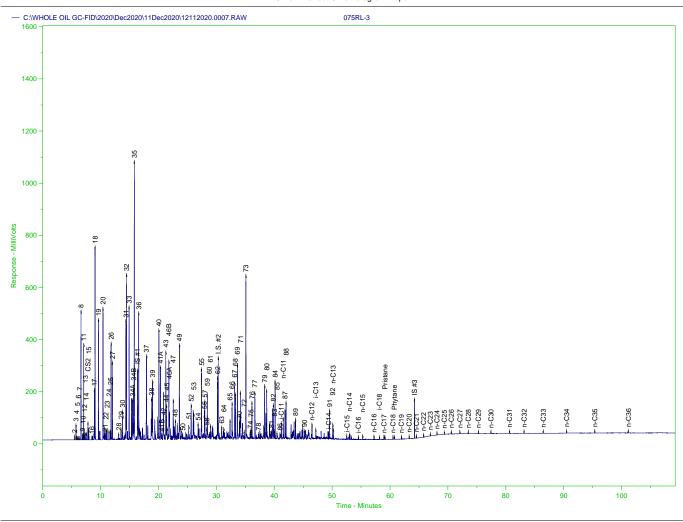
Ret. Time	Area %	Area
82.85	0.0116	7831.57
83.61	0.0011	715.32
84.61	0.0079	5321.55
84.93	0.0038	2595.88
85.74	0.0221	14994.53
87.06	0.0008	523.88
87.66	0.0098	6618.30
88.32	0.0234	15845.03
89.37	0.0121	8220.49
89.56	0.0125	8460.89
90.09	0.0087	5907.47
90.76	0.0020	1347.50
90.92	0.0072	4869.36

n-C32	83.61	0.0011	715.32
	84.61	0.0079	5321.55
	84.93	0.0038	2595.88
	85.74	0.0221	14994.53
n-C33	87.06	0.0008	523.88
	87.66	0.0098	6618.30
	88.32	0.0234	15845.03
	89.37	0.0121	8220.49
	89.56	0.0125	8460.89
	90.09	0.0087	5907.47
n-C34	90.76	0.0020	1347.50
	90.92	0.0072	4869.36
	91.61	0.0060	4085.95
	92.33	0.0008	522.88
	93.05	0.0034	2290.15
	93.75	0.0114	7715.40
	94.39	0.0008	519.51
	94.66	0.0074	5020.49
n-C35	95.35	0.0148	10022.75
	96.15	0.0039	2614.05
	97.12	0.0017	1134.83
	98.13	0.0003	222.32
	99.29	0.0076	5129.98
	99.71	0.0011	754.59
n-C36	101.29	0.0017	1124.90
	101.44	0.0068	4617.07
	102.21	0.0017	1143.87
	102.73	0.0008	524.50
	103.79	0.0189	12839.98
	104.75	0.0007	474.08
	104.89	0.0005	342.60
	105.38	0.0008	531.39
	106.20	0.0014	931.84
	106.31	0.0007	504.94
	106.67	0.0016	1087.59
	106.85	0.0011	738.54
	107.03	0.0011	764.62
	107.90	0.0021	1410.70

Chrom Perfect Chromatogram Report

Total Area = 6.777512E+07 Total Height = 1.922429E+07 Total Amount = 0

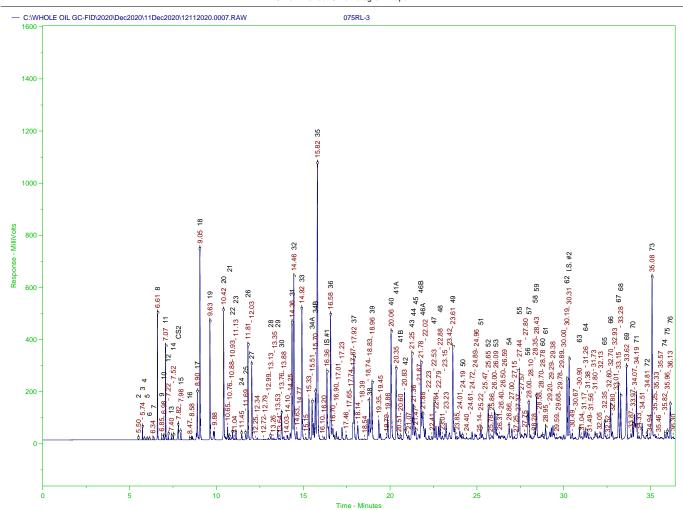




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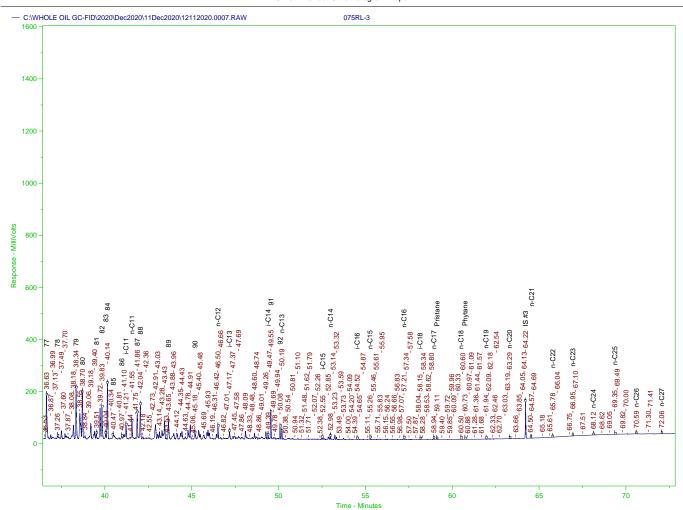
Fax: 865.573.8133 Web: www.microbe.com





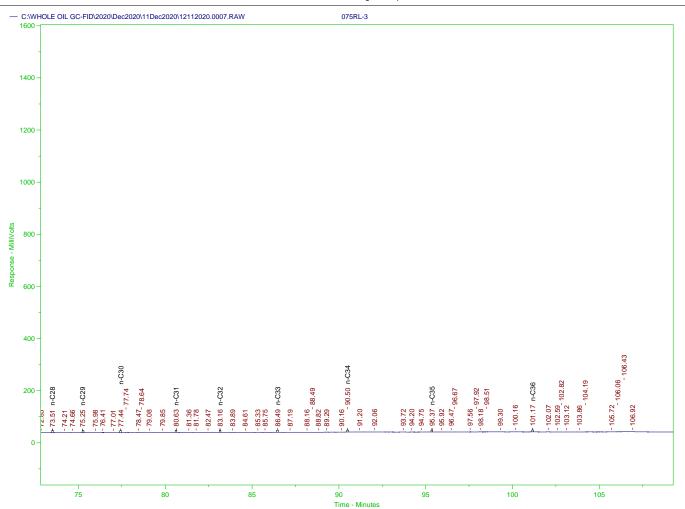
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Sample Name = 075RL-3

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:} \\ \textbf{WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{Dec2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{072} \\ \textbf{ReAN(e} \\ \textbf{nd}) = 12/12/2020 \\ \textbf{7:} \\ \textbf{30:} \\ \textbf{26} \ \textbf{AM} \\ \textbf{AM} \\ \textbf{2020} \\ \textbf{30:} \\ \textbf{3$ 

Method File Name = C:\1 - A Backup\C3442020.met Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.50	0.0083	5484.25
3	5.74	0.0851	56266.38
	6.34	0.0042	2794.63
8	6.61	1.0043	664361.60
9	6.85	0.0234	15448.02
10	6.98	0.0255	16858.14
11	7.07	0.7945	525626.10
12	7.22	0.0466	30813.98
13	7.40	0.0306	20231.67
14	7.52	0.0422	27910.32
CS2	7.82	0.2661	176066.00
15	7.96	0.0765	50632.76
16	8.47	0.0030	1961.24
	8.58	0.0799	52849.65
17	8.90	0.6760	447176.10
18	9.05	2.2513	1489356.00
19	9.63	1.4742	975257.00
	9.88	0.2122	140394.30
20	10.42	1.7908	1184705.00
	10.65	0.1703	112636.00
21	10.76	0.0373	24686.06
	10.88	0.0263	17426.17
22	10.93	0.1053	69653.06
	11.04	0.0168	11104.62
23	11.13	0.0952	62954.64
24	11.45	0.0877	57990.93
25	11.69	0.0919	60794.13
26	11.81	1.3677	904780.90
27	12.03	1.1452	757583.70
	12.25	0.0036	2384.46
	12.34	0.0344	22731.48
	12.72	0.0117	7755.56
	12.79	0.0139	9216.66
	12.99	0.0323	21343.00
28	13.13	0.0639	42273.29
	13.26	0.0297	19670.97
	13.35	0.0172	11348.82
29	13.53	0.1432	94708.34
	13.64	0.0237	15699.08
30	13.76	0.4307	284930.70
	13.88	0.0541	35804.69
	14.03	0.0186	12281.86
	14.10	0.0747	49409.27
	14.25	0.1169	77334.68
31	14.36	1.9426	1285109.00
32	14.46	2.6405	1746780.00
	14.63	0.1486	98307.24
	14.77	0.0218	14410.97
33	14.92	2.1321	1410497.00
	15.15	0.0496	32803.88
	15.33	0.6812	450667.80
34A	15.51	0.8853	585678.70
34B	15.70	0.8260	546442.40
35	15.82	5.0223	3322442.00
	16.10	0.0080	5279.52
	16.20	0.0599	39602.78
IS #1	16.36	1.3455	890076.40
36	16.58	2.0534	1358407.00

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Chrom Perfect Chromatogram Report					
Peak Name	Ret. Time	Area %	Area		
	16.70	0.3199	211601.10		
	16.90 17.01	0.1361	90008.20 46077.21		
	17.01	0.0697 0.2674	176922.60		
	17.23	0.1490	98542.38		
	17.65	0.0034	2223.31		
	17.74	0.0353	23383.51		
	17.87	0.2340	154789.10		
37	17.92	1.4215	940357.80		
	18.14	0.3140	207714.70		
	18.39	0.0198	13070.34		
	18.54	0.0285	18850.04		
20	18.74	0.3457	228707.80		
38 39	18.83 18.96	0.7970 1.0321	527264.40 682754.90		
39	19.35	0.3463	229067.00		
	19.45	0.1076	71165.98		
	19.79	0.0762	50441.98		
	19.86	0.4566	302051.20		
40	20.06	2.0227	1338111.00		
41A	20.35	1.3426	888182.60		
	20.51	0.0376	24854.20		
41B	20.60	0.0765	50603.29		
	20.83 21.07	1.1512	761576.10		
43	21.07	0.0827 1.4658	54727.09 969657.00		
44	21.36	0.5375	355577.70		
45	21.47	0.2563	169528.70		
	21.67	0.1588	105027.90		
46B	21.78	1.2900	853368.40		
46A	21.88	0.8780	580817.60		
	22.02	0.2092	138381.10		
	22.23 22.41	0.0773 0.0628	51166.33 41514.41		
47	22.53	0.6657	440375.30		
-11	22.64	0.2598	171849.60		
	22.79	0.2205	145886.50		
48	22.88	0.2983	197350.30		
	23.01	0.0882	58327.25		
	23.15	0.0999	66058.49		
	23.23 23.42	0.3025	200106.60		
49	23.42	0.2392 1.9171	158233.70 1268269.00		
43	23.85	0.0927	61327.60		
	24.01	0.2656	175709.70		
50	24.19	0.1205	79744.60		
	24.40	0.0675	44664.13		
	24.61	0.0666	44026.57		
	24.72	0.1438	95121.24		
	24.89 24.96	0.1147 0.1154	75864.52 76343.84		
	25.14	0.0457	30237.28		
51	25.22	0.3264	215918.80		
	25.47	0.0420	27791.47		
52	25.65	0.7658	506620.70		
	25.78	0.0380	25141.57		
	25.86	0.1319	87255.24		
50	26.00	0.5259	347929.30		
53	26.09 26.31	0.6120 0.0787	404865.50 52061.63		
	26.40	0.1095	72413.26		
	26.50	0.0837	55339.27		
	26.59	0.0855	56570.58		
54	26.86	0.4179	276435.90		
	27.00	0.2514	166285.00		
	27.15	0.0927	61292.14		
	27.25	0.0454	30061.57		
55	27.37 27.44	0.2057 1.1818	136061.40 781823.90		
55	27.44	0.2089	138225.90		
	2	0.200	.55220.00		

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	27.75	0.1131	74815.89	
	27.80	0.1645	108806.40	
57	28.00	1.1359	751459.60	
	28.10	0.1248	82584.38	
	28.28	0.0636	42075.30	
58	28.35	0.1579	104424.40	
59	28.43	0.8543	565132.30	
	28.58	0.0846	55935.79 77063.30	
60	28.70 28.78	0.1165 0.1328	77062.20 87827.99	
61	28.95	0.1328	179243.70	
01	29.20	0.2315	153141.00	
	29.29	0.2349	155374.10	
	29.38	0.4160	275217.70	
	29.59	0.0469	31054.85	
	29.68	0.0428	28327.73	
	29.78	0.1145	75722.72	
	29.89	0.0515	34094.20	
	30.00	0.0951	62897.29	
62	30.19	1.1213	741766.10	
I.S. #2	30.31	1.4138	935265.30	
	30.49 30.67	0.1626	107590.20	
63	30.90	0.0953 0.2209	63075.08 146127.30	
03	31.04	0.2209	51533.79	
	31.17	0.1770	117080.70	
64	31.26	0.1918	126908.60	
0.	31.38	0.1659	109734.50	
	31.49	0.0393	25985.99	
	31.56	0.0732	48451.71	
	31.73	0.0513	33952.29	
	31.80	0.3170	209733.20	
	32.05	0.1092	72258.77	
	32.13	0.2004	132579.40	
65	32.35	0.3742	247546.30	
	32.52	0.0310	20503.75	
66	32.60 32.70	0.0514	33977.64	
66	32.70 32.80	0.6374 0.1749	421646.60 115698.10	
	32.93	0.0396	26200.15	
	33.01	0.0489	32363.69	
67	33.15	0.9710	642356.80	
68	33.28	0.7412	490317.30	
69	33.62	1.4433	954783.50	
	33.87	0.2003	132516.10	
70	33.97	0.2781	183950.90	
	34.07	0.6867	454291.00	
71	34.19	0.8024	530839.70	
	34.33	0.1077	71259.99	
72	34.51	0.4365	288741.80	
72	34.81 34.94	0.1927	127483.70	
73	34.94 35.08	0.0643 2.9360	42514.75 1942284.00	
75	35.25	0.1281	84760.71	
	35.33	0.1000	66141.69	
	35.46	0.0534	35310.98	
	35.57	0.1278	84562.80	
74	35.82	0.1352	89425.94	
75	35.96	0.2144	141839.90	
76	36.13	0.6420	424700.80	
	36.30	0.1372	90764.45	
	36.53	0.0437	28927.12	
77	36.63	0.9783	647188.90	
	36.87	0.0963	63687.54	
	36.99 37.13	0.1074	71035.30	
78	37.13 37.26	0.0582 0.1716	38522.21 113538.90	
70	37.26 37.49	0.1716	120969.00	
	37.49	0.0325	21504.73	
	37.70	0.2184	144449.70	
	50	5.2.10.1		

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	Chrom Perfec	t Chromatogram Report	
eak Name	Ret. Time	Area %	Area
-	37.87	0.0958	63384.78
	38.08	0.0975	64478.01
	38.18	0.3174	209982.20
9	38.34	1.0154	671697.10
	38.55	0.7355	486590.80
0	38.70	0.8347	552209.30
O	38.84	0.1152	76222.75
	39.06	0.0599	39634.95
	39.18	0.3729	246720.60
_	39.40	0.2789	184535.50
1	39.51	0.1512	100039.60
	39.72	0.6082	402347.60
2	39.83	0.6546	433049.30
3	40.04	0.1283	84908.52
4	40.14	0.9887	654072.10
	40.34	0.0506	33472.82
5	40.47	0.2631	174074.90
	40.81	0.0754	49891.68
	40.97	0.0864	57129.82
	41.10	0.1409	93213.80
C11	41.21	0.3330	220300.90
- •	41.44	0.0796	52664.84
-C11	41.55	0.4091	270629.40
<b>.</b>	41.75	0.465	30754.42
,	41.75	0.4900	30754.42 324136.90
3	42.04	0.6570	434628.90
	42.18	0.0729	48239.92
	42.36	0.0726	48009.63
	42.55	0.1207	79843.62
	42.73	0.0204	13520.90
	42.91	0.4227	279601.00
	43.03	0.1264	83627.27
	43.14	0.1986	131370.10
	43.28	0.2737	181059.50
	43.43	0.3275	216655.90
	43.53	0.0351	23215.82
)	43.65	0.3935	260334.10
	43.88	0.0766	50666.71
	43.96	0.1730	114471.30
	44.12	0.2177	144013.70
	44.35	0.1297	85813.56
	44.43	0.1950	128986.60
	44.63	0.0782	51723.99
	44.03		
		0.2452	162208.50
	44.91 45.06	0.2768	183108.50
1	45.06 45.18	0.0269	17802.36
	45.18	0.1838	121590.90
	45.40	0.2454	162334.50
	45.48	0.1137	75245.30
	45.69	0.1722	113931.30
	45.93	0.4660	308249.80
	46.19	0.0513	33958.72
	46.31	0.0304	20089.29
	46.42	0.0993	65722.34
C12	46.50	0.2440	161399.80
	46.66	0.0687	45447.12
	46.82	0.0576	38102.41
	47.01	0.0659	43591.59
:13	47.17	0.0039	131800.30
, 10	47.17	0.1992	50979.54
	47.45 47.59	0.1022	67580.23
	47.58	0.0560	37058.55
	47.69	0.1180	78031.78
	47.86	0.1043	68999.66
	48.09	0.2322	153598.60
	48.33	0.0398	26313.18
	48.48	0.0827	54730.39
	48.60	0.1264	83651.61
		0.0786	51998.55
	48.74	0.0786	51998

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	Chrom Perfec	ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	49.01	0.1512	100048.30
	49.26	0.1555	102851.80
i-C14	49.39	0.0711	47045.86
	49.47	0.0287	18970.43
91	49.55	0.3843	254210.70
	49.69	0.0528	34958.21
	49.78	0.0458	30312.29
	49.94	0.0598	39559.54
92	50.08	0.1807	119567.40
n-C13	50.19	0.1373	90832.21
	50.38	0.0115	7584.14
	50.54	0.0829	54851.15
	50.81	0.0445	29437.94
	50.94	0.0152	10048.46
	51.10	0.0366	24217.64
	51.32	0.0327	21624.46
	51.48	0.0327	12859.02
	51.62	0.0188	12435.43
	51.71	0.0154	10209.34
	51.79	0.0209	13857.97
	52.07	0.0477	31572.26
	52.26	0.0154	10166.60
	52.38	0.0052	3424.19
i-C15	52.55	0.0766	50653.84
	52.85	0.0707	46748.05
n-C14	52.98	0.0468	30928.00
	53.14	0.0057	3765.70
	53.23	0.0632	41803.26
	53.32	0.0384	25382.09
	53.49	0.0039	
			2608.92
	53.59	0.0055	3661.72
	53.73	0.0298	19738.95
	54.00	0.0032	2102.46
	54.09	0.0140	9280.59
	54.20	0.0067	4447.31
	54.39	0.0036	2364.61
i-C16	54.52	0.0128	8443.15
	54.65	0.0073	4861.69
	54.87	0.0060	3969.93
	55.11	0.0054	3540.85
n-C15	55.26	0.0295	19526.24
	55.46	0.0060	3939.85
	55.61	0.0050	3291.63
	55.71	0.0030	4962.02
	55.83		
		0.0100	6612.85
	55.95	0.0015	1012.85
	56.15	0.0064	4248.86
	56.24	0.0076	5026.54
	56.55	0.0143	9489.89
	56.66	0.0019	1225.53
	56.83	0.0058	3848.89
	56.98	0.0016	1060.15
	57.07	0.0063	4188.00
n-C16	57.21	0.0184	12179.03
	57.34	0.0035	2291.60
	57.50	0.0020	1339.76
	57.58	0.0020	2693.65
	57.56 57.87	0.0006	416.60
i C10	58.04 58.15	0.0023	1517.49
i-C18	58.15	0.0073	4854.38
	58.28	0.0014	894.79
	58.34	0.0012	795.44
	58.53	0.0038	2493.74
	58.62	0.0022	1450.30
	58.80	0.0039	2600.06
n-C17	58.94	0.0160	10599.93
Pristane	59.11	0.0107	7053.84
i natarie	59.40		
	J <b>J.4</b> U	0.0095	6282.09
	E0.70	0.0000	F00 F0
	59.72 59.85	0.0008 0.0018	526.56 1214.78

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Peak Name         Rel. Time 59 86 00.09 0.0013 882:16 60.09 0.0013 882:16 60.09 0.0013 882:16 60.09 0.0013 882:16 60.001 0.0012 2055:20 0.0021 2055:20 0.0021 2055:20 0.0022 2765:18 2052:20 0.0022	Chrom Perfect Chromatogram Report				
60.09	Peak Name	Ret. Time	Area %	Area	
n-C18		59.96	0.0019	1225.08	
n-C18 60.50 00.0079 5214.95 60.60 00.0012 786.78 60.68 00.003 00.0012 786.78 60.88 00.0034 2248.55 60.88 00.0034 1824.55 60.99 00.0019 1185.47 61.58 00.19 61.58 00.019 1185.47 61.57 00.009 1518.517 61.68 00.0005 402.88 61.68 00.0006 402.88 62.03 62.03 00.0017 1114.20 62.46 62.46 00.0010 679.35 62.23 00.0017 1107.74 62.54 00.005 62.54 00.005 62.54 00.005 62.54 00.005 62.54 00.005 62.54 00.005 62.68 62.68 00.0010 679.35 62.70 00.0005 333.397 62.70 00.0005 333.397 62.70 00.0005 1191.311 15.83 64.62 64.63 00.0010 679.35 64.63 64.63 00.0018 1219.44 15.84 15.83 64.13 00.0018 1219.41 15.83 64.13 00.0018 1219.41 15.83 64.13 00.0018 1219.41 15.84 64.65 00.002 1419.49 16.65 66.66 00.002 16.65 66.67 00.002 17.65 66.67 00.002 18.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.67 00.002 19.65 66.77 19.65 66.78 00.002 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 00.003 19.65 66.78 19.65 66.7		60.09	0.0013	892.16	
Phylane					
Physine 60.73	n-C18				
60.88					
60.97   0.0028   1852.69     61.09   0.0019   1248.46     61.28   0.0018   1185.17     61.36   0.0013   835.27     61.44   0.0017   1114.20     61.57   0.0009   567.63     61.68   0.0006   402.88     62.09   0.0005   3371.50     62.09   0.0005   3371.50     62.09   0.0005   3371.50     62.08   0.0008   2286.70     62.08   0.0008   2286.70     62.09   0.0008   2286.70     62.09   0.0008   2286.70     62.00   0.0008   2286.70     62.00   0.0005   333.91     62.54   0.0010   1670.35     62.54   0.0010   1670.35     62.54   0.0009   1913.91     62.70   0.0005   333.91     62.70   0.0005   333.91     62.70   0.0005   333.91     63.19   0.0008   514.51     63.66   0.0022   1467.97     63.29   0.0038   2284.63     63.66   0.0022   1467.97     64.05   0.0032   2091.79     64.05   0.0008   2890.93     64.05   0.0008   2890.93     64.05   0.0008   2890.93     64.05   0.0008   1219.41     18.83   64.22   0.4128   273097.10     64.57   0.0018   1219.41     64.57   0.0021   1418.43     65.61   0.0020   13765.26     66.62   0.0022   1477.50     67.01   0.0043   13765.26     66.04   0.0294   19423.92     67.10   0.0543   35928.74     67.51   0.1500   99241.70     67.51   0.1500   99241.70     67.52   68.95   0.0527   34892.04     67.53   0.0046   30892.74     67.54   68.12   0.0085   13766.60     68.62   0.1548   122437.00     69.05   0.1724   1405.90     69.05   0.1724	Phytane				
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62.18	n-C19	61.94			
62.33		62.09	0.0035	2296.70	
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n-C22				665.15	
n-C22         66.78         0.0162         10728.58           66.04         0.0294         19423.92           66.75         0.1548         102437.00           n-C23         66.95         0.0527         34892.04           67.10         0.0543         35928.74           67.51         0.1500         99241.70           n-C24         68.12         0.2085         137960.60           68.62         0.1958         129527.10           69.05         0.1724         114035.90           n-C25         69.35         0.0490         32420.45           69.49         0.0475         31430.13           69.82         0.1226         81089.43           70.00         0.0878         58097.17           n-C26         70.59         0.1202         79514.16           71.30         0.0466         30849.94           n-C27         72.06         0.0042         2773.41           n-C28         73.51         0.0215         14202.61           n-C28         73.51         0.0215         14202.61           75.98         0.0210         13923.64           n-C30         77.44         0.0189         12524.73					
66.04   0.0294   19423.92   66.75   0.1548   102437.00   n-C23   66.95   0.0527   34892.04   67.10   0.0543   35928.74   67.51   0.1500   99241.70   n-C24   68.12   0.2085   137960.60   68.62   0.1958   129527.10   69.05   0.1724   114035.90   n-C25   69.35   0.0490   32420.45   69.82   0.1726   81089.43   77.00   0.0878   58097.17   n-C26   77.59   0.1202   79514.16   71.30   0.0466   3084.94   171.41   0.0201   13325.40   n-C27   72.06   0.0042   2773.41   n-C28   73.51   0.0215   14202.61   n-C28   73.51   0.0215   14202.61   n-C29   75.25   0.0211   13926.55   n-C29   75.25   0.0211   13926.55   n-C29   75.25   0.0216   74.21   n-C29   75.98   0.0230   15214.75   n-C29   75.98   0.0230   15214.95   n-C30   77.44   0.0041   13923.64   n-C30   77.44   0.0041   13923.64   n-C30   77.44   0.0041   2724.03   n-C30   77.44   0.0041   2724.03   n-C31   78.64   0.0179   11848.50   n-C31   79.98   0.0182   12069.20   n-C31   80.63   0.0312   20623.74   n-C31   80.63   0.0312   20623.74   n-C31   80.63   0.0312   20623.74   n-C31   80.63   0.0140   9238.31   n-C31   80.63   0.0140   9238.31   n-C31   80.63   0.0140   9238.31   n-C31   81.36   0.0140   9238.31   n-C31   82.47   0.0165   10109.44   n-C31   82.47   0.0165   0.0169.44   n-C31   77.967   n-C32   79.967   n-C33   10.109.44   179.967   n-C34   10.109.44   179.967   n-C35   10.109.44   179.967   n-C36   10.109.44   10.109.44   n-C37   11848.50   n-C31   10.109.44   10.109.44   n-C32   10.109.34   n-C33   10.109.44   10.109.44   n-C34   10.109.44   10.109.44   n-C35   10.109.44   10.109.44   n-C36   10.109.44   10.109.44   n-C37   10.109.44   10.109.44   n-C38   10.109.44   10.109.44   n-C39   10.109.44   10.109.44   n-C31   10.109.44   n-C31   10.109.44   n-C31   10.109.44   n-C31   10.109.44   n-C31   1					
n-C23 66.75 0.1548 102437.00 n-C23 66.75 0.0527 34892.04 67.10 0.0543 35928.74 67.10 0.0543 35928.74 67.51 0.1500 99241.70 n-C24 68.12 0.2085 137960.60 68.62 0.1958 129527.10 69.05 0.1724 114035.90 n-C25 69.35 0.0490 32420.45 69.49 0.0475 31430.13 69.82 0.1226 81089.43 70.00 0.0878 58097.17 n-C26 70.59 0.1202 79514.16 71.30 0.0466 30849.94 71.41 0.0201 13325.40 n-C27 72.06 0.0042 2773.41 0.0201 13325.40 n-C27 72.06 0.0042 2773.41 13926.55 n-C28 73.51 0.0215 14202.61 74.21 0.0080 5324.75 n-C29 75.25 0.0106 7010.51 75.98 0.0230 15214.95 76.41 0.0181 11954.38 n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 n-C30 79.08 0.0182 12069.20 n-C31 80.63 0.0312 20623.74 n-C31 80.63 0	n-C22				
n-C23         66.95         0.0527         34892.04           67.51         0.0543         35928.74           67.51         0.1500         99241.70           n-C24         68.12         0.2085         137960.60           68.62         0.1958         129527.10           69.05         0.1724         114035.90           n-C25         69.35         0.0490         32420.45           69.49         0.0475         31430.13           69.82         0.1226         81089.43           70.00         0.0878         58097.17           n-C26         70.59         0.1202         79514.16           71.30         0.0466         30849.94           n-C27         72.06         0.0042         2773.41           n-C28         73.51         0.0211         13926.55           n-C28         73.51         0.0215         14202.61           n-C29         75.25         0.0106         7010.51           n-C29         75.25         0.0106         7010.51           75.98         0.0230         15214.95           76.41         0.0181         11954.38           77.04         0.00165         10910.07 </td <td></td> <td></td> <td></td> <td></td>					
n-C24 67.10 67.51 0.1500 99241.70 n-C24 68.62 0.2085 137960.60 68.62 0.1958 129527.10 69.05 0.1724 114035.90 n-C25 69.35 0.0490 32420.45 69.82 0.1226 81089.43 70.00 0.0878 58097.17 n-C26 70.59 0.1202 79514.16 71.30 0.0466 30849.94 n-C27 72.06 0.0042 2773.41 0.0201 13325.40 n-C28 73.51 0.0215 14202.61 74.21 0.0080 5324.75 n-C29 75.25 0.016 0.0189 12524.73 n-C29 75.98 0.0230 15214.95 76.41 0.0181 11954.38 n-C30 77.74 0.0065 10910.07 78.87 0.0019 13923.64 n-C30 77.74 0.00165 10910.07 78.64 0.00182 12069.20 79.08 0.0182 12069.20 12083.31 n-C31 80.63 0.0312 2.0623.74 10109.44	n C22				
n-C24	11-023				
n-C24         68.12         0.2085         137960.60           68.62         0.1958         129527.10           69.05         0.1724         114035.90           n-C25         69.35         0.0490         32420.45           69.82         0.1226         81089.43           70.00         0.0878         58097.17           n-C26         70.59         0.1202         79514.16           71.30         0.0466         30849.94           71.41         0.0201         13325.40           n-C27         72.06         0.0042         2773.41           72.85         0.0211         13926.55           n-C28         73.51         0.0215         14202.61           74.21         0.0080         5324.75           74.21         0.0080         5324.75           n-C29         75.25         0.0106         7010.51           n-C29         75.25         0.0106         7010.51           n-C30         77.44         0.0181         11954.38           77.01         0.0210         13923.64           n-C30         77.44         0.0041         2724.03           79.98         0.0210         13923.64					
n-C25 68.62 0.1958 129527.10 69.05 0.1724 114035.90 n-C25 69.35 0.0490 32420.45 69.49 0.0475 31430.13 69.82 0.1226 81089.43 58097.17 n-C26 70.59 0.1202 79514.16 71.30 0.0466 30849.94 71.41 0.0201 13325.40 n-C27 72.06 0.0042 2773.41 13926.55 n-C28 73.51 0.0211 13926.55 14202.61 74.21 0.0080 5324.75 n-C29 75.25 0.0106 70.0151 75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64 n-C30 77.44 0.0165 10910.07 78.47 0.0065 10910.07 78.47 0.0065 10910.07 78.47 0.0065 10910.07 78.47 0.0065 10910.07 78.47 0.0165 10910.07 78.47 0.0165 10910.07 78.47 0.0165 10910.07 78.47 0.0165 10910.07 78.47 0.0165 10910.07 78.47 0.0165 10910.07 79.85 0.0246 1224.23 12069.20	n-C24				
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69.82       0.1226       81089.43         70.00       0.0878       58097.17         n-C26       70.59       0.1202       79514.16         71.30       0.0466       30849.94         71.41       0.0201       13325.40         n-C27       72.06       0.0042       2773.41         n-C28       73.51       0.0211       13926.55         n-C28       73.51       0.0215       14202.61         74.21       0.0080       5324.75         74.66       0.0189       12524.73         n-C29       75.25       0.0106       7010.51         75.98       0.0230       15214.95         76.41       0.0181       11954.38         77.01       0.0210       13923.64         n-C30       77.44       0.0041       2724.03         77.74       0.0165       10910.07         78.47       0.0075       4993.48         78.64       0.0179       11848.50         79.08       0.0182       12069.20         79.85       0.0246       16243.23         n-C31       80.63       0.0312       20623.74         81.36       0.0112       7379.67	n-C25	69.35	0.0490	32420.45	
n-C26     70.00     0.0878     58097.17       n-C26     70.59     0.1202     79514.16       71.30     0.0466     30849.94       71.41     0.0201     13325.40       n-C27     72.06     0.0042     2773.41       n-C28     73.51     0.0215     14202.61       74.21     0.0080     5324.75       74.66     0.0189     12524.73       n-C29     75.25     0.0106     7010.51       75.98     0.0230     15214.95       76.41     0.0181     11954.38       77.01     0.0210     13923.64       n-C30     77.44     0.0041     2724.03       77.74     0.00165     10910.07       78.47     0.0075     4993.48       79.08     0.0182     12069.20       79.08     0.0182     12069.20       79.85     0.0246     16243.23       n-C31     80.63     0.0312     20623.74       81.36     0.0140     9238.31       81.78     0.0112     7379.67       82.47     0.0153     10109.44		69.49	0.0475	31430.13	
n-C26       70.59       0.1202       79514.16         71.30       0.0466       30849.94         71.41       0.0201       13325.40         n-C27       72.06       0.0042       2773.41         72.85       0.0211       13926.55         n-C28       73.51       0.0215       14202.61         74.21       0.0080       5324.75         74.66       0.0189       12524.73         n-C29       75.25       0.0106       7010.51         75.98       0.0230       15214.95         76.41       0.0181       11954.38         77.01       0.0210       13923.64         n-C30       77.44       0.0041       2724.03         77.74       0.0165       10910.07         78.47       0.0075       4993.48         79.08       0.0182       12069.20         79.85       0.0246       16243.23         n-C31       80.63       0.0312       20623.74         81.36       0.0140       9238.31         81.78       0.0112       7379.67         82.47       0.0153       10109.44					
71.30 0.0466 30849.94 71.41 0.0201 13325.40  n-C27 72.06 0.0042 2773.41 72.85 0.0211 13926.55  n-C28 73.51 0.0215 14202.61 74.21 0.0080 5324.75 74.66 0.0189 12524.73  n-C29 75.25 0.0106 7010.51 75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64  n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0165 10910.07 78.47 0.0165 10910.07 78.64 0.0179 11848.50 79.08 0.0182 12069.20 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.36 0.0112 7379.67 82.47 0.0153 10109.44					
71.41 0.0201 13325.40  n-C27 72.06 0.0042 2773.41  72.85 0.0211 13926.55  n-C28 73.51 0.0215 14202.61  74.21 0.0080 5324.75  74.66 0.0189 12524.73  n-C29 75.25 0.0106 7010.51  75.98 0.0230 15214.95  76.41 0.0181 11954.38  77.01 0.0210 13923.64  n-C30 77.44 0.0041 2724.03  77.74 0.0165 10910.07  78.47 0.0075 4993.48  78.64 0.0179 11848.50  79.08 0.0182 12069.20  79.85 0.0246 16243.23  n-C31 80.63 0.0312 20623.74  81.36 0.0140 9238.31  81.78 0.0112 7379.67  82.47 0.0153 10109.44	n-C26				
n-C27					
n-C28     72.85     0.0211     13926.55       n-C28     73.51     0.0215     14202.61       74.21     0.0080     5324.75       74.66     0.0189     12524.73       n-C29     75.25     0.0106     7010.51       75.98     0.0230     15214.95       76.41     0.0181     11954.38       77.01     0.0210     13923.64       n-C30     77.44     0.0041     2724.03       77.74     0.0165     10910.07       78.47     0.0075     4993.48       78.64     0.0179     11848.50       79.08     0.0182     12069.20       79.85     0.0246     16243.23       n-C31     80.63     0.0312     20623.74       81.36     0.0140     9238.31       81.78     0.0112     7379.67       82.47     0.0153     10109.44	n C27				
n-C28 73.51 0.0215 14202.61 74.21 0.0080 5324.75 74.66 0.0189 12524.73 n-C29 75.25 0.0106 7010.51 75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64 n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44	11-021				
74.21 0.0080 5324.75 74.66 0.0189 12524.73  n-C29 75.25 0.0106 7010.51 75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64  n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23  n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44	n-C28				
74.66 0.0189 12524.73  n-C29 75.25 0.0106 7010.51 75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64  n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44	11 020				
n-C29 75.25 0.0106 7010.51 75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64 n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44					
75.98 0.0230 15214.95 76.41 0.0181 11954.38 77.01 0.0210 13923.64  n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44	n-C29				
76.41 0.0181 11954.38 77.01 0.0210 13923.64 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44	020				
n-C30 77.44 0.0041 2724.03 77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44					
77.74 0.0165 10910.07 78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44			0.0210		
78.47 0.0075 4993.48 78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44	n-C30				
78.64 0.0179 11848.50 79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44					
79.08 0.0182 12069.20 79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44					
79.85 0.0246 16243.23 n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44					
n-C31 80.63 0.0312 20623.74 81.36 0.0140 9238.31 81.78 0.0112 7379.67 82.47 0.0153 10109.44					
81.36       0.0140       9238.31         81.78       0.0112       7379.67         82.47       0.0153       10109.44	n C24				
81.78       0.0112       7379.67         82.47       0.0153       10109.44	n-C31				
82.47 0.0153 10109.44					
552 00.10	n-C32				
	002	55.15	0.0000	551.25	

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10515 Research Drive Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133 Web: www.microbe.com



Chrom Perfect Ch	romatogram Report
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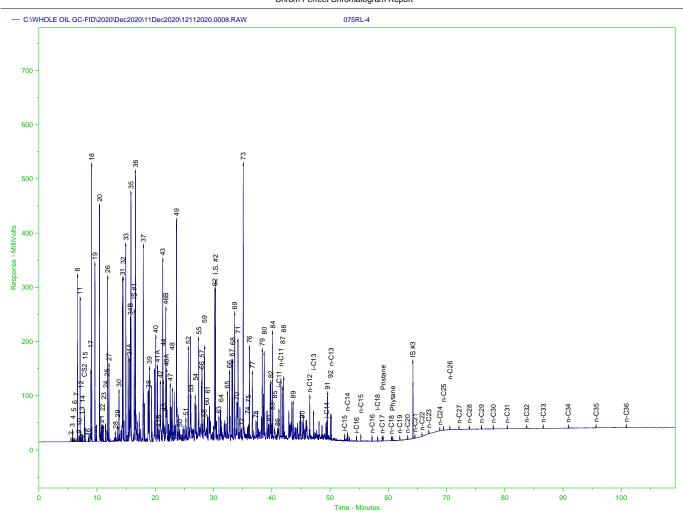
Peak Name	Ret. Time	Area %	Area
	83.89	0.0088	5820.13
	84.61	0.0035	2309.36
	85.33	0.0132	8725.17
	85.75	0.0080	5277.22
n-C33	86.49	0.0107	7067.49
	87.19	0.0173	11436.71
	88.16	0.0053	3531.23
	88.49	0.0041	2738.45
	88.82	0.0010	655.29
	89.29	0.0024	1558.07
	90.16	0.0039	2564.69
n-C34	90.50	0.0182	12032.29
	91.20	0.0182	12049.36
	92.06	0.0029	1950.45
	93.72	0.0063	4162.22
	94.20	0.0008	533.58
	94.75	0.0051	3344.89
n-C35	95.37	0.0073	4805.62
	95.92	0.0074	4870.28
	96.47	0.0016	1087.16
	96.67	0.0025	1650.27
	97.56	0.0026	1732.92
	97.92	0.0010	629.58
	98.18	0.0022	1437.66
	98.51	0.0006	374.79
	99.30	0.0033	2188.53
	100.16	0.0215	14190.55
n-C36	101.17	0.0008	530.59
	102.07	0.0042	2765.19
	102.59	0.0010	641.70
	102.82	0.0010	630.36
	103.12	0.0009	624.83
	103.86	0.0011	738.51
	104.19	0.0006	392.83
	105.72	0.0026	1705.47
	106.06	0.0033	2181.97
	106.43	0.0015	1002.11
	106.92	0.0030	1961.93
Total Area - 6 615406F+07	Total Height - 2 027148F+07	Total Amount - 0	

Total Area = 6.615406E+07

Total Height = 2.027148E+07

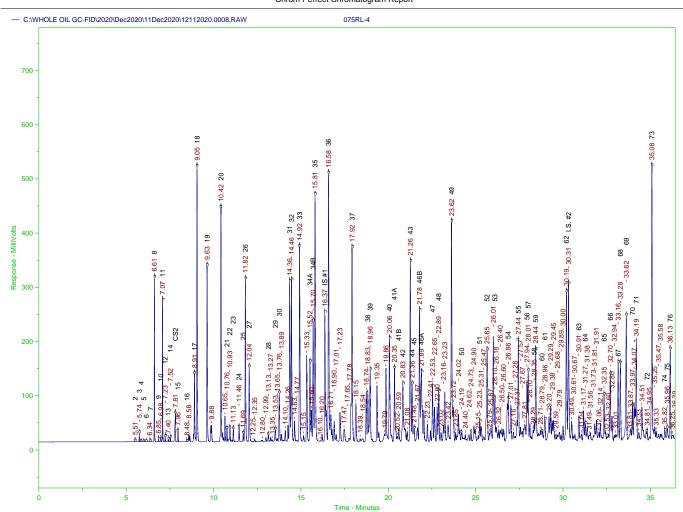
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Printed on 12/14/2020 9:54:46 AM Page 1 of 1

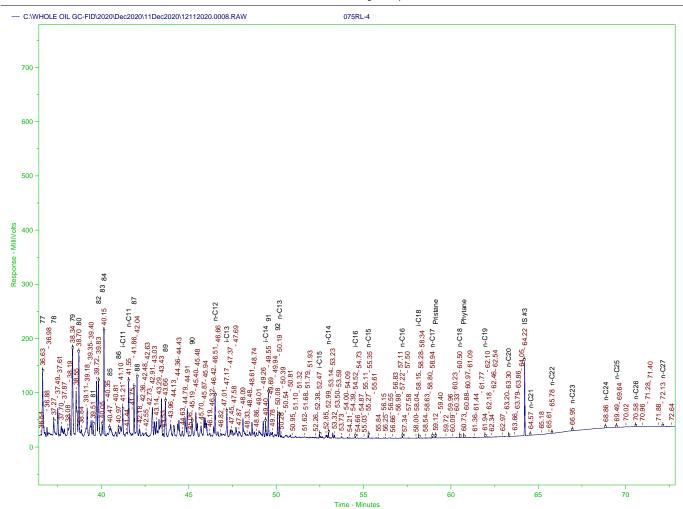




Printed on 12/14/2020 9:55:07 AM Page 1 of 3

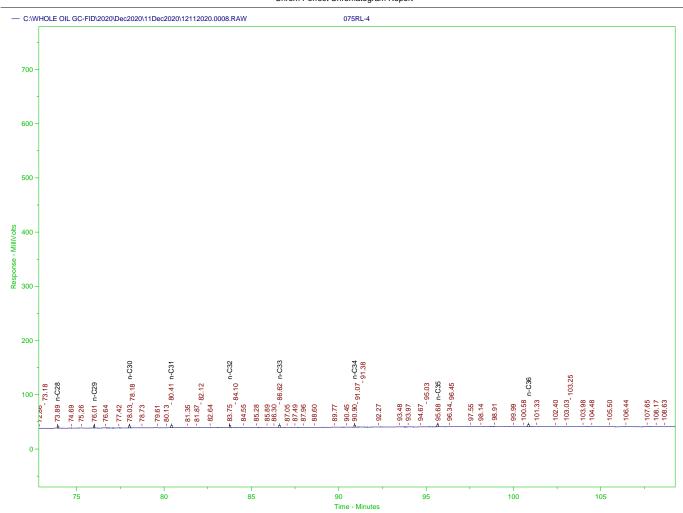
Fax: 865.573.8133 Web: www.microbe.com





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Sample Name = 075RL-4

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{1212} \\ \textbf{2020} \\ \textbf{9:32:04} \ AM \\ \textbf{AM } \\$ 

Method File Name = C:\1 - A Backup\C3442020.met Me

Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.51	0.0025	1650.64
3	5.74	0.0292	19270.45
J	6.34	0.0019	1262.04
8	6.61	0.6293	415140.50
9	6.85	0.0100	6592.74
10	6.98	0.0108	7145.60
11			
12	7.07	0.5785	381613.70
	7.23	0.0230	15179.37
13	7.40	0.0136	8972.41
14	7.52	0.0201	13257.83
CS2	7.81	0.2420	159617.80
15	7.96	0.0508	33532.46
16	8.48	0.0013	862.57
	8.58	0.0714	47090.57
17	8.91	0.4592	302932.00
18	9.05	1.5873	1047162.00
19	9.63	1.0607	699773.60
	9.88	0.1943	128158.90
20	10.42	1.5794	1041924.00
	10.65	0.1603	105721.10
21	10.76	0.0848	55949.55
22	10.93	0.1217	80266.02
23	11.13	0.0860	56762.53
24	11.46	0.1001	66035.46
25	11.69	0.0599	39508.25
26	11.82	1.1394	751644.30
27	12.04	0.5591	368838.10
21	12.25	0.0037	2459.90
	12.35	0.0258	17034.56
	12.80	0.0272	17920.41
	12.99	0.0356	23514.55
28	13.13	0.0564	37236.82
20	13.13		23044.78
	13.35	0.0349	
00		0.0182	12017.18
29	13.53	0.1197	78967.35
00	13.65	0.0270	17788.97
30	13.76	0.3881	256005.80
	13.89	0.0791	52155.47
	14.10	0.0921	60773.39
	14.26	0.1344	88689.16
31	14.36	1.2737	840295.90
32	14.46	1.2838	846933.70
	14.63	0.1708	112688.80
	14.77	0.0170	11210.55
33	14.92	1.5227	1004550.00
	15.15	0.0559	36858.25
	15.33	0.6874	453488.50
34A	15.52	0.6235	411349.60
	15.60	0.2546	167985.80
34B	15.70	0.9868	651025.20
35	15.81	2.1746	1434615.00
	16.10	0.0116	7646.82
	16.20	0.0711	46892.70
IS #1	16.37	1.3030	859606.00
36	16.58	2.1418	1412934.00
50	16.71	0.3655	241153.80
	16.90	0.1617	106663.20
	17.01	0.0818	53939.36
	17.01	0.0616	55959.50

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Peak Name         Rel. Time         Area %         Area %         Area %         17.23         0.3226         213455.0         213455.0         213455.0         11.767         0.0044         2895.33         115616.00         2895.33         115616.00         2895.33         115616.00         2895.33         1157.22         11.8727         1235424.00         2895.33         125446.00         2895.33         124447.00         12895.33         124447.00         12895.33         124487.00         12895.34         12895.3	Chrom Perfect Chromatogram Report			
17.47	Peak Name			
17.65				
37				
37         17.92         1.8727         123542400           18.15         0.3691         243487.50         17869.47           18.54         0.0271         17869.37         18654           18.74         0.4005         22422.10           38         18.38         0.7548         29792.10           39         19.35         0.5499         362774.30           19.79         0.1072         70731.55           40         20.06         1.0838         71498.90           41A         20.35         0.7421         48959.23           41B         20.55         0.0490         32355.56           42         20.18         0.0011         73300.73           43         21.26         1.0494         96574.80           44         20.35         0.0111         7300.73           42         20.88         0.0010         9017.41           43         21.26         1.4842         96576.80           44         21.38         0.0010         9017.41           43         21.26         1.4942         96576.80           44         21.38         0.1907         10.5800.30           45         21.48				
18.15   0.3691   2434877.50   18.59   0.0271   17869.47   18.54   0.0449   29636.93   18.74   0.4005   24622.10   38   18.83   0.3653   251455.10   39   18.96   0.75449   39722.20   39   18.96   0.75449   39722.20   39   18.96   0.75449   39722.20   39   18.98   0.56949   45943.30   40   20.06   1.0838   714983.90   410   20.05   0.1072   498592.30   411   20.52   0.0490   32355.56   412   20.83   0.8871   591832.10   414   21.08   0.05101   60017.41   434   21.28   1.4842   3985761.81   445   21.48   0.4977   312890.30   446   21.48   0.4977   312890.30   456   21.78   1.0693   765420.60   468   21.78   1.0693   765420.60   468   21.78   1.0693   765420.60   469   22.23   0.1562   1.00423.60   47   22.55   0.4843   319521.70   48   22.89   0.4789   1.3898.31   49   23.62   1.3486   2.38937.30   49   23.62   1.3966   2.3285   49   23.62   1.3966   2.38837.30   49   23.62   1.3966   2.38837.30   49   23.62   1.3966   2.38837.30   49   23.62   1.3966   2.38837.30   49   23.62   1.3966   2.38837.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.303389.30   49   23.62   1.9764   1.30389.30   49   23.62   1.9764   1.30389.30   49   23.62   1.9764   1.9769.30   40.63   2.986   2.986   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0071   1.9765   2.986   40.0	37			
18.39	37			
18.54				
38         18.74         0.4005         264422.10           39         18.96         0.7548         497922.20           19.35         0.5499         362774.30           19.86         0.8949         458435.30           40         20.06         1.0838         774985.90           41A         20.52         0.0490         32535.56           41B         20.52         0.0490         32355.56           42         20.83         0.8971         591832.10           42         20.83         0.8971         591832.10           44         21.58         0.0912         90174           44         21.08         0.0917         90174           44         21.18         0.0917         12580.03           44         21.18         0.0917         12580.03           45         21.48         0.1907         12580.03           46         21.48         0.1907         12580.03           46B         21.76         0.1977         13046.80           46B         21.76         0.1977         13046.80           46A         21.89         1.388         889810.30           46B         21.76         <				
38         18.86         0.7548         497922.20           19.35         0.5499         362774.30           19.79         0.1072         70731.55           40         20.06         1.0838         714983.30           41A         20.25         0.7421         488592.30           41B         20.52         0.0490         32355.56           42         20.83         0.1119         7308.77           42         20.83         0.0111         7308.77           42         20.83         0.0111         7308.77           42         20.83         0.0111         7308.77           42         20.83         0.0111         7308.77           42         20.83         0.0111         60017.41           43         21.26         1.4942         985761.80           44         21.38         0.4707         310494.60           45         21.87         1.993         705420.60           46B         21.78         1.0983         705420.60           46B         21.89         1.3488         8889810.30           46A         21.89         1.3488         889810.30           47         22.55				
99	38			
19.35   0.5499   362774.30   19.79   0.1072   70731.55   19.86   0.6949   458435.30   40   20.06   1.0838   714883.90   414   20.35   0.7421   489592.30   20.52   0.0490   32355.56   418   20.59   0.1119   73006.73   42   21.08   0.0910   60017.41   43.0936.73   42   21.08   0.0910   60017.41   43.0936.73   43   21.26   1.4942   985761.80   44   21.36   0.4707   310542.40   45   21.67   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   130404.60   46.04   21.87   0.1907   0.19				
19.79   0.1072   70731.55     19.86				
19.86   0.6949   458435.30   440   20.06   1.0838   714983.90   411   420.35   0.7421   489592.30   411   20.52   0.0490   32255.56   418   20.59   0.1119   73808.73   42   20.083   0.8971   1591832.10   43   21.26   1.4942   995761.80   44   21.36   0.0910   60017.41   43   21.26   1.4942   995761.80   44   21.36   0.4707   310542.40   44   21.36   0.4707   310542.40   45   21.48   0.1997   125800.30   46B   21.78   1.0993   70.5420.60   46A   21.88   1.0993   70.5420.60   46A   21.89   1.3488   888910.30   22.23   0.1522   10.0423.60   46A   21.89   1.3488   888910.30   22.23   0.1522   10.0423.60   46A   22.23   0.1522   10.0423.60   46A   22.23   0.1522   10.0423.60   46A   22.23   0.0522   0.0523   6.0907.51   47   22.53   0.3488   2.0093   2				
40   20.06   1.0838   71.498.3.90   411.4   20.35   0.7421   4.495.92.30   20.52   0.0490   32.355.56   21.08   0.0490   32.355.56   21.08   0.0910   6.0017.41   4.30   21.08   0.0911   6.0017.41   4.30   21.26   1.4942   9.85761.80   4.40   4.21.36   0.4707   31.0542.40   4.50   21.67   0.1977   1.2500.30   31.0542.40   4.50   21.67   0.1977   1.30404.60   4.60				
41A 20.35 0.7421 489892.30 41B 20.52 0.0490 32355.56 41B 20.52 0.0490 32355.56 41B 20.52 0.0490 32355.56 41B 20.59 0.1119 73808.73 42 20.83 0.0910 60017.41 43 21.36 0.0910 60017.41 43 44 21.36 0.4707 310542.40 44 21.36 0.4707 310542.40 45 21.48 0.1997 130542.40 45 21.67 0.1977 130404.60 466 21.78 1.0693 705420.60 466 21.78 1.0693 705420.60 466 22.23 0.1522 100423.60 22.24 1 0.0923 60907.51 47 22.53 0.4843 319521.70 22.65 0.3126 206218.80 22.89 0.4304 283971.30 488 23.92 0.1047 69074.99 4678.32 0.325 2.323 0.4366 288030.80 9164.98 23.42 0.2789 183839.30 91645.98 23.42 0.2824 186330.60 49 23.62 1.9764 1803848.00 2.356	40		1.0838	714983.90
41B 20.52 0.0490 32355.56 4   42 20.83 0.8971 591832.10   43 21.08 0.0910 60017.41   43 21.26 1.4942 985761.80   44 21.36 0.4707 310542.40   45 21.48 0.1907 125800.30   46 21.48 0.1907 125800.30   46 21.48 0.1907 125800.30   46 21.48 1.0693 705420.60   46 21.89 1.3488 889810.30   46 40 21.89 1.3488 889810.30   46 40 22.23 0.1522 100423.60   46 40 22.23 0.1522 100423.60   47 22.55 0.3126 202218.80   48 22.89 0.0762 2890 0.2769 183973.30   48 22.89 0.0762 2890 0.2769 183973.30   48 22.89 0.0762 2890 0.2769 183973.30   49 23.62 0.1047 69074.99   23.16 0.1389 91645.98   23.42 0.2284 186330.60   49 23.62 1.0764 1339848.00   49 23.62 1.0764 1339848.00   49 23.62 1.0764 1339848.00   49 23.62 1.0764 1339848.00   49 23.62 1.0764 1339848.00   49 23.62 1.0764 1339848.00   40 22.89 0.3964 28150.80   40 24.49 0.0871 57459.56   40 24.49 0.0871 57459.56   41483.64   42.490 0.0871 57459.56   42.490 0.3000 197933.80   41483.64   51 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0762 44183.64   52 25.57 0.0769 44783.66   52 25.57 0.0769 44783.66   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   52 25.57 0.0769 46783.41   53 25.57 0.0769 46783.41   54 25.57 0.0769 46783.41   54 25.57 0.0769 46783.41   54 25.57 0.0769 46783.41   54 25.57 0.0769 46783.41   55 26 25 26 26 0.0769 46783.41   56 25 26 26 0.0769 46783.41   56 26 0.0679 46783.41   57 27 26 0.0679 46783.41   58 25 27 27 28 0.0769 4782   59 25 25 25 25 25 25 25 25 25 25 25 25 25	41A			489592.30
41B   20.59   0.1119   73808.73   42   20.83   0.8971   651832.10   43   21.26   1.4942   985761.80   44   21.36   0.4707   310542.40   45   21.48   0.1907   125800.30   46B   21.78   1.0693   705420.60   46A   21.89   1.3488   889810.30   22.41   0.0923   60907.51   47   22.53   0.4483   319521.70   48   22.89   0.4304   283971.30   48   22.89   0.4304   283971.30   48   22.89   0.4304   283971.30   48   22.89   0.4304   283971.30   49   23.62   1.9164   1.9164   23.16   0.1389   91645.98   23.23   0.4366   228630.80   49   23.62   1.9764   1303348.00   49   23.62   1.9764   1303348.00   50   24.19   0.1688   111338.40   50   24.40   0.0871   57459.56   51   25.23   0.1733   11428.61   51   25.23   0.1733   14129.00   51   25.57   0.0670   4418.64   52.87   0.0729   66773.20   52.87   0.0709   47419.00   53   25.79   0.0709   47419.00   54   0.0871   1.57459.56   52   25.65   0.0670   4418.64   52   25.79   0.0709   47419.00   53   25.79   0.0709   47419.00   54   0.0871   0.1389   2.5671.80   55   25.79   0.0709   47419.00   56   25.86   0.1733   11428.64   57   25.87   0.0173   1.1428.64   58   0.0774   0.0871   0.0873.80   59   25.79   0.0709   44183.64   50   25.79   0.0709   44183.64   50   25.79   0.0709   44183.64   50   25.79   0.0709   44183.64   50   25.79   0.0709   44183.64   50   25.79   0.0709   44183.64   50   25.79   0.0709   44183.64   50   25.87   0.0173   1.1428   50   25.80   0.1138   7.5066.00   50   25.79   0.0709   44183.64   50   25.80   0.1138   7.5066.00   50   25.79   0.0709   44422.99   50   25.60   0.1274   8406.92   50   26.60   0.1337   88221.92   50   26.60   0.1337   88221.92   50   26.60   0.1337   88221.92   50   27.66   0.0674   44422.94   50   27.70   0.3944   0.0675   50   27.74   0.0963   0.0970.70   50   27.76   0.1428   0.0970.70   50   27.76   0.1428   0.0970.70   50   27.76   0.1428   0.0970.70   50   27.76   0.1428   0.0970.70   50   27.76   0.1428   0.0970.70   50   27.76   0.1428   0.0970.70   50   27.77   0.1367   0.0952.80   50   27.94   0.095032   331987.90				32355.56
42   20.83   0.8971   591832.10   43   21.08   0.0910   60017.41   43   21.26   1.4942   985761.80   44   21.36   0.4707   310542.40   45   21.48   0.1907   125800.30   21.67   0.1977   130404.60   46B   21.78   1.0893   705420.60   46B   21.78   1.0893   705420.60   46A   21.89   1.3488   888810.30   22.23   0.1522   100423.60   22.241   0.0923   6.9907.51   47   22.53   0.4843   319521.70   22.65   0.3126   22.289   0.3126   22.289   0.2789   18.3973.30   48   22.289   0.2789   18.3973.30   48   22.289   0.4304   28.3971.30   23.02   0.1047   6.9074.99   32.316   0.1389   91645.98   23.32   0.4366   22.8803.80   23.42   0.2824   1.9764   1.9338.80   23.42   0.2824   1.9764   1.9338.80   23.42   0.2824   1.9764   1.9338.80   23.42   0.2824   1.9764   1.9338.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   24.40   0.0871   57495.80   25.53   0.1688   111338.40   25.53   0.1680   121376.10   25.53   0.1680   121376.10   25.53   0.1680   121376.10   25.57   0.0653   4.900.50   25.79   0.0709   4.4183.64   25.57   0.0670   4.4183.64   25.57   0.0670   4.4183.64   25.57   0.0670   4.4183.64   25.57   0.0653   4.900.50   25.79   0.0709   4.7733.11   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   4.900.50   25.67   0.0653   0.0552   0.06574   4.4452.74   0.0653   0.0552   0.06574   4.4452.74	41B	20.59		73808.73
43 44 4136 44 4136 60.4707 310542 40 45 21.48 0.1907 125800.30 12167 0.1977 130404.60 468 21.78 1.0693 705420.60 46A 21.89 1.3488 889810.30 22.23 0.1522 100423.60 47 22.53 0.1522 100423.60 47 22.53 0.4843 313521.70 22.65 0.3126 22.80 0.2789 183973.30 48 22.89 0.4304 23.16 23.22 0.1047 89074.99 23.16 0.1389 91645.98 23.23 0.4366 288030.80 49 23.42 0.2824 186330.60 49 23.42 0.2824 186330.60 49 23.62 23.72 0.3225 24.19 23.85 0.0742 49882.29 24.02 24.91 0.0871 50 24.19 0.0871 55 24.40 0.0871 65749.55 11338.40 24.40 0.0871 65749.55 24.62 0.1019 72477.02 24.90 0.3000 197933.80 51 25.51 0.0670 44183.84 51 25.53 0.0653 4300.00 197933.80 51 25.57 0.0709 46793.41 25.57 0.0663 4300.00 19793.80 52 54 66.00 0.3891 0.1099 72477.02 24.90 0.3000 19793.80 51 25.57 0.0709 46793.41 25.57 0.0663 4300.00 3891 25.67 25.79 0.0709 46793.41 25.71 26.60 0.1337 88221.92 26.60 0.1337 89397.90 26.60 27.74 27.95 0.1428 29.91 20.1148 20.91111.10 27.81 0.0507 27.94 27.95 27.94 27.90 27.91 27	42			
44 21.36 0.4707 310542.40 45 21.48 0.1907 125800.30 46B 21.76 0.1977 130404.60 46A 21.89 1.348B 888910.30 22.23 0.1522 100423.60 22.41 0.0923 60907.51 47 22.53 0.4843 315521.70 22.65 0.3126 20521.80 48 22.89 0.3126 20521.80 48 22.89 0.4304 283971.30 48 22.89 0.4304 283971.30 48 22.89 0.4304 283971.30 49 23.62 0.1047 689074.99 23.16 0.1369 9.1645.98 49 23.62 1.9764 1303843.00 49 23.62 1.9764 1303843.00 49 23.62 1.9764 1303843.00 50 24.49 0.1688 111338.40 50 24.49 0.1688 111338.40 51 24.73 0.0991 727477.02 24.90 0.3000 197933.80 51 25.51 0.0670 44183.64 51 25.23 0.1733 114297.00 51 25.51 0.0670 44183.64 51 25.23 0.1733 114297.00 52 25.66 0.0670 44183.64 51 25.23 0.1733 114297.00 52 25.66 0.0670 44183.64 51 25.23 0.1733 114297.00 52 25.66 0.0670 44183.64 51 25.23 0.1733 114297.00 52 25.66 0.0670 44183.64 51 25.23 0.1733 114297.00 52 25.66 0.0670 44183.64 51 25.23 0.1733 114297.00 52 25.66 0.0670 44783.64 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 52 25.79 0.0709 46793.41 53 26.60 0.3891 2.56774.80 54 26.60 0.3891 2.56774.80 55 2.744 0.0653 3.8907.00 56 27.94 0.0739 3.944 58 25.757 0.1367 9.0158.20 59 27.744 0.9914 5.8007.00 56 27.94 0.0670 44485.79 56 27.94 0.0991 5.00070 57 59 50 50 50 50 50 50 50 50 50 50 50 50 50		21.08	0.0910	60017.41
456 21.48 21.67 0.1977 130404.60 468 21.78 1.0893 705420.60 468 46A 21.89 1.3488 889810.30 22.23 0.1522 100423.60 22.241 0.0923 86907.51 47 22.65 0.3126 22.80 0.2789 183973.30 48 22.89 0.4304 23.16 0.1389 91645.98 23.16 0.1389 91645.98 23.22 0.4966 23.362 1.19764 1303848.00 49 23.72 0.3225 24.00 23.72 0.3225 21.776.10 24.40 0.0871 55 24.40 0.0871 55 24.40 0.0871 55 24.40 0.0871 55 25.51 0.0670 44183.64 261503.80 27749 2777.02 24.90 0.3000 1999 72477.02 24.90 0.3000 1999 72477.02 25.51 0.0670 44183.64 51 25.57 0.0709 44783.64 52.66 0.1939 14787.00 55 26.60 0.1912 1.1966 0.1939 1.19733.80 1.19764 0.1989 0.3000 0.3010 0.3011 0.6713 0.1999 0.3000 0.3011 0.6713 0.1999 0.3000 0.	43			985761.80
456				310542.40
46B 21.78 1.093 7.05420.60 46A 21.89 1.3488 889810.30 22.23 0.1522 1.00423.60 22.241 0.0923 60907.51 47 22.53 0.4843 319521.70 22.65 0.33126 2.06218.80 48 22.89 0.4304 283971.30 23.00 0.1047 69074.99 23.16 0.1389 91645.98 23.23 0.4366 288030.80 49 23.62 1.9764 1330348.00 49 23.62 1.9764 1303848.00 23.72 0.3225 2127776 10 23.85 0.0742 48982.29 24.02 0.3964 26103.80 50 24.19 0.1688 111338.40 51 24.40 0.0871 5749.56 24.40 0.0871 5749.56 24.40 0.0871 5749.56 24.73 0.1099 72477.02 24.73 0.1099 72477.02 24.73 0.1099 72477.02 25.31 0.1840 112136.40 51 25.51 0.0670 44183.64 51 25.23 0.1733 114297.00 52.67 0.0000 1.97933.80 52.67 0.0000 1.97933.80 52.67 0.0000 1.97933.80 52.68 0.0000 1.97933.80 52.69 0.0000 1.97933.80 53 0.0000 1.97933.80 54 0.0000 1.97933.80 55 0.0000 1.97933.80 56 0.0000 1.97933.80 57 0.0000 1.97933.80 58 0.0000 1.97933.80 59 0.0000 1.97933.80 50 0.00000 1.97933.80 50 0.00000 1.97933.80 50 0.000000000000000000000000000000000				
46A 21.89 1.3488 889810.30 22.23 0.1522 100423.60 22.41 0.0923 60907.51 47 22.53 0.4843 319521.70 22.65 0.3126 22.65 0.3126 206218.80 22.80 0.2789 183973.30 48 22.89 0.4504 283971.30 23.02 0.1047 69074.99 23.16 0.1389 91645.98 23.23 0.4366 28803.80 23.23 0.4366 28803.80 23.23 0.4366 28803.80 23.23 0.4366 28803.80 23.23 0.4366 28803.80 23.24 0.2824 186330.60 23.342 0.2824 186330.60 23.35 0.0742 48982.29 24.02 0.3964 261503.80 0.742 48982.29 24.02 0.3964 261503.80 111338.40 24.40 0.0871 57459.56 24.62 0.1011 66718.30 24.73 0.1099 72477.02 24.73 0.1099 72477.02 24.73 0.1099 72477.02 24.73 0.1099 72477.02 25.51 0.0670 44183.64 11338.40 121376.10 25.31 0.1840 121376.10 25.31 0.1840 121376.10 25.31 0.1840 121376.10 25.31 0.1840 121376.10 25.31 0.1840 121376.10 25.87 0.0653 43060.50 52 25.87 0.0709 46793.41 25.87 0.0709 46793.41 25.87 0.2121 139922.70 25.87 0.2121 139922.70 25.87 0.2121 139922.70 25.87 0.2121 139922.70 25.87 0.2121 139922.70 25.87 0.2121 139922.70 26.60 0.1337 88221.92 27.66 0.01337 88221.92 27.66 0.01337 88221.92 27.66 0.0674 44452.74 24.99 27.66 0.0674 44452.74 24.99 27.76 0.0674 44452.74 24.99 27.76 0.0674 44452.74 24.99 27.76 0.0674 44452.74 24.99 27.76 0.0674 44452.74 24.99 27.76 0.0674 44452.74 24.99 27.76 0.0674 44452.74 24.99 27.76 0.0674 44.90 2.000.30 1.0000 1.0000.30 1.00000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.0000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.00000.30 1.000000.30 1.000000.30 1.000000.30 1.0000000000				130404.60
22.23         0.1522         100423.60           47         22.53         0.4843         319521.70           22.80         0.2789         183973.30           48         22.89         0.4304         283971.30           48         22.89         0.4304         283971.30           23.16         0.1389         91645.98           23.23         0.4366         288030.80           23.42         0.2824         186330.60           49         23.62         1.9764         1303848.00           23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.62         0.1011         66718.30           24.62         0.1011         66718.30           24.90         0.3000         19733.30           44.91         0.3604         12618.30           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           45.51         0.0670         44183.64           52         25.65         1.0592<	46B		1.0693	705420.60
47         22.53         0.4843         319521.70           48         22.65         0.3126         206218.80           22.80         0.2789         183973.30           48         22.89         0.4304         283971.50           23.02         0.1047         69074.99           23.16         0.1389         9164.59           23.23         0.4366         28803.80           49         23.62         1.9764         1303848.00           23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.62         0.1011         66718.30           24.62         0.1011         66718.30           24.40         0.0871         57459.56           24.73         0.1099         72477.02           24.90         0.3000         197933.80           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0653         43060.50           25.57         0.0799         46793	46A	21.89	1.3488	889810.30
47         22.53         0.4843         319521.70           22.80         0.3126         206218.80           48         22.89         0.4304         283971.30           48         22.89         0.4304         283971.30           48         23.02         0.1047         69074.99           23.16         0.1389         91645.98           23.23         0.4366         288030.80           49         23.62         1.9764         1303848.00           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.62         0.0111         66718.30           24.73         0.1099         72477.02           24.90         0.3000         197973.80           51         25.15         0.0670         44183.64           14         14.297.00         44183.64           15         25.23         0.1733         114297.00           25.87         0.0670         44183.64           15         25.23         0.1733         134927.00           25.87         0.0674         0.0874         265.00		22.23	0.1522	100423.60
22.65         0.3126         206218.80           22.89         0.2789         183973.30           48         22.89         0.4304         283971.30           23.02         0.1047         69074.99           23.16         0.1389         91645.98           23.23         0.4366         288030.80           49         23.62         1.9764         1303848.00           23.85         0.0742         48982.29           24.02         0.3964         261603.80           24.40         0.0871         57459.56           24.40         0.0871         57459.56           24.73         0.1099         72477.02           24.73         0.1099         72477.02           24.73         0.1099         72477.02           24.73         0.1099         72477.02           24.90         0.3000         19733.80           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           52         25.65         1.0592         698773.20           25.87         0.2121         139922.70           25.87         0.2121         139922.70 <td< td=""><td></td><td>22.41</td><td>0.0923</td><td>60907.51</td></td<>		22.41	0.0923	60907.51
48         22.89         0.4304         283971.30           48         22.02         0.1047         69074.99           23.06         0.1389         91645.98           23.23         0.4366         28030.80           49         23.62         1.9764         1303848.00           49         23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.62         0.1011         66718.30           24.73         0.1099         72477.02           24.73         0.1099         72477.02           24.90         0.3000         19733.80           51         25.23         0.1733         114297.00           52         25.31         0.1840         121376.10           25.31         0.1840         121376.10           25.87         0.2121         139922.70           53         26.61         0.9121         601697.00           25.87         0.2121         139922.70           53         26.10         0.9121         601697.00	47	22.53	0.4843	319521.70
48         22.89         0.4304         283971.30           23.16         0.1389         91645.98           23.23         0.4366         288030.80           23.42         0.2824         186330.60           49         23.62         1.9764         1303848.00           23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.40         0.0871         57459.56           24.40         0.0871         57459.56           24.40         0.0871         57459.56           24.90         0.3000         197933.80           24.490         0.3000         197933.80           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.47         0.0653         43060.50           52         25.66         1.0592         698773.20           25.79         0.0709         46793.41           25.87         0.2121         139922.70           26.01         0.9121         601697.00 <td></td> <td>22.65</td> <td>0.3126</td> <td>206218.80</td>		22.65	0.3126	206218.80
23.02         0.1047         69074.99           23.16         0.1389         91645.98           23.23         0.4366         288030.80           49         23.62         0.2824         186330.60           49         23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.62         0.1011         66718.30           24.62         0.1011         66718.30           24.62         0.1011         66718.30           24.53         0.1099         72477.02           24.90         0.3000         197933.80           25.15         0.0670         44483.64           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0653         43060.50           52         25.65         1.0592         698773.20           25.67         0.2121         601697.00           53         26.10         0.9121         601697.00           53         26.10         0.93891 </td <td></td> <td>22.80</td> <td>0.2789</td> <td>183973.30</td>		22.80	0.2789	183973.30
23.16         0.1389         91645.98           23.23         0.4366         288030.80           23.42         0.2824         186330.60           49         23.62         1.9764         1303848.00           23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.40         0.0871         57459.56           24.73         0.1099         72477.02           24.90         0.3000         197933.80           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0653         43060.50           52         25.65         1.0592         698773.20           25.79         0.0709         46793.41           25.87         0.2121         139922.70           53         26.10         0.9121         601697.00           54         26.10         0.9121         601697.00           26.40         0.1530         10	48		0.4304	283971.30
49         23.42         0.2824         166330.60           49         23.62         1.9764         1303848.00           23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.40         0.0871         57459.56           24.62         0.1011         66718.30           24.90         0.3000         197933.80           24.90         0.3000         197933.80           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0663         43060.50           52         25.65         1.0592         698773.20           25.87         0.2121         139922.70           26.01         0.9121         601697.00           53         26.10         0.3891         256714.80           26.40         0.1530         100952.80           26.50         0.1274         84016.92           26.60         0.1337         8		23.02	0.1047	69074.99
49         23.42         0.2824         186330.60           49         23.62         1.9764         1303848.00           23.72         0.3225         212776.10           23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.40         0.0871         57459.56           24.62         0.1011         66718.30           24.73         0.1099         72477.02           24.90         0.3000         197933.80           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.47         0.0653         43060.50           52         25.65         1.0592         698773.20           25.87         0.2121         139922.70           25.87         0.2121         139922.70           53         26.10         0.3891         256714.80           26.18         0.1912         601697.00           53         26.10         0.3891         256714.80           26.40         0.1530         100952.80           26.50         0.127		23.16	0.1389	91645.98
49       23.62       1.9764       1303848.00         23.72       0.3225       212776.10         23.85       0.0742       48982.29         50       24.02       0.3964       261503.80         50       24.19       0.1688       111338.40         24.40       0.0871       57459.56         24.62       0.1011       66718.30         24.73       0.1099       72477.02         24.90       0.3000       197933.80         25.15       0.0670       44183.64         31       25.23       0.1733       114297.00         40       25.23       0.1733       114297.00         52       25.65       1.0592       698773.20         52       25.65       1.0592       698773.20         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.9391       256714.80         26.32       0.1138       75086.00         26.32       0.1138       75086.00         26.50       0.1274       84016.92         26.50       0.1337       8221.92         27.16       0.1277       84242.99 </td <td></td> <td>23.23</td> <td>0.4366</td> <td>288030.80</td>		23.23	0.4366	288030.80
23,72         0,3225         212776,10           23,85         0,0742         48982,29           24,02         0,3964         261503,80           50         24,19         0,1688         111338,40           24,40         0,0871         57459,56           24,62         0,1011         66718,30           24,73         0,1099         72477,02           24,90         0,3000         197933,80           25,15         0,0670         44183,64           51         25,23         0,1733         114297,00           25,31         0,1840         121376,10           25,47         0,0663         43060,50           52         25,65         1,0592         698773,20           25,79         0,0709         46793,41           25,87         0,2121         139922,70           26,01         0,9121         601697,00           26,01         0,9121         601697,00           26,18         0,1912         126115,80           26,40         0,1530         100952,80           26,50         0,1274         8221,92           26,60         0,1337         82221,92           27,01         <			0.2824	186330.60
23.85         0.0742         48982.29           24.02         0.3964         261503.80           50         24.19         0.1688         111338.40           24.40         0.0871         57459.56           24.62         0.1011         66718.30           24.73         0.1099         72477.02           24.90         0.3000         197933.80           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0653         43060.50           52         25.65         1.0592         698773.20           25.87         0.2121         139922.70           25.87         0.2121         139922.70           53         26.10         0.3891         256714.80           26.20         0.1330         100952.80           26.32         0.1138         75086.00           26.50         0.1274         84016.92           26.60         0.1337         8221.92           54         26.86         0.7882         520000.30           27.16         0.1277         84242.99	49			1303848.00
50         24.02         0.3964         261503.80           50         24.40         0.08871         57459.56           24.40         0.0871         57459.56           24.62         0.1011         66718.30           24.90         0.3000         197933.80           25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0653         43060.50           52         25.65         1.0592         698773.20           25.87         0.2121         139922.70           25.87         0.2121         139922.70           25.87         0.2121         139922.70           26.61         0.9121         601697.00           53         26.10         0.3891         256714.80           26.18         0.1912         126115.80           26.40         0.1530         100952.80           26.50         0.1274         84016.92           26.60         0.1337         88221.92           54         26.86         0.7882         50000.30           27.16         0.1277         842				212776.10
50       24.19       0.1688       111338.40         24.62       0.1011       66718.30         24.73       0.1099       72477.02         24.90       0.3000       197933.80         25.15       0.0670       44183.64         51       25.23       0.1733       114297.00         25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.79       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.32       0.1138       75086.00         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       58070.00         27.57       0.1367       90154.59         27.57				
24.40       0.0871       57459.56         24.62       0.1011       66718.30         24.73       0.1099       72477.02         24.90       0.3000       197933.80         25.15       0.0670       44183.64         51       25.23       0.1733       114297.00         25.31       0.1840       121376.10         25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.87       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0				
24.62       0.1011       66718.30         24.73       0.1099       72477.02         24.90       0.3000       197933.80         25.15       0.0670       44183.64         51       25.23       0.1733       114297.00         25.31       0.1840       121376.10         25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.87       0.2121       139922.70         25.87       0.2121       139922.70         53       26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       133070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.	50			
24.73         0.1099         72477.02           24.90         0.3000         197933.80           51         25.15         0.0670         44183.64           51         25.23         0.1733         114297.00           25.31         0.1840         121376.10           25.47         0.0653         43060.50           52         25.65         1.0592         698773.20           25.87         0.2121         139922.70           26.01         0.9121         601697.00           53         26.10         0.3891         256714.80           26.32         0.1138         75086.00           26.50         0.1530         100952.80           26.50         0.1274         84016.92           26.60         0.1337         88221.92           54         26.86         0.7882         520000.30           27.01         0.3944         260168.20           27.16         0.1277         84242.99           27.26         0.0674         44452.74           27.37         0.2108         139070.70           55         27.44         0.8914         588070.00           27.57         0.1367         9015				
24.90       0.3000       197933.80         25.15       0.0670       44183.64         51       25.23       0.1733       114297.00         25.31       0.1840       121376.10         25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.79       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.67				
51       25.15       0.0670       44183.64         51       25.23       0.1733       114297.00         25.31       0.1840       121376.10         25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.87       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.32       0.1138       75086.00         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       13970.70         55       27.44       0.8914       580070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.67				
51       25.23       0.1733       114297.00         25.31       0.1840       121376.10         25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.79       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.11274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       23582.670         56       27.94       0.5032       331987.90				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				
52       25.47       0.0653       43060.50         52       25.65       1.0592       698773.20         25.79       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90	51			
52       25.65       1.0592       698773.20         25.79       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90				
25.79       0.0709       46793.41         25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90				
25.87       0.2121       139922.70         26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90	52			
53       26.01       0.9121       601697.00         53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90				
53       26.10       0.3891       256714.80         26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90				
26.18       0.1912       126115.80         26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90				
26.32       0.1138       75086.00         26.40       0.1530       100952.80         26.50       0.1274       84016.92         26.60       0.1337       88221.92         54       26.86       0.7882       520000.30         27.01       0.3944       260168.20         27.16       0.1277       84242.99         27.26       0.0674       44452.74         27.37       0.2108       139070.70         55       27.44       0.8914       588070.00         27.57       0.1367       90154.59         27.67       0.1428       94181.10         27.81       0.3575       235826.70         56       27.94       0.5032       331987.90	53			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				
26.60     0.1337     88221.92       54     26.86     0.7882     520000.30       27.01     0.3944     260168.20       27.16     0.1277     84242.99       27.26     0.0674     44452.74       27.37     0.2108     139070.70       55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
54     26.86     0.7882     520000.30       27.01     0.3944     260168.20       27.16     0.1277     84242.99       27.26     0.0674     44452.74       27.37     0.2108     139070.70       55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
27.01     0.3944     260168.20       27.16     0.1277     84242.99       27.26     0.0674     44452.74       27.37     0.2108     139070.70       55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
27.16     0.1277     84242.99       27.26     0.0674     44452.74       27.37     0.2108     139070.70       55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90	54			
27.26     0.0674     44452.74       27.37     0.2108     139070.70       55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
27.37     0.2108     139070.70       55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
55     27.44     0.8914     588070.00       27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
27.57     0.1367     90154.59       27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
27.67     0.1428     94181.10       27.81     0.3575     235826.70       56     27.94     0.5032     331987.90	55			
27.81     0.3575     235826.70       56     27.94     0.5032     331987.90				
56 27.94 0.5032 331987.90				
57 28.01 0.5913 390115.70				
	57	28.01	0.5913	390115.70

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	28.10	0.2062	136004.80
	28.29	0.1029	67877.10
58	28.35	0.1667	109985.80
59	28.44	1.0601	699327.90
	28.71	0.1169	77106.87
60	28.79	0.1782	117551.10
61	28.96	0.2886	190399.60
	29.20	0.3489	230201.00
	29.29	0.3377	222759.50
	29.38	0.1814	119685.50
	29.45	0.2492	164431.40
	29.59	0.0696 0.0589	45908.98 38835.60
	29.68 29.79	0.0369	38835.60 95981.84
	29.89	0.0613	40413.60
	30.00	0.1467	96770.51
62	30.19	1.3464	888211.70
I.S. #2	30.31	1.4220	938105.60
	30.49	0.2354	155267.60
	30.61	0.0500	32980.53
	30.67	0.0906	59791.15
63	30.91	0.2140	141160.80
	31.04	0.1027	67773.86
	31.17	0.2967	195741.30
64	31.27	0.1880	124038.00
	31.38	0.1768	116611.20
	31.49	0.0623	41072.73
	31.56	0.1063	70145.65
	31.73	0.0584	38525.15
	31.81	0.1977 0.2007	130448.70
	31.91 32.06	0.2007 0.1347	132380.70 88830.54
	32.14	0.1347	156752.80
65	32.35	0.5111	337183.80
03	32.53	0.0450	29677.70
	32.60	0.0757	49927.45
66	32.70	0.6169	406986.30
	32.80	0.2757	181868.40
	32.94	0.0566	37361.24
	33.01	0.1224	80723.09
67	33.16	0.6720	443302.10
68	33.28	0.6723	443540.00
69	33.62	1.3188	870057.00
	33.81	0.0993	65504.44
70	33.87	0.1480	97642.57
70	33.97	0.3220	212404.50
71	34.07 34.10	0.5578	367989.80 580300.00
<i>t</i> 1	34.19 34.33	0.8798 0.1327	580399.00 87535.55
	34.51	0.1327	339056.60
72	34.81	0.1828	120601.10
	34.95	0.0700	46157.48
73	35.08	2.4390	1609063.00
. •	35.25	0.1535	101237.40
	35.33	0.1022	67415.13
	35.47	0.1259	83028.59
	35.58	0.1764	116396.60
74	35.82	0.1440	94993.49
75	35.96	0.2067	136364.90
76	36.13	0.8219	542219.70
	36.25	0.1236	81565.88
	36.39	0.0549	36235.45
	36.54	0.0717	47280.38
77	36.63	0.7921	522533.80
	36.88	0.1074	70829.18
	36.98	0.2033	134100.20
78	37.27	0.2796	184428.40
	37.49	0.2886	190391.70
	37.61 37.70	0.0481	31764.64
	37.70	0.2330	153729.70

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	37.87	0.1522	100412.80
	38.08	0.1287	84883.71
70	38.19	0.2943	194129.30
79	38.34	0.9287	612701.50
90	38.55 38.70	0.6403	422427.00
80	38.70 38.84	0.7771	512635.00
	39.11	0.1304 0.1679	86023.72 110752.40
	39.11	0.1079	203164.10
	39.35	0.1246	82179.38
	39.40	0.1240	123175.80
81	39.51	0.1809	119340.90
01	39.72	0.5548	365988.10
82	39.83	0.6247	412152.80
83	40.05	0.1454	95931.59
84	40.15	0.9304	613793.60
0.	40.35	0.0788	51964.97
85	40.47	0.3361	221729.30
	40.81	0.1197	78943.05
86	40.97	0.1306	86148.55
	41.10	0.1580	104244.40
i-C11	41.21	0.3601	237577.30
- • •	41.44	0.1084	71539.07
n-C11	41.55	0.6026	397540.30
	41.75	0.0582	38379.99
87	41.86	0.4668	307949.30
88	42.04	0.5907	389663.40
	42.18	0.1193	78682.65
	42.36	0.1035	68302.06
	42.48	0.0674	44433.98
	42.55	0.0678	44737.27
	42.63	0.0388	25605.34
	42.73	0.0324	21394.58
	42.91	0.4335	286000.20
	43.03	0.1802	118900.70
	43.14	0.2277	150240.40
	43.29	0.1899	125310.80
	43.43	0.4713	310928.80
	43.53	0.0529	34917.63
89	43.66	0.4060	267848.60
	43.96	0.3087	203621.20
	44.13	0.2419	159603.00
	44.36	0.1512	99760.53
	44.43	0.2287	150859.20
	44.63	0.1066	70337.84
	44.79 44.01	0.2828	186552.00
	44.91 45.06	0.2788 0.0438	183895.50 28880.16
90	45.06 45.19	0.0438	28880.16 156572.70
30	45.19 45.40	0.2373	216960.10
	45.40 45.48	0.3269	101926.90
	45.46	0.1343	157299.70
	45.87	0.2304	128521.40
	45.94	0.3756	247802.20
	46.19	0.0872	57520.57
	46.32	0.0448	29552.03
	46.42	0.1071	70663.02
n-C12	46.51	0.3834	252955.00
11-012	46.66	0.1039	68528.23
	46.82	0.0801	52844.64
	47.01	0.1024	67570.48
i-C13	47.17	0.3098	204350.40
. 0.10	47.37	0.1043	68807.96
	47.37 47.45	0.1043	85406.30
	47.45 47.58	0.1295	49503.89
	47.56 47.69	0.1854	122313.70
	47.89	0.1526	100651.00
		0.1326	194852.20
	48.09 48.33		
	48.09 48.33 48.48	0.2954 0.0650 0.1140	42914.01 75236.52

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	48.61	0.1607	105987.00
	48.74	0.1016	67053.27
	48.86	0.0849	56027.75
	49.01	0.2135	140880.90
	49.26	0.1703	112347.50
i-C14	49.40	0.1653	109077.10
91	49.55	0.3323	219221.80
	49.69	0.0611	40276.53
	49.78	0.0807	53251.16
	49.94	0.0821	54162.23
92	50.08	0.1712	112964.10
n-C13	50.19	0.1605	105891.50
	50.28	0.0290	19125.41
	50.39	0.0163	10721.43
	50.54	0.0964	63592.25
	50.81	0.0554	36526.62
	50.95	0.0174	11469.07
	51.10	0.0400	26417.94
	51.32	0.0385	25367.67
	51.62	0.0370	24408.33
	51.68 51.70	0.0173	11426.16
	51.79	0.0186	12249.02
	51.93	0.0423	27879.59
	52.26 52.38	0.0134	8848.22
i-C15	52.36 52.47	0.0053 0.0657	3482.98 43325.00
1-015	52.47 52.85	0.0657	43325.00 29714.30
n-C14	52.65	0.0430	27873.00
11-014	53.14	0.0055	3660.07
	53.23	0.0362	23863.47
	53.32	0.0352	16604.95
	53.50	0.0033	2184.17
	53.59	0.0045	2963.08
	53.73	0.0198	13076.61
	54.00	0.0034	2220.91
	54.09	0.0085	5613.14
	54.21	0.0066	4344.23
	54.39	0.0041	2673.50
i-C16	54.52	0.0166	10934.57
	54.66	0.0031	2050.98
	54.73	0.0021	1372.06
	54.87	0.0048	3158.45
	55.03	0.0019	1251.15
	55.11	0.0027	1786.08
n-C15	55.27	0.0226	14929.73
	55.35	0.0033	2207.14
	55.61	0.0084	5521.87
	55.84	0.0116	7635.97
	56.15	0.0037	2463.74
	56.25	0.0046	3028.31
	56.55	0.0107	7077.49
	56.66	0.0025	1641.79
	56.83	0.0037	2421.45
	56.98	0.0010	684.21
0.10	57.11	0.0044	2933.36
n-C16	57.22	0.0159	10510.11
	57.34	0.0027	1789.57
	57.50	0.0020	1303.86
	57.58	0.0049	3245.08
	58.00 58.04	0.0011	742.53 878.85
i-C18	58.04 58.15	0.0013 0.0080	878.85 5308.63
1-010			665.99
	58.28 58.34	0.0010	
	58.34 58.54	0.0014 0.0027	914.07 1748.77
	58.63	0.0027	478.57
	56.63 58.80	0.0007	476.57 1613.96
n-C17	58.94	0.0024	8112.03
Pristane	59.12	0.0123	9155.62
i notane	59.12	0.0023	1498.10
	59. <del>4</del> 0	0.0020	1490.10

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	59.72	0.0007	473.12
	59.96	0.0028	1857.42
	60.09	0.0009	573.10
	60.23	0.0006	406.27
	60.33	0.0023	1509.81
n-C18	60.50	0.0064	4221.03
Phytane	60.73	0.0045	2958.65
Filylane	60.88	0.0043	1153.93
	60.97	0.0015	984.70
	61.09	0.0016	1057.72
	61.36	0.0012	780.40
	61.44	0.0012	822.94
	61.77	0.0010	659.70
n-C19	61.94	0.0051	3342.66
	62.10	0.0018	1216.81
	62.18	0.0025	1682.20
	62.34	0.0007	453.74
	62.46	0.0006	391.91
	62.54	0.0015	960.80
	62.97	0.0034	2273.64
. 000	63.20	0.0017	1152.65
n-C20	63.30	0.0037	2470.00
	63.66	0.0021	1355.55
	63.79	0.0014	951.48
	63.86	0.0016	1070.23
	64.05	0.0028	1870.21
IS #3	64.22	0.4085	269459.80
n-C21	64.57	0.0163	10772.23
11 021	65.18	0.0573	37772.07
	65.61	0.0678	44745.66
- 000			
n-C22	65.78	0.0547	36110.11
n-C23	66.95	0.4402	290427.80
n-C24	68.86	1.5054	993106.20
n-C25	69.49	0.3263	215237.90
	69.64	0.1756	115862.10
	70.02	0.3220	212439.30
n-C26	70.58	0.5805	382959.00
	70.96	0.0824	54368.42
	71.28	0.2498	164792.30
	71.40	0.3002	198020.20
	71.88	0.0813	53649.94
n C27	72.13		
n-C27		0.3110	205153.40
	72.64	0.0837	55185.31
	72.86	0.1510	99644.13
	73.18	0.2952	194727.80
n-C28	73.89	0.3001	198001.80
	74.69	0.1385	91388.80
	75.26	0.2514	165879.70
n-C29	76.01	0.1310	86435.85
	76.64	0.1353	89283.79
	77.42	0.0478	31506.98
n-C30	78.03	0.0119	7820.32
11-030			
	78.18	0.0035	2314.29
	78.73	0.0018	1165.17
	79.61	0.0043	2854.81
	80.13	0.0009	567.16
n-C31	80.41	0.0084	5516.09
	81.35	0.0051	3386.11
	81.87	0.0035	2323.63
	82.12	0.0005	335.94
	82.64	0.0063	4164.73
n-C32	83.75	0.0099	6502.61
11-032			
	84.10	0.0009	605.33
	84.55	0.0141	9334.30
	85.28	0.0080	5288.23
	85.89	0.0047	3108.11
	86.30	0.0025	1641.28
n-C33	86.62	0.0038	2503.44
	87.05	0.0019	1244.42
	87.49	0.0085	5609.33

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Peak Name

n-C34

n-C35

Ret. Time	Area %	Area
87.96	0.0008	539.29
88.60	0.0036	2378.18
89.77	0.0045	2989.47
90.45	0.0004	288.75
90.90	0.0008	512.17
91.07	0.0021	1366.45
91.38	0.0054	3568.72
92.27	0.0014	925.28
93.48	0.0039	2554.00
93 97	0.0003	202.04

90.45	0.0004	288.75
90.90	0.0008	512.17
91.07	0.0021	1366.45
91.38	0.0054	3568.72
92.27	0.0014	925.28
93.48	0.0039	2554.00
93.97	0.0003	202.04
94.67	0.0023	1498.68
95.03	0.0007	439.27
95.68	0.0015	994.50
96.34	0.0010	627.53
96.45	0.0009	587.61
97.55	0.0019	1238.86
98.14	0.0012	778.88
98.91	0.0067	4449.98
99.99	0.0002	118.77
100.58	0.0054	3568.71
101.33	0.0022	1464.89
102.40	0.0017	1125.17
103.03	0.0012	808.31
103.25	0.0009	581.06
103.98	0.0004	294.76
104.48	0.0009	588.06
105.50	0.0021	1406.82
106.44	0.0036	2381.11
107.65	0.0057	3772.12
108.17	0.0008	516.86
108.63	0.0003	184.71

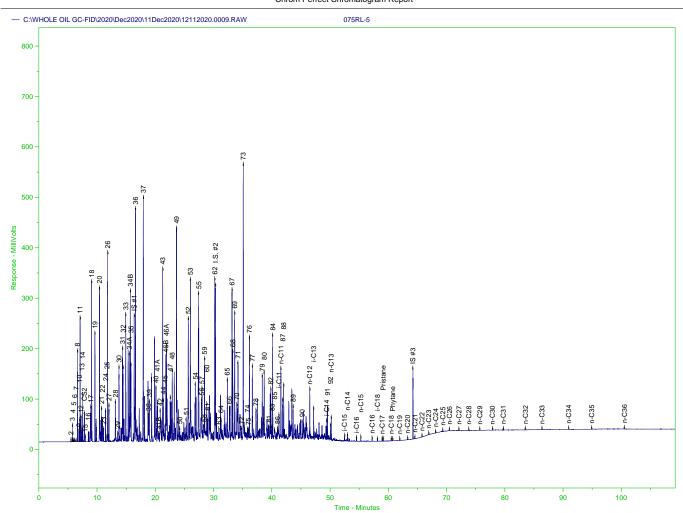
Chrom Perfect Chromatogram Report

Total Area = 6.597103E+07

Total Height = 1.831833E+07

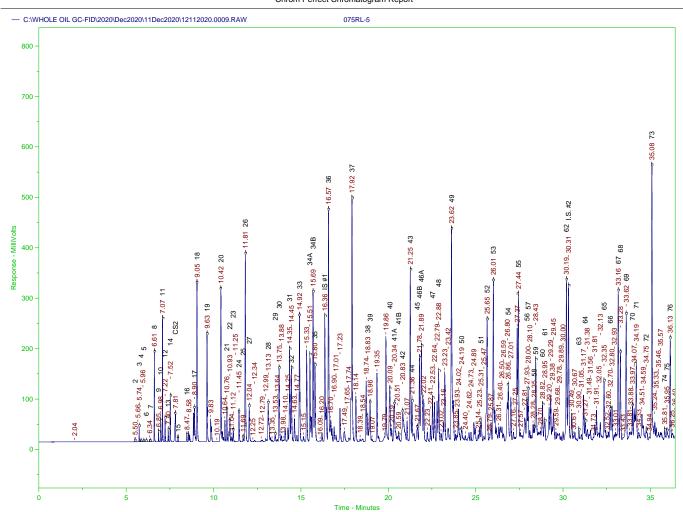
Total Amount = 0





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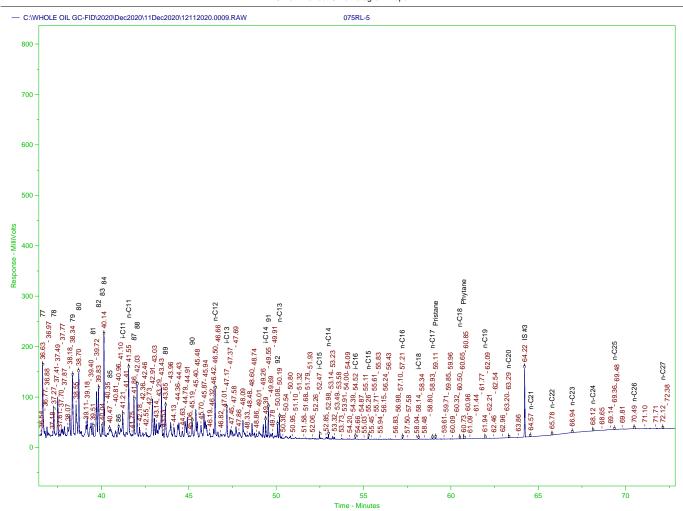




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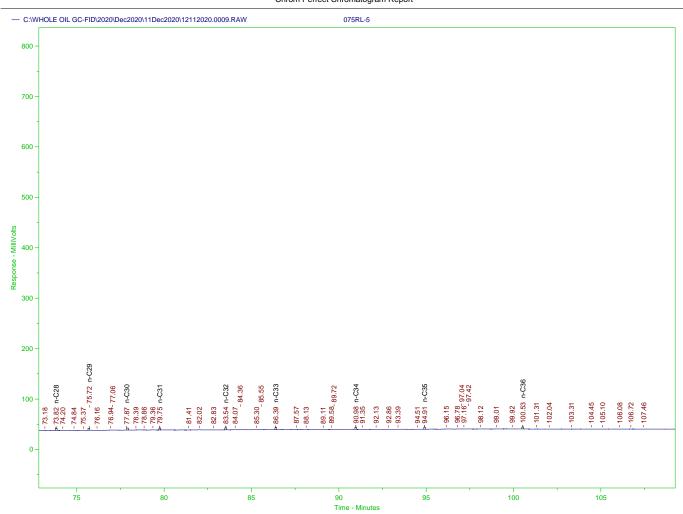
Fax: 865.573.8133 Web: www.microbe.com





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Sample Name = 075RL-5

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $\label{eq:RawFileName} \mbox{Raw File Name} = \mbox{C:\WHOLE OIL GC-FID\2020\Dec2020\11Dec2020\12112020\Dec2020\12112020\Dec2020\11212020\Dec2020\Cde202020\Cde2020\Cde2020\Cde202020\Cde202020\Cde202020\Cde202020\Cde20200\Cde202020\Cde202020\Cde202020\Cde202020\Cde202020\Cde202020\Cde$ 

Method File Name = C:\1 - A Backup\C3442020.met

Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
	2.04	0.0020	1365.10
2	5.50	0.0025	1753.50
	5.66	0.0011	797.97
3	5.74	0.0520	36107.03
	5.96	0.0034	2376.67
	6.34	0.0092	6408.09
8	6.61	0.3465	240480.30
9	6.85	0.0368	25505.71
10	6.98	0.0853	59217.57
11	7.07	0.5141	356758.20
12	7.22	0.1004	69662.74
13	7.40	0.0545	37804.23
14	7.52	0.2172	150756.80
CS2	7.81	0.2708	187940.80
16	8.47	0.0319	22120.98
	8.58	0.0913	63380.12
17	8.90	0.4058	281625.40
18	9.05	0.9750	676625.90
19	9.63	0.6601	458046.20
	9.83	0.2328	161516.10
	10.19	0.0016	1142.58
20	10.42	1.1144	773339.90
	10.64	0.1395	96832.88
21	10.76	0.2095	145388.80
22	10.93	0.2062	143067.20
	11.04	0.0348	24126.55
23	11.12	0.0787	54624.74
	11.25	0.0032	2207.32
24	11.45	0.2080	144364.10
25	11.69	0.0288	19964.62
26	11.81	1.3428	931818.00
27	12.04	0.2887	200349.00
	12.25	0.0034	2356.84
	12.34	0.0182	12653.83
	12.72	0.0140	9686.21
	12.79	0.0160	11087.85
	12.99	0.0263	18217.93
28	13.13	0.4492	311736.50
	13.35	0.0153	10604.02
29	13.53	0.0726	50380.64
	13.64	0.0221	15328.63
30	13.75	0.5788	401628.90
	13.88	0.0487	33828.11
	13.98	0.0276	19168.24
	14.10	0.1110	77046.64
	14.25	0.1160	80504.96
31	14.35	0.7543	523469.70
32	14.45	0.5906	409839.20
	14.63	0.1923	133459.00
	14.77	0.0579	40158.07
33	14.92	1.0129	702886.30
	15.15	0.0518	35942.03
	15.33	0.7455	517309.50
34A	15.51	0.8923	619220.60
34B	15.69	1.2240	849398.50
35	15.80	0.7727	536241.90
	16.09	0.0143	9929.02
	16.20	0.0835	57934.84

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	Chrom Perfec	ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
S #1	16.36	1.3335	925371.70
6	16.57	1.8823	1306219.00
0	16.70	0.3287	228083.40
	16.90	0.1188	82448.19
	17.01	0.0743	51562.46
	17.23	0.3436	238456.30
	17.49	0.1539	106828.60
	17.65	0.0042	2927.88
	17.74	0.0531	36835.59
7	17.92	2.3695	1644309.00
,			
	18.14	0.4116	285659.00
	18.39	0.0258	17925.99
	18.54	0.0398	27637.96
	18.74	0.4925	341732.80
8	18.83	0.2886	200277.30
9	18.96	0.3610	250512.80
,			
	19.07	0.0236	16398.25
	19.35	0.6282	435942.30
	19.79	0.0718	49806.20
	19.86	0.9744	676153.10
0	20.09	0.6773	469998.30
-	20.19	0.1169	81154.60
1 /			
1A	20.34	0.6010	417057.40
	20.51	0.0558	38742.96
1B	20.59	0.0865	60024.54
2	20.83	0.6631	460135.00
	21.07	0.1797	124706.10
3	21.25	1.4528	1008138.00
4	21.36	0.4572	317237.80
5	21.67	0.2232	154860.20
6B	21.78	0.6911	479563.90
6A	21.89	1.3316	924067.60
	22.02	0.3747	260023.50
	22.23	0.0960	66595.38
	22.41	0.1396	96870.30
7			
7	22.53	0.3906	271030.00
	22.64	0.3566	247448.60
	22.79	0.3389	235191.60
8	22.88	0.6079	421862.30
	23.02	0.1000	69400.90
	23.16	0.1576	109389.90
	23.23	0.6167	427969.90
	23.42	0.2500	173498.70
9	23.62	2.4159	1676491.00
	23.85	0.0629	43658.58
	23.93	0.0522	36211.00
	24.02	0.3689	255979.40
0			
0	24.19	0.2008	139308.70
	24.40	0.0818	56762.51
	24.62	0.1224	84952.49
	24.73	0.0850	58982.77
	24.89	0.3400	235927.50
	25.14	0.0709	49231.81
	25.23	0.1235	85672.17
1	25.31	0.2483	172297.00
	25.47	0.0700	48567.25
2	25.65	1.4443	1002284.00
-	25.79	0.0314	21813.48
•	25.87	0.2412	167406.20
3	26.01	1.8850	1308082.00
	26.31	0.1349	93613.09
	26.40	0.1981	137464.30
		0.1399	
	26.50		97114.46
	26.59	0.0923	64046.55
	26.80	0.4152	288121.50
4	26.86	0.5384	373596.20
	27.01	0.4263	295819.60
	27.16	0.1169	81116.02
	27.25	0.0565	39180.01
	27.37	0.9468	657029.10

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Chrom Perfect Chromatogram Report						
Peak Name	Ret. Time	Area %	Area			
55	27.44	1.2701	881386.00			
	27.57	0.1791	124269.30			
	27.81	0.4236	293985.00			
56	27.93	0.3805	264044.50			
57	28.00	0.4457	309284.00			
	28.10	0.1573	109162.00			
	28.28	0.1754	121750.50			
58	28.35	0.1172	81326.14			
59	28.43	1.1008	763872.90			
	28.70	0.1048	72738.17			
60	28.82	0.4306	298802.30			
61	28.95	0.2874	199450.40			
	29.20	0.4273	296490.10			
	29.29	0.4428	307289.80			
	29.38	0.1293	89713.17			
	29.45	0.3395	235582.90			
	29.59	0.0924	64135.95			
	29.68	0.1154	80047.29			
	29.78	0.1015	70436.27			
	29.89	0.0529	36698.00			
60	30.00	0.0986	68401.61			
62	30.19	1.4899 1.4865	1033895.00			
I.S. #2	30.31		1031560.00 220764.00			
	30.49	0.3181 0.0563				
	30.61 30.67	0.0363	39036.98 85834.28			
63	30.90	0.1257	87205.37			
03	31.05	0.1045	72489.10			
	31.17	0.4482	310997.60			
64	31.27	0.2097	145503.70			
0-1	31.38	0.1691	117341.20			
	31.49	0.0717	49742.29			
	31.56	0.1341	93027.59			
	31.73	0.0468	32503.37			
	31.81	0.1823	126500.90			
	31.91	0.2934	203582.00			
	32.05	0.1528	106063.80			
	32.13	0.2698	187203.50			
65	32.35	0.6574	456218.30			
	32.52	0.0597	41404.32			
	32.60	0.0978	67874.09			
66	32.70	0.3348	232308.80			
	32.80	0.3998	277402.80			
	32.93	0.0642	44548.59			
	33.01	0.1497	103916.50			
67	33.16	1.2870	893116.80			
68	33.28	0.7836	543798.00			
	33.43	0.0404	28032.45			
69	33.62	1.3508	937369.00			
	33.81	0.1447	100383.90			
	33.88	0.1221	84705.77			
70	33.97	0.3256	225945.10			
74	34.07	0.4882	338747.00			
71	34.19	0.7291	505942.20			
	34.33	0.1572	109100.90			
	34.51	0.3167	219775.10			
70	34.59	0.2274	157791.00 137861.90			
72	34.75 34.94	0.1987				
79	34.94 35.08	0.0738 2.5358	51242.56 1759675.00			
73	35.06	0.1986				
	35.24 35.33	0.1986	137823.00 98546.83			
	35.46	0.1658	115038.00			
	35.46 35.57	0.1656	146807.40			
74	35.81	0.1517	105270.50			
74 75	35.81	0.1971	136772.00			
76	36.13	0.1971	652806.90			
. 0	36.25	0.1481	102752.30			
	36.40	0.1157	80322.25			
	36.54	0.0595	41314.57			
	20.0 .	2.2000				

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Chrom Perfect Chromatogram Report						
Peak Name	Ret. Time	Area %	Area			
77	36.63	0.7807	541761.40			
	36.77	0.0890	61731.11			
	36.88	0.1244	86333.52			
	36.97	0.1425	98856.30			
78	37.18 37.37	0.0760	52726.24			
70	37.27 37.41	0.3340 0.0531	231784.30 36836.31			
	37.41	0.0331	287286.10			
	37.61	0.0664	46052.89			
	37.70	0.1091	75679.65			
	37.77	0.1178	81744.42			
	37.87	0.2103	145959.00			
	38.07	0.1501	104179.10			
	38.18	0.3027	210024.90			
79	38.34	0.7704	534614.90			
00	38.55	0.4711	326895.20			
80	38.70 39.11	0.7866 0.2258	545859.70 156669.40			
	39.11	0.2256	170543.70			
	39.40	0.3031	210318.50			
81	39.51	0.1389	96379.93			
	39.72	0.5358	371820.20			
82	39.83	0.6374	442337.90			
83	40.04	0.1412	97986.77			
84	40.14	0.9430	654386.70			
85 86 i-C11	40.35	0.0946	65662.99			
	40.47 40.81	0.3788 0.1545	262868.90 107228.10			
	40.96	0.1636	113521.30			
	41.10	0.1543	107075.00			
	41.21	0.3674	254945.30			
	41.41	0.1235	85694.53			
n-C11	41.55	0.7572	525482.90			
	41.75	0.0656	45537.52			
87	41.86	0.3839	266428.20			
88	42.03 42.18	0.5691 0.1501	394930.30 104155.70			
	42.36	0.1236	85776.93			
	42.46	0.0736	51106.82			
	42.55	0.1423	98745.32			
	42.73	0.0413	28677.49			
	42.91	0.5186	359909.60			
	43.03	0.2293	159148.70			
	43.14 43.29	0.2436 0.3014	169040.50 209144.20			
	43.43	0.4807	333557.00			
	43.53	0.0725	50278.68			
89	43.65	0.3889	269901.20			
	43.96	0.3614	250756.60			
	44.13	0.2459	170643.90			
	44.36	0.1627	112870.70			
	44.43	0.2132	147929.60			
	44.63 44.79	0.1265 0.2910	87770.15 201966.20			
	44.79	0.2318	160822.40			
	45.06	0.0544	37727.53			
90	45.19	0.2709	187995.10			
	45.40	0.3790	263012.00			
	45.48	0.1851	128476.10			
	45.70	0.2788	193444.30			
	45.87 45.04	0.2400	166560.50			
	45.94 46.19	0.3544 0.1331	245960.90 92384.77			
	46.19	0.1331	92384.77 38241.56			
	46.42	0.1005	69727.46			
n-C12	46.50	0.4722	327674.20			
	46.66	0.1212	84108.24			
	46.82	0.0933	64765.91			
: 040	47.01	0.1210	83960.30			
i-C13	47.17	0.3666	254369.00			

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Peak Name i-C14 91	Ret. Time 47.37 47.45 47.45 47.58 47.69 47.86 48.09 48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55 49.69	Area % 0.1198 0.1396 0.0787 0.2121 0.1636 0.3084 0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858 0.2532	Area 83160.14 96855.71 54599.31 147196.90 113546.90 214036.40 69398.24 66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	47.45 47.58 47.69 47.86 48.09 48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.1396 0.0787 0.2121 0.1636 0.3084 0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	96855.71 54599.31 147196.90 113546.90 214036.40 69398.24 66591.10 115989.70 71396.21 51182.95 164952.70
91	47.58 47.69 47.86 48.09 48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.0787 0.2121 0.1636 0.3084 0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	54599.31 147196.90 113546.90 214036.40 69398.24 66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	47.69 47.86 48.09 48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.2121 0.1636 0.3084 0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	147196.90 113546.90 214036.40 69398.24 66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	47.86 48.09 48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.1636 0.3084 0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	113546.90 214036.40 69398.24 66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	48.09 48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.3084 0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	214036.40 69398.24 66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	48.33 48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.1000 0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	69398.24 66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	48.48 48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.0960 0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	66591.10 115989.70 71396.21 51182.95 164952.70 107147.10
91	48.60 48.74 48.86 49.01 49.26 49.39 49.55	0.1671 0.1029 0.0738 0.2377 0.1544 0.1858	115989.70 71396.21 51182.95 164952.70 107147.10
91	48.74 48.86 49.01 49.26 49.39 49.55	0.1029 0.0738 0.2377 0.1544 0.1858	71396.21 51182.95 164952.70 107147.10
91	48.86 49.01 49.26 49.39 49.55	0.0738 0.2377 0.1544 0.1858	51182.95 164952.70 107147.10
91	49.01 49.26 49.39 49.55	0.2377 0.1544 0.1858	164952.70 107147.10
91	49.26 49.39 49.55	0.1544 0.1858	107147.10
91	49.39 49.55	0.1858	
91	49.55		128923.20
			175719.30
		0.0602	41741.76
	49.78	0.0815	56540.73
	49.91	0.0822	57010.54
92	50.08	0.1177	81654.80
n-C13	50.19	0.1942	134753.60
	50.38	0.0171	11873.74
	50.54	0.0936	64981.23
	50.80	0.0543	37659.52
	50.95	0.0173	11987.13
	51.10	0.0393	27292.91
	51.32	0.0401	27856.16
	51.58	0.0340	23585.29
	51.68	0.0196	13598.36
	51.79	0.0151	10461.79
	51.93	0.0156	10793.70
	52.06	0.0215	14928.75
. 0.15	52.26	0.0162	11267.94
i-C15	52.47	0.0620	43015.57
- C11	52.85	0.0339	23524.71
n-C14	52.98	0.0397	27572.83
	53.14	0.0060	4169.96
	53.23 53.32	0.0226	15693.22
	53.32 53.49	0.0187 0.0027	12984.97 1888.16
	53.49	0.0027	2670.79
	53.73	0.0038	8632.00
	53.91	0.0026	1827.88
	54.00	0.0035	2409.71
	54.09	0.0055	3839.65
	54.20	0.0068	4720.73
	54.39	0.0042	2935.98
i-C16	54.52	0.0190	13187.28
- <del>-</del>	54.66	0.0023	1612.62
	54.87	0.0070	4868.00
	55.03	0.0018	1219.01
	55.11	0.0026	1794.98
n-C15	55.26	0.0241	16738.79
	55.45	0.0023	1565.30
	55.61	0.0044	3029.83
	55.71	0.0034	2374.08
	55.83	0.0027	1897.50
	55.94	0.0019	1290.58
	56.15	0.0022	1495.16
	56.24	0.0030	2061.64
	56.43	0.0119	8278.49
	56.83	0.0028	1920.52
	56.98	0.0008	549.50
	57.10	0.0023	1630.55
n-C16	57.21	0.0128	8891.89
	57.50	0.0015	1038.00
	57.58	0.0029	1980.98
	58.04	0.0011	762.36
i-C18	58.14	0.0083	5747.27
	58.34	0.0023	1576.92
	58.48	0.0022	1535.70

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	58.80	0.0014	959.96
n-C17	58.93	0.0088	6085.00
Pristane	59.11	0.0129	8962.75
	59.61	0.0013	920.27
	59.71	0.0008	584.18
	59.85	0.0016	1115.32
	59.96	0.0009	618.77
	60.09	0.0011	729.23
~ C19	60.32	0.0016	1135.15
n-C18	60.50	0.0052 0.0011	3611.07 732.66
Phytono	60.65 60.73	0.0053	732.06 3691.00
Phytane	60.85	0.0035	531.50
	60.96	0.0008	439.52
	61.09	0.0008	532.33
	61.44	0.0010	666.44
	61.77	0.0008	537.77
n-C19	61.94	0.0049	3396.03
	62.09	0.0011	782.39
	62.21	0.0030	2088.56
	62.46	0.0005	373.43
	62.54	0.0009	597.71
	62.96	0.0006	424.43
	63.20	0.0009	641.36
n-C20	63.29	0.0029	1985.91
	63.86	0.0020	1372.31
IS #3	64.22	0.3824	265361.00
n-C21	64.57	0.0100	6916.03
n-C22	65.78	0.1202	83402.43
n-C23	66.94	0.3771	261650.90
n-C24	68.12	0.6311	437910.80
	68.65	0.3505	243229.30
	69.14	0.3554	246611.90
n-C25	69.36	0.1233	85536.05
	69.48	0.0819	56842.26
- 000	69.81	0.3135	217530.40
n-C26	70.49 71.10	0.5827	404348.30
	71.10	0.4706 0.2701	326543.70
n-C27	71.71	0.2701	187404.10 59822.16
11-021	72.12	0.0002	120810.40
	73.18	0.3637	252412.20
n-C28	73.82	0.1396	96852.62
020	74.20	0.1222	84765.85
	74.84	0.1221	84738.66
	75.37	0.0312	21673.41
n-C29	75.72	0.0393	27267.99
	76.16	0.0388	26914.11
	76.94	0.0151	10502.75
	77.06	0.0023	1610.71
n-C30	77.87	0.0099	6870.30
	78.39	0.0046	3211.42
	78.86	0.0108	7485.19
	79.36	0.0058	4034.26
n-C31	79.75	0.0006	391.26
	81.41	0.0009	638.22
	82.02	0.0018	1221.97
	82.83	0.0006	441.23
n-C32	83.54	0.0023	1573.90
	84.07	0.0041	2876.00
	84.36	0.0003	188.09
	85.30	0.0018	1224.17
n C22	85.55 86.30	0.0034	2367.26
n-C33	86.39	0.0016	1079.45
	87.57	0.0061	4248.87
	88.13 80.11	0.0009	643.90 2024.16
	89.11 89.58	0.0029 0.0021	2024.16 1469.83
	89.72	0.0021	636.28
n-C34	90.98	0.0079	5476.28
007	30.30	0.0013	047 0.20

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Peak Name

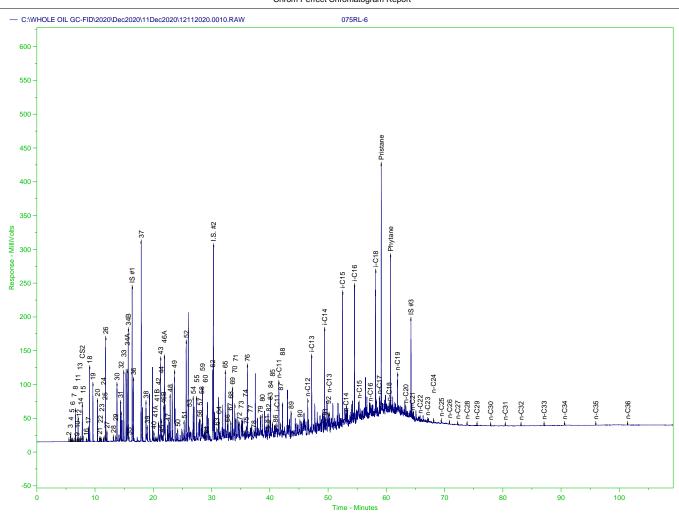
Ret. Time	Area %	Area
91.35	0.0040	2766.55
92.13	0.0046	3164.06
92.86	0.0006	447.17
93.39	0.0008	545.27
94.51	0.0010	720.92
94.91	0.0005	321.09
96.15	0.0011	752.05
96 78	0.0024	1692 24

	92.13	0.0046	3164.06
	92.86	0.0006	447.17
	93.39	0.0008	545.27
	94.51	0.0010	720.92
n-C35	94.91	0.0005	321.09
	96.15	0.0011	752.05
	96.78	0.0024	1692.24
	97.04	0.0048	3355.12
	97.16	0.0060	4136.43
	97.42	0.0055	3836.14
	98.12	0.0043	3000.06
	99.01	0.0010	724.60
	99.92	0.0025	1764.68
n-C36	100.53	0.0019	1324.17
	101.31	0.0012	804.67
	102.04	0.0013	899.13
	103.31	0.0003	228.61
	104.45	0.0005	355.51
	105.10	0.0016	1091.31
	106.08	0.0005	345.90
	106.72	0.0053	3660.27
	107.46	0.0005	373.99

Chrom Perfect Chromatogram Report

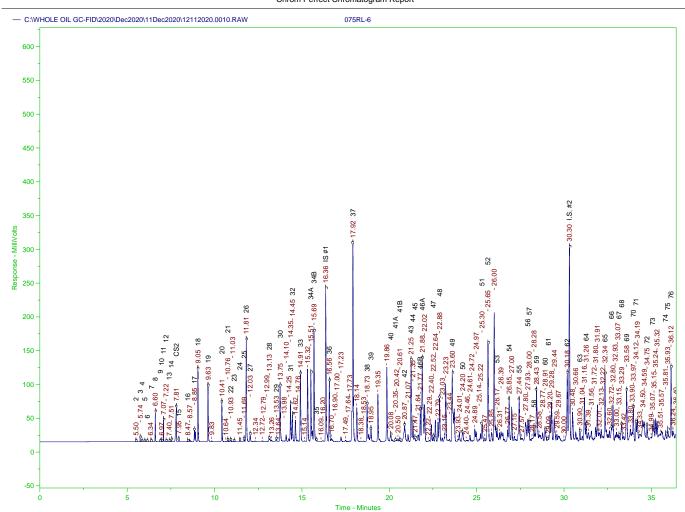
Total Height = 1.884504E+07 Total Area = 6.9394E+07 Total Amount = 0





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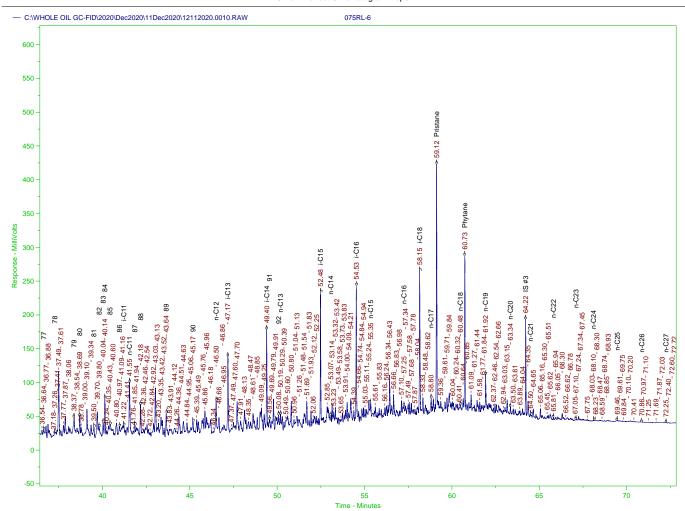




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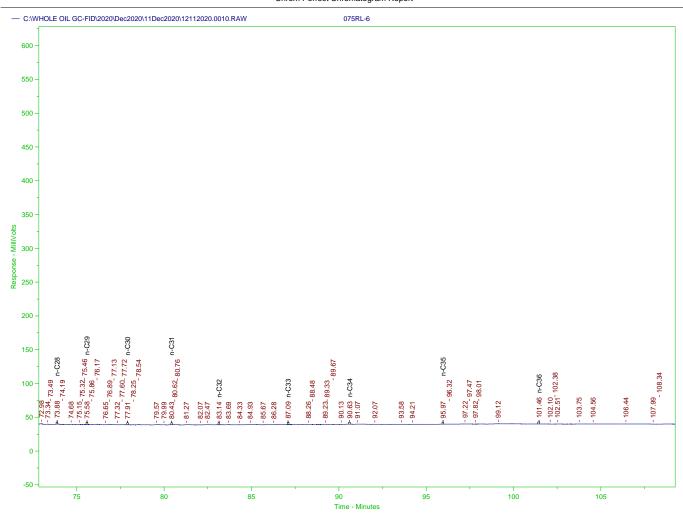
Fax: 865.573.8133 Web: www.microbe.com





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Sample Name = 075RL-6

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{12020} \\ \textbf{1212020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{1212/2020} \\ \textbf{1:38:57 PM} \\ \textbf{1:38:57$ 

Method File Name = C:\1 - A Backup\C3442020.met

Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.50	0.0007	376.03
3	5.74	0.0116	6579.77
	6.34	0.0007	421.08
8	6.60	0.1055	59987.80
10	6.97	0.0013	715.67
11	7.07	0.0820	46591.29
12	7.22	0.0011	596.79
13	7.40	0.0007	395.17
14	7.51	0.0077	4378.33
CS2	7.81	0.2666	151550.80
15	7.95	0.0090	5125.85
16	8.47	0.0010	572.90
	8.57	0.0175	9949.74
17	8.85	0.1116	63405.70
18	9.05	0.3804	216183.50
19	9.63	0.3146	178783.30
	9.83	0.0049	2763.23
20	10.41	0.2315	131579.00
	10.64	0.0013	754.10
21	10.76	0.0075	4277.78
22	10.93	0.0115	6560.75
	11.03	0.0037	2081.78
24	11.45	0.0057	3221.15
25	11.69	0.0165	9369.12
26	11.81	0.6567	373262.70
27	12.03	0.0504	28633.72
	12.34	0.0040	2282.28
	12.72	0.0058	3284.97
	12.79	0.0034	1933.05
	12.99	0.0037	2117.50
28	13.13	0.0359	20405.93
	13.26	0.0136	7733.91
29	13.53	0.0216	12274.54
	13.64	0.0048	2713.75
30	13.75	0.4034	229254.50
	13.98	0.0063	3595.45
	14.10	0.0518	29439.01
	14.25	0.0226	12833.98
31	14.35	0.2667	151584.10
32	14.45	0.1982	112667.30
	14.62	0.1608	91407.07
	14.76	0.0138	7819.32
33	14.91	0.4932	280311.30
	15.14	0.0087	4916.50
	15.32	0.5316	302125.30
34A	15.51	0.5762	327468.20
34B	15.69	0.8407	477842.30
	16.09	0.0041	2319.11
	16.20	0.0117	6631.33
IS #1	16.36	1.1599	659218.70
36	16.56	0.4375	248657.30
	16.70	0.0357	20279.00
	16.90	0.0014	784.56
	17.00	0.0049	2778.98
	17.23	0.0421	23927.71
	17.49	0.0124	7067.03
	17.64	0.0016	886.74
	17.73	0.0080	4554.03

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	Chrom Perfec	t Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
37	17.92	1.7099	971852.70
	18.14	0.2731	155196.30
	18.38	0.0055	3104.41
	18.53	0.0057	3266.29
38	18.73	0.3341	189911.90
39	18.95	0.1295	73615.32
55	19.35	0.3874	220178.50
	19.86	0.6057	344241.70
40	20.08	0.0037	51709.11
11A	20.06		
+1A		0.0074	4184.14
	20.42	0.0120	6845.77
445	20.50	0.0269	15312.78
41B	20.61	0.0131	7427.34
42	20.87	0.2564	145699.60
	21.07	0.0536	30453.15
13	21.25	0.6166	350432.00
14	21.35	0.1448	82324.71
45	21.47	0.0512	29122.09
	21.64	0.0871	49492.17
16B	21.77	0.2394	136043.50
46A	21.88	0.9202	522982.70
-	22.02	0.2906	165169.40
	22.22	0.0029	1636.31
	22.22	0.0029	5987.77
	22.29	0.0105	74867.76
<b>1</b> 7		0.1317	
47	22.52		23556.58
	22.64	0.1665	94655.71
	22.79	0.1450	82418.43
18	22.88	0.3467	197024.60
	23.03	0.0341	19360.21
	23.15	0.0304	17258.11
	23.23	0.4780	271675.00
	23.44	0.0213	12103.15
19	23.60	0.9669	549523.80
	23.93	0.0176	10027.11
	24.01	0.0782	44456.39
50	24.20	0.1194	67835.80
,,	24.40	0.0098	5570.82
	24.46	0.0115	6528.75
	24.61	0.0655	37203.78
	24.72	0.0120	6838.37
	24.89	0.1157	65780.88
	24.97	0.0904	51367.24
	25.14	0.0236	13437.66
	25.22	0.0615	34946.18
51	25.30	0.1762	100146.80
	25.47	0.0311	17700.26
52	25.65	0.9847	559666.80
	25.85	0.0918	52184.02
	26.00	1.1420	649077.70
53	26.17	0.1134	64479.51
	26.31	0.0693	39366.53
	26.39	0.2038	115815.30
	26.77	0.0957	54384.29
54	26.85	0.3537	201032.30
77			
	27.00 27.15	0.2741	155802.10
	27.15	0.0736	41858.61
55	27.44	0.4244	241203.20
	27.57	0.0570	32413.56
	27.80	0.2728	155076.20
56	27.93	0.1616	91846.31
57	28.00	0.1655	94052.76
	28.17	0.0253	14381.42
58	28.28	0.1884	107092.60
59	28.43	0.5706	324285.70
~~	28.58	0.1343	76310.50
20	28.77	0.0832	47272.79
60	28.91	0.1380	78448.50
61	29.09 29.20	0.0233	13228.18 140264.10
		0.2468	

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	29.28	0.3247	184544.40
	29.44	0.2460	139810.50
	29.59	0.0579	32880.30
	29.67	0.1055	59941.48
60	30.00	0.0171	9740.53
62	30.18	0.5873	333796.30
I.S. #2	30.30	1.6028	910957.50 172317.60
	30.48 30.66	0.3032 0.1113	63265.64
63	30.90	0.0804	45684.14
03	31.04	0.0572	32534.89
	31.16	0.372	214887.60
64	31.26	0.1556	88409.80
0.1	31.39	0.1082	61512.08
	31.56	0.1525	86676.56
	31.72	0.0273	15493.13
	31.80	0.1287	73138.27
	31.91	0.3000	170488.10
	32.01	0.1289	73279.53
	32.13	0.1053	59833.69
	32.22	0.0654	37193.51
65	32.34	0.6954	395231.70
	32.60	0.0964	54801.66
66	32.72	0.1329	75556.01
	32.80	0.3725	211690.80
	32.93	0.0489	27787.00
	33.00	0.0775	44028.87
07	33.07	0.0557	31657.15
67	33.15	0.0574	32597.34
68	33.29	0.1845	104860.50
60	33.42 33.58	0.0460	26142.84
69	33.80	0.5046 0.1663	286783.60 94509.02
	33.90	0.0792	45035.46
70	33.97	0.0792	156813.50
70	34.12	0.1431	81330.52
, .	34.19	0.2223	126325.70
	34.33	0.1297	73744.06
	34.50	0.2287	129986.30
	34.59	0.2608	148222.70
72	34.75	0.1631	92689.62
	34.99	0.0652	37060.69
73	35.07	0.1273	72350.74
	35.15	0.1730	98336.53
	35.24	0.1821	103494.60
	35.32	0.1771	100636.40
	35.51	0.1345	76452.05
	35.57	0.1734	98527.42
74	35.81	0.0883	50168.50
75 70	35.93	0.1467	83402.28
76	36.12	0.6258	355662.60
	36.24 36.40	0.1245	70740.59
	36.40	0.0898	51030.79 61066.76
77	36.54 36.64	0.1074 0.1369	61066.76 77789.58
77	36.77	0.1095	62260.42
	36.88	0.2368	134571.70
	37.18	0.2308	24942.11
78	37.16	0.1223	69537.05
70	37.41	0.0605	34359.79
	37.49	0.5810	330218.10
	37.61	0.0875	49732.79
	37.77	0.1462	83112.99
	37.87	0.2745	156011.60
	38.06	0.2685	152582.00
79	38.37	0.3737	212369.80
	38.54	0.1661	94431.86
80	38.69	0.1895	107709.80
	38.78	0.1286	73099.37
	39.00	0.0807	45876.13

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	39.10	0.4053	230372.90
	39.34	0.1390	79012.08
81	39.50	0.1217	69143.90
	39.70	0.2942	167190.30
82	39.80	0.1831	104090.80
83	40.04	0.1410	80152.37
84	40.14	0.3250	184737.10
	40.24	0.0659	37449.23
	40.35	0.1343	76331.40
85	40.43	0.2018	114675.40
	40.60	0.1769	100526.00
	40.80	0.2175	123636.40
86	40.97	0.1504	85498.75
	41.09	0.1090	61932.51
. 044	41.16	0.0995	56565.63
i-C11	41.22	0.1897	107821.20
. 044	41.41	0.1211	68856.30
n-C11	41.55	0.5980	339875.00
07	41.76	0.0696	39573.22 67443.63
87	41.85 41.94	0.1187 0.2101	67442.62 119424.00
88	41.94 42.18	0.2101	165642.50
00	42.16	0.0427	24274.44
	42.36	0.0427	47673.61
	42.46	0.1104	62746.15
	42.54	0.1866	106084.10
	42.72	0.0427	24287.22
	42.84	0.0477	27100.34
	42.92	0.1428	81161.34
	43.03	0.4477	254427.20
	43.13	0.0854	48564.09
	43.20	0.1233	70084.25
	43.35	0.2386	135609.90
	43.42	0.1377	78241.78
	43.52	0.0688	39103.51
89	43.64	0.2614	148541.70
	43.83	0.0786	44659.45
	43.91	0.1192	67763.86
	44.12	0.1534	87189.63
	44.26	0.0660	37490.58
	44.36	0.2833	161022.00
	44.51	0.0477	27137.31
	44.63	0.2152	122319.10
	44.84	0.1814	103082.00
	44.95	0.0577	32768.71
00	45.06	0.0989	56186.15
90	45.17 45.30	0.2466	140149.70
	45.39 45.49	0.1721 0.1466	97812.00 83315.38
	45.76	0.1400	201587.40
	45.76	0.2492	141650.20
	45.96	0.3224	183217.50
	46.18	0.2506	142408.60
	46.34	0.0521	29589.34
n-C12	46.50	0.4255	241818.80
11 012	46.66	0.2114	120153.90
	46.86	0.1168	66371.90
	46.95	0.2043	116144.30
i-C13	47.17	0.6890	391587.50
	47.37	0.0943	53580.26
	47.49	0.1655	94064.30
	47.60	0.1110	63068.19
	47.70	0.4048	230056.50
	47.91	0.2390	135851.50
	48.13	0.4368	248248.70
	48.35	0.2186	124226.40
	48.47	0.1621	92125.36
	48.61	0.4001	227410.00
	48.85	0.1770	100596.40
	49.09	0.6120	347844.80

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		ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	49.25	0.2384	135511.20
-C14	49.40	0.8002	454818.40
91	49.56	0.1993	113269.20
	49.69	0.1083	61540.46
	49.79	0.3439	195443.40
	49.91	0.3181	180768.80
12	50.08	0.2172	123466.30
-C13	50.19	0.2003	113821.70
	50.29	0.1772	100740.10
	50.39	0.0890	50577.56
	50.49	0.1226	69666.12
	50.60	0.3787	215233.80
	50.80	0.3569	202843.20
	50.96	0.1423	80862.86
	51.04	0.1036	58906.67
	51.13	0.2520	143229.60
	51.26	0.3456	196412.40
	51.48	0.1065	60540.15
	51.54	0.3126	177690.20
	51.69	0.2905	165135.00
	51.83	0.1672	95009.37
	51.93	0.1840	104580.60
	52.06	0.1657	94168.49
	52.12	0.2403	136593.40
	52.25	0.3271	185897.80
C15	52.48	1.2485	709623.80
0.10	52.85	0.7719	438706.90
-C14	53.07	0.1529	86879.53
-014	53.14	0.1329	121007.60
	53.23	0.2593	147348.30
	53.32	0.2029	115323.60
	53.42	0.1547	87928.24
	53.49	0.1406	79937.09
	53.58	0.1329	75547.66
	53.65	0.0846	48098.76
	53.73	0.1985	112825.90
	53.83	0.2057	116913.60
	53.91	0.2087	118602.80
	54.00	0.2961	168283.00
	54.09	0.2180	123913.60
	54.21	0.4779	271607.80
	54.39	0.2632	149585.20
C16	54.53	1.1602	659404.60
010	54.66	0.1703	96771.05
	54.74		
		0.1878	106732.30
	54.84	0.2796	158919.40
	54.94	0.1649	93737.49
	55.03	0.2669	151720.90
	55.11	0.3178	180599.00
	55.24	0.4198	238613.60
-C15	55.35	0.2859	162487.30
	55.61	0.8706	494810.80
	55.83	0.3615	205454.40
	56.16	0.7659	435303.30
	56.24	0.3023	171802.80
	56.34	0.1926	109475.40
	56.43	0.9073	515692.80
	56.66	0.4928	280109.40
	56.83	0.4248	241430.00
	56.98	0.1940	110246.40
0.40	57.10	0.5745	326548.90
-C16	57.25	0.3026	171961.50
	57.34	0.3100	176169.00
	57.49	0.4498	255637.70
	57.58	0.2295	130414.40
	57.68	0.2996	170287.90
	57.78	0.3111	176825.20
	57.76 57.87	0.3577	203296.20
		0.3267	185710.00
C18	58.04		
LIX	58.15	1.4416	819343.40

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	58.33	0.3431	195020.00
	58.48	0.5621	319502.70
	58.62	0.3140	178470.50
n-C17	58.80	1.1862	674180.40
Pristane	59.12	2.2579	1283279.00
	59.36	0.6594	374763.70
	59.61	0.4337	246470.00
	59.71	0.5099	289825.70
	59.84	0.7864	446968.20
	60.04	0.5923	336637.80
	60.24	0.3516	199826.30
	60.32	0.2362	134232.90
0.40	60.41	0.2568	145957.30
n-C18	60.48	0.3832	217778.80
Divide	60.64	0.3804	216230.70
Phytane	60.73	1.2684	720880.50
	60.85	0.3387	192488.10
	61.09	0.7893	448578.60
	61.27	0.6909	392690.40 390057.10
	61.44	0.5086	289057.10 158363.50
	61.58 61.77	0.2786	158363.50
	61.77	0.4976	282791.60
T C10	61.84	0.2212	125734.30
n-C19	61.92	1.4842	843556.10 451000.50
	62.37	0.2674	151999.50
	62.46 62.54	0.2167 0.3491	123154.40
	62.66	0.6856	198393.30 389680.80
	62.94	0.2238	127214.60
	63.03	0.2756	156658.50
	63.15	0.4609	261977.40
n-C20	63.34	0.2915	165688.30
11 020	63.50	0.2483	141139.20
	63.61	0.3988	226658.70
	63.89	0.4067	231150.00
	64.04	0.3956	224868.10
IS #3	64.22	0.6586	374338.30
	64.35	0.3975	225929.10
n-C21	64.50	0.1848	105012.80
	64.65	0.5145	292420.10
	65.06	0.2072	117739.00
	65.16	0.1583	89947.48
	65.30	0.1337	76006.04
	65.45	0.1133	64380.07
	65.51	0.0869	49374.54
	65.62	0.2302	130822.20
n-C22	65.81	0.0949	53965.50
	65.94	0.1291	73389.95
	66.05	0.1691	96096.08
	66.30	0.2560	145478.20
	66.52	0.0621	35279.29
	66.62	0.1211	68815.68
	66.78	0.2098	119214.20
	67.05	0.0515	29252.34
n-C23	67.10	0.0757	43049.27
	67.24	0.0834	47418.62
	67.34	0.0709	40305.10
	67.45	0.1270	72160.48
	67.75	0.1669	94882.56
- CO4	68.03	0.0276	15672.70
n-C24	68.10	0.0588	33443.56
	68.23	0.0290	16474.59
	68.30	0.0392	22298.25
	68.47	0.0739	42013.81
	68.59	0.0293	16678.19
	68.74	0.0452	25686.48 44735.87
	68.85	0.0206	11725.87
n COE	68.93	0.1076	61136.20
n-C25	69.46	0.0710	40371.27
	69.61	0.0282	16053.85

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	69.75	0.0171	9731.34
	69.84	0.0322	18280.37
	70.10 70.20	0.0113	6400.51
	70.20 70.41	0.0241	13721.91
n-C26	70.41	0.0063 0.0034	3584.82 1923.35
11-020	70.86	0.0034	1226.38
	71.10	0.0022	3717.53
	71.25	0.0132	7493.95
	71.69	0.0142	8095.72
	71.87	0.0063	3584.43
	72.03	0.0100	5659.91
n-C27	72.25	0.0068	3856.13
	72.40	0.0073	4167.45
	72.60	0.0017	951.99
	72.72	0.0106	6000.05
	72.98	0.0124	7028.02
	73.34	0.0034	1929.69
	73.49	0.0024	1388.21
n-C28	73.88	0.0082	4644.74
	74.19	0.0019	1056.35
	74.68	0.0049	2769.26
	75.15	0.0089	5038.55
	75.32	0.0047	2697.54
	75.46	0.0040	2257.39
n-C29	75.58	0.0100	5675.16
	75.86	0.0033	1881.01
	76.17	0.0157	8938.84
	76.65	0.0018	1010.37
	76.89	0.0075	4277.94
	77.13	0.0023	1312.20
	77.32	0.0030	1693.11
	77.60	0.0044	2518.01
000	77.72	0.0037	2113.38
n-C30	77.91	0.0025	1394.71
	78.25	0.0021	1185.42
	78.54 70.57	0.0068	3850.34
	79.57	0.0187	10632.23
n-C31	79.99	0.0053	2991.24
11-031	80.43 80.62	0.0090 0.0070	5105.59 3971.47
	80.76	0.0070	6241.32
	81.27	0.0032	1803.67
	82.07	0.0032	619.52
	82.47	0.0171	9726.92
n-C32	83.14	0.0090	5133.77
502	83.69	0.0083	4693.74
	84.33	0.0005	857.81
	84.93	0.0029	1674.83
	85.67	0.0006	342.18
	86.28	0.0034	1922.05
n-C33	87.09	0.0033	1896.98
	88.26	0.0042	2375.29
	88.48	0.0085	4816.08
	89.23	0.0007	421.07
	89.33	0.0009	524.78
	89.67	0.0006	335.69
	90.13	0.0007	400.11
n-C34	90.63	0.0096	5441.04
	91.07	0.0006	355.75
	92.07	0.0009	519.92
	93.58	0.0005	304.49
	94.21	0.0008	465.84
n-C35	95.97	0.0050	2868.70
	96.32	0.0007	416.07
	97.22	0.0050	2824.15
	97.47	0.0035	1965.35
	97.82	0.0003	164.92
	98.01	0.0003	168.02
	99.12	0.0118	6728.45

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Chrom Perfect Chron	matogram Report
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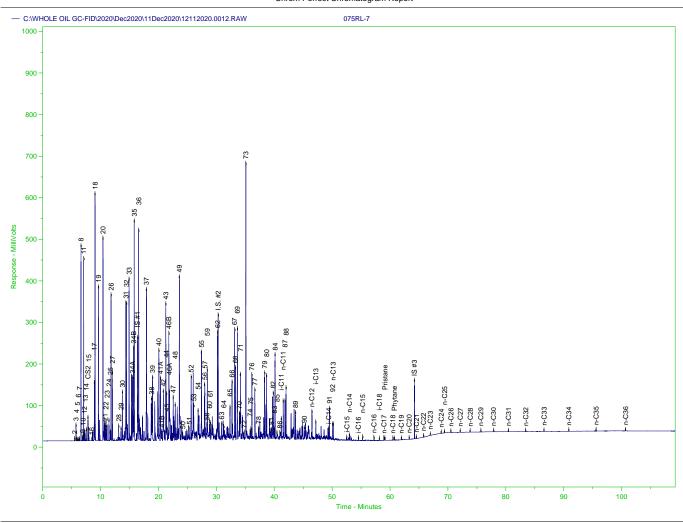
Peak Name	Ret. Time	Area %	Area
n-C36	101.46	0.0003	151.61
	102.10	0.0005	287.63
	102.38	0.0005	260.59
	102.51	0.0011	601.64
	103.75	0.0005	302.54
	104.56	0.0020	1163.26
	106.44	0.0008	444.18
	107.99	0.0007	387.20
	108.34	0.0005	302.54

Total Area = 5.683604E+07

Total Height = 1.293265E+07

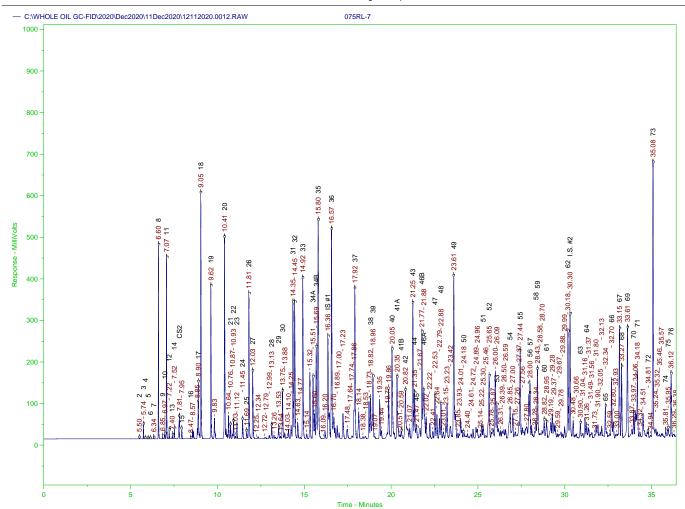
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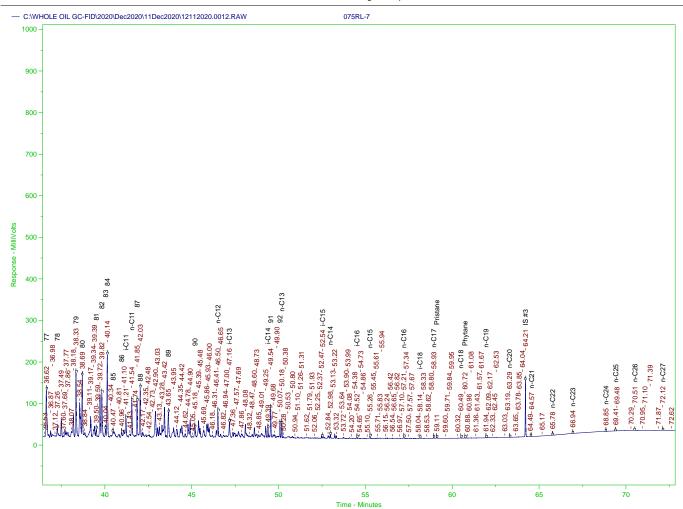
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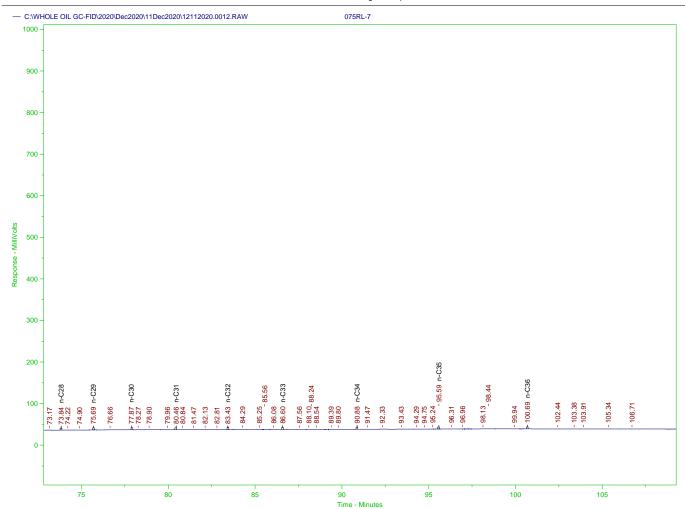
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Sample Name = 075RL-7

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{5:44:53 PM} \\ \textbf{12112020}  

Method File Name = C:\1 - A Backup\C3442020.met Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.50	0.0047	3022.29
3	5.74	0.0622	39809.25
7	6.34	0.0047	3035.55
8	6.60	0.9872	631386.40
9	6.85	0.0113	7195.75
10	6.97	0.0270	17294.01
11	7.07	1.0006	639942.20
12	7.22	0.0484	30928.71
13	7.40	0.0272	17413.67
14	7.52	0.0634	40551.68
CS2	7.81	0.2527	161594.00
15	7.95	0.0636	40662.61
16	8.47	0.0025	1615.68
	8.57	0.1167	74651.26
	8.85	0.0728	46581.71
17	8.90	0.5013	320613.10
18	9.05	1.9317	1235424.00
19	9.62	1.2361	790560.30
.0	9.83	0.2141	136905.70
20	10.41	1.8625	1191150.00
20	10.64	0.1978	126518.40
21	10.76	0.1217	77802.21
21	10.87	0.0387	24728.08
22	10.93	0.1555	99477.39
22	11.03	0.0234	14993.79
23	11.12	0.1175	75147.86
24	11.45	0.1763	112744.50
25	11.69	0.0709	45342.41
26	11.81	1.3654	873253.60
27	12.03	0.6829	436751.70
21	12.03	0.0023	2935.75
	12.34	0.0286	18274.98
	12.72	0.0139	8869.40
	12.79	0.0185	11844.31
	12.79	0.0421	26951.76
28	13.13	0.1314	84016.23
20	13.26	0.0573	36620.87
29	13.53	0.1362	87094.09
25	13.64	0.0271	17318.72
30	13.75	0.5010	320419.20
30	13.88	0.0662	42335.59
	14.03	0.0255	16280.72
	14.10	0.1019	65138.90
	14.25	0.1475	94339.14
31	14.35	1.4619	934963.30
32	14.45	1.4402	921068.20
02	14.63	0.1849	118256.30
	14.77	0.0225	14412.40
33	14.92	1.6805	1074739.00
00	15.14	0.0600	38371.20
	15.32	0.7091	453476.70
34A	15.51	0.6434	411459.60
· · · ·	15.60	0.2721	174015.30
34B	15.69	1.0154	649381.90
35	15.80	2.5022	1600314.00
00	16.09	0.0094	6035.52
	16.20	0.0878	56136.71
IS #1	16.36	1.4055	898874.90
.5 " 1	10.00	1.7055	030074.90

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Chrom Perfect Chromatogram Report				
Peak Name Ret. Time Area % Area				
36	16.57	2.2404	1432867.00	
	16.70	0.4077	260729.40	
	16.89		89199.30	
		0.1395		
	17.00	0.0836	53478.88	
	17.23	0.3627	231985.30	
	17.48	0.1829	116967.50	
	17.64	0.0044	2792.45	
	17.74	0.0551	35255.44	
	17.86	0.2284	146089.00	
37	17.92	1.7056	1090820.00	
31	18.14	0.3599	230185.70	
	18.38	0.0272		
			17379.49	
	18.53	0.0470	30057.93	
	18.73	0.4003	256008.10	
38	18.82	0.4487	286943.60	
39	18.96	0.8452	540565.50	
	19.07	0.0285	18228.50	
	19.35	0.4362	278984.20	
	19.44	0.0981	62747.16	
	19.78	0.0981	74668.16	
40	19.86	0.6339	405410.50	
40	20.05	1.2697	812038.20	
41A	20.35	0.8292	530310.00	
	20.51	0.0499	31927.22	
41B	20.59	0.1230	78679.96	
42	20.82	0.9618	615115.00	
	21.07	0.1257	80407.08	
43	21.25	1.5119	966968.90	
44	21.35	0.5029	321658.20	
45	21.47	0.2070	132396.00	
	21.67	0.1991	127349.80	
46B	21.77	1.1628	743700.20	
46A	21.88	1.0180	651044.90	
	22.02	0.2620	167549.40	
	22.22	0.1785	114148.60	
	22.41	0.0860	54998.14	
47	22.53			
+7		0.4992	319250.10	
	22.64	0.3005	192192.00	
	22.79	0.2206	141085.00	
48	22.88	0.3932	251459.20	
	23.01	0.1053	67347.27	
	23.15	0.1435	91766.36	
	23.23	0.4016	256814.00	
	23.42	0.2870	183532.20	
49	23.61	2.2711	1452495.00	
TU				
	23.85	0.0624	39919.75	
	23.93	0.0433	27660.85	
	24.01	0.3571	228393.40	
50	24.18	0.1620	103577.70	
	24.40	0.0851	54397.29	
	24.61	0.0982	62788.00	
	24.72	0.1179	75396.52	
	24.72		99550.81	
		0.1557		
	24.96	0.1438	91954.63	
	25.14	0.0720	46020.61	
	25.22	0.1812	115901.20	
51	25.30	0.1706	109116.50	
	25.46	0.0650	41595.80	
52	25.65	0.9741	622961.90	
-	25.78	0.0749	47873.43	
	25.87	0.2151	137565.50	
	26.00	0.7900	505256.60	
53	26.09	0.6037	386111.70	
	26.31	0.1071	68465.80	
	26.39	0.1417	90631.68	
	26.50	0.1188	75958.70	
	26.59	0.1402	89658.84	
= A				
54	26.85	0.6297	402726.60	
	27.00	0.3788	242269.60	
	27.15	0.1270	81193.52	

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	27.26	0.0692	44242.95	
	27.37	0.2166	138547.30	
55	27.44	1.0196	652089.40	
	27.56	0.2948	188526.40	
EC	27.80	0.3520	225134.10	
56	28.00 28.28	1.3464 0.0886	861094.20 56651.66	
58	28.34	0.0860	112446.80	
59	28.43	0.9282	593627.50	
	28.58	0.1098	70227.93	
	28.70	0.1186	75821.52	
60	28.82	0.2977	190406.40	
61	28.95	0.2775	177497.80	
	29.19	0.3265	208816.10	
	29.28	0.3096	198024.30	
	29.37	0.3918	250592.40	
	29.59	0.0636	40649.05	
	29.67	0.0550	35145.61	
	29.78	0.1413	90388.11	
	29.88 29.99	0.0590 0.1508	37727.95 96415.14	
62	30.18	1.2870	823097.40	
I.S. #2	30.30	1.4663	937765.80	
1.5. #2	30.48	0.2638	168685.00	
	30.66	0.1328	84945.21	
63	30.90	0.2013	128734.90	
	31.04	0.1014	64847.84	
	31.16	0.2603	166479.90	
64	31.26	0.1784	114112.30	
	31.37	0.1754	112149.80	
	31.49	0.0565	36106.07	
	31.56	0.1004	64198.04	
	31.73	0.0592	37873.38	
	31.80	0.1944	124350.50	
	31.90	0.1783	114022.60	
	32.05 32.13	0.1275 0.2269	81561.53 145095.40	
65	32.13	0.5112	326929.00	
05	32.59	0.0706	45125.84	
66	32.70	0.6968	445633.80	
	32.80	0.2425	155117.90	
	32.93	0.0530	33886.91	
	33.00	0.0606	38770.12	
67	33.15	1.2761	816121.40	
68	33.27	0.7991	511085.60	
69	33.61	1.4844	949368.10	
70	33.87	0.2371	151625.20	
70	33.97 34.06	0.3071 0.5534	196433.80 353903.10	
71	34.18	0.5554	495862.60	
7.1	34.32	0.1793	82692.57	
	34.51	0.4936	315655.50	
72	34.81	0.1717	109814.80	
	34.94	0.0653	41755.02	
73	35.08	3.2852	2101033.00	
	35.24	0.1441	92169.79	
	35.32	0.0926	59223.03	
	35.46	0.1082	69227.08	
	35.57	0.1614	103200.60	
74	35.81	0.1338	85559.19	
75 70	35.95 36.43	0.2012	128654.00	
76	36.12 36.30	0.7714	493328.00	
	36.29 36.38	0.1126	72036.84	
	36.38 36.53	0.0471 0.0697	30098.36 44602.84	
77	36.62	0.0697	44602.64 496455.60	
	36.87	0.1763	64533.43	
	36.98	0.1251	79994.84	
	37.12	0.0645	41265.23	
78	37.26	0.2502	159984.80	

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	37.49	0.2560	163757.60	
	37.60	0.0430	27520.69	
	37.69	0.1132	72410.61	
	37.77	0.1032	65999.68	
	37.86 38.07	0.1394 0.1146	89150.48 73312.49	
	38.18	0.1146	218727.60	
79	38.33	0.9045	578481.40	
79	38.54	0.6539	418178.40	
80	38.69	0.7670	490537.60	
	38.84	0.1234	78930.46	
	39.11	0.1496	95687.85	
	39.17	0.2967	189782.10	
	39.34	0.1202	76904.13	
	39.39	0.1712	109473.50	
81	39.50	0.1316	84165.24	
	39.59	0.0404	25859.01	
00	39.72	0.5656	361740.80	
82	39.82 40.04	0.6561 0.1377	419606.30	
83 84	40.14	0.1377	88086.40 624668.00	
∪ <del>T</del>	40.14	0.9767	44548.67	
85	40.47	0.3079	196932.90	
00	40.81	0.1070	68433.79	
86	40.96	0.1167	74646.55	
	41.10	0.1486	95037.21	
i-C11	41.21	0.3376	215906.90	
	41.43	0.1004	64179.64	
n-C11	41.54	0.5389	344658.90	
	41.74	0.0534	34156.42	
87	41.85	0.4617	295273.70	
88	42.03	0.6479	414339.30	
	42.17 42.35	0.1422 0.0793	90918.85 50726.82	
	42.48	0.0793	40160.51	
	42.54	0.0929	59415.59	
	42.73	0.0298	19060.78	
	42.90	0.4712	301379.50	
	43.03	0.1569	100361.00	
	43.13	0.2150	137515.60	
	43.28	0.1768	113088.70	
	43.42	0.5248	335611.40	
89	43.65	0.3893	248962.20	
	43.95 44.12	0.2923 0.2278	186954.60 145699.50	
	44.12	0.2276	88468.58	
	44.42	0.1363	141673.70	
	44.62	0.0933	59691.32	
	44.78	0.2606	166664.20	
	44.90	0.2380	152220.00	
	45.05	0.0376	24019.54	
90	45.18	0.2142	136963.20	
	45.39	0.2986	190954.40	
	45.48	0.1409	90117.34	
	45.69	0.2152	137612.10	
	45.86	0.1768	113043.40	
	45.93 46.00	0.1852 0.1649	118462.50 105482.60	
	46.18	0.0754	48246.02	
	46.31	0.0389	24875.09	
	46.41	0.1015	64924.86	
n-C12	46.50	0.3312	211833.90	
	46.65	0.0925	59138.28	
	46.82	0.0715	45733.01	
	46.94	0.0453	28944.26	
	47.00	0.0431	27582.36	
i-C13	47.16	0.2834	181255.80	
	47.36	0.2119	135524.30	
	47.57 47.60	0.0657	41989.18	
	47.69	0.1627	104055.90	

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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	47.86	0.1326	84783.85	
	48.08	0.2723	174122.80	
	48.32 48.47	0.0551 0.1025	35208.36 65525.79	
	48.60	0.1025	92201.81	
	48.73	0.0927	59279.49	
	48.85	0.0734	46969.12	
	49.01	0.1891	120962.60	
	49.25	0.1574	100691.10	
i-C14	49.39	0.1421	90900.22	
91	49.54	0.2991	191263.90	
	49.68	0.0544	34760.16	
	49.77	0.0701	44813.43	
	49.90	0.0690	44121.85	
92	50.07	0.1463	93571.55	
n-C13	50.18 50.28	0.1423 0.0260	90976.98 16622.07	
	50.28	0.0260	9010.18	
	50.53	0.0872	55745.12	
	50.80	0.0533	34094.32	
	50.94	0.0152	9741.85	
	51.10	0.0365	23334.10	
	51.26	0.0132	8412.07	
	51.31	0.0197	12570.01	
	51.62	0.0515	32939.28	
	51.79	0.0169	10781.42	
	51.93	0.0168	10770.19	
	52.06 52.25	0.0225 0.0124	14388.31 7943.18	
	52.25 52.37	0.0045	2862.63	
	52.47	0.0247	15804.69	
i-C15	52.54	0.0408	26077.70	
	52.84	0.0493	31525.30	
n-C14	52.98	0.0402	25733.73	
	53.13	0.0053	3408.86	
	53.22	0.0407	26001.99	
	53.32	0.0268	17153.76	
	53.64	0.0050	3192.12	
	53.72 53.90	0.0189 0.0023	12083.91 1469.41	
	53.99	0.0023	2054.34	
	54.08	0.0091	5789.93	
	54.20	0.0064	4079.68	
	54.38	0.0036	2322.67	
i-C16	54.52	0.0152	9716.69	
	54.65	0.0033	2112.71	
	54.73	0.0021	1332.80	
	54.86	0.0048	3092.77	
- 045	55.10 55.00	0.0046	2948.68	
n-C15	55.26 55.45	0.0259 0.0041	16589.72 2615.49	
	55.61	0.0041	2832.68	
	55.71	0.0049	3157.58	
	55.83	0.0063	4018.42	
	55.94	0.0008	484.77	
	56.15	0.0039	2503.69	
	56.24	0.0051	3256.12	
	56.42	0.0054	3464.15	
	56.54	0.0060	3858.97	
	56.65	0.0027	1696.36	
	56.82	0.0041	2609.08	
	56.97	0.0012	759.87	
n-C16	57.10 57.21	0.0047	3006.96 10333.63	
n-C16	57.21 57.34	0.0160 0.0029	10232.62 1867.35	
	57.50	0.0029	1100.50	
	57.50 57.57	0.0017	1984.72	
	001	0.0001		
	57.67	0.0021	1328.05	
	57.67 58.04	0.0021 0.0025	1328.05 1580.28	
i-C18				

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Peak Name	Ret. Time	Area %	Area
	58.33	0.0022	1411.14
	58.53	0.0025	1578.54
	58.62	0.0013	810.11
	58.80	0.0034	2157.67
n-C17	58.93	0.0115	7353.63
Pristane	59.11	0.0152	9737.74
	59.60	0.0017	1068.30
	59.71	0.0006	373.39
	59.84	0.0017	1110.36
	59.95	0.0011	689.25
	60.32	0.0023	1466.73
n-C18	60.49	0.0062	3945.86
Phytane	60.72	0.0043	2752.29
Trytario	60.88	0.0020	1287.74
	60.96	0.0016	1000.34
	61.08	0.0010	632.26
	61.36	0.0010	764.84
	61.43	0.0013	847.36
	61.57	0.0006	407.00
C40	61.67	0.0005	291.72
-C19	61.94	0.0050	3217.09
	62.09	0.0021	1365.76
	62.17	0.0029	1884.75
	62.33	0.0008	536.77
	62.45	0.0007	465.43
	62.53	0.0018	1125.54
	63.03	0.0019	1207.86
	63.19	0.0011	721.77
n-C20	63.29	0.0033	2092.29
	63.65	0.0013	860.61
	63.78	0.0010	623.93
	63.85	0.0012	785.59
	64.04	0.0011	684.86
S #3	64.21	0.4144	265053.10
	64.49	0.0013	840.20
n-C21	64.57	0.0018	1122.20
021	65.17	0.0061	3890.34
n-C22	65.78	0.0220	14081.83
1-022 1-C23	66.94	0.1771	113271.70
1-C23 1-C24	68.85	0.5615	359137.80
1-C24 1-C25	69.41	0.3613	110140.30
1-025			
	69.48	0.0270	17252.15
000	70.29	0.2191	140145.40
n-C26	70.51	0.0781	49918.50
	70.95	0.0296	18903.03
	71.10	0.0257	16428.39
	71.39	0.0059	3775.30
	71.87	0.0022	1378.82
-C27	72.12	0.0159	10185.49
	72.62	0.0038	2436.69
	73.17	0.0300	19156.91
-C28	73.84	0.0165	10566.84
	74.22	0.0194	12418.95
	74.90	0.0236	15111.17
-C29	75.69	0.0187	11985.94
	76.66	0.0340	21775.77
-C30	77.87	0.0299	19145.29
	78.27	0.0215	13725.09
	78.90	0.0319	20432.53
	79.96	0.0123	7890.56
i-C31	80.46	0.0123	4019.75
. 551	80.84	0.0063	8166.77
	81.47	0.0103	6599.06
	82.13	0.0118	7528.48
	82.81	0.0036	2323.95
i-C32	83.43	0.0048	3073.40
	84.29	0.0073	4672.35
	85.25	0.0009	548.51
	85.56	0.0008	526.98

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Peak Name n-C33

Ret. Time	Area %	Area
86.60	0.0027	1702.48
87.56	0.0026	1675.88
88.10	0.0014	913.29
88.24	0.0007	434.19
88.54	0.0004	268.18
89.39	0.0010	629.47
89.80	0.0017	1087.00
90.88	0.0031	1962.56
91.47	0.0012	784.92

	00.24	0.0007
	88.54	0.0004
	89.39	0.0010
	89.80	0.0017
n-C34	90.88	0.0031
	91.47	0.0012
	92.33	0.0036
	93.43	0.0022
	94.29	0.0004
	94.75	0.0028
	95.24	0.0017
n-C35	95.59	0.0006
	96.31	0.0064
	96.96	0.0009
	98.13	0.0019
	98.44	0.0036
	99.94	0.0007
n-C36	100.69	0.0016
	102.44	0.0007
	103.38	0.0023
	103.91	0.0007
	105.34	0.0010
	106.71	0.0007

2328.64 1421.34 228.88 1778.78 1068.36 355.36 4094.72 589.45 1187.56 474.18 1015.74 479.66 1465.12 472.54 650.82 438.32

Total Area = 6.395534E+07

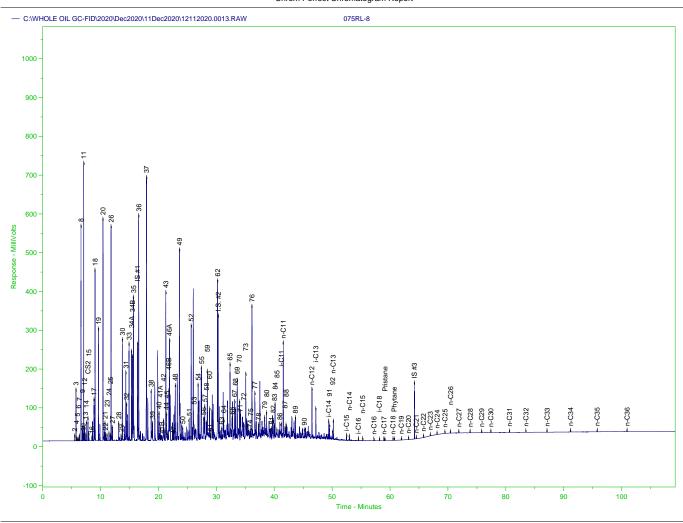
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Chrom Perfect Chromatogram Report

Total Amount = 0

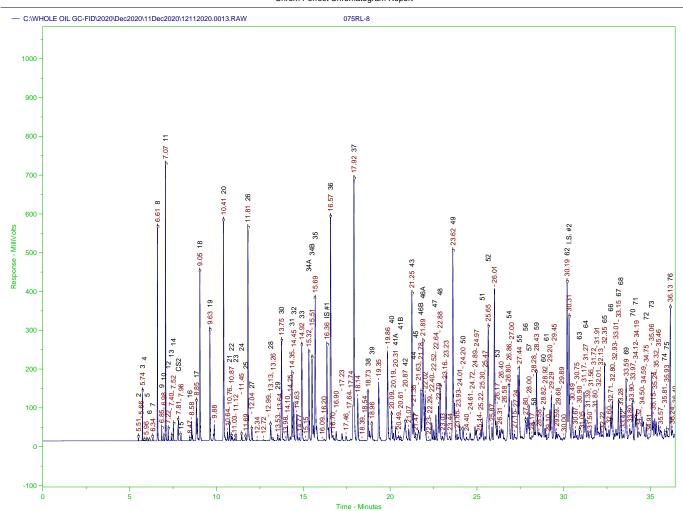
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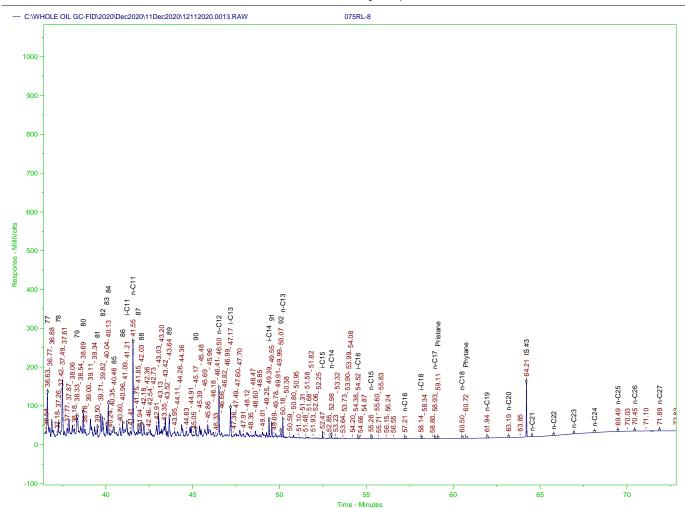
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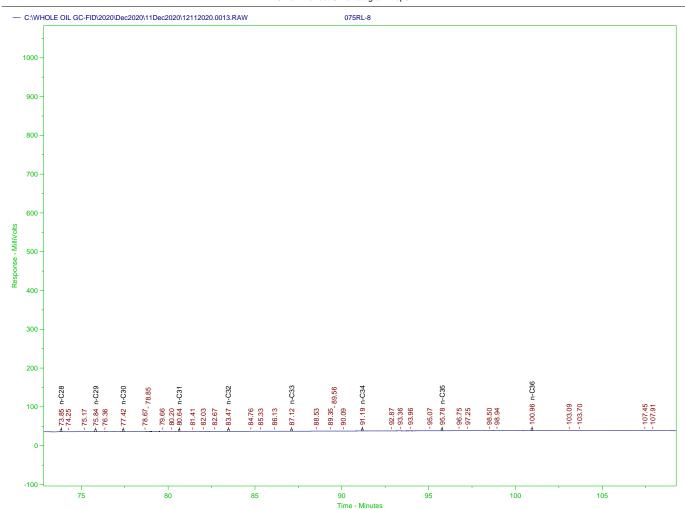




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Sample Name = 075RL-8

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 = Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{13.IR-AN} \\ \textbf{(end)} = 12/12/2020 \\ \textbf{7:47:26 PM} \\ \textbf{12020} \\ \textbf{12020} \\ \textbf{12020} \\ \textbf{13.IR-AN} \\ \textbf{(end)} = 12/12/2020 \\ \textbf{13.IR-AN} \\ \textbf{(end)} = 12/12/2020 \\ \textbf{13.IR-AN} \\ \textbf{(end)} = 12/12/2020 \\ \textbf{13.IR-AN} \\ \textbf{(end)} = 12/12/2020 \\ \textbf{13.IR-AN} \\ \textbf{(end)} = 12/12/2020 \\ \textbf{(end)} = 12/12/2$ 

Method Version = 23 Method File Name = C:\1 - A Backup\C3442020.met Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.51	0.0136	9238.14
	5.66	0.0013	869.35
3	5.74	0.2138	144925.20
	5.96	0.0009	641.72
7	6.34	0.0170	11551.72
8	6.61	1.0981	744503.20
9	6.85	0.0643	43593.54
10	6.98	0.0215	14598.08
11	7.07	1.5365	1041767.00
12	7.22	0.0662	44870.56
13	7.40	0.0277	18752.25
14	7.52	0.1066	72277.89
CS2	7.81	0.2414	163647.30
15	7.96	0.0384	26045.48
16	8.47	0.0103	6974.51
	8.58	0.1749	118598.30
17	8.85	0.4782	324210.40
18	9.05	1.3306	902161.30
19	9.63	0.9049	613491.90
	9.88	0.1925	130486.90
20	10.41	1.9298	1308389.00
	10.64	0.0770	52235.83
21	10.76	0.1426	96684.26
22	10.87	0.0712	48293.64
	11.03	0.0204	13837.99
23	11.12	0.0397	26936.84
24	11.45	0.0593	40210.54
25	11.69	0.0386	26198.37
26	11.81	2.0112	1363590.00
27	12.04	0.1264	85689.37
21	12.34	0.0141	
	12.72		9587.54 16750.55
		0.0247	16750.55
	12.99	0.0116	7852.80
28	13.13	0.1782	120840.50
	13.26	0.0422	28611.66
29	13.53	0.0418	28326.08
	13.64	0.0266	18029.57
30	13.75	1.0496	711615.10
	13.98	0.0164	11133.58
	14.10	0.1562	105886.50
	14.25	0.0464	31473.30
31	14.35	0.6986	473683.90
32	14.45	0.3821	259097.00
02	14.63	0.2917	197792.80
	14.77	0.0410	27828.98
33	14.92		
33		1.0175	689897.90
0.4.4	15.15	0.0181	12276.81
34A	15.32	0.9483	642932.70
34B	15.51	1.0432	707291.20
35	15.69	1.7027	1154452.00
	16.09	0.0088	5938.55
	16.20	0.0255	17257.25
IS #1	16.36	1.1770	798005.40
36	16.57	2.4065	1631633.00
	16.70	0.1001	67892.52
	16.90	0.1209	81973.20
	17.23	0.0983	66681.21
	17.46	0.0766	51953.38
	17.40	0.0766	51955.56

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	Chrom Perfec	t Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	17.64	0.0043	2925.84
	17.74	0.0293	19836.33
7	17.92	3.2807	2224346.00
	18.14	0.5006	339436.80
	18.39	0.0102	6930.23
	18.54	0.0111	7493.52
8	18.73	0.6284	426022.60
9	18.96	0.2515	170484.20
	19.35	0.7045	477674.30
	19.86	1.0908	739589.40
0	20.09	0.3296	223491.50
	20.19	0.0862	58417.86
1A	20.31	0.1242	84228.47
	20.49	0.1193	80917.46
·1B	20.61	0.0250	16943.28
2	20.87	0.4708	319189.10
	21.07	0.1371	92940.25
3	21.25	1.6449	1115221.00
4	21.35	0.2804	190096.90
5	21.47	0.0806	54633.88
	21.63	0.2122	143892.80
6B	21.78	0.5267	357107.10
6A	21.89	1.6296	1104885.00
<del></del> -	22.02	0.5271	357370.50
	22.23	0.0061	4138.45
	22.29	0.0157	10657.66
	22.40	0.2104	142651.90
	22.52	0.1332	90334.56
	22.64	0.2995	203038.80
	22.79	0.3889	263645.30
8	22.79	0.6206	420737.90
O	23.03	0.0626	42454.13
	23.16	0.0928	61610.64
	23.23	0.7986	541449.30
0	23.44	0.0929	62990.04
.9	23.62	2.8596	1938790.00
	23.85	0.0748	50682.27
	23.93	0.0404	27358.40
	24.01	0.2125	144042.30
0	24.20	0.2116	143457.30
	24.40	0.0657	44551.48
	24.61	0.1223	82922.25
	24.72	0.0244	16524.11
	24.89	0.1926	130572.60
	24.97	0.1474	99957.30
	25.14	0.0465	31516.70
	25.22	0.1135	76959.59
1	25.30	0.2965	201047.50
	25.47	0.0633	42893.21
2	25.65	1.7886	1212699.00
	25.87	0.2128	144256.50
	26.01	2.0079	1361358.00
3	26.17	0.1947	131993.10
	26.31	0.1247	84528.99
	26.40	0.3442	233395.80
	26.58	0.0388	26278.55
	26.80	0.3751	254284.70
4	26.86	0.6978	473085.10
	27.00	0.4698	318517.90
	27.15	0.1017	68950.96
	27.24	0.0605	41001.46
5	27.44	1.6940	1148542.00
6	27.80	0.4749	321982.10
7	28.00	0.7121	482791.40
•	28.17	0.7121	41061.08
i8	28.28	0.0606	218702.50
9	26.26 28.43		
J		1.0697	725241.90
•0	28.58	0.2547	172676.30
0	28.82	0.4567	309611.20
	28.92	0.2346	159050.70

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Peak Name         Ret. Time         Area           20.0         0.08114         38801           20.0         0.04409         3281811.60           20.2         29.29         0.5740         381416.60           20.5         29.59         0.1068         72848           20.00         0.0563         313423.30           20.00         0.0503         341346.50           11.5         22.2         30.19         1.50859         1.222712.00           11.5         22.2         30.19         1.50859         1.222712.00           11.5         22.2         30.19         1.50859         1.22712.00           11.5         22.2         30.19         1.50859         1.22712.00           20.7         30.67         0.1792         1.25712.00           30.5         0.11111         7.5342.95           61         31.05         0.11111         7.5342.95           62         31.17         0.6144         4.16552.93           63         30.90         0.1510         1.2276.20           64         31.27         0.2614         1.77253.80           31.5         0.1750         1.5382.95         1.5582.93	Chrom Perfect Chromatogram Report				
29.20	Peak Name				
1929   0.5740   389145.80   29.45   0.5499   372821.30   29.59   0.1068   72394.86   29.66   0.1989   134823.90   29.66   0.1989   134823.90   29.66   0.1989   134823.90   29.66   0.1989   134823.90   29.66   0.1989   134823.90   29.66			0.0514	34850.07	
1945   0.5499   37282130   29.599   0.10668   72394468   29.599   0.10668   72394468   29.599   0.00232   21887.37   21		29.20	0.4409	298911.60	
19.95   0.1068   7.2934   18.203   19.203   13		29.29	0.5740	389145.80	
1988   0.1989   1.34823.90   2.9889   0.0323   2.1887.37   30.00   0.0503   3.1434.65   2.98619.00   1.5. #2   30.19   1.9065   1.9262619.00   1.5. #2   30.31   1.6559   1.122712.00   30.49   0.4893   3.13749.50   30.07   0.1792   1.21465.50   30.07   0.0502   5.739.16   30.07   0.0502   5.739.16   30.07   0.0502   5.739.16   30.07   0.0502   5.739.16   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.0767   0.0569.80   30.0767   0.0569.80   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   0		29.45	0.5499	372821.30	
1988   0.1989   1.34823.90   2.9889   0.0323   2.1887.37   30.00   0.0503   3.1434.65   2.98619.00   1.5. #2   30.19   1.9065   1.9262619.00   1.5. #2   30.31   1.6559   1.122712.00   30.49   0.4893   3.13749.50   30.07   0.1792   1.21465.50   30.07   0.0502   5.739.16   30.07   0.0502   5.739.16   30.07   0.0502   5.739.16   30.07   0.0502   5.739.16   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.1511   1.02376.26   30.07   0.0767   0.0569.80   30.0767   0.0569.80   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   30.0767   0.0569.80   0		29.59	0.1068	72394.68	
29.89					
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63   30.90   0.1510   102376.20   75342.95   64   31.05   0.1111   75342.95   64   31.27   0.6144   416592.70   64   31.39   0.1926   130569.80   31.50   0.0767   51897.45   31.50   0.0767   51897.45   31.50   0.1930   130225.50   31.72   0.0495   33569.88   31.80   0.2213   150016.40   31.91   0.4930   334267.50   32.01   0.2063   139996.20   32.01   0.2063   139996.20   32.13   0.2198   148996.30   32.21   0.1120   75946.87   65   32.35   0.1120   75946.87   66   32.71   0.3140   212810   32.93   0.0662   35814   334213.30   32.93   0.0662   35845   68   33.28   0.5814   334213.30   68   33.315   0.4534   315213.80   68   33.38   0.4634   315213.80   69   33.59   0.9855   68818.60   33.42   0.1091   73947.40   69   33.59   0.9855   68818.60   33.90   0.1394   34492.80   33.90   0.1394   34492.80   34.41   34.12   0.2546   172603.00   34.50   0.3936   0.2573   174470.00   70   33.97   0.4586   310407.60   34.50   0.3985   2.2295   155608.40   71   34.12   0.2546   172603.00   72   34.75   0.2241   18403.50   73   35.06   0.3390   0.3985   160809.40   34.50   0.3985   36080.40   35.24   0.2796   193609.40   35.57   0.2934   198919.70   74   35.81   0.1560   0.2793   174446.30   35.57   0.2934   198919.70   75   35.50   0.2934   198919.70   76   35.57   0.2934   198919.70   77   36.63   0.0565   0.2368   160800.40   35.54   0.2796   1936500.40   36.54   0.2796   1936500.40   37.67   0.2934   198919.70   75   36.53   0.1567   0.1597   108301.10   36.68   0.4453   0.1055   71552.20   77   36.63   0.7006   4.7503.80   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37410.10   37.77   0.2027   37740.10   37.77   0.2027   37740.10   37					
64 31.17 0.6144 4.46592.70 64 131.27 0.2614 177253.80 131.39 0.1926 130569.80 131.50 0.0767 61897.45 131.56 0.1930 130569.80 131.56 0.1930 130569.80 131.56 0.1930 130569.80 131.50 0.0767 61897.45 130569.80 131.50 0.0495 33569.98 131.80 0.2213 150016.40 132.01 0.2063 33569.98 131.91 0.4930 334267.50 132.01 0.2063 139896.20 132.01 0.2063 139896.20 132.01 0.2063 139896.20 132.01 0.2063 139896.20 132.02 0.1120 7.5346.87 1450 7.5348.87 1450 7.5348.87 1450 7.5348.87 1450 7.5348.87 1450 7.5348.87 1450 7.5348.87 1450 7.5348.87 1450 7.5348.10 14752.50 147	00				
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156   0.0767   51987.45     31.56   0.1930   130825.50     31.72   0.0495   33569.98     31.80   0.2213   150016.40     31.91   0.4930   334267.50     32.01   0.2663   319996.20     32.13   0.2198   148996.30     32.22   0.1120   75946.87     65   32.35   1.1450   77628.110     66   32.71   0.3140   21288   0.07528.10     66   32.71   0.3140   21288   0.07528.10     67   32.80   0.5814   394213.30     68   33.28   0.4544   394213.30     68   33.28   0.4544   39538.90     68   33.28   0.4544   39538.90     69   33.59   0.9855   668184.60     69   33.59   0.9855   668184.60     70   33.90   0.1394   94492.80     70   33.91   0.2573   174470.00     70   33.97   0.4586   310945.50     71   34.12   0.2546   310945.50     71   34.12   0.2546   310945.50     72   34.75   0.2195   315606.80     73   34.59   0.3897   250638.60     72   34.75   0.2419   614035.50     73   35.06   0.8350   35610.00     74   35.81   0.1580   107167.70     75   36.93   0.2573   174440.30     75   35.93   0.3897   250638.60     75   35.93   0.3897   250638.60     75   35.93   0.2295   155608.40     76   36.13   1.6167   109805.70     76   36.83   0.2567   160499.90     76   36.83   0.2567   160499.90     76   36.83   0.7006   47502.20     77   36.63   0.7006   47502.20     78   37.26   0.2814   19801.70     78   37.26   0.2814   19801.70     78   37.26   0.2814   19800.50     37.77   0.2027   137410.10     37.87   0.3979   22606.90     37.77   0.2027   137410.10     37.87   0.3979   22606.90     37.77   0.2027   137410.10     37.87   0.3979   226900.00     37.77   0.2027   137410.10     37.87   0.3979   226900.00     37.77   0.2027   137410.10     37.87   0.3979   226900.00     37.70   37.87   0.3979   226900.00     37.71   0.2027   137410.10     37.87   0.3979   226900.00     37.71   0.2027   137410.10     37.87   0.3979   226900.00     37.72   0.2979.00     37.73   0.2979.00     37.74   0.2027   137410.10     37.87   0.3979   226900.00     37.74   0.3979   226900.00     37.75   0.2979.00     37.77   0.2027   137410.10     37.87   0.3979	64		0.2614	177253.80	
31.56 0.1930 130825.50 33669.98 31.80 0.2213 150016.40 31.91 0.4930 3345267.50 32.91 1.91 0.4930 3345267.50 32.91 0.2063 13.9996.20 32.13 0.2198 148396.30 32.13 0.2198 148396.30 32.22 0.11120 75946.87 32.60 0.1545 1.4752.50 32.80 0.5544 394213.30 32.93 0.0862 58445.21 33.01 0.2344 158925.30 32.93 0.0862 58445.21 33.01 0.2344 158925.30 32.93 0.0862 58445.21 33.01 0.2344 158925.30 33.15 0.4534 33.315 0.4534 33.315 0.4534 33.315 0.4534 33.328 0.4649 315213.80 33.59 0.9855 688184.60 33.59 0.9855 688184.60 33.59 0.9855 688184.60 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.50 34.19 0.4632 314067.60 34.50 0.2573 1774470.80 34.19 0.4632 314067.60 34.50 0.3985 270167.20 34.59 0.		31.39	0.1926	130569.80	
31.56 0.1930 130825.50 33669.98 31.80 0.2213 150016.40 31.91 0.4930 3345267.50 32.91 1.91 0.4930 3345267.50 32.91 0.2063 13.9996.20 32.13 0.2198 148396.30 32.13 0.2198 148396.30 32.22 0.11120 75946.87 32.60 0.1545 1.4752.50 32.80 0.5544 394213.30 32.93 0.0862 58445.21 33.01 0.2344 158925.30 32.93 0.0862 58445.21 33.01 0.2344 158925.30 32.93 0.0862 58445.21 33.01 0.2344 158925.30 33.15 0.4534 33.315 0.4534 33.315 0.4534 33.315 0.4534 33.328 0.4649 315213.80 33.59 0.9855 688184.60 33.59 0.9855 688184.60 33.59 0.9855 688184.60 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.80 33.90 0.1394 93492.50 34.19 0.4632 314067.60 34.50 0.2573 1774470.80 34.19 0.4632 314067.60 34.50 0.3985 270167.20 34.59 0.		31.50	0.0767	51987.45	
31.72         0.0495         33669.98           31.80         0.2213         150016.40           31.91         0.4930         334267.50           32.01         0.2063         139996.20           32.13         0.2198         148996.30           65         32.22         0.1120         75946.87           66         32.71         0.3140         212881.00           66         32.71         0.3140         212881.00           32.80         0.5814         394213.30           67         33.01         0.2344         158925.30           68         33.28         0.4649         315213.80           69         33.59         0.9855         668184.60           33.30         0.1991         7.3947.40           69         33.59         0.9855         668184.60           33.90         0.1394         94492.80           70         33.97         0.4586         3194945.80           71         34.19         0.4582         314667.60           34.32         0.2295         155608.40           72         34.75         0.2419         164035.70           73         35.06         0.8350					
1.80   0.2213   150016.40   31.91   0.4930   334267.50   32.01   0.2063   13996.20   32.01   0.2063   13996.20   32.01   0.2063   13996.30   32.02   0.1120   75946.87   32.20   0.1120   75946.87   75946.87   32.20   0.1545   0.47452.50   32.20   0.1545   0.47452.50   32.20   0.5514   394213.30   32.93   0.0662   558445.21   32.93   0.0662   58445.21   32.93   0.0662   58445.21   58445.21   33.30   0.2534   158925.30   33.42   0.1091   73947.40   33.30   0.4649   315213.80   33.42   0.1091   73947.40   33.30   0.2573   3174470.00   33.30   0.2573   3174470.00   33.30   0.2573   3174470.00   33.30   0.2573   3174470.00   33.97   0.4586   319943.50   34.52   0.2295   3155608.40   34.52   0.2295   315608.40   34.50   0.3985   270167.20   34.51   0.4532   314067.60   34.52   0.2295   315608.40   35.54   0.2419   36403.50   35.54   0.2368   37003.79   35.57   0.2419   36403.50   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.57   0.2368   3600.40   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.54   0.2573   3174463.50   35.57   0.2368   3600.40   35.57   0.2368   3600.40   36.57   36.63   0.700.60   36.44   36.44   0.2067   36.63   0.700.60   36.44   36.44   0.2067   36.63   0.700.60   36.44   36.44   0.2067   36.63   0.700.60   36.44   36					
31.91 0.4930 334267.50 32.01 0.2063 399996.20 32.13 0.2198 1489996.20 32.22 0.1120 75946.87 32.26 0.1545 776281.10 32.60 0.1545 104752.50 66 32.71 0.3140 212881.00 32.80 0.5814 394213.30 67 33.293 0.0862 58445.21 33.01 0.2344 158925.30 68 33.28 0.4649 315218.80 69 33.59 0.9855 668184.60 33.30 0.2573 174470.00 69 33.59 0.9855 668184.60 33.30 0.2573 174470.00 70 33.97 0.4586 33094 94492.80 71 34.12 0.2546 172603.00 71 34.19 0.4632 314067.60 34.50 0.3985 270167.20 34.50 0.3985 270167.20 34.51 0.39897 250638.60 72 34.75 0.2419 164035.50 73 35.06 0.3835 9.09855 56810.40 73 3.59 0.3987 250638.60 72 34.75 0.2419 164035.50 73 35.06 0.3835 56100.40 35.57 0.2419 164035.50 35.54 0.2796 189555.50 36.54 0.2295 155608.40 35.57 0.294 1996.50 35.57 0.2934 19891.70 74 35.51 0.2368 160580.40 35.57 0.2934 19891.70 75 36.63 0.7036 189555.50 77 36.63 0.7036 1.704446.30 36.64 0.3250 220327.80 76 36.13 1.6167 1096150.00 77 36.63 0.7006 47503.40 78 36.63 0.7006 47503.40 78 37.49 0.2667 1.0597 10830.11 78 37.49 0.7679 520609.90 37.61 0.1337 9.06569.90 37.61 0.1337 9.06569.90 37.61 0.1337 9.06569.90 37.61 0.1337 9.06569.90 37.61 0.1337 9.06569.90 37.61 0.1337 9.06569.90 37.67 0.0004 6.3728.46 37.28 0.0004 6.3728.46 37.29 0.0004 6.3728.46 37.29 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3728.46 37.20 0.0004 6.3774.10.10 37.67 0.0006 7.00					
32.01 0.2063 13898e.20 32.13 0.2198 148996.30 32.22 0.1120 75948.87 65 32.35 1.1450 776281.10 75948.87 66 32.35 1.1450 776281.10 75948.87 66 32.50 0.1545 104752.50 66 32.71 0.3140 2.12881.30 32.93 0.05514 394213.30 32.93 0.0662 58445.21 68 33.293 0.0662 58445.21 68 33.301 0.2344 158925.30 68 33.32 0.4649 315213.80 33.32 0.4649 315213.80 69 33.59 0.9855 668184.60 33.42 0.1091 73947.40 69 33.50 0.2573 174470.00 69 33.50 0.2573 174470.00 70 33.37 0.4586 310945.50 71 34.12 0.2546 172603.00 71 34.19 0.4632 314067.60 34.50 0.3985 1555008.40 34.50 0.3985 70 167.20 34.50 0.39					
32.13         0.2198         148996.30           65         32.35         1.1450         775248.17           66         32.71         0.3140         212881.00           32.80         0.5814         394213.30           32.93         0.0862         58445.21           67         33.01         0.2344         158925.30           68         33.28         0.4649         315213.80           68         33.28         0.4649         315213.80           69         33.59         0.9855         668184.60           33.90         0.2573         174470.00           33.91         0.4584         319449.50           71         34.19         0.4586         319943.50           71         34.19         0.4632         314067.60           34.50         0.3985         270167.60           34.50         0.3985         270167.20           34.59         0.3667         255638.60           72         34.75         0.2419         164035.50           35.51         0.2389         155608.40           35.52         0.2796         189555.50           35.32         0.2773         174446.30      <					
65 32.22 0.1120 75946,87 656 665 32.35 1.1450 7776281.10 66 32.60 0.1545 1.04752.50 66 32.71 0.3140 2.12881.00 32.80 0.5814 39.4213.30 0.8662 58445.21 33.01 0.2344 158925.30 67 33.15 0.4534 30.7389.00 68 33.28 0.4649 315213.80 68 33.28 0.4649 315213.80 69 33.59 0.9855 666184.60 33.90 0.2573 174470.00 70 33.90 0.1394 94492.80 71 33.90 0.1394 94492.80 71 33.90 0.1394 94492.80 71 33.90 0.1394 94492.80 71 33.90 0.1394 94492.80 71 33.90 0.1394 94492.80 71 34.12 0.2546 172603.00 34.19 0.4632 314067.60 34.19 0.4632 314067.60 71 34.12 0.2546 172603.00 34.59 0.3697 2.50683.60 72 34.59 0.3697 2.50683.60 34.50 0.3697 2.50683.60 34.50 0.3697 2.50683.60 34.50 0.3697 2.50683.60 35.15 0.2349 16055.50 35.32 0.2573 174445.30 35.16 0.2368 160580.40 35.16 0.2568 1605.80 35.24 0.2796 18055.50 35.32 0.2573 174446.30 35.17 0.2368 160580.40 35.17 0.2368 160580.40 35.17 0.2568 18055.50 35.32 0.2573 174446.30 35.17 0.2934 198919.70 75 35.81 0.1550 107126.70 75 35.93 0.2367 160499.90 35.64 0.2017 136748.50 36.24 0.2160 146414.0 36.24 0.2160 146					
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66 32.71 0.3140 1.2281.00   32.80 0.5814 3.94213.30   32.93 0.0862 58445.21   33.01 0.2344 158925.30   67 33.15 0.4534 307389.00   68 33.28 0.4649 315213.80   69 33.59 0.9855 668184.60   33.80 0.2573 174470.00   33.90 0.1394 94492.80   70 33.97 0.4586 310943.50   71 34.12 0.2546 172603.00   71 34.12 0.2546 172603.00   34.32 0.2295 156608.40   34.32 0.2295 156608.40   34.32 0.2295 156508.40   34.50 0.3985 277167.20   72 34.75 0.2419 16055.50   73 3.506 0.8350 566100.40   35.24 0.2796 189555.50   35.15 0.2368 160580.40   35.24 0.2796 189555.50   35.24 0.2796 189555.50   74 33.81 0.1580 171446.30   35.15 0.2368 160580.40   35.24 0.2796 189555.50   75 35.33 0.2367 160580 1 76 36.34 0.2796 189555.50   77 3.3 3.506 0.8350 566100.40   35.24 0.2796 189555.50   77 3.506 0.3250 0.22780   35.57 0.2334 198919.70   78 35.36 0.3250 0.2573 174446.30   35.17 0.2934 198919.70   78 36.81 0.1580 1712.67   79 36.83 0.2367 160499.90   70 36.43 0.2067 160499.90   70 36.63 0.7006 475034.80   36.77 0.1597 100301.50   77 36.83 0.7006 475034.80   36.77 0.1597 100301.50   77 36.83 0.4453 3.01915.00   36.74 0.1095 7155.20   77 36.83 0.4453 3.01915.00   37.74 0.0996 6.440.91   36.83 0.4453 3.01915.00   37.74 0.0996 6.440.91   37.77 0.1597 100301.50   37.77 0.1597 100301.50   37.77 0.1597 100301.50   37.77 0.1597 100301.50   37.77 0.1597 100301.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   37.77 0.2027 137410.50   38.00 0.1910 1.29550.00   39.2037 0.2037 0.2039 0.2037 0.2039 0.2037 0.2037 0.2039 0.2037 0.2037 0.2039 0.2037					
66         32.71         0.3140         212881.00           32.93         0.0862         58445.21           33.01         0.2344         158925.30           67         33.15         0.4534         307389.00           68         33.28         0.4649         315213.80           69         33.59         0.9855         668184.60           33.80         0.2573         174470.00           70         33.97         0.4586         310943.50           71         34.12         0.2546         172603.50           71         34.19         0.4632         314067.60           34.50         0.3985         270167.20           34.51         0.3985         270167.20           34.52         0.2295         15608.40           34.53         0.3697         250638.60           72         34.75         0.2419         16035.50           35.16         0.3835         56100.40           35.15         0.2388         160580.40           35.15         0.2388         160580.40           35.24         0.2796         189555.50           35.57         0.2934         198919.70           75	65				
32.80         0.5814         394213.30           33.01         0.2344         158925.30           67         33.15         0.4534         307389.00           68         33.28         0.4649         315213.80           69         33.59         0.9855         668184.60           33.80         0.2573         174470.00           70         33.90         0.1394         9.4492.80           71         34.12         0.2546         17.2603.00           71         34.12         0.2546         17.2603.00           71         34.12         0.2546         17.2603.00           72         34.59         0.3687         25068.40           34.50         0.3985         270167.20           34.51         0.3687         25068.40           72         34.75         0.2419         164035.50           73         35.06         0.8350         566100.40           35.15         0.2368         160580.40           4         0.2796         189555.50           35.32         0.2573         174446.30           35.46         0.3250         220327.80           75         35.31         0.166				104752.50	
32.93         0.0862         58445.21           33.01         0.2344         158925.30           68         33.28         0.4634         307389.00           69         33.59         0.9855         668184.60           33.80         0.2573         174470.00           70         33.97         0.4586         310943.50           71         34.12         0.2546         17260.35           71         34.12         0.2546         17260.35           71         34.12         0.2546         17260.35           71         34.19         0.4632         314067.60           34.32         0.2295         155608.40           34.50         0.3985         270167.20           34.51         0.3697         250638.60           72         34.75         0.2419         164035.50           73         35.06         0.8350         566100.40           35.24         0.2796         18955.50           35.32         0.2573         174446.30           35.57         0.2934         198919.70           74         35.81         0.1580         107126.70           75         35.93         0.2677	66	32.71	0.3140	212881.00	
67 33.01 0.2344 158925.30 68 33.15 0.4534 307389.00 68 33.28 0.4649 315213.80 69 33.59 0.9855 668184.60 69 33.80 0.2573 174470.00 70 33.97 0.4586 310943.50 71 34.12 0.2546 172603.00 71 34.12 0.2546 172603.00 71 34.19 0.4632 314067.60 34.32 0.295 155608.40 34.59 0.3985 270167.20 34.59 0.3985 270167.20 34.59 0.3697 250638.60 72 34.75 0.2419 164035.50 73 35.06 0.8350 56810.40 35.24 0.2796 189555.50 35.32 0.2573 174446.30 35.57 0.2368 160580.40 35.57 0.2368 199555.50 74 35.57 0.2934 199915.70 74 35.57 0.2934 199919.70 75 35.81 0.1580 10726.70 76 36.13 1.6167 1096150.00 77 36.63 0.796 14446.30 36.64 0.2217 136748.50 77 36.63 0.706 47503.80 78 36.64 0.2217 136748.50 79 36.63 0.706 47503.80 70 36.64 0.2160 4441.40 36.40 0.2017 136748.50 77 36.68 0.4453 301915.00 78 37.18 0.0956 47503.80 37.18 0.0956 64809.13 78 37.26 0.2814 190801.13 78 37.26 0.2814 190801.13		32.80	0.5814	394213.30	
67 33.01 0.2344 158925.30 68 33.15 0.4534 307389.00 68 33.15 0.4534 307389.00 68 33.28 0.4649 315213.80 33.28 0.4649 315213.80 69 33.59 0.9855 668184.60 33.80 0.2573 174470.00 33.90 0.1394 94492.80 70 33.97 0.4586 310943.50 71 34.12 0.2546 172603.00 14 34.19 0.4632 314067.60 34.32 0.295 155608.40 34.59 0.3985 270167.20 34.59 0.3985 270167.20 34.59 0.3985 270167.20 34.59 0.3697 250638.60 72 34.75 0.2419 164035.50 56 6100.40 35.12 0.2546 35.12 0.2546 37003.79 73 35.06 0.8350 566100.40 35.12 0.2796 189555.50 35.32 0.2796 189555.50 35.32 0.2796 189555.50 35.32 0.2573 174446.30 35.44 0.2796 189555.50 35.32 0.2573 174446.30 1600.40 35.57 0.2934 199919.70 74 35.57 0.2934 199919.70 75 35.57 0.2934 199919.70 75 35.35 3.50 0.2367 160499.90 76 36.13 1.6167 1096150.00 66 36.40 0.2017 136748.50 36.40 0.2017 136748.50 36.40 0.2017 136748.50 36.40 0.2017 136748.50 36.40 0.2017 136748.50 36.54 0.1055 71552.80 36.63 0.7056 47503.80 30.18 0.0566 647503.80 37.18 0.0956 64809.13 37.18 0.0956 64809.13 37.18 0.0956 64809.13 37.49 0.7679 520609.90 37.77 0.2027 137410.10 37.77 0.2027 137410.10 37.77 0.2027 137410.10 129530.60 0.91910 129530.60		32.93	0.0862	58445.21	
67					
68         33.28         0.4649         315213.80           69         33.59         0.9855         668184.60           70         33.90         0.1394         94492.80           70         33.97         0.4586         310943.50           71         34.12         0.2546         172603.00           71         34.19         0.4632         314067.60           72         34.50         0.3995         270167.20           34.59         0.3697         250638.60           72         34.75         0.2419         164035.50           73         35.06         0.8350         566100.40           74         35.01         0.2368         160580.40           35.21         0.2573         17446.30           35.46         0.3250         20327.80           35.47         0.2388         160580.40           35.46         0.3250         220327.80           35.47         0.2934         198919.70           74         35.81         0.1580         107126.70           75         35.93         0.2367         160499.90           76         36.13         1.6167         1098150.00 <t< td=""><td>67</td><td></td><td></td><td></td></t<>	67				
69         33.59         0.9855         668184.60           33.80         0.2573         174470.00           70         33.90         0.1394         94492.80           70         33.97         0.4586         310943.50           71         34.12         0.2546         172603.00           34.19         0.4632         314067.60           34.50         0.3985         270167.20           34.59         0.3697         250638.60           72         34.75         0.2419         164035.50           73         35.06         0.8350         566100.40           35.15         0.2368         160580.40           35.24         0.2796         189555.50           35.32         0.2573         174446.30           35.46         0.3250         220327.80           35.57         0.2934         198919.70           74         35.81         0.1580         107126.70           75         35.93         0.2367         160499.90           76         36.34         0.1580         107126.70           75         35.93         0.2367         1904919.90           76         36.34         0.1590					
69         33.59         0.9855         688184.60           33.90         0.1394         94492.80           70         33.97         0.4586         310943.50           71         34.12         0.2546         172603.00           71         34.19         0.4632         314067.60           34.19         0.4632         314067.60           34.50         0.3985         2270167.2           34.59         0.3697         250638.60           72         34.91         0.0546         37003.79           35.15         0.2419         164035.50           35.15         0.2368         160580.40           35.15         0.2368         160580.40           35.24         0.2796         189555.50           35.32         0.2573         174446.30           35.57         0.2934         198919.70           75         35.81         0.1580         107126.70           75         35.93         0.2367         160499.90           76         36.13         1.6167         1996150.00           36.40         0.2017         136748.50           77         36.63         0.7006         475034.80      <	00				
33.80         0.2573         174470.00           33.90         0.1394         94492.80           70         33.97         0.4586         310943.50           71         34.12         0.2546         172603.00           34.19         0.4632         314067.60           34.32         0.2295         155608.40           34.50         0.3985         270167.20           34.59         0.3697         250638.60           72         34.75         0.2419         164035.50           34.91         0.0546         37003.79           73         35.06         0.8350         566100.40           35.15         0.2368         16080.40           35.15         0.2368         180555.50           35.32         0.2796         189555.50           35.46         0.3250         220327.80           35.57         0.2934         188919.70           74         35.81         0.1580         107126.70           75         35.93         0.2367         180499.90           76         36.13         1.6167         1096150.00           36.40         0.2017         136748.50           77         36.63	60				
70         33.90         0.1394         94492.80           71         33.97         0.4586         310943.50           71         34.12         0.2546         172603.00           34.19         0.4632         314067.60           34.50         0.3985         270167.20           34.50         0.3985         270167.20           72         34.75         0.2419         164035.50           34.91         0.0546         37003.79           35         35.06         0.8350         566100.40           35.15         0.2368         160890.40           35.24         0.2796         189555.50           35.32         0.2573         174446.30           35.46         0.3250         220327.80           35.57         0.2934         198919.70           75         35.93         0.2367         160499.90           76         36.31         1.6167         1096150.00           36.40         0.2017         136748.50           36.54         0.1055         71552.20           77         36.63         0.706         475034.80           36.77         0.1597         108301.10           36.88<	69				
70         33.97         0.4586         310943.50           71         34.12         0.2546         172603.00           34.19         0.4632         314067.60           34.32         0.2995         155608.40           34.50         0.3985         270167.20           34.59         0.3697         250638.60           72         34.75         0.2419         164035.50           35.06         0.8350         566100.40           35.15         0.2368         160580.40           35.24         0.2796         189555.50           35.32         0.2573         174446.30           35.46         0.3250         220327.80           35.81         0.1580         107126.70           75         35.81         0.1580         107126.70           75         35.81         0.1580         107126.70           75         35.93         0.2367         160499.90           76         36.24         0.2160         146441.40           36.24         0.2160         146441.40           36.40         0.2017         136748.50           37.18         0.0956         64809.13           37.18         0					
71         34.12         0.2546         172603.00           34.19         0.4632         314067.60           34.32         0.2295         155608.40           34.50         0.3985         270167.20           34.59         0.3697         250638.60           72         34.91         0.0546         37003.79           73         35.06         0.8350         566100.40           35.15         0.2368         160580.40           35.24         0.2796         189555.50           35.32         0.2573         17446.30           35.46         0.3250         220327.80           35.57         0.2934         198919.70           74         35.81         0.1580         107126.70           75         35.93         0.2367         160499.90           76         36.13         1.6167         1096150.00           36.24         0.2160         146441.40           36.40         0.2017         136748.50           77         36.63         0.7006         475034.80           36.77         0.1597         108301.10           36.88         0.4453         301915.00           37.49         0					
34.19       0.4632       314067.60         34.50       0.2295       155608.40         34.50       0.3895       270167.20         72       34.75       0.2419       164035.50         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       18955.50         35.32       0.2573       17446.30         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7006       47503.48         37.18       0.0956       64809.13         78       36.83       0.4453       301915.00         37.49       0.7679       52060.90         37.49       0.7679       52060.90         37.49       0.7679       52060.90         37.77       0.2027       137410.10         37.87       0.3979       269790.30					
34.32       0.2295       155608.40         34.50       0.3985       270167.20         34.59       0.3697       250638.60         72       34.75       0.2419       164035.50         34.91       0.0546       37003.79         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       189555.50         35.32       0.2573       174446.30         35.46       0.3250       220327.80         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       109615.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         37.18       0.0956       64809.13         78       37.26       0.2814       190803.50         37.49       0.7679       520609.90         37.77       0.2027       13740.10 <td>71</td> <td></td> <td></td> <td></td>	71				
34.50       0.3985       270167.20         34.59       0.3697       250638.60         72       34.75       0.2419       164035.50         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       189555.50         35.32       0.2573       174446.30         35.46       0.3250       220327.80         35.57       0.2934       198919.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.40       0.2017       136748.50         36.54       0.1055       71552.20         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.26       0.2814       190803.50         37.49       0.7679       520609.90         37.61       0.1337       9066.92         37.77       0.2027       13740.10         37.87       0.3979       269790.30         <					
34.59       0.3697       250638.60         72       34.75       0.2419       164035.50         34.91       0.0546       37003.79         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       189555.50         35.32       0.2573       174446.30         35.46       0.3250       220327.80         35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.26       0.2814       190803.50         37.42       0.0940       63728.46         37.49       0.7679       52060.99         37.61       0.1337       90656.92         37.77       0.2027       13740.10 <t< td=""><td></td><td>34.32</td><td>0.2295</td><td>155608.40</td></t<>		34.32	0.2295	155608.40	
72       34.75       0.2419       164035.50         34.91       0.0546       37003.79         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       189555.50         35.32       0.2573       174446.30         35.46       0.3250       220327.80         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7055       71552.20         77       36.63       0.7055       71552.20         77       36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.42       0.0940       63728.46         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979 <td></td> <td>34.50</td> <td>0.3985</td> <td>270167.20</td>		34.50	0.3985	270167.20	
72       34.75       0.2419       164035.50         34.91       0.0546       37003.79         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       189555.50         35.36       0.3250       220327.80         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7005       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.42       0.0940       63728.46         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979       26970.30         38.66       0.1910       129530.60 <td></td> <td>34.59</td> <td>0.3697</td> <td>250638.60</td>		34.59	0.3697	250638.60	
73       34.91       0.0546       37003.79         73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       18955.50         35.32       0.2573       174446.30         35.46       0.3250       220327.80         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7006       475034.80         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.42       0.0940       63728.46         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       13740.10         37.87       0.3979       26970.	72				
73       35.06       0.8350       566100.40         35.15       0.2368       160580.40         35.24       0.2796       189555.50         35.32       0.2573       17446.30         35.46       0.3250       220327.80         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         36.54       0.1055       71552.20         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.42       0.0940       63728.46         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979       269790.30         38.06       0.1910       129530.60 <td></td> <td></td> <td></td> <td></td>					
35.15       0.2368       160580.40         35.24       0.2796       18955.50         35.32       0.2573       174446.30         35.46       0.3250       220327.80         35.57       0.2934       198919.70         74       35.81       0.1580       107126.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         36.54       0.1055       71552.20         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.26       0.2814       190803.50         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979       269790.30         38.06       0.1910       129530.60	73				
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74       35.81       0.2934       198919.70         75       35.93       0.2367       160499.90         76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.26       0.2814       190803.50         37.42       0.0940       63728.46         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979       269790.30         38.06       0.1910       129530.60					
74     35.81     0.1580     107126.70       75     35.93     0.2367     160499.90       76     36.13     1.6167     1096150.00       36.24     0.2160     146441.40       36.40     0.2017     136748.50       77     36.63     0.7006     475034.80       36.77     0.1597     108301.10       36.88     0.4453     301915.00       37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60					
75     35.93     0.2367     160499.90       76     36.13     1.6167     1096150.00       36.24     0.2160     146441.40       36.40     0.2017     136748.50       36.54     0.1055     71552.20       77     36.63     0.7006     475034.80       36.77     0.1597     108301.10       36.88     0.4453     301915.00       37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60	74				
76       36.13       1.6167       1096150.00         36.24       0.2160       146441.40         36.40       0.2017       136748.50         77       36.54       0.1055       71552.20         77       36.63       0.7006       475034.80         36.77       0.1597       108301.10         36.88       0.4453       301915.00         37.18       0.0956       64809.13         78       37.26       0.2814       190803.50         37.42       0.0940       63728.46         37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979       269790.30         38.06       0.1910       129530.60					
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$		36.24	0.2160	146441.40	
36.54     0.1055     71552.20       77     36.63     0.7006     475034.80       36.77     0.1597     108301.10       36.88     0.4453     301915.00       37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60				136748.50	
77     36.63     0.7006     475034.80       36.77     0.1597     108301.10       36.88     0.4453     301915.00       37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60					
36.77     0.1597     108301.10       36.88     0.4453     301915.00       37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60	77				
36.88     0.4453     301915.00       37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60					
37.18     0.0956     64809.13       78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60					
78     37.26     0.2814     190803.50       37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60					
37.42     0.0940     63728.46       37.49     0.7679     520609.90       37.61     0.1337     90656.92       37.77     0.2027     137410.10       37.87     0.3979     269790.30       38.06     0.1910     129530.60	70				
37.49       0.7679       520609.90         37.61       0.1337       90656.92         37.77       0.2027       137410.10         37.87       0.3979       269790.30         38.06       0.1910       129530.60	10				
37.610.133790656.9237.770.2027137410.1037.870.3979269790.3038.060.1910129530.60					
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37.87     0.3979     269790.30       38.06     0.1910     129530.60					
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79 38.33	Chrom Perfect Chromatogram Report				
80 38.54 0.3172 215068.0 38.78 0.2033 137855.0 39.00 0.1312 8840.0 39.00 0.1312 8840.0 39.11 0.5339 361816.6 39.34 0.2192 146063.7 81 39.54 0.2192 146063.7 82 39.82 0.4048 22523.2 83 82 0.4048 22523.2 84 0.044 0.1992 135088.8 84 0.044 0.1992 135088.8 84 0.045 0.0835 656611.1 85 0.0835 0.1466 99.73.2 85 0.0468 0.4505 305410.6 86 0.055 0.0769 138668.1 86 0.098 0.02709 138668.1 86 0.098 0.02709 138668.1 86 0.098 0.02709 138668.1 87 0.1418 0.098 0.02709 13868.8 86 0.098 0.02709 13868.8 87 0.1418 0.098 0.02709 13868.8 88 0.098 0.02709 13868.1 87 0.098 0.098 0.02709 13868.1 87 0.098 0.098 0.02709 13868.1 87 0.098 0.0	Peak Name	Ret. Time		Area	
80	79	38.33	0.6162	417780.10	
38.78   0.2033   1378550		38.54	0.3172	215065.00	
39.00   0.1312   388409   39.11   0.5339   361961.6   39.34   0.2192   1.48009.7   1.2922.0   1.2	80	38.69	0.3391	229928.40	
81		38.78	0.2033	137855.00	
81 39.50 0.1915 128923.0 82 39.82 0.4048 274451.3 83 40.04 0.19192 135086.8 84 40.13 0.4315 22258.8 85 40.06 0.0835 56601.1 86 40.24 0.0835 56601.1 87 40.80 0.2709 133068.1 86 40.96 0.2709 133068.1 86 40.96 0.2709 133068.1 86 40.96 0.2709 133068.1 87 41.01 41.01 0.1510 10.1510 10.1526.1 88 40.96 0.2709 133068.1 89 40.97 41.1 41.2 0.408 12.2712.1 89 41.4 41.5 0.408 12.2712.1 81 41.5 0.168 71.2326.1 88 42.03 0.289 16.203.8 88 42.03 0.289 16.203.8 88 42.03 0.2399 16.203.8 88 42.03 0.2399 16.203.8 88 42.03 0.2399 16.203.8 42.18 0.3033 2.25618.6 42.26 0.0981 6.6497.4 42.54 0.0981 6.6497.4 42.54 0.0981 6.6497.4 42.54 0.0981 6.6497.4 42.54 0.0981 6.6497.4 42.54 0.0991 4.2016.7 42.91 0.3009 2.10130.5 43.13 0.0979 6.6383.2 43.14 0.0629 4.2616.7 43.15 0.0629 4.2616.7 43.16 0.0991 4.2616.7 43.17 0.0629 4.2616.7 43.18 0.3564 0.3564 1.2626.8 89 43.64 0.0981 6.6497.4 44.26 0.0981 6.6497.4 44.26 0.0981 6.6497.4 44.26 0.0981 6.6497.4 44.27 0.0629 4.2616.7 43.13 0.0979 6.6383.2 43.14 0.0599 2.10130.5 43.15 0.0629 4.2616.7 43.16 0.3564 0.3564 2.2626.1 43.17 0.3569 0.3564 0.3564 2.2626.1 43.19 0.3564 0.				88940.90	
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81   39.50   0.1915   1.298230   82   39.82   0.4048   2744513   83   40.04   0.1992   135086.8   84   40.13   0.4315   2.22526.8   85   40.24   0.0835   56601.1   85   40.35   0.1466   9.375.2   86   40.96   0.2765   137642.0   86   40.96   0.2765   137742.0   86   40.96   0.2765   137742.0   86   41.09   0.1501   1.01755.6   87   41.14   0.1489   1.09477.1   87   41.45   0.1489   1.09477.1   88   41.94   0.1489   1.09477.1   89   41.94   0.0980   6.7383   80   41.94   0.0980   6.7383   80   42.03   0.2393   1.02038   80   42.03   0.2393   1.02038   80   42.03   0.2393   1.02038   80   42.03   0.2393   1.02038   80   42.04   0.1101   0.2983   1.02038   80   42.04   0.1101   0.2983   1.02038   80   42.04   0.1101   0.2983   1.02038   80   42.05   0.1101   0.2993   1.02038   80   42.07   0.0629   2.01305   80   42.54   0.2493   1.0991   6.7835   80   42.54   0.2493   1.0991   6.7835   80   42.54   0.2493   1.0991   6.7835   80   42.54   0.2493   1.0991   6.7835   80   43.55   0.2697   1.22854   80   43.54   0.3564   2.4167   80   43.55   0.2698   1.7876   80   43.56   0.2942   1.99450.3   80   43.64   0.3564   2.41627   80   44.63   0.1792   1.37354   80   44.63   0.1792   1.37354   80   45.66   0.0471   3.1918   80   45.67   0.0794   6.6832   80   45.68   0.0797   6.6832   80   45.69   0.0794   6.59631   80   45.69   0.2795   1.0983   80   45				148609.70	
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46.82 0.1142 77452.52 46.99 0.1323 89700.63 i-C13 47.17 0.4393 297849.51 47.36 0.0846 57377.7 47.49 0.1220 82707.99 47.60 0.0719 48754.33 47.70 0.1904 129059.10 47.91 0.1478 100230.66 48.12 0.2253 152774.52 48.35 0.1063 72101.55 48.37 0.0822 55719.2 48.60 0.1988 134765.00 48.85 0.0848 57497.43	012				
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i-C13 47.17 0.4393 297849.50 47.36 0.0846 57377.7 47.49 0.1220 82707.7 47.60 0.0719 48754.3 47.70 0.1904 129059.10 47.91 0.1478 100230.60 48.12 0.2253 152774.5 48.35 0.1063 72101.5 48.47 0.0822 55719.2 48.60 0.1988 134765.0 48.85 0.0848 57497.4					
47.36       0.0846       57377.7'         47.49       0.1220       82707.9'         47.60       0.0719       48754.3'         47.70       0.1904       129059.1'         47.91       0.1478       100230.6'         48.12       0.2253       152774.5'         48.35       0.1063       72101.5'         48.47       0.0822       55719.2'         48.60       0.1988       134765.0'         48.85       0.0848       57497.4'	i-C13				
47.49       0.1220       82707.9         47.60       0.0719       48754.3         47.70       0.1904       129059.1         47.91       0.1478       100230.6         48.12       0.2253       152774.5         48.35       0.1063       72101.5         48.47       0.0822       55719.2         48.60       0.1988       134765.0         48.85       0.0848       57497.4	1-013				
47.60     0.0719     48754.3       47.70     0.1904     129059.1       47.91     0.1478     100230.6       48.12     0.2253     152774.6       48.35     0.1063     72101.5       48.47     0.0822     55719.2       48.60     0.1988     134765.0       48.85     0.0848     57497.4					
47.70     0.1904     129059.10       47.91     0.1478     100230.60       48.12     0.2253     152774.51       48.35     0.1063     72101.50       48.47     0.0822     55719.2       48.60     0.1988     134765.00       48.85     0.0848     57497.43					
47.91     0.1478     100230.60       48.12     0.2253     152774.51       48.35     0.1063     72101.51       48.47     0.0822     55719.21       48.60     0.1988     134765.01       48.85     0.0848     57497.41					
48.12     0.2253     152774.5       48.35     0.1063     72101.5       48.47     0.0822     55719.2       48.60     0.1988     134765.0       48.85     0.0848     57497.4				129059.10	
48.35       0.1063       72101.5         48.47       0.0822       55719.2         48.60       0.1988       134765.0         48.85       0.0848       57497.4				100230.60	
48.47     0.0822     55719.2'       48.60     0.1988     134765.0'       48.85     0.0848     57497.4'				152774.50	
48.60 0.1988 134765.00 48.85 0.0848 57497.40		48.35	0.1063	72101.50	
48.60 0.1988 134765.00 48.85 0.0848 57497.40				55719.27	
48.85 0.0848 57497.4				134765.00	
				57497.45	
45/01 07/01 15/02/3		49.01	0.2281	154642.30	
0.2201 104042.01		10.01	0.2201	10 10 12.00	

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Chrom Perfect Chromatogram Report					
Peak Name	Ret. Time	Area %	Area		
	49.25	0.1021	69192.52		
i-C14	49.39	0.2158	146336.20		
91	49.55	0.1604	108768.50		
	49.69	0.0433	29333.18		
	49.78	0.0883	59845.96		
	49.91	0.0518	35116.58		
	49.99	0.0430	29174.83		
92	50.07	0.0856	58036.61		
n-C13	50.18	0.2164	146709.40		
0.0	50.38	0.0239	16188.83		
	50.59	0.0979	66385.69		
	50.80	0.0684	46349.28		
	50.95	0.0365	24714.19		
	51.10	0.0319	21632.02		
	51.31	0.0457	31000.60		
	51.48	0.0121	8185.43		
	51.58	0.0304	20603.07		
	51.68	0.0304	15257.24		
	51.82	0.0223	12318.22		
	51.93 53.06	0.0197	13369.23		
	52.06 53.35	0.0271	18367.19		
: 045	52.25	0.0202	13703.93		
i-C15	52.47	0.0561	38050.47		
	52.85	0.0237	16067.86		
n-C14	52.98	0.0382	25913.22		
	53.23	0.0120	8136.81		
	53.32	0.0162	10977.87		
	53.64	0.0040	2736.44		
	53.73	0.0073	4935.43		
	53.90	0.0024	1637.50		
	53.99	0.0028	1927.18		
	54.08	0.0034	2295.38		
	54.20	0.0054	3694.36		
	54.38	0.0016	1105.73		
i-C16	54.52	0.0090	6095.18		
	54.66	0.0027	1845.37		
	54.87	0.0039	2647.44		
n-C15	55.26	0.0079	5359.19		
11-013	55.60	0.0008	516.86		
	55.71	0.0006	386.79		
	55.83	0.0006	387.10		
	56.15	0.0004	289.98		
	56.24	0.0006	381.30		
	56.55	0.0007	463.75		
n-C16	57.21	0.0018	1191.18		
i-C18	58.14	0.0010	653.81		
1010	58.34	0.0004	283.66		
	58.80	0.0003	171.26		
n-C17	58.93	0.0003	432.03		
Pristane	59.11	0.0008	564.09		
n-C18	60.50	0.0008	175.31		
Phytane	60.72	0.0003	538.57		
n-C19	61.94		327.68		
		0.0005			
n-C20	63.19	0.0003	183.54		
10 #2	63.85	0.0005	367.81		
IS #3	64.21	0.3948	267665.90		
n-C25	69.49	0.9978	676501.40		
n-C26	70.03	0.1985	134610.00		
	70.45	0.1037	70324.63		
	71.10	0.0900	61030.63		
n-C27	71.89	0.0156	10566.88		
n-C28	72.83	0.0044	3014.10		
	73.85	0.0139	9395.59		
	74.25	0.0039	2610.94		
	75.17	0.0148	10042.26		
n-C29	75.84	0.0043	2926.14		
	76.36	0.0022	1497.57		
n-C30	77.42	0.0073	4941.06		
	78.67	0.0104	7061.13		
	78.85	0.0088	5935.41		

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Peak Name

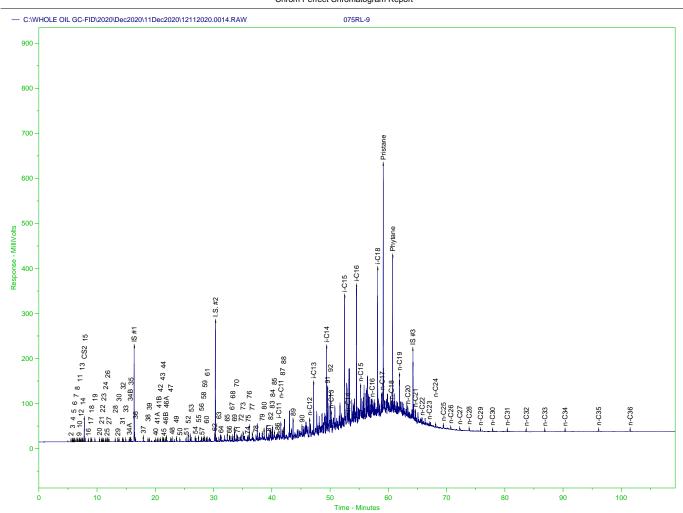
Ret. Time	Area %	Area
79.66	0.0043	2919.54
80.20	0.0108	7354.99
80.64	0.0050	3415.38
81.41	0.0063	4288.29
82.03	0.0044	3009.76
82.67	0.0037	2524.86
83.47	0.0012	792.95
84.76	0.0059	3983.46
85.33	0.0009	585.76
00.40	0.0044	700.40

	80.20	0.0108	7354.99
n-C31	80.64	0.0050	3415.38
	81.41	0.0063	4288.29
	82.03	0.0044	3009.76
	82.67	0.0037	2524.86
n-C32	83.47	0.0012	792.95
	84.76	0.0059	3983.46
	85.33	0.0009	585.76
	86.13	0.0011	762.10
n-C33	87.12	0.0039	2666.83
	88.53	0.0070	4746.06
	89.35	0.0006	436.54
	89.56	0.0012	829.83
	90.09	0.0003	221.53
n-C34	91.19	0.0052	3518.32
	92.87	0.0036	2421.32
	93.36	0.0061	4169.01
	93.96	0.0013	892.95
	95.07	0.0004	299.85
n-C35	95.78	0.0007	484.51
	96.75	0.0044	3014.77
	97.25	0.0016	1084.60
	98.50	0.0008	527.30
	98.94	0.0006	380.09
n-C36	100.96	0.0004	283.77
	103.09	0.0006	408.91
	103.70	0.0008	540.26
	107.45	0.0005	346.75
	107.91	0.0003	219.02

Chrom Perfect Chromatogram Report

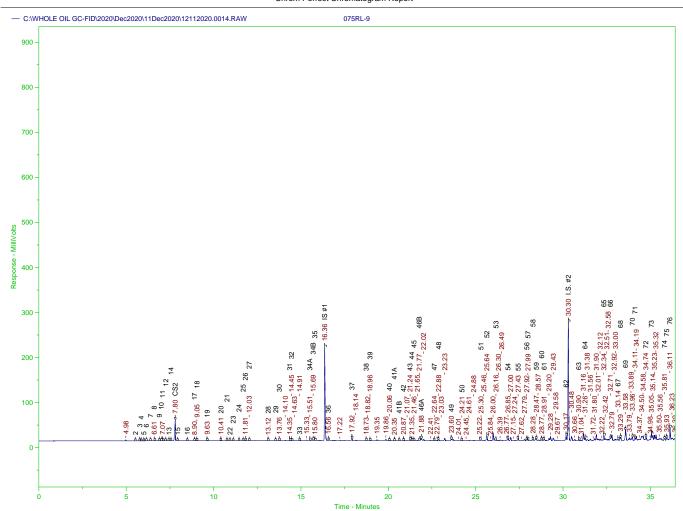
Total Area = 6.78001E+07 Total Height = 1.932614E+07 Total Amount = 0





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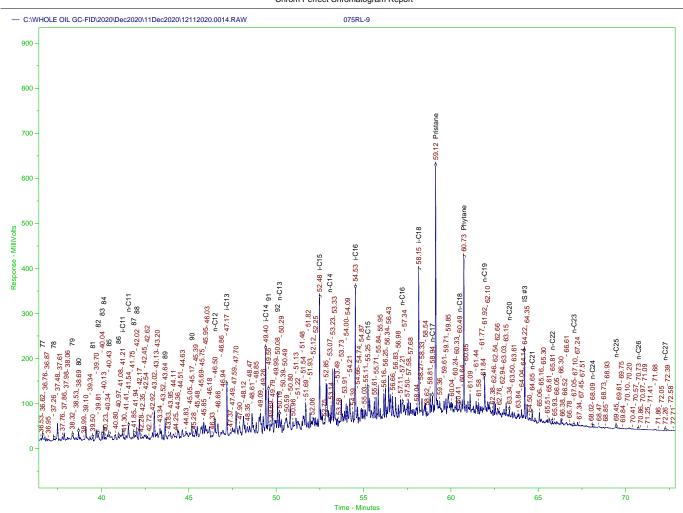
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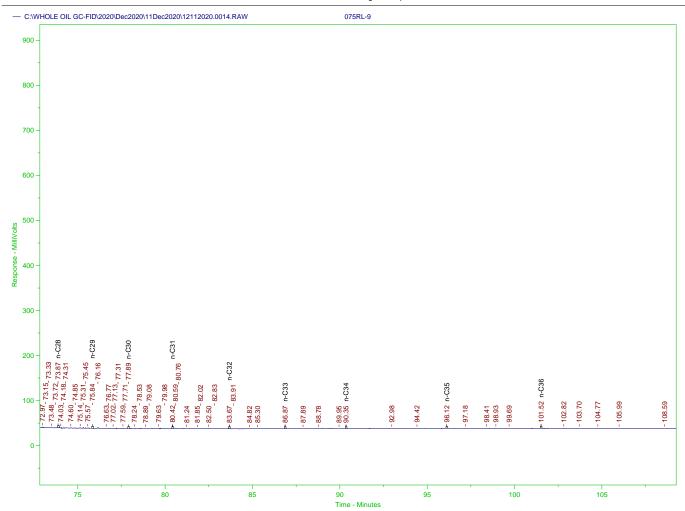
#### Chrom Perfect Chromatogram Report



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Sample Name = 075RL-9

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

 $Raw \ File \ Name = \textbf{C:WHOLE OIL GC-FID} \\ \textbf{2020} \\ \textbf{11Dec2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{12112020} \\ \textbf{2020} \\ \textbf{9:49:36 PM} \\ \textbf{PM} \\ \textbf{1212} \\ \textbf{2020} \\ \textbf{9:49:36 PM} \\ \textbf{1212} \\ \textbf{2020} \\ \textbf{9:49:36 PM} \\ \textbf{1212} \\ \textbf{122020} \\ \textbf{9:49:36 PM} \\ \textbf{12220}  

Method File Name = C:\1 - A Backup\C3442020.met

Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
	4.98	0.0038	2748.05
8	6.61	0.0011	801.86
11	7.07	0.0016	1121.43
CS2	7.80	0.1884	135500.10
17	8.90	0.0010	728.46
18	9.05	0.0023	1685.57
19	9.63	0.0020	1447.52
20	10.41	0.0025	1816.63
26	11.81	0.0048	3435.87
27	12.03	0.0007	504.04
28	13.12	0.0003	251.33
30	13.76	0.0039	2813.10
	14.10	0.0005	392.52
31	14.35	0.0026	1878.66
32	14.45	0.0024	1709.69
	14.63	0.0019	1380.08
33	14.91	0.0043	3085.69
	15.33	0.0053	3789.21
34A	15.51	0.0061	4392.41
34B	15.69	0.0077	5550.12
35	15.80	0.0027	1918.89
IS #1	16.36	0.8139	585269.50
36	16.56	0.0056	4023.56
30	17.22	0.0014	1037.50
37	17.92	0.0255	18351.95
31	18.14	0.0059	4236.66
38	18.73	0.0034	2418.96
30	18.82	0.0034	789.72
39	18.96	0.0022	1615.00
39	19.35	0.0022	6370.75
	19.86	0.0089	9504.69
40	20.06	0.0023	1623.85
41A	20.06	0.0023	663.27
41A 42	20.33	0.0009	4654.77
42	20.87		
40		0.0006	425.09
43 44	21.24	0.0100	7192.31
	21.35	0.0029	2064.04
45	21.46	0.0015	1054.87
400	21.65	0.0024	1731.58
46B	21.77	0.0054	3903.72
46A	21.88	0.0327	23500.70
	22.02	0.0126	9062.06
47	22.41	0.0052	3756.66
47	22.64	0.0048	3444.48
40	22.79	0.0043	3092.85
48	22.88	0.0111	7998.03
	23.03	0.0014	981.16
10	23.23	0.0236	16996.90
49	23.60	0.0361	25974.19
	24.01	0.0009	665.91
50	24.21	0.0056	4036.99
	24.45	0.0013	930.86
	24.61	0.0036	2553.87
	24.88	0.0052	3753.86
	25.22	0.0033	2340.06
51	25.30	0.0111	7964.95
	25.46	0.0023	1625.95
52	25.64	0.0513	36899.92
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Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
	25.84	0.0050	3589.91	
50	26.00	0.0802	57693.92	
53	26.16	0.0095	6818.13	
	26.30	0.0049	3501.01 6384.13	
	26.39 26.49	0.0087	6284.12 4322.53	
	26.49	0.0060 0.0087	4322.53 6262.03	
54	26.85	0.0007	15115.18	
54	27.00	0.0332	23865.66	
	27.15	0.0034	2422.81	
	27.24	0.0020	1434.53	
55	27.43	0.0251	18035.34	
	27.62	0.0041	2983.40	
	27.79	0.0158	11337.54	
56	27.92	0.0112	8050.63	
57	27.99	0.0107	7689.71	
58	28.28	0.0208	14942.64	
59	28.47	0.0365	26276.79	
	28.57	0.0142	10231.72	
60	28.77	0.0117	8423.27	
61	28.91	0.0172	12380.53	
	29.20	0.0270	19400.66	
	29.28 29.43	0.0407	29276.18	
	29.43 29.58	0.0350 0.0063	25172.29 4561.42	
	29.56	0.0003	7120.32	
62	30.17	0.0533	41175.09	
I.S. #2	30.30	1.0392	747290.30	
1.0. 1/2	30.48	0.0505	36322.60	
	30.66	0.0156	11220.38	
63	30.90	0.0112	8087.23	
	31.04	0.0064	4609.91	
	31.16	0.0717	51539.51	
64	31.26	0.0288	20683.15	
	31.38	0.0179	12905.93	
	31.56	0.0262	18850.21	
	31.72	0.0063	4556.30	
	31.80	0.0209	15027.00	
	31.90	0.0604	43446.45	
	32.01	0.0275	19743.34	
	32.12 32.22	0.0167 0.0132	12003.69 9482.65	
65	32.34	0.0517	37204.00	
03	32.42	0.0244	17559.51	
	32.51	0.0130	9349.05	
	32.58	0.0174	12531.04	
66	32.71	0.0338	24272.64	
	32.79	0.0745	53601.75	
	32.92	0.0102	7348.78	
	33.00	0.0263	18879.11	
67	33.14	0.0178	12779.61	
68	33.29	0.0511	36774.90	
69	33.58	0.1301	93579.35	
	33.79	0.0440	31609.05	
70	33.89	0.0226	16230.39	
70	33.96	0.0387	27850.24	
71	34.11 34.19	0.0247	17791.65	
	34.19	0.0495 0.0340	35627.26 24450.60	
	34.50	0.0551	39594.11	
	34.58	0.0331	55217.82	
72	34.74	0.0519	37352.74	
. =	34.98	0.0186	13369.89	
73	35.05	0.0760	54654.29	
•	35.14	0.0512	36797.56	
	35.23	0.0513	36857.31	
	35.32	0.0738	53076.62	
	35.50	0.0217	15591.85	
	35.56	0.0391	28133.41	
74	35.81	0.0252	18128.87	

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Real Name	Chrom Perfect Chromatogram Report			
76				
96.23				
96.39 0.0313 22507.31 77 36.62 0.0834 55947.53 36.76 0.0450 123239.54 36.76 0.0450 123239.54 36.76 0.0450 123239.54 36.76 0.0450 132329.54 36.76 0.0450 132329.54 37.68 0.0582 14147.04 37.76 0.0605 14346.62 37.76 0.0605 43446.62 37.76 0.0605 43446.62 37.78 0.0711 12327.63 37.76 0.0605 43446.62 37.98 0.0171 12327.63 38.06 0.1168 84015.16 37.98 0.0171 12327.63 80.0 0.0582 141225.30 38.08 0.1562 112257.63 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0583 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 141225.30 80.0 0.0584 14149 82604.88 80.0 0.0393 14149 82604.88	76		0.1394	100234.00
77				
77				22507.31
36.76 36.87 0.0260 1899.67 36.87 0.0260 1899.67 36.87 0.0260 1899.67 78 37.69 0.0424 37.76 0.0583 41917.42 37.61 0.0341 24497.04 37.67 0.0341 24497.04 37.67 0.0605 44349.62 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 37.68 0.0404 38.06 0.1168 0.0404 38.69 0.1168 0.0404 38.69 0.1168 0.0404 38.69 0.1168 0.0404 38.69 0.0562 39.10 0.0216 159318.00 81 39.10 0.02216 159318.00 81 39.34 0.0563 4.0563 4.0563 82 39.34 0.0563 4.0563 4.0563 83 4.044 0.0563 4.0403 83 4.044 0.0663 4.023 0.0414 0.0685 84 822.80 83.81 84 0.043 0.0797 0.0756 1.0737 1.07384 85 4.043 0.0797 0.0756 1.073737 1.0741 1.0741 1.0777 1.0246 86 4.097 0.0756 1.0341.00 87.73737 1.0411 1.0411 1.0411 1.0777 1.0246 87 4.034 0.0694 4.034 0.0797 0.0756 1.04341.30 0.0864 1.080 0.01167 1.0441 0.0797 1.0756 1.04341.30 0.0867 1.0441 0.0797 1.07566 1.04341.30 0.0868 1.0804 1.0				
78	77	36.62	0.0834	59947.53
78 36.95 0.0424 305061,7 78 37.26 0.0583 141917.42 37.66 0.0583 141917.42 37.66 0.0583 141917.42 37.66 0.0583 141917.42 37.66 0.0505 43496.62 37.86 0.0005 43496.62 37.86 0.0005 67979.65 67979.65 37.86 0.0005 67979.65 67979.65 37.86 0.0171 12327.63 38.06 0.1168 84015.16 84015.16 84015.16 38.05 0.1512 108694.60 38.55 0.0678 48728.36 38.99 0.0375 48728.36 38.99 0.0375 48728.36 38.99 0.0375 48728.36 38.99 0.0375 48728.36 38.99 0.0375 48728.36 38.99 0.0375 48728.36 38.99 0.0375 48728.37 39.91 0.0563 48728.37 39.91 0.0565 48728.37 39.91 0.0563 48728.		36.76	0.0450	32329.54
78		36.87	0.0260	18690.67
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79         38.02         0.1512         108694.60           80         38.53         0.0678         48728.36           80         38.99         0.0375         26977.73           39.10         0.2216         159318.00           81         39.34         0.0563         40505.07           81         39.50         0.0541         38932.06           82         39.70         0.1521         109388.50           83         40.04         0.0685         49228.72           84         40.13         0.1149         82604.98           84         40.13         0.1149         82604.98           85         40.83         0.0364         27568.22           40.23         0.0384         27636.22           40.24         0.0797         57337.34           86         40.43         0.2146         154341.30           86         40.97         0.0756         54377.39           87         41.08         0.0694         49528.15           86         40.97         0.0756         54377.39           87         41.81         0.0717         51562.01           80         141.94         0.0610				
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80   38.69   0.1562   112295.30   38.99   0.0375   26977.73   39.10   0.2216   159318.00   39.34   0.0563   40.005.07   39.34   0.0563   40.005.07   39.50   0.0541   3832.06   40.005.07	79			
38.99	80			
39.10   0.2216   159318.00   159318.00   39.34   0.0563   45050.07   39.34   0.0563   45050.07   39.70   0.0541   38932.06   39.70   0.1521   109388.50   39.70   0.1521   109388.50   39.70   0.1521   109388.50   39.70   0.1521   109388.50   39.70   0.1521   109388.50   39.70   0.1521   109388.50   39.70   0.70   0.70	00			
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84         40.13         0.1149         8260, 98           40.23         0.0384         27636.22           40.34         0.0797         57337.34           85         40.80         0.1156         83414.30           86         40.97         0.0756         54377.39           i-C11         41.08         0.0694         49928.15           i-C11         41.21         0.1451         104311.80           41.41         0.0717         51562.01           n-C11         41.54         0.2380         171147.60           41.85         0.0430         30887.48           87         41.85         0.0804         57783.43           88         42.02         0.1147         82506.21           42.28         0.0283         20384.99           42.28         0.0283         20384.99           42.25         0.0439         31548.21           42.26         0.0737         53007.32           42.25         0.0737         53007.32           42.54         0.05867         42199.39           42.62         0.0439         31548.21           42.92         0.1270         91339.98           43.02				
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85		40.23	0.0384	27636.22
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86	85	40.43	0.2146	154341.30
86		40.80	0.1156	83156.66
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n-C11         41.54         0.2380         171147.60           41.75         0.0430         30887.48           87         41.85         0.0804         57783.43           88         42.02         0.1147         82506.21           88         42.02         0.1147         82506.21           42.17         0.2178         156640.70           42.28         0.0283         20384.99           42.35         0.0459         33020.52           42.45         0.0737         53007.32           42.62         0.0439         31548.21           42.72         0.0291         20892.35           42.72         0.0291         20892.35           43.02         0.3163         227450.10           43.13         0.0659         47415.34           43.20         0.0757         54459.80           43.34         0.2737         196830.80           43.35         0.0479         34420.51           89         43.64         0.2265         162851.70           43.83         0.0558         40098.03           43.84         0.2265         162851.70           44.51         0.0399         28700.82				
n-C11 41.54 0.2380 171147.60 41.75 0.0430 30887.48 87 41.94 0.0630 45318.73 88 42.02 0.1147 282506.21 42.17 0.2178 156640.70 42.28 0.0283 20384.99 42.45 0.0737 33020.52 42.45 0.0737 33020.52 42.54 0.0587 42.192 0.0439 31548.21 42.92 0.0149 42.92 0.0149 31548.21 42.92 0.1270 31339.98 43.02 0.3163 227450.10 43.13 0.0659 47415.34 43.20 0.3757 54459.80 43.34 0.2737 196830.80 43.34 0.2737 196830.80 43.35 0.0459 89 43.44 0.2737 196830.80 43.52 0.0479 34420.51 89 43.64 0.2265 162851.70 43.83 0.0558 40098.03 43.95 0.1242 89315.77 44.11 0.1234 88741.16 44.25 0.0579 44.451 0.0399 28700.82 44.63 0.1835 0.1266 148539.00 44.63 0.0399 28700.82 44.63 0.1835 131966.10 90 45.05 0.0992 71306.17				
87 41.75 0.0430 38887.48 87 41.85 0.0804 57783.43 88 42.02 0.1147 82506.21 42.17 0.2178 156640.70 42.28 0.0283 20384.99 42.35 0.0459 33020.52 42.45 0.0737 53007.32 42.62 0.0439 31548.21 42.92 0.0439 31548.21 42.92 0.0291 20892.35 42.92 0.1270 91339.98 43.02 0.3163 227450.10 43.13 0.0659 47415.34 43.20 0.0757 54459.80 43.34 0.2737 196830.80 43.35 0.0459 3420.51 89 43.64 0.2265 162851.70 43.83 0.0558 4098.03 43.95 0.1242 89315.77 44.11 0.1234 88741.16 44.25 0.0579 41640.70 44.36 0.2066 148539.00 44.36 0.2066 148539.00 44.36 0.2066 148539.00 44.36 0.2066 148539.00 44.36 0.2066 148539.00 44.51 0.0399 28700.82 44.63 0.1663 0.1956.00 45.05 0.0992 71306.17 90 45.17 0.1830 131590.90 90 45.17 0.1830 131590.90 91 45.28 0.0527 37875.18 91 45.28 0.0527 37875.18	n-C11			
87       41.85       0.0804       57783.43         41.94       0.0630       45318.73         88       42.02       0.1147       82506.21         42.17       0.2178       156640.70         42.28       0.0283       20384.99         42.35       0.0459       33020.52         42.45       0.0587       42199.39         42.62       0.0439       31548.21         42.72       0.0291       20892.35         42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40988.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       1706.17 <td>11-011</td> <td></td> <td></td> <td></td>	11-011			
88	97			
88       42.02       0.1147       82506.21         42.17       0.2178       156640.70         42.28       0.0283       20384.99         42.35       0.0459       33020.52         42.54       0.0587       42199.39         42.62       0.0439       31548.21         42.72       0.0291       20892.35         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       4098.03         43.83       0.0558       4098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.63       0.1835       131966.10         44.63       0.1835       131966.10         44.63       0.1835       131966.10         45.17       0.1830       131590.90         45.18       0.0527       37875.18	07			
42.17       0.2178       156640.70         42.28       0.0283       20384.99         42.35       0.0459       33020.52         42.45       0.0737       53007.32         42.54       0.0587       42199.39         42.62       0.0439       31548.21         42.72       0.0291       20892.35         42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0669       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       4098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       1706.17         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         <	00			
42.28 0.0283 20384.99 42.35 0.0459 33020.52 42.45 0.0737 53007.32 42.54 0.0587 42199.39 42.62 0.0439 31548.21 42.72 0.0291 20892.35 42.92 0.1270 91339.98 43.02 0.3163 227450.10 43.13 0.0659 47415.34 43.20 0.0757 54459.80 43.34 0.2737 196830.80 43.52 0.0479 34420.51 89 43.64 0.2265 162851.70 43.83 0.0558 40098.03 43.95 0.1242 89315.77 44.11 0.1234 88741.16 44.25 0.0579 41640.70 44.36 0.2066 148539.00 44.51 0.0399 28700.82 44.63 0.1835 131966.10 44.83 0.2376 170835.60 45.17 0.1830 131590.90 90 45.17 0.1830 131590.90 45.28 0.0527 37875.18 45.39 0.1398 100515.60 45.48 0.1663 1119547.80 45.69 0.2015 144868.20	00			
42.35       0.0459       33020.52         42.45       0.0737       53007.32         42.54       0.0587       42199.39         42.62       0.0439       31548.21         42.72       0.0291       20892.35         42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18				
42.45       0.0737       53007.32         42.54       0.0587       42199.39         42.62       0.0439       31548.21         42.72       0.0291       20892.35         42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80				
42.54 0.0587 42199.39 42.62 0.0439 31548.21 42.72 0.0291 20892.35 42.92 0.1270 91339.98 43.02 0.3163 227450.10 43.13 0.0659 47415.34 43.20 0.0757 54459.80 43.34 0.2737 196830.80 43.52 0.0479 34420.51 89 43.64 0.2265 162851.70 43.83 0.0558 40098.03 43.95 0.1242 89315.77 44.11 0.1234 88741.16 44.25 0.0579 41640.70 44.36 0.2066 148539.00 44.51 0.0399 28700.82 44.63 0.1835 131966.10 44.83 0.2376 170835.60 45.05 0.0992 71306.17 90 45.17 0.1830 131590.90 45.28 0.0527 37875.18 45.39 0.1398 100515.60 45.48 0.1663 11954.80				
42.62       0.0439       31548.21         42.72       0.0291       20892.35         42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       4098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         90       45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
42.72       0.0291       20892.35         42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
42.92       0.1270       91339.98         43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
43.02       0.3163       227450.10         43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.61       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
43.13       0.0659       47415.34         43.20       0.0757       54459.80         43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.61       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				227450.10
43.34       0.2737       196830.80         43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20		43.13	0.0659	
89       43.52       0.0479       34420.51         89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20		43.20	0.0757	54459.80
89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20		43.34	0.2737	196830.80
89       43.64       0.2265       162851.70         43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20		43.52	0.0479	34420.51
43.83       0.0558       40098.03         43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20	89			
43.95       0.1242       89315.77         44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
44.11       0.1234       88741.16         44.25       0.0579       41640.70         44.36       0.2066       148539.00         44.51       0.0399       28700.82         44.63       0.1835       131966.10         44.83       0.2376       170835.60         45.05       0.0992       71306.17         90       45.17       0.1830       131590.90         45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20				
44.25     0.0579     41640.70       44.36     0.2066     148539.00       44.51     0.0399     28700.82       44.63     0.1835     131966.10       44.83     0.2376     170835.60       45.05     0.0992     71306.17       90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
44.36     0.2066     148539.00       44.51     0.0399     28700.82       44.63     0.1835     131966.10       44.83     0.2376     170835.60       45.05     0.0992     71306.17       90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
44.51     0.0399     28700.82       44.63     0.1835     131966.10       44.83     0.2376     170835.60       45.05     0.0992     71306.17       90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
44.63     0.1835     131966.10       44.83     0.2376     170835.60       45.05     0.0992     71306.17       90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
44.83     0.2376     170835.60       45.05     0.0992     71306.17       90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
45.05     0.0992     71306.17       90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
90     45.17     0.1830     131590.90       45.28     0.0527     37875.18       45.39     0.1398     100515.60       45.48     0.1663     119547.80       45.69     0.2015     144868.20				
45.28       0.0527       37875.18         45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20	00			
45.39       0.1398       100515.60         45.48       0.1663       119547.80         45.69       0.2015       144868.20	90			
45.48       0.1663       119547.80         45.69       0.2015       144868.20				
45.69 0.2015 144868.20				
		45.48	0.1663	119547.80
45.75 0.1416 101795.70		45.69	0.2015	144868.20

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	45.85	0.2186	157185.50
	45.95	0.1853	133246.70
	46.03	0.1663	119584.70
	46.18	0.2037	146472.80
	46.33	0.0629	45264.30
n-C12	46.50	0.3431	246751.30
	46.66	0.2294	164952.50
	46.86	0.1427	102583.90
	46.94	0.2325	167202.30
i-C13	47.17	0.6064	436081.80
	47.37	0.1182	84968.10
	47.49	0.1966	141351.20
	47.59	0.1386	99648.16
	47.70	0.4483	322381.40
	47.90	0.3040	218607.50
	48.12	0.5191	373278.10
	48.35	0.2677	192504.00
	48.47	0.2196	157914.10
	48.61	0.5520	396898.60
	48.85	0.2327	167365.00
	49.09	0.7741	556673.70
	49.26	0.3381	243119.50
i-C14	49.40	0.8863	637329.80
91	49.55	0.5264	378519.20
	49.69	0.1660	119379.60
	49.79	0.4507	324079.60
	49.99	0.4446	319735.10
92	50.08	0.4577	329146.40
n-C13	50.19	0.2988	214885.20
	50.29	0.2541	182704.50
	50.39	0.1362	97921.05
	50.49	0.1878	135023.20
	50.59	0.5857	421196.10
	50.80	0.5065	364248.70
	50.96	0.3858	277442.10
	51.13	0.3795	272900.80
	51.22	0.5811	417835.90
	51.48	0.1732	124513.40
	51.54	0.4614	331775.90
	51.69	0.4190	301275.50
	51.82	0.2905	208921.30
	51.93	0.2837	203994.60
	52.06	0.3042	218727.20
	52.12	0.3870	278289.80
	52.25	0.5441	391219.50
i-C15	52.48	1.7978	1292740.00
	52.75	0.1775	127602.10
	52.85	1.3607	978472.60
n-C14	53.07	0.2297	165192.90
	53.14	0.3094	222452.30
	53.23	0.6776	487225.40
	53.33	0.8326	598672.40
	53.49	0.2434	175057.80
	53.58	0.3726	267933.50
	53.73	0.8098	582327.30
	53.91	0.3248	233555.10
	54.00	0.4330	311393.10
	54.09	0.4113	295787.50
	54.21	0.7184	516561.50
	54.39	0.4350	312825.70
i-C16	54.53	1.4532	1044996.00
	54.66	0.4178	300460.50
	54.74	0.3183	228881.00
	54.87	0.7362	529350.40
	55.03	0.4261	306415.40
	55.11	0.4952	356114.90
n-C15	55.25	1.2238	880025.00
	55.61	1.1366	817332.60
	55.71	0.4242	305003.00
	55.84	0.7055	507315.70

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	Chrom Perfe	ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	55.95	0.8814	633783.90
	56.16	0.4634	333187.40
	56.25	0.5772	415017.30
	56.34	0.2930	210680.70
	56.43	1.5390	1106692.00
	56.66	0.7576	544785.40
	56.83	0.7557	543409.70
	56.98	0.3566	256405.40
	57.11	0.6351	456677.80
. C16	57.11 57.21		
n-C16	57.21 57.34	0.8093	581984.90
		0.7817	562099.90
	57.50	0.4290	308461.10
	57.58	0.3958	284631.00
	57.68	0.9635	692824.40
	58.04	1.1359	816778.30
-C18	58.15	1.6394	1178883.00
	58.27	0.3751	269703.20
	58.33	0.4943	355413.60
	58.54	0.9412	676762.40
	58.62	0.4996	359250.50
	58.81	1.0169	731216.20
n-C17	58.94	0.9191	660929.10
Pristane	59.12	3.0984	2227985.00
	59.36	1.0814	777580.30
	59.61	0.7025	505173.30
	59.61 59.71	0.7025 0.7716	554823.70
	59.71 59.85		
		1.2028	864883.30
	60.04	0.9279	667250.00
	60.24	0.5600	402655.60
	60.33	0.4295	308875.30
	60.41	0.3751	269708.20
n-C18	60.49	0.6144	441835.80
	60.64	0.5988	430603.60
Phytane	60.73	1.6310	1172804.00
<b>,</b>	60.85	0.5606	403110.70
	61.09	2.3941	1721571.00
	61.44	0.7913	569031.70
	61.58	0.4495	323194.80
	61.77	0.7986	574251.10
	61.84	0.7380	250267.30
n C10			
n-C19	61.92	1.1097	797981.70
	62.10	1.2002	863048.10
	62.38	0.4425	318172.30
	62.46	0.3723	267742.90
	62.54	0.5888	423390.70
	62.66	0.4766	342697.30
	62.76	0.6554	471306.30
	62.94	0.3692	265492.10
	63.03	0.4582	329472.80
	63.15	0.7720	555147.50
n-C20	63.34	0.4665	335438.20
	63.50	0.4188	301143.70
	63.61	0.7132	512836.70
	63.84	0.6010	432133.20
	64.04	0.5876	422545.20
0 110	64.14	0.2485	178709.70
S #3	64.22	0.7163	515052.60
	64.35	0.6759	485997.80
	64.50	0.3615	259940.50
n-C21	64.65	1.0045	722339.10
	65.06	0.3921	281982.40
	65.16	0.3276	235562.30
	65.30	0.2686	193116.70
	65.51	0.4260	306313.70
		0.4200	
	65.61 65.84		331400.90
n-C22	65.81	0.2263	162708.50
	65.93	0.2885	207476.80
	66.05	0.4711	338762.40
	66.30	0.2174	156307.10
	66.38	0.2162	155463.90

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
	66.52	0.1484	106699.10
	66.61	0.3445	247724.60
000	66.78	0.4022	289242.80
n-C23	67.05	0.1393	100200.00
	67.10 67.24	0.1964 0.1700	141227.30 122211.10
	67.24 67.34	0.1700	122664.30
	67.45	0.1766	85320.25
	67.51	0.6713	482718.10
	68.02	0.0825	59315.48
n-C24	68.09	0.3760	270372.40
	68.47	0.3218	231407.00
	68.73	0.1454	104571.70
	68.85	0.0816	58672.66
- 005	68.93	0.3692	265492.50
n-C25	69.45 69.61	0.3070 0.1131	220768.40 81315.00
	69.75	0.0798	57412.74
	69.84	0.1949	140131.90
	70.10	0.0840	60434.60
	70.20	0.1824	131136.80
	70.41	0.1078	77544.02
	70.57	0.0920	66142.95
n-C26	70.73	0.0638	45843.57
	70.86	0.0996	71646.27
	70.97 71.09	0.0702 0.0953	50463.88 68533.27
	71.25	0.0757	54435.18
	71.41	0.1202	86433.39
	71.68	0.1156	83132.78
	71.86	0.0591	42464.42
	72.05	0.0811	58330.09
n-C27	72.26	0.0642	46143.64
	72.39	0.0805	57883.13 24077.04
	72.58 72.71	0.0347 0.0625	24977.04 44914.34
	72.97	0.0767	55142.16
	73.15	0.0250	17956.92
	73.33	0.0572	41161.88
	73.48	0.0431	30968.55
	73.72	0.0305	21914.88
n-C28	73.87	0.0542	38993.56
	74.03 74.18	0.0218 0.0200	15642.10 14412.17
	74.10	0.0200	31007.99
	74.60	0.0272	19581.36
	74.85	0.0261	18786.47
	75.14	0.0235	16877.71
	75.31	0.0123	8844.45
	75.45	0.0091	6571.00
. 000	75.57	0.0133	9583.34
n-C29	75.84 76.16	0.0031 0.0065	2246.20 4678.35
	76.16 76.63	0.0003	1352.15
	76.77	0.0012	829.28
	77.02	0.0017	1205.89
	77.13	0.0038	2715.49
	77.31	0.0041	2933.89
	77.59	0.0072	5205.92
- 020	77.71	0.0040	2885.04
n-C30	77.89 78.24	0.0024 0.0046	1707.06 3325.11
	78.24 78.53	0.0046	5125.98
	78.89	0.0071	887.35
	79.08	0.0004	286.16
	79.63	0.0131	9397.63
	79.98	0.0064	4585.28
n-C31	80.42	0.0031	2255.67
	80.59	0.0007	537.56
	80.76	0.0073	5273.37

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Peak Name

Ret. Time	Area %	Area
81.24	0.0037	2667.96
81.85	0.0015	1098.45
82.02	0.0016	1143.87
82.50	0.0030	2135.72
82.83	0.0041	2918.47
83.67	0.0037	2650.46
83.91	0.0003	231.92
94 92	0.0014	080 04

	81.24	0.0037	2667.96
	81.85	0.0015	1098.45
	82.02	0.0016	1143.87
	82.50	0.0030	2135.72
	82.83	0.0041	2918.47
n-C32	83.67	0.0037	2650.46
	83.91	0.0003	231.92
	84.82	0.0014	980.94
	85.30	0.0031	2253.36
n-C33	86.87	0.0053	3833.60
	87.89	0.0006	435.18
	88.78	0.0028	1993.78
	89.95	0.0006	444.54
n-C34	90.35	0.0009	682.71
	92.98	0.0023	1673.22
	94.42	0.0032	2307.19
n-C35	96.12	0.0080	5718.16
	97.18	0.0014	981.91
	98.41	0.0010	698.55
	98.93	0.0007	507.46
	99.69	0.0011	781.39
n-C36	101.52	0.0010	707.75
	102.82	0.0007	476.51
	103.70	0.0003	214.15
	104.77	0.0004	260.82
	105.99	0.0007	508.93
	108.59	0.0006	460.26

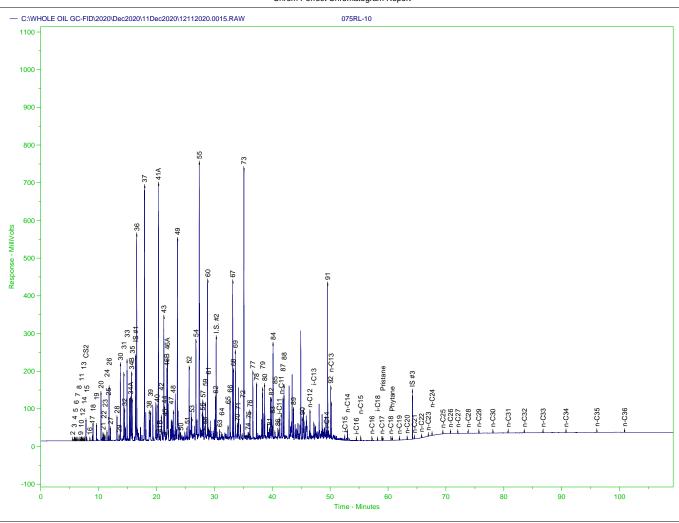
Chrom Perfect Chromatogram Report

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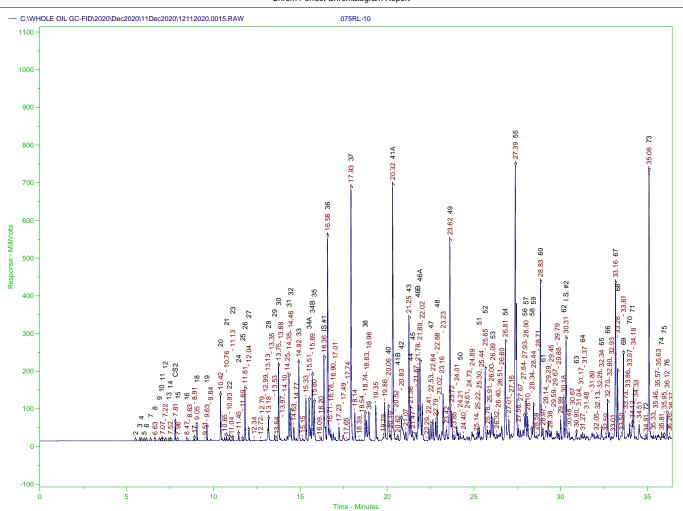




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Web: www.microbe.com

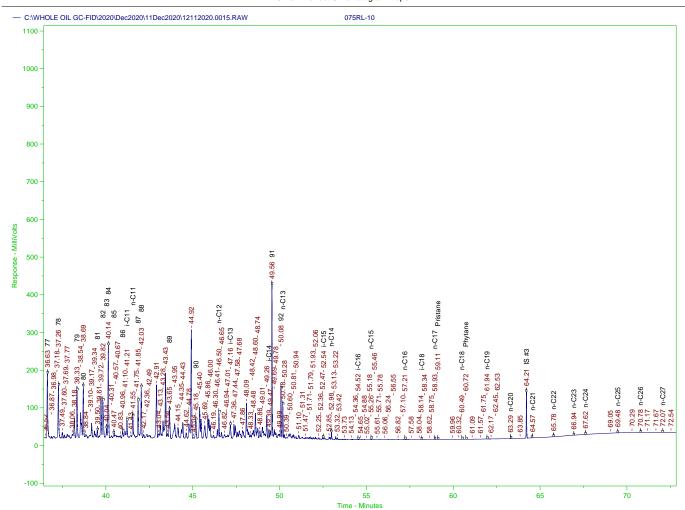




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Fax: 865.573.8133 Web: www.microbe.com

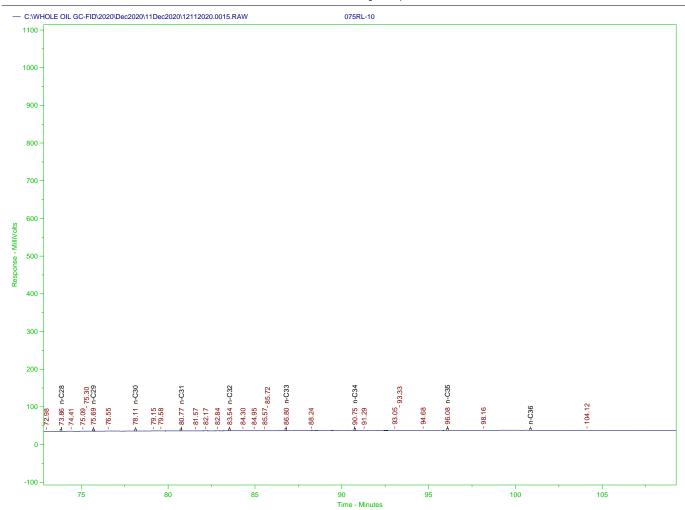




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Sample Name = 075RL-10

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

Method File Name = C:\1 - A Backup\C3442020.met

Method Version = 23

Calibration File Name = C:\1 - A Backup\CALIBRATIONS\2020\12112020.cal Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
8	6.63	0.0011	677.94
11	7.07	0.0028	1797.59
12	7.22	0.0007	430.18
14	7.52	0.0026	1662.84
CS2	7.81	0.2242	142700.90
15	7.96	0.0010	613.65
16	8.47	0.0012	753.96
	8.63	0.0026	1648.81
17	8.91	0.0306	19487.04
18	9.05	0.1295	82378.23
	9.51	0.0009	545.84
19	9.63	0.1218	77511.25
	9.84	0.0255	16231.10
20	10.42	0.4580	291432.90
	10.65	0.0348	22154.78
21	10.76	0.0472	30023.18
22	10.93	0.0443	28174.96
	11.04	0.0074	4729.39
23	11.13	0.0218	13877.81
24	11.45	0.0677	43105.40
25	11.69	0.0155	9883.79
26	11.81	0.5352	340589.00
27	12.04	0.1233	78487.02
	12.34	0.0130	8289.49
	12.72	0.0053	3348.65
	12.79	0.0061	3885.50
	12.99	0.0136	8681.97
	13.13	0.1168	74303.43
28	13.18	0.2484	158085.60
	13.35	0.0088	5586.02
29	13.53	0.0419	26675.22
	13.64	0.0101	6435.27
30	13.75	0.8476	539371.40
	13.88	0.0282	17924.68
	13.97	0.0143	9083.31
	14.10	0.0260	16515.58
	14.25	0.0567	36075.34
31	14.35	0.7524	478780.00
32	14.46	0.3505	223078.80
	14.63	0.1704	108451.30
	14.77	0.0317	20158.20
33	14.92	0.9090	578488.40
	15.15	0.0321	20446.59
0.44	15.33	0.5002	318297.40
34A	15.51	0.6184	393554.10
34B	15.69	0.7838	498776.60
35	15.80	0.5361	341184.40
	16.09	0.0079	5046.48
10 //4	16.20	0.0539	34326.88
IS #1	16.36	1.1523	733302.00
36	16.58	2.4178	1538615.00
	16.71	0.1768	112534.20
	16.78	0.0811	51614.36
	16.90	0.0931	59227.06
	17.01	0.0596	37938.96
	17.23	0.1920	122174.20
	17.49	0.1193	75906.30
	17.65	0.0021	1313.81

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	Chrom Perfect	t Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	17.74	0.0290	18482.32
7	17.93	3.3418	2126591.00
	18.14	0.3729	237291.20
	18.39	0.0179	11398.08
	18.54	0.0140	8930.72
8	18.74	0.3178	202249.80
	18.83	0.3137	199604.80
9	18.96	0.3502	222832.70
	19.35	0.4865	309563.30
	19.79	0.0720	45804.35
	19.86	0.5342	339964.00
0	20.06	0.6181	393366.20
	20.19	0.0870	55359.92
1A	20.32	3.4463	2193097.00
	20.52	0.0308	19575.42
1B	20.62	0.0521	33168.86
2	20.83	0.6582	418889.40
	21.07	0.1134	72181.77
3	21.25	1.5043	957289.40
4	21.36	0.3834	243979.40
5	21.47	0.1321	84069.68
	21.67	0.1802	114678.00
6B	21.78	0.8280	526926.80
6A	21.89	1.3415	853669.90
	22.02	0.4749	302215.80
	22.29	0.0077	4879.34
	22.41	0.1467	93378.37
7	22.53	0.2213	140807.80
	22.64	0.2891	183999.60
	22.79	0.2311	147068.30
8	22.88	0.3415	217322.00
	23.02	0.1026	65299.58
	23.16	0.1145	72852.74
	23.23	0.6060	385638.70
	23.42	0.2758	175535.00
9	23.62	2.5321	1611370.00
	23.72	0.4290	272976.10
	23.85	0.0733	46642.55
	24.01	0.3495	222391.90
0	24.21	0.1474	93790.05
	24.40	0.0972	61869.83
	24.61	0.0914	58184.98
	24.73	0.0566	36025.98
	24.89	0.2630	167337.90
	25.14	0.0511	32497.87
	25.22	0.1300	82745.37
1	25.30	0.1756	111721.50
	25.44	0.0738	46984.65
2	25.65	1.1412	726205.70
	25.78	0.1581	100584.50
	25.91	0.2402	152851.40
	26.00	0.3661	232955.70
3	26.09	0.4075	259292.70
	26.32	0.1006	63992.23
	26.40	0.1183	75277.34
	26.51	0.1210	77032.27
	26.60	0.2306	146773.70
4	26.81	1.4542	925401.10
	27.01	0.4245	270133.00
	27.16	0.1999	127212.20
5	27.39	5.2677	3352179.00
-	27.56	0.1910	121529.80
	27.67	0.2273	144639.20
	27.84	0.2400	152734.90
6	27.93	0.2400	200667.30
7	28.00	0.3133	307543.00
,			
	28.10	0.3640	231647.00
Q	20 21		
8 9	28.34 28.44	0.1848 0.5193	117586.20 330440.30

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Chrom Perfect Chromatogram Report			
Peak Name	Ret. Time	Area %	Area
60	28.71 28.83	0.0900 2.0309	57254.92 1292370.00
61	26.63 28.97	0.1702	108285.50
01	29.14	0.1702	182778.80
	29.14	0.2984	189878.00
	29.38	0.0853	54300.91
	29.45	0.1779	113210.00
	29.59	0.0421	26807.86
	29.67	0.0523	33304.59
	29.79	0.2019	128510.20
	29.88	0.0973	61937.03
	29.99	0.2864	182243.60
62	30.18	0.5642	359008.70
I.S. #2	30.31 30.48	1.2936 0.1835	823210.90 116751.60
	30.46	0.1193	75946.80
63	30.90	0.1454	92552.27
	31.04	0.0803	51116.90
	31.17	0.1100	70003.89
64	31.27	0.0747	47506.06
	31.37	0.1063	67665.87
	31.48	0.1327	84439.96
	31.80	0.3042	193568.60
	32.05	0.0959	61025.27
	32.13 32.26	0.1272 0.0340	80925.84 21636.59
65	32.34	0.0340	141355.30
00	32.59	0.1056	67175.20
66	32.70	0.5078	323162.00
	32.80	0.1349	85854.36
	32.93	0.0601	38276.04
	33.01	0.0453	28810.02
67	33.16	2.0105	1279432.00
68	33.28 33.50	0.8225 0.1332	523386.30 84764.30
69	33.61	1.1199	712653.50
	33.73	0.0525	33386.68
	33.86	0.1717	109289.50
70	33.97	0.2057	130903.60
71	34.12	0.2513	159892.10
	34.18	0.7091	451261.10
	34.33 34.51	0.0984 0.4671	62639.04 297265.90
72	34.91	0.4671	45601.04
73	35.08	3.6554	2326168.00
. 0	35.33	0.0805	51224.01
	35.46	0.1069	68007.80
	35.57	0.0697	44384.72
	35.63	0.1409	89677.87
74	35.81	0.1259	80130.34
75 76	35.95 36.12	0.1093 0.3727	69527.44 237173.00
76	36.26	0.1025	65211.92
	36.37	0.0483	30743.19
	36.52	0.0655	41683.80
77	36.63	0.9667	615166.10
	36.87	0.0506	32207.67
	36.98	0.1043	66361.41
70	37.18	0.0518	32932.54
78	37.26 37.49	0.7470 0.1194	475367.20 75960.32
	37.49 37.60	0.1194	75960.32 50010.66
	37.69	0.0451	28731.54
	37.77	0.2099	133561.20
	38.06	0.1061	67514.05
	38.18	0.3468	220710.40
79	38.33	0.7211	458861.10
90	38.54	0.5734	364919.20 451396.00
80	38.69 38.84	0.7092 0.1458	451286.90 92809.98
	30.04	0.1700	32003.30

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	Chrom Perfec	ct Chromatogram Report	
Peak Name	Ret. Time	Area %	Area
	39.10	0.1386	88190.77
	39.17	0.2525	160684.40
	39.34	0.2299	146319.10
31	39.50	0.1504	95683.20
•	39.61	0.0633	40277.29
	39.72	0.6308	401426.30
32	39.82	0.7016	446483.10
33	40.04	0.1932	122970.10
34	40.14	1.2006	764033.70
) <del>-1</del>			
NE.	40.31	0.1018	64778.76
35	40.47	0.1295	82412.06
	40.57	0.1107	70418.39
	40.67	0.1212	77128.78
_	40.83	0.0841	53530.75
36	40.96	0.1618	102940.80
	41.10	0.1890	120293.60
-C11	41.21	0.3417	217430.00
	41.43	0.1194	75984.84
n-C11	41.55	0.4543	289111.00
	41.75	0.0591	37590.54
37	41.85	0.5488	349213.00
38	42.03	0.7538	479680.00
	42.17	0.1100	70018.73
	42.36	0.1491	94900.63
	42.49	0.1958	124604.90
	42.91	0.9693	616837.10
	43.04	0.1178	74987.49
	43.13	0.2809	178767.30
	43.28	0.3950	251370.00
	43.43	0.8752	556958.70
	43.54	0.1098	69841.81
39	43.65	0.4954	315269.10
59	43.05	0.4665	296839.30
	44.15		202505.80
	44.15	0.3182	
		0.1595	101505.90
	44.43	0.2692	171341.10
	44.62	0.1472	93662.36
	44.78	0.3167	201564.40
	44.92	1.3872	882768.10
	45.04	0.0393	25024.51
90	45.18	0.3426	218043.90
	45.40	0.7805	496708.00
	45.69	0.3507	223168.30
	45.86	0.5814	370013.20
	46.00	0.2465	156880.60
	46.19	0.0967	61512.95
	46.30	0.0508	32331.28
	46.41	0.1360	86533.27
n-C12	46.50	0.3464	220463.40
	46.65	0.1737	110527.20
	46.82	0.1145	72863.68
	46.94	0.0590	37520.39
	47.01	0.0799	50847.76
·C13	47.16	0.3280	208728.50
J.J	47.36	0.2115	134600.00
	47.44	0.2516	160116.40
	47.44 47.58	0.2516	74572.24
	47.68 47.86	0.2401	152798.00
	47.86	0.2642	168100.80
	48.09	0.6822	434102.10
	48.33	0.0805	51211.67
	48.42	0.0868	55209.21
	48.48	0.1694	107809.10
	48.60	0.4418	281120.40
	48.74	0.1583	100748.00
	48.86	0.1715	109151.90
	49.01	0.4277	272170.40
	49.26	0.3522	224152.60
-C14	49.39	0.0892	56783.53
· U 1 <del>- 1</del>	43.33		
	49.47	0.1106	70380.83

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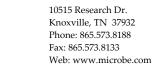
Chrom Perfect Chromatogram Report				
Peak Name	Ret. Time	Area %	Area	
91	49.56	1.5958	1015546.00	
	49.69	0.1624	103321.50	
	49.78	0.1340	85253.77	
	49.99	0.1752	111498.10	
92	50.08	0.5139	327036.80	
n-C13	50.18	0.3669	233492.80	
	50.28	0.0741	47185.60	
	50.39	0.0430	27388.58	
	50.60	0.2411	153415.70	
	50.81	0.1336	85039.30	
	50.94	0.0536	34093.54	
	51.10	0.0917	58328.57	
	51.31	0.0894	56869.58	
	51.47	0.0890	56633.79	
	51.71	0.0378	24031.88	
	51.79	0.0487	30979.98	
	51.93	0.0451	28679.72	
	52.06	0.0509	32390.41	
	52.25	0.0294	18687.12	
	52.36	0.0106	6738.95	
	52.47	0.0242	15411.81	
i-C15	52.54	0.0483	30705.31	
-	52.85	0.0486	30904.54	
n-C14	52.98	0.0772	49158.69	
•	53.13	0.0070	4470.91	
	53.22	0.0304	19329.67	
	53.32	0.0188	11963.38	
	53.42	0.0099	6314.98	
	53.73	0.0129	8222.74	
	54.13	0.0100	6393.62	
	54.36	0.0047	2984.08	
i-C16	54.52	0.0072	4582.64	
. 0.10	54.65	0.0015	973.56	
	54.88	0.0064	4068.53	
	55.02	0.0012	740.83	
	55.18	0.0020	1243.62	
n-C15	55.26	0.0114	7228.57	
11 0 10	55.46	0.0018	1146.84	
	55.61	0.0014	891.44	
	55.71	0.0016	1033.92	
	55.78	0.0026	1669.07	
	56.06	0.0005	342.63	
	56.24	0.0023	1487.85	
	56.55	0.0030	1922.47	
	56.82	0.0020	1299.84	
	57.10	0.0019	1180.87	
n-C16	57.21	0.0019	3382.87	
1 0 10	57.58	0.0033	852.37	
	58.04	0.0013	588.56	
	58.14	0.0022	1409.23	
	58.14 58.34	0.0022	425.38	
	58.62	0.0010	617.84	
	58.75	0.0009	582.26	
n-C17	58.93	0.0038	2389.63	
Pristane	58.93 59.11	0.0038	1943.00	
Filstalle	59.96	0.0031	816.95	
	60.32			
n-C18	60.49	0.0007 0.0026	457.05 1676.19	
	60.72		1269.31	
Phytane	61.09	0.0020	182.94	
		0.0003		
	61.57 61.75	0.0012	763.28 491.34	
n C10	61.75	0.0008	491.34	
n-C19	61.94	0.0026	1685.13	
	62.17	0.0014	881.20	
	62.45	0.0006	409.04	
000	62.53	0.0006	378.62	
n (''') ()	63.29	0.0035	2250.83	
11-020				
	63.85	0.0009	542.06	
n-C20 IS #3 n-C21	63.85 64.21 64.57	0.0009 0.3713 0.0018	542.06 236278.30 1172.41	

Page 5 of 6



Chrom	Perfect	Chromatogram	Report
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Peak Name	Ret. Time	Area %	Area
n-C22	65.78	0.0350	22293.47
n-C23	66.94	0.2203	140202.70
n-C24	67.62	0.2224	141559.70
	69.05	0.5900	375456.20
n-C25	69.48	0.1887	120086.60
	70.29	0.3447	219351.70
n-C26	70.78	0.2155	137127.10
	71.17	0.1352	86012.70
	71.67	0.0320	20335.70
n-C27	72.07	0.0778	49493.17
	72.54	0.0255	16218.17
	72.98	0.0033	2107.58
n-C28	73.86	0.0032	2024.97
	74.41	0.0053	3382.27
	75.09	0.0019	1213.24
	75.30	0.0012	764.99
n-C29	75.69	0.0105	6695.13
	76.55	0.0045	2851.22
n-C30	78.11	0.0129	8221.81
	79.15	0.0054	3446.22
	79.58	0.0021	1340.16
n-C31	80.77	0.0050	3185.16
	81.57	0.0018	1131.86
	82.17	0.0067	4243.77
	82.84	0.0013	850.50
n-C32	83.54	0.0024	1557.32
	84.30	0.0056	3568.80
	84.95	0.0018	1156.30
	85.57	0.0017	1082.20
	85.72	0.0006	397.10
n-C33	86.80	0.0029	1875.31
555	88.24	0.0032	2050.38
n-C34	90.75	0.0026	1637.92
55 .	91.29	0.0013	812.66
	93.05	0.0006	371.07
	93.33	0.0091	5794.78
	94.68	0.0030	1894.76
n-C35	96.08	0.0030	1932.87
11 000	98.16	0.0021	1306.26
	104.12	0.0004	285.68
Total Area = 6.36369E+07	Total Height = 1.75	55833E+07 Total Amo	unt = 0





# SITE LOGIC Report

EDB and Organic Lead

Contact: Russ Shropshire Phone: 425-482-3323

**Address:** Leidos, Inc.

18939 129th Avenue NE, Suite 112 Email: russell.s.shropshire@leidos.com

Bothell, WA 98011

MI Identifier: 075RL Report Date: February 10, 2021

**Project:** Chelan Chevron Site, #334893.TM.1.000.00.000.000

**Comments:** 

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 Russ Shropshire
 Lab ID:
 075RL-1

 Leidos, Inc
 Collected:
 12/6/20

 18939 120th Avenue, Suite 112
 Received:
 12/11/20

 Bothell, WA 98011
 Matrix:
 Product

Project: Chelan Chevron Site Client ID: MW-10-201206

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	U	<0.1
Tetramethyl Lead	6.7	20.1	U	<1.0
Trimethylethyl Lead	6.7	20.1	U	<1.0
Dimethyldiethyl Lead	6.7	20.1	U	<1.0
Methyltriethyl Lead	6.7	20.1	U	<1.0
Tetraethyl Lead	6.7	20.1	689.5	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-1.D EW



Russ ShropshireLab ID:075RL-2Leidos, IncCollected:12/7/2018939 120th Avenue, Suite 112Received:12/11/20Bothell, WA 98011Matrix:Product

Project: Chelan Chevron Site Client ID: MW-12-201207

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	2.0	<0.1
Tetramethyl Lead	6.5	19.6	7.1 J	<1.0
Trimethylethyl Lead	6.5	19.6	U	<1.0
Dimethyldiethyl Lead	6.5	19.6	U	<1.0
Methyltriethyl Lead	6.5	19.6	U	<1.0
Tetraethyl Lead	6.5	19.6	253.6	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-2.D EW



 Russ Shropshire
 Lab ID:
 075RL-3

 Leidos, Inc
 Collected:
 12/7/20

 18939 120th Avenue, Suite 112
 Received:
 12/11/20

 Bothell, WA 98011
 Matrix:
 Product

Project: Chelan Chevron Site Client ID: RW-2-201207

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 2/1/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	U	<0.1
Tetramethyl Lead	6.8	20.4	U	<1.0
Trimethylethyl Lead	6.8	20.4	U	<1.0
Dimethyldiethyl Lead	6.8	20.4	25.7	<1.0
Methyltriethyl Lead	6.8	20.4	U	<1.0
Tetraethyl Lead	6.8	20.4	311.2	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-3 dup.D

EW



 Russ Shropshire
 Lab ID:
 075RL-4

 Leidos, Inc
 Collected:
 12/7/20

 18939 120th Avenue, Suite 112
 Received:
 12/11/20

 Bothell, WA 98011
 Matrix:
 Product

Project: Chelan Chevron Site Client ID: MW-9-201207

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	U	<0.1
Tetramethyl Lead	6.7	20.2	U	<1.0
Trimethylethyl Lead	6.7	20.2	U	<1.0
Dimethyldiethyl Lead	6.7	20.2	U	<1.0
Methyltriethyl Lead	6.7	20.2	U	<1.0
Tetraethyl Lead	6.7	20.2	579.4	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-4.D EW



Russ ShropshireLab ID:075RL-5Leidos, IncCollected:12/7/2018939 120th Avenue, Suite 112Received:12/11/20Bothell, WA 98011Matrix:Product

Project: Chelan Chevron Site Client ID: MW-44-201207

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 2/9/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	7.5	<0.1
Tetramethyl Lead	6.5	19.5	U	<1.0
Trimethylethyl Lead	6.5	19.5	U	<1.0
Dimethyldiethyl Lead	6.5	19.5	U	<1.0
Methyltriethyl Lead	6.5	19.5	U	<1.0
Tetraethyl Lead	6.5	19.5	263.7	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-5.D EW



 Russ Shropshire
 Lab ID:
 075RL-6

 Leidos, Inc
 Collected:
 12/7/20

 18939 120th Avenue, Suite 112
 Received:
 12/11/20

 Bothell, WA 98011
 Matrix:
 Product

Project: Chelan Chevron Site Client ID: MW-19-201207

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.6	1.8	U	<0.1
Tetramethyl Lead	6.0	18.1	U	<1.0
Trimethylethyl Lead	6.0	18.1	U	<1.0
Dimethyldiethyl Lead	6.0	18.1	U	<1.0
Methyltriethyl Lead	6.0	18.1	U	<1.0
Tetraethyl Lead	6.0	18.1	30.1	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.6	1.8	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-6.D EW



 Russ Shropshire
 Lab ID:
 075RL-7

 Leidos, Inc
 Collected:
 12/7/20

 18939 120th Avenue, Suite 112
 Received:
 12/11/20

 Bothell, WA 98011
 Matrix:
 Product

Project: Chelan Chevron Site Client ID: MW-16-201207

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	U	<0.1
Tetramethyl Lead	6.8	20.3	U	<1.0
Trimethylethyl Lead	6.8	20.3	U	<1.0
Dimethyldiethyl Lead	6.8	20.3	15.7 J	<1.0
Methyltriethyl Lead	6.8	20.3	29.4	<1.0
Tetraethyl Lead	6.8	20.3	739.0	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-7.D EW



Russ ShropshireLab ID:075RL-8Leidos, IncCollected:12/8/2018939 120th Avenue, Suite 112Received:12/11/20Bothell, WA 98011Matrix:Product

Project: Chelan Chevron Site Client ID: MW-21-201208

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.7	2.0	1.8 J	<0.1
Tetramethyl Lead	6.7	20.1	U	<1.0
Trimethylethyl Lead	6.7	20.1	U	<1.0
Dimethyldiethyl Lead	6.7	20.1	U	<1.0
Methyltriethyl Lead	6.7	20.1	< 6.7	<1.0
Tetraethyl Lead	6.7	20.1	158.4	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.7	2.0	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-8.D EW



 Russ Shropshire
 Lab ID:
 075RL-9

 Leidos, Inc
 Collected:
 12/8/20

 18939 120th Avenue, Suite 112
 Received:
 12/11/20

 Bothell, WA 98011
 Matrix:
 Product

Project: Chelan Chevron Site Client ID: MW-27-201208

 Project #:
 334893.TM.1.000.00.000
 Analyzed:
 1/29/2021

 Collected by:
 Q Method:
 GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.6	1.7	U	<0.1
Tetramethyl Lead	5.8	17.3	U	<1.0
Trimethylethyl Lead	5.8	17.3	U	<1.0
Dimethyldiethyl Lead	5.8	17.3	U	<1.0
Methyltriethyl Lead	5.8	17.3	U	<1.0
Tetraethyl Lead	5.8	17.3	U	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.6	1.7	U	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-9.D EW



Russ Shropshire Leidos, Inc 18939 120th Avenue, Suite 112 Bothell, WA 98011

**Project:** Chelan Chevron Site

Project #: 334893.TM.1.000.00.000

Collected by:

 Lab ID:
 075RL-10

 Collected:
 11/7/20220

 Received:
 12/11/20

 Matrix:
 Product

Client ID: 22IE Woodin UST-1

Analyzed: 2/1/2021 Q Method: GC/ECD

Constituents	ssRL	PQL	Result	Blank
	mg/kg	mg/kg	mg/kg	mg/L
Ethylene Dibromide	0.6	1.9	U	<0.1
Tetramethyl Lead	6.3	19.0	U	<1.0
Trimethylethyl Lead	6.3	19.0	22.1	<1.0
Dimethyldiethyl Lead	6.3	19.0	52.5	<1.0
Methyltriethyl Lead	6.3	19.0	U	<1.0
Tetraethyl Lead	6.3	19.0	12.2 J	<1.0
Methylcyclopentadienyl Manganese Tricarbonyl	0.6	1.9	15.6	<1.0

ssRL - Sample Specific Reporting Limit

U: Not detected

J: value greater than the ssRL but less than the PQL (3xssRL)

Trace detection: If analyte detected below ssRL then < ssRL will be shown

075RL-10.D EW





Russ Shropshire Leidos, Inc 18939 120th Avenue, Suite 112 Bothell, WA 98011 Project # Analyzed: Method:

334893.TM.1.000.00.00.000 2/1/2021 GC/ECD

# QA DATA FOR EDB, TEL and MMT

				ACCEPTANCE
ANALYTES	RRFD	RRF	RPD	LIMIT %
Ethylene Dibromide	0.065	0.063	3.39	<u>+</u> 15
Tetraethyl Lead	0.004	0.004	0.00	<u>+</u> 15
MMT	0.024	0.027	11.02	<u>+</u> 15

RRF = Mean relative response factor from 6 point calibration RRFD= Daily calibration standard relative response factor RPD = Relative Percent Difference QUANTORGPB07232020.M

075RL-10.D EW





SITE LOGIC Report

C3-C12 PIANO

Contact: Russ Shropshire Phone: 425-482-3323

Address: Leidos, Inc.

18939 120<sup>th</sup> Avenue NE, Suite 112, Email: russell.s.shropshire@leidos.com

Bothell, WA 98011

MI Identifier: 075RL Report Date: December 21, 2020

**Project:** Chelan Chevron Site, #334893.TM.1.000.00.000.000

Comments:

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Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011

Collected: 12/6/2020 Received: 12/11/2020 Matrix: Product

Lab ID: 075RL-1

Client ID: MW-10-201206

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000
Collected by:

Analyzed: 12/15/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	1	IP	199.6	1465.9	D
1-Pentene	0	1P	99.8	99.8	U
2-Methyl-1-butene	0	2M1B	99.8	119.0	
Pentane (nC5)	Р	C5	199.6	1672.2	D
trans-2-pentene	0	T2P	99.8	99.8	U
cis-2-pentene	0	C2P	99.8	1514.1	
2-Methyl-2-butene (t)	0	2M2B	99.8	1383.7	
t-Butanol (TBA)	ADD	TBA	99.8	99.8	U
2,2-Dimethylbutane (t)	I	22DMB	99.8	568.6	
Cyclopentane	N	CYP	99.8	99.8	U
2,3-Dimethylbutane	I	23DMB	199.6	1927.1	D
2-Methylpentane	I	2MP	199.6	8488.5	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	74.9	74.9	U
3-Methylpentane	I	3MP	199.6	10288.3	D
1-Hexene	0	1HX	199.6	992.4	D
Hexane (nC6)	P	C6	199.6	12320.2	D
Di-isopropyl ether (DIPE)	ADD	DIPE	74.9	74.9	U
trans-2-hexene (t)	0	T2HE	99.8	4008.2	
2-Methyl-2-pentene (t)	0	2M2P	199.6	331.1	D
cis-2-hexene (t)	0	C2HE	199.6	666.3	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	199.6	253.7	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	74.9	74.9	U
2,2-Dimethylpentane (t)	1	22DMP	199.6	902.5	D
Methylcyclopentane	N	MCYP	199.6	14194.6	D
2,4-Dimethylpentane	1	24DMP	199.6	14027.5	D
1,2-Dichloroethane (EDC)	ADD	EDC	74.9	74.9	U
Benzene	Α	В	99.8	1142.1	
3,3-Dimethylpentane (t)	1	33DMP	199.6	2254.1	D
Thiophene	S	THIO	74.9	74.9	U
Cyclohexane	N	CYH	199.6	4896.2	D
2-Methylhexane	1	2MH	199.6	22139.7	D
2,3-Dimethylpentane	1	23DMP	199.6	20599.4	D



Russ Shropshire Lab ID: 075RL-1
Leidos, Inc. Collected: 12/6/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-10-201206

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/15/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	74.9	74.9	U
3-Methylhexane	1	3МН	199.6	26856.8	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	199.6	4938.4	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	199.6	1689.0	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	199.6	6416.7	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	598.9	36250.2	D
1-Heptene	0	1HP	199.6	21200.5	D
Heptane (nC7)	Р	C7	199.6	51025.0	D
trans-2-heptene (t)	0	T2HP	99.8	7361.0	
Methylcyclohexane	N	MCYH	199.6	16685.1	D
2,5-Dimethylhexane	1	25DMH	598.9	9068.1	D
2,2,3-Trimethylpentane	1	233TMP	99.8	99.8	U
2,4-Dimethylhexane	1	24DMH	199.6	15433.7	D
2,3,4-Trimethylpentane	1	234TMP	199.6	21298.2	D
2,3,3-Trimethylpentane	1	233TMP	199.6	14126.4	D
Toluene	Α	Т	99.8	99.8	U
2-Methylthiophene	S	2MTHIO	74.9	74.9	U
2,3-Dimethylhexane	1	23DMH	199.6	17131.4	D
3-Methylthiophene	S	3MTHIO	74.9	74.9	U
2-Methylheptane	1	2MHP	199.6	52626.5	D
4-Methylheptane (t)	1	4MHP	199.6	16947.1	D
3-Methylheptane	1	ЗМНР	399.2	46759.8	D
3-Ethylhexane	1	3EHX	199.6	199.6	U
1,2-Dibromoethane (EDB)	ADD	EDB	99.8	99.8	U
1-Octene	0	10	99.8	99.8	U
Octane (nC8)	Р	C8	199.6	49929.6	D
2,4-Dimethylheptane (t)	1	24DMHP	199.6	23140.5	D
2,5-Dimethylheptane (t)	1	25DMHP	199.6	28151.9	D
Ethylbenzene	Α	EB	199.6	2338.5	D
2-Ethylthiophene	S	2ETHIO	74.9	74.9	U
2,3-Dimethylheptane (t)	1	23DMHP	199.6	53978.0	D
m-Xylene	Α	MX	99.8	99.8	U



Russ Shropshire Lab ID: 075RL-1
Leidos, Inc. Collected: 12/6/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-10-201206

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/15/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	199.6	729.8	D
4-Methyloctane (t)	1	4MO	199.6	21559.9	D
2-Methyloctane (t)	1	2MO	199.6	25221.0	D
3-Methyloctane (t)	Ì	3МО	199.6	63184.8	D
Styrene	Α	STRE	99.8	99.8	U
o-Xylene	Α	ОХ	99.8	99.8	U
1-Nonene	0	1N	299.4	299.4	U
Nonane (nC9)	Р	C9	399.2	32591.9	D
Isopropylbenzene (cumene)	Α	IPROPB	99.8	99.8	U
n-Propylbenzene	Α	NPRPPB	199.6	3526.5	D
1-Methyl-3-ethylbenzene	Α	1M3EB	199.6	327.9	D
1-Methyl-4-ethylbenzene	Α	1M4EB	199.6	1940.7	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	199.6	4109.3	D
1-Methyl-2-ethylbenzene	Α	1M2EB	199.6	3988.7	D
1,2,4-Trimethylbenzene	Α	124TMB	199.6	5961.1	D
1-Decene	0	1D	598.9	7658.0	D
Decane (nC10)	Р	C10	598.9	15887.7	D
sec-Butylbenzene	Α	SBUB	99.8	4827.6	
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	199.6	1141.5	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	199.6	578.4	D
Indane	Α	IA	199.6	682.6	D
Indene	Α	IE	99.8	99.8	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	99.8	726.8	
1-Methyl-3-propylbenzene	Α	1M3PROPB	199.6	6393.1	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	199.6	3721.4	D
n-Butylbenzene	Α	NBB	199.6	2816.5	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	199.6	6377.8	D
1,2,diethylbenzene	Α	12DEB	199.6	625.4	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	199.6	2749.0	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	199.6	4090.3	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	199.6	3045.4	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	199.6	7143.7	D



Russ Shropshire Lab ID: 075RL-1
Leidos, Inc. Collected: 12/6/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-10-201206

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/15/2020 Q Method: 121818ICAL.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
	02.100	7.0011.	6/ 1/6	6/ 1/6	QOTENTEN
1,3-Dimethyl-2-ethylbenzene	Α	13DM2EB	99.8	99.8	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	199.6	815.0	D
Undecane (nC11)	Р	C11	598.9	3893.5	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	199.6	4591.0	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	199.6	4347.0	D
n-Pentylbenzene	Α	NPYB	199.6	1186.9	D
Naphthalene	Α	N	199.6	435.7	D
Benzothiophene	S	BTHIO	74.9	74.9	U
Dodecane (nC12)	Р	C12	399.2	1841.6	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	199.6	2085.4	D
MMT	ADD	MMT	74.9	74.9	U
2-Methylnaphthalene	Α	2MN	99.8	215.7	
1-Methylnaphthalene	Α	1MN	99.8	99.8	U
Benzene d-6 (RS)	115.	74 %			
Toluene-d8 (RS)	94.9	96 %			
Ethylbenzene d10 (RS)	121.0	62 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-1 1000X.D & dilution 075RL-1

2000X.D

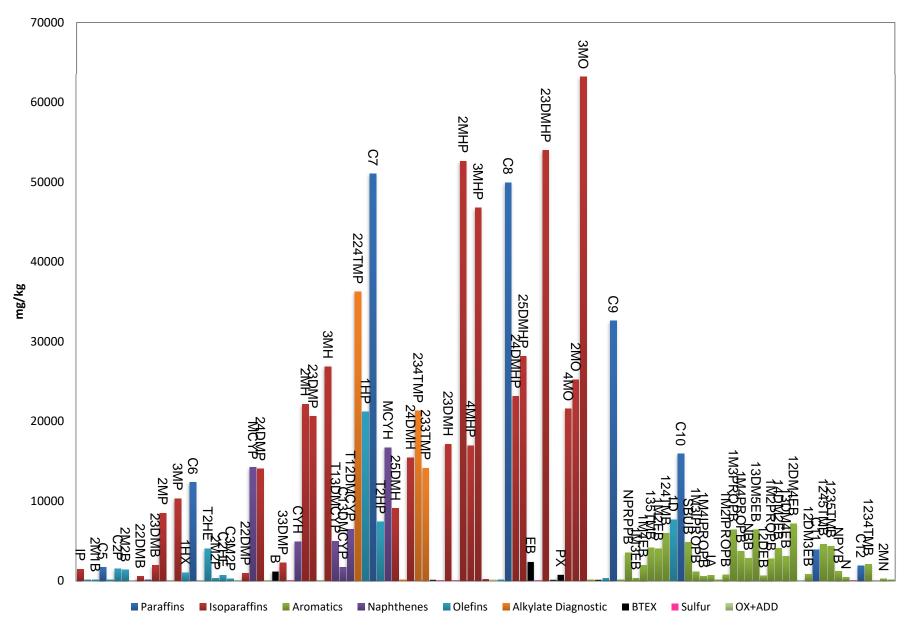
Submitted by,

Microbial Insights, Inc.



MIID	075RL-1
Sample ID	MW-10-201206
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.03
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.14
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.19
Toluene / (Toluene+Methylcyclohexane)	
Aromatics / Total Paraffins (n+iso+cyc)	0.11
Aromatics / Naphthenes	1.69
wt% < o-xylene	84.42
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	17.69
3-Methylhexane / n-Heptane	0.53
Methylcyclohexane / n-Heptane	0.33
Isoparaffins + Naphthenes / Paraffins	3.57
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.7
2,2,4-Trimethylpentane / Total TMPs	0.51
nC9 / Isopropylbenzene	
nC10 / 1-Methyl-2-ethylbenzene	3.98
nC11 / 1,4-Dimethyl-2-ethylbenzene	0.95
iC5 / (iC5+nC5) (2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.47
(2-metrymexane + 2,5umetrypentane) / (5-metrymexane + 2,4 umetrypentane)	1.05
Naphthalene / (Naphthalene+nC12)	0.19
Methylcyclohexane/(Methylcyclohexane+Toluene)	
Toluene/n-Octane	
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	18.8
% Isoparaffinic	61.6
% Aromatic	9.2
% Naphthenic	5.4
% Olefinic	5.1

075RL-1





Russ Shropshire Lab ID: 075RL-2
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-12-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	185.9	4233.2	D
1-Pentene	0	1P	93.0	93.0	U
2-Methyl-1-butene	0	2M1B	93.0	817.4	
Pentane (nC5)	Р	C5	185.9	4830.7	D
trans-2-pentene	0	T2P	93.0	1259.3	
cis-2-pentene	0	C2P	185.9	546.6	D
2-Methyl-2-butene (t)	О	2M2B	185.9	2025.8	D
t-Butanol (TBA)	ADD	TBA	93.0	93.0	U
2,2-Dimethylbutane (t)	1	22DMB	185.9	218.0	D
Cyclopentane	N	CYP	93.0	3370.9	
2,3-Dimethylbutane	1	23DMB	185.9	2177.5	D
2-Methylpentane	1	2MP	185.9	9708.9	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	69.7	69.7	U
3-Methylpentane	1	3MP	185.9	11471.7	D
1-Hexene	Ο	1HX	185.9	4147.6	D
Hexane (nC6)	Р	C6	185.9	14162.5	D
Di-isopropyl ether (DIPE)	ADD	DIPE	69.7	69.7	U
trans-2-hexene (t)	Ο	T2HE	185.9	3477.2	D
2-Methyl-2-pentene (t)	О	2M2P	185.9	1816.0	D
cis-2-hexene (t)	О	C2HE	185.9	1820.2	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	185.9	1327.2	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	69.7	69.7	U
2,2-Dimethylpentane (t)	1	22DMP	185.9	574.8	D
Methylcyclopentane	N	MCYP	185.9	24164.6	D
2,4-Dimethylpentane	1	24DMP	185.9	8812.0	D
1,2-Dichloroethane (EDC)	ADD	EDC	69.7	69.7	U
Benzene	Α	В	185.9	607.8	D
3,3-Dimethylpentane (t)	1	33DMP	185.9	1420.4	D
Thiophene	S	THIO	69.7	69.7	U
Cyclohexane	N	СҮН	93.0	1513.1	
2-Methylhexane	1	2MH	93.0	97018.0	
2,3-Dimethylpentane	1	23DMP	185.9	12268.3	D



Russ Shropshire Lab ID: 075RL-2
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-12-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	69.7	69.7	U
3-Methylhexane	1	3МН	185.9	18924.9	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	185.9	5928.5	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	185.9	2058.1	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	185.9	7903.1	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	557.8	19581.8	D
1-Heptene	0	1HP	93.0	24698.9	
Heptane (nC7)	Р	C7	185.9	42905.2	D
trans-2-heptene (t)	0	T2HP	185.9	3787.5	D
Methylcyclohexane	N	MCYH	185.9	21073.5	D
2,5-Dimethylhexane	1	25DMH	557.8	788.1	D
2,2,3-Trimethylpentane	1	233TMP	93.0	93.0	U
2,4-Dimethylhexane	Ì	24DMH	185.9	7491.7	D
2,3,4-Trimethylpentane	1	234TMP	185.9	11308.9	D
2,3,3-Trimethylpentane	Ì	233TMP	185.9	7975.9	D
Toluene	Α	T	185.9	2671.7	D
2-Methylthiophene	S	2MTHIO	69.7	69.7	U
2,3-Dimethylhexane	Ì	23DMH	185.9	10159.7	D
3-Methylthiophene	S	3MTHIO	69.7	201.6	
2-Methylheptane	I	2MHP	185.9	37545.8	D
4-Methylheptane (t)	I	4MHP	185.9	9009.3	D
3-Methylheptane	I	3MHP	371.9	24213.0	D
3-Ethylhexane	I	3EHX	185.9	185.9	U
1,2-Dibromoethane (EDB)	ADD	EDB	93.0	93.0	U
1-Octene	0	10	93.0	93.0	U
Octane (nC8)	Р	C8	185.9	38854.1	D
2,4-Dimethylheptane (t)	I	24DMHP	185.9	12938.3	D
2,5-Dimethylheptane (t)	I	25DMHP	185.9	12308.0	D
Ethylbenzene	Α	EB	185.9	6377.4	D
2-Ethylthiophene	S	2ETHIO	69.7	69.7	U
2,3-Dimethylheptane (t)	1	23DMHP	185.9	41188.9	D
m-Xylene	Α	MX	185.9	11376.9	D



Russ Shropshire Lab ID: 075RL-2
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-12-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	185.9	7275.4	D
4-Methyloctane (t)	1	4MO	185.9	11769.4	D
2-Methyloctane (t)	Ì	2MO	185.9	11289.2	D
3-Methyloctane (t)	1	3МО	185.9	32010.9	D
Styrene	Α	STRE	93.0	185.9	
o-Xylene	Α	OX	185.9	5575.6	D
1-Nonene	0	1N	557.8	3463.6	D
Nonane (nC9)	Р	C9	371.9	25881.7	D
Isopropylbenzene (cumene)	Α	IPROPB	93.0	5742.0	
n-Propylbenzene	Α	NPRPPB	185.9	4314.4	D
1-Methyl-3-ethylbenzene	Α	1M3EB	185.9	11295.3	D
1-Methyl-4-ethylbenzene	Α	1M4EB	185.9	6199.9	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	185.9	8329.8	D
1-Methyl-2-ethylbenzene	Α	1M2EB	185.9	5141.9	D
1,2,4-Trimethylbenzene	Α	124TMB	185.9	18880.2	D
1-Decene	0	1D	557.8	7437.1	D
Decane (nC10)	Р	C10	557.8	13091.9	D
sec-Butylbenzene	Α	SBUB	185.9	673.4	D
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	185.9	2113.4	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	185.9	787.8	D
Indane	Α	IA	185.9	1974.6	D
Indene	Α	IE	93.0	93.0	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	93.0	570.7	
1-Methyl-3-propylbenzene	Α	1M3PROPB	185.9	5767.6	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	185.9	3041.7	D
n-Butylbenzene	Α	NBB	185.9	1972.2	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	185.9	5980.0	D
1,2,diethylbenzene	Α	12DEB	185.9	488.5	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	185.9	1947.1	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	185.9	4114.6	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	185.9	3584.9	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	185.9	6326.4	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011 Lab ID: 075RL-2 Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-12-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000

Collected by:

Analyzed: 12/15/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	Α	13DM2EB	93.0	93.0	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	185.9	958.5	D
Undecane (nC11)	Р	C11	557.8	3157.2	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	185.9	4058.5	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	185.9	5458.9	D
n-Pentylbenzene	Α	NPYB	185.9	1058.1	D
Naphthalene	Α	N	185.9	749.3	D
Benzothiophene	S	втню	69.7	69.7	U
Dodecane (nC12)	Р	C12	371.9	1554.6	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	185.9	2227.4	D
MMT	ADD	MMT	69.7	69.7	U
2-Methylnaphthalene	Α	2MN	93.0	93.0	U
1-Methylnaphthalene	Α	1MN	93.0	581.9	
Benzene d-6 (RS)	122	2.04 %			
Toluene-d8 (RS)	98	3.22 %			
Ethylbenzene d10 (RS)	123	3.37 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- **Q** Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-2 1000X.D & dilution 075RL-2 2000X.D

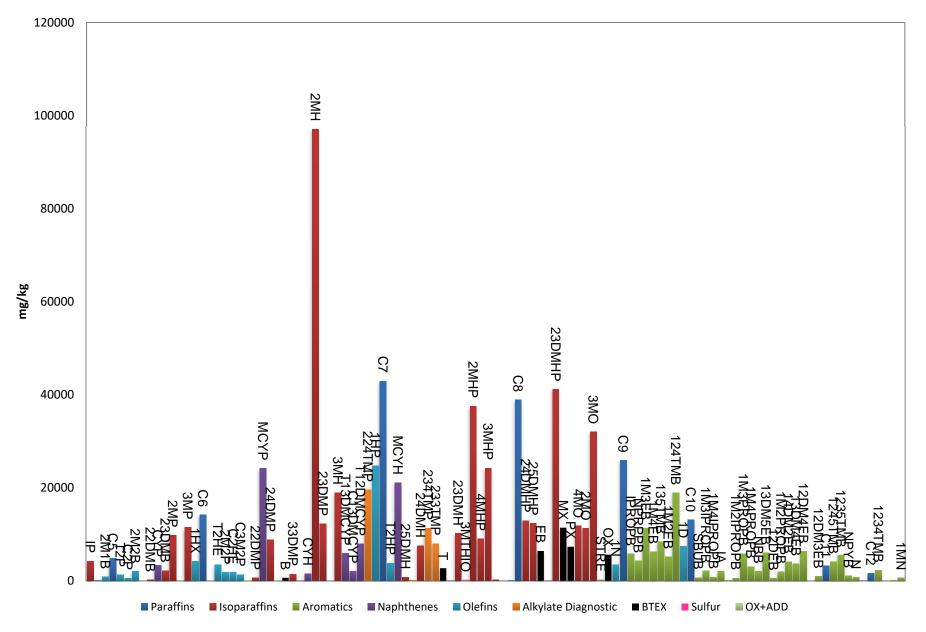
Submitted by,

Microbial Insights, Inc.



MIID	075RL-2
Sample ID	MW-12-201207
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.10
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.21
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.29
Toluene / (Toluene+Methylcyclohexane)	0.11
Aromatics / Total Paraffins (n+iso+cyc)	0.24
Aromatics / Naphthenes	2.25
wt% < o-xylene	79.03
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	11.31
3-Methylhexane / n-Heptane	0.44
Methylcyclohexane / n-Heptane	0.49
Isoparaffins + Naphthenes / Paraffins	3.34
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.5
2,2,4-Trimethylpentane / Total TMPs	0.50
nC9 / Isopropylbenzene	4.51
nC10 / 1-Methyl-2-ethylbenzene	2.55
nC11 / 1,4-Dimethyl-2-ethylbenzene	0.77
iC5 / (iC5+nC5)	0.47
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	3.94
Naphthalene / (Naphthalene+nC12)	0.33
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.89
Toluene/n-Octane	0.07
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	201.6
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	17.4
% Isoparaffinic	50.1
% Aromatic	17.8
% Naphthenic	7.9
% Olefinic	6.8

075RL-2





**Russ Shropshire** Lab ID: 075RL-3 Leidos, Inc. Collected: 12/7/2020 18939 120th Avenue NE, Suite 112, Received: 12/11/2020 Bothell, WA, 98011 **Matrix: Product** 

Client ID: RW-2-201207

**Project: Chelan Chevron Site** Project #: 334893.TM.1.000.00.000

Analyzed: 12/15/2020 Collected by: Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	190.7	4475.0	D
1-Pentene	0	1P	95.4	95.4	U
2-Methyl-1-butene	0	2M1B	95.4	180.9	
Pentane (nC5)	Р	C5	190.7	3387.5	D
trans-2-pentene	0	T2P	95.4	539.9	
cis-2-pentene	0	C2P	95.4	2217.8	
2-Methyl-2-butene (t)	О	2M2B	95.4	192.6	
t-Butanol (TBA)	ADD	TBA	95.4	95.4	U
2,2-Dimethylbutane (t)	1	22DMB	190.7	311.6	D
Cyclopentane	N	CYP	95.4	95.4	U
2,3-Dimethylbutane	1	23DMB	190.7	2999.0	D
2-Methylpentane	1	2MP	190.7	11063.8	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	71.5	71.5	U
3-Methylpentane	1	ЗМР	190.7	12882.3	D
1-Hexene	0	1HX	95.4	95.4	U
Hexane (nC6)	Р	C6	190.7	12021.2	D
Di-isopropyl ether (DIPE)	ADD	DIPE	71.5	71.5	U
trans-2-hexene (t)	0	T2HE	190.7	2177.8	D
2-Methyl-2-pentene (t)	0	2M2P	95.4	1259.7	
cis-2-hexene (t)	0	C2HE	190.7	1259.9	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	190.7	430.7	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	71.5	71.5	U
2,2-Dimethylpentane (t)	I	22DMP	190.7	835.1	D
Methylcyclopentane	N	MCYP	190.7	19531.8	D
2,4-Dimethylpentane	I	24DMP	190.7	17002.3	D
1,2-Dichloroethane (EDC)	ADD	EDC	71.5	71.5	U
Benzene	Α	В	95.4	879.6	
3,3-Dimethylpentane (t)	I	33DMP	190.7	2138.5	D
Thiophene	S	THIO	71.5	71.5	U
Cyclohexane	N	CYH	95.4	896.6	
2-Methylhexane	1	2MH	95.4	74927.3	
2,3-Dimethylpentane	1	23DMP	190.7	24117.8	D



Russ Shropshire Lab ID: 075RL-3
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: RW-2-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000

Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	71.5	71.5	U
3-Methylhexane	1	3МН	190.7	20378.2	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	190.7	3713.8	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	190.7	1221.8	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	190.7	3820.8	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	572.2	42687.1	D
1-Heptene	0	1HP	190.7	13107.4	D
Heptane (nC7)	Р	C7	190.7	26908.2	D
trans-2-heptene (t)	0	T2HP	190.7	2383.9	D
Methylcyclohexane	N	MCYH	190.7	11841.7	D
2,5-Dimethylhexane	1	25DMH	572.2	6268.8	D
2,2,3-Trimethylpentane	1	233TMP	190.7	1333.9	D
2,4-Dimethylhexane	1	24DMH	190.7	11173.4	D
2,3,4-Trimethylpentane	1	234TMP	190.7	23467.3	D
2,3,3-Trimethylpentane	1	233TMP	190.7	14580.7	D
Toluene	Α	T	95.4	252.7	
2-Methylthiophene	S	2MTHIO	71.5	71.5	U
2,3-Dimethylhexane	1	23DMH	190.7	12786.1	D
3-Methylthiophene	S	3MTHIO	71.5	71.5	U
2-Methylheptane	1	2MHP	190.7	22232.2	D
4-Methylheptane (t)	1	4MHP	190.7	7364.2	D
3-Methylheptane	1	3MHP	381.5	22621.1	D
3-Ethylhexane	1	3EHX	190.7	190.7	U
1,2-Dibromoethane (EDB)	ADD	EDB	95.4	95.4	U
1-Octene	Ο	10	95.4	95.4	U
Octane (nC8)	Р	C8	190.7	25967.0	D
2,4-Dimethylheptane (t)	1	24DMHP	190.7	10455.7	D
2,5-Dimethylheptane (t)	1	25DMHP	190.7	11302.7	D
Ethylbenzene	Α	EB	190.7	786.3	D
2-Ethylthiophene	S	2ETHIO	71.5	71.5	U
2,3-Dimethylheptane (t)	1	23DMHP	190.7	20148.0	D
m-Xylene	Α	MX	95.4	2354.9	



Russ Shropshire Lab ID: 075RL-3
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: RW-2-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	190.7	10771.4	D
4-Methyloctane (t)	I	4MO	190.7	12357.1	D
2-Methyloctane (t)	1	2MO	190.7	11041.7	D
3-Methyloctane (t)	1	3МО	190.7	25583.6	D
Styrene	Α	STRE	95.4	95.4	U
o-Xylene	Α	OX	190.7	296.4	D
1-Nonene	0	1N	572.2	1686.6	D
Nonane (nC9)	Р	C9	381.5	21229.0	D
Isopropylbenzene (cumene)	Α	IPROPB	190.7	1869.1	D
n-Propylbenzene	Α	NPRPPB	190.7	5898.1	D
1-Methyl-3-ethylbenzene	Α	1M3EB	190.7	9740.7	D
1-Methyl-4-ethylbenzene	Α	1M4EB	190.7	7139.5	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	190.7	11401.0	D
1-Methyl-2-ethylbenzene	Α	1M2EB	190.7	7491.3	D
1,2,4-Trimethylbenzene	Α	124TMB	95.4	95.4	U
1-Decene	0	1D	572.2	5619.4	D
Decane (nC10)	Р	C10	572.2	11992.9	D
sec-Butylbenzene	Α	SBUB	95.4	95.4	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	190.7	3030.2	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	190.7	791.8	D
Indane	Α	IA	190.7	332.5	D
Indene	Α	IE	95.4	95.4	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	95.4	656.9	
1-Methyl-3-propylbenzene	Α	1M3PROPB	190.7	9252.7	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	190.7	4659.7	D
n-Butylbenzene	Α	NBB	190.7	3265.9	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	190.7	8741.6	D
1,2,diethylbenzene	Α	12DEB	190.7	668.2	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	190.7	3093.3	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	190.7	6158.1	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	190.7	5115.1	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	190.7	8486.0	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011

Matrix: Product
Client ID: RW-2-201207

Lab ID: 075RL-3

Collected: 12/7/2020

Received: 12/11/2020

**Project: Chelan Chevron Site** 

Project #: 334893.TM.1.000.00.00.000 Collected by:

Analyzed: 12/15/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	А	13DM2EB	95.4	95.4	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	190.7	1343.0	D
Undecane (nC11)	Р	C11	572.2	2793.8	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	190.7	5584.4	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	190.7	7155.1	D
n-Pentylbenzene	Α	NPYB	190.7	966.9	D
Naphthalene	Α	N	190.7	792.1	D
Benzothiophene	S	BTHIO	71.5	71.5	U
Dodecane (nC12)	Р	C12	381.5	1353.4	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	190.7	2504.1	D
MMT	ADD	MMT	71.5	71.5	U
2-Methylnaphthalene	Α	2MN	95.4	201.7	
1-Methylnaphthalene	Α	1MN	95.4	95.4	U
Benzene d-6 (RS)	122	2.73 %			
Toluene-d8 (RS)	98	3.12 %			
Ethylbenzene d10 (RS)	125	5.09 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- **Q** Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-3 1000X.D & dilution 075RL-3

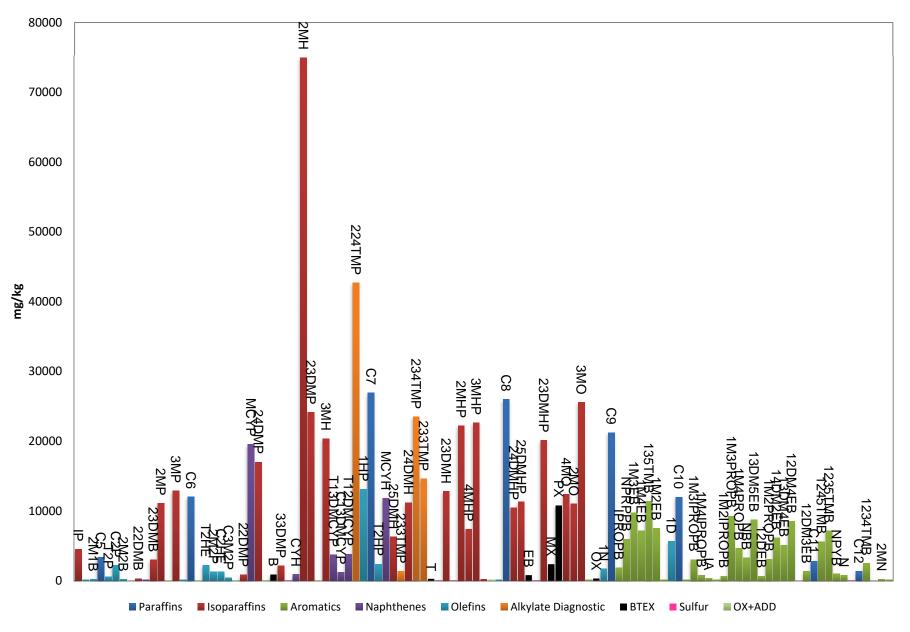
Submitted by, Microbial Insights, Inc.

2000X.D



MIID	075RL-3
Sample ID	RW-2-201207
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.11
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.33
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.50
Toluene / (Toluene+Methylcyclohexane)	0.02
Aromatics / Total Paraffins (n+iso+cyc)	0.23
Aromatics / Naphthenes	3.21
wt% < o-xylene	78.08
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	20.83
3-Methylhexane / n-Heptane	0.76
Methylcyclohexane / n-Heptane	0.44
Isoparaffins + Naphthenes / Paraffins	4.43
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.8
2,2,4-Trimethylpentane / Total TMPs	0.52
nC9 / Isopropylbenzene	11.36
nC10 / 1-Methyl-2-ethylbenzene	1.60
nC11 / 1,4-Dimethyl-2-ethylbenzene	0.45
iC5 / (iC5+nC5)	0.57
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	2.65
Naphthalene / (Naphthalene+nC12)	0.37
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.98
Toluene/n-Octane	0.01
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	14.4
% Isoparaffinic	58.0
% Aromatic	17.9
% Naphthenic	5.6
% Olefinic	4.2

075RL-3





Russ Shropshire Lab ID: 075RL-4
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-9-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	193.6	2438.7	D
1-Pentene	0	1P	96.8	96.8	U
2-Methyl-1-butene	0	2M1B	96.8	394.4	
Pentane (nC5)	Р	C5	193.6	2096.4	D
trans-2-pentene	0	T2P	96.8	243.7	
cis-2-pentene	0	C2P	96.8	929.8	
2-Methyl-2-butene (t)	0	2M2B	96.8	880.9	
t-Butanol (TBA)	ADD	TBA	96.8	96.8	U
2,2-Dimethylbutane (t)	1	22DMB	96.8	1090.8	
Cyclopentane	N	CYP	96.8	96.8	U
2,3-Dimethylbutane	1	23DMB	193.6	1644.2	D
2-Methylpentane	1	2MP	193.6	6582.1	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	72.6	72.6	U
3-Methylpentane	1	3MP	193.6	7783.1	D
1-Hexene	Ο	1HX	96.8	96.8	U
Hexane (nC6)	Р	C6	193.6	8069.9	D
Di-isopropyl ether (DIPE)	ADD	DIPE	72.6	72.6	U
trans-2-hexene (t)	Ο	T2HE	193.6	1422.8	D
2-Methyl-2-pentene (t)	0	2M2P	193.6	373.1	D
cis-2-hexene (t)	0	C2HE	193.6	802.4	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	193.6	344.2	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	72.6	72.6	U
2,2-Dimethylpentane (t)	1	22DMP	193.6	372.8	D
Methylcyclopentane	N	MCYP	193.6	12417.2	D
2,4-Dimethylpentane	I	24DMP	193.6	5953.7	D
1,2-Dichloroethane (EDC)	ADD	EDC	72.6	72.6	U
Benzene	Α	В	96.8	349.3	
3,3-Dimethylpentane (t)	I	33DMP	193.6	1034.2	D
Thiophene	S	THIO	72.6	72.6	U
Cyclohexane	N	СҮН	96.8	1261.1	
2-Methylhexane	1	2MH	193.6	7692.6	D
2,3-Dimethylpentane	1	23DMP	193.6	7817.5	D



Russ Shropshire Lab ID: 075RL-4
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-9-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	72.6	72.6	U
3-Methylhexane	1	3МН	193.6	9332.0	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	193.6	2416.8	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	193.6	799.3	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	193.6	2870.1	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	580.7	11175.1	D
1-Heptene	0	1HP	193.6	9157.6	D
Heptane (nC7)	Р	C7	193.6	17209.6	D
trans-2-heptene (t)	0	T2HP	193.6	2526.8	D
Methylcyclohexane	N	MCYH	193.6	8801.1	D
2,5-Dimethylhexane	I	25DMH	580.7	2028.4	D
2,2,3-Trimethylpentane	1	233TMP	193.6	360.0	D
2,4-Dimethylhexane	1	24DMH	193.6	3706.5	D
2,3,4-Trimethylpentane	1	234TMP	193.6	6609.5	D
2,3,3-Trimethylpentane	1	233TMP	96.8	57822.7	
Toluene	Α	T	96.8	202.0	
2-Methylthiophene	S	2MTHIO	72.6	72.6	U
2,3-Dimethylhexane	1	23DMH	193.6	4511.1	D
3-Methylthiophene	S	3MTHIO	72.6	72.6	U
2-Methylheptane	1	2MHP	193.6	11609.4	D
4-Methylheptane (t)	1	4MHP	193.6	3279.9	D
3-Methylheptane	1	3МНР	387.1	10385.9	D
3-Ethylhexane	1	3EHX	193.6	193.6	U
1,2-Dibromoethane (EDB)	ADD	EDB	96.8	96.8	U
1-Octene	0	10	96.8	96.8	U
Octane (nC8)	Р	C8	193.6	17049.3	D
2,4-Dimethylheptane (t)	1	24DMHP	193.6	4416.1	D
2,5-Dimethylheptane (t)	1	25DMHP	193.6	4900.9	D
Ethylbenzene	Α	EB	193.6	2657.7	D
2-Ethylthiophene	S	2ETHIO	72.6	72.6	U
2,3-Dimethylheptane (t)	1	23DMHP	193.6	10671.9	D
m-Xylene	Α	MX	96.8	271.8	



Russ Shropshire Lab ID: 075RL-4
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-9-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	193.6	4601.2	D
4-Methyloctane (t)	1	4MO	193.6	5261.2	D
2-Methyloctane (t)	ĺ	2MO	193.6	4643.7	D
3-Methyloctane (t)	1	3МО	193.6	11818.3	D
Styrene	Α	STRE	96.8	96.8	U
o-Xylene	Α	OX	193.6	220.1	D
1-Nonene	0	1N	580.7	1262.1	D
Nonane (nC9)	Р	C9	387.1	16021.0	D
Isopropylbenzene (cumene)	Α	IPROPB	96.8	96.8	U
n-Propylbenzene	Α	NPRPPB	193.6	5100.1	D
1-Methyl-3-ethylbenzene	Α	1M3EB	193.6	6833.0	D
1-Methyl-4-ethylbenzene	Α	1M4EB	193.6	5916.4	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	193.6	9169.2	D
1-Methyl-2-ethylbenzene	Α	1M2EB	193.6	7674.6	D
1,2,4-Trimethylbenzene	Α	124TMB	96.8	96.8	U
1-Decene	0	1D	290.3	290.3	U
Decane (nC10)	Р	C10	580.7	9389.0	D
sec-Butylbenzene	Α	SBUB	96.8	96.8	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	193.6	2196.2	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	193.6	658.6	D
Indane	Α	IA	193.6	969.6	D
Indene	Α	IE	96.8	96.8	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	96.8	663.7	
1-Methyl-3-propylbenzene	Α	1M3PROPB	193.6	6785.7	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	193.6	3381.1	D
n-Butylbenzene	Α	NBB	193.6	2215.6	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	193.6	6984.6	D
1,2,diethylbenzene	Α	12DEB	193.6	562.6	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	193.6	2402.2	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	193.6	4641.2	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	193.6	3892.2	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	193.6	6907.8	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011 Lab ID: 075RL-4
Collected: 12/7/2020
Received: 12/11/2020
Matrix: Product

Client ID: MW-9-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	Α	13DM2EB	96.8	96.8	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	193.6	1071.1	D
Undecane (nC11)	Р	C11	580.7	2013.4	D
1,2,4,5-Tetramethylbenzene	А	1245TMB	193.6	4704.1	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	193.6	5725.4	D
n-Pentylbenzene	Α	NPYB	193.6	722.6	D
Naphthalene	Α	N	193.6	576.2	D
Benzothiophene	S	втніо	72.6	72.6	U
Dodecane (nC12)	Р	C12	387.1	1151.1	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	193.6	2327.7	D
MMT	ADD	MMT	72.6	72.6	U
2-Methylnaphthalene	Α	2MN	96.8	151.0	
1-Methylnaphthalene	Α	1MN	96.8	96.8	U
Benzene d-6 (RS)	128.96 %				
Toluene-d8 (RS)	98	3.51 %			
Ethylbenzene d10 (RS)	128	3.62 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-4 1000X.D & dilution 075RL-4 2000X.D

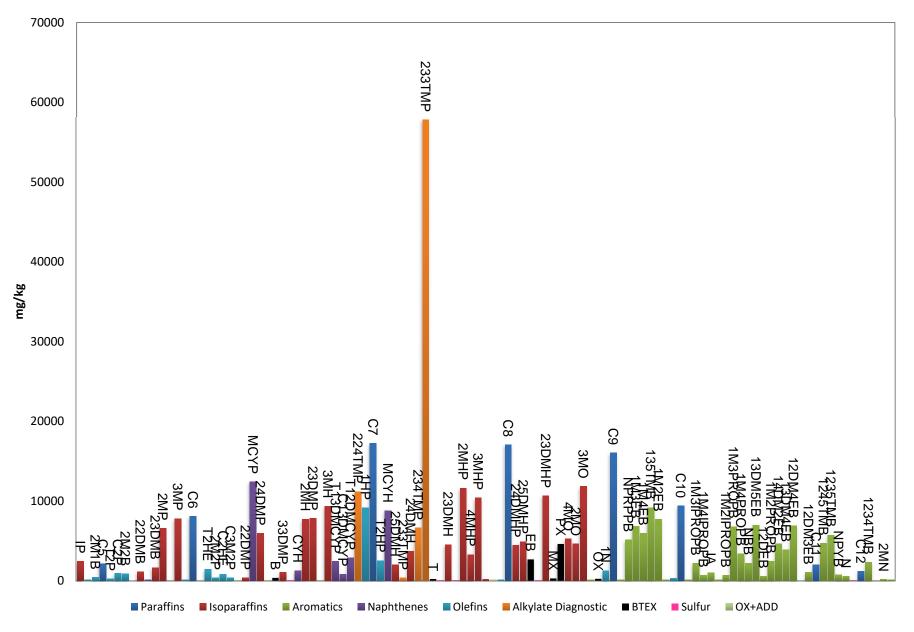
Submitted by,

Microbial Insights, Inc.



MIID	075RL-4
Sample ID	MW-9-201207
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.11
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.36
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.22
Toluene / (Toluene+Methylcyclohexane)	0.02
Aromatics / Total Paraffins (n+iso+cyc)	0.33
Aromatics / Naphthenes	3.52
wt% < o-xylene	71.25
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	14.60
3-Methylhexane / n-Heptane	0.54
Methylcyclohexane / n-Heptane	0.51
Isoparaffins + Naphthenes / Paraffins	3.20
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.6
2,2,4-Trimethylpentane / Total TMPs	0.15
nC9 / Isopropylbenzene	
nC10 / 1-Methyl-2-ethylbenzene	1.22
nC11 / 1,4-Dimethyl-2-ethylbenzene	0.43
iC5 / (iC5+nC5) (2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.54
(2-methymexane + 2,3umethymeritane)	1.01
Naphthalene / (Naphthalene+nC12)	0.33
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.98
Toluene/n-Octane	0.01
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	17.2
% Isoparaffinic	48.2
% Aromatic	23.6
% Naphthenic	6.7
% Olefinic	4.3

075RL-4





**Russ Shropshire** Leidos, Inc. Collected: 12/7/2020 18939 120th Avenue NE, Suite 112, Received: 12/11/2020 Bothell, WA, 98011

Client ID: MW-44-201207

Lab ID: 075RL-5

**Matrix: Product** 

**Project: Chelan Chevron Site** Project #: 334893.TM.1.000.00.000 Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	1	IP	188.2	1755.9	D
1-Pentene	0	1P	94.1	94.1	U
2-Methyl-1-butene	0	2M1B	94.1	673.7	
Pentane (nC5)	Р	C5	188.2	2440.2	D
trans-2-pentene	0	T2P	94.1	778.2	
cis-2-pentene	0	C2P	188.2	340.8	D
2-Methyl-2-butene (t)	0	2M2B	188.2	1553.4	D
t-Butanol (TBA)	ADD	TBA	94.1	94.1	U
2,2-Dimethylbutane (t)	I	22DMB	94.1	575.8	
Cyclopentane	N	CYP	188.2	843.3	D
2,3-Dimethylbutane	I	23DMB	188.2	1183.6	D
2-Methylpentane	1	2MP	188.2	5783.9	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	70.6	70.6	U
3-Methylpentane	1	3MP	188.2	7160.1	D
1-Hexene	О	1HX	188.2	2727.7	D
Hexane (nC6)	Р	C6	188.2	8182.7	D
Di-isopropyl ether (DIPE)	ADD	DIPE	70.6	70.6	U
trans-2-hexene (t)	О	T2HE	188.2	1839.2	D
2-Methyl-2-pentene (t)	0	2M2P	188.2	1444.1	D
cis-2-hexene (t)	0	C2HE	188.2	1128.2	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	188.2	1126.0	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	70.6	70.6	U
2,2-Dimethylpentane (t)	1	22DMP	188.2	276.3	D
Methylcyclopentane	N	MCYP	188.2	20868.3	D
2,4-Dimethylpentane	I	24DMP	94.1	42600.3	
1,2-Dichloroethane (EDC)	ADD	EDC	70.6	70.6	U
Benzene	Α	В	188.2	2430.8	D
3,3-Dimethylpentane (t)	I	33DMP	188.2	858.9	D
Thiophene	S	THIO	70.6	70.6	U
Cyclohexane	N	СҮН	94.1	1199.1	
2-Methylhexane	I	2MH	188.2	7959.0	D
2,3-Dimethylpentane	1	23DMP	188.2	6297.3	D



Russ Shropshire Lab ID: 075RL-5
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-44-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	70.6	70.6	U
3-Methylhexane	1	3МН	188.2	11085.0	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	188.2	4225.8	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	188.2	1433.6	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	188.2	5882.7	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	282.3	91120.4	
1-Heptene	0	1HP	188.2	19297.5	D
Heptane (nC7)	Р	C7	188.2	27059.7	D
trans-2-heptene (t)	0	T2HP	188.2	3302.4	D
Methylcyclohexane	N	MCYH	188.2	17797.3	D
2,5-Dimethylhexane	I	25DMH	564.7	2626.4	D
2,2,3-Trimethylpentane	I	233TMP	94.1	94.1	U
2,4-Dimethylhexane	1	24DMH	188.2	4075.2	D
2,3,4-Trimethylpentane	1	234TMP	188.2	5347.1	D
2,3,3-Trimethylpentane	I	233TMP	94.1	38776.0	
Toluene	Α	T	188.2	2759.1	D
2-Methylthiophene	S	2MTHIO	70.6	70.6	U
2,3-Dimethylhexane	1	23DMH	188.2	6046.8	D
3-Methylthiophene	S	3MTHIO	70.6	70.6	U
2-Methylheptane	1	2MHP	188.2	29622.0	D
4-Methylheptane (t)	1	4MHP	188.2	5804.2	D
3-Methylheptane	1	3МНР	376.4	18148.2	D
3-Ethylhexane	1	ЗЕНХ	188.2	188.2	U
1,2-Dibromoethane (EDB)	ADD	EDB	94.1	94.1	U
1-Octene	0	10	94.1	94.1	U
Octane (nC8)	Р	C8	188.2	33656.3	D
2,4-Dimethylheptane (t)	1	24DMHP	188.2	12236.9	D
2,5-Dimethylheptane (t)	1	25DMHP	188.2	11560.1	D
Ethylbenzene	Α	EB	188.2	3345.8	D
2-Ethylthiophene	S	2ETHIO	70.6	70.6	U
2,3-Dimethylheptane (t)	I	23DMHP	188.2	43099.1	D
m-Xylene	Α	MX	188.2	12160.4	D



Russ Shropshire Lab ID: 075RL-5
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-44-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	188.2	6669.4	D
4-Methyloctane (t)	1	4MO	188.2	12576.5	D
2-Methyloctane (t)	1	2MO	188.2	11908.4	D
3-Methyloctane (t)	1	3МО	188.2	35958.3	D
Styrene	Α	STRE	94.1	118.0	
o-Xylene	Α	OX	188.2	3232.3	D
1-Nonene	0	1N	564.7	2868.6	D
Nonane (nC9)	Р	C9	376.4	29558.7	D
Isopropylbenzene (cumene)	Α	IPROPB	94.1	94.1	U
n-Propylbenzene	Α	NPRPPB	188.2	2762.8	D
1-Methyl-3-ethylbenzene	Α	1M3EB	188.2	14104.2	D
1-Methyl-4-ethylbenzene	Α	1M4EB	188.2	7296.0	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	188.2	10219.9	D
1-Methyl-2-ethylbenzene	Α	1M2EB	188.2	6591.8	D
1,2,4-Trimethylbenzene	Α	124TMB	188.2	21335.1	D
1-Decene	0	1D	282.3	9906.7	
Decane (nC10)	Р	C10	564.7	17173.2	D
sec-Butylbenzene	Α	SBUB	94.1	94.1	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	188.2	2277.5	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	188.2	851.0	D
Indane	Α	IA	188.2	1984.0	D
Indene	Α	IE	94.1	94.1	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	94.1	611.3	
1-Methyl-3-propylbenzene	Α	1M3PROPB	188.2	6009.0	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	188.2	3077.3	D
n-Butylbenzene	Α	NBB	188.2	1635.6	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	188.2	6425.1	D
1,2,diethylbenzene	Α	12DEB	188.2	528.2	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	188.2	2051.4	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	188.2	4404.9	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	188.2	4027.1	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	188.2	6912.7	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011 Lab ID: 075RL-5
Collected: 12/7/2020
Received: 12/11/2020
Matrix: Product

Client ID: MW-44-201207

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	A	13DM2EB	94.1	94.1	U
1,2-Dimethyl-3-ethylbenzene	A	12DM3EB	188.2	1049.5	D
Undecane (nC11)	Р	C11	564.7	5176.8	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	188.2	4053.7	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	188.2	5657.6	D
n-Pentylbenzene	Α	NPYB	188.2	917.4	D
Naphthalene	Α	N	188.2	372.5	D
Benzothiophene	S	BTHIO	70.6	70.6	U
Dodecane (nC12)	Р	C12	376.4	2333.8	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	188.2	2325.1	D
MMT	ADD	MMT	70.6	70.6	U
2-Methylnaphthalene	Α	2MN	94.1	123.1	
1-Methylnaphthalene	Α	1MN	94.1	94.1	U
Benzene d-6 (RS)	127.08 %				
Toluene-d8 (RS)	98.1				
Ethylbenzene d10 (RS)	127.6				

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- **Q** Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-5 1000X.D & dilution 075RL-5

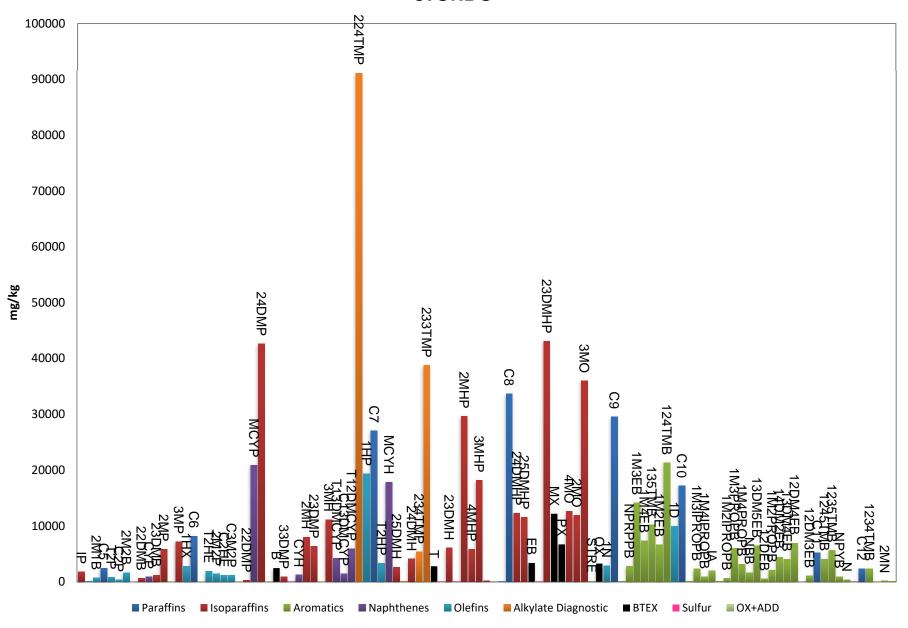
Submitted by, Microbial Insights, Inc.

2000X.D



MIID	075RL-5
Sample ID	MW-44-201207
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.08
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.16
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.67
Toluene / (Toluene+Methylcyclohexane)	0.13
Aromatics / Total Paraffins (n+iso+cyc)	0.25
Aromatics / Naphthenes	2.84
wt% < o-xylene	76.15
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	14.20
3-Methylhexane / n-Heptane	0.41
Methylcyclohexane / n-Heptane	0.66
Isoparaffins + Naphthenes / Paraffins	3.72
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.8
2,2,4-Trimethylpentane / Total TMPs	0.67
nC9 / Isopropylbenzene	
nC10 / 1-Methyl-2-ethylbenzene	2.61
nC11 / 1,4-Dimethyl-2-ethylbenzene	1.18
iC5 / (iC5+nC5)	0.42
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.27
Naphthalene / (Naphthalene+nC12)	0.14
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.87
Toluene/n-Octane	0.08
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	15.9
% Isoparaffinic	52.6
% Aromatic	18.8
% Naphthenic	6.6
% Olefinic	6.0

075RL-5





Russ Shropshire Lab ID: 075RL-6
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-19-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	97.4	1010.2	
1-Pentene	0	1P	97.4	97.4	U
2-Methyl-1-butene	0	2M1B	97.4	97.4	U
Pentane (nC5)	Р	C5	97.4	779.7	
trans-2-pentene	0	T2P	97.4	97.4	U
cis-2-pentene	0	C2P	97.4	301.3	
2-Methyl-2-butene (t)	0	2M2B	97.4	231.7	
t-Butanol (TBA)	ADD	TBA	97.4	97.4	U
2,2-Dimethylbutane (t)	I	22DMB	97.4	232.1	
Cyclopentane	N	CYP	194.8	213.9	D
2,3-Dimethylbutane	I	23DMB	194.8	303.3	D
2-Methylpentane	1	2MP	194.8	2351.1	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	73.0	73.0	U
3-Methylpentane	1	3MP	194.8	3304.4	D
1-Hexene	0	1HX	97.4	560.6	
Hexane (nC6)	Р	C6	194.8	1924.5	D
Di-isopropyl ether (DIPE)	ADD	DIPE	73.0	73.0	U
trans-2-hexene (t)	0	T2HE	97.4	97.4	U
2-Methyl-2-pentene (t)	0	2M2P	97.4	274.0	
cis-2-hexene (t)	0	C2HE	97.4	97.4	U
cis-3-Methyl-2-pentene (t)	0	C3M2P	97.4	155.4	
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	73.0	73.0	U
2,2-Dimethylpentane (t)	1	22DMP	97.4	1502.0	
Methylcyclopentane	N	MCYP	194.8	9065.2	D
2,4-Dimethylpentane	1	24DMP	97.4	7750.6	
1,2-Dichloroethane (EDC)	ADD	EDC	73.0	73.0	U
Benzene	Α	В	97.4	1247.5	
3,3-Dimethylpentane (t)	1	33DMP	97.4	2649.7	
Thiophene	S	THIO	73.0	73.0	U
Cyclohexane	N	CYH	194.8	5492.7	D
2-Methylhexane	1	2MH	194.8	2986.8	D
2,3-Dimethylpentane	I	23DMP	194.8	2068.0	D



**Russ Shropshire** Lab ID: 075RL-6 Leidos, Inc. Collected: 12/7/2020 18939 120th Avenue NE, Suite 112, Received: 12/11/2020 Bothell, WA, 98011 **Matrix: Product** 

Client ID: MW-19-201207

**Project: Chelan Chevron Site** Project #: 334893.TM.1.000.00.000

Analyzed: 12/16/2020 Collected by: Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	73.0	73.0	U
3-Methylhexane	1	3МН	194.8	5410.2	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	194.8	2740.6	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	194.8	891.3	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	194.8	3994.6	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	584.3	1450.0	D
1-Heptene	0	1HP	194.8	12193.9	D
Heptane (nC7)	Р	C7	194.8	7367.4	D
trans-2-heptene (t)	0	T2HP	97.4	99.9	
Methylcyclohexane	N	MCYH	194.8	11397.3	D
2,5-Dimethylhexane	1	25DMH	584.3	889.8	D
2,2,3-Trimethylpentane	I	233TMP	97.4	97.4	U
2,4-Dimethylhexane	1	24DMH	194.8	1406.9	D
2,3,4-Trimethylpentane	I	234TMP	194.8	709.8	D
2,3,3-Trimethylpentane	1	233TMP	97.4	97.4	U
Toluene	Α	T	97.4	97.4	U
2-Methylthiophene	S	2MTHIO	73.0	73.0	U
2,3-Dimethylhexane	1	23DMH	97.4	97.4	U
3-Methylthiophene	S	3MTHIO	73.0	73.0	U
2-Methylheptane	1	2MHP	194.8	16315.5	D
4-Methylheptane (t)	1	4MHP	194.8	3144.0	D
3-Methylheptane	1	3МНР	389.6	8309.5	D
3-Ethylhexane	1	ЗЕНХ	194.8	37773.4	
1,2-Dibromoethane (EDB)	ADD	EDB	97.4	97.4	U
1-Octene	0	10	97.4	97.4	U
Octane (nC8)	Р	C8	194.8	17510.9	D
2,4-Dimethylheptane (t)	1	24DMHP	97.4	97.4	U
2,5-Dimethylheptane (t)	1	25DMHP	194.8	7080.1	D
Ethylbenzene	Α	EB	97.4	235.2	
2-Ethylthiophene	S	2ETHIO	73.0	73.0	U
2,3-Dimethylheptane (t)	I	23DMHP	194.8	31731.2	D
m-Xylene	Α	MX	97.4	97.8	



Russ Shropshire Lab ID: 075RL-6
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-19-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	97.4	128.5	
4-Methyloctane (t)	1	4MO	194.8	6360.3	D
2-Methyloctane (t)	1	2MO	194.8	5909.4	D
3-Methyloctane (t)	1	3МО	194.8	28921.5	D
Styrene	Α	STRE	97.4	97.4	U
o-Xylene	Α	OX	97.4	97.4	U
1-Nonene	0	1N	292.2	292.2	U
Nonane (nC9)	Р	C9	389.6	22171.4	D
Isopropylbenzene (cumene)	Α	IPROPB	97.4	2885.9	
n-Propylbenzene	Α	NPRPPB	194.8	322.6	D
1-Methyl-3-ethylbenzene	Α	1M3EB	194.8	336.7	D
1-Methyl-4-ethylbenzene	Α	1M4EB	194.8	357.3	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	194.8	352.6	D
1-Methyl-2-ethylbenzene	Α	1M2EB	194.8	704.3	D
1,2,4-Trimethylbenzene	Α	124TMB	194.8	891.8	D
1-Decene	0	1D	292.2	292.2	U
Decane (nC10)	Р	C10	584.3	14530.2	D
sec-Butylbenzene	Α	SBUB	97.4	97.4	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	194.8	313.8	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	194.8	468.5	D
Indane	Α	IA	97.4	302.0	
Indene	Α	IE	97.4	97.4	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	97.4	646.7	
1-Methyl-3-propylbenzene	Α	1M3PROPB	194.8	797.2	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	194.8	537.2	D
n-Butylbenzene	Α	NBB	194.8	423.3	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	194.8	526.4	D
1,2,diethylbenzene	Α	12DEB	97.4	651.4	
1-Methyl-2-propylbenzene	Α	1M2PROPB	194.8	471.5	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	194.8	568.7	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	194.8	450.9	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	194.8	1353.4	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011

Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Lab ID: 075RL-6

Client ID: MW-19-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	А	13DM2EB	97.4	97.4	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	194.8	231.1	D
Undecane (nC11)	Р	C11	584.3	3249.6	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	194.8	845.1	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	194.8	463.8	D
n-Pentylbenzene	Α	NPYB	97.4	118.4	
Naphthalene	Α	N	97.4	97.4	U
Benzothiophene	S	втню	73.0	73.0	U
Dodecane (nC12)	Р	C12	194.8	1420.7	
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	194.8	1281.2	D
MMT	ADD	MMT	73.0	73.0	U
2-Methylnaphthalene	Α	2MN	97.4	97.4	U
1-Methylnaphthalene	Α	1MN	97.4	97.4	U
Benzene d-6 (RS)	127.20 %				
Toluene-d8 (RS)	97	7.07 %			
Ethylbenzene d10 (RS)	128	3.86 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

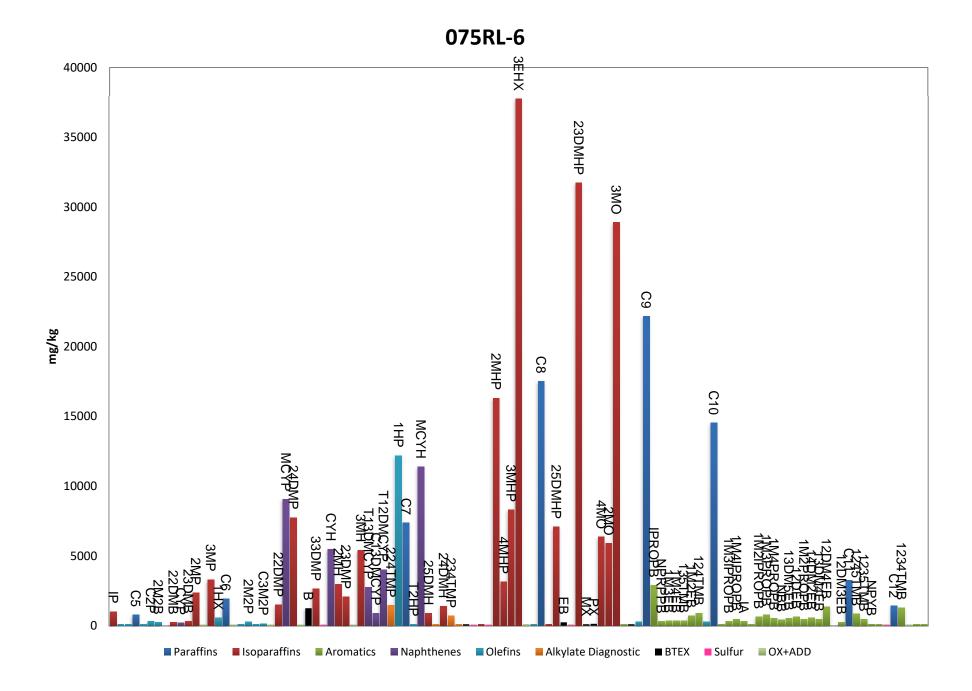
**US631** 

075RL-6 1000X.D & dilution 075RL-6 2000X.D

Submitted by, Microbial Insights, Inc.



MIID	075RL-6
Sample ID	MW-19-201207
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.10
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.13
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.19
Toluene / (Toluene+Methylcyclohexane)	
Aromatics / Total Paraffins (n+iso+cyc)	0.06
Aromatics / Naphthenes	0.53
wt% < o-xylene	81.64
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	14.99
3-Methylhexane / n-Heptane	0.73
Methylcyclohexane / n-Heptane	1.55
Isoparaffins + Naphthenes / Paraffins	3.09
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.1
2,2,4-Trimethylpentane / Total TMPs	0.67
nC9 / Isopropylbenzene	7.68
nC10 / 1-Methyl-2-ethylbenzene	20.63
nC11 / 1,4-Dimethyl-2-ethylbenzene	5.71
iC5 / (iC5+nC5) (2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.56
(2-metrymexane + 2,5umetrypentane) / (5-metrymexane + 2,4 umetrypentane)	0.38
Naphthalene / (Naphthalene+nC12)	
Methylcyclohexane/(Methylcyclohexane+Toluene)	
Toluene/n-Octane	
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	21.9
% Isoparaffinic	57.2
% Aromatic	5.7
% Naphthenic % Olefinic	10.8 4.4
/u Olemine	4.4





Russ Shropshire Lab ID: 075RL-7
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-16-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	1	IP	188.2	3005.0	D
1-Pentene	0	1P	94.1	94.1	U
2-Methyl-1-butene	0	2M1B	94.1	94.1	U
Pentane (nC5)	Р	C5	188.2	2895.9	D
trans-2-pentene	0	T2P	94.1	370.9	
cis-2-pentene	0	C2P	94.1	1996.2	
2-Methyl-2-butene (t)	0	2M2B	94.1	94.1	U
t-Butanol (TBA)	ADD	TBA	94.1	94.1	U
2,2-Dimethylbutane (t)	l	22DMB	94.1	1101.2	
Cyclopentane	N	CYP	94.1	94.1	U
2,3-Dimethylbutane	I	23DMB	188.2	1583.7	D
2-Methylpentane	1	2MP	188.2	6712.0	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	70.6	70.6	U
3-Methylpentane	1	3MP	188.2	8038.1	D
1-Hexene	0	1HX	94.1	94.1	U
Hexane (nC6)	P	C6	188.2	8326.8	D
Di-isopropyl ether (DIPE)	ADD	DIPE	70.6	70.6	U
trans-2-hexene (t)	0	T2HE	188.2	1866.2	D
2-Methyl-2-pentene (t)	0	2M2P	188.2	556.1	D
cis-2-hexene (t)	0	C2HE	188.2	1109.5	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	188.2	649.3	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	70.6	70.6	U
2,2-Dimethylpentane (t)	1	22DMP	188.2	404.3	D
Methylcyclopentane	N	MCYP	188.2	14299.7	D
2,4-Dimethylpentane	1	24DMP	188.2	6198.3	D
1,2-Dichloroethane (EDC)	ADD	EDC	70.6	70.6	U
Benzene	Α	В	94.1	94.1	U
3,3-Dimethylpentane (t)	1	33DMP	188.2	1071.3	D
Thiophene	S	THIO	70.6	70.6	U
Cyclohexane	N	CYH	94.1	94.1	U
2-Methylhexane	1	2MH	188.2	8798.3	D
2,3-Dimethylpentane	I	23DMP	188.2	8770.7	D



Russ Shropshire Lab ID: 075RL-7
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-16-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	70.6	70.6	U
3-Methylhexane	I	3МН	188.2	10384.2	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	188.2	2569.5	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	188.2	879.6	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	188.2	3337.7	D
2,2,4-Trimethylpentane (isooctane)	I	224TMP	564.6	13314.3	D
1-Heptene	0	1HP	94.1	94.1	U
Heptane (nC7)	Р	C7	188.2	17557.5	D
trans-2-heptene (t)	0	T2HP	188.2	2558.7	D
Methylcyclohexane	N	MCYH	188.2	10018.3	D
2,5-Dimethylhexane	I	25DMH	564.6	2349.1	D
2,2,3-Trimethylpentane	I	233TMP	94.1	94.1	U
2,4-Dimethylhexane	I	24DMH	188.2	4152.0	D
2,3,4-Trimethylpentane	I	234TMP	188.2	7539.8	D
2,3,3-Trimethylpentane	I	233TMP	188.2	5187.1	D
Toluene	Α	Т	94.1	1011.9	
2-Methylthiophene	S	2MTHIO	70.6	70.6	U
2,3-Dimethylhexane	1	23DMH	188.2	4956.6	D
3-Methylthiophene	S	3MTHIO	70.6	70.6	U
2-Methylheptane	1	2MHP	188.2	11819.0	D
4-Methylheptane (t)	1	4MHP	188.2	3602.5	D
3-Methylheptane	1	3МНР	376.4	11599.0	D
3-Ethylhexane	1	3EHX	188.2	188.2	U
1,2-Dibromoethane (EDB)	ADD	EDB	94.1	94.1	U
1-Octene	0	10	94.1	94.1	U
Octane (nC8)	Р	C8	188.2	17068.0	D
2,4-Dimethylheptane (t)	1	24DMHP	188.2	4874.3	D
2,5-Dimethylheptane (t)	1	25DMHP	188.2	5101.7	D
Ethylbenzene	Α	EB	188.2	1384.9	D
2-Ethylthiophene	S	2ETHIO	70.6	70.6	U
2,3-Dimethylheptane (t)	1	23DMHP	188.2	10183.2	D
m-Xylene	Α	MX	94.1	94.1	U



Russ Shropshire Lab ID: 075RL-7
Leidos, Inc. Collected: 12/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-16-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	188.2	5968.5	D
4-Methyloctane (t)	1	4MO	188.2	5268.4	D
2-Methyloctane (t)	1	2MO	188.2	4631.4	D
3-Methyloctane (t)	1	3МО	188.2	11821.4	D
Styrene	Α	STRE	94.1	94.1	U
o-Xylene	Α	OX	188.2	1605.4	D
1-Nonene	0	1N	564.6	1248.4	D
Nonane (nC9)	Р	C9	376.4	15276.8	D
Isopropylbenzene (cumene)	Α	IPROPB	94.1	94.1	U
n-Propylbenzene	Α	NPRPPB	188.2	5944.5	D
1-Methyl-3-ethylbenzene	Α	1M3EB	188.2	11858.6	D
1-Methyl-4-ethylbenzene	Α	1M4EB	188.2	6960.5	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	188.2	10516.8	D
1-Methyl-2-ethylbenzene	Α	1M2EB	188.2	6666.7	D
1,2,4-Trimethylbenzene	Α	124TMB	94.1	94.1	U
1-Decene	0	1D	564.6	4463.2	D
Decane (nC10)	Р	C10	564.6	8770.9	D
sec-Butylbenzene	Α	SBUB	94.1	94.1	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	188.2	2035.5	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	188.2	634.0	D
Indane	Α	IA	188.2	734.7	D
Indene	Α	IE	94.1	94.1	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	94.1	558.8	
1-Methyl-3-propylbenzene	Α	1M3PROPB	188.2	6684.8	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	188.2	3443.6	D
n-Butylbenzene	Α	NBB	188.2	2388.6	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	94.1	94.1	U
1,2,diethylbenzene	Α	12DEB	188.2	520.0	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	188.2	2272.0	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	188.2	4664.5	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	188.2	4010.9	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	188.2	6834.6	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011 Lab ID: 075RL-7
Collected: 12/7/2020
Received: 12/11/2020
Matrix: Product

Client ID: MW-16-201207

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	А	13DM2EB	94.1	94.1	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	188.2	996.5	D
Undecane (nC11)	Р	C11	564.6	1528.0	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	188.2	4251.6	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	188.2	5761.2	D
n-Pentylbenzene	Α	NPYB	188.2	713.4	D
Naphthalene	Α	N	188.2	417.1	D
Benzothiophene	S	BTHIO	70.6	70.6	U
Dodecane (nC12)	Р	C12	376.4	707.9	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	188.2	2043.1	D
MMT	ADD	MMT	70.6	70.6	U
2-Methylnaphthalene	Α	2MN	94.1	548.6	
1-Methylnaphthalene	Α	1MN	94.1	94.1	U
Benzene d-6 (RS)	114.04 %				
Toluene-d8 (RS)	96	5.17 %			
Ethylbenzene d10 (RS)	125	5.89 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-7 1000X.D & dilution 075RL-7 2000X.D

Submitted by,

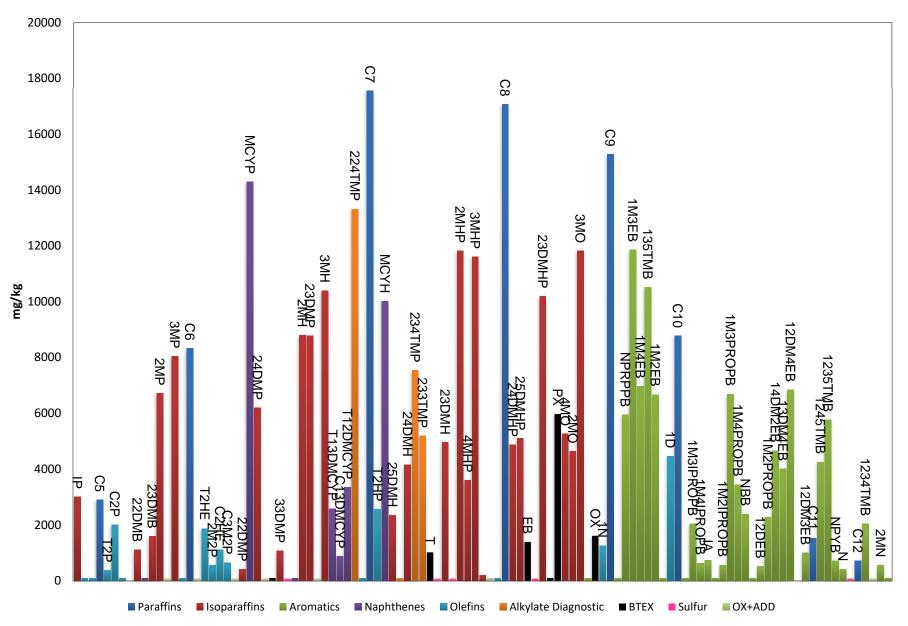
Microbial Insights, Inc.



MIID	075RL-7
Sample ID	MW-16-201207
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.14
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.36
Waterwashing	
Benzene / (Benzene+Cyclohexane)	
Toluene / (Toluene+Methylcyclohexane)	0.09
Aromatics / Total Paraffins (n+iso+cyc)	0.38
Aromatics / Naphthenes	3.26
wt% < o-xylene	67.26
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	22.87
3-Methylhexane / n-Heptane	0.59
Methylcyclohexane / n-Heptane	0.57
Isoparaffins + Naphthenes / Paraffins	2.68
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.6
2,2,4-Trimethylpentane / Total TMPs	0.51
nC9 / Isopropylbenzene	
nC10 / 1-Methyl-2-ethylbenzene	1.32
nC11 / 1,4-Dimethyl-2-ethylbenzene	0.33
iC5 / (iC5+nC5)	0.51
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	1.06
Naphthalene / (Naphthalene+nC12)	0.37
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.91
Toluene/n-Octane	0.06
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	18.9
% Isoparaffinic	42.5
% Aromatic	26.6
% Naphthenic	8.1
% Olefinic	3.9

Note: If field is blank a ratio was not calculable.

075RL-7





Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011

Client ID: MW-21-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

Lab ID: 075RL-8

Collected: 12/8/2020

**Matrix: Product** 

Received: 12/11/2020

ssRL **RESULT CONSTITUENTS CLASS** ABBR. mg/kg mg/kg QUALIFIER ΙP Isopentane (2-Methylbutane) ī 196.8 4027.1 D 1-Pentene 0 1P 98.4 98.4 U 2-Methyl-1-butene 0 2M1B 98.4 103.5 Р C5 196.8 5106.6 D Pentane (nC5) trans-2-pentene 0 T2P 98.4 431.0 cis-2-pentene 0 C2P 98.4 3142.6 0 2-Methyl-2-butene (t) 2M2B 196.8 626.5 D t-Butanol (TBA) ADD TBA 98.4 98.4 U 2,2-Dimethylbutane (t) 22DMB 98.4 892.1 Cyclopentane Ν CYP 98.4 2893.0 2,3-Dimethylbutane 23DMB 196.8 815.6 D 2-Methylpentane 2MP 196.8 5946.5 D Methyl-tert-butyl ether (MTBE) ADD **MTBE** 73.8 73.8 U 3-Methylpentane 3MP 196.8 7282.8 D 0 1HX 1522.6 D 1-Hexene 196.8 Hexane (nC6) Р 10970.0 C6 196.8 D ADD DIPE Di-isopropyl ether (DIPE) 73.8 73.8 U 0 trans-2-hexene (t) T2HE 196.8 887.0 D 2-Methyl-2-pentene (t) 0 2M2P 196.8 776.3 D 0 C2HE 196.8 419.3 D cis-2-hexene (t) 0 cis-3-Methyl-2-pentene (t) C3M2P 98.4 1426.3 Ethyl-tert-butyl ether (ETBE) ADD **ETBE** 73.8 73.8 U 2,2-Dimethylpentane (t) 22DMP 98.4 2191.2 Methylcyclopentane Ν **MCYP** 196.8 23434.6 D 24DMP 2,4-Dimethylpentane 196.8 1454.4 D 1,2-Dichloroethane (EDC) ADD **EDC** 73.8 73.8 U Α 98.4 1500.6 Benzene В 3,3-Dimethylpentane (t) 33DMP 196.8 482.3 D Thiophene S THIO 73.8 73.8 U Cyclohexane Ν CYH 196.8 13560.3 D 2-Methylhexane 2MH 196.8 5294.4 D 2,3-Dimethylpentane 23DMP 3184.8 D 196.8



Russ Shropshire Lab ID: 075RL-8
Leidos, Inc. Collected: 12/8/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-21-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	73.8	73.8	U
3-Methylhexane	I	3МН	196.8	8015.1	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	196.8	4401.2	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	196.8	1477.7	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	196.8	6131.9	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	590.5	2561.5	D
1-Heptene	0	1HP	196.8	19892.8	D
Heptane (nC7)	Р	C7	196.8	24267.3	D
trans-2-heptene (t)	0	T2HP	196.8	1896.6	D
Methylcyclohexane	N	MCYH	196.8	20319.5	D
2,5-Dimethylhexane	I	25DMH	590.5	752.9	D
2,2,3-Trimethylpentane	I	233TMP	98.4	98.4	U
2,4-Dimethylhexane	I	24DMH	98.4	98.4	U
2,3,4-Trimethylpentane	I	234TMP	196.8	787.8	D
2,3,3-Trimethylpentane	I	233TMP	98.4	98.4	U
Toluene	Α	T	196.8	1253.6	D
2-Methylthiophene	S	2MTHIO	73.8	73.8	U
2,3-Dimethylhexane	I	23DMH	98.4	98.4	U
3-Methylthiophene	S	3MTHIO	73.8	73.8	U
2-Methylheptane	I	2MHP	196.8	16375.3	D
4-Methylheptane (t)	I	4MHP	196.8	2352.2	D
3-Methylheptane	I	3МНР	393.7	8265.2	D
3-Ethylhexane	I	3EHX	196.8	196.8	U
1,2-Dibromoethane (EDB)	ADD	EDB	98.4	98.4	U
1-Octene	0	10	98.4	98.4	U
Octane (nC8)	Р	C8	196.8	22555.9	D
2,4-Dimethylheptane (t)	1	24DMHP	98.4	98.4	U
2,5-Dimethylheptane (t)	1	25DMHP	196.8	3146.1	D
Ethylbenzene	Α	EB	196.8	2647.6	D
2-Ethylthiophene	S	2ETHIO	73.8	73.8	U
2,3-Dimethylheptane (t)	I	23DMHP	196.8	16327.4	D
m-Xylene	Α	MX	196.8	7763.0	D



Russ Shropshire Lab ID: 075RL-8
Leidos, Inc. Collected: 12/8/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-21-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000
Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	196.8	1714.8	D
4-Methyloctane (t)	1	4MO	196.8	3458.7	D
2-Methyloctane (t)	1	2MO	196.8	3598.4	D
3-Methyloctane (t)	1	3МО	196.8	14578.8	D
Styrene	Α	STRE	98.4	98.4	U
o-Xylene	Α	OX	196.8	3408.1	D
1-Nonene	0	1N	590.5	3153.1	D
Nonane (nC9)	Р	C9	393.7	19791.9	D
Isopropylbenzene (cumene)	Α	IPROPB	98.4	98.4	U
n-Propylbenzene	Α	NPRPPB	196.8	1615.3	D
1-Methyl-3-ethylbenzene	Α	1M3EB	196.8	4472.6	D
1-Methyl-4-ethylbenzene	Α	1M4EB	196.8	2248.0	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	196.8	3174.5	D
1-Methyl-2-ethylbenzene	Α	1M2EB	196.8	2308.2	D
1,2,4-Trimethylbenzene	Α	124TMB	196.8	7378.8	D
1-Decene	0	1D	295.3	16148.4	
Decane (nC10)	Р	C10	590.5	12264.2	D
sec-Butylbenzene	Α	SBUB	98.4	98.4	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	196.8	1687.5	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	196.8	1191.3	D
Indane	Α	IA	196.8	912.8	D
Indene	Α	IE	98.4	130.5	
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	98.4	723.7	
1-Methyl-3-propylbenzene	Α	1M3PROPB	196.8	2323.7	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	196.8	1034.0	D
n-Butylbenzene	Α	NBB	196.8	757.8	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	196.8	1857.3	D
1,2,diethylbenzene	Α	12DEB	196.8	291.7	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	196.8	952.5	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	196.8	1225.3	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	196.8	1728.7	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	98.4	98.4	U



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011

Client ID: MW-21-201208

Lab ID: 075RL-8

Collected: 12/8/2020

**Matrix: Product** 

Received: 12/11/2020

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	Α	13DM2EB	196.8	1989.3	D
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	196.8	595.3	D
Undecane (nC11)	Р	C11	590.5	3126.8	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	196.8	1077.7	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	196.8	1635.9	D
n-Pentylbenzene	Α	NPYB	196.8	409.5	D
Naphthalene	Α	N	196.8	324.3	D
Benzothiophene	S	BTHIO	73.8	73.8	U
Dodecane (nC12)	P	C12	393.7	1138.4	D
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	196.8	2112.4	D
MMT	ADD	MMT	73.8	73.8	U
2-Methylnaphthalene	Α	2MN	98.4	359.7	
1-Methylnaphthalene	Α	1MN	98.4	98.4	U
Benzene d-6 (RS)	111.19 %				
Toluene-d8 (RS)	96.4	13 %			
Ethylbenzene d10 (RS)	125.2	18 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-8 1000X.D & dilution 075RL-8 2000X.D

Submitted by,

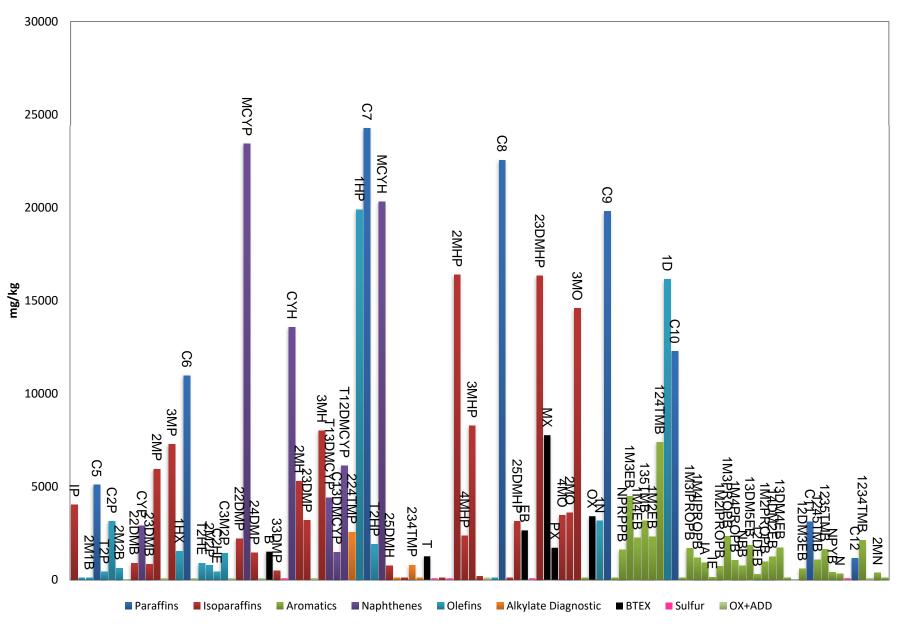
Microbial Insights, Inc.



MIID	075RL-8
Sample ID	MW-21-201208
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.17
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.27
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.10
Toluene / (Toluene+Methylcyclohexane)	0.06
Aromatics / Total Paraffins (n+iso+cyc)	0.21
Aromatics / Naphthenes	0.84
wt% < o-xylene	74.25
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	5.61
3-Methylhexane / n-Heptane	0.33
Methylcyclohexane / n-Heptane	0.84
Isoparaffins + Naphthenes / Paraffins	1.85
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.1
2,2,4-Trimethylpentane / Total TMPs	0.76
nC9 / Isopropylbenzene	
nC10 / 1-Methyl-2-ethylbenzene	5.31
nC11 / 1,4-Dimethyl-2-ethylbenzene	2.55
iC5 / (iC5+nC5)	0.44
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.90
Naphthalene / (Naphthalene+nC12)	0.22
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.94
Toluene/n-Octane	0.06
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME) MMT	U U
MINI	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Cultius containing 110s (con /lea)	
Sulfur containing HCs (mg/kg) Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
• •	-
Relative Percentages	
% Paraffinic	25.2
% Isoparaffinic	28.3
% Aromatic	15.4
% Naphthenic	18.3
% Olefinic	12.8

Note: If field is blank a ratio was not calculable.

075RL-8





Russ Shropshire Lab ID: 075RL-9
Leidos, Inc. Collected: 12/8/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-27-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000
Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

ssRL **RESULT CONSTITUENTS CLASS** ABBR. mg/kg mg/kg QUALIFIER ΙP 97.9 Isopentane (2-Methylbutane) ī 237.7 97.9 1-Pentene 0 1P 97.9 U 2-Methyl-1-butene 0 2M1B 97.9 97.9 U Р C5 97.9 334.4 Pentane (nC5) trans-2-pentene 0 T2P 97.9 97.9 U cis-2-pentene 0 C2P 97.9 97.9 П 0 2-Methyl-2-butene (t) 2M2B 97.9 97.9 U t-Butanol (TBA) ADD TBA 97.9 97.9 U 2,2-Dimethylbutane (t) 22DMB 97.9 97.9 U Cyclopentane Ν CYP 97.9 97.9 U 2,3-Dimethylbutane 23DMB 97.9 97.9 U 2-Methylpentane 2MP 97.9 653.9 Methyl-tert-butyl ether (MTBE) ADD **MTBE** 73.4 73.4 U 3-Methylpentane 3MP 97.9 828.0 0 1HX 109.3 1-Hexene 97.9 Hexane (nC6) Ρ 1186.3 C6 97.9 Di-isopropyl ether (DIPE) ADD DIPE 73.4 73.4 U 0 trans-2-hexene (t) T2HE 97.9 97.9 U 2-Methyl-2-pentene (t) 0 2M2P 97.9 97.9 U 0 C2HE 97.9 97.9 cis-2-hexene (t) U 0 cis-3-Methyl-2-pentene (t) C3M2P 97.9 97.9 U Ethyl-tert-butyl ether (ETBE) ADD **ETBE** 73.4 73.4 U 2,2-Dimethylpentane (t) 22DMP 97.9 97.9 U Methylcyclopentane Ν **MCYP** 195.8 219.9 D 24DMP 2,4-Dimethylpentane 97.9 97.9 U 1,2-Dichloroethane (EDC) ADD **EDC** 73.4 73.4 U Α 97.9 97.9 Benzene В U 3,3-Dimethylpentane (t) 33DMP 97.9 97.9 Thiophene S THIO 73.4 U 73.4 Cyclohexane Ν CYH 97.9 1237.7 2-Methylhexane 2MH 97.9 964.4 2,3-Dimethylpentane 23DMP 571.8 97.9



Russ Shropshire Lab ID: 075RL-9
Leidos, Inc. Collected: 12/8/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-27-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	73.4	73.4	U
3-Methylhexane	I	3МН	97.9	1463.5	
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	97.9	617.2	
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	97.9	200.7	
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	97.9	958.2	
2,2,4-Trimethylpentane (isooctane)	I	224TMP	293.7	557.0	
1-Heptene	0	1HP	97.9	3427.9	
Heptane (nC7)	Р	C7	195.8	787.7	D
trans-2-heptene (t)	0	T2HP	97.9	170.6	
Methylcyclohexane	N	MCYH	195.8	483.7	D
2,5-Dimethylhexane	I	25DMH	293.7	293.7	U
2,2,3-Trimethylpentane	I	233TMP	97.9	97.9	U
2,4-Dimethylhexane	I	24DMH	97.9	520.5	
2,3,4-Trimethylpentane	I	234TMP	97.9	383.7	
2,3,3-Trimethylpentane	I	233TMP	97.9	97.9	U
Toluene	Α	T	97.9	97.9	U
2-Methylthiophene	S	2MTHIO	73.4	73.4	U
2,3-Dimethylhexane	I	23DMH	97.9	97.9	U
3-Methylthiophene	S	3MTHIO	73.4	73.4	U
2-Methylheptane	I	2MHP	195.8	1203.7	D
4-Methylheptane (t)	1	4MHP	97.9	1008.7	
3-Methylheptane	I	3МНР	391.7	654.6	D
3-Ethylhexane	1	3EHX	195.8	195.8	U
1,2-Dibromoethane (EDB)	ADD	EDB	97.9	97.9	U
1-Octene	0	10	97.9	97.9	U
Octane (nC8)	Р	C8	195.8	3068.6	D
2,4-Dimethylheptane (t)	I	24DMHP	97.9	2894.4	
2,5-Dimethylheptane (t)	I	25DMHP	195.8	930.0	D
Ethylbenzene	Α	EB	97.9	311.3	
2-Ethylthiophene	S	2ETHIO	73.4	73.4	U
2,3-Dimethylheptane (t)	1	23DMHP	195.8	4563.7	D
m-Xylene	Α	MX	97.9	405.4	



Russ Shropshire Lab ID: 075RL-9
Leidos, Inc. Collected: 12/8/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: MW-27-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	97.9	224.0	
4-Methyloctane (t)	ı	4MO	97.9	1711.0	
2-Methyloctane (t)	ı	2MO	97.9	1578.3	
3-Methyloctane (t)	l	3МО	195.8	3413.4	D
Styrene	Α	STRE	97.9	97.9	U
o-Xylene	Α	ОХ	97.9	238.8	
1-Nonene	0	1N	293.7	293.7	U
Nonane (nC9)	Р	C9	391.7	11180.6	D
Isopropylbenzene (cumene)	Α	IPROPB	97.9	97.9	U
n-Propylbenzene	Α	NPRPPB	97.9	751.8	
1-Methyl-3-ethylbenzene	Α	1M3EB	97.9	749.8	
1-Methyl-4-ethylbenzene	Α	1M4EB	97.9	738.9	
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	195.8	197.2	D
1-Methyl-2-ethylbenzene	Α	1M2EB	195.8	198.1	D
1,2,4-Trimethylbenzene	Α	124TMB	195.8	740.2	D
1-Decene	0	1D	293.7	293.7	U
Decane (nC10)	Р	C10	587.5	9216.3	D
sec-Butylbenzene	Α	SBUB	97.9	97.9	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	195.8	272.6	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	195.8	218.4	D
Indane	Α	IA	97.9	491.8	
Indene	Α	IE	97.9	97.9	U
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	97.9	195.9	
1-Methyl-3-propylbenzene	Α	1M3PROPB	195.8	550.7	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	195.8	276.7	D
n-Butylbenzene	Α	NBB	195.8	238.4	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	195.8	327.4	D
1,2,diethylbenzene	Α	12DEB	97.9	97.9	U
1-Methyl-2-propylbenzene	Α	1M2PROPB	195.8	304.4	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	195.8	343.4	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	195.8	569.2	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	97.9	97.9	U



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011

Collected: 12/8/2020 Received: 12/11/2020 Matrix: Product

Lab ID: 075RL-9

Client ID: MW-27-201208

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.000

Collected by:

Analyzed: 12/16/2020 Q Method: 121818ICAL.M

ssRL **RESULT CONSTITUENTS CLASS** ABBR. mg/kg mg/kg QUALIFIER 1,3-Dimethyl-2-ethylbenzene Α 13DM2EB 195.8 631.4 D 1,2-Dimethyl-3-ethylbenzene 12DM3EB 195.8 267.0 D Α Undecane (nC11) C11 293.7 1283.4 1,2,4,5-Tetramethylbenzene Α 1245TMB 195.8 569.9 D 1,2,3,5-Tetramethylbenzene (t) Α 1235TMB 195.8 770.4 D n-Pentylbenzene Α **NPYB** 97.9 165.6 Naphthalene Α 97.9 574.9 **BTHIO** Benzothiophene S 73.4 73.4 U Dodecane (nC12) Р C12 195.8 875.6 1,2,3,4-Tetramethylbenzene (t) Α 1234TMB 195.8 1143.2 D MMT ADD MMT 73.4 73.4 U 2-Methylnaphthalene Α 2MN 195.8 422.4 D 1-Methylnaphthalene Α 1MN 97.9 97.9 U 112.71 % Benzene d-6 (RS) Toluene-d8 (RS) 94.71 % Ethylbenzene d10 (RS) 128.45 %

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- J Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-9 1000X.D & dilution 075RL-9 2000X.D

Submitted by,

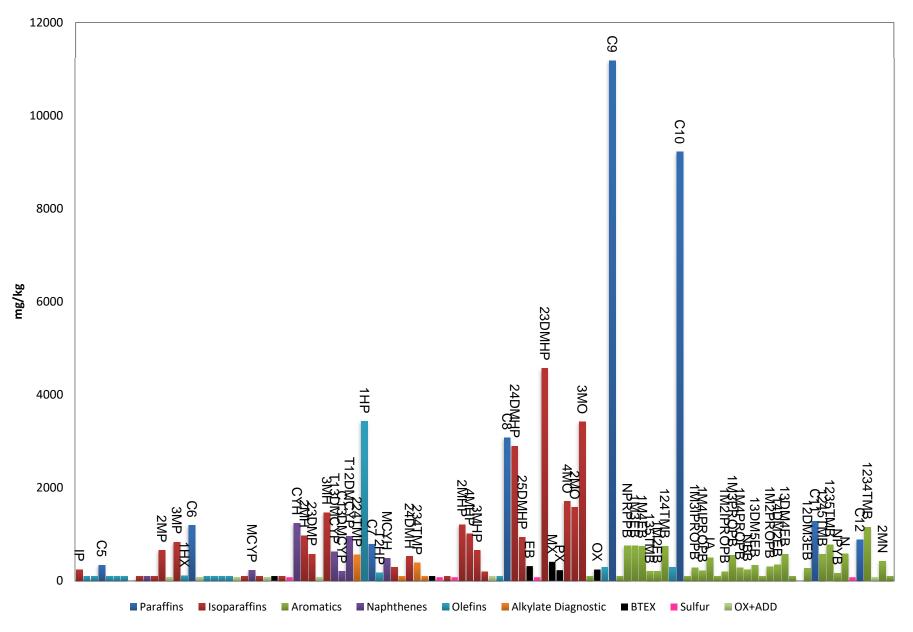
Microbial Insights, Inc.



MIID	075RL-9
Sample ID	MW-27-201208
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.30
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.35
Waterwashing	
Benzene / (Benzene+Cyclohexane)	
Toluene / (Toluene+Methylcyclohexane)	
Aromatics / Total Paraffins (n+iso+cyc)	0.22
Aromatics / Naphthenes	3.30
wt% < o-xylene	52.79
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	7.96
3-Methylhexane / n-Heptane	1.86
Methylcyclohexane / n-Heptane	0.61
Isoparaffins + Naphthenes / Paraffins	1.00
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.5
2,2,4-Trimethylpentane / Total TMPs	0.59
nC9 / Isopropylbenzene	
nC10 / 1-Methyl-2-ethylbenzene	46.53
nC11 / 1,4-Dimethyl-2-ethylbenzene	3.74
iC5 / (iC5+nC5) (2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.42
Naphthalene / (Naphthalene+nC12)	0.40
Methylcyclohexane/(Methylcyclohexane+Toluene)	
Toluene/n-Octane	
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U 
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	U
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	U
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	U
Relative Percentages	
% Paraffinic	38.9
% Isoparaffinic	33.6
% Aromatic	17.1
% Naphthenic	5.2
% Olefinic	5.2

Note: If field is blank a ratio was not calculable.

075RL-9





Russ Shropshire Lab ID: 075RL-10
Leidos, Inc. Collected: 11/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: 22IE Woodin UST-1

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

Analyzed: 12/17/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	95.9	95.9	U
1-Pentene	0	1P	95.9	95.9	U
2-Methyl-1-butene	0	2M1B	95.9	95.9	U
Pentane (nC5)	Р	C5	95.9	95.9	U
trans-2-pentene	0	T2P	95.9	95.9	U
cis-2-pentene	0	C2P	95.9	95.9	U
2-Methyl-2-butene (t)	0	2M2B	95.9	95.9	U
t-Butanol (TBA)	ADD	TBA	95.9	95.9	U
2,2-Dimethylbutane (t)	I	22DMB	95.9	95.9	U
Cyclopentane	N	CYP	95.9	95.9	U
2,3-Dimethylbutane	I	23DMB	95.9	646.4	
2-Methylpentane	ļ	2MP	191.8	593.0	D
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	71.9	71.9	U
3-Methylpentane	ļ	3MP	191.8	1016.5	D
1-Hexene	0	1HX	95.9	1649.9	
Hexane (nC6)	Р	C6	191.8	2491.7	D
Di-isopropyl ether (DIPE)	ADD	DIPE	71.9	71.9	U
trans-2-hexene (t)	0	T2HE	191.8	348.5	D
2-Methyl-2-pentene (t)	0	2M2P	95.9	1648.9	
cis-2-hexene (t)	0	C2HE	191.8	233.0	D
cis-3-Methyl-2-pentene (t)	0	C3M2P	191.8	269.4	D
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	71.9	71.9	U
2,2-Dimethylpentane (t)	1	22DMP	95.9	1176.3	
Methylcyclopentane	N	MCYP	191.8	6537.6	D
2,4-Dimethylpentane	I	24DMP	95.9	13656.4	
1,2-Dichloroethane (EDC)	ADD	EDC	71.9	499.4	
Benzene	Α	В	191.8	3851.5	D
3,3-Dimethylpentane (t)	I	33DMP	191.8	330.2	D
Thiophene	S	THIO	71.9	71.9	U
Cyclohexane	N	СҮН	191.8	11055.6	D
2-Methylhexane	I	2MH	191.8	6084.7	D
2,3-Dimethylpentane	I	23DMP	191.8	2914.5	D



Russ Shropshire Lab ID: 075RL-10
Leidos, Inc. Collected: 11/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: 22IE Woodin UST-1

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

0.00.000 Analyzed: 12/17/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	71.9	71.9	U
3-Methylhexane	1	3МН	191.8	7760.8	D
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	191.8	2206.1	D
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	191.8	769.9	D
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	191.8	3101.8	D
2,2,4-Trimethylpentane (isooctane)	1	224TMP	575.3	4851.4	D
1-Heptene	0	1HP	95.9	90969.1	
Heptane (nC7)	Р	C7	191.8	28236.1	D
trans-2-heptene (t)	0	T2HP	191.8	1929.9	D
Methylcyclohexane	N	MCYH	191.8	21184.1	D
2,5-Dimethylhexane	1	25DMH	575.3	2566.8	D
2,2,3-Trimethylpentane	I	233TMP	95.9	95.9	U
2,4-Dimethylhexane	1	24DMH	191.8	3634.5	D
2,3,4-Trimethylpentane	I	234TMP	191.8	4870.2	D
2,3,3-Trimethylpentane	1	233TMP	95.9	46029.9	
Toluene	Α	Т	191.8	23042.6	D
2-Methylthiophene	S	2MTHIO	71.9	303.5	
2,3-Dimethylhexane	1	23DMH	191.8	5634.8	D
3-Methylthiophene	S	3MTHIO	71.9	71.9	U
2-Methylheptane	1	2MHP	191.8	24899.3	D
4-Methylheptane (t)	1	4MHP	191.8	5693.2	D
3-Methylheptane	1	3МНР	383.5	16884.1	D
3-Ethylhexane	1	3EHX	191.8	191.8	U
1,2-Dibromoethane (EDB)	ADD	EDB	95.9	95.9	U
1-Octene	0	10	95.9	95.9	U
Octane (nC8)	Р	C8	191.8	37165.0	D
2,4-Dimethylheptane (t)	1	24DMHP	191.8	9476.5	D
2,5-Dimethylheptane (t)	1	25DMHP	191.8	10191.6	D
Ethylbenzene	Α	EB	191.8	10938.3	D
2-Ethylthiophene	S	2ETHIO	71.9	71.9	U
2,3-Dimethylheptane (t)	I	23DMHP	191.8	14459.8	D
m-Xylene	Α	MX	95.9	95.9	U



Russ Shropshire Lab ID: 075RL-10
Leidos, Inc. Collected: 11/7/2020
18939 120th Avenue NE, Suite 112, Received: 12/11/2020
Bothell, WA, 98011 Matrix: Product

Client ID: 22IE Woodin UST-1

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000
Collected by:

Analyzed: 12/17/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
p-Xylene	Α	PX	191.8	9000.6	D
4-Methyloctane (t)	I	4MO	191.8	10018.7	D
2-Methyloctane (t)	I	2MO	191.8	10850.2	D
3-Methyloctane (t)	I	3МО	191.8	18859.8	D
Styrene	Α	STRE	95.9	394.9	
o-Xylene	Α	OX	191.8	16808.8	D
1-Nonene	0	1N	287.6	287.6	U
Nonane (nC9)	Р	C9	383.5	18021.1	D
Isopropylbenzene (cumene)	Α	IPROPB	95.9	95.9	U
n-Propylbenzene	Α	NPRPPB	191.8	4865.6	D
1-Methyl-3-ethylbenzene	Α	1M3EB	191.8	18190.8	D
1-Methyl-4-ethylbenzene	Α	1M4EB	191.8	7981.3	D
1,3,5-Trimethylbenzene (mesitylene)	Α	135TMB	191.8	10596.9	D
1-Methyl-2-ethylbenzene	Α	1M2EB	191.8	6514.1	D
1,2,4-Trimethylbenzene	Α	124TMB	95.9	95.9	U
1-Decene	0	1D	287.6	8533.4	
Decane (nC10)	Р	C10	575.3	10419.3	D
sec-Butylbenzene	Α	SBUB	95.9	95.9	U
1-Methyl-3-isopropylbenzene (m-cymene)	Α	1M3IPROPB	191.8	1861.8	D
1-Methyl-4-isopropylbenzene (p-cymene)	Α	1M4IPROPB	191.8	277.0	D
Indane	Α	IA	191.8	5168.0	D
Indene	Α	IE	191.8	265.7	D
1-Methyl-2-isopropybenzene (o-cymene)	Α	1M2IPROPB	95.9	315.3	
1-Methyl-3-propylbenzene	Α	1M3PROPB	191.8	6762.2	D
1-Methyl-4-propylbenzene	Α	1M4PROPB	191.8	3232.9	D
n-Butylbenzene	Α	NBB	191.8	2127.3	D
1,3-Dimethyl-5-ethylbenzene	Α	13DM5EB	191.8	7298.3	D
1,2,diethylbenzene	Α	12DEB	191.8	520.8	D
1-Methyl-2-propylbenzene	Α	1M2PROPB	191.8	1966.1	D
1,4-Dimethyl-2-ethylbenzene	Α	14DM2EB	191.8	5617.5	D
1,3-Dimethyl-4-ethylbenzene	Α	13DM4EB	191.8	4586.2	D
1,2-Dimethyl-4-ethylbenzene	Α	12DM4EB	191.8	8099.2	D



Russ Shropshire Leidos, Inc. 18939 120th Avenue NE, Suite 112, Bothell, WA, 98011 Lab ID: 075RL-10
Collected: 11/7/2020
Received: 12/11/2020
Matrix: Product

Client ID: 22IE Woodin UST-1

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00.000

Collected by:

Analyzed: 12/17/2020 Q Method: 121818ICAL.M

			ssRL	RESULT	
CONSTITUENTS	CLASS	ABBR.	mg/kg	mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	Α	13DM2EB	95.9	95.9	U
1,2-Dimethyl-3-ethylbenzene	Α	12DM3EB	191.8	1114.2	D
Undecane (nC11)	Р	C11	575.3	2529.2	D
1,2,4,5-Tetramethylbenzene	Α	1245TMB	191.8	4652.9	D
1,2,3,5-Tetramethylbenzene (t)	Α	1235TMB	191.8	6434.3	D
n-Pentylbenzene	Α	NPYB	191.8	1460.4	D
Naphthalene	Α	N	191.8	2610.2	D
Benzothiophene	S	BTHIO	71.9	623.4	
Dodecane (nC12)	Р	C12	191.8	2694.0	
1,2,3,4-Tetramethylbenzene (t)	Α	1234TMB	191.8	2209.3	D
MMT	ADD	MMT	71.9	71.9	U
2-Methylnaphthalene	Α	2MN	95.9	433.0	
1-Methylnaphthalene	Α	1MN	95.9	95.9	U
Benzene d-6 (RS)	108	3.75 %			
Toluene-d8 (RS)	95	5.80 %			
Ethylbenzene d10 (RS)	125	5.15 %			

ssRL - Sample Specific Reporting Limit

Results listed as U would have been reported if present at or above the listed ssRL

- ${\bf J}$  Values greater than the ssRL but less than the PQL (3 x ssRL).
- D Secondary dilution perfomed
- Q Surrogate recovery limit exceedance
- I Matrix Interference

NC - Not calibrated

Note: Extracted by EPA 5030 (Purge and Trap).

**US631** 

075RL-10 1000X.D & dilution 075RL-10 2000X.D

Submitted by,

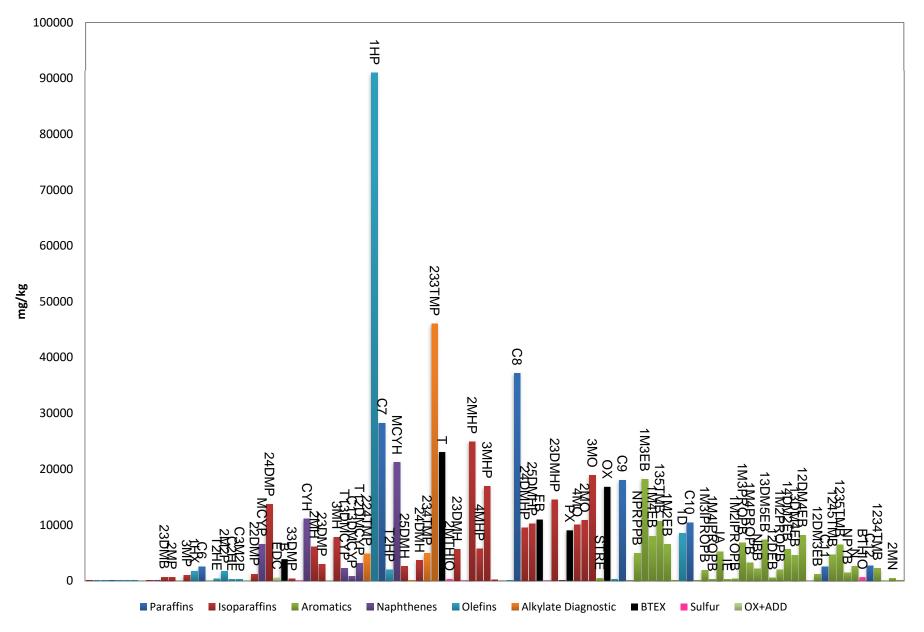
Microbial Insights, Inc.



MI ID Sample ID	075RL-10 22IE Woodin UST-1
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.02
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.26
Toluene / (Toluene+Methylcyclohexane)	0.52
Aromatics / Total Paraffins (n+iso+cyc)	0.48
Aromatics / Naphthenes	4.00
wt% < o-xylene	73.34
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	3.00
3-Methylhexane / n-Heptane	0.27
Methylcyclohexane / n-Heptane	0.75
Isoparaffins + Naphthenes / Paraffins	2.64
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	0.2
2,2,4-Trimethylpentane / Total TMPs	0.09
nC9 / Isopropylbenzene	1.60
nC10 / 1-Methyl-2-ethylbenzene	1.60
nC11 / 1,4-Dimethyl-2-ethylbenzene iC5 / (iC5+nC5)	0.45
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	0.42
Naphthalene / (Naphthalene+nC12)	0.49
Methylcyclohexane/(Methylcyclohexane+Toluene)	0.48
Toluene/n-Octane	0.62
Oxygenates & Other (mg/kg)	
Methyl-tert-butyl ether (MTBE)	U
Di-isopropyl ether (DIPE)	U
Ethyl-tert-butyl ether (ETBE)	U
Tert-amyl methyl ether (TAME)	U
MMT	U
Lead Scavengers (mg/kg)	
1,2-Dichloroethane (EDC)	499.39
1,2-Dibromoethane (EDB)	U
Sulfur containing HCs (mg/kg)	
Thiophene	U
2-Methylthiophene	303.45
3-Methylthiophene	U
2-Ethylthiophene	U
Benzothiophene	623.44
Relative Percentages	
% Paraffinic	15.5
% Isoparaffinic	34.1
% Aromatic	27.4
% Naphthenic	6.9
% Olefinic	16.1

Note: If field is blank a ratio was not calculable.

# 075RL-10







# SITE LOGIC Report

C8-C40 Full Scan Semi-Quantitative Characterization by GC/MS

Contact: Russ Shropshire Phone: 425-482-3323

**Address:** Ledios Inc.

18939 120th Avenue NE Suite 112 Email: russell.s.shropshire@leidos.com

Bothell, WA 98011

MI Identifier: 075RL Report Date: December 22, 2020

**Project:** Chelan Chevron Site, #334893.TM.1.000.00.00.000

**Comments:** 

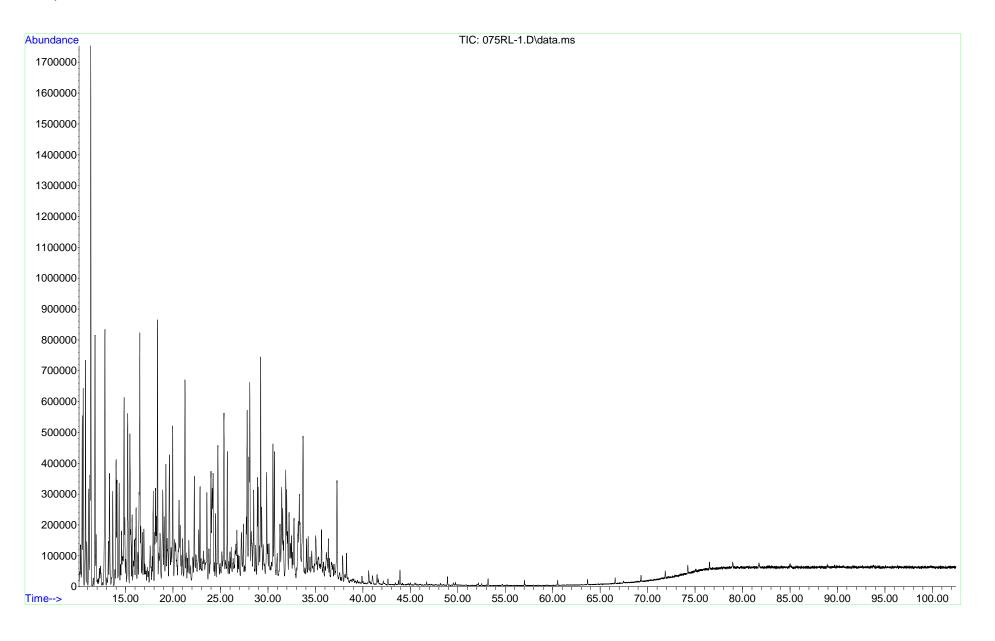
**NOTICE:** This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.



Ion (m/z)	Compound Class
TIC	All Compounds
85	n-Alkanes
113	Iso-Alkanes and Isoprenoids
83	Alkylcyclohexanes
134	C4-Benzenes
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatic Steranes
231	Triaromatic Steranes
Bar Diagram	Aromatic Hydrocarbons

Note: Chromatograms and data follow this cover page.

Acquired : 15 Dec 2020 16:47 Sample Name: 075RL-1 using AcqMethod FOREN4LA\_MI\_BACK.M





#### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-1

Client: Leidos, Inc.

Collected: 12/6/2020

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/6/2020

Received: 12/11/2020

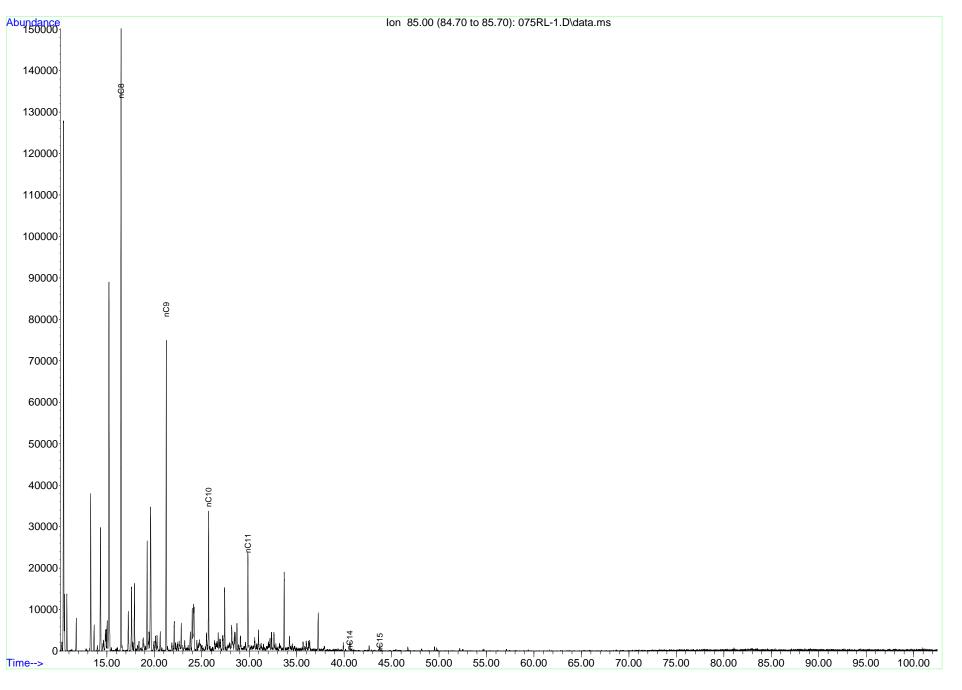
Matrix: Product

Project: Chelan Chevron Site Client ID: MW-10-201206
Project #: 334893.TM.1.000.00.0 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	150066.0	52.5%
n-Nonane	nC9	85	21.3	74944.0	26.2%
n-Decane	nC10	85	25.7	33477.0	11.7%
n-Undecane	nC11	85	29.9	23369.0	8.2%
n-Dodecane	nC12	85	ND	ND	ND
n-Tridecane	nC13	85	ND	ND	ND
n-Tetradecane	nC14	85	40.6	2322.0	0.8%
n-Pentadecane	nC15	85	43.8	1773.0	0.6%
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-1 0.40507 g





## Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

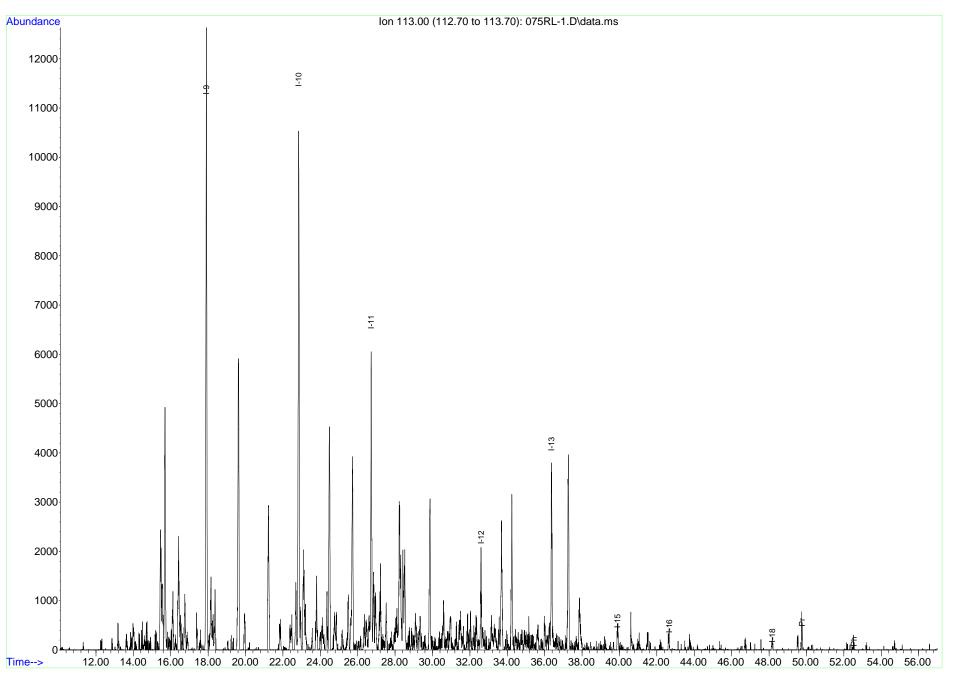
Collected by:

Lab ID: 075RL-1 Collected: 12/6/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-10-201206 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	12631.0	34.6%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	10361.0	28.4%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	5865.0	16.1%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.6	2030.0	5.6%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	3748.0	10.3%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	ND	ND	ND
Farnesane (Isoprenoid - C15)	I-15	113	39.9	534.0	1.5%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.7	437.0	1.2%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.2	268.0	0.7%
Pristane (Isoprenoid - C19)	Pr	113	49.8	509.0	1.4%
Phytane (Isoprenoid - C20)	Ph	113	52.5	155.0	0.4%

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.00

Client ID: MW-10-201206 Analyzed: 12/15/2020

Lab ID: 075RL-1

Collected: 12/6/2020

Received: 12/11/2020

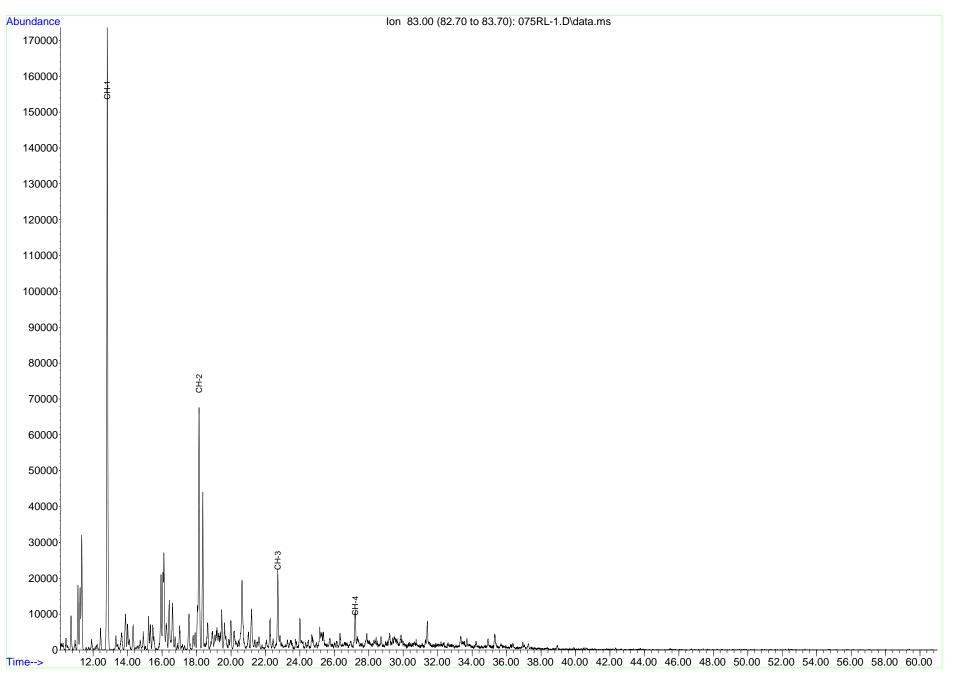
Matrix: Product

Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (83 m/z)
Methylcyclohexane	CH-1	83	12.8	173558.0	63.9%
Ethylcyclohexane	CH-2	83	18.1	67043.0	24.7%
Propylcyclohexane	CH-3	83	22.7	21353.0	7.9%
Butylcyclohexane	CH-4	83	27.2	9787.0	3.6%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-1 0.40507 g





## Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-1 Collected: 12/6/2020 Received: 12/11/2020

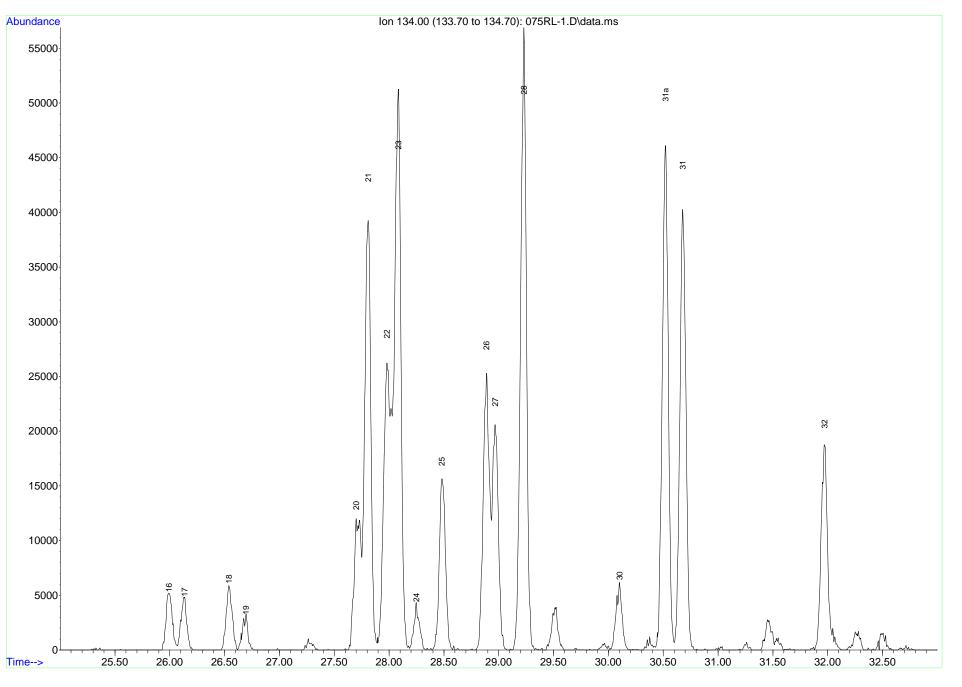
Matrix: Product

Client ID: MW-10-201206 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	5203.0	1.4%
1-Methyl-3-Isopropylbenzene	17	134	26.1	4683.0	1.2%
1-Methyl-4-Isopropylbenzene	18	134	26.5	5886.0	1.5%
1-Methyl-2-Isopropylbenzene	19	134	26.7	3241.0	0.9%
1,3-Diethylbenzene	20	134	27.7	12006.0	3.2%
1-Methyl-3-Propylbenzene	21	134	27.8	38611.0	10.2%
Butylbenzene	22	134	28.0	25482.0	6.7%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	51047.0	13.4%
1,2-Diethylbenzene	24	134	28.2	4332.0	1.1%
1-Methyl-2-Propylbenzene	25	134	28.5	15651.0	4.1%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	25300.0	6.7%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	20600.0	5.4%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	56885.0	15.0%
1,3-Dimethyl-2-Ethylbenzene	29	134	ND	ND	ND
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	6167.0	1.6%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	45862.0	12.1%
1,2,3,5-Tetramethylbenzene	31	134	30.7	40025.0	10.5%
1,2,3,4-Tetramethylbenzene	32	134	32.0	18768.0	4.9%

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-1 0.40507 g





#### Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc. Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.0

Collected by:

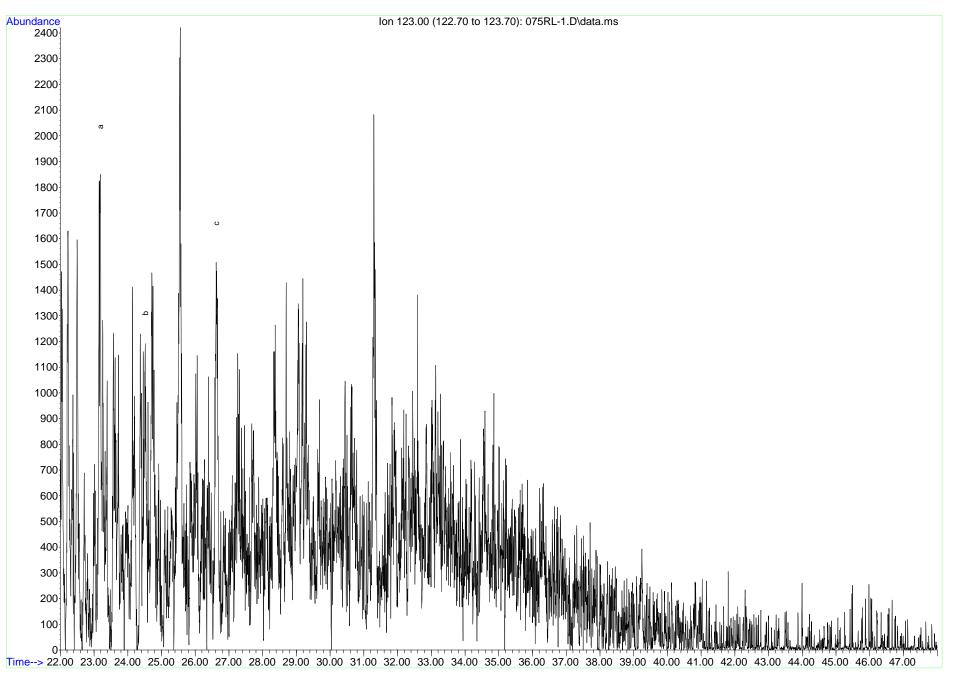
Lab ID: 075RL-1 Collected: 12/6/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-10-201206 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	а	123	23.2	1850.0	40.7%
C <sub>10</sub> bicycloalkane	b	123	24.5	1191.0	26.2%
3,3,7-Trimethylbicycloheptane	С	123	26.6	1508.0	33.2%
C <sub>11</sub> Decalin	d	123	ND	ND	ND
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-1 0.40507 g



#### Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-1 Collected: 12/6/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-10-201206 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	<b>Z4</b>	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
$17\alpha$ -25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
$18\alpha$ -30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	P	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R —	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	T	191	ND	ND	ND
22R-17α,21β-30-Bishomohopane	U	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	WS	191	ND	ND	ND
22R-17α,21β-Trishomohopane 22S-17α,21β-Tetrahomohopane	WR vs	191 101	ND	ND	ND ND
223-17α,21p-retranomonopane	XS	191	ND	ND	ND

#### Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-1 Collected: 12/6/2020 Received: 12/11/2020

Matrix: Product

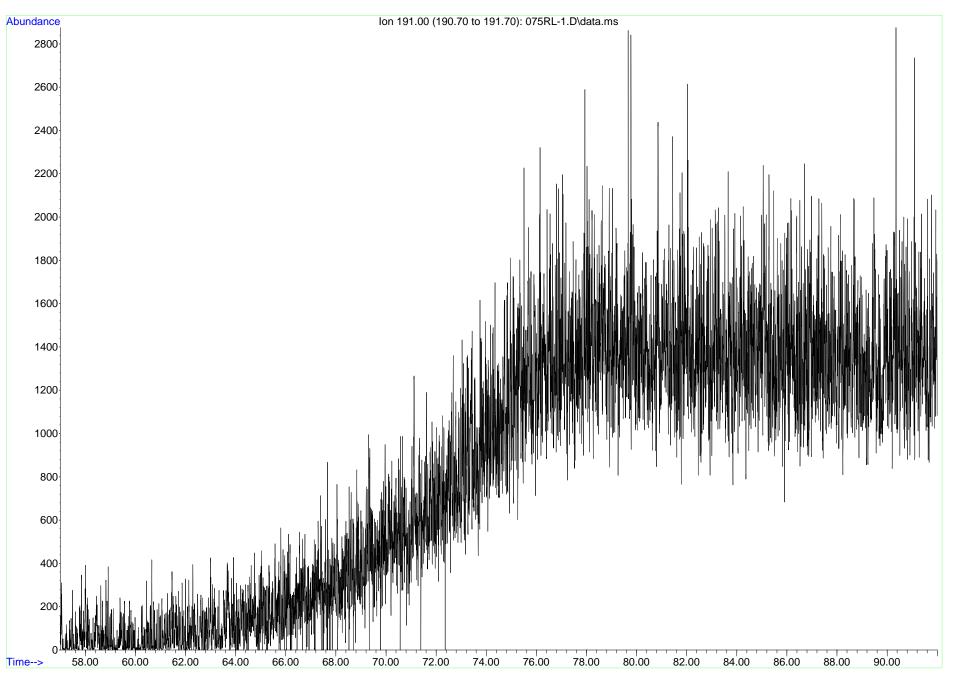
Client ID: MW-10-201206 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-1 0.40507 g





Lab ID: 075RL-1

## **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

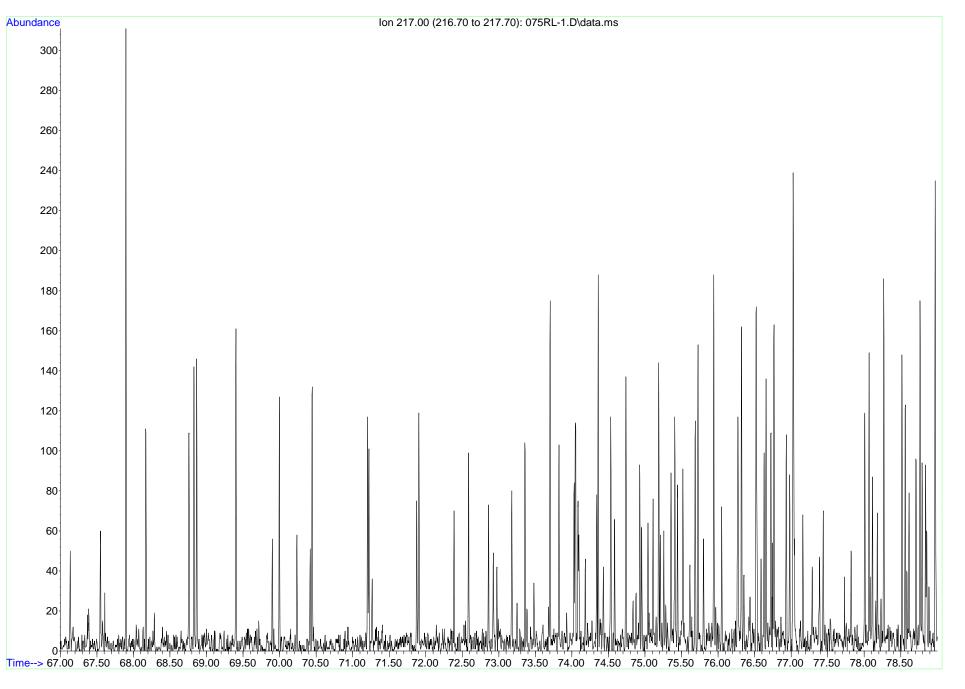
Client: Leidos, Inc. Collected: 12/6/2020
Address: 18939 120th Avenue NE, Received: 12/11/2020

Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: MW-10-201206
Project #: 334893.TM.1.000.00.00 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13 $\alpha$ , 17 $\beta$ -Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14 $\alpha$ , 17 $\alpha$ -Cholestane (20R)	20	217	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-1

Collected: 12/6/2020 Received: 12/11/2020

Matrix: Product

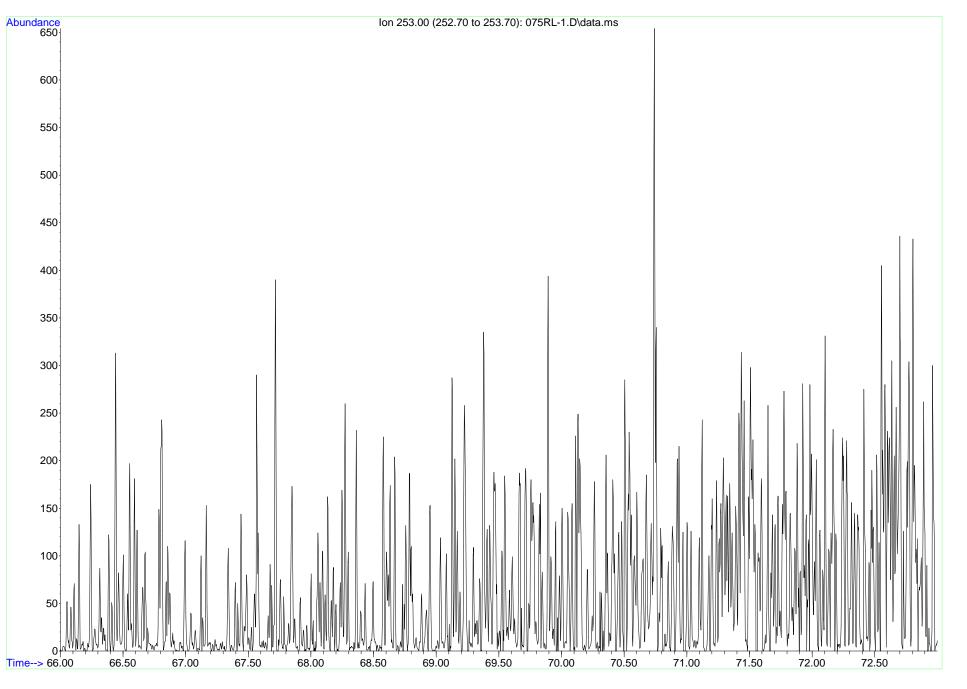
Client ID: MW-10-201206 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	a	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	e	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-1 0.40507 g





## Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-1

Collected: 12/6/2020

Received: 12/11/2020

Matrix: Product

Client ID: MW-10-201206

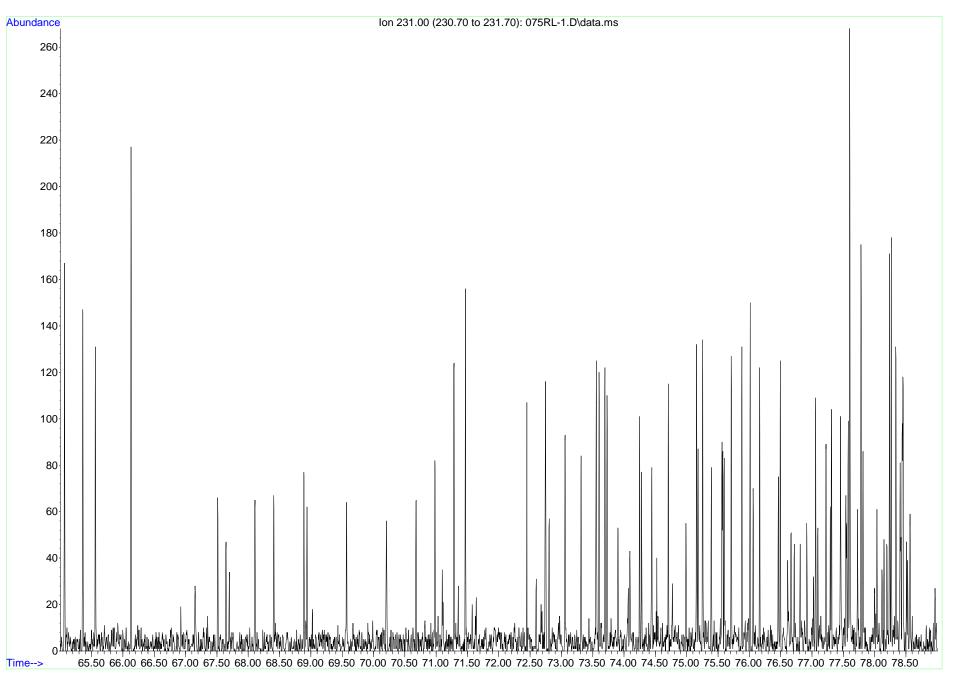
Analyzed: 12/15/2020

Q Method: FSRTL120320.M

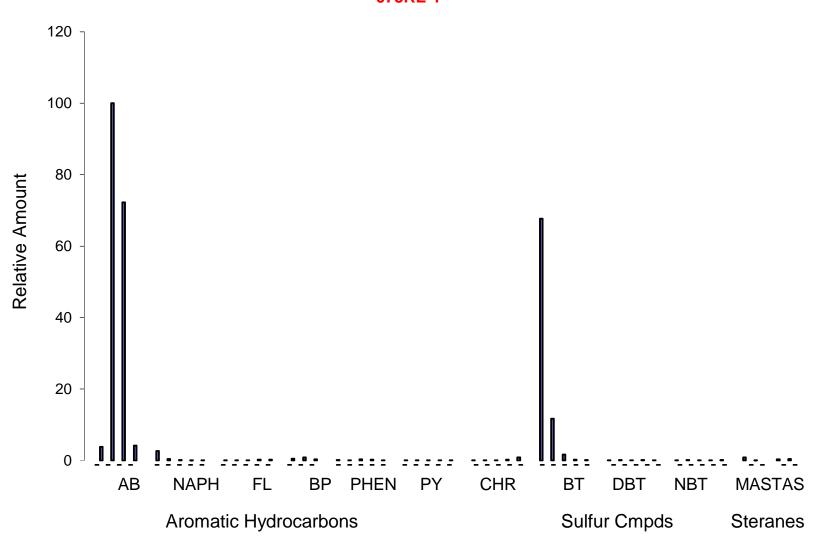
Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	T3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	T6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	Т7	231	ND	ND	ND

0.40507 g in 10mL DCM FOREN4LA\_MI\_BACK

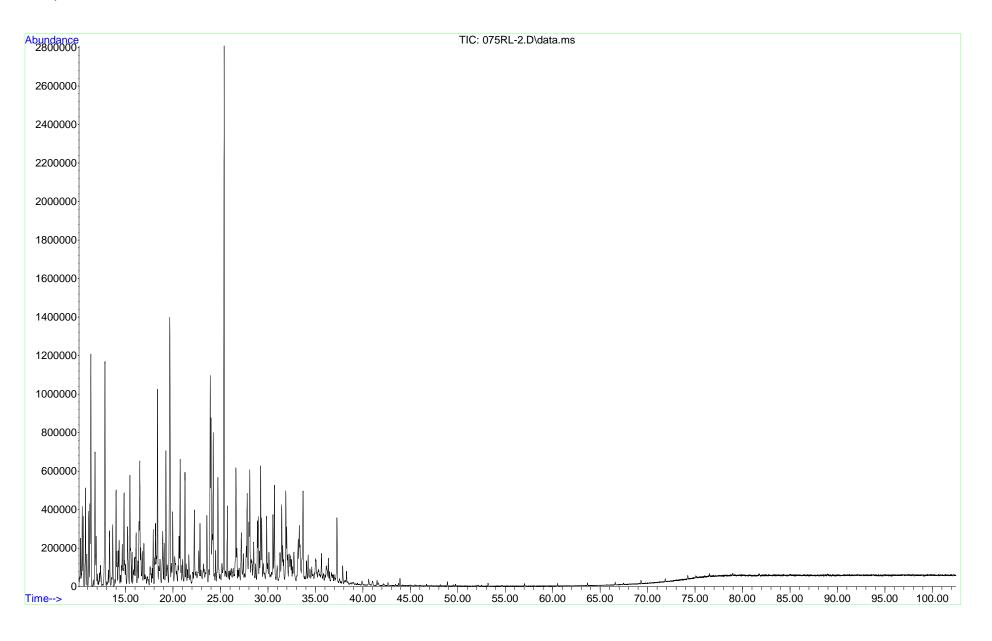
075RL-1 0.40507 g



Aromatic Hydrocarbon Distribution 075RL-1



Acquired : 15 Dec 2020 18:39 Sample Name: 075RL-2 using AcqMethod FOREN4LA\_MI\_BACK.M





## Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-2

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

Received: 12/11/2020

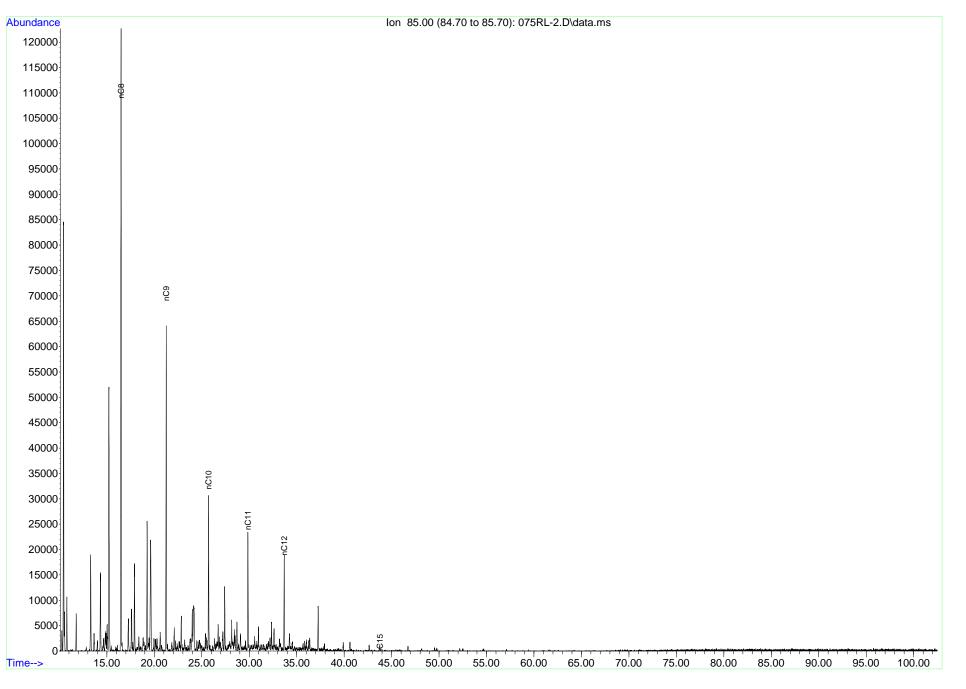
Matrix: Product

Project: Chelan Chevron Site Client ID: MW-12-201207
Project #: 334893.TM.1.000.00.0 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	122652.0	47.1%
n-Nonane	nC9	85	21.3	64037.0	24.6%
n-Decane	nC10	85	25.7	30384.0	11.7%
n-Undecane	nC11	85	29.9	23165.0	8.9%
n-Dodecane	nC12	85	33.7	18726.0	7.2%
n-Tridecane	nC13	85	ND	ND	ND
n-Tetradecane	nC14	85	ND	ND	ND
n-Pentadecane	nC15	85	43.8	1311.0	0.5%
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
<i>n</i> -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-2 0.40264 g





# Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

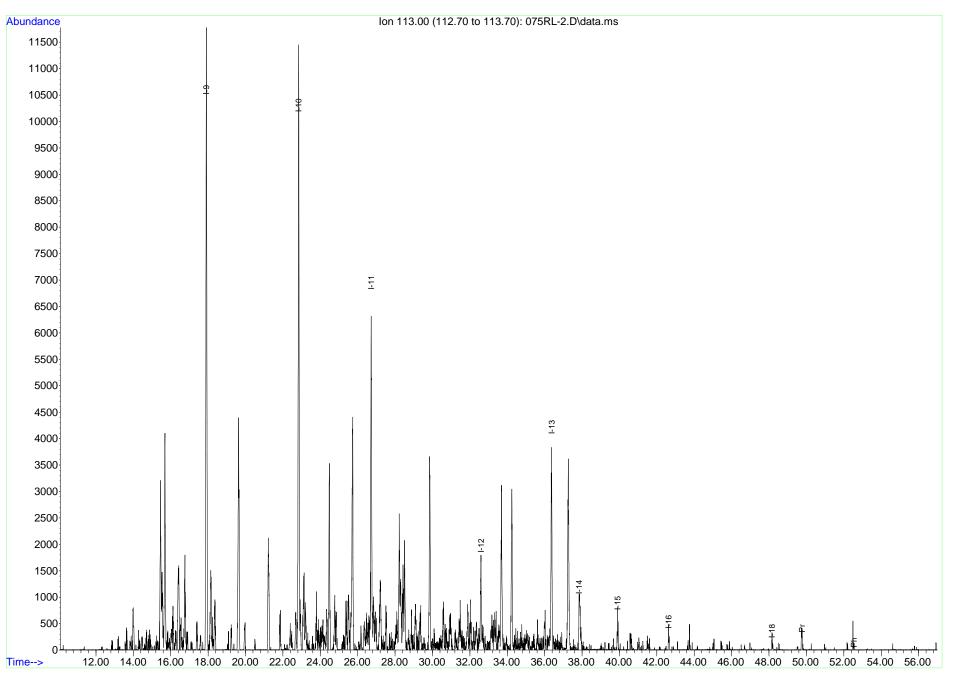
Lab ID: 075RL-2 Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-12-201207 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	11769.0	31.0%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	11424.0	30.1%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	6051.0	16.0%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.6	1654.0	4.4%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	3834.0	10.1%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.8	1071.0	2.8%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	797.0	2.1%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.6	486.0	1.3%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.2	326.0	0.9%
Pristane (Isoprenoid - C19)	Pr	113	49.8	372.0	1.0%
Phytane (Isoprenoid - C20)	Ph	113	52.5	127.0	0.3%

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

CH-11

CH-12

CH-13

CH-14

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Lab ID: 075RL-2

Client ID: MW-12-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	243452.0	70.8%
Ethylcyclohexane	CH-2	83	18.1	68118.0	19.8%
Propylcyclohexane	CH-3	83	22.7	22718.0	6.6%
Butylcyclohexane	CH-4	83	27.2	9767.0	2.8%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND

83

83

83

83

ND

ND

ND

ND

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK

Undecylcyclohexane

Dodecylcyclohexane

Tridecylcyclohexane

Tetradecylcyclohexane

Submitted by, Microbial Insights, Inc.

ND

ND

ND

ND

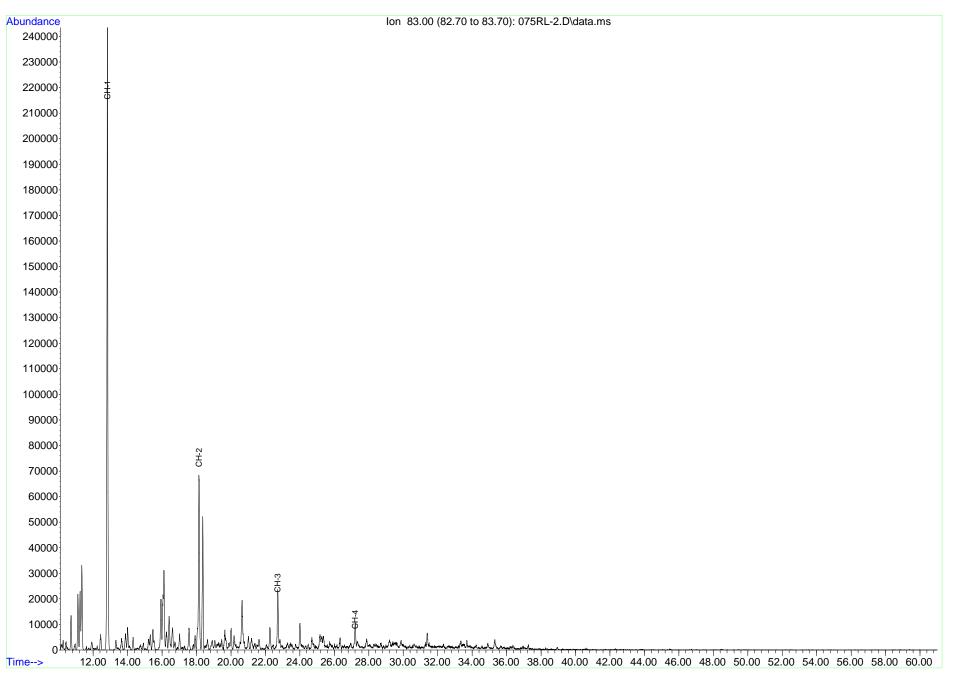
ND

ND

ND

ND

075RL-2 0.40264 g





# Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

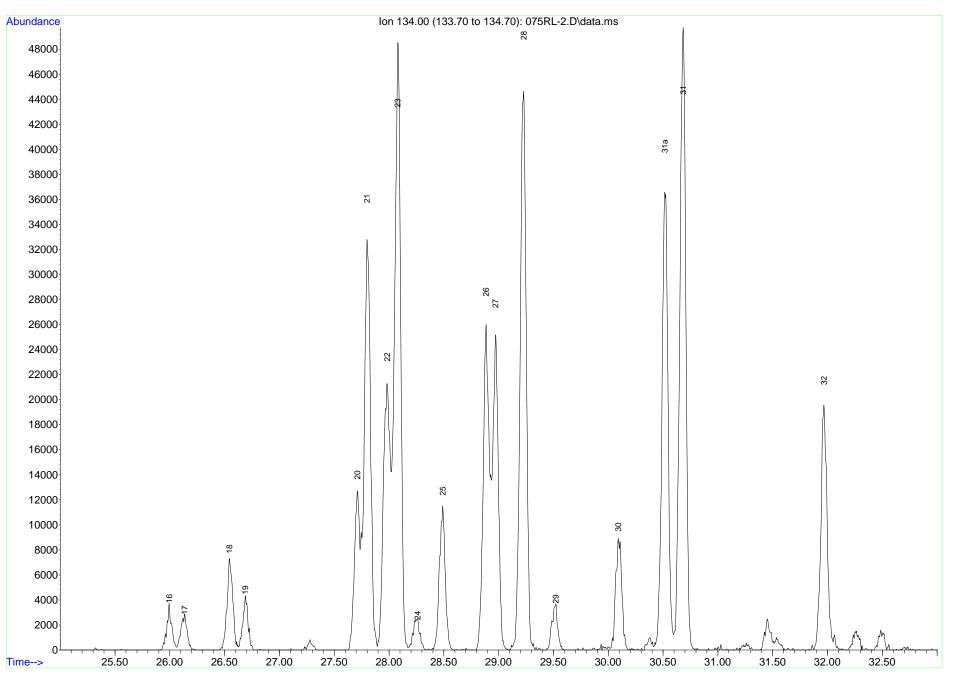
Lab ID: 075RL-2 Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-12-201207 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	3659.0	1.0%
1-Methyl-3-Isopropylbenzene	17	134	26.1	2894.0	0.8%
1-Methyl-4-Isopropylbenzene	18	134	26.5	7180.0	2.0%
1-Methyl-2-Isopropylbenzene	19	134	26.7	4111.0	1.1%
1,3-Diethylbenzene	20	134	27.7	12705.0	3.5%
1-Methyl-3-Propylbenzene	21	134	27.8	32492.0	9.0%
Butylbenzene	22	134	28.0	20980.0	5.8%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	48348.0	13.4%
1,2-Diethylbenzene	24	134	28.3	2501.0	0.7%
1-Methyl-2-Propylbenzene	25	134	28.5	11536.0	3.2%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	25982.0	7.2%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	25136.0	7.0%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	44406.0	12.3%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3667.0	1.0%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	8925.0	2.5%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	36167.0	10.1%
1,2,3,5-Tetramethylbenzene	31	134	30.7	49594.0	13.8%
1,2,3,4-Tetramethylbenzene	32	134	32.0	19552.0	5.4%

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Collected by:

Project #: 334893.TM.1.000.00.0 Analy

Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Client ID: MW-12-201207

Lab ID: 075RL-2

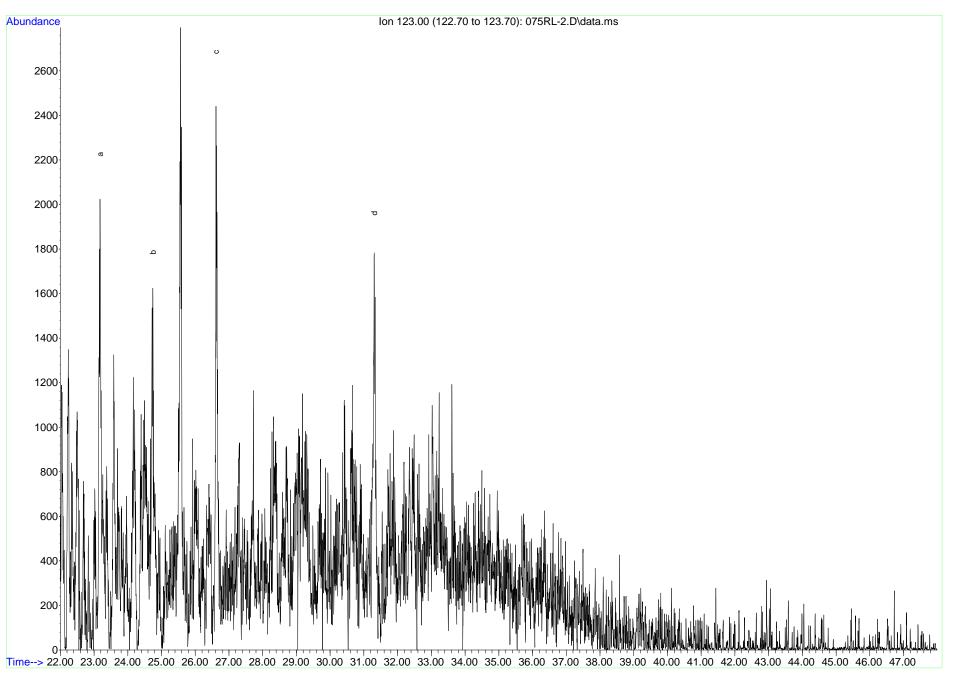
Collected: 12/7/2020

Matrix: Product

Received: 12/11/2020

Identity	Symbol	lon (m/z)	Retention	Peak Height	Rel. Height %
			Time		(123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	1917.0	27.2%
C <sub>10</sub> bicycloalkane	b	123	24.7	1254.0	17.8%
3,3,7-Trimethylbicycloheptane	С	123	26.6	2286.0	32.4%
C <sub>11</sub> Decalin	d	123	31.3	1597.0	22.6%
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK



## Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-2 Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-12-201207 Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	Z4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21 $\alpha$ -Moretane	0	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	T	191	ND	ND	ND
22R-17α,21β-30-Bishomohopane	U	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	WS	191	ND	ND	ND
$22R-17\alpha,21\beta$ -Trishomohopane	WR	191	ND	ND	ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

#### Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-2 Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product
Client ID: MW-12-201207

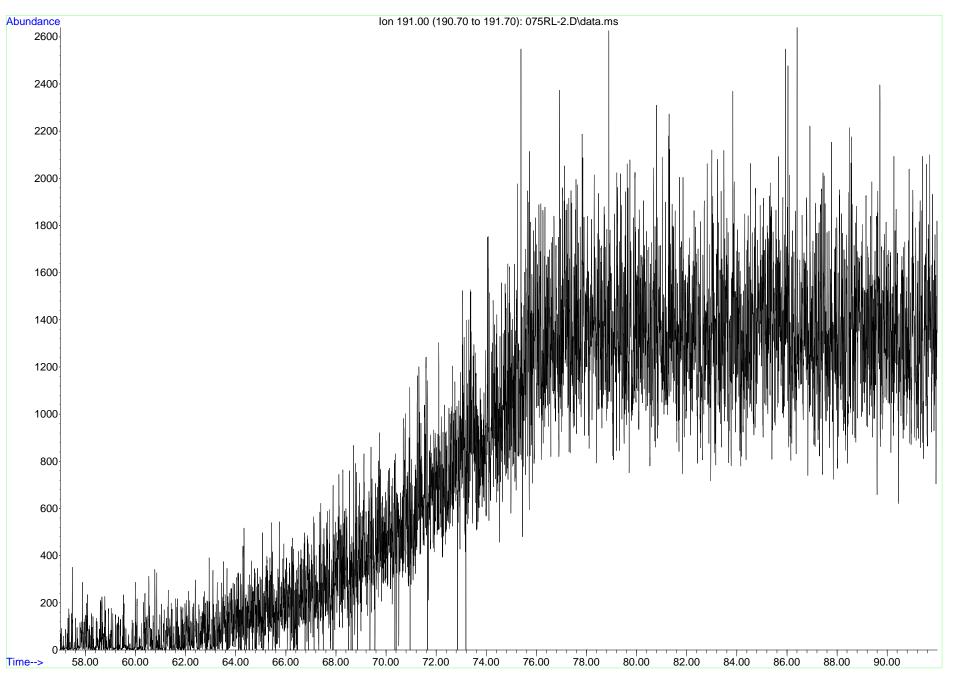
Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-2 0.40264 g





Lab ID: 075RL-2

#### Chromatogram Key & Numerical Results: 217 m/z Steranes

Project Manager: Russ Shropshire

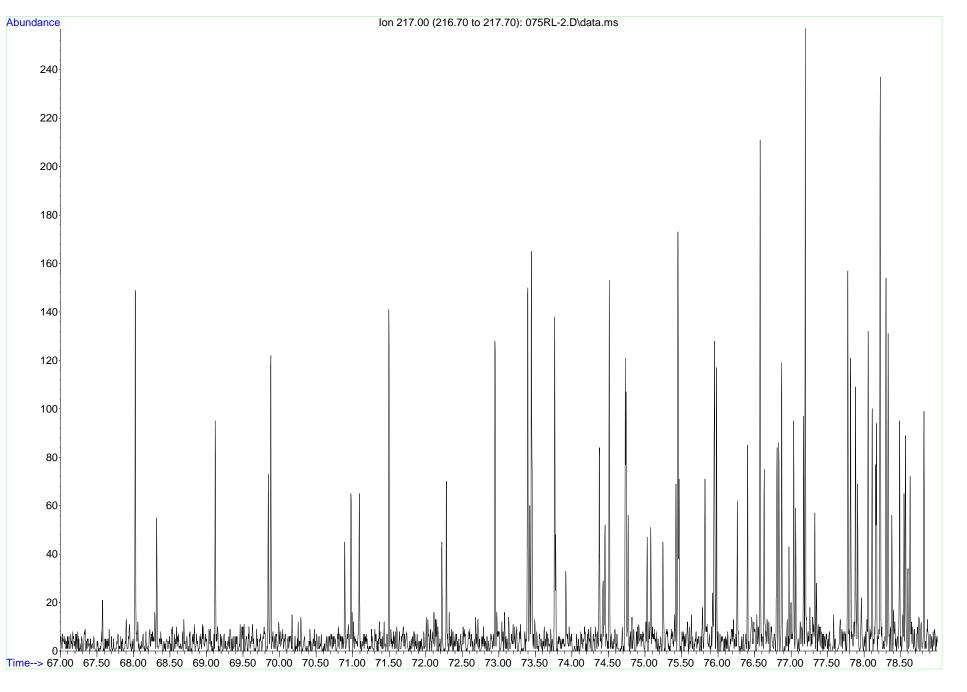
Client: Leidos, Inc. Collected: 12/7/2020
Address: 18939 120th Avenue NE, Received: 12/11/2020

Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: MW-12-201207
Project #: 334893.TM.1.000.00.00 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity Symbol Retention Peak Height Rel. Height % Ion (m/z) **Time** (217 m/z)13β, 17α-Diacholestane (20S) 1 217 ND ND ND 13 $\beta$ , 17 $\alpha$ -Diacholestane (20R) 2 217 ND ND ND 13α, 17β-Diacholestane (20S) 3 217 ND ND ND 4 13α, 17β-Diacholestane (20R) 217 ND ND ND 24-methyl-13 $\beta$ ,17 $\alpha$ -Diacholestane (20S) 5 217 ND ND ND 6 ND ND 24-methyl-13 $\beta$ ,17 $\alpha$ -Diacholestane (20S) 217 ND 24-methyl- $13\alpha$ , $17\beta$ -Diacholestane (20S) 7D 217 ND ND ND  $14\alpha$ ,  $17\alpha$ -Cholestane (20S) 7 217 ND ND ND 24-ethyl-13 $\beta$ , 17 $\alpha$ -Diacholestane (20S)+ 8+8D 217 ND ND ND  $14\beta$ ,17β-Cholestane (20R)  $14\beta$ ,  $17\beta$ -Cholestane (20S) 9 217 ND ND ND 24-methyl-13α,17β-Diacholestane (20R) 9D 217 ND ND ND  $14\alpha$ ,  $17\alpha$ -Cholestane (20R) 10 217 ND ND ND 24-ethyl-13 $\beta$ , 17 $\alpha$ -Diacholestane (20R) 11 217 ND ND ND 24-ethyl-13α, 17β-Diacholestane (20S) 12 217 ND ND ND 24-ethyl-13 $\alpha$ , 17 $\alpha$ -Diacholestane (20S) 13 217 ND ND ND 24-methyl-14β, 17β-Cholestane (20R) 14 217 ND ND ND 24-methyl-14β, 17β-Cholestane (20S) 15 ND ND 217 ND 24-methyl-14 $\alpha$ , 17 $\alpha$ -Cholestane (20R) 16 217 ND ND ND 17 ND 24-ethyl-14 $\alpha$ -Cholestane (20S) 217 ND ND 24-ethyl-14β, 17β-Cholestane (20R) ND ND 18 217 ND 24-ethyl-14 $\beta$ , 17 $\beta$ -Cholestane (20S) 19 217 ND ND ND 24-ethyl-14α, 17α-Cholestane (20R) 20 217 ND ND ND

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-2

Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-12-201207

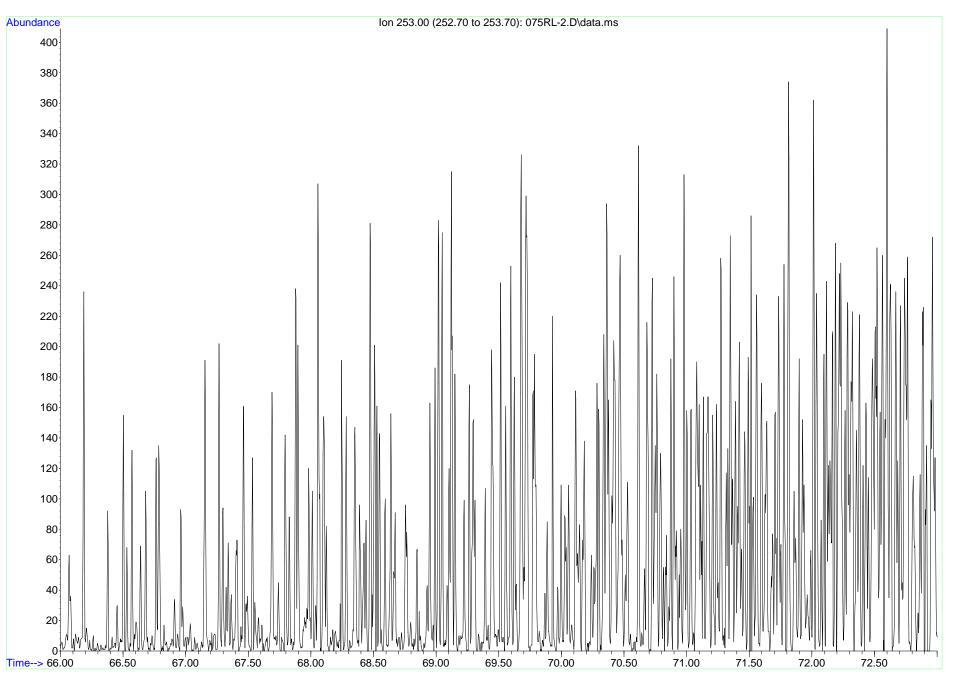
Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	а	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	е	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-2 0.40264 g





## Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-2

Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

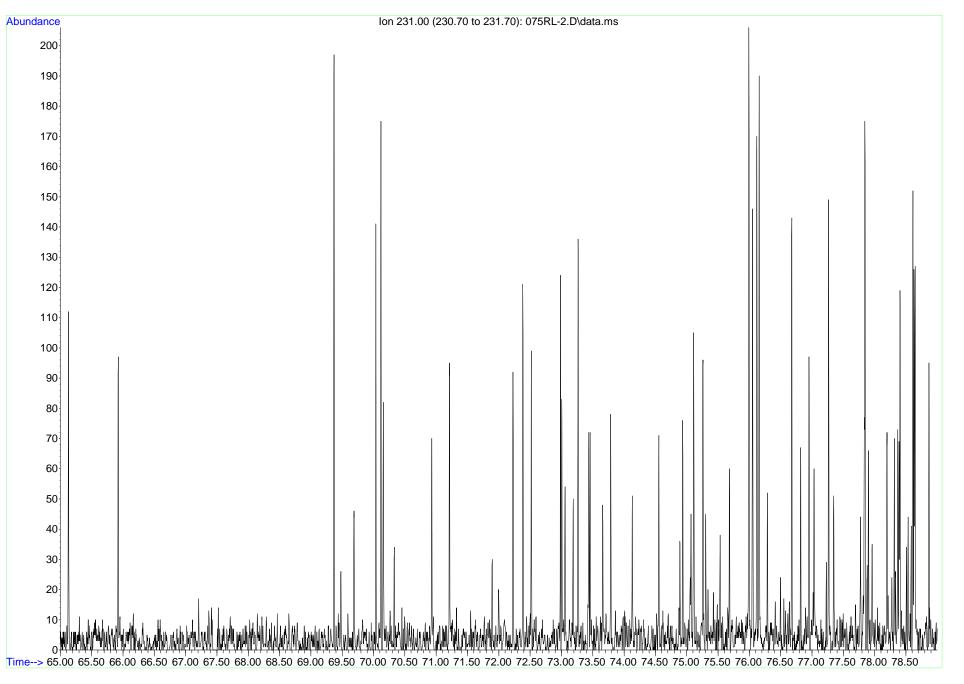
Client ID: MW-12-201207

Analyzed: 12/15/2020

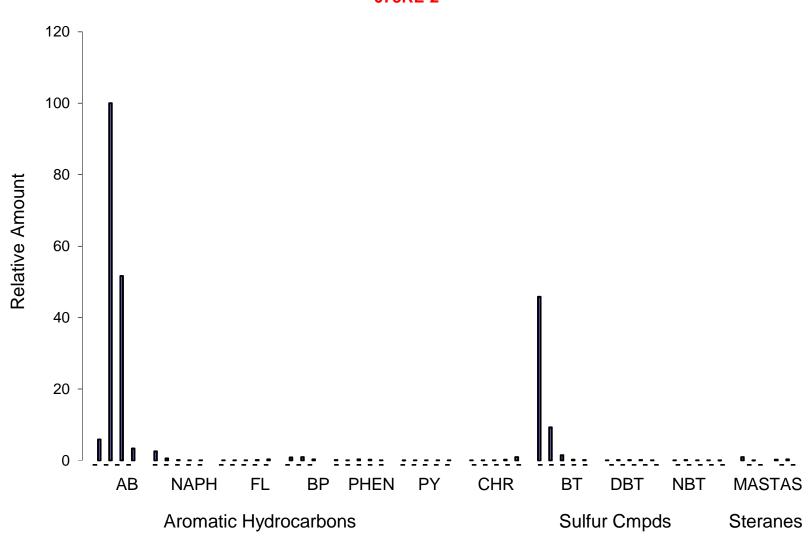
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	T3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	T6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	T7	231	ND	ND	ND

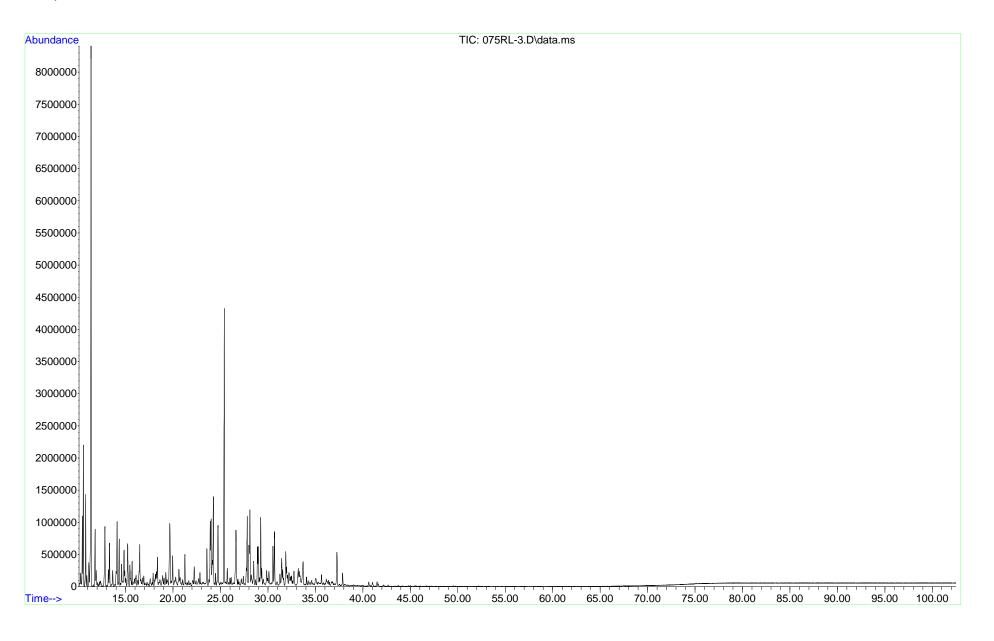
0.40264 g in 10mL DCM FOREN4LA\_MI\_BACK



Aromatic Hydrocarbon Distribution
075RL-2



Acquired : 15 Dec 2020 20:31 Sample Name: 075RL-3 using AcqMethod FOREN4LA\_MI\_BACK.M





Lab ID: 075RL-3

Received: 12/11/2020

Matrix: Product

## Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire

Collected: 12/07/2020 Client: Leidos, Inc. Address: 18939 120th Avenue NE,

Bothell, WA 98011

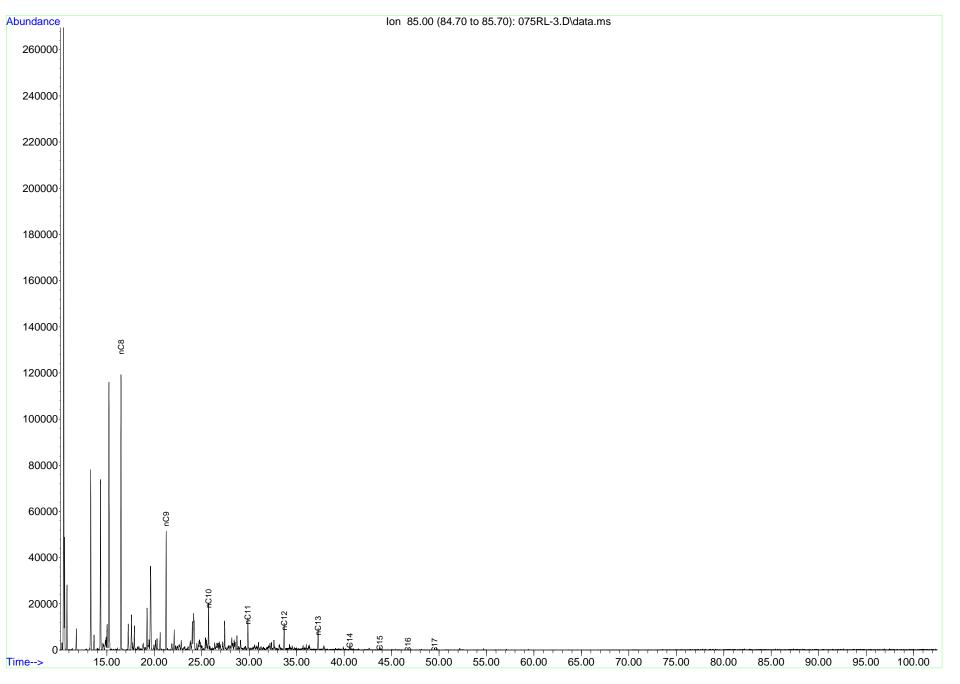
Project: Chelan Chevron Site Client ID: RW-2-201207 Project #: 334893.TM.1.000.00.0 Analyzed: 12/15/2020

Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(85 m/z)
n-Octane	nC8	85	16.5	119157.0	51.5%
n-Nonane	nC9	85	21.2	51471.0	22.3%
n-Decane	nC10	85	25.7	19969.0	8.6%
n-Undecane	nC11	85	29.9	13283.0	5.7%
n-Dodecane	nC12	85	33.7	11429.0	4.9%
n-Tridecane	nC13	85	37.3	9276.0	4.0%
n-Tetradecane	nC14	85	40.6	2762.0	1.2%
n-Pentadecane	nC15	85	43.8	1884.0	0.8%
n-Hexadecane	nC16	85	46.7	1019.0	0.4%
n-Heptadecane	nC17	85	49.5	991.0	0.4%
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-3 0.40650 g





# Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-3 Collected: 12/07/2020

Received: 12/11/2020

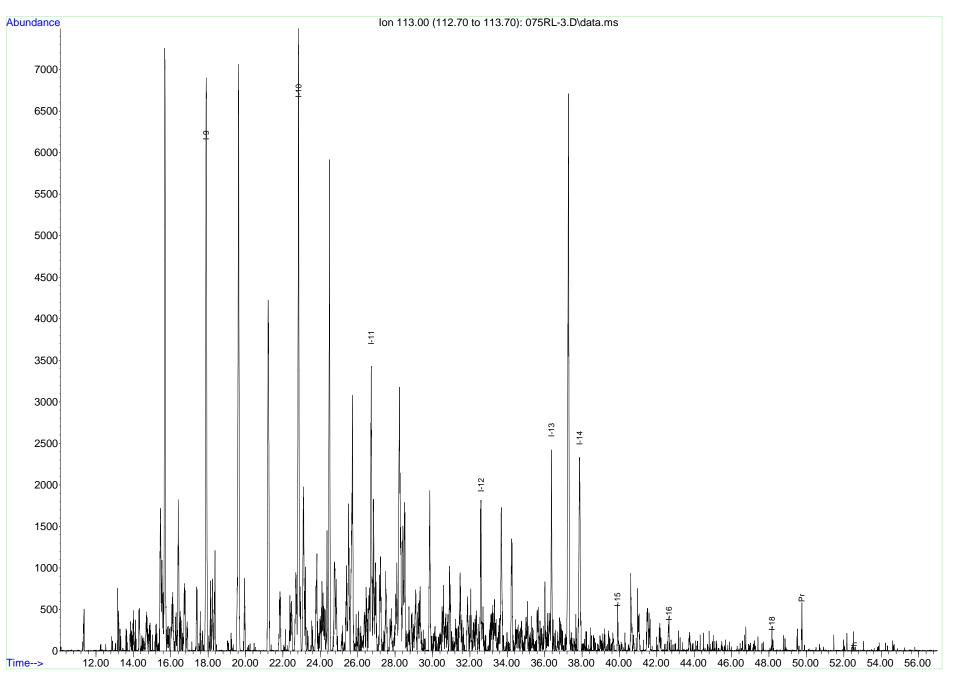
Matrix: Product

Client ID: RW-2-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	6899.0	26.7%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	7369.0	28.5%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	3241.0	12.5%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.6	1752.0	6.8%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	2408.0	9.3%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	2330.0	9.0%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	558.0	2.2%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.6	412.0	1.6%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.2	297.0	1.1%
Pristane (Isoprenoid - C19)	Pr	113	49.8	579.0	2.2%
Phytane (Isoprenoid - C20)	Ph	113	52.6	42.0	0.2%

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK





# Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Client ID: RW-2-201207 Analyzed: 12/15/2020

Lab ID: 075RL-3

Collected: 12/07/2020

Received: 12/11/2020

Matrix: Product

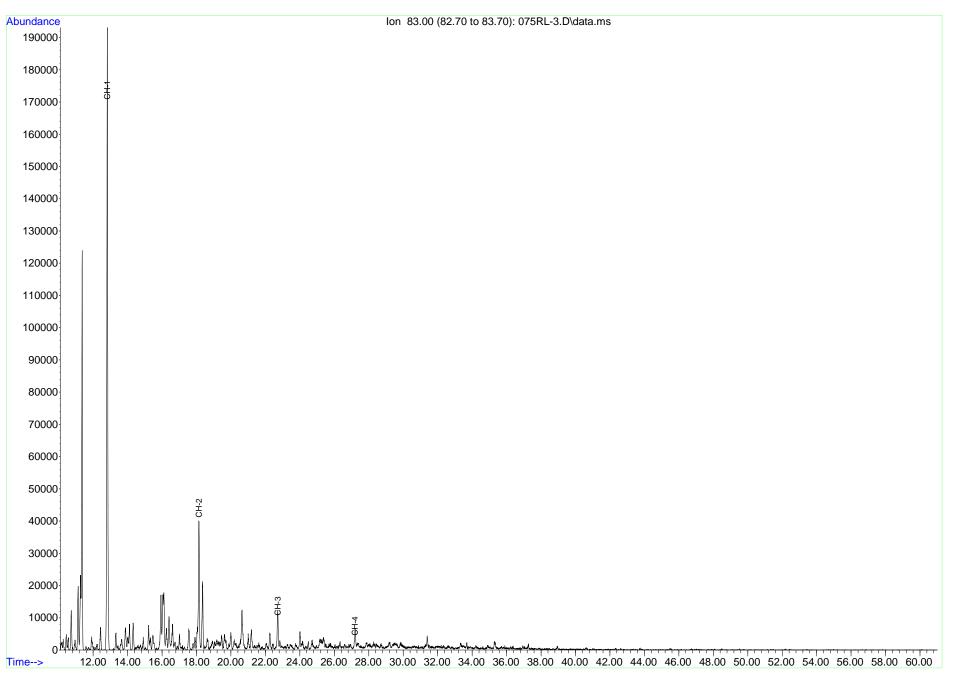
Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %

identity	Зуппоот	1011	Retention	reak Height	Nei. Height 70
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	193019.0	77.5%
Ethylcyclohexane	CH-2	83	18.1	38569.0	15.5%
Propylcyclohexane	CH-3	83	22.7	11513.0	4.6%
Butylcyclohexane	CH-4	83	27.2	6040.0	2.4%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-3 0.40650 g





# Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-3 Collected: 12/07/2020 Received: 12/11/2020

Matrix: Product

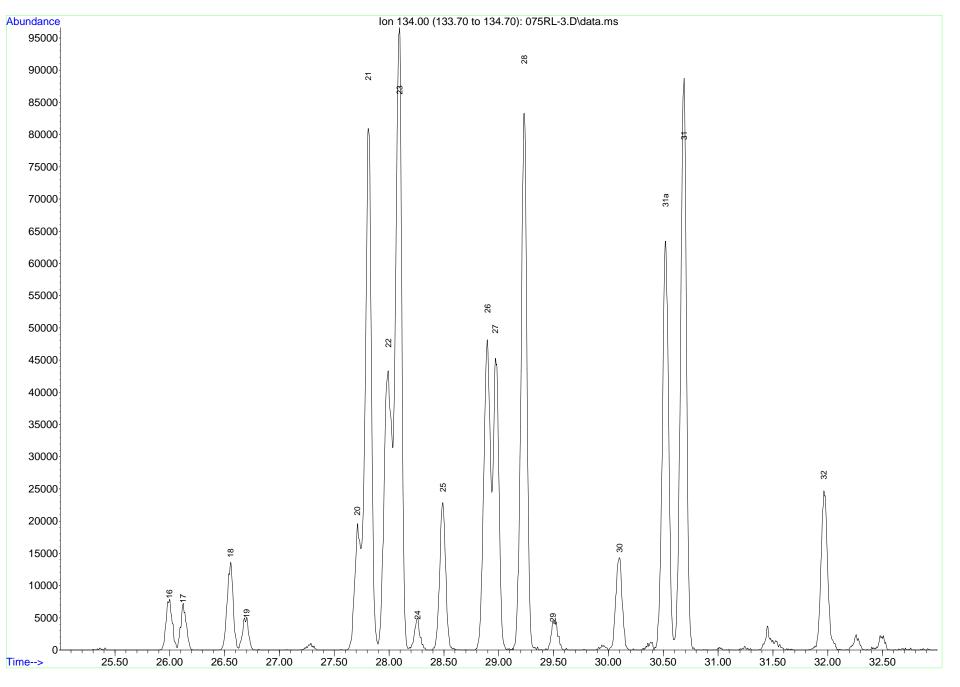
Client ID: RW-2-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	7906.0	1.2%
1-Methyl-3-Isopropylbenzene	17	134	26.1	7269.0	1.1%
1-Methyl-4-Isopropylbenzene	18	134	26.6	13652.0	2.0%
1-Methyl-2-Isopropylbenzene	19	134	26.7	5110.0	0.8%
1,3-Diethylbenzene	20	134	27.7	19632.0	2.9%
1-Methyl-3-Propylbenzene	21	134	27.8	80887.0	12.0%
Butylbenzene	22	134	28.0	43189.0	6.4%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	96382.0	14.3%
1,2-Diethylbenzene	24	134	28.3	4666.0	0.7%
1-Methyl-2-Propylbenzene	25	134	28.5	22893.0	3.4%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	48166.0	7.2%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	45226.0	6.7%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	83328.0	12.4%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	4575.0	0.7%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	14337.0	2.1%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	63144.0	9.4%
1,2,3,5-Tetramethylbenzene	31	134	30.7	88549.0	13.1%
1,2,3,4-Tetramethylbenzene	32	134	32.0	24672.0	3.7%

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-3 0.40650 g





## Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire Lab ID: 075RL-3

Client: Leidos, Inc. Collected:

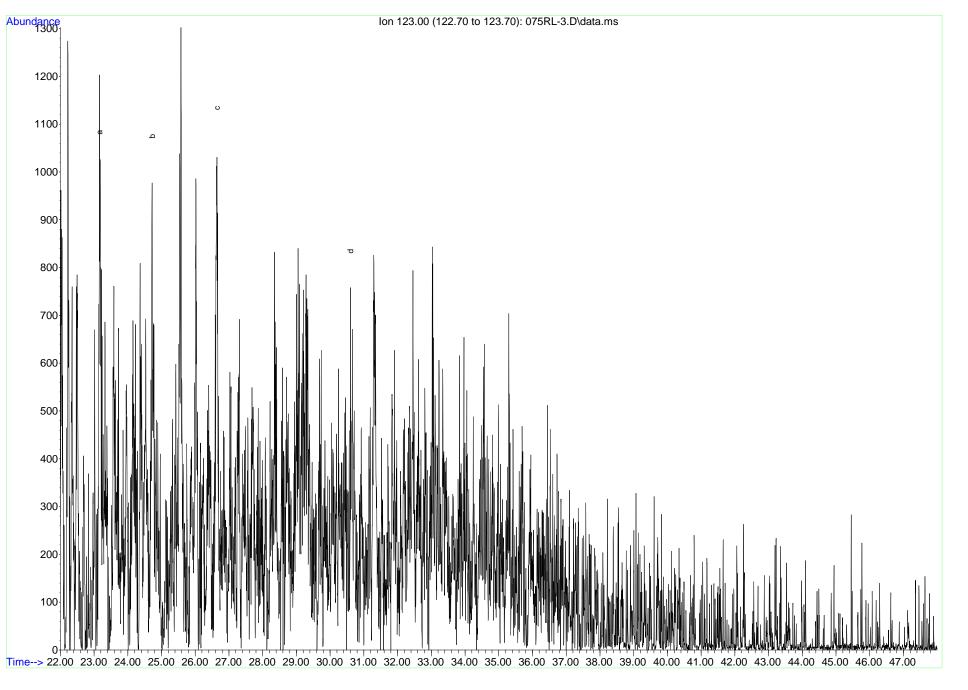
Address: 18939 120th Avenue NE, Received: 12/11/2020

Bothell, WA 98011 Matrix: Product
Project: Chelan Chevron Site Client ID: RW-2-201207

Project #: 334893.TM.1.000.00.0 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention	Peak Height	Rel. Height %
			Time		(123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	1111.0	31.9%
C <sub>10</sub> bicycloalkane	b	123	24.7	870.0	25.0%
3,3,7-Trimethylbicycloheptane	С	123	26.6	839.0	24.1%
C <sub>11</sub> Decalin	d	123	30.6	663.0	19.0%
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK



Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-3
Collected: 12/07/2020
Received: 12/11/2020
Matrix: Product
Client ID: RW-2-201207

Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	Z4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21 $\alpha$ -Moretane	0	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	T	191	ND	ND	ND
22R-17α,21β-30-Bishomohopane	U	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	WS	191	ND	ND	ND
$22R-17\alpha,21\beta$ -Trishomohopane	WR	191	ND	ND	ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-3 Collected: 12/07/2020 Received: 12/11/2020 Matrix: Product

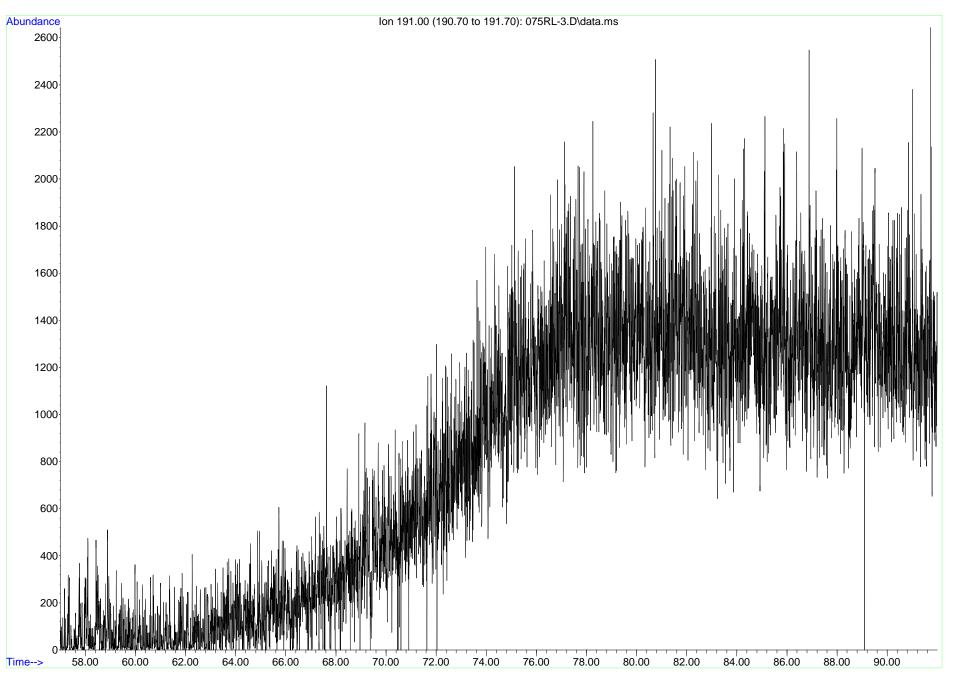
Client ID: RW-2-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-3 0.40650 g





Lab ID: 075RL-3 Collected: 12/07/2020

Received: 12/11/2020

Matrix: Product

## **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.00

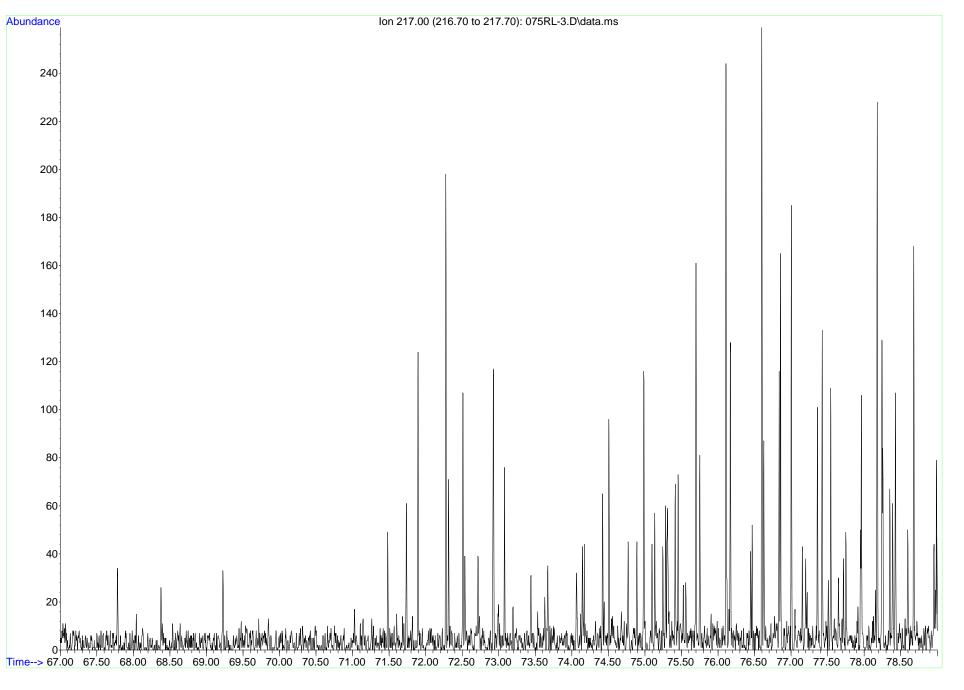
Analyzed: 12/15/2020

Client ID: RW-2-201207

Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14 $\alpha$ , 17 $\alpha$ -Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	ND	ND	ND

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Collected: 12/07/2020 Received: 12/11/2020 Matrix: Product

Lab ID: 075RL-3

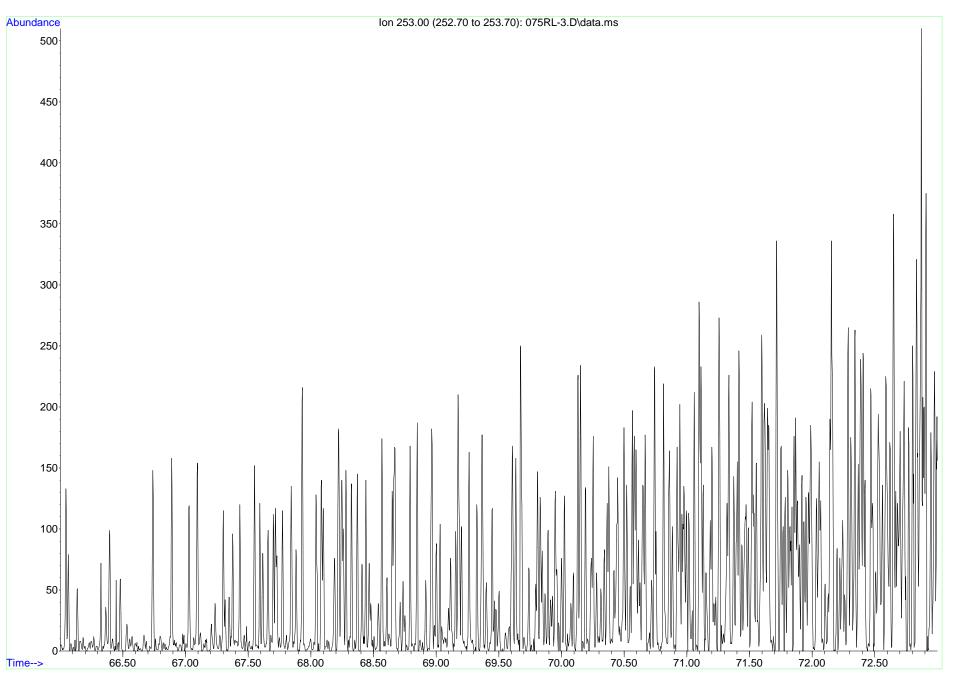
Client ID: RW-2-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	a	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	e	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-3 0.40650 g





## Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-3

Collected: 12/07/2020 Received: 12/11/2020

Matrix: Product

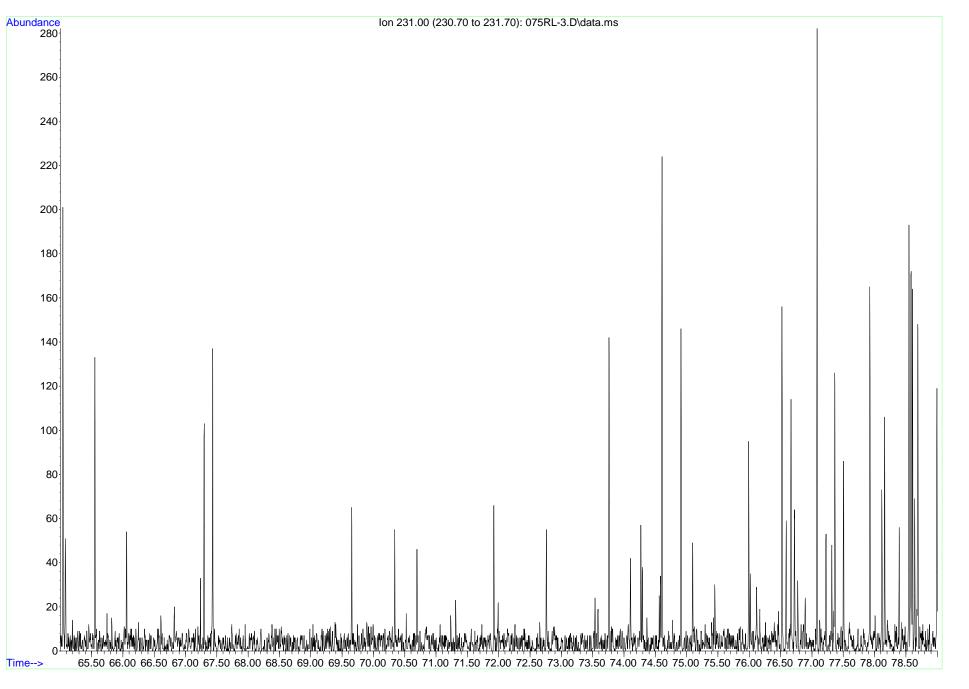
Client ID: RW-2-201207

Analyzed: 12/15/2020

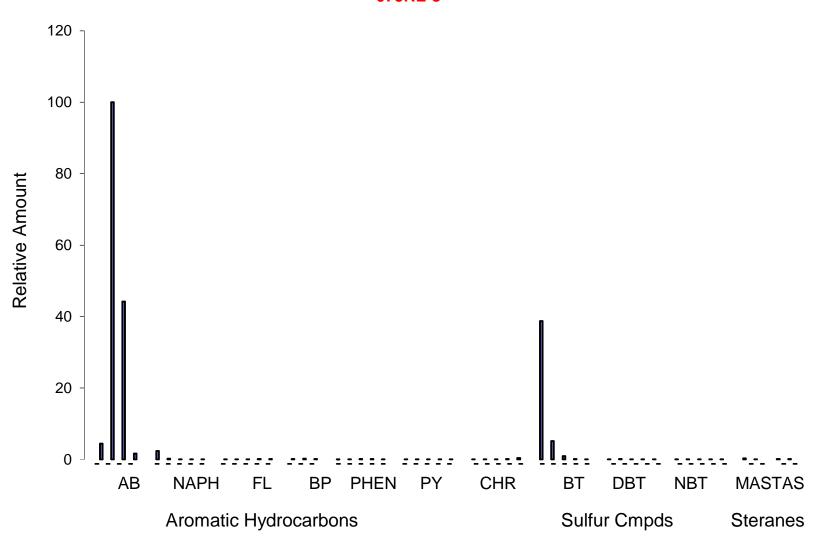
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	Т3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	Т6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	T7	231	ND	ND	ND

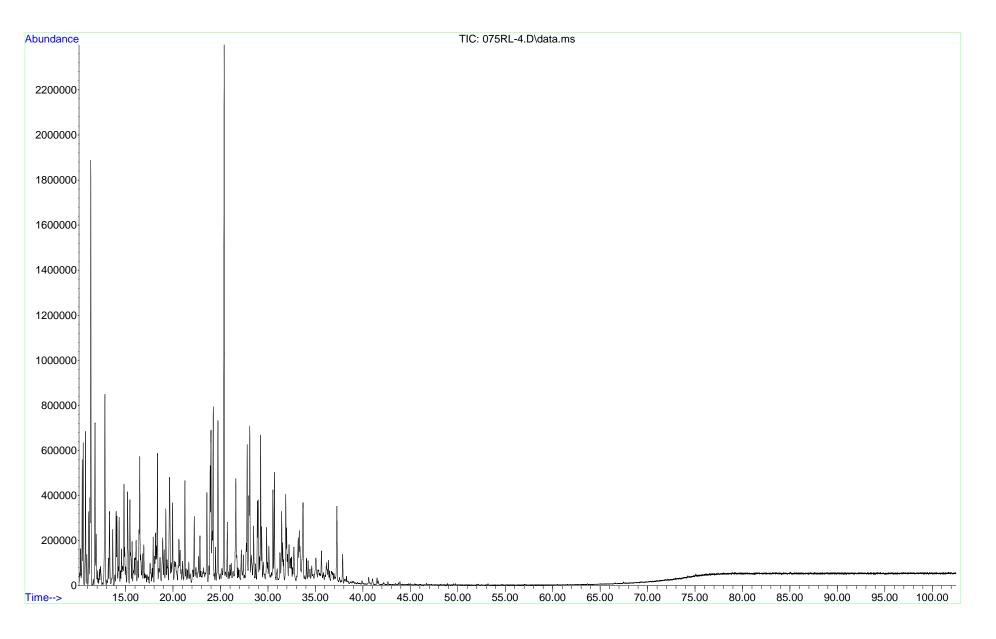
0.40650 g in 10mL DCM FOREN4LA\_MI\_BACK



# Aromatic Hydrocarbon Distribution 075RL-3



Acquired : 15 Dec 2020 22:22 Sample Name: 075RL-4 using AcqMethod FOREN4LA\_MI\_BACK.M





## Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-4

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

Received: 12/11/2020

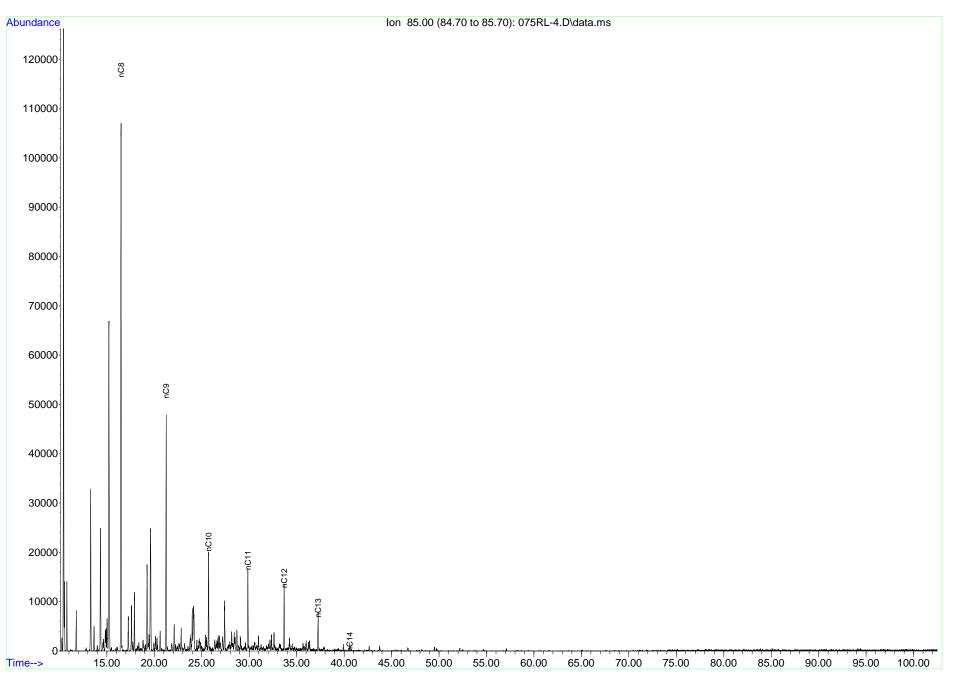
Matrix: Product

Project: Chelan Chevron Site Client ID: MW-9-201207
Project #: 334893.TM.1.000.00.0 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	107064.0	50.1%
n-Nonane	nC9	85	21.3	47818.0	22.4%
n-Decane	nC10	85	25.7	19900.0	9.3%
n-Undecane	nC11	85	29.9	16292.0	7.6%
n-Dodecane	nC12	85	33.7	13250.0	6.2%
n-Tridecane	nC13	85	37.3	7822.0	3.7%
n-Tetradecane	nC14	85	40.6	1694.0	0.8%
n-Pentadecane	nC15	85	ND	ND	ND
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-4 0.40000 g





# Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-4

Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

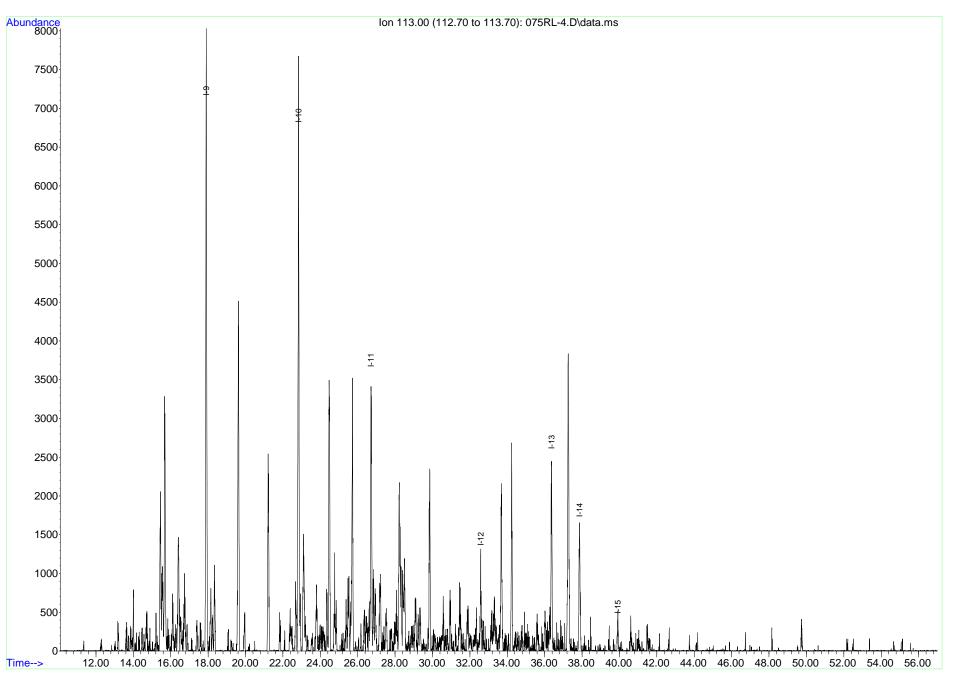
Client ID: MW-9-201207

Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	8024.0	32.2%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	7668.0	30.8%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	3327.0	13.4%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.6	1288.0	5.2%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	2423.0	9.7%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	1647.0	6.6%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	517.0	2.1%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	ND	ND	ND
Iso-alkane w/ 18 Carbon Atoms	I-18	113	ND	ND	ND
Pristane (Isoprenoid - C19)	Pr	113	ND	ND	ND
Phytane (Isoprenoid - C20)	Ph	113	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK





# Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-4 Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

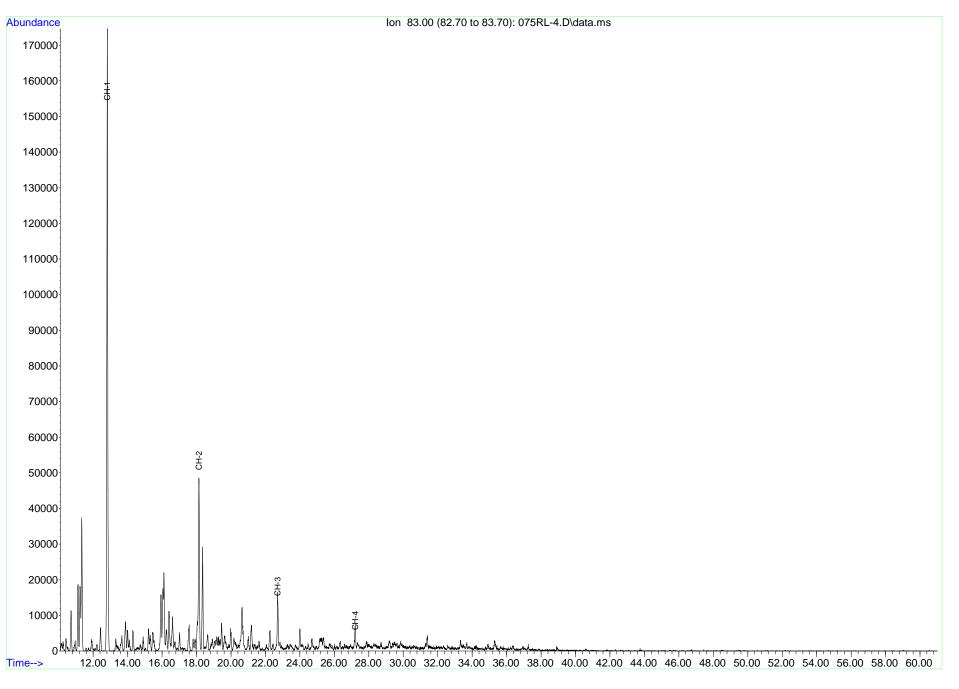
Client ID: MW-9-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	174656.0	71.3%
Ethylcyclohexane	CH-2	83	18.1	48163.0	19.7%
Propylcyclohexane	CH-3	83	22.7	15061.0	6.2%
Butylcyclohexane	CH-4	83	27.2	6926.0	2.8%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-4 0.40000 g





# Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-4 Collected: 12/7/2020 Received: 12/11/2020

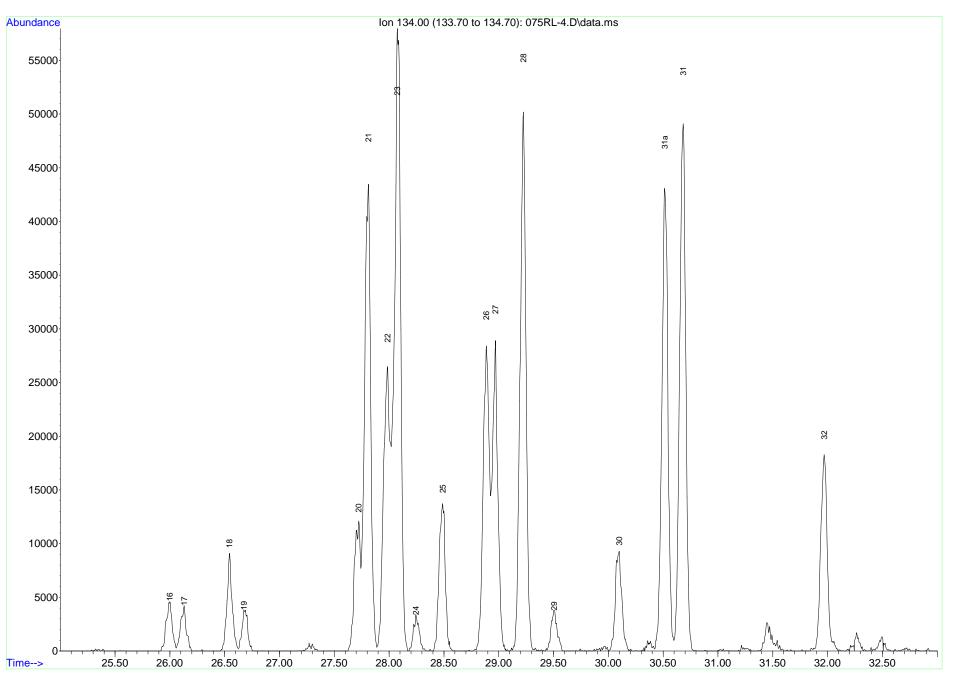
Matrix: Product

Client ID: MW-9-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (134 m/z)
Sec-Butylbenzene	16	134	26.0	4586.0	1.1%
1-Methyl-3-Isopropylbenzene	17	134	26.1	4223.0	1.0%
1-Methyl-4-Isopropylbenzene	18	134	26.5	9107.0	2.2%
1-Methyl-2-Isopropylbenzene	19	134	26.7	3809.0	0.9%
1,3-Diethylbenzene	20	134	27.7	12112.0	3.0%
1-Methyl-3-Propylbenzene	21	134	27.8	43124.0	10.6%
Butylbenzene	22	134	28.0	26156.0	6.4%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	57955.0	14.2%
1,2-Diethylbenzene	24	134	28.2	3417.0	0.8%
1-Methyl-2-Propylbenzene	25	134	28.5	13735.0	3.4%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	28293.0	6.9%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	28874.0	7.1%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	50111.0	12.3%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3796.0	0.9%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	9253.0	2.3%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	42922.0	10.5%
1,2,3,5-Tetramethylbenzene	31	134	30.7	49085.0	12.0%
1,2,3,4-Tetramethylbenzene	32	134	32.0	18065.0	4.4%

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.0

Collected by:

Collected: 12/7/2020 Received: 12/11/2020

Lab ID: 075RL-4

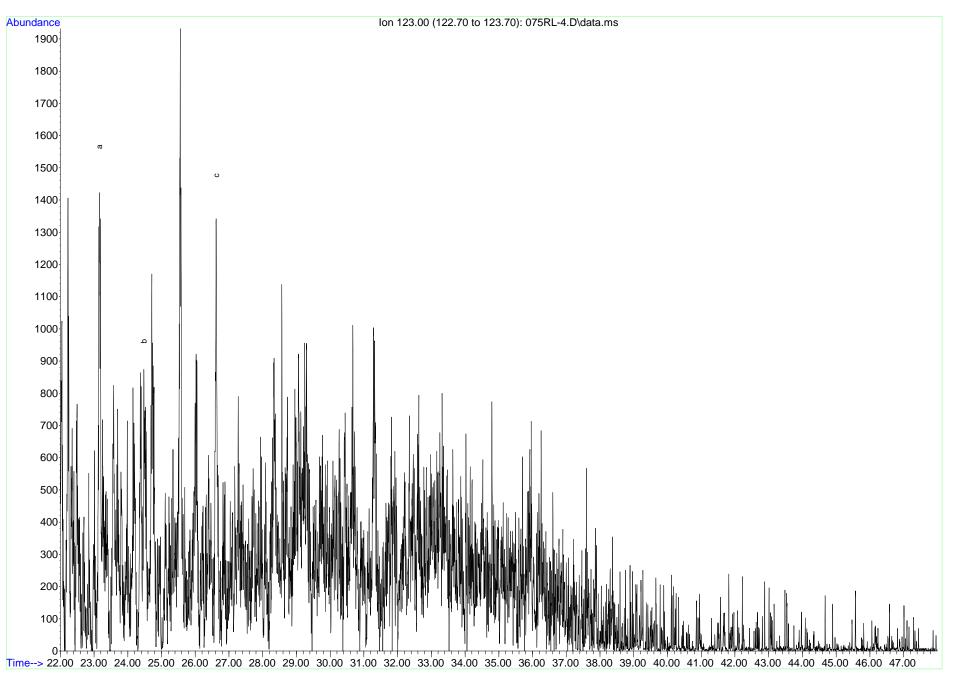
Matrix: Product

Client ID: MW-9-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	а	123	23.2	1303.0	37.3%
C <sub>10</sub> bicycloalkane	b	123	24.5	851.0	24.4%
3,3,7-Trimethylbicycloheptane	С	123	26.6	1336.0	38.3%
C <sub>11</sub> Decalin	d	123	ND	ND	ND
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK



Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-4 Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Analyzed: 12/15/2020 Q Method: FSRTL120320.M

Client ID: MW-9-201207

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	Z4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	T	191	ND	ND	ND
$22R-17\alpha,21\beta-30$ -Bishomohopane	U	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	WS	191	ND	ND	ND
$22R-17\alpha,21\beta$ -Trishomohopane	WR	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -Tetrahomohopane	XS	191	ND	ND	ND

Project Manager: Russ Shropshire

Client: Leidos, Inc. Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-4
Collected: 12/7/2020
Received: 12/11/2020
Matrix: Product

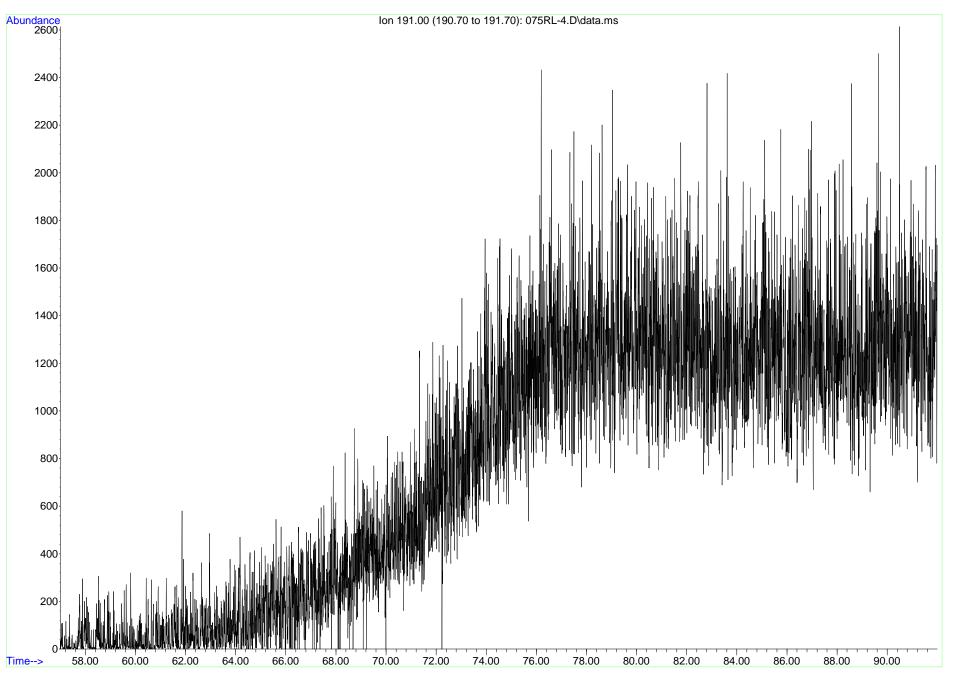
Client ID: MW-9-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-4 0.40000 g





Lab ID: 075RL-4

## **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

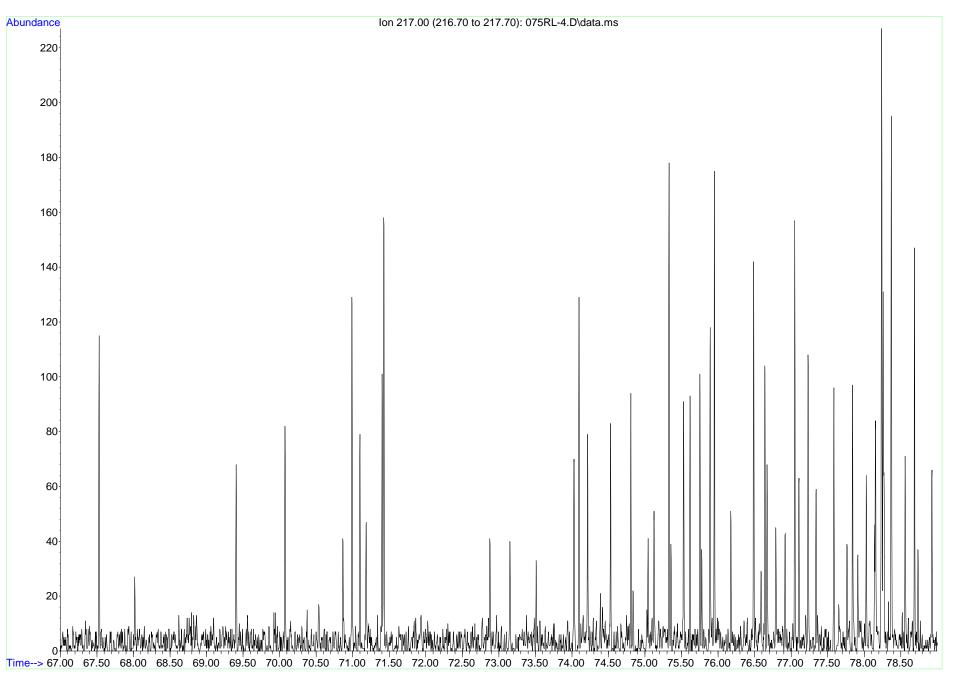
Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-9-201207
Project #: 334893.TM.1.000.00.00 Analyzed: 12/15/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-4
Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

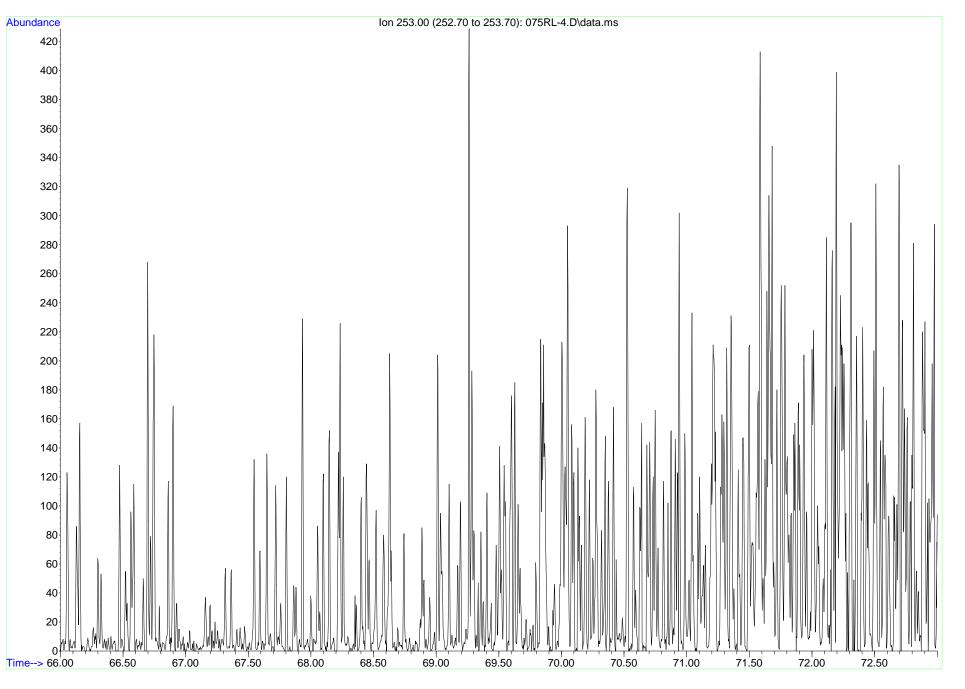
Client ID: MW-9-201207 Analyzed: 12/15/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	а	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	е	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-4 0.40000 g





## Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-4

Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

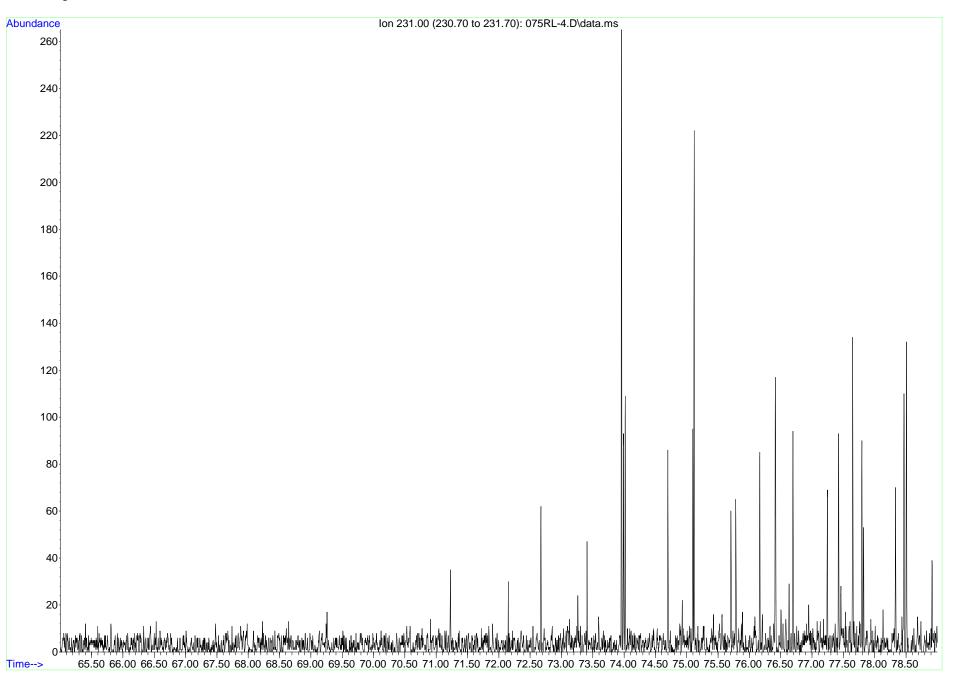
Client ID: MW-9-201207

Analyzed: 12/15/2020

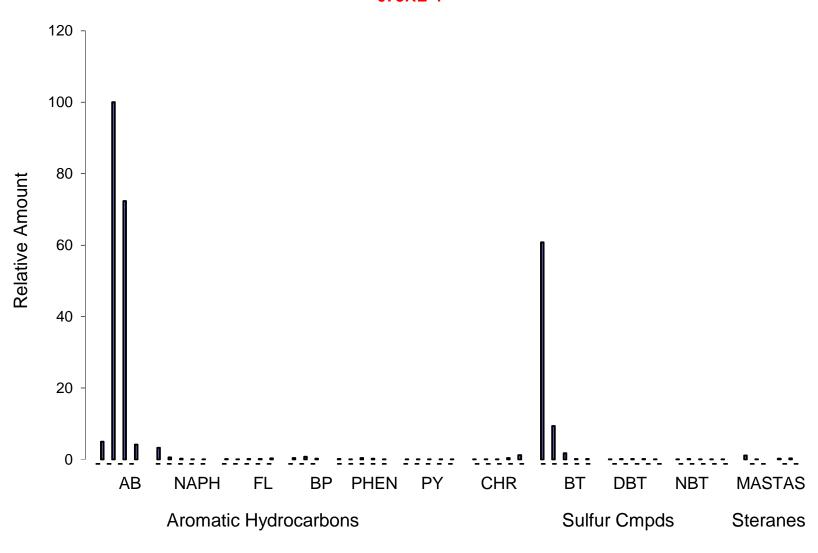
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	T3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	T6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	T7	231	ND	ND	ND

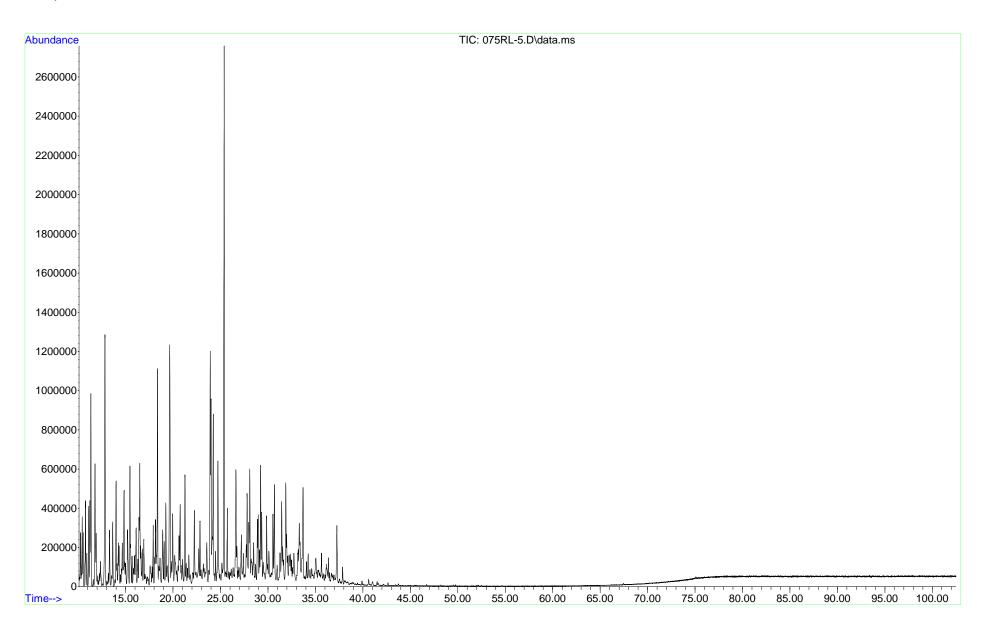
0.40000 g in 10mL DCM FOREN4LA\_MI\_BACK



Aromatic Hydrocarbon Distribution
075RL-4



Acquired : 16 Dec 2020 00:14 Sample Name: 075RL-5 using AcqMethod FOREN4LA\_MI\_BACK.M





### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-5

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

Received: 12/11/2020

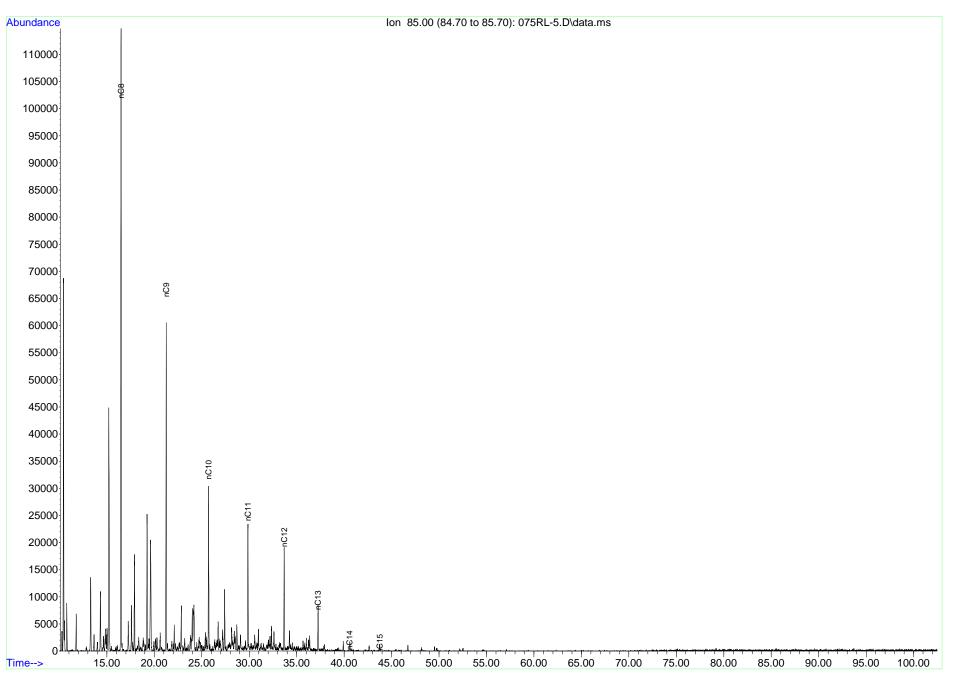
Matrix: Product

Project: Chelan Chevron Site Client ID: MW-44-201207
Project #: 334893.TM.1.000.00.0 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	114644.0	44.3%
n-Nonane	nC9	85	21.3	60526.0	23.4%
n-Decane	nC10	85	25.7	30200.0	11.7%
n-Undecane	nC11	85	29.9	23072.0	8.9%
n-Dodecane	nC12	85	33.7	18907.0	7.3%
n-Tridecane	nC13	85	37.3	8385.0	3.2%
n-Tetradecane	nC14	85	40.6	1787.0	0.7%
n-Pentadecane	nC15	85	43.8	1242.0	0.5%
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-5 0.40623 g





# Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-5 Collected: 12/7/2020 Received: 12/11/2020

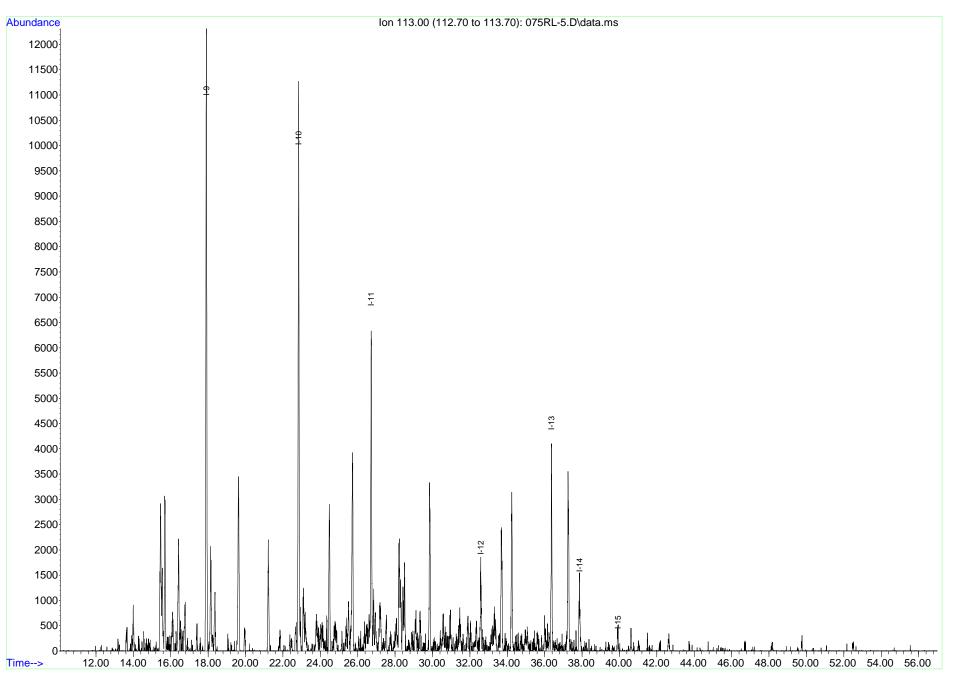
Matrix: Product

Client ID: MW-44-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	12314.0	32.8%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	11267.0	30.0%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	5947.0	15.9%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.6	1855.0	4.9%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	4082.0	10.9%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	1538.0	4.1%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	513.0	1.4%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	ND	ND	ND
Iso-alkane w/ 18 Carbon Atoms	I-18	113	ND	ND	ND
Pristane (Isoprenoid - C19)	Pr	113	ND	ND	ND
Phytane (Isoprenoid - C20)	Ph	113	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK





Lab ID: 075RL-5

## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

Received: 12/11/2020

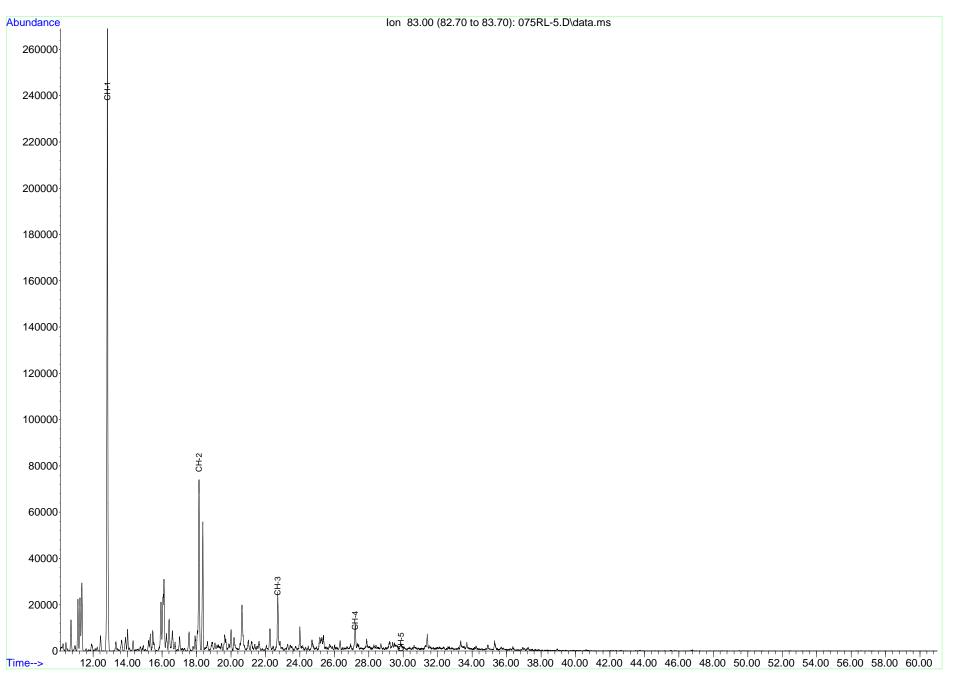
Matrix: Product

Project: Chelan Chevron Site Client ID: MW-44-201207
Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	268991.0	70.8%
Ethylcyclohexane	CH-2	83	18.1	73552.0	19.4%
Propylcyclohexane	CH-3	83	22.7	23783.0	6.3%
Butylcyclohexane	CH-4	83	27.2	10970.0	2.9%
Pentylcyclohexane	CH-5	83	29.9	2434.0	0.6%
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-5 0.40623 g





## Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-5 Collected: 12/7/2020 Received: 12/11/2020

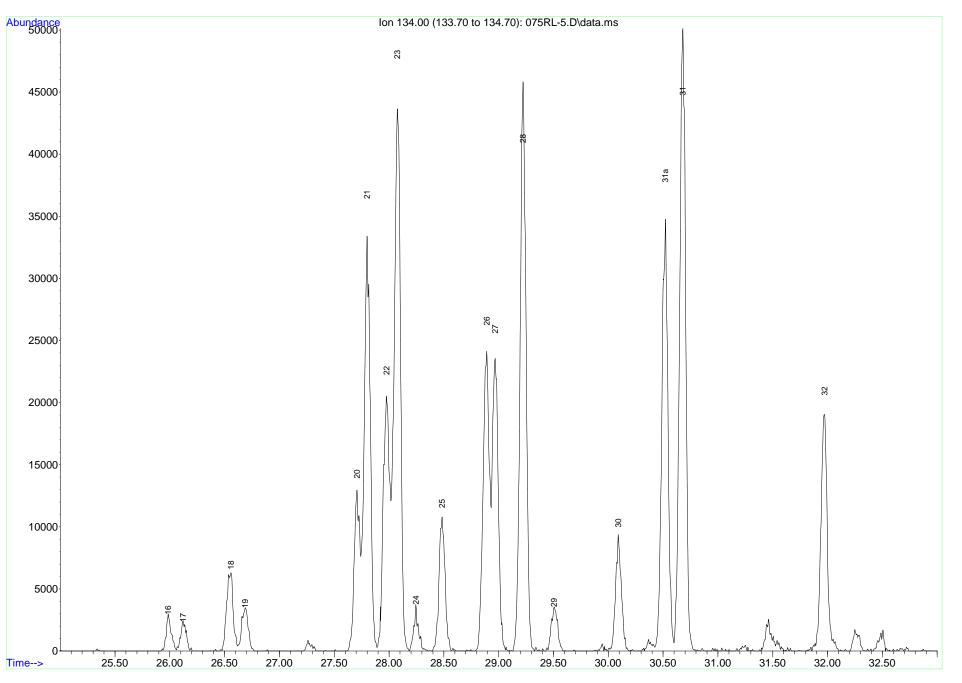
Matrix: Product

Client ID: MW-44-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	2928.0	0.8%
1-Methyl-3-Isopropylbenzene	17	134	26.1	2453.0	0.7%
1-Methyl-4-Isopropylbenzene	18	134	26.6	6297.0	1.8%
1-Methyl-2-Isopropylbenzene	19	134	26.7	3488.0	1.0%
1,3-Diethylbenzene	20	134	27.7	12955.0	3.7%
1-Methyl-3-Propylbenzene	21	134	27.8	33109.0	9.5%
Butylbenzene	22	134	28.0	20229.0	5.8%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	43648.0	12.5%
1,2-Diethylbenzene	24	134	28.2	3746.0	1.1%
1-Methyl-2-Propylbenzene	25	134	28.5	10798.0	3.1%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	24125.0	6.9%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	23474.0	6.7%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	45824.0	13.1%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3541.0	1.0%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	9375.0	2.7%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	34482.0	9.9%
1,2,3,5-Tetramethylbenzene	31	134	30.7	50017.0	14.3%
1,2,3,4-Tetramethylbenzene	32	134	32.0	18616.0	5.3%

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.0

Collected by:

Lab ID: 075RL-5

Collected: 12/7/2020 Received: 12/11/2020

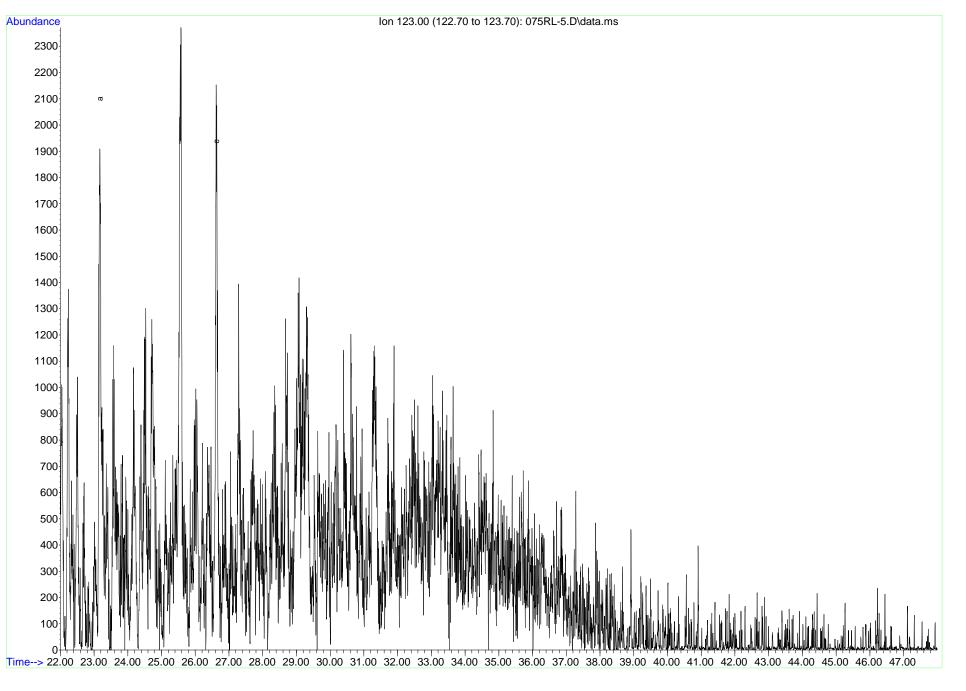
Matrix: Product

Client ID: MW-44-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	а	123	23.2	1841.0	46.1%
C <sub>10</sub> bicycloalkane	b	123	ND	ND	ND
3,3,7-Trimethylbicycloheptane	С	123	26.6	2153.0	53.9%
C <sub>11</sub> Decalin	d	123	ND	ND	ND
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK



Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-5 Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-44-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	<b>Z4</b>	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
$17\alpha$ -25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
$18\alpha$ -30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	P	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	T	191 101	ND	ND	ND
22R-17α,21β-30-Bishomohopane	U	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane 22R-17α,21β-Trishomohopane	WS WR	191 191	ND ND	ND ND	ND ND
22S-17α,21β-Trisnomonopane 22S-17α,21β-Tetrahomohopane	XS	191 191	ND ND	ND ND	ND ND
223-174,21p-Tetranomonopane	۸۵	191	ND	ND	ND

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-5 Collected: 12/7/2020 Received: 12/11/2020

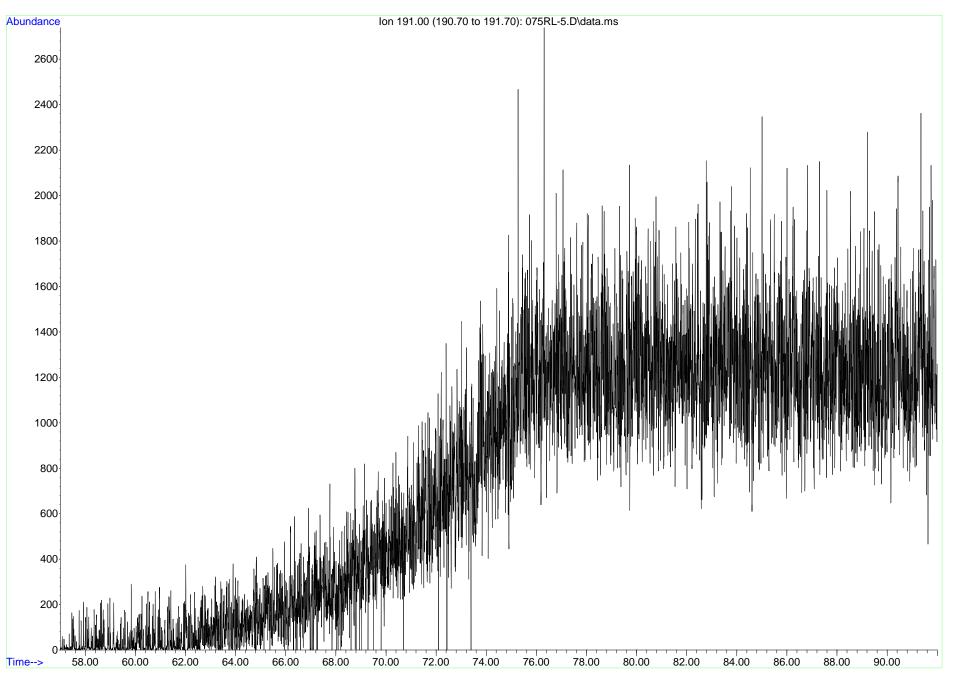
Matrix: Product

Client ID: MW-44-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-5 0.40623 g





Lab ID: 075RL-5

### **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

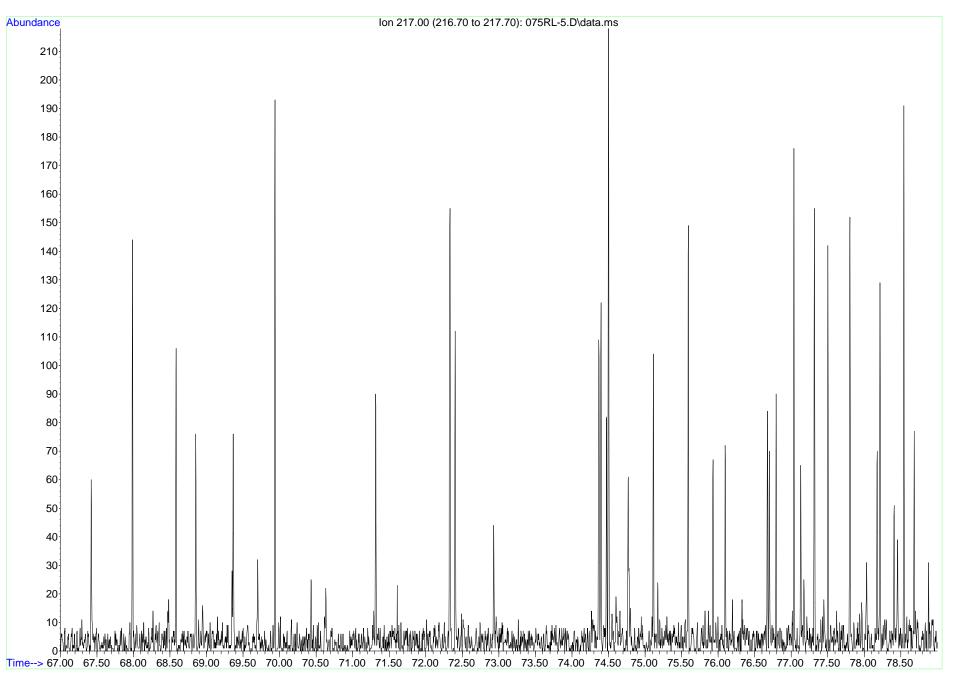
Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-44-201207
Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14 $\alpha$ , 17 $\alpha$ -Cholestane (20R)	20	217	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK





### Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-5

Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

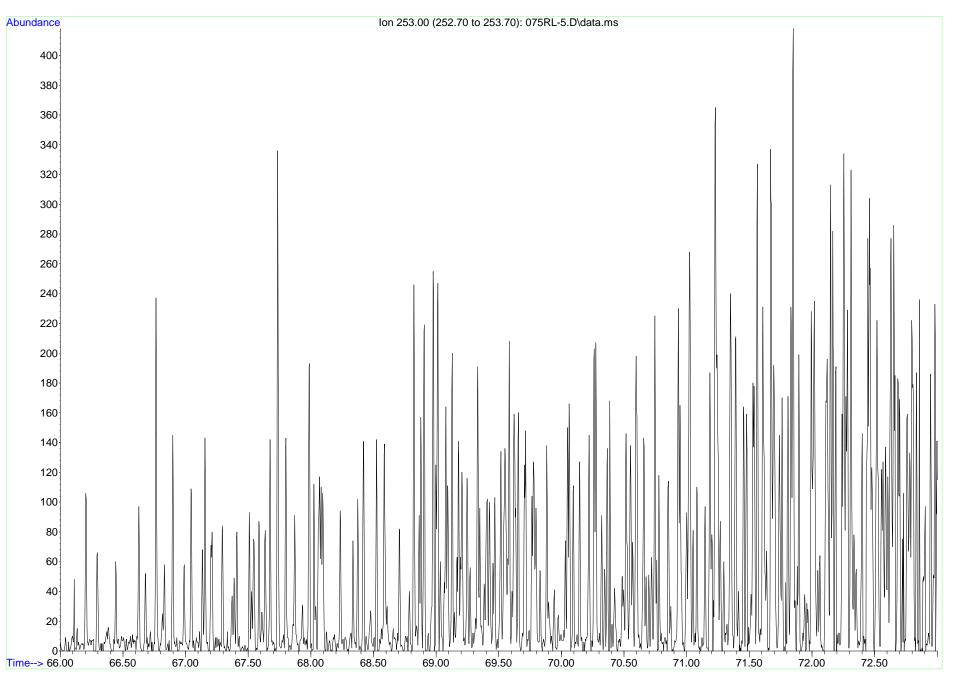
Client ID: MW-44-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (253 m/z)
20S, 5β C27-MAS	а	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	е	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-5 0.40623 g





### Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-5

Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

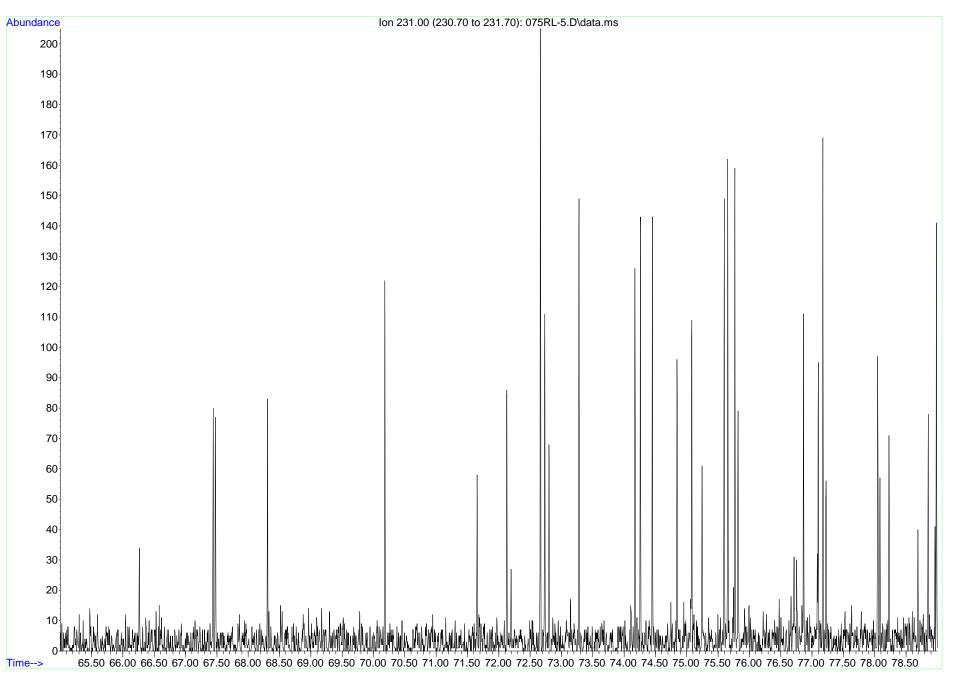
Client ID: MW-44-201207

Analyzed: 12/16/2020

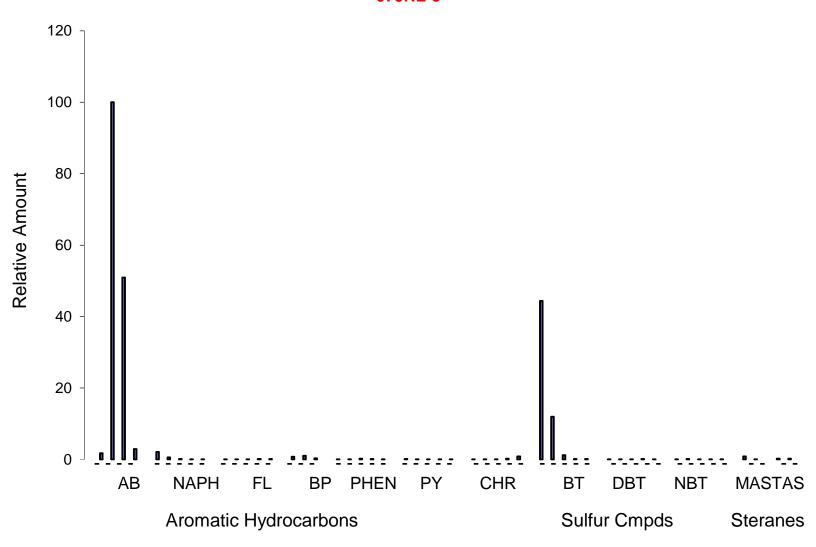
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	Т3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	T6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	Т7	231	ND	ND	ND

0.40623 g in 10mL DCM FOREN4LA\_MI\_BACK

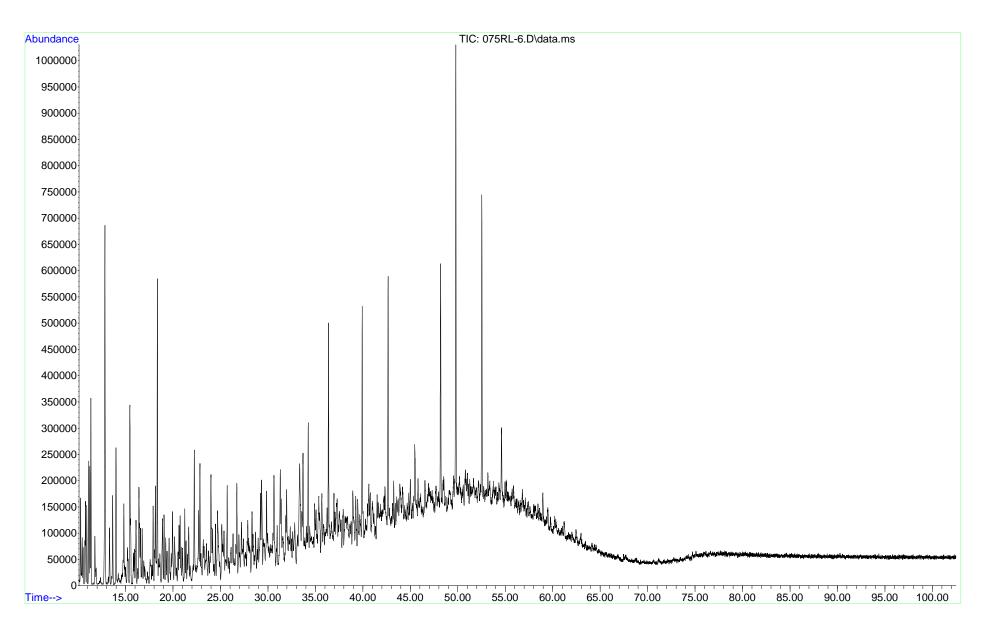


# Aromatic Hydrocarbon Distribution 075RL-5



Acquired : 16 Dec 2020 2:05 using AcqMethod FOREN4LA\_MI\_BACK.M

Sample Name: 075RL-6





### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-6

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

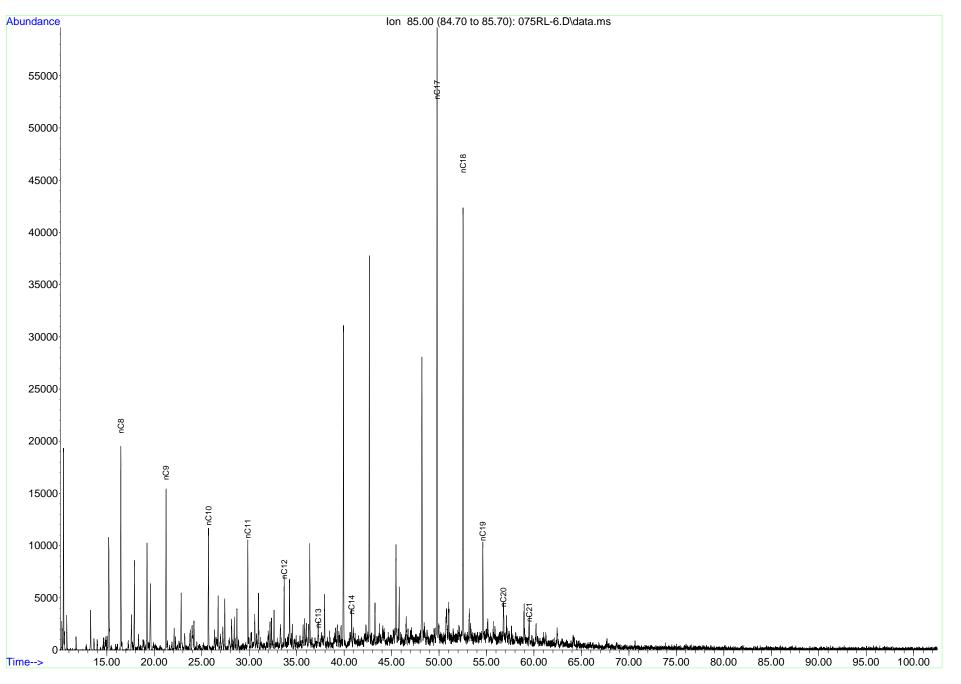
Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-19-201207
Project #: 334893.TM.1.000.00.0 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	19512.0	10.6%
n-Nonane	nC9	85	21.2	15427.0	8.4%
n-Decane	nC10	85	25.7	11570.0	6.3%
n-Undecane	nC11	85	29.8	10362.0	5.6%
n-Dodecane	nC12	85	33.7	6781.0	3.7%
n-Tridecane	nC13	85	37.3	2265.0	1.2%
n-Tetradecane	nC14	85	40.8	3486.0	1.9%
n-Pentadecane	nC15	85	ND	ND	ND
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	49.8	58180.0	31.6%
n-Octadecane	nC18	85	52.5	41206.0	22.4%
n-Nonadecane	nC19	85	54.6	9277.0	5.0%
n-Eicosane	nC20	85	56.8	3334.0	1.8%
n-Henicosane	nC21	85	59.5	2887.0	1.6%
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-6 Collected: 12/7/2020 Received: 12/11/2020

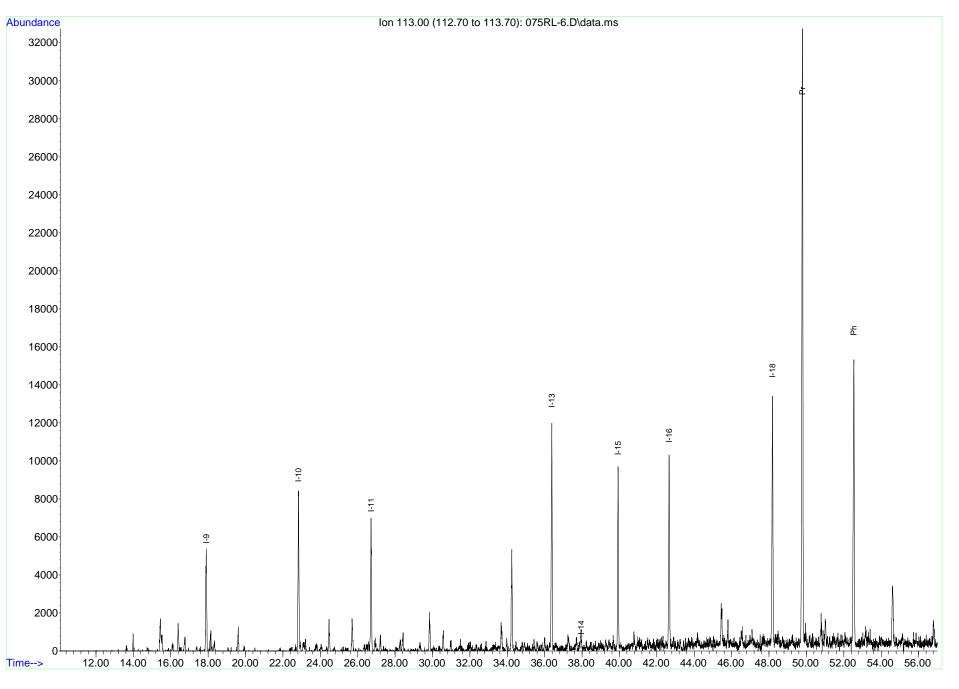
Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	5367.0	4.7%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	8424.0	7.4%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	6993.0	6.1%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	ND	ND	ND
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	11931.0	10.5%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	1105.0	1.0%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	9542.0	8.4%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.7	10108.0	8.9%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.2	13006.0	11.4%
Pristane (Isoprenoid - C19)	Pr	113	49.8	32309.0	28.4%
Phytane (Isoprenoid - C20)	Ph	113	52.5	15010.0	13.2%

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Collected: 12/7/2020 Received: 12/11/2020

Lab ID: 075RL-6

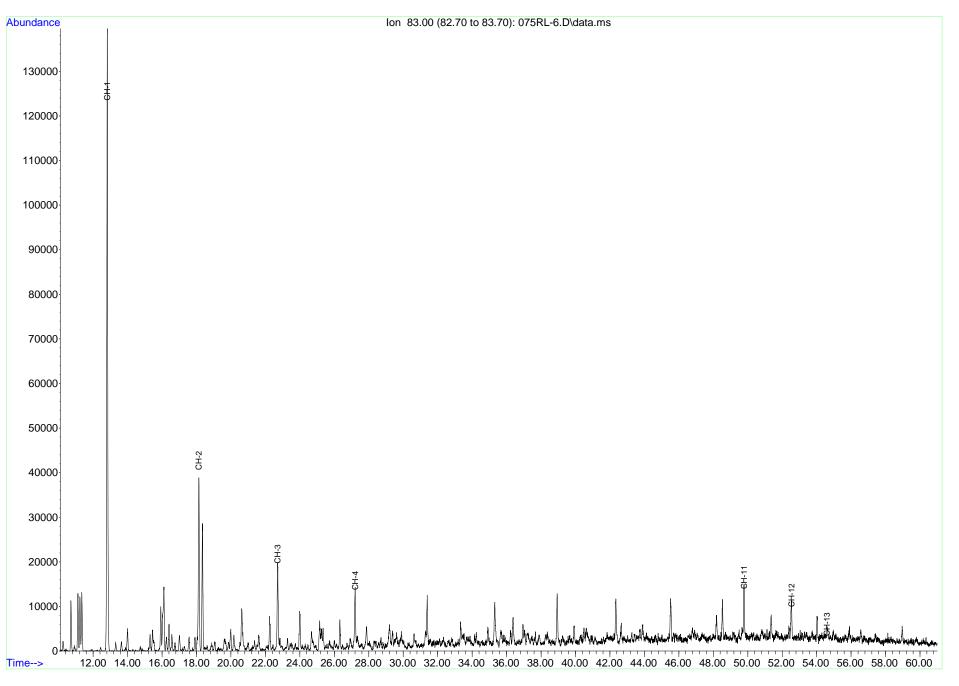
Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (83 m/z)
Methylcyclohexane	CH-1	83	12.8	139443.0	59.8%
Ethylcyclohexane	CH-2	83	18.1	38826.0	16.6%
Propylcyclohexane	CH-3	83	22.7	18832.0	8.1%
Butylcyclohexane	CH-4	83	27.2	12775.0	5.5%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	49.8	11599.0	5.0%
Dodecylcyclohexane	CH-12	83	52.5	8862.0	3.8%
Tridecylcyclohexane	CH-13	83	54.6	2966.0	1.3%
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

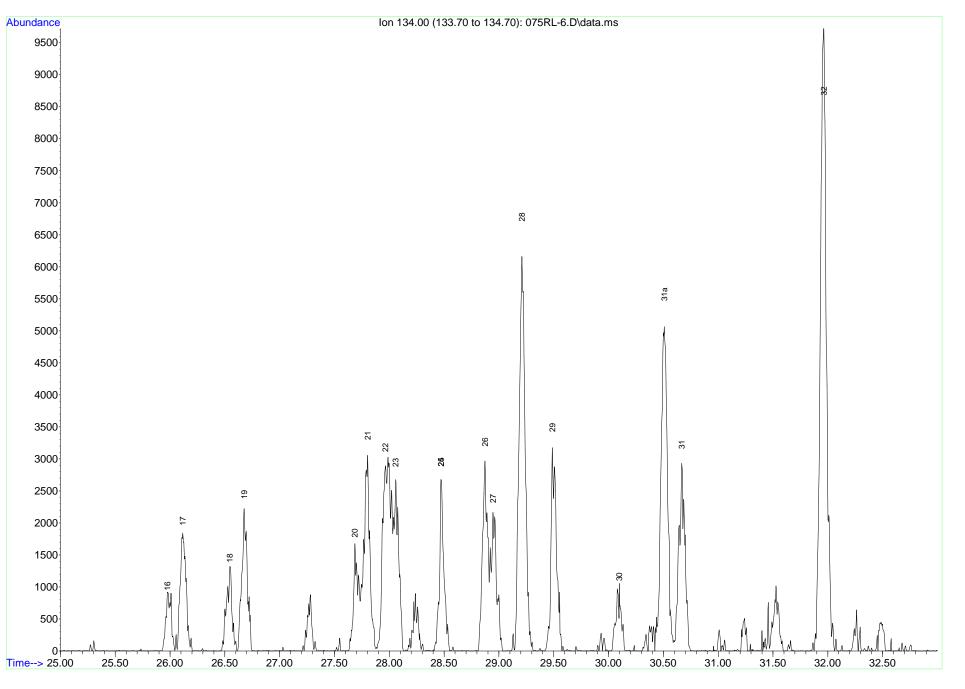
Lab ID: 075RL-6 Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	920.0	1.7%
1-Methyl-3-Isopropylbenzene	17	134	26.1	1838.0	3.4%
1-Methyl-4-Isopropylbenzene	18	134	26.5	1322.0	2.4%
1-Methyl-2-Isopropylbenzene	19	134	26.7	2223.0	4.1%
1,3-Diethylbenzene	20	134	27.7	1676.0	3.1%
1-Methyl-3-Propylbenzene	21	134	27.8	3055.0	5.6%
Butylbenzene	22	134	28.0	2853.0	5.2%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	2676.0	4.9%
1,2-Diethylbenzene	24	134	28.5	2678.0	4.9%
1-Methyl-2-Propylbenzene	25	134	28.5	2678.0	4.9%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	2967.0	5.4%
1,3-Dimethyl-4-Ethylbenzene	27	134	28.9	2165.0	3.9%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	6145.0	11.2%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3175.0	5.8%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	1054.0	1.9%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	4915.0	9.0%
1,2,3,5-Tetramethylbenzene	31	134	30.7	2930.0	5.3%
1,2,3,4-Tetramethylbenzene	32	134	32.0	9592.0	17.5%

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc. Address: 18939 120th Avenue NE,

Address. 18959 120th Avenue Ne

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.0

Collected by:

Collected: 12/7/2020 Received: 12/11/2020

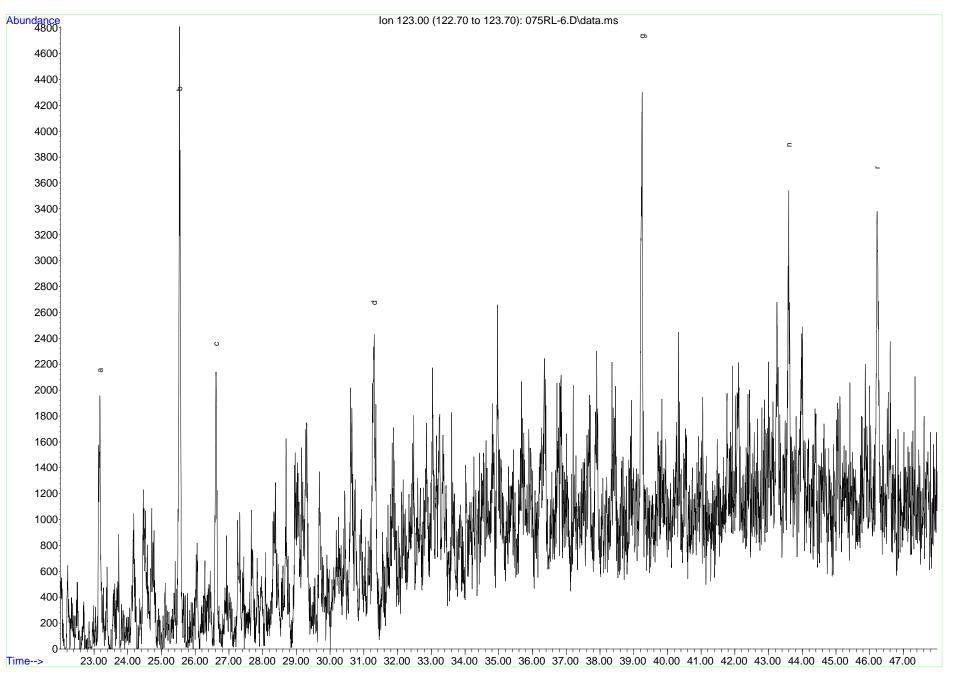
Lab ID: 075RL-6

Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention	Peak Height	Rel. Height %
			Time		(123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	1933.0	9.7%
C <sub>10</sub> bicycloalkane	b	123	25.5	4790.0	24.1%
3,3,7-Trimethylbicycloheptane	С	123	26.6	2129.0	10.7%
C <sub>11</sub> Decalin	d	123	31.3	2328.0	11.7%
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	39.3	3573.0	18.0%
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	43.6	2682.0	13.5%
C <sub>15</sub> Bicyclic Sesquiterpane	О	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	46.2	2421.0	12.2%

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK



Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-6
Collected: 12/7/2020
Received: 12/11/2020
Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	57.8	1633.0	8.2%
C <sub>22</sub> -Tricyclic Terpane	2	191	58.0	1453.0	7.3%
C <sub>23</sub> -Tricyclic Terpane	3	191	58.4	16801.0	84.5%
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	<b>Z</b> 4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 $\alpha$ -22,29,30-Trisnorneohopane (Ts)	Е	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	Т	191	ND	ND	ND
$22R-17\alpha,21\beta-30$ -Bishomohopane	U	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	WS	191	ND	ND	ND
$22R-17\alpha,21\beta$ -Trishomohopane	WR	191	ND	ND	ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:

microbialinsights

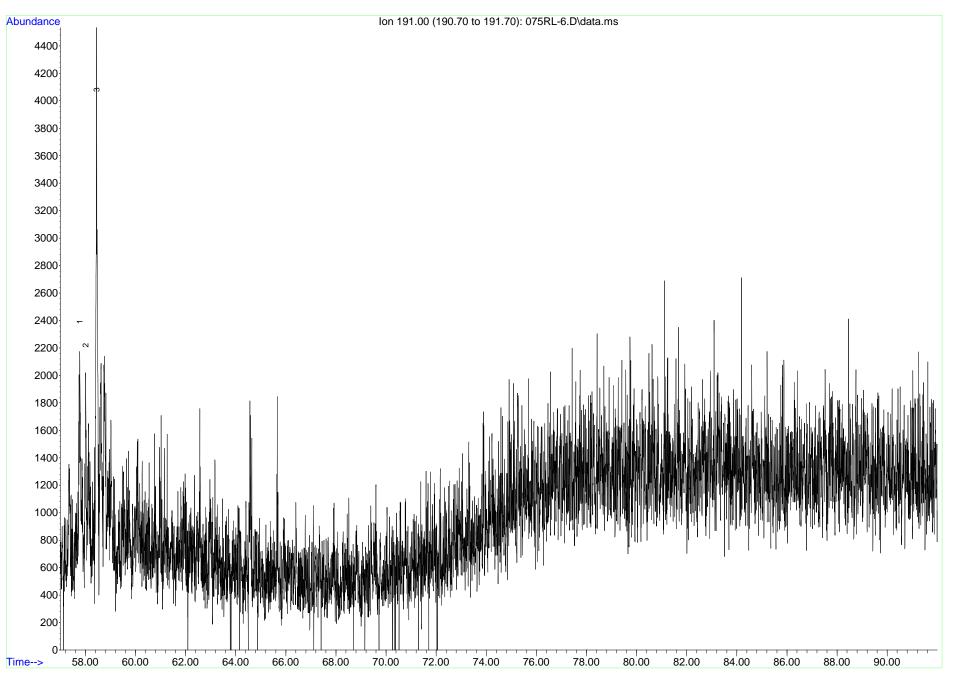
Lab ID: 075RL-6 Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK





Project Manager: Russ Shropshire

Client: Leidos, Inc. Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site Clien
Project #: 334893.TM.1.000.00.00 Analy

Collected by:

Client ID: MW-19-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Lab ID: 075RL-6

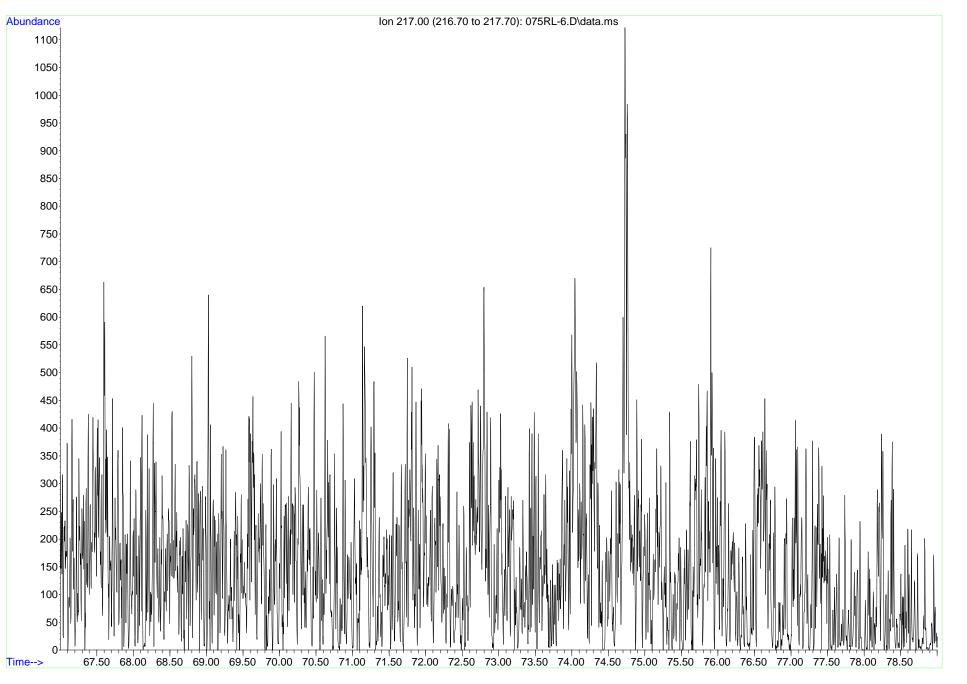
Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13 $\beta$ , 17 $\alpha$ -Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13 $\alpha$ , 17 $\alpha$ -Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	ND	ND	ND

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK





#### Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-6

Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

Client ID: MW-19-201207

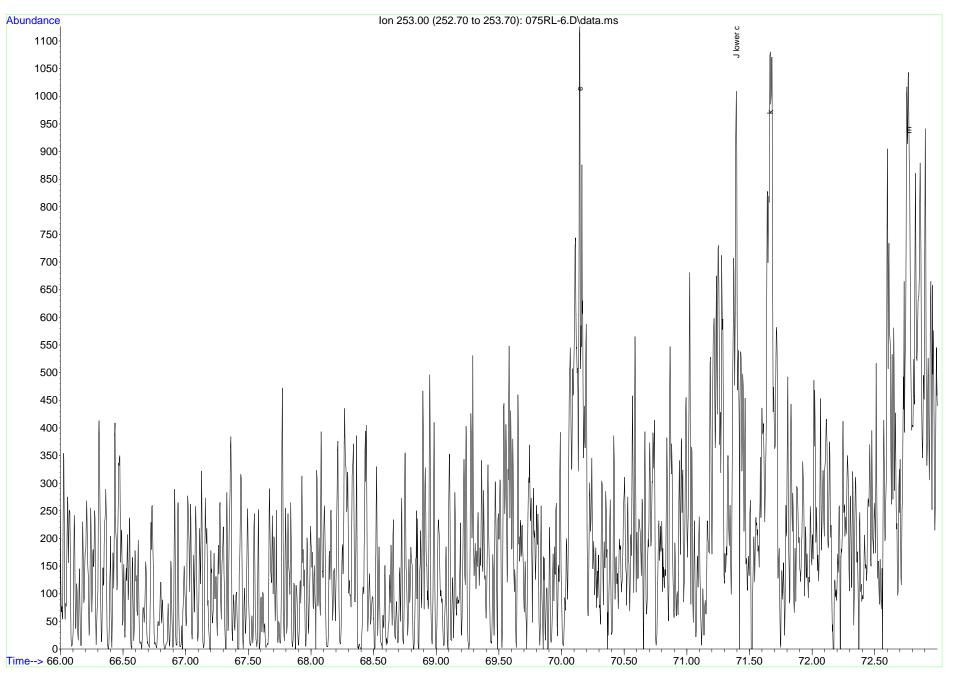
Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	a	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	e	253	70.1	1067.0	26.5%
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	71.4	944.0	23.4%
20R, 5α C28-MAS	k	253	71.7	1056.0	26.2%
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	72.8	960.0	23.8%

0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-6 0.40039 g





#### Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-6 Collected: 12/7/2020

Received: 12/11/2020

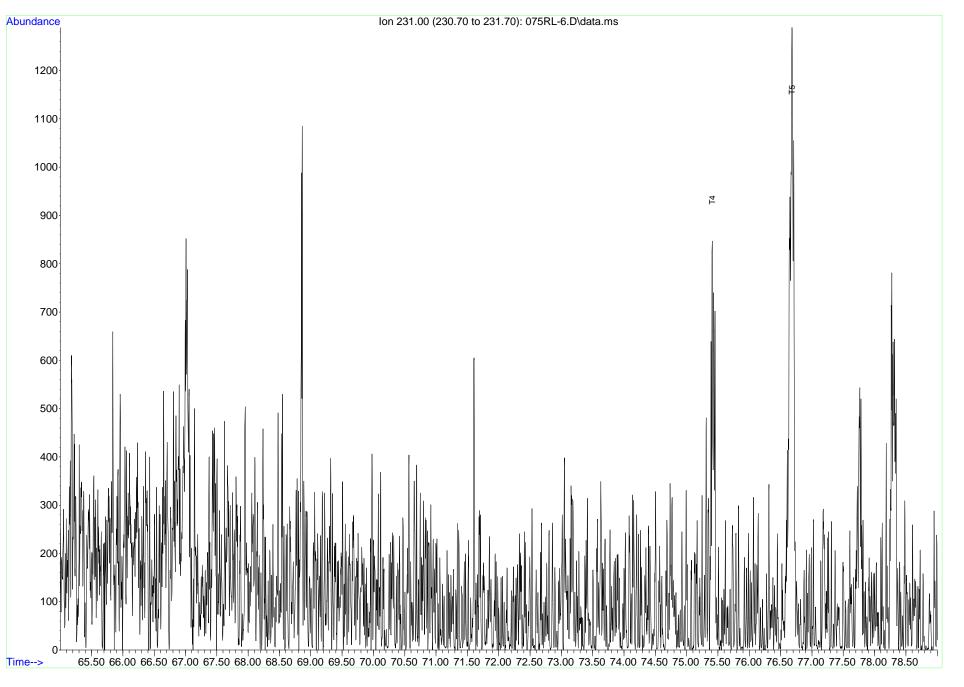
Matrix: Product

Client ID: MW-19-201207 Analyzed: 12/16/2020

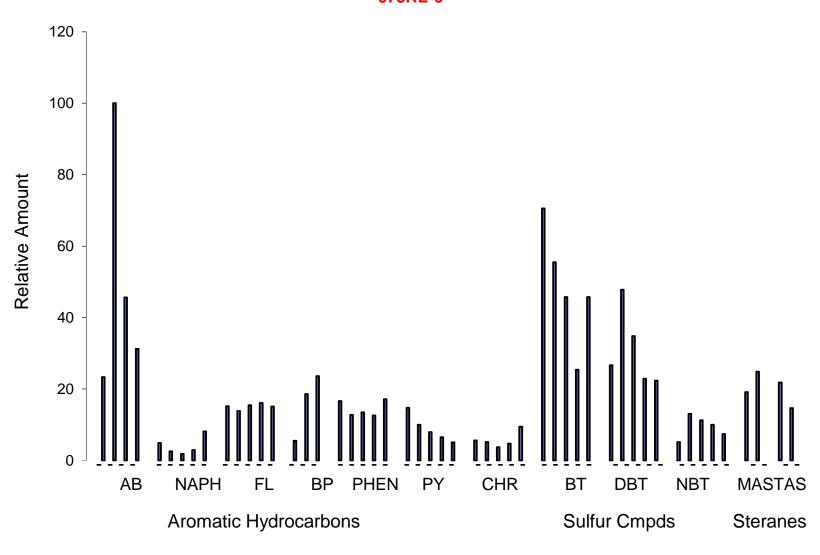
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	T3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	75.4	827.0	28.7%
20S C <sub>28</sub> Triaromatic Sterane	T5	231	76.7	1271.0	44.1%
20R C <sub>27</sub> Triaromatic Sterane	T6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	T7	231	78.3	781.0	27.1%

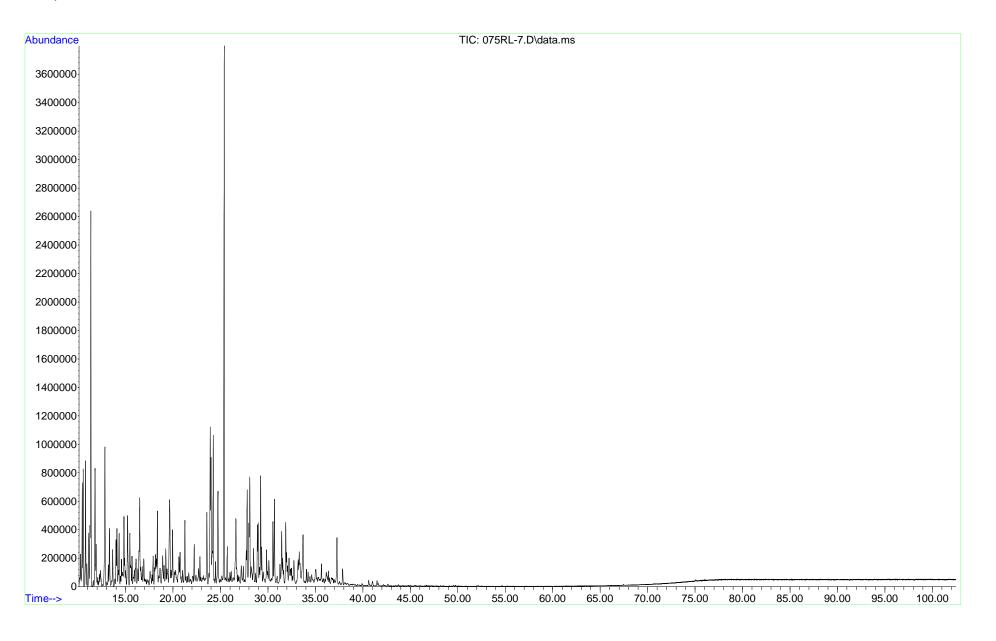
0.40039 g in 10mL DCM FOREN4LA\_MI\_BACK



# Aromatic Hydrocarbon Distribution 075RL-6



Acquired: 16 Dec 2020: 3:57 Sample Name: 075RL-7 using AcqMethod FOREN4LA\_MI\_BACK.M





#### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-7

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/7/2020

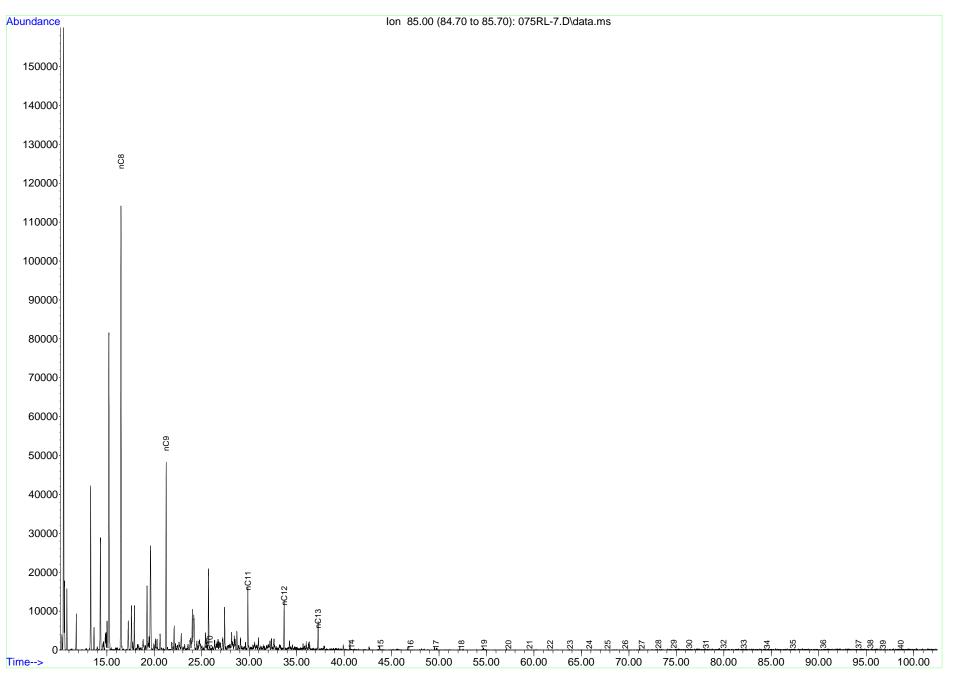
Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-16-201207
Project #: 334893.TM.1.000.00.0 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	113935.0	51.2%
n-Nonane	nC9	85	21.2	48155.0	21.6%
n-Decane	nC10	85	25.7	20751.0	9.3%
n-Undecane	nC11	85	29.9	15986.0	7.2%
n-Dodecane	nC12	85	33.7	12465.0	5.6%
n-Tridecane	nC13	85	37.3	7250.0	3.3%
n-Tetradecane	nC14	85	40.6	2122.0	1.0%
n-Pentadecane	nC15	85	43.8	1110.0	0.5%
n-Hexadecane	nC16	85	46.7	691.0	0.3%
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
<i>n</i> -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-7 Collected: 12/7/2020 Received: 12/11/2020

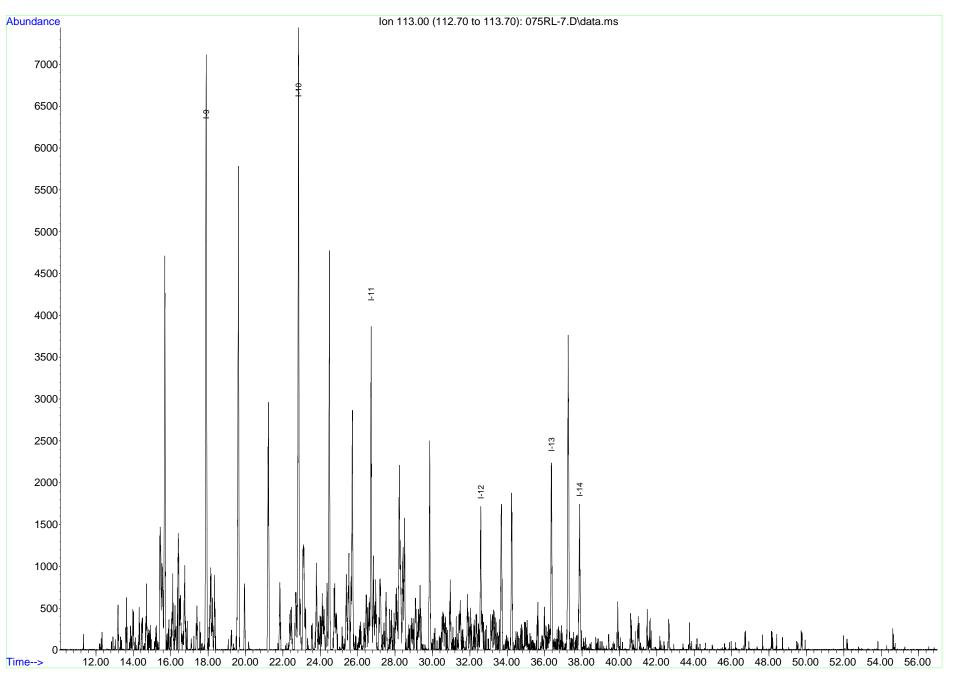
Matrix: Product

Client ID: MW-16-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	7110.0	29.9%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	7264.0	30.6%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	3723.0	15.7%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.6	1691.0	7.1%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	2235.0	9.4%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	1720.0	7.2%
Farnesane (Isoprenoid - C15)	I-15	113	ND	ND	ND
Iso-alkane w/ 16 Carbon Atoms	I-16	113	ND	ND	ND
Iso-alkane w/ 18 Carbon Atoms	I-18	113	ND	ND	ND
Pristane (Isoprenoid - C19)	Pr	113	ND	ND	ND
Phytane (Isoprenoid - C20)	Ph	113	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc. Collecte
Address: 18939 120th Avenue NE, Receive

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

Lab ID: 075RL-7

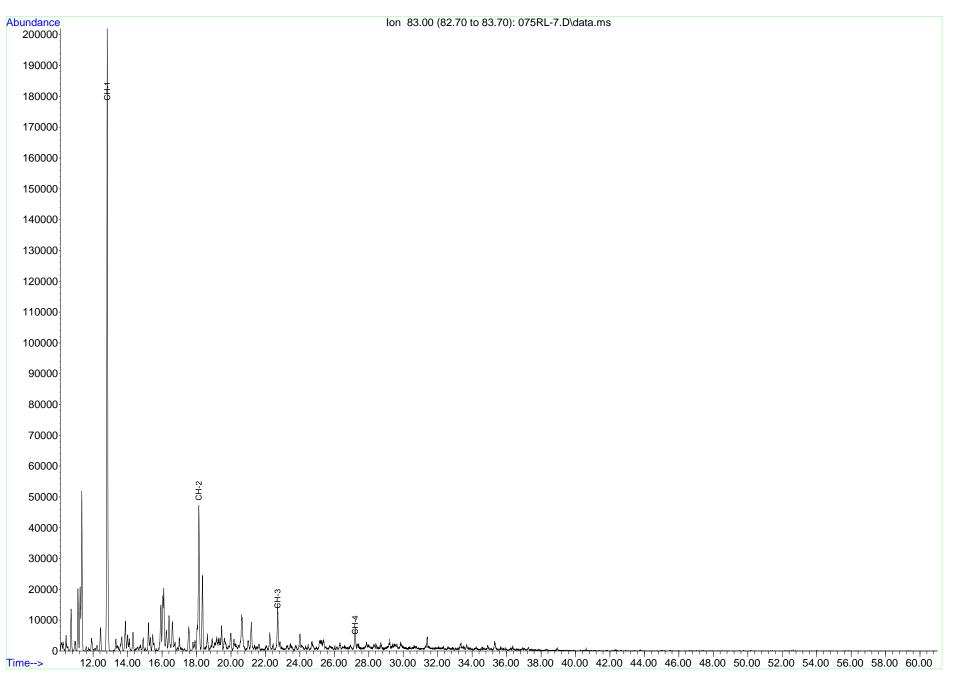
Client ID: MW-16-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	201984.0	74.6%
Ethylcyclohexane	CH-2	83	18.1	46821.0	17.3%
Propylcyclohexane	CH-3	83	22.7	14816.0	5.5%
Butylcyclohexane	CH-4	83	27.2	7169.0	2.6%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-7 0.40683 g





## Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-7 Collected: 12/7/2020 Received: 12/11/2020

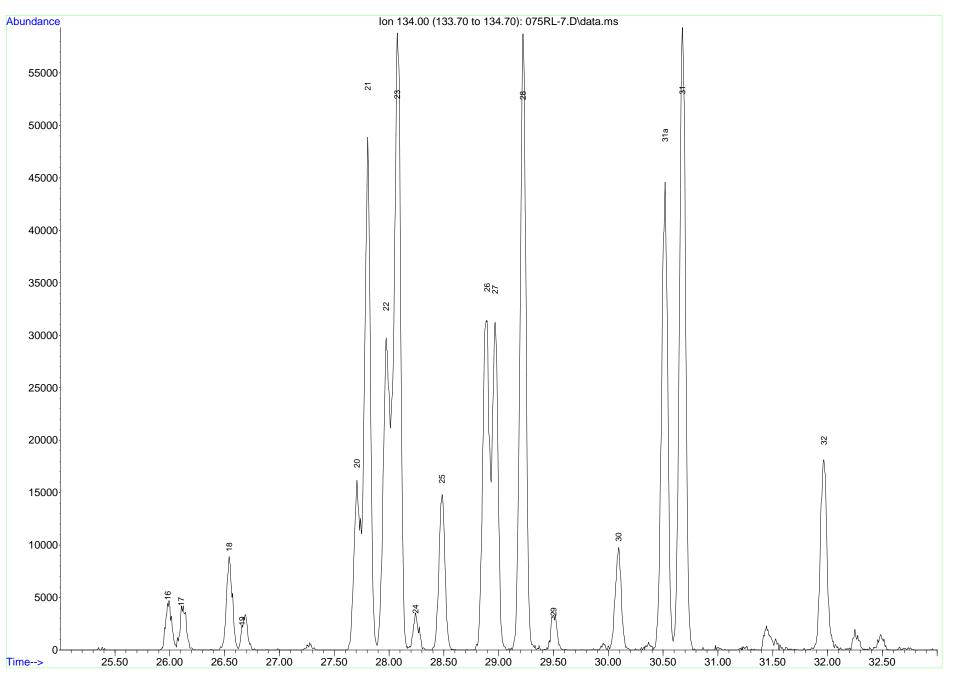
Matrix: Product

Client ID: MW-16-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	4705.0	1.1%
1-Methyl-3-Isopropylbenzene	17	134	26.1	4224.0	0.9%
1-Methyl-4-Isopropylbenzene	18	134	26.5	8801.0	2.0%
1-Methyl-2-Isopropylbenzene	19	134	26.7	3379.0	0.8%
1,3-Diethylbenzene	20	134	27.7	16161.0	3.6%
1-Methyl-3-Propylbenzene	21	134	27.8	48451.0	10.8%
Butylbenzene	22	134	28.0	29339.0	6.5%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	58622.0	13.1%
1,2-Diethylbenzene	24	134	28.2	3497.0	0.8%
1-Methyl-2-Propylbenzene	25	134	28.5	14806.0	3.3%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	31026.0	6.9%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	31240.0	7.0%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	58681.0	13.1%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3302.0	0.7%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	9794.0	2.2%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	44608.0	10.0%
1,2,3,5-Tetramethylbenzene	31	134	30.7	59313.0	13.2%
1,2,3,4-Tetramethylbenzene	32	134	32.0	18042.0	4.0%

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK





### Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc. Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.0

Collected by:

Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

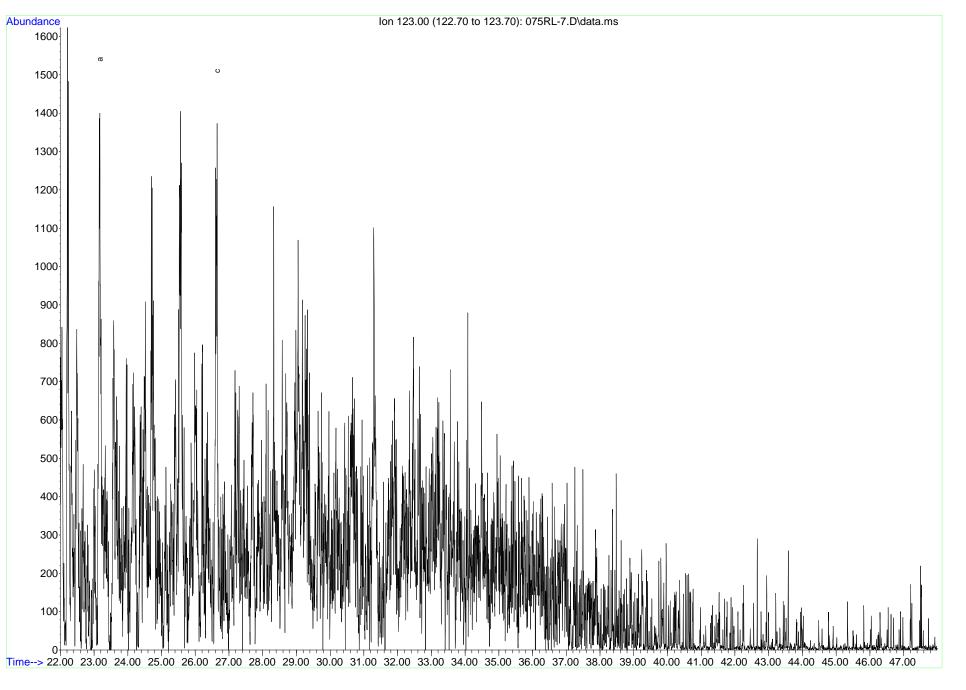
Lab ID: 075RL-7

Client ID: MW-16-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	1397.0	52.3%
C <sub>10</sub> bicycloalkane	b	123	ND	ND	ND
3,3,7-Trimethylbicycloheptane	С	123	26.6	1276.0	47.7%
C <sub>11</sub> Decalin	d	123	ND	ND	ND
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK



## Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-7
Collected: 12/7/2020
Received: 12/11/2020
Matrix: Product

Client ID: MW-16-201207 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	Z4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
$18\alpha$ - $30$ -Norneohopane	C29Ts	191	ND	ND	ND
$17\alpha$ -Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
$17\beta$ -21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	P	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane 22R-17α,21β-30-Bishomohopane	T U	191 191	ND ND	ND ND	ND ND
$22S-17\alpha$ , $21\beta-30$ -Bishomohopane	WS	191	ND ND	ND ND	ND ND
22R-17α,21β-50-Bishomohopane	WR	191	ND ND	ND ND	ND
22S-17α,21β-Trishomonopane	XS	191	ND	ND	ND
220 17 a,21p retranomonopune	7.5		110	110	110

#### Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-7 Collected: 12/7/2020 Received: 12/11/2020 Matrix: Product

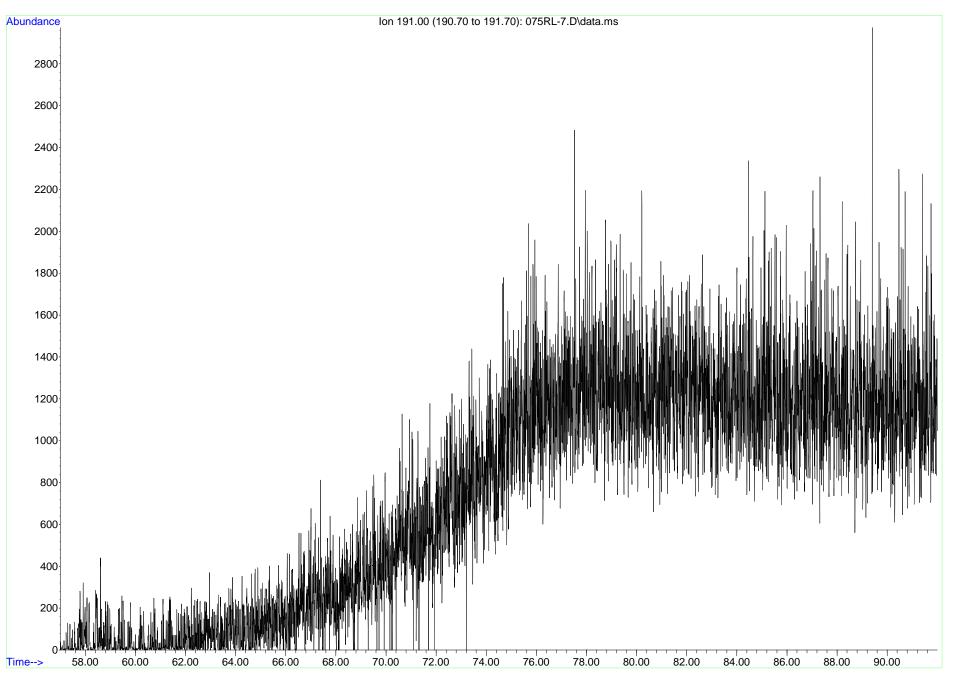
Client ID: MW-16-201207

Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-7 0.40683 g





#### **Chromatogram Key & Numerical Results: 217 m/z Steranes**

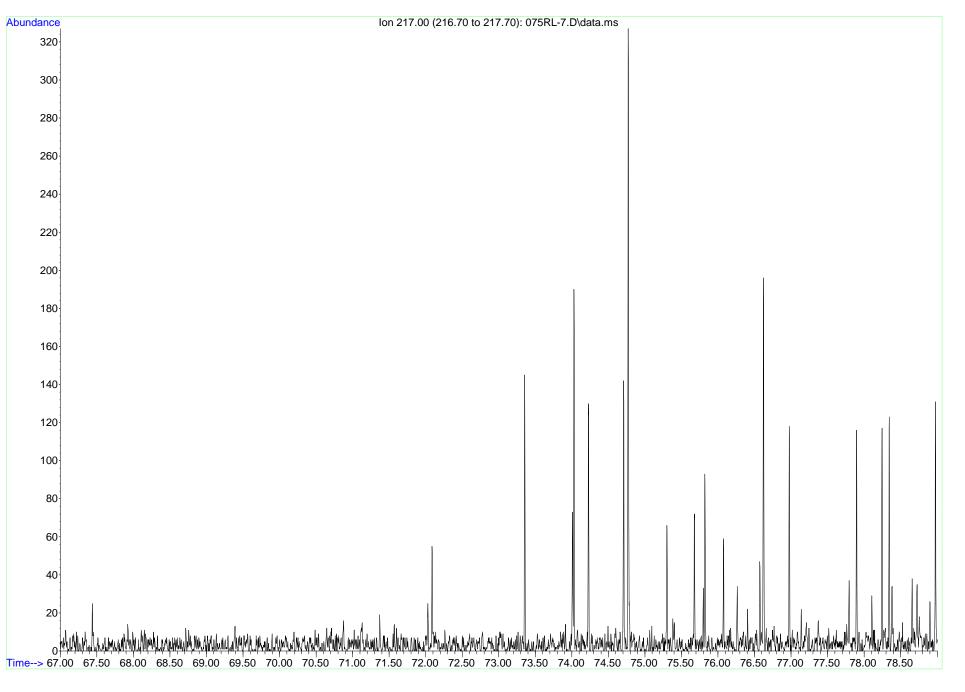
Project Manager: Russ Shropshire

Lab ID: 075RL-7 Client: Leidos, Inc. Collected: 12/7/2020 Address: 18939 120th Avenue NE, Received: 12/11/2020 Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: MW-16-201207 Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020 Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK





#### Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-7

Collected: 12/7/2020 Received: 12/11/2020

Matrix: Product

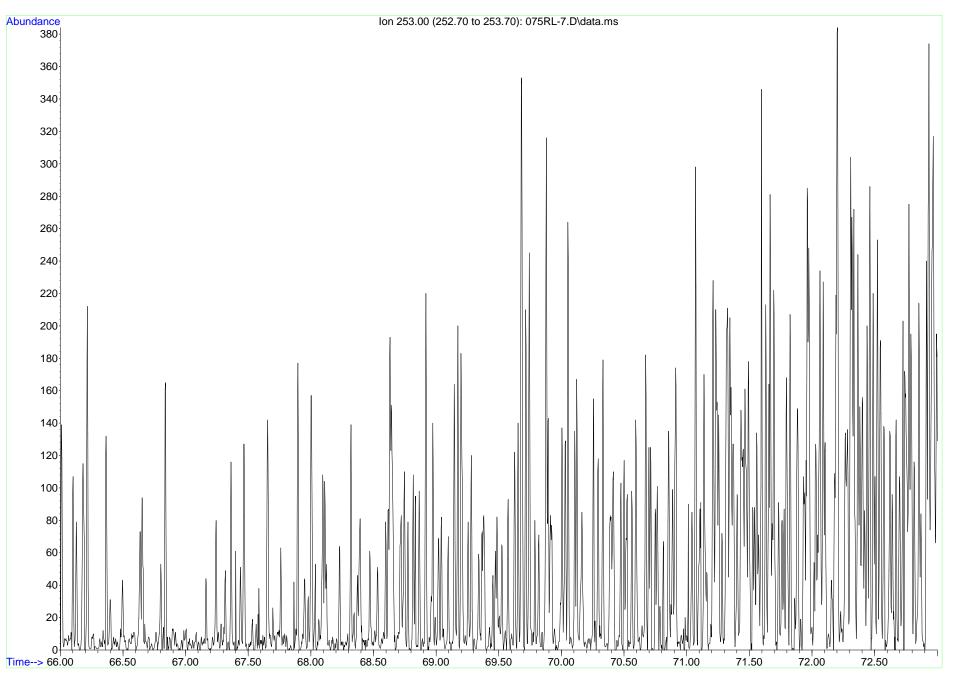
Client ID: MW-16-201207 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	a	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	е	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-7 0.40683 g





#### Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-7

Collected: 12/7/2020

Received: 12/11/2020

Matrix: Product

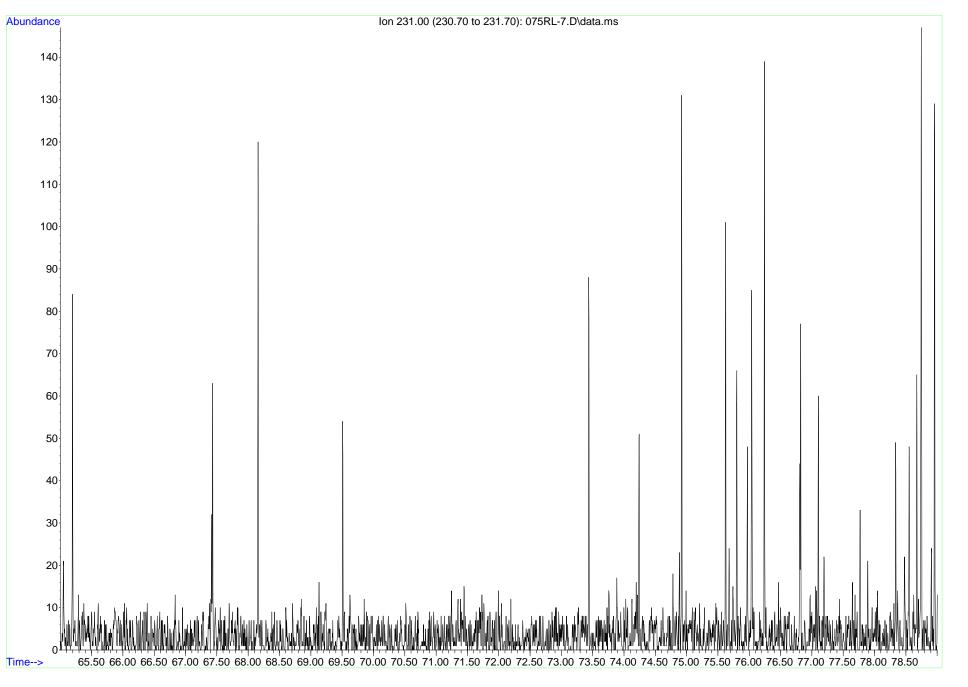
Client ID: MW-16-201207

Analyzed: 12/16/2020

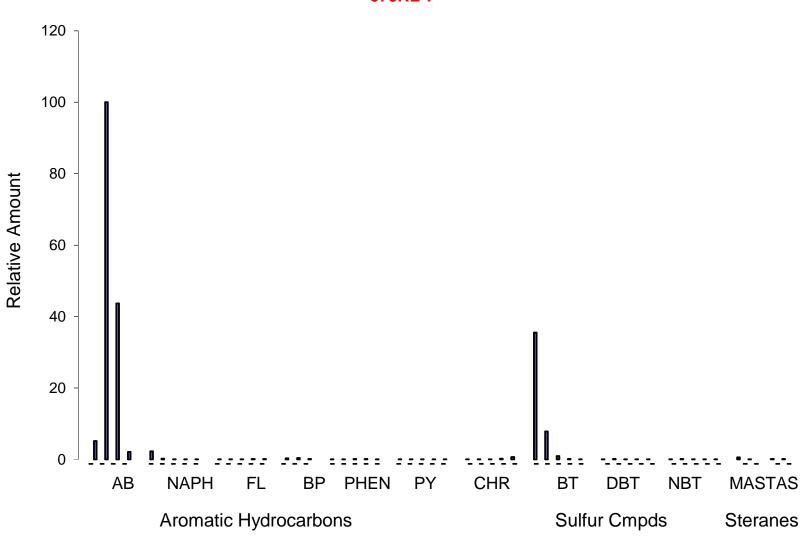
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	Т3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	Т6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	T7	231	ND	ND	ND

0.40683 g in 10mL DCM FOREN4LA\_MI\_BACK

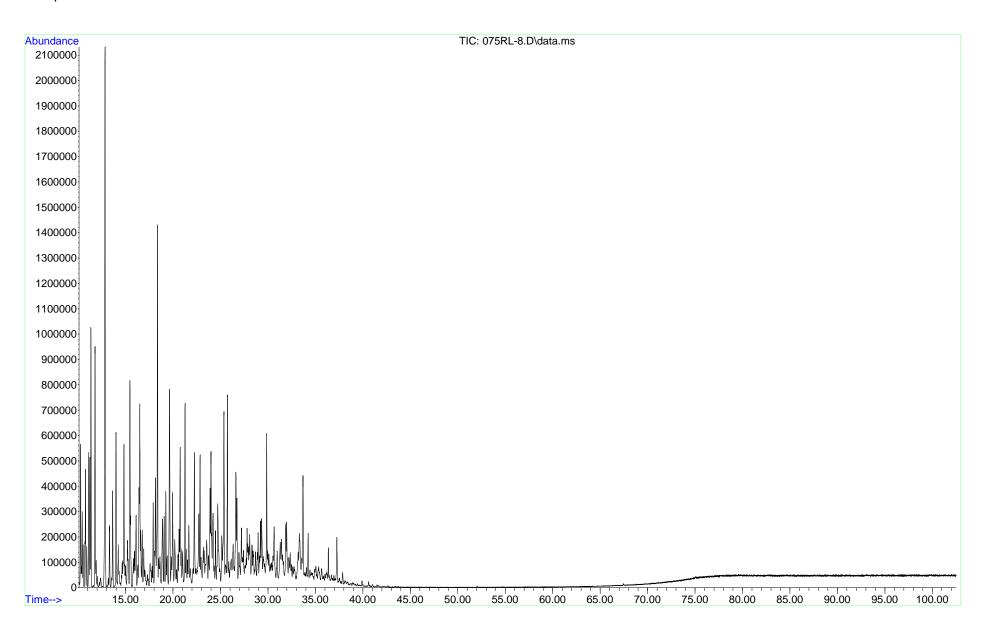


# Aromatic Hydrocarbon Distribution 075RL-7



Acquired : 16 Dec 2020 5:47 using AcqMethod FOREN4LA\_MI\_BACK.M

Sample Name: 075RL-8





#### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/8/2020

Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-21-201208

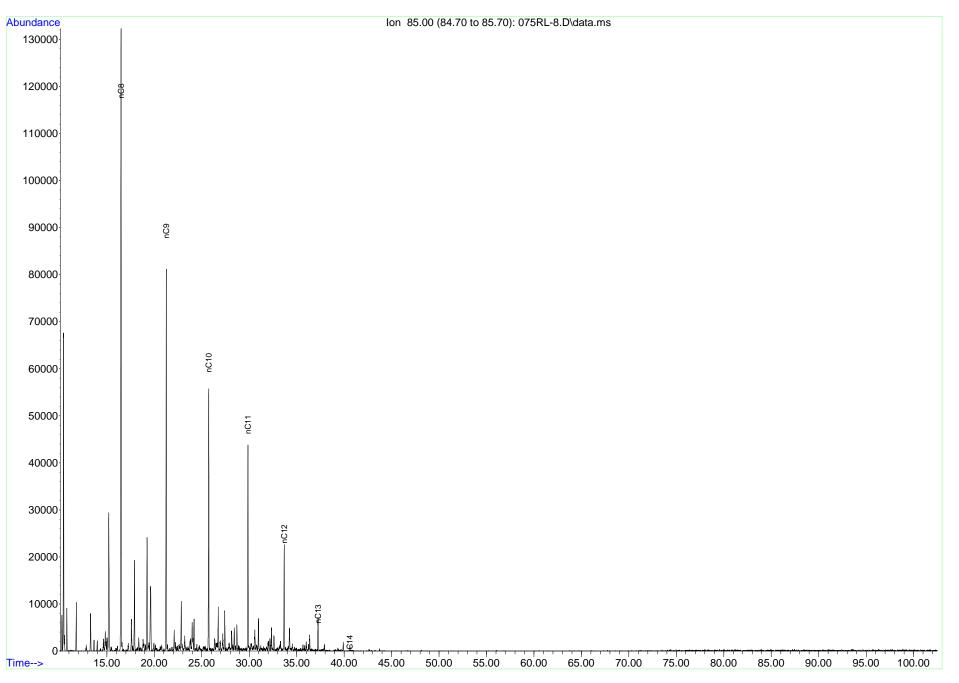
334893.TM.1.000.00.0

Project #: 0.000 Analyzed: 12/16/2020 Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(85 m/z)
n-Octane	nC8	85	16.5	132064.0	38.5%
n-Nonane	nC9	85	21.3	81114.0	23.7%
n-Decane	nC10	85	25.7	55599.0	16.2%
n-Undecane	nC11	85	29.9	43457.0	12.7%
n-Dodecane	nC12	85	33.7	22308.0	6.5%
n-Tridecane	nC13	85	37.3	7124.0	2.1%
n-Tetradecane	nC14	85	40.6	1250.0	0.4%
n-Pentadecane	nC15	85	ND	ND	ND
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-8 0.40712 g





## Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc.

Collected: 12/8/2020

Address: 18939 120th Avenue NE,

Received: 12/11/2020

Suite 112

Bothell, WA 98011 Matrix: Product

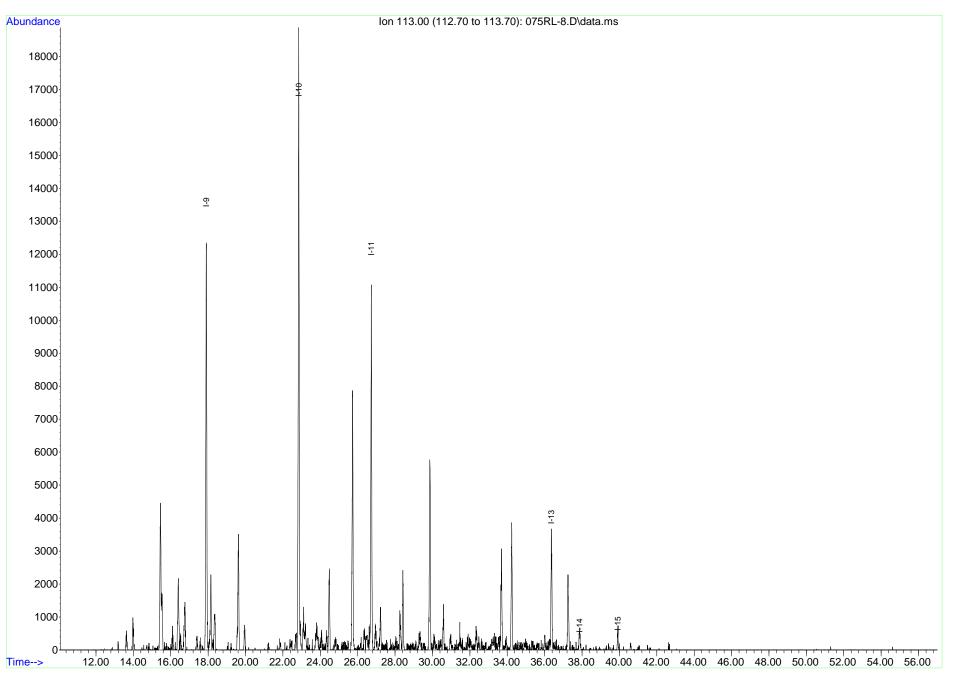
Project: Chelan Chevron Site Client ID: MW-21-201208

334893.TM.1.000.00.00

Project #: .000 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	12341.0	26.2%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	18857.0	40.0%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	10870.0	23.1%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	ND	ND	ND
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	3649.0	7.7%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	673.0	1.4%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	731.0	1.6%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	ND	ND	ND
Iso-alkane w/ 18 Carbon Atoms	I-18	113	ND	ND	ND
Pristane (Isoprenoid - C19)	Pr	113	ND	ND	ND
Phytane (Isoprenoid - C20)	Ph	113	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc. Collected: 12/8/2020
Address: 18939 120th Avenue NE, Received: 12/11/2020

Suite 112

Bothell, WA 98011 Matrix: Product

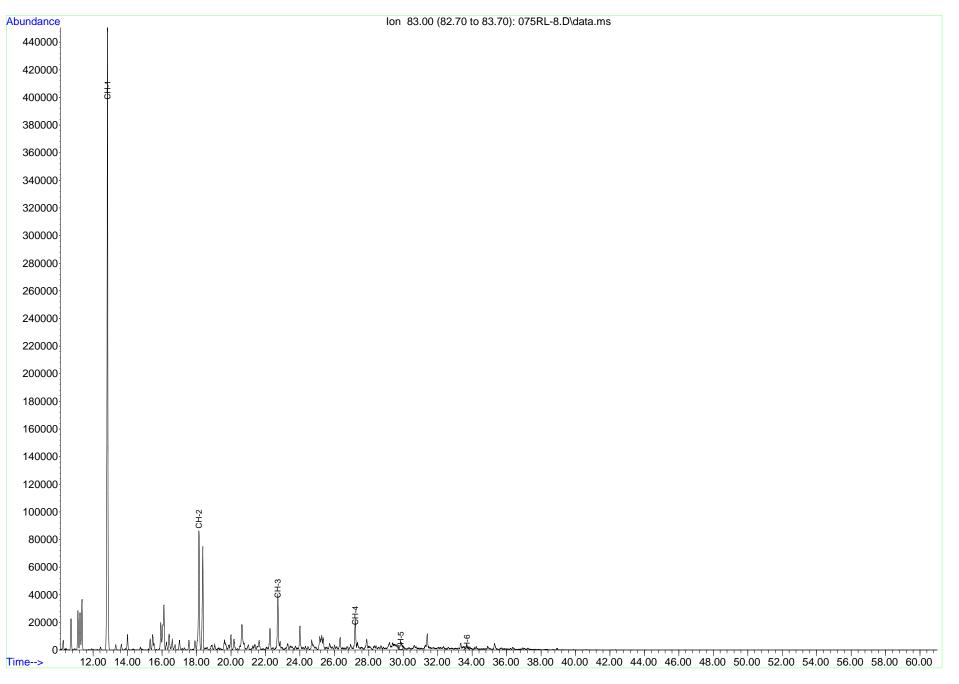
Project: Chelan Chevron Site Client ID: MW-21-201208

334893.TM.1.000.00.00

Project #: .000 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	<b>Peak Height</b>	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	450556.0	74.4%
Ethylcyclohexane	CH-2	83	18.1	85947.0	14.2%
Propylcyclohexane	CH-3	83	22.7	38847.0	6.4%
Butylcyclohexane	CH-4	83	27.2	22045.0	3.6%
Pentylcyclohexane	CH-5	83	29.9	4812.0	0.8%
Hexylcyclohexane	CH-6	83	33.7	3078.0	0.5%
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc. Collected: 12/8/2020
Address: 18939 120th Avenue NE, Received: 12/11/2020

Suite 112

Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: MW-21-201208

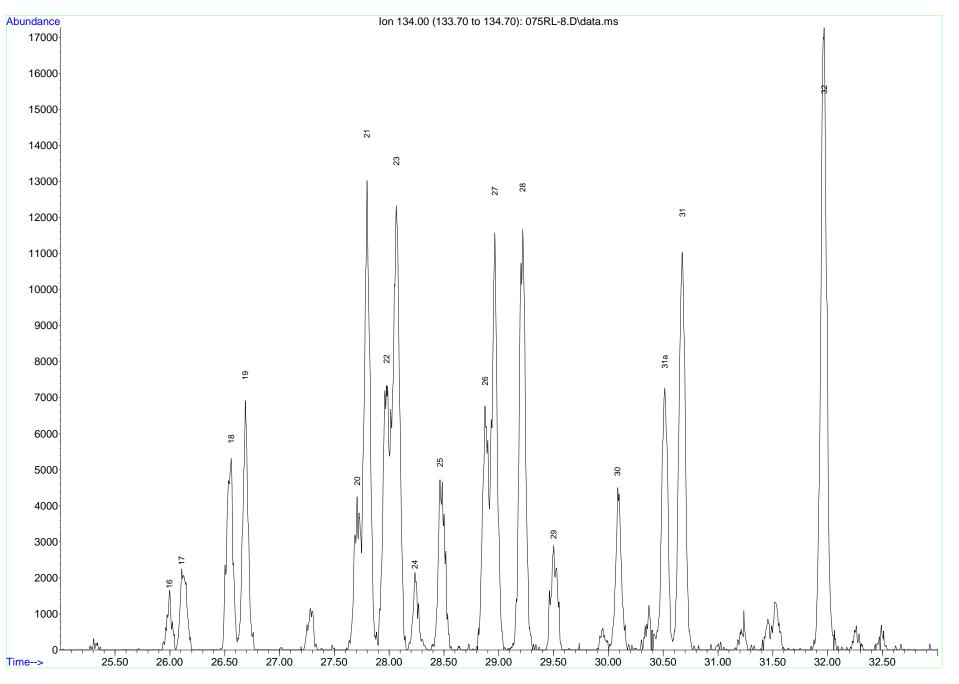
334893.TM.1.000.00.00 :: .000 Analyzed: 12/16/2020

Project #: .000 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (134 m/z)
Sec-Butylbenzene	16	134	26.0	1659.0	1.3%
1-Methyl-3-Isopropylbenzene	17	134	26.1	2258.0	1.7%
1-Methyl-4-Isopropylbenzene	18	134	26.6	5318.0	4.0%
1-Methyl-2-Isopropylbenzene	19	134	26.7	6699.0	5.1%
1,3-Diethylbenzene	20	134	27.7	4259.0	3.2%
1-Methyl-3-Propylbenzene	21	134	27.8	12734.0	9.6%
Butylbenzene	22	134	28.0	7339.0	5.6%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	12054.0	9.1%
1,2-Diethylbenzene	24	134	28.2	2152.0	1.6%
1-Methyl-2-Propylbenzene	25	134	28.5	4725.0	3.6%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	6777.0	5.1%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	11565.0	8.8%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	11670.0	8.8%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	2906.0	2.2%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	4508.0	3.4%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	7257.0	5.5%
1,2,3,5-Tetramethylbenzene	31	134	30.7	11019.0	8.3%
1,2,3,4-Tetramethylbenzene	32	134	32.0	17272.0	13.1%

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-8 0.40712 g





### Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc.

Collected: 12/8/2020

Address: 18939 120th Avenue NE, Received: 12/11/2020 Suite 112

Bothell, WA 98011 Matrix: Product

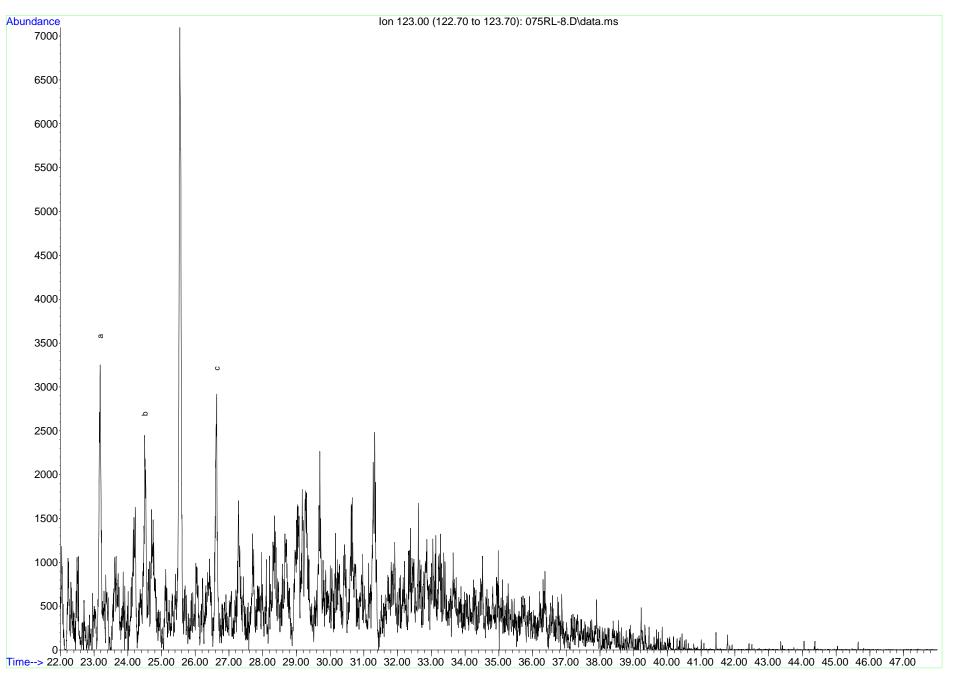
Project: Chelan Chevron Site Client ID: MW-21-201208

334893.TM.1.000.00.0

Project #: 0.000 Analyzed: 12/16/2020 Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	3208.0	38.9%
C <sub>10</sub> bicycloalkane	b	123	24.5	2242.0	27.2%
3,3,7-Trimethylbicycloheptane	С	123	26.6	2795.0	33.9%
C <sub>11</sub> Decalin	d	123	ND	ND	ND
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK



Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

334893.TM.1.000.00.

Project #: 00.000

Collected by:



Lab ID: 075RL-8
Collected: 12/8/2020
Received: 12/11/2020
Matrix: Product

Client ID: MW-21-201208

Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	ND	ND	ND
C <sub>22</sub> -Tricyclic Terpane	2	191	ND	ND	ND
C <sub>23</sub> -Tricyclic Terpane	3	191	ND	ND	ND
C <sub>24</sub> -Tricyclic Terpane	4	191	ND	ND	ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	<b>Z</b> 4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	Е	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21 $\alpha$ -30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R —	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	T 	191	ND	ND	ND
22R-17α,21β-30-Bishomohopane	U	191	ND	ND	ND
22S-17α,21β-30-Bishomohopane	WS	191	ND	ND	ND
22R-17α,21β-Trishomohopane	WR	191	ND	ND	ND

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

334893.TM.1.000.00.

Project #: 00.000

Collected by:

microbial insights

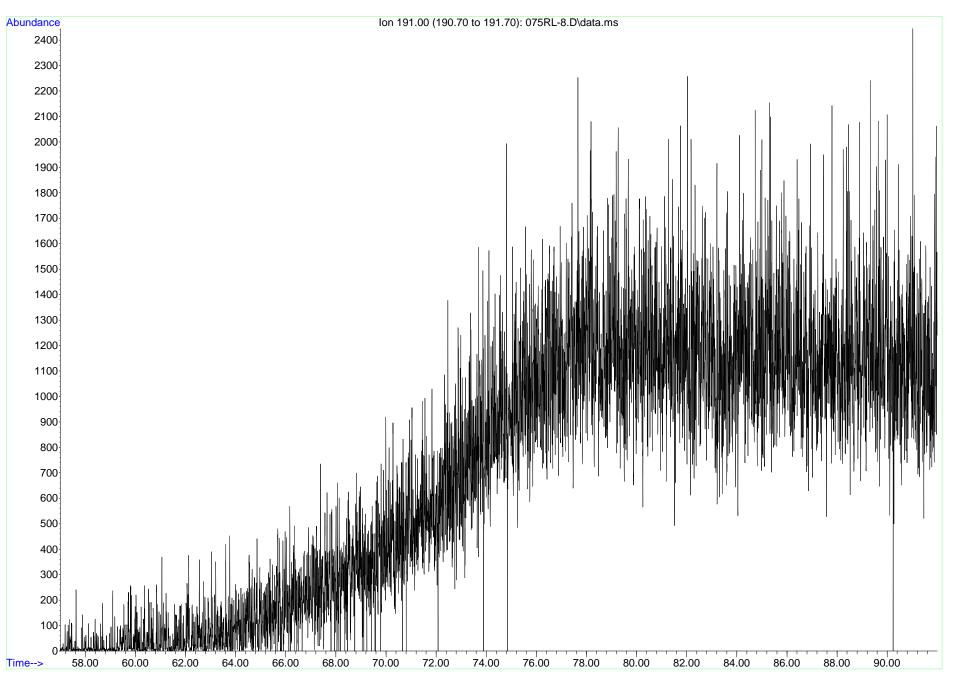
Lab ID: 075RL-8 Collected: 12/8/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-21-201208

Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK





Lab ID: 075RL-8

### **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

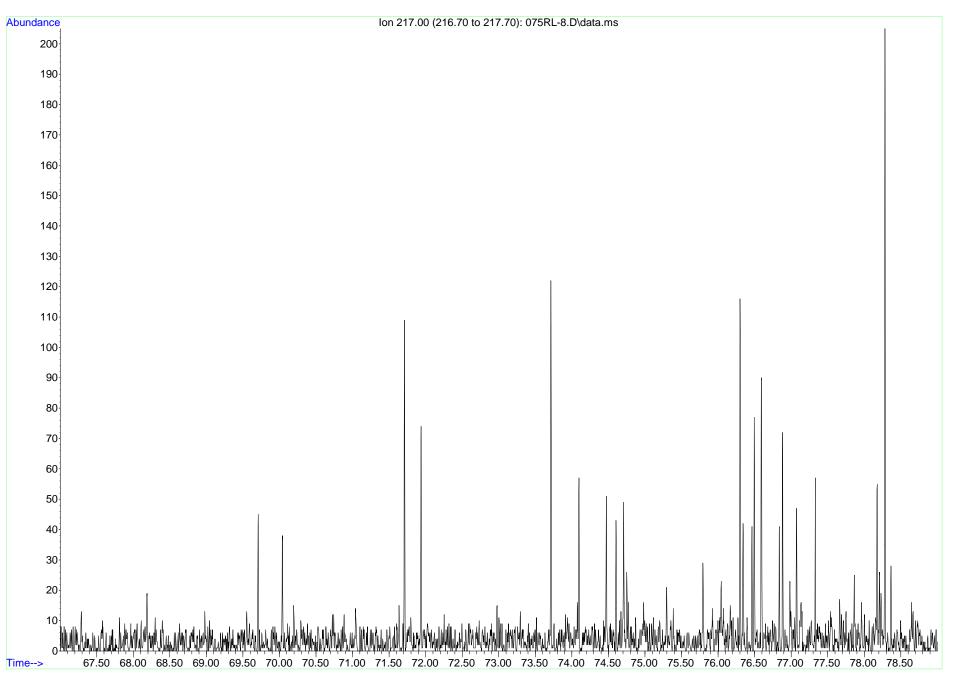
Client: Leidos, Inc. Collected: 12/8/2020 Address: 18939 120th Avenue NE, Received: 12/11/2020

Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: MW-21-201208
Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14 $\alpha$ , 17 $\alpha$ -Cholestane (20R)	20	217	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK





### Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc.

Collected: 12/8/2020

Address: 18939 120th Avenue NE,

Received: 12/11/2020

Suite 112

Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: MW-21-201208

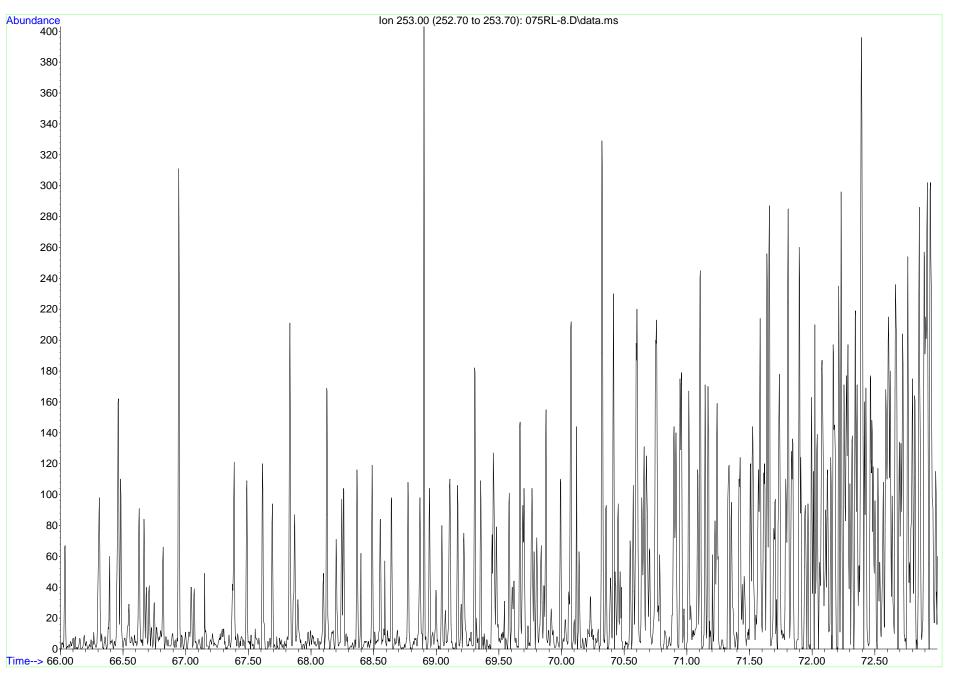
334893.TM.1.000.00.00

Project #: .000 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (253 m/z)
20S, 5β C27-MAS	а	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	e	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-8 0.40712 g





### Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire Lab ID: 075RL-8

Client: Leidos, Inc.

Collected: 12/8/2020

Address: 18939 120th Avenue NE,

Received: 12/11/2020

Suite 112

Bothell, WA 98011 Matrix: Product

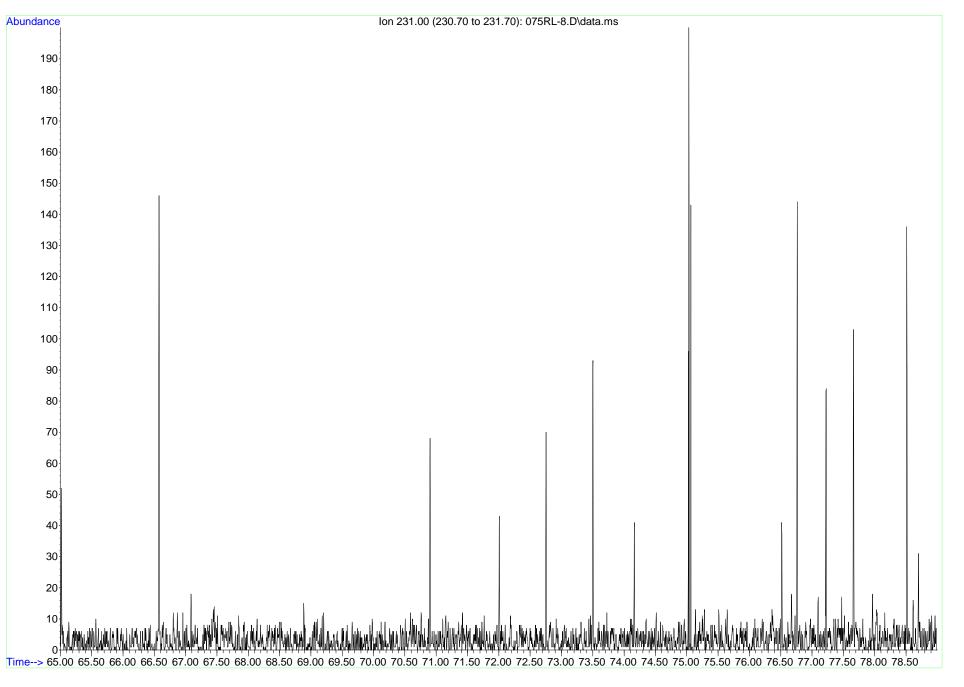
Project: Chelan Chevron Site Client ID: MW-21-201208

334893.TM.1.000.00.00

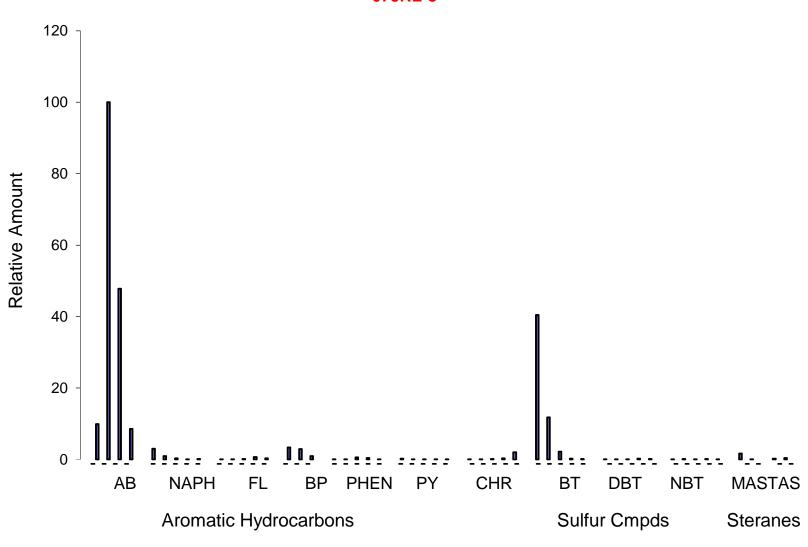
Project #: .000 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	T3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	Т6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	Т7	231	ND	ND	ND

0.40712 g in 10mL DCM FOREN4LA\_MI\_BACK

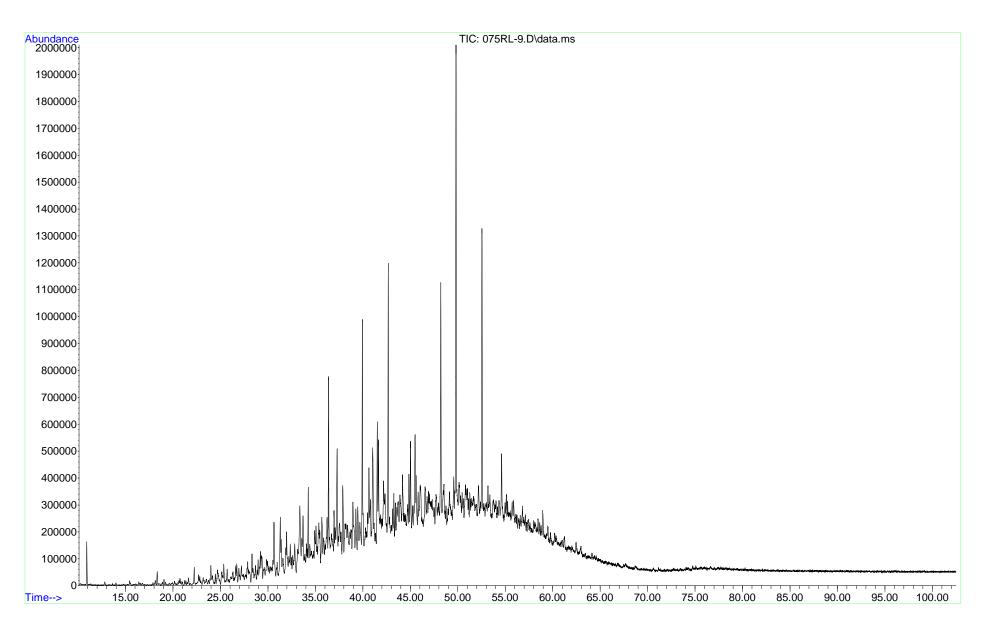


Aromatic Hydrocarbon Distribution
075RL-8



Acquired : 16 Dec 2020 7:39 using AcqMethod FOREN4LA\_MI\_BACK.M

Sample Name: 075RL-9





### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-9

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/8/2020

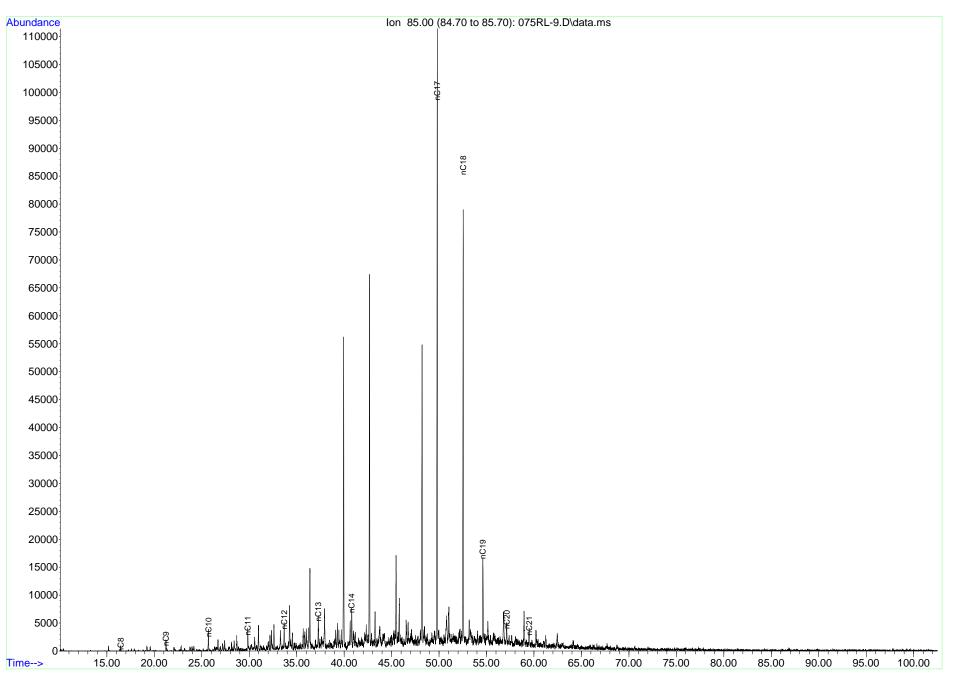
Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-27-201208
Project #: 334893.TM.1.000.00.0 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	964.0	0.4%
n-Nonane	nC9	85	21.2	1995.0	0.8%
n-Decane	nC10	85	25.7	3894.0	1.6%
n-Undecane	nC11	85	29.8	3877.0	1.6%
n-Dodecane	nC12	85	33.7	4491.0	1.9%
n-Tridecane	nC13	85	37.3	5999.0	2.5%
n-Tetradecane	nC14	85	40.8	7431.0	3.1%
n-Pentadecane	nC15	85	ND	ND	ND
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	49.8	109400.0	46.1%
n-Octadecane	nC18	85	52.5	77183.0	32.5%
n-Nonadecane	nC19	85	54.6	14900.0	6.3%
n-Eicosane	nC20	85	57.1	3914.0	1.7%
n-Henicosane	nC21	85	59.5	3108.0	1.3%
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
n -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK





# Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-9 Collected: 12/8/2020

Received: 12/11/2020

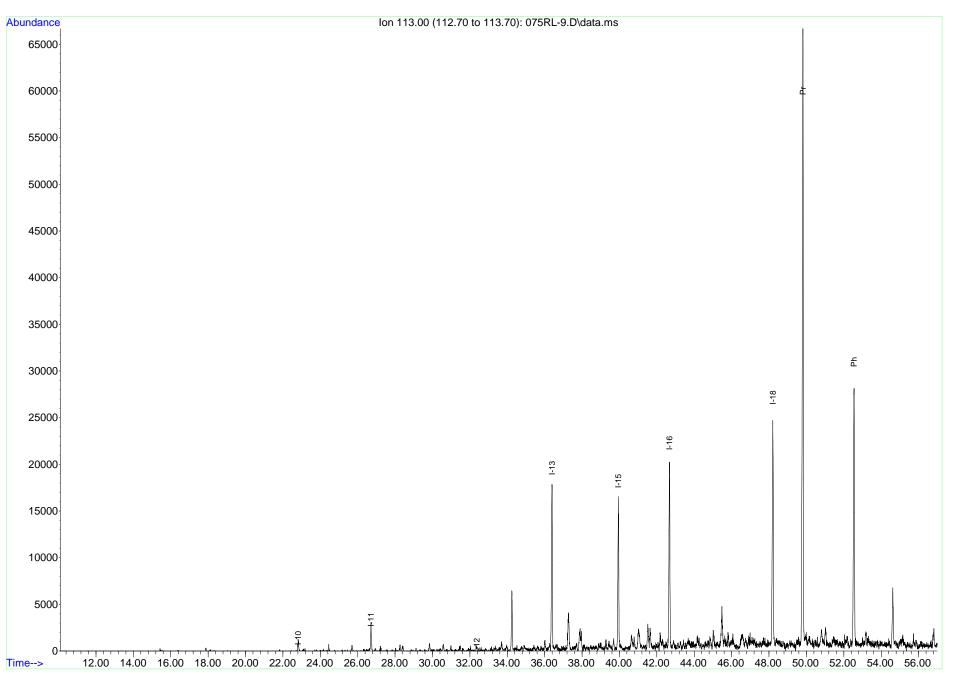
Matrix: Product

Client ID: MW-27-201208 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	ND	ND	ND
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	1251.0	0.7%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	3046.0	1.7%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.4	591.0	0.3%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	17840.0	10.1%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	ND	ND	ND
Farnesane (Isoprenoid - C15)	I-15	113	39.9	16441.0	9.3%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.7	19538.0	11.1%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.2	23912.0	13.6%
Pristane (Isoprenoid - C19)	Pr	113	49.8	66022.0	37.5%
Phytane (Isoprenoid - C20)	Ph	113	52.5	27527.0	15.6%

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Collected: 12/8/2020 Received: 12/11/2020

Lab ID: 075RL-9

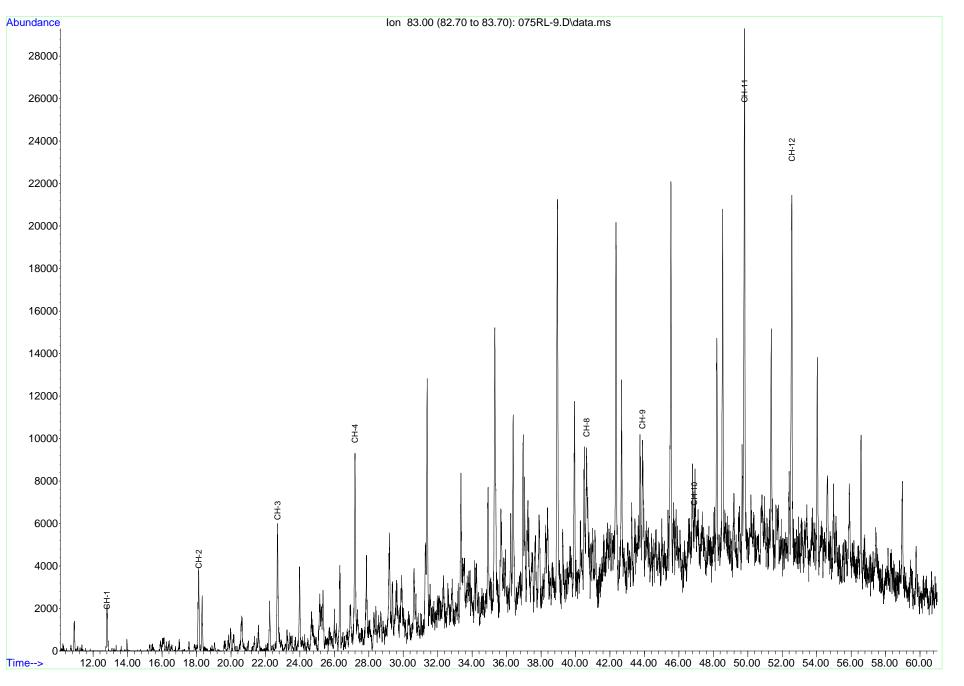
Matrix: Product

Client ID: MW-27-201208 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	2172.0	2.8%
Ethylcyclohexane	CH-2	83	18.1	3936.0	5.0%
Propylcyclohexane	CH-3	83	22.7	5810.0	7.4%
Butylcyclohexane	CH-4	83	27.2	8704.0	11.1%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	40.6	7100.0	9.1%
Nonylcyclohexane	CH-9	83	43.9	6427.0	8.2%
Decylcyclohexane	CH-10	83	46.9	1586.0	2.0%
Undecylcyclohexane	CH-11	83	49.8	24472.0	31.2%
Dodecylcyclohexane	CH-12	83	52.6	18157.0	23.2%
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

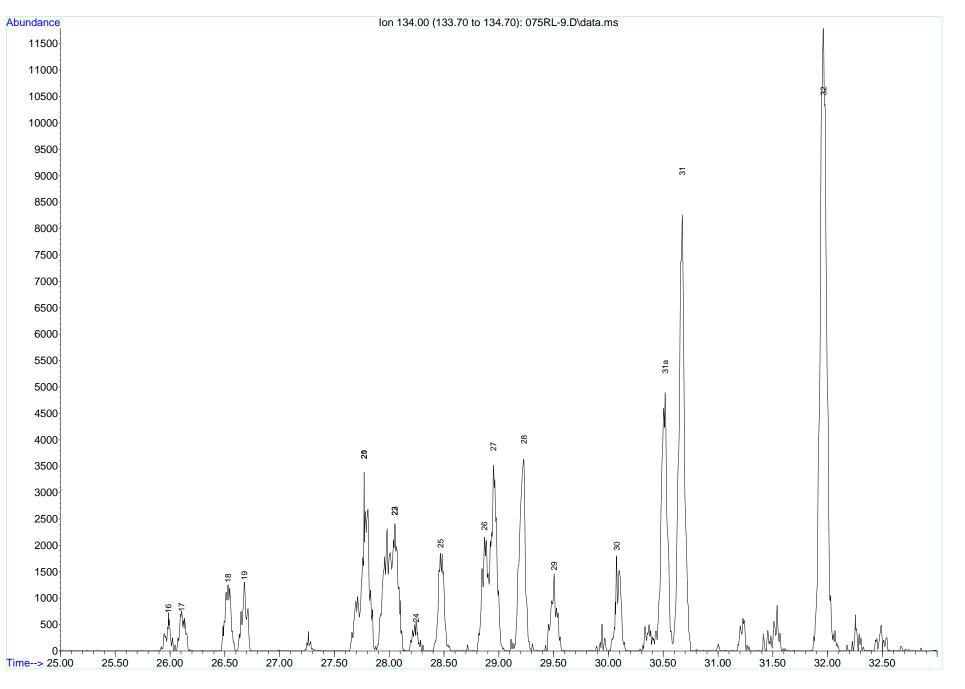
Lab ID: 075RL-9 Collected: 12/8/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-27-201208 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	726.0	1.4%
1-Methyl-3-Isopropylbenzene	17	134	26.1	757.0	1.4%
1-Methyl-4-Isopropylbenzene	18	134	26.5	1258.0	2.3%
1-Methyl-2-Isopropylbenzene	19	134	26.7	1302.0	2.4%
1,3-Diethylbenzene	20	134	27.8	3383.0	6.3%
1-Methyl-3-Propylbenzene	21	134	27.8	1761.0	3.3%
Butylbenzene	22	134	28.1	2409.0	4.5%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	2409.0	4.5%
1,2-Diethylbenzene	24	134	28.2	568.0	1.1%
1-Methyl-2-Propylbenzene	25	134	28.5	1852.0	3.4%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	2150.0	4.0%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	3483.0	6.5%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	3632.0	6.8%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	1462.0	2.7%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	1804.0	3.4%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	4873.0	9.1%
1,2,3,5-Tetramethylbenzene	31	134	30.7	8262.0	15.4%
1,2,3,4-Tetramethylbenzene	32	134	32.0	11591.0	21.6%

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK





### Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc. Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.0

Collected by:

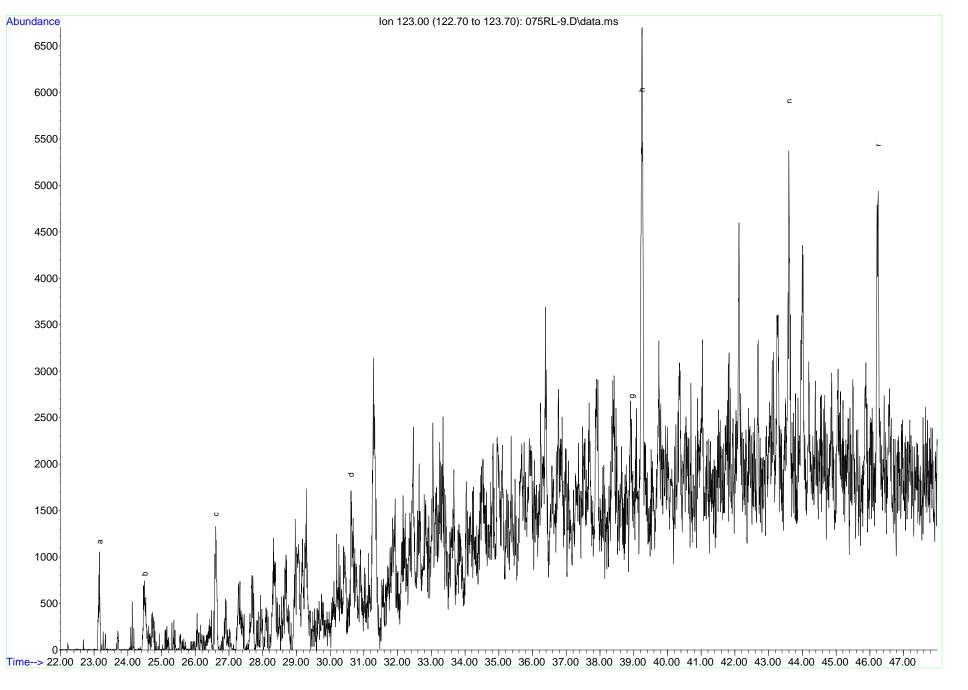
Lab ID: 075RL-9 Collected: 12/8/2020 Received: 12/11/2020

Matrix: Product

Client ID: MW-27-201208 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	1056.0	5.7%
C <sub>10</sub> bicycloalkane	b	123	24.5	746.0	4.1%
3,3,7-Trimethylbicycloheptane	С	123	26.6	1323.0	7.2%
C <sub>11</sub> Decalin	d	123	30.6	1351.0	7.3%
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	38.9	1303.0	7.1%
Rearranged drimane	h	123	39.2	5227.0	28.4%
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	43.6	3942.0	21.4%
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	46.2	3434.0	18.7%

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK



Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-9 Collected: 12/8/2020 Received: 12/11/2020 Matrix: Product

Client ID: MW-27-201208 Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191	57.8	3186.0	8.3%
C <sub>22</sub> -Tricyclic Terpane	2	191	58.0	2653.0	6.9%
C <sub>23</sub> -Tricyclic Terpane	3	191	58.5	31295.0	81.1%
C <sub>24</sub> -Tricyclic Terpane	4	191	59.5	1458.0	3.8%
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C <sub>24</sub> -Tetracyclic Terpane	<b>Z</b> 4	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191	ND	ND	ND
C <sub>26</sub> -Tricyclic Terpane	6b	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #1	Α	191	ND	ND	ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #1	С	191	ND	ND	ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191	ND	ND	ND
18 α-22,29,30-Trisnorneohopane (Ts)	Е	191	ND	ND	ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191	ND	ND	ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	1	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191	ND	ND	ND
17 α,21β-30-Norhopane	K	191	ND	ND	ND
18α-30-Norneohopane	C29Ts	191	ND	ND	ND
17α-Diahopane	C30*	191	ND	ND	ND
17β-21α-30-Normoretane	L	191	ND	ND	ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21α-Moretane	0	191	ND	ND	ND
22S-17α,21β-30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	T	191	ND	ND	ND
$22R-17\alpha,21\beta-30$ -Bishomohopane	U	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	WS	191	ND	ND	ND
22R-17α,21β-Trishomohopane	WR	191	ND	ND	ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-9 Collected: 12/8/2020 Received: 12/11/2020

Matrix: Product

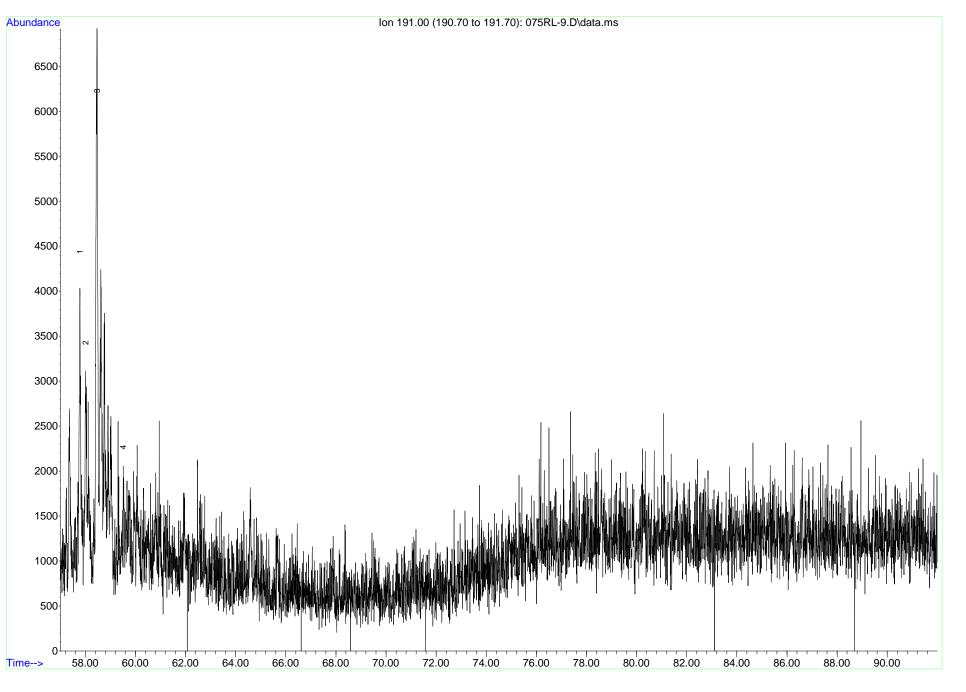
Client ID: MW-27-201208 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-9 0.40679 g





Lab ID: 075RL-9

### **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 12/8/2020

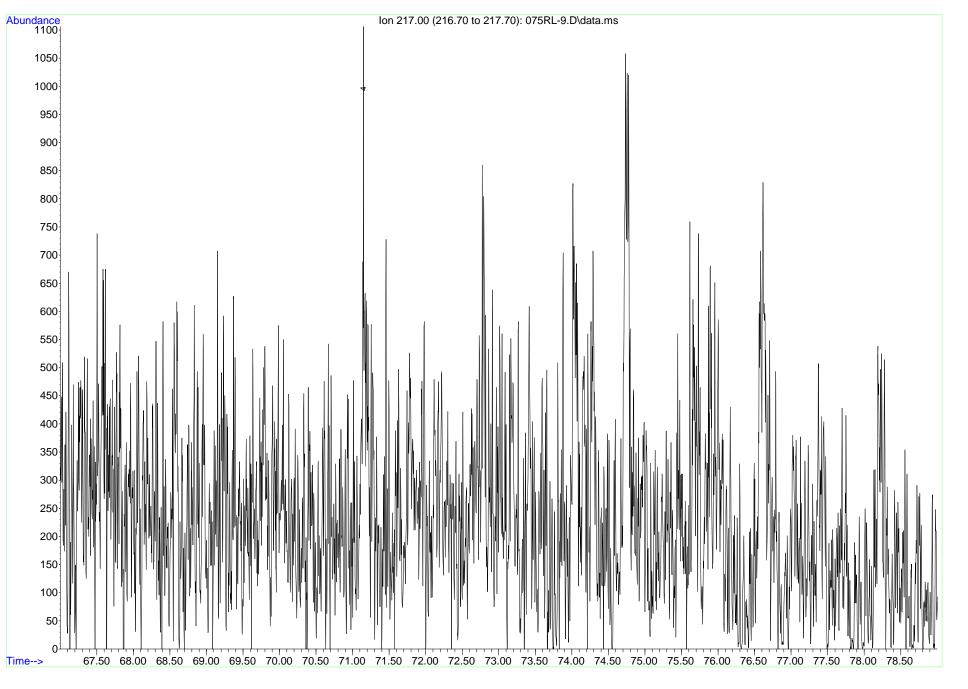
Received: 12/11/2020

Matrix: Product

Project: Chelan Chevron Site Client ID: MW-27-201208
Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	71.1	1039.0	100.0%
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14 $\alpha$ , 17 $\alpha$ -Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	ND	ND	ND

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK





### Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site
Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-9 Collected: 12/8/2020

Received: 12/11/2020

Matrix: Product

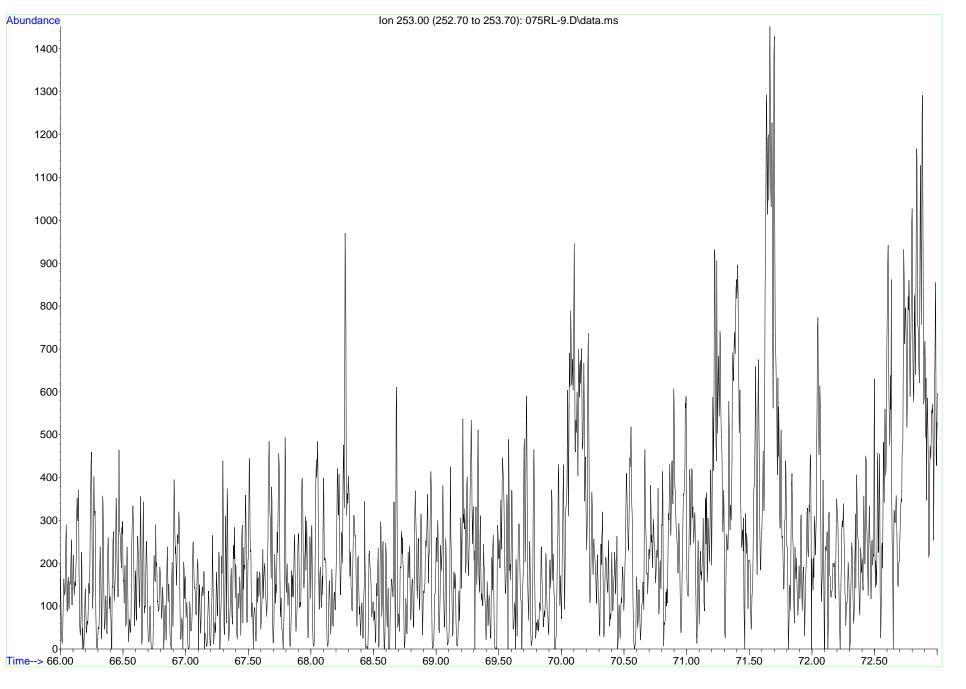
Client ID: MW-27-201208 Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	а	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	e	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-9 0.40679 g





### Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-9

Collected: 12/8/2020

Received: 12/11/2020

Matrix: Product

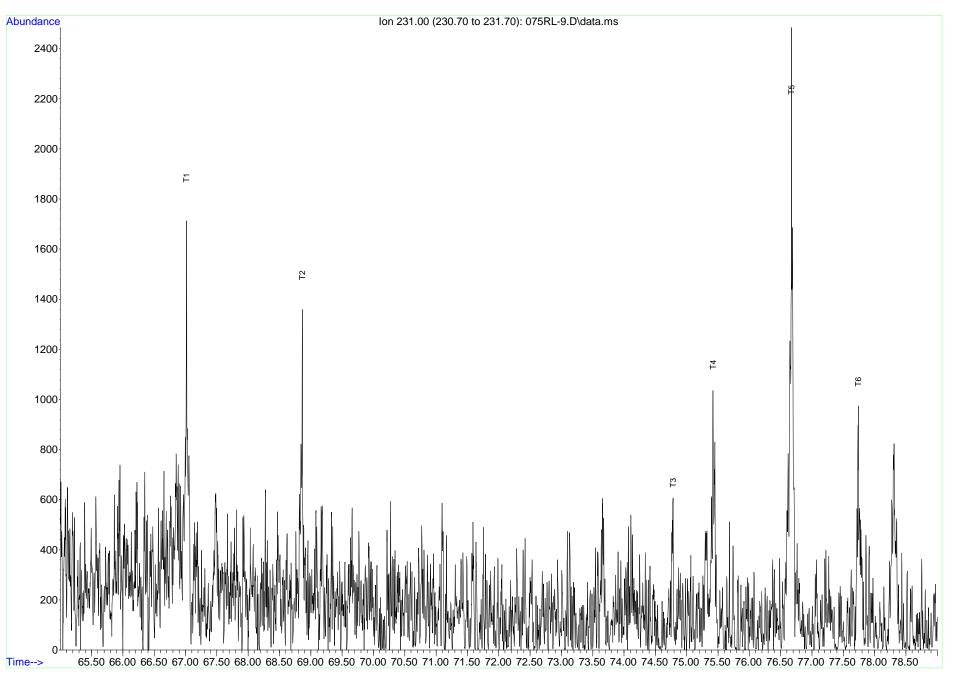
Client ID: MW-27-201208

Analyzed: 12/16/2020

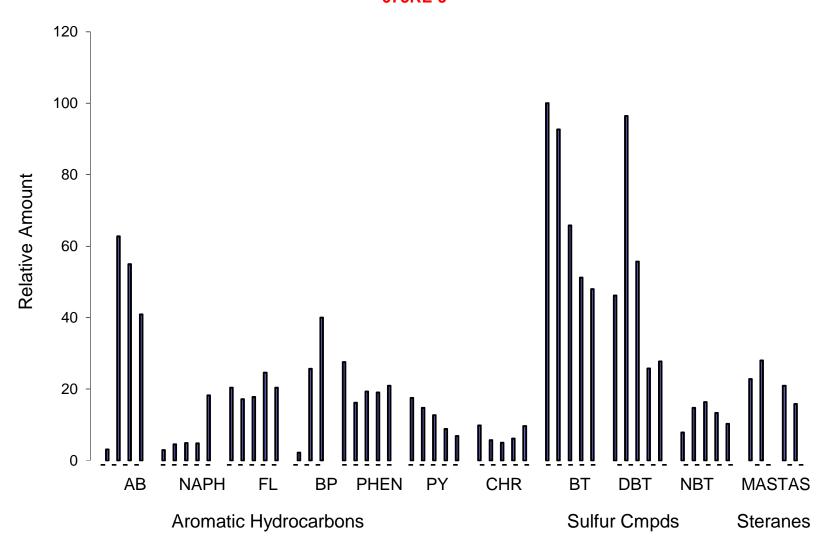
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	67.0	1665.0	18.8%
C <sub>21</sub> Triaromatic Sterane	T2	231	68.9	1311.0	14.8%
20S C <sub>26</sub> Triaromatic Sterane	Т3	231	74.8	604.0	6.8%
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	75.4	1032.0	11.6%
20S C <sub>28</sub> Triaromatic Sterane	T5	231	76.7	2467.0	27.8%
20R C <sub>27</sub> Triaromatic Sterane	T6	231	77.7	974.0	11.0%
20R C <sub>28</sub> Triaromatic Sterane	T7	231	78.3	823.0	9.3%

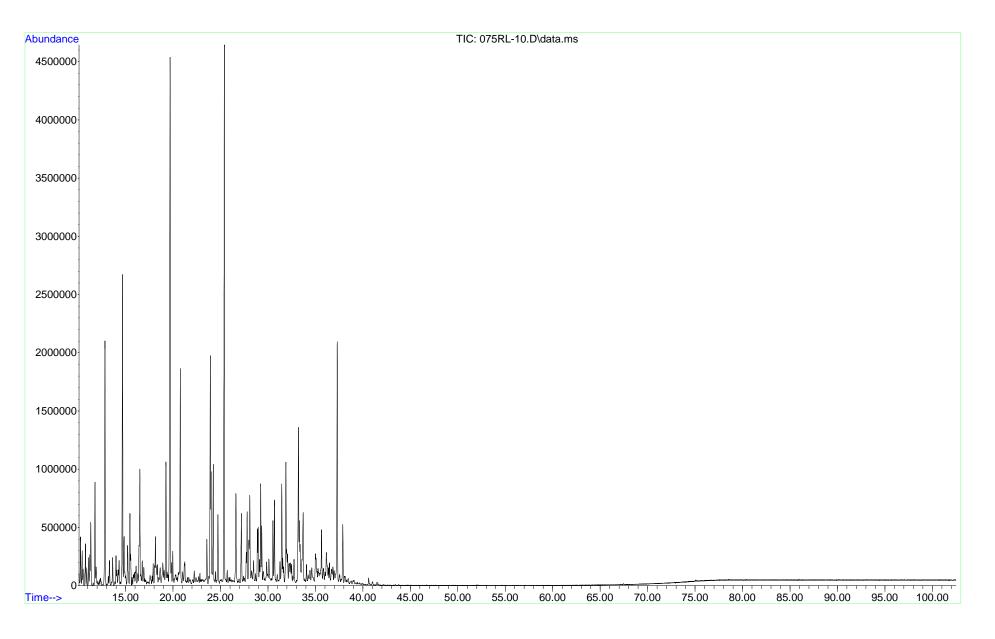
0.40679 g in 10mL DCM FOREN4LA\_MI\_BACK



Aromatic Hydrocarbon Distribution 075RL-9



Acquired : 16 Dec 2020 9:31 Sample Name: 075RL-10 using AcqMethod FOREN4LA\_MI\_BACK.M





### Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

Project Manager: Russ Shropshire Lab ID: 075RL-10
Client: Leidos, Inc. Collected: 11/7/2020
Address: 18939 120th Avenue NE Received: 12/11/2020

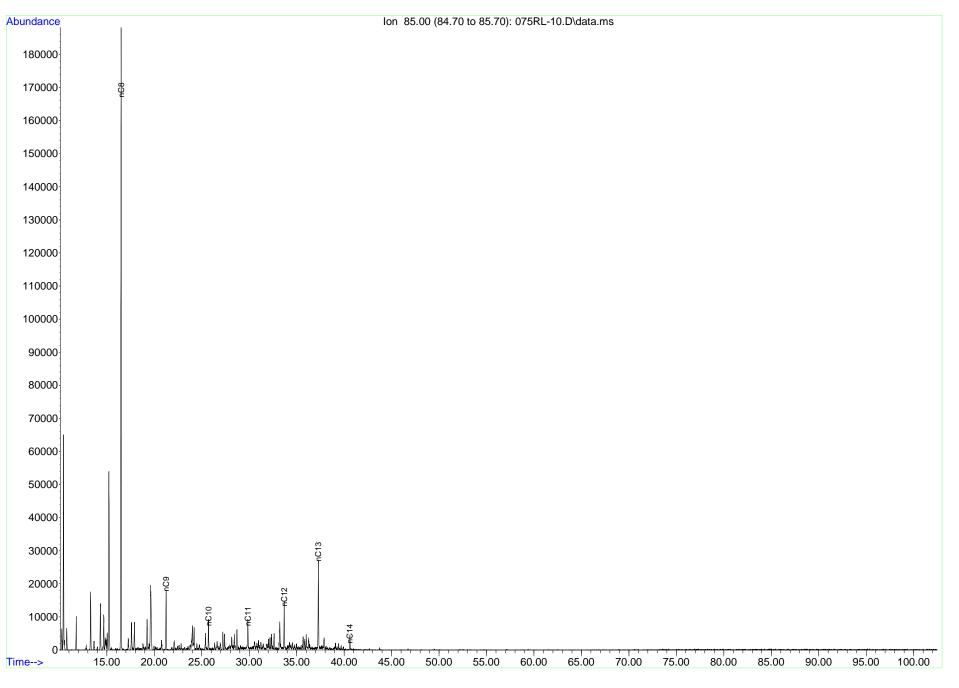
Address: 18939 120th Avenue NE, Received: 12/11/2020
Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: 22IE Woodin UST-1
Project #: 334893.TM.1.000.00.0 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	187599.0	69.8%
n-Nonane	nC9	85	21.2	18035.0	6.7%
n-Decane	nC10	85	25.7	9283.0	3.5%
n-Undecane	nC11	85	29.9	8617.0	3.2%
n-Dodecane	nC12	85	33.7	14137.0	5.3%
n-Tridecane	nC13	85	37.3	26522.0	9.9%
n-Tetradecane	nC14	85	40.6	4499.0	1.7%
n-Pentadecane	nC15	85	ND	ND	ND
n-Hexadecane	nC16	85	ND	ND	ND
n-Heptadecane	nC17	85	ND	ND	ND
n-Octadecane	nC18	85	ND	ND	ND
n-Nonadecane	nC19	85	ND	ND	ND
n-Eicosane	nC20	85	ND	ND	ND
n-Henicosane	nC21	85	ND	ND	ND
n-Docosane	nC22	85	ND	ND	ND
n-Tricosane	nC23	85	ND	ND	ND
n-Tetracosane	nC24	85	ND	ND	ND
n-Pentacosane	nC25	85	ND	ND	ND
n-Hexacosane	nC26	85	ND	ND	ND
n-Heptacosane	nC27	85	ND	ND	ND
n-Octacosane	nC28	85	ND	ND	ND
n-Nonacosane	nC29	85	ND	ND	ND
n-Triacontane	nC30	85	ND	ND	ND
n-Hentriacontane	nC31	85	ND	ND	ND
n-Dotriacontane	nC32	85	ND	ND	ND
n-Tritriacontane	nC33	85	ND	ND	ND
n-Tetratriacontane	nC34	85	ND	ND	ND
n-Pentatriacontane	nC35	85	ND	ND	ND
n-Hexatriacontane	nC36	85	ND	ND	ND
<i>n</i> -Heptatriacontane	nC37	85	ND	ND	ND
n -Octatriacontane	nC38	85	ND	ND	ND
n -Nonatriacontane	nC39	85	ND	ND	ND
n-Tetracontane	nC40	85	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK

075RL-10 0.40016 g





# Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-10 Collected: 11/7/2020

Received: 12/11/2020

Matrix: Product

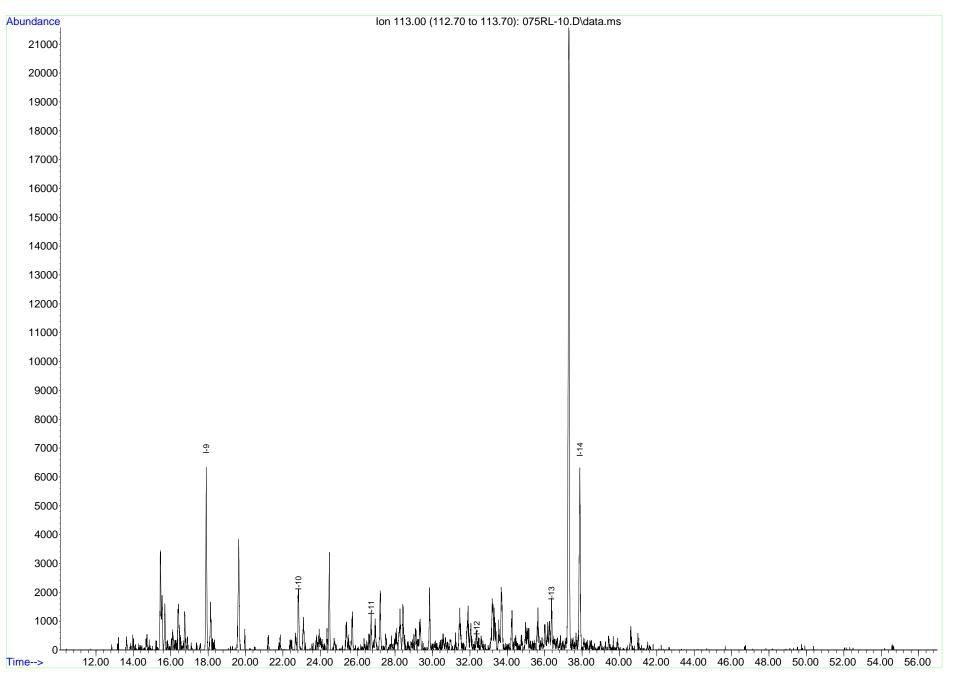
Client ID: 22IE Woodin UST-1

Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.9	6340.0	34.2%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	2111.0	11.4%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	1342.0	7.2%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.4	689.0	3.7%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.4	1720.0	9.3%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	6315.0	34.1%
Farnesane (Isoprenoid - C15)	I-15	113	ND	ND	ND
Iso-alkane w/ 16 Carbon Atoms	I-16	113	ND	ND	ND
Iso-alkane w/ 18 Carbon Atoms	I-18	113	ND	ND	ND
Pristane (Isoprenoid - C19)	Pr	113	ND	ND	ND
Phytane (Isoprenoid - C20)	Ph	113	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK





Lab ID: 075RL-10

# Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Collected: 11/7/2020

Received: 12/11/2020

Matrix: Product

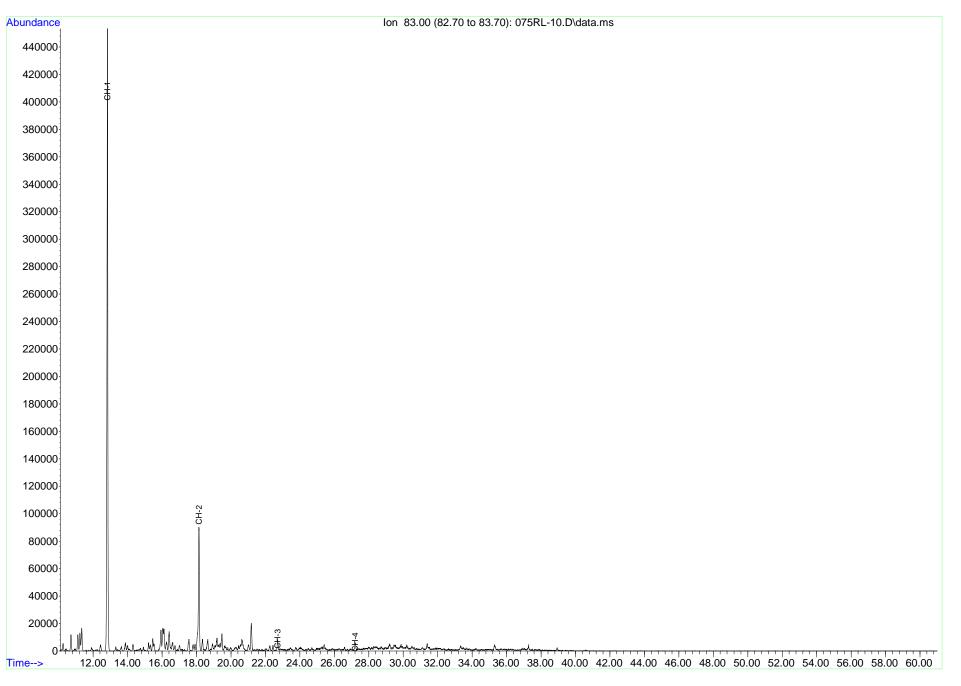
Project: Chelan Chevron Site Client ID: 22IE Woodin UST-1

Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020

Collected by: Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(83 m/z)
Methylcyclohexane	CH-1	83	12.8	453375.0	81.5%
Ethylcyclohexane	CH-2	83	18.1	90066.0	16.2%
Propylcyclohexane	CH-3	83	22.7	7748.0	1.4%
Butylcyclohexane	CH-4	83	27.2	5201.0	0.9%
Pentylcyclohexane	CH-5	83	ND	ND	ND
Hexylcyclohexane	CH-6	83	ND	ND	ND
Heptylcyclohexane	CH-7	83	ND	ND	ND
Octylcyclohexane	CH-8	83	ND	ND	ND
Nonylcyclohexane	CH-9	83	ND	ND	ND
Decylcyclohexane	CH-10	83	ND	ND	ND
Undecylcyclohexane	CH-11	83	ND	ND	ND
Dodecylcyclohexane	CH-12	83	ND	ND	ND
Tridecylcyclohexane	CH-13	83	ND	ND	ND
Tetradecylcyclohexane	CH-14	83	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK





# Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-10 Collected: 11/7/2020 Received: 12/11/2020 Matrix: Product

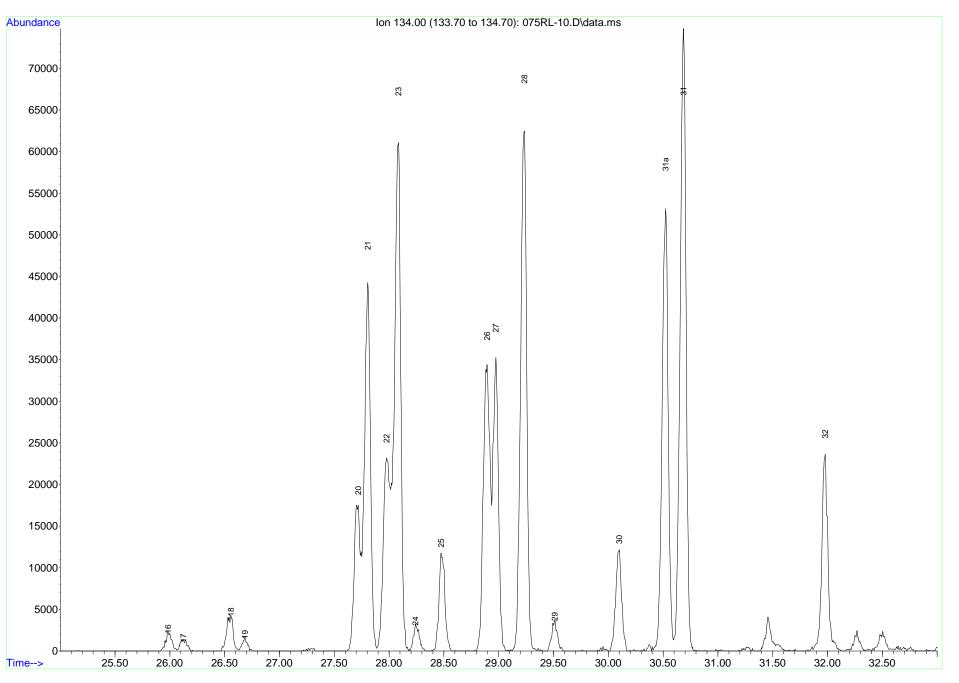
Client ID: 22IE Woodin UST-1

Analyzed: 12/16/2020

Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(134 m/z)
Sec-Butylbenzene	16	134	26.0	2400.0	0.5%
1-Methyl-3-Isopropylbenzene	17	134	26.1	1411.0	0.3%
1-Methyl-4-Isopropylbenzene	18	134	26.6	4283.0	0.9%
1-Methyl-2-Isopropylbenzene	19	134	26.7	1806.0	0.4%
1,3-Diethylbenzene	20	134	27.7	17459.0	3.7%
1-Methyl-3-Propylbenzene	21	134	27.8	43917.0	9.4%
Butylbenzene	22	134	28.0	22837.0	4.9%
1,3-Diethyl-5-Ethylbenzene	23	134	28.1	60720.0	12.9%
1,2-Diethylbenzene	24	134	28.2	3277.0	0.7%
1-Methyl-2-Propylbenzene	25	134	28.5	11788.0	2.5%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.9	34403.0	7.3%
1,3-Dimethyl-4-Ethylbenzene	27	134	29.0	35257.0	7.5%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	62430.0	13.3%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3758.0	0.8%
1,2-Dimethyl-3-Ethylbenzene	30	134	30.1	12173.0	2.6%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	52998.0	11.3%
1,2,3,5-Tetramethylbenzene	31	134	30.7	74737.0	15.9%
1,2,3,4-Tetramethylbenzene	32	134	32.0	23494.0	5.0%

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK





Lab ID: 075RL-10

## Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

Project Manager: Russ Shropshire

Client: Leidos, Inc. Collected: 11/7/2020 Address: 18939 120th Avenue NE, Received: 12/11/2020

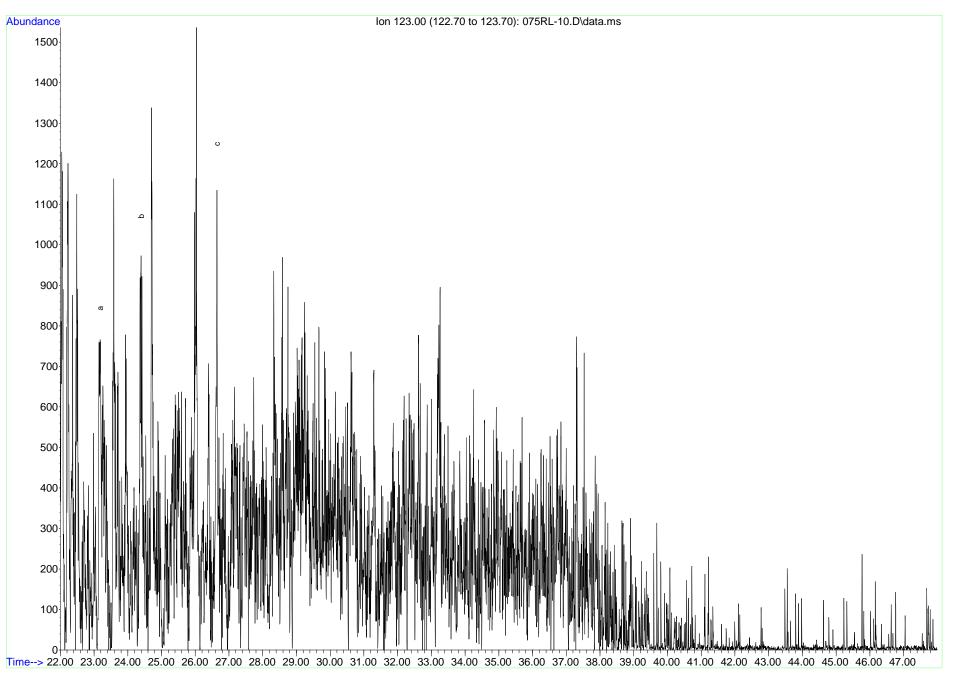
Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: 22IE Woodin UST-1

Project #: 334893.TM.1.000.00.0 Analyzed: 12/16/2020
Collected by: Q Method: FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention	Peak Height	Rel. Height %
			Time		(123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.2	732.0	27.5%
C <sub>10</sub> bicycloalkane	b	123	24.4	918.0	34.4%
3,3,7-Trimethylbicycloheptane	С	123	26.6	1016.0	38.1%
C <sub>11</sub> Decalin	d	123	ND	ND	ND
Nordrimane	f	123	ND	ND	ND
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	ND	ND	ND
Rearranged drimane	j	123	ND	ND	ND
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	1	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	m	123	ND	ND	ND
8β (H) Drimane	n	123	ND	ND	ND
C <sub>15</sub> Bicyclic Sesquiterpane	0	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	р	123	ND	ND	ND
C <sub>16</sub> Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK



## Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

allasted by:

Collected by:



Lab ID: 075RL-10 Collected: 11/7/2020 Received: 12/11/2020 Matrix: Product

Client ID: 22IE Woodin UST-1

Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C <sub>21</sub> -Tricyclic Terpane	1	191		ND	
C <sub>22</sub> -Tricyclic Terpane	2	191			ND
C <sub>23</sub> -Tricyclic Terpane	3	191			ND
C <sub>24</sub> -Tricyclic Terpane	4	191			ND
C <sub>25</sub> -Tricyclic Terpane	5(S+R)	191			ND
C <sub>24</sub> -Tetracyclic Terpane	Z4	191			ND
C <sub>26</sub> -Tricyclic Terpane	6a*	191			ND
C <sub>26</sub> -Tricyclic Terpane	6b	191			ND
C <sub>28</sub> -Tricyclic Terpane #1	A	191			ND
C <sub>28</sub> -Tricyclic Terpane #2	В	191			ND
C <sub>29</sub> -Tricyclic Terpane #1	C	191			ND
C <sub>29</sub> -Tricyclic Terpane #2	D	191			ND
18 α-22,29,30-Trisnorneohopane (Ts)	E	191			ND
17 α-22,29,30-Trisnorhopane (Tm)	F	191			ND
C <sub>30</sub> -Tricyclic Terpane #1	10a*	191			ND
C <sub>30</sub> -Tricyclic Terpane #2	10b	191			ND
17 α-28,30 Bisnorhopane	100	191			ND
C <sub>31</sub> -Tricyclic Terpane #1	11a*	191			ND
17α-25-Norhopane	J	191			ND
C <sub>31</sub> -Tricyclic Terpane #2	11b	191			ND
17 α,21β-30-Norhopane	K	191			ND
18α-30-Norneohopane	C29Ts	191			ND
17α-Diahopane	C30*	191			ND
17β-21α-30-Normoretane	L	191			ND
18α+18β-Oleanane	Ma+Mb	191	ND	ND	ND
17α-21β-Hopane	N	191	ND	ND	ND
17β-21 $\alpha$ -Moretane	0	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Homohopane	Р	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	ND	ND	ND
Gammacerane	R	191	ND	ND	ND
22S-17 $\alpha$ ,21 $\beta$ -30-Bishomohopane	T	191			ND
22R-17α,21β-30-Bishomohopane	U	191			ND
22S-17α,21β-30-Bishomohopane	WS	191			ND
22R-17α,21β-Trishomohopane	WR	191			ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

## Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.

Collected by:



Lab ID: 075RL-10 Collected: 11/7/2020 Received: 12/11/2020

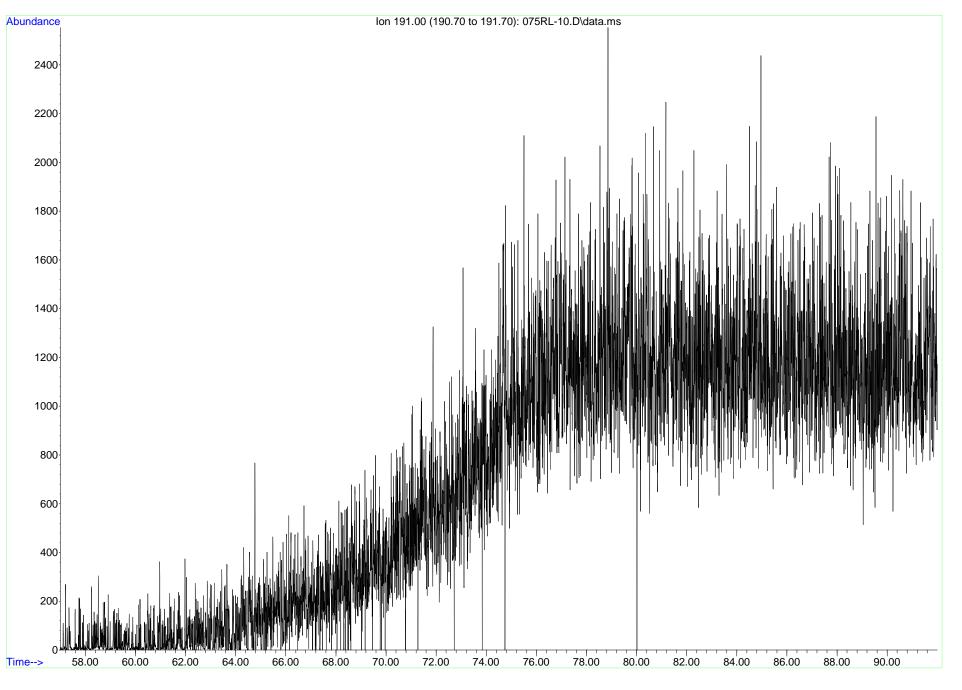
Matrix: Product

Client ID: 22IE Woodin UST-1

Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	Ion	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(191 m/z)
22R-17α,21β-Tetrahomohopane	XR	191	ND	ND	ND
22S-17α,21β-Pentahomohopane	YS	191	ND	ND	ND
22R-17α,21β-Pentahomohopane	YR	191	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK





## **Chromatogram Key & Numerical Results: 217 m/z Steranes**

Project Manager: Russ Shropshire

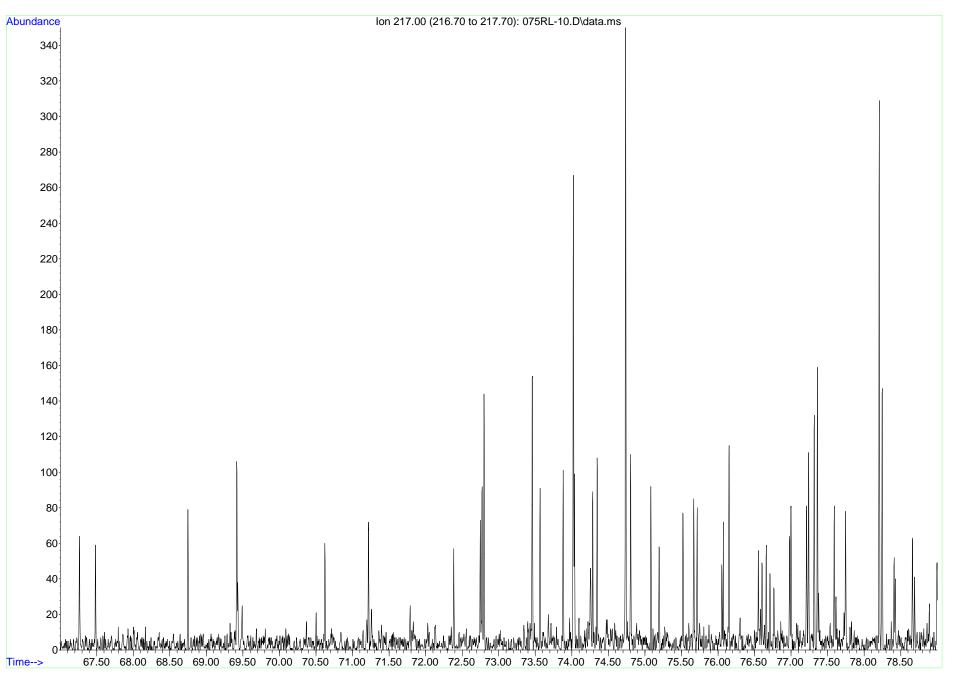
Lab ID: 075RL-10 Client: Leidos, Inc. Collected: 11/7/2020 Address: 18939 120th Avenue NE, Received: 12/11/2020 Bothell, WA 98011 Matrix: Product

Project: Chelan Chevron Site Client ID: 22IE Woodin UST-1 Project #: 334893.TM.1.000.00.00 Analyzed: 12/16/2020

Collected by: Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (217 m/z)
13β, 17α-Diacholestane (20S)	1	217	ND	ND	ND
13β, 17α-Diacholestane (20R)	2	217	ND	ND	ND
13α, 17β-Diacholestane (20S)	3	217	ND	ND	ND
13α, 17β-Diacholestane (20R)	4	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20S)	7D	217	ND	ND	ND
14α,17α-Cholestane (20S)	7	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20S)+	8+8D	217	ND	ND	ND
14β,17β-Cholestane (20R)					
14β,17β-Cholestane (20S)	9	217	ND	ND	ND
24-methyl-13α,17β-Diacholestane (20R)	9D	217	ND	ND	ND
14α,17α-Cholestane (20R)	10	217	ND	ND	ND
24-ethyl-13β, 17α-Diacholestane (20R)	11	217	ND	ND	ND
24-ethyl-13α, 17β-Diacholestane (20S)	12	217	ND	ND	ND
24-ethyl-13α, 17α-Diacholestane (20S)	13	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20R)	14	217	ND	ND	ND
24-methyl-14β, 17β-Cholestane (20S)	15	217	ND	ND	ND
24-methyl-14α, 17α-Cholestane (20R)	16	217	ND	ND	ND
24-ethyl-14α-Cholestane (20S)	17	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20R)	18	217	ND	ND	ND
24-ethyl-14β, 17β-Cholestane (20S)	19	217	ND	ND	ND
24-ethyl-14α, 17α-Cholestane (20R)	20	217	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-10 Collected: 11/7/2020

Received: 12/11/2020

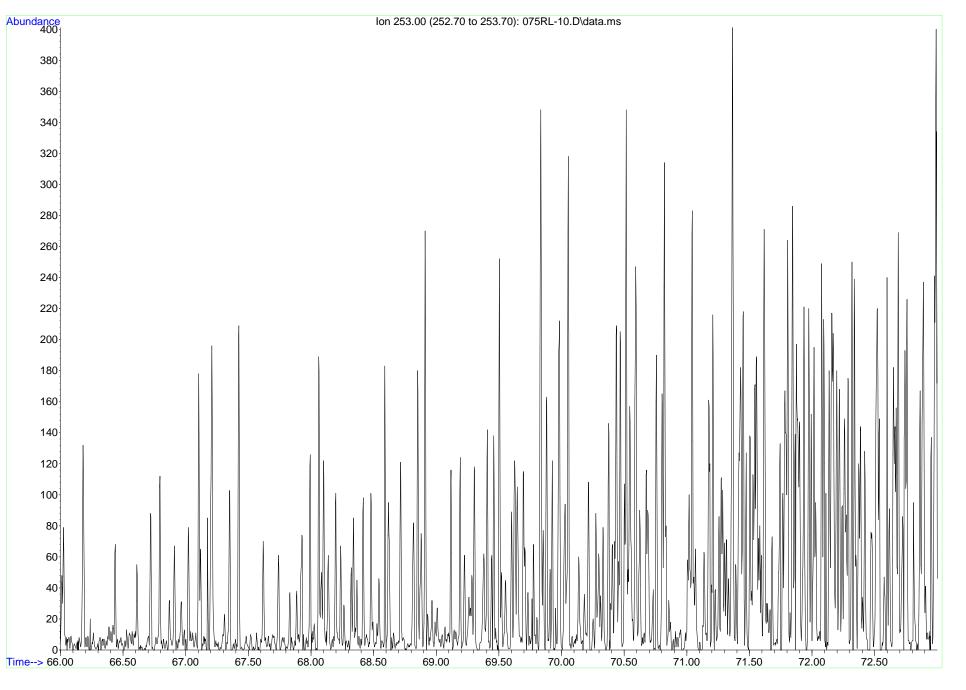
Matrix: Product

Client ID: 22IE Woodin UST-1

Analyzed: 12/16/2020 Q Method: FSRTL120320.M

Identity	Symbol	lon	Retention	Peak Height	Rel. Height %
		(m/z)	Time		(253 m/z)
20S, 5β C27-MAS	a	253	ND	ND	ND
20S, dia C27-MAS	b	253	ND	ND	ND
20R, 5β C27-MAS + 20R C27 dia MAS	С	253	ND	ND	ND
20S, 5α C27-MAS	d	253	ND	ND	ND
20R, 5β C28-MAS + 20S C28 dia MAS	е	253	ND	ND	ND
20R, 5α C27-MAS	f	253	ND	ND	ND
20S, 5α C28-MAS	g	253	ND	ND	ND
20R, 5β C28-MAS + 20R C28 dia MAS	h	253	ND	ND	ND
20S, 5β C29-MAS + 20S C29 dia MAS	i	253	ND	ND	ND
20S, 5α C29-MAS	J lower case	253	ND	ND	ND
20R, 5α C28-MAS	k	253	ND	ND	ND
20R, 5β C29-MAS + 20R C29 dia MAS	L lower case	253	ND	ND	ND
20R, 5α C29-MAS	m	253	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK





## Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

Project Manager: Russ Shropshire

Client: Leidos, Inc.

Address: 18939 120th Avenue NE,

Bothell, WA 98011

Project: Chelan Chevron Site

Project #: 334893.TM.1.000.00.00

Collected by:

Lab ID: 075RL-10 Collected: 11/7/2020

Received: 12/11/2020 Matrix: Product

N: 11D 221E144 |:

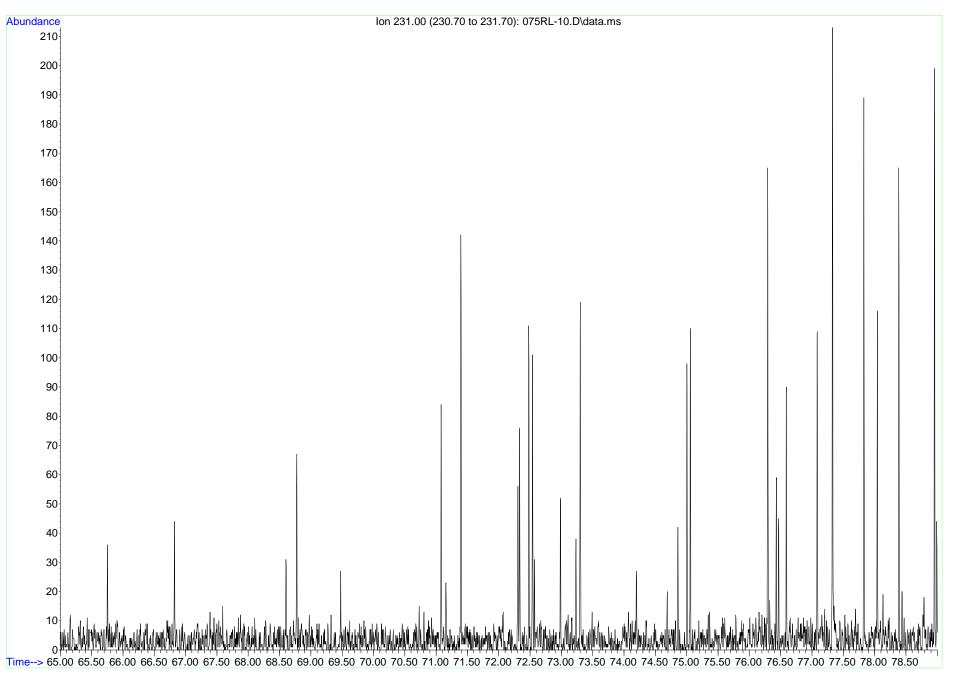
Client ID: 22IE Woodin UST-1

Analyzed: 12/16/2020

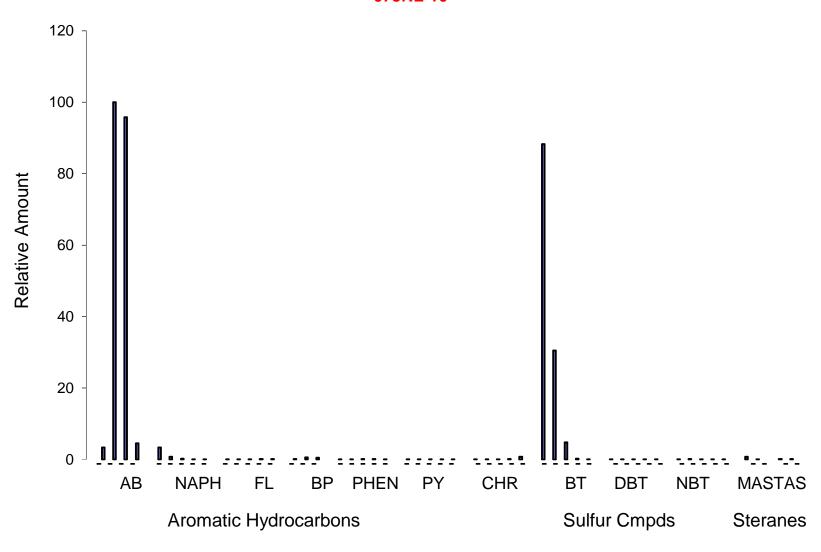
Q Method: FSRTL120320.M

Identity	Symbol	lon (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C <sub>20</sub> Triaromatic Sterane	T1	231	ND	ND	ND
C <sub>21</sub> Triaromatic Sterane	T2	231	ND	ND	ND
20S C <sub>26</sub> Triaromatic Sterane	T3	231	ND	ND	ND
20R C <sub>26</sub> + 20S C <sub>27</sub> Triaromatic Steranes	T4	231	ND	ND	ND
20S C <sub>28</sub> Triaromatic Sterane	T5	231	ND	ND	ND
20R C <sub>27</sub> Triaromatic Sterane	T6	231	ND	ND	ND
20R C <sub>28</sub> Triaromatic Sterane	T7	231	ND	ND	ND

0.40016 g in 10mL DCM FOREN4LA\_MI\_BACK



Aromatic Hydrocarbon Distribution
075RL-10





# Key for Identifying Aromatic Hydrocarbons

No	m/z	Abbreviation	Compound
1	120	AB	C <sub>3</sub> -alkylbenzenes
2	134		C <sub>4</sub> -alkylbenzenes
3	148		C <sub>5</sub> -alkylbenzenes
4	162		C <sub>6</sub> -alkylbenzenes
5	128	NAPH	C <sub>0</sub> -naphthalene
6	142		C <sub>1</sub> -naphthalenes
7	156		C <sub>2</sub> -naphthalenes
8	170		C <sub>3</sub> -naphthalenes
9	184		C <sub>4</sub> -naphthalenes
10	166	FL	C <sub>0</sub> -fluorene
11	180		C <sub>1</sub> -fluorenes
12	194		C <sub>2</sub> -fluorenes
13	208		C <sub>3</sub> -fluorenes
14	222		$C_4$ -fluorenes
15	154	ВР	C <sub>0</sub> -biphenyl
16	168		C <sub>1</sub> -biphenyls + dibenzofuran
17	182		C <sub>2</sub> -biphenyls + C1 Dibenzofuran
18	178	PHEN	C <sub>0</sub> -phenanthrene
19	192		C <sub>1</sub> -phenanthrenes
20	206		C <sub>2</sub> -phenanthrenes
21	220		C <sub>3</sub> -phenanthrenes
22	234		$C_4$ -phenanthrenes
23	202	PY	$C_0$ -pyrene/fluoranthene
24	216		C <sub>1</sub> -pyrenes/fluoranthenes
25	230		C <sub>2</sub> -pyrenes/fluoranthenes
26	244		C <sub>3</sub> -pyrenes/fluoranthenes
27	258		C <sub>4</sub> -pyrenes/fluoranthenes
28	228	CHR	C <sub>0</sub> -chrysene
29	242		C <sub>1</sub> -chrysenes
30	256		C <sub>2</sub> -chrysenes
31	270		C <sub>3</sub> -chrysenes
32	284		C <sub>4</sub> -chrysenes
33	148	ВТ	$C_1$ -benzothiophenes
34	162		C <sub>2</sub> -benzothiophenes
35	176		C <sub>3</sub> -benzothiophenes
36	190		$C_4$ -benzothiophenes
37	204		C <sub>5</sub> -benzothiophenes



# Key for Identifying Aromatic Hydrocarbons – Cont.

No	m/z	Abbreviation	Compound
38	184	DBT	C <sub>0</sub> -dibenzothiophene
39	198		C <sub>1</sub> -dibenzothiophenes
40	212		C <sub>2</sub> -dibenzothiophenes
41	226		C <sub>3</sub> -dibenzothiophenes
42	240		C <sub>4</sub> -dibenzothiophenes
43	234	NBT	C <sub>0</sub> -naphthobenzthiophene
44	248		C <sub>1</sub> -naphthobenzthiophenes
45	262		C <sub>2</sub> -naphthobenzthiophenes
46	276		C <sub>3</sub> -naphthobenzthiophenes
47	290		C <sub>4</sub> -naphthobenzthiophenes
48	253	MAS	Monoaromatic steranes
49	267		Monoaromatic steranes
50	239		Monoaromatic steranes
51	231	TAS	Triaromatic steranes
52	245		Triaromatic steranes

REPORT TO:		INVOICE TO:		001
Reports will be provide below will require pride	ded to the contact(s) listed below. Parties other than the contact(s) listed or approval.	For Invoices paid by a t corresponding reference	hird party it is imperative that contact information & PNO. be provided.	microbialinsight
Name:	Russ Shropshire	Name:	Russ Shropshire	3
Company:	Leidos	Company:	Leidos	10515 Research Dr
Address:	18939 120th ave NE	Address:	18939 120th ave NE	Knoxville, TN 37932
	Suik 112		Suite 112	phone (865) 573-8188
	Bothell, WA 98011		Bothe 4, WH 98011	fax: (865) 573-8133
email:	shropshirer a leidos.com	email:	shropshirera leidos.com	email: customerservice@microbe.com
Phone:	(206) 321-2387	Phone:		www.microbe.com
Fax:		Fax:		
				Please Check One:
Project Manager:	Russ Shropshire	Purchase Order No.	PO10246480	☐ More samples to follow
Project Name:	Chelan Chevron	Subcontract No.		□ No Additional Samples
Project No.:	WA-02	Quote No.	Q 2020 1014.0010	
Report Type:	☐ Standard (default)	☐ Historical	samples listed here are split between two coolers.	Saturday Delivery Please see sampling protocol for instructions

Please contact us prior to submitting samples regarding questions about the analyses you are requesting at (865) 573-8188 (9:00 am to 5:00 pm M-F). After hours email: customerservice@microbe.com

	Sample Informatio	n					7				Anal	ysis					
MI ID (Laboratory Use Only)	955 12-10-20 Sample Name	Date Sampled	# of vials	Matrix	Parent and Alykylates PAHs	C3-C36 Whole Oil A STM 03328	C8-C40 Full Scan ASTM D5739	Simulated Distillation	Oxygenated Blending Agents	EDB and Organic Lead	C3-C12 PIANO EPA 8260M	Other:					
175RL [	mw-10-201206		3	4		×	X				X						
	mw-12-201207		3	L		X	X				X						
3	RW-2-201207		3	4		X	X				X						
4	mw-9 - 201207		3	4		X	X				X						
5	mw-44-201207		3	4		X	X				X						
6	mw-19-201207		3	L		Х	X				X						
7	mw-16-201207		3	4		X	X				X						
8	MW-21-201208		3	4		×	X				X						
9	MW-27-201208		3	4		X	X				X						
10	221 E Woodin UST-1		3	4		X	X				X						
elinquished by		Date 2-10-2	2070			Rece	eived by:	10	_ 4	SAN	Date	12	/11/2	20			

Appendix E: Laboratory Analysis Reports – Integrated Geosciences





# INTEGRATED GEOSCIENCES LABORATORIES, LLC

Environmental \* Geotechnical \* Core Analysis

6016 Centralcrest Street • Houston, Texas 77092 Telephone (713) 316-1800 • Fax (877) 255-9953

December 23, 2020

Russ Shropshire, Project Manager, Leidos. 18939 120th Ave NE, Suite 112, Bothell, WA 98011.

Re: IGL File No: 2012-8

Project Name: **Chelan**. Project Number: **WA-02** Site Location: **Chelan, WA.** 

Subject: Final Report: Fluid Properties Package-(Density/Specific Gravity, Viscosity &

Interfacial Tension – (ASTM D1481, ASTM D445, ASTM D971).

Dear Russ Shropshire,

Please find enclosed report for Fluid properties Package analyses conducted on fluid samples received from your "**Chelan**" project. All analyses were performed by applicable ASTM, EPA, or API methodologies. The samples are currently in storage and will be retained for thirty days past the completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

Integrated Geosciences Laboratories appreciate the opportunity to be of service. If you have any questions or require additional information, please contact me or Emeka Anazodo at (713) 316-1800.

Sincerely, Integrated Geosciences Laboratories, LLC.

#### Wumi Andrew.

Laboratory Technician.

Encl.

# Integrated Geosciences Laboratories, LLC.

Project Name: Chelan IGL File No: 2012-8
Project Number: WA-02 Client: Leidos

Site Location: Chelan, WA Date Received: 12/15/2020

#### **TEST PROGRAM - 20201215**

Serial Number	Sample ID	Date Sampled	Time Sampled	Depth (feet)	Matix Type	Fluid Properties Package LNAPL / DNAPL (ASTM D445, D1481, D971)	Comments
	Date Received: 20201215						
1	MW-10-201206	12/6/2020	2010	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
2	MW-12-201207	12/7/2020	0720	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
3	RW-2-201207	12/7/2020	0930	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
4	MW-9-201207	12/7/2020	1010	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
5	MW-44-201207	12/7/2020	1928	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
6	MW-19-201207	12/7/2020	2045	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
7	MW-16-201207	12/7/2020	2230	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
8	MW-21-201208	12/8/2020	0600	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
9	MW-27-201208	12/8/2020	0720	N/A	LNAPL & Groundwater	X	2- [8oz glass jars]
	TOTAL					9	18

## **Laboratory Test Program Notes**

Rev. 1.0 20140226 CLIENT CONFIDENTIAL

<sup>1.</sup> Standard TAT for basic analysis is 10-15 business days.

IGL File No: 2012-8 Client: Leidos Report Date: 12/23/2020

# VISCOSITY, DENSITY, and SPECIFIC GRAVITY DATA

(METHODOLOGY: ASTM D445, ASTM D1481, API RP40)

Project Name: Chelan Project No: WA-02 Chelan, WA Site Location:

SAMPLE	IGL	MATRIX	TEMPERATURE,	SPECIFIC	DENSITY,	VISC	OSITY
ID	ID	IVIATRIA	°F	GRAVITY	g/cc	centistokes	centipoise
MW-10-201206	1	<b>Ground Water</b>	70	0.9987	0.9985	0.992	0.991
			100	1.0006	0.9936	0.709	0.705
			130	1.0008	0.9867	0.535	0.527
MW-10-201206	1	LNAPL	70	0.7549	0.7547	0.88	0.67
	-		100	0.7466	0.7414	0.73	0.54
			130	0.7382	0.7279	0.62	0.45
MW-12-201207	2	Ground Water	70	0.9982	0.9980	0.997	0.995
	_		100	1.0003	0.9934	0.701	0.697
			130	0.9990	0.9850	0.529	0.521
MW-12-201207	2	LNAPL	70	0.7628	0.7627	0.83	0.63
			100	0.7542	0.7490	0.70	0.52
			130	0.7458	0.7354	0.59	0.44
RW-2-201207	3	Ground Water	70	0.9986	0.9984	0.998	0.997
			100	1.0007	0.9938	0.706	0.702
			130	1.0000	0.9859	0.532	0.525
RW-2-201207	3	LNAPL	70	0.7459	0.7458	0.76	0.57
			100	0.7367	0.7316	0.64	0.47
			130	0.7284	0.7181	0.55	0.40

#### **QUALITY CONTROL DATA**

Date: 12/18/20 FLUID TYPE: Cannon® CVS S3 TEMPERATURE, °F: 70 DENSITY, MEASURED: 0.8615 DENSITY, PUBLISHED: 0.8615 RPD: 0.00 VISCOSITY, MEASURED: 4.50 VISCOSITY, PUBLISHED: 4.47 RPD: 0.77 CVS Lot #: 17301

CVS = Certified Viscosity Standard

IGL File No: 2012-8 Client: Leidos Report Date: 12/23/2020

# VISCOSITY, DENSITY, and SPECIFIC GRAVITY DATA

(METHODOLOGY: ASTM D445, ASTM D1481, API RP40)

Project Name: Chelan Project No: WA-02 Chelan, WA Site Location:

SAMPLE	IGL	MATRIX	TEMPERATURE,	SPECIFIC	DENSITY,	VISC	OSITY		
ID	ID	WATKIA	°F	GRAVITY	g/cc	centistokes	centipoise		
MW-9-201207	4	<b>Ground Water</b>	70	0.9984	0.9982	1.001	0.999		
			100	0.9998	0.9928	0.703	0.698		
			130	0.9958	0.9819	0.531	0.521		
MW-9-201207	4	LNAPL	70	0.7424	0.7423	0.81	0.60		
			100	0.7331	0.7281	0.67	0.49		
			130	0.7254	0.7152	0.58	0.42		
MW-44-201207	5	Ground Water	70	0.9984	0.9982	0.997	0.995		
			100	0.9998	0.9928	0.700	0.695		
			130	0.9972	0.9832	0.530	0.521		
MW-44-201207	5	LNAPL	70	0.7677	0.7676	0.85	0.65		
10100-44-201207	3	LINAL							
			100	0.7589	0.7537	0.71	0.54		
			130	0.7510	0.7404	0.61	0.45		
MW-19-201207	6	Ground Water	70	0.9984	0.9982	1.003	1.001		
10 201201	J	Cidalia Water	100	0.9998	0.9928	0.703	0.698		
			130	0.9976	0.9836	0.531	0.522		
			.00	0.0070	0.0000	0.001	0.022		
MW-19-201207	6	LNAPL	70	0.8296	0.8295	2.55	2.11		
			100	0.8227	0.8170	1.86	1.52		
			130	0.8166	0.8051	1.46	1.17		

#### **QUALITY CONTROL DATA**

Date: 12/18/20 FLUID TYPE: Cannon® CVS S3 TEMPERATURE, °F: 70 DENSITY, MEASURED: 0.8615 DENSITY, PUBLISHED: 0.8615 RPD: 0.00 VISCOSITY, MEASURED: 4.50 VISCOSITY, PUBLISHED: 4.47 RPD: 0.77 CVS Lot #: 17301

CVS = Certified Viscosity Standard

IGL File No: 2012-8 Client: Leidos Report Date: 12/23/2020

# VISCOSITY, DENSITY, and SPECIFIC GRAVITY DATA

(METHODOLOGY: ASTM D445, ASTM D1481, API RP40)

Project Name: Chelan Project No: WA-02 Chelan, WA Site Location:

SAMPLE	IGL	MATRIX	TEMPERATURE,	SPECIFIC	DENSITY,	VISC	OSITY
ID	ID	WATNA	°F	GRAVITY	g/cc	centistokes	centipoise
MW-16-201207	7	<b>Ground Water</b>	70	0.9983	0.9981	1.000	0.998
			100	0.9996	0.9927	0.705	0.700
			130	0.9985	0.9845	0.532	0.524
MW-16-201207	7	LNAPL	70	0.7525	0.7524	0.78	0.59
			100	0.7436	0.7384	0.66	0.49
			130	0.7350	0.7247	0.56	0.41
MW-21-201208	8	Ground Water	70	0.9981	0.9979	1.004	1.002
			100	0.9998	0.9928	0.708	0.703
			130	0.9985	0.9845	0.531	0.522
MW-21-201208	8	LNAPL	70	0.7566	0.7565	0.85	0.64
10100-21-201200	0	LNAPL					
			100	0.7479	0.7427	0.71	0.53
			130	0.7394	0.7290	0.61	0.44
MW 27 204200		One we d Mater	70	0.0000	0.0004	0.007	0.005
MW-27-201208	9	Ground Water	70	0.9983	0.9981	0.997	0.995
			100	1.0001	0.9931	0.704	0.699
			130	1.0001	0.9861	0.530	0.523
NAV 07 004600		LALADI	70	0.0007	0.0000	<b>5.00</b>	4.04
MW-27-201208	9	LNAPL	70	0.8694	0.8693	5.68	4.94
			100	0.8642	0.8582	3.69	3.17
			130	0.8584	0.8464	2.62	2.22

#### **QUALITY CONTROL DATA**

Date: 12/18/20 FLUID TYPE: Cannon® CVS S3 TEMPERATURE, °F: 70 DENSITY, MEASURED: 0.8615 DENSITY, PUBLISHED: 0.8615 RPD: 0.00 VISCOSITY, MEASURED: 4.50 VISCOSITY, PUBLISHED: 4.47 RPD: 0.77 CVS Lot #: 17301

CVS = Certified Viscosity Standard

 IGL File No:
 2012-8

 Client:
 Leidos

 Report Date:
 12/23/2020

### INTERFACIAL / SURFACE TENSION DATA (METHODOLOGY: DuNuoy Method - ASTM D971)

Project Name: Chelan
Project No: WA-02
Site Location: Chelan, WA

PHASE PAIR		TEMPERATURE,	INTERFACIAL TENSION,
SAMPLE ID / PHASE	SAMPLE ID / PHASE	°F	Dynes/centimeter
MW-10-201206 Ground Water	Air	69.5	70.23
MW-10-201206 NAPL	Air	69.7	22.41
MW-10-201206 Ground Water	MW-10-201206 NAPL	69.2	17.88
MW-12-201207 Ground Water	Air	69.9	70.03
MW-12-201207 NAPL	Air	69.9	22.58
MW-12-201207 Ground Water	MW-12-201207 NAPL	69.0	18.85
RW-2-201207 Ground Water	Air	70.0	62.27
RW-2-201207 NAPL	Air	70.0	21.86
RW-2-201207 Ground Water	RW-2-201207 NAPL	68.4	20.53
MW-9-201207 Ground Water	Air	70.9	69.68
MW-9-201207 NAPL	Air	71.8	22.24
MW-9-201207 Ground Water	MW-9-201207 NAPL	70.1	22.40
MW 44 004007 One of Water	Δ'	74.0	00.07
MW-44-201207 Ground Water	Air	71.2	68.07
MW-44-201207 NAPL	Air	72.5	22.90
MW-44-201207 Ground Water	MW-44-201207 NAPL	71.0	15.13

## QUALITY CONTROL DATA

Date: 12/23/20
PHASE PAIR: DIWATER / AIR
TEMPERATURE, °F: 71.3
IFT, MEASURED: 71.9
IFT, PUBLISHED: 72.4
RPD: -0.76

 IGL File No:
 2012-8

 Client:
 Leidos

 Report Date:
 12/23/2020

### INTERFACIAL / SURFACE TENSION DATA (METHODOLOGY: DuNuoy Method - ASTM D971)

Project Name: Chelan
Project No: WA-02
Site Location: Chelan, WA

PHASE PAIR	TEMPERATURE,	INTERFACIAL TENSION,	
SAMPLE ID / PHASE	SAMPLE ID / PHASE	°F	Dynes/centimeter
MW-19-201207 Ground Water	Air	72.2	68.88
MW-19-201207 NAPL	Air	73.6	25.05
MW-19-201207 Ground Water	MW-19-201207 NAPL	72.2	18.46
MW-16-201207 Ground Water	Air	72.7	67.97
MW-16-201207 NAPL	Air	75.2	20.74
MW-16-201207 Ground Water	MW-16-201207 NAPL	71.3	17.11
MW-21-201208 Ground Water	Air	72.4	68.93
MW-21-201208 NAPL	Air	73.6	21.52
MW-21-201208 Ground Water	MW-21-201208 NAPL	70.0	29.35
MW-27-201208 Ground Water	Air	72.4	59.69
MW-27-201208 NAPL	Air	75.1	27.66
MW-27-201208 Ground Water	MW-27-201208 NAPL	71.1	19.59

#### QUALITY CONTROL DATA

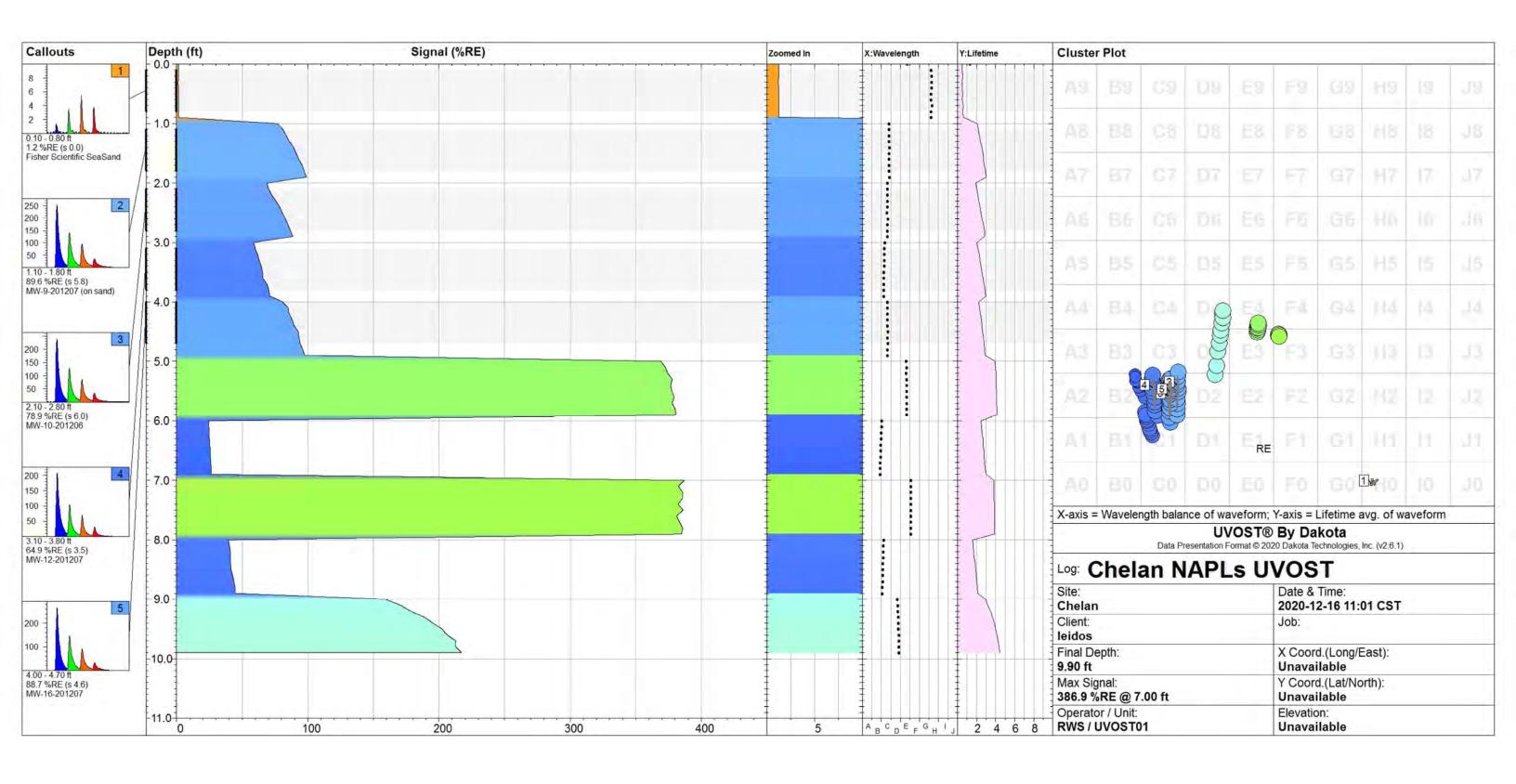
Date: 12/23/20
PHASE PAIR: DIWATER / AIR
TEMPERATURE, °F: 71.3
IFT, MEASURED: 71.9
IFT, PUBLISHED: 72.4
RPD: -0.76

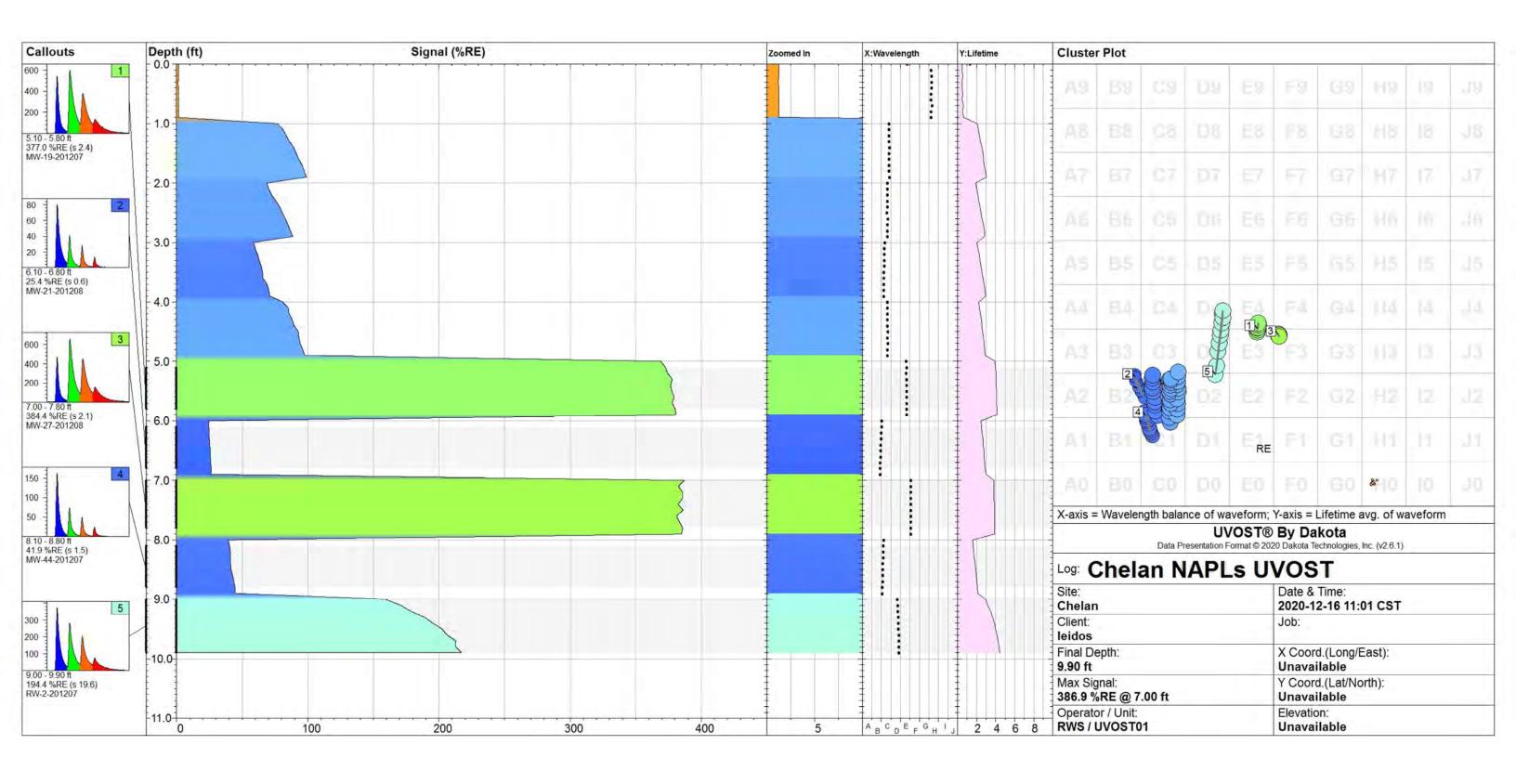
INTEGRATED GEOSCIENCES LABORATORIES, LLC							CHAIN OF CUSTODY						P#	\GE	1	OF	: /							
(formerly PTS L	aboratories,	Inc	2.)																					
COMPANY: Leidos											AN	ALYS	SIS R	REQL	JEST									PO#: PO10246683
ADDRESS: CITY Bother  18939 120th ava NE, So  PROJECT MANAGER NAME: EMAIL  Shropshire com (206)  PROJECT NAME:  Chalan  PROJECT NUMBER:  WA-02  SITE LOCATION:  Chalan WA	PHONE # ireraleidis.	OF SAMPLES	SOIL PROPERTIES PACKAGE	HYDRAULIC CONDUCTIVITY PACKAGE	D SATURATION PACKAGE	TCEQ/TNRCC PROPERTIES PACKAGE	CAPILLARITY PACKAGE	FLUID PROPERTIES PACKAGE	СОКЕ РНОТОGRAРНУ	VAPOR TRANSPORT PACKAGE	POROSITY: TOTAL, AIR-FILLED, WATER-FILLED	PROSITY: EFFECTIVE, ASTM D425M	SPECIFIC GRAVITY, ASTM D854	3ULK DENSITY (DRV), API RP40 or ASTM D2937	AIR PERMEABILITY, API RP40	HYDRAULIC CONDUCTIVITY, EPA 9100/API RP40 OR ASTM D5084	SRAIN SIZE DISTRIBUTION, ASTM D422 or D4464M	TOC: WALKLEY-BLACK	ATTERBERG LIMITS, ASTM D4318	/APOR INTRUSION PACKAGE	REE PRODUCT MOBILITY PACKAGE			BILLING ADDRESS:  BILLING EMAIL:  BILLING CONTACT: Ann. Moria Cray  BILLING PHONE #:  TURNAROUND TIME  24 HOURS 5 DAYS  72 HOURS NORMAL X  OTHERS:  SAMPLE INTEGRITY (CHECK):  INTACT: TEMP (F)  IGL QUOTE NO/DATE  10 -14-20
SAMPLER SIGNATURE		NUMBER	PROP	RAULI	PORE FLUID S	\TNR	LLARI	D PRO	Е РНО	OR TR	OSITY:	SITY: E	IFIC G	C DEN	PERME	AULIC	IN SIZE	WAL	RBER	DR IN	PROU			IGL FILE NO
SAMPLE ID DATE TIME	DEPTH, FEET	Ž	SOIL	유 포	§.	100	SPI	<u> </u>	8 8	VAP	P. P.	PRO	SPEC	BUL	AIR F	HYD	GRA	700	ATT	VAP	FREE			COMMENTS
mw-10-201200 12-6-20 2010	NA	2						X																Samples will
mw-12-201207 12-7-20 0720		2						X																arrive in 4
RW-2-201207 12-7-20 0930		2						X																coolers.
mw-9-201207 12-7-20 1010		2						X																
mw-44-20120712-7-20 1928		Z						X					1											
mw-19-201207 12-7-20 2045		2						x																
mw-16-201207 12-9-20 2230		2						x																
mw-21-201208 12-8-20 0600		2						X		ij														
mw-27-20120312-8-20 0720		2						X														1		
77.20.20	1							1-													$\forall$	$\top$	-	
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1. RELINQUISHED BY COMPANY Leidos	2: RECEIVED BY:	lu	ba	n					1. REI	LINQL	JISHE	D BY							-	2: REC	CEIVED	BY:		
COMPANY	COMPANY 16L								сом	PANY									-	COMI	PANY			
12-14-20 WE 1530	DATE 12/18/20 COSCIENCIES LABOR	)	DIEC	TIME	100	00	TDAL		DATE		10116	TON :		TIME		NO.	C /***	1) 240		DATE				TIME

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Appendix F: LNAPL Sample Analysis – Dakota Technologies







Appendix G: UVOST-HP Summary Report – Dakota Technologies



# High Resolution Site Characterization Report – UVOST®-HP Investigation

**Client: Leidos** 

**Project Name: Chelan Chevron Station** 

Location: Chelan, Washington

Prepared by:

**Dakota Technologies Company, LLC** 

**1625 SE Decker Street** 

Lee's Summit, Missouri 64081

Office phone 816.525.7483

12/25/2020

**Project Number: 0380.20** 



www.dakotatechnologies.com National and International Services

# **TABLE OF CONTENTS**

1.0	ULTRA-VIOLET OPTICAL SCREENING TOOL (UVOST®) DESCRIPTION & ANALYSIS	1
2.0	HYDRAULIC PROFILING (HP) DESCRIPTION	2
3.0	DISCUSSION AND COMMENTS	3
4.0	LIMITATIONS	4

# **APPENDICES**

Appendix A	UVOST®-HP Field Summary Log
Appendix B	UVOST®-HP Logs at 10% RE
Appendix C	UVOST®-HP Logs 100% RE
Appendix D	UVOST®-HP Reference Log



Project No.: 0380.20

# 1.0 ULTRA-VIOLET OPTICAL SCREENING TOOL (UVOST®) DESCRIPTION & ANALYSIS

Fluorescence is a property of some compounds where absorbed ultra-violet (UV) light stimulates the emission of photons (light) of a longer wavelength relative to the source emission. The release of the photons can be used to detect small amounts of substance (i.e., polycyclic aromatic hydrocarbons (PAHs)) in a larger matrix (soil). This method of detection has been used in laboratories for decades. With the commercial availability of lasers and optical fibers, this technology can also be applied in-situ in the field to identify the presence of light non-aqueous phase liquids (LNAPL).

The UVOST® system sends laser light (308 nanometer wavelength) through a fiber optic cable strung within probe rods on a direct push drill rig. The light, reflected by a parabolic mirror, then exits through a sapphire window in the side of the probe. As the probe is advanced, the immediately adjacent soil is exposed to the UV laser light. If PAHs (compounds in petroleum oils and lubricants that fluoresce) are present, longer wavelength light is emitted by the PAH compounds. This "signal" light is transmitted through a return fiber, back to the surface to be analyzed. Responses are indicated in real-time on a graph of signal vs. depth. The UVOST® log displays "color mixed" signal logs consisting of contributions from four wavelength channels, and waveforms ("fingerprint" of multi-wavelength) to aid in identification and relative quantity of the compound present.

Prior to every log, the UVOST® system is checked for optical quality by observing the background signal for sources of signal in the fiber, filter, mirror and sapphire window. Also, the reference emitter (a standard, proprietary LNAPL mixture called the "RE") is placed on the window to determine the qualitative and semi-quantitative properties of the laser system. This is to assure that the RE response has the correct shape and intensity and that the UVOST® system is calibrated to log. Typically, the RE will fall between 10,000 and 12,000 picovolt-seconds (pVs), which is a measure of waveform area. The background can vary from 0.1% to 1%, which is typically an area of approximately 0 to 100 pVs. The relationship between the instrument responses from NAPL in the subsurface and the RE depends on the properties of the NAPL. The calibration of the system is not to a concentration, but to a known fluorescence signature.



#### 2.0 Hydraulic Profiling (HP) Description

The Hydraulic Profiling add-on is a logging tool that measures the pressure required to inject a flow of water into the soil as the probe is advanced into the subsurface. The injection pressure log is an excellent indicator of formation permeability. In addition to injection pressure, hydrostatic pressure can be measured under a zero flow condition, called a dissipation test. This allows a calculation of potentiometric surface (water table) upon successful completion of the dissipation test.

Prior to starting a log, there is a quality assurance (QA) check on the down-hole transducer to ensure proper function. The probe is submerged in a reference tube and filled with water. A reading is taken at the hydraulic port when it is submerged to a depth of 1 foot and a second reading at 0 feet, or baseline, under zero flow conditions. The reading at 0 feet, or the baseline pressure, is equal to the measurement of atmospheric pressure. Subtracting reading 2 from reading 1 should produce a result of 0.433 psi (+/-10%), which is the hydrostatic weight of a 1 foot column of water.

The UVOST®-HP probe is advanced into the ground at a rate of approximately 2 cm/sec. The pump in the HP flow module draws water from the supply tank and pumps water down the trunk line at a constant flow rate (60 mL/min). The downhole transducer monitors the pressure generated by injecting water into the formation matrix. The log provides graphs of the pressure and flow rate versus depth alongside the fluorescence plot. If a dissipation test is performed below the water table and the test successfully stabilizes, the result can be corrected to an absolute hydrostatic value, from which a potentiometric surface (water table) can be calculated. Using the calculated water table to correct for hydrostatic pressure increase, a hydraulic conductivity (K) value for a given depth below the water table can be estimated using the following equation:

$$K = In(Q/P') * 20.0 + 7.0$$

where P'= downhole pressure – (0.433 \* depth below water table) – atmospheric pressure, and Q is equal to flow. K values above the water table are also reported after a successful dissipation test even though they are suspect due to varying permeability behavior of dry soils. These values still maintain some qualitative value to the eye, and may lend insight into preferential pathways in the vadose zone.



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#### 3.0 DISCUSSION AND COMMENTS

Dakota Technologies Company, LLC completed 6 UVOST®-HP borings at the Chelan Chevron Station Site in Chelan, Washington. The UVOST®-HP was pushed approximately to 60 feet below surface at every location except borings UHP-01 and UHP-02 where shallow refusal was encountered. NAPL fluorescence response was observed in logs UHP-02 and UHP-06 between approximately 13 and 41 feet as shown in Appendix A. Dissipation tests were successfully conducted at UHP-02 and UHP-05. However, due to the nature of the lithology at the Site, calculated water levels at those locations maybe inaccurate due to separation of the hydraulic formations encountered. All QA/QC passed specifications for all UVOST®-HP logs.



#### 4.0 LIMITATIONS

The analysis and opinions expressed in this report are based upon data obtained from the specific test locations and from other information discussed in this report. Exceptions, if any, are discussed in the accompanying comments section of this report. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. Reported results shall not be reproduced, except in full, without written approval of Dakota. No warranties, expressed or implied are intended or made.



# Appendix A UVOST®-HP Field Summary Log



#### **UVOST®-HP Field Summary Log**

Chelan Chevron Station Chelan, Washington

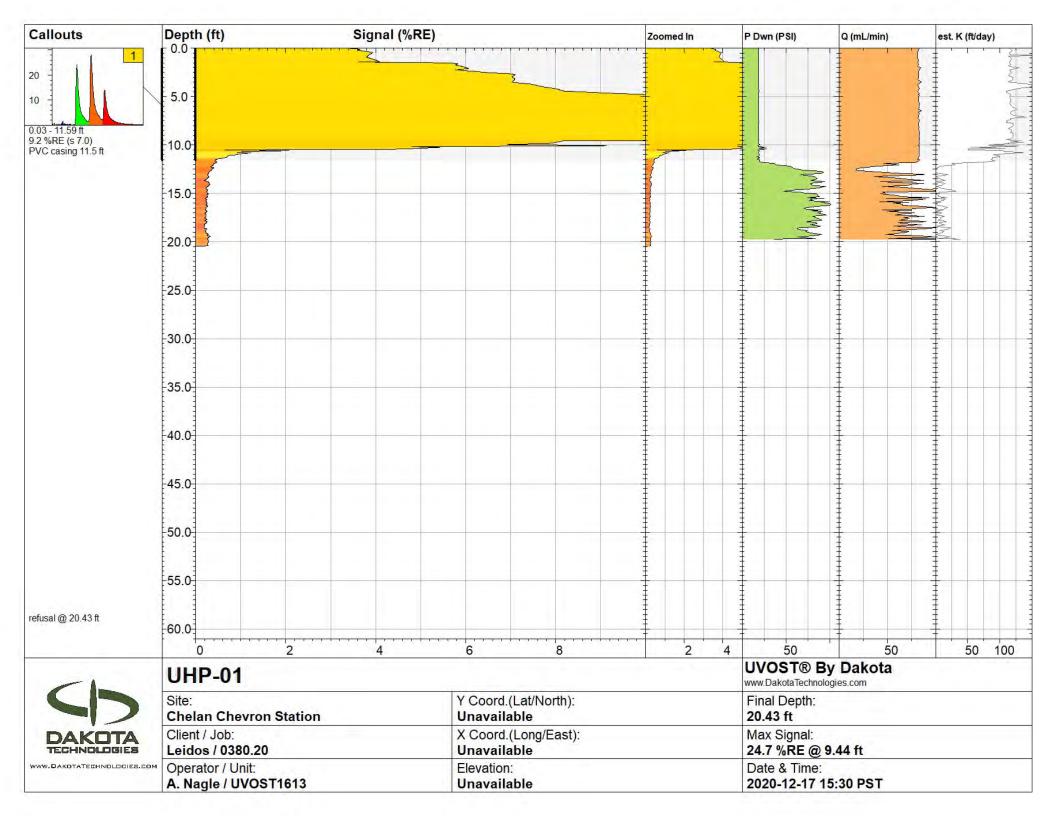
File Log ID	Date / Time	Pre-Probe (ft)	Final Depth (ft)	Max Signal (%RE)	Max Signal Depth (ft)	Initial RE Area (pVs)	Background Area (pVs)	Stable Dissipation (yes or no)		Fluorescence Top - Bottom (ft)
UHP-01	12/17/20 3:30 PM	11.5	20.4	25	9.4	11300	28	NA	NA	0-10.5
UHP-02	12/18/20 8:08 AM	12.5	42.7	9	9.9	11772	20	yes	38.4	0-12.0, 15.9, 19.6, 38.5, 41.7
UHP-03	12/17/20 11:09 AM	14.5	58.8	39	9.7	11369	21	yes	58.1	0-12.9
UHP-04	12/17/20 9:36 AM	14.5	60.1	6	10.8	11599	29	NA	NA	0-17.6
UHP-05	12/17/20 5:16 PM	15	60.0	42	9.6	11893	10	NA	NA	0-15.0, 23.6
UHP-06	12/17/20 1:14 PM	13	60.1	5	2.2	11222	10	NA	NA	0-13, 13.7-17.7, 30.3-31.1
Total Footage (this sheet)			302.2							-

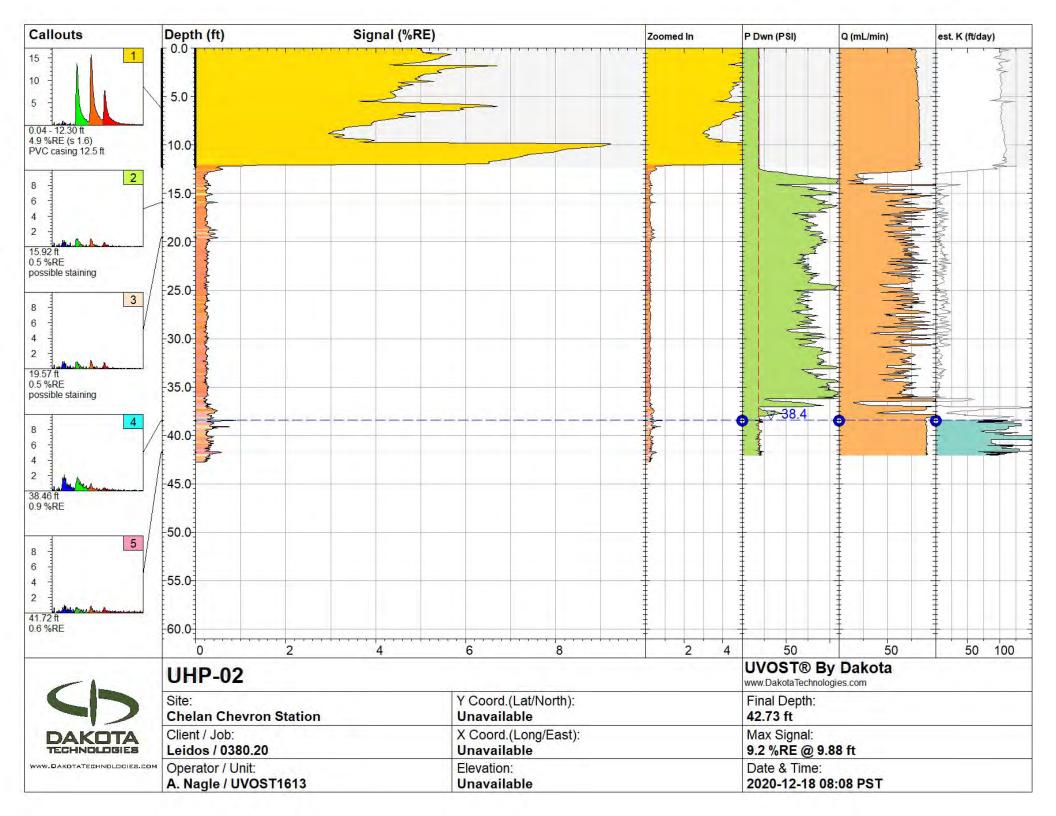
<sup>(1)</sup> Signal responses in the indicated pre-probed regions may not be accurate due to soil disturbance

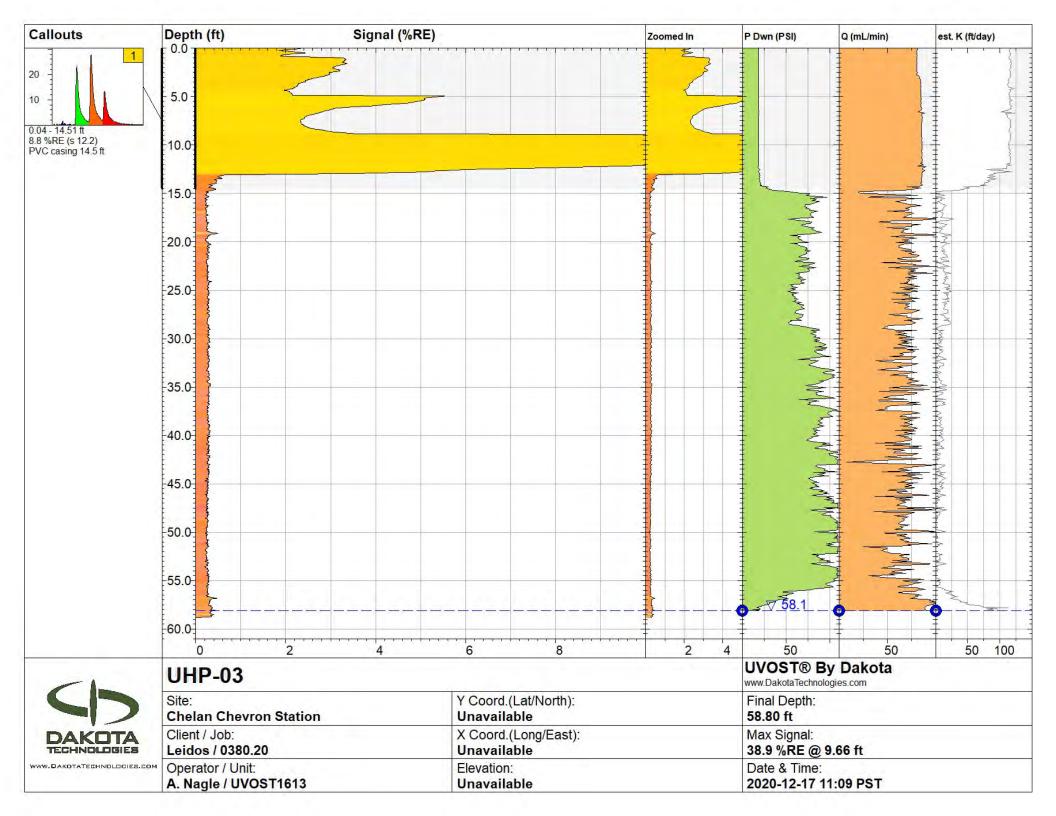
### Appendix B

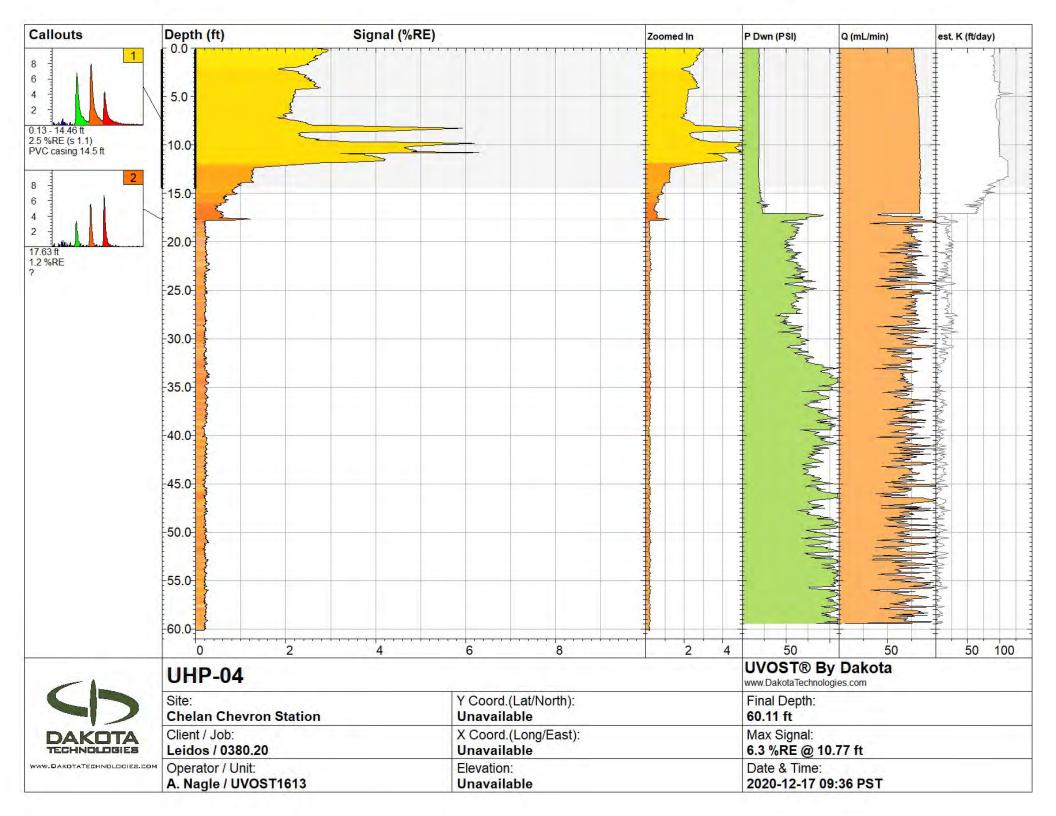
**UVOST®-HP Logs at 10% RE** 

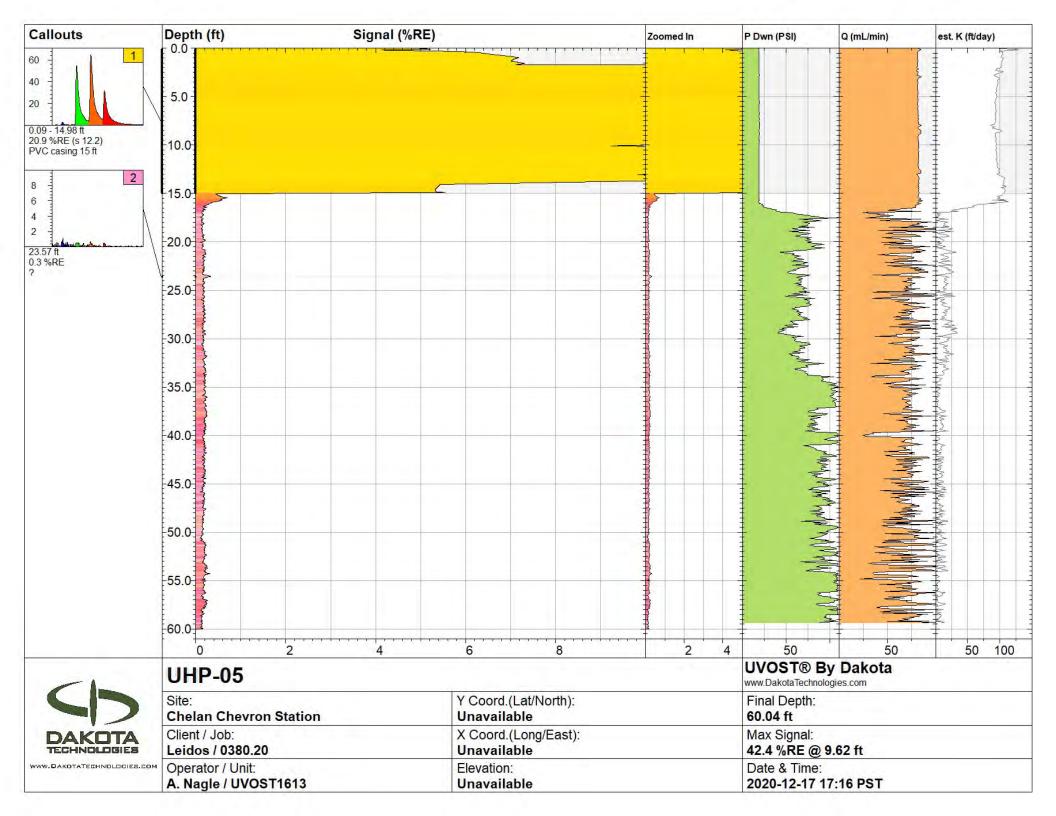


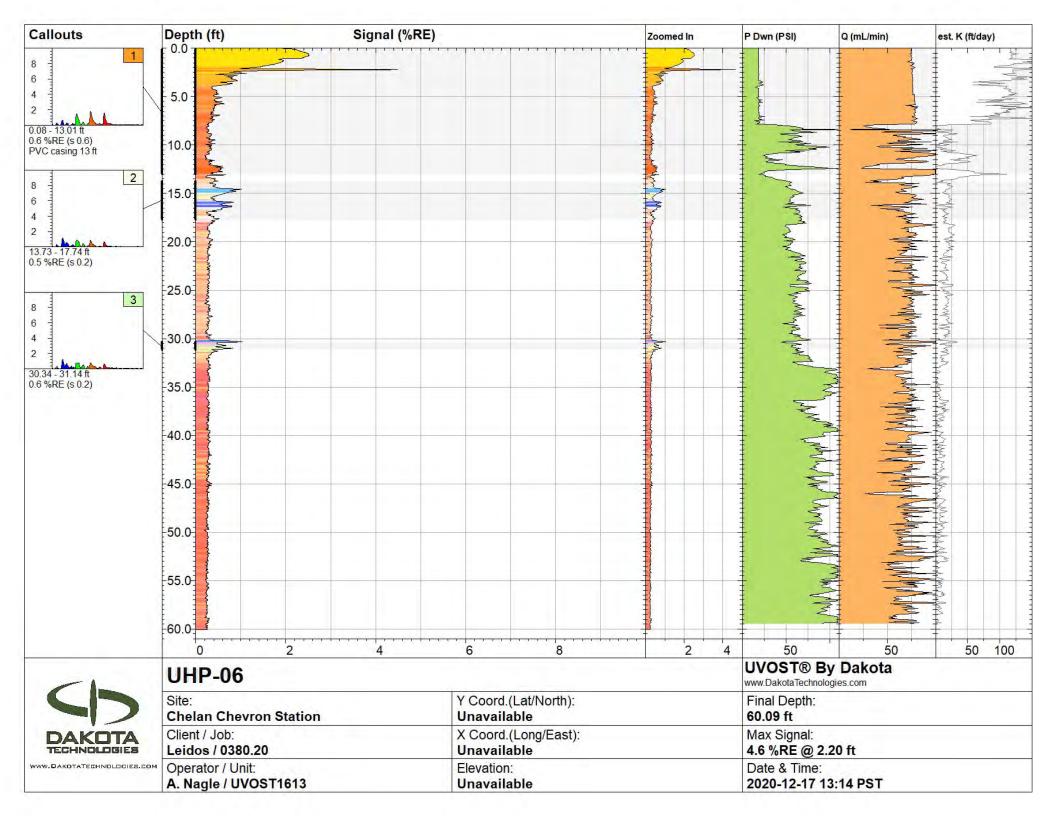








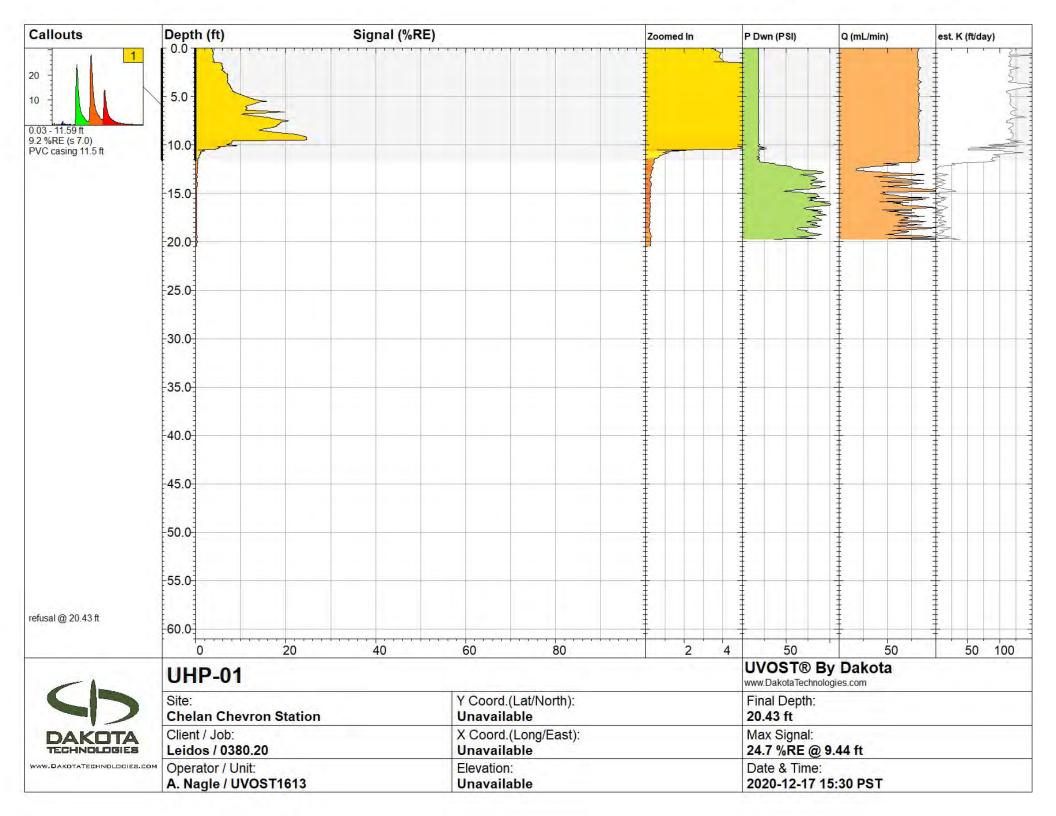


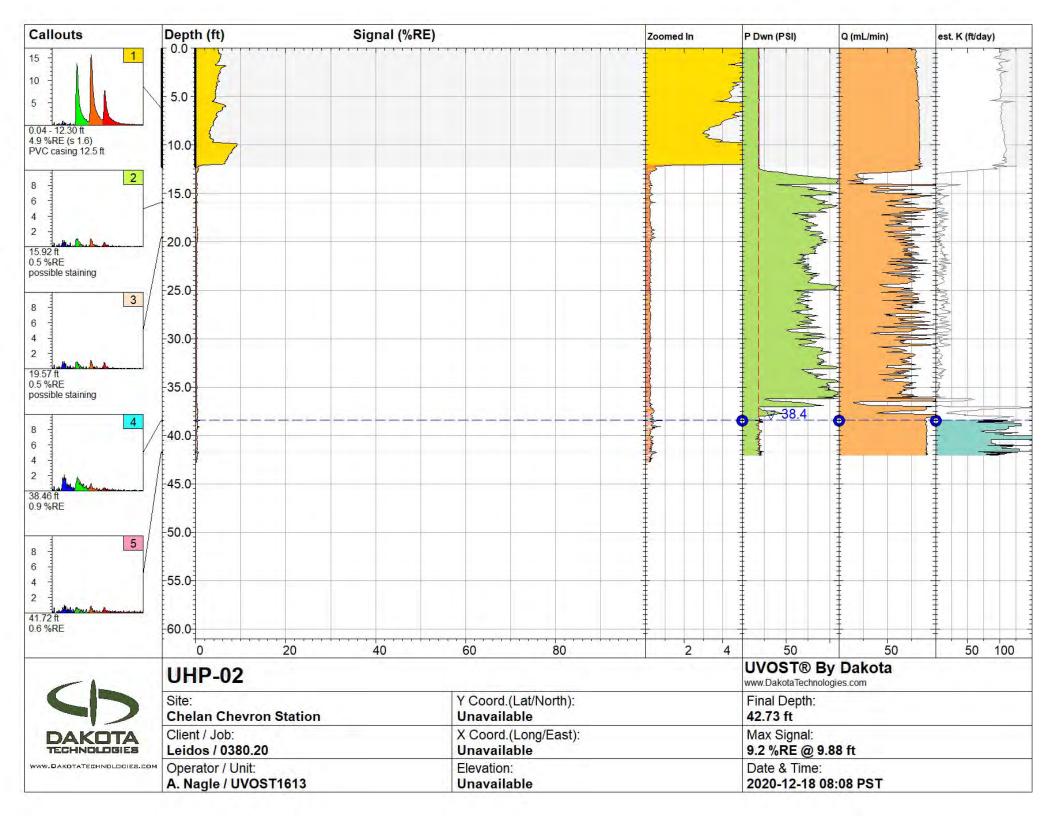


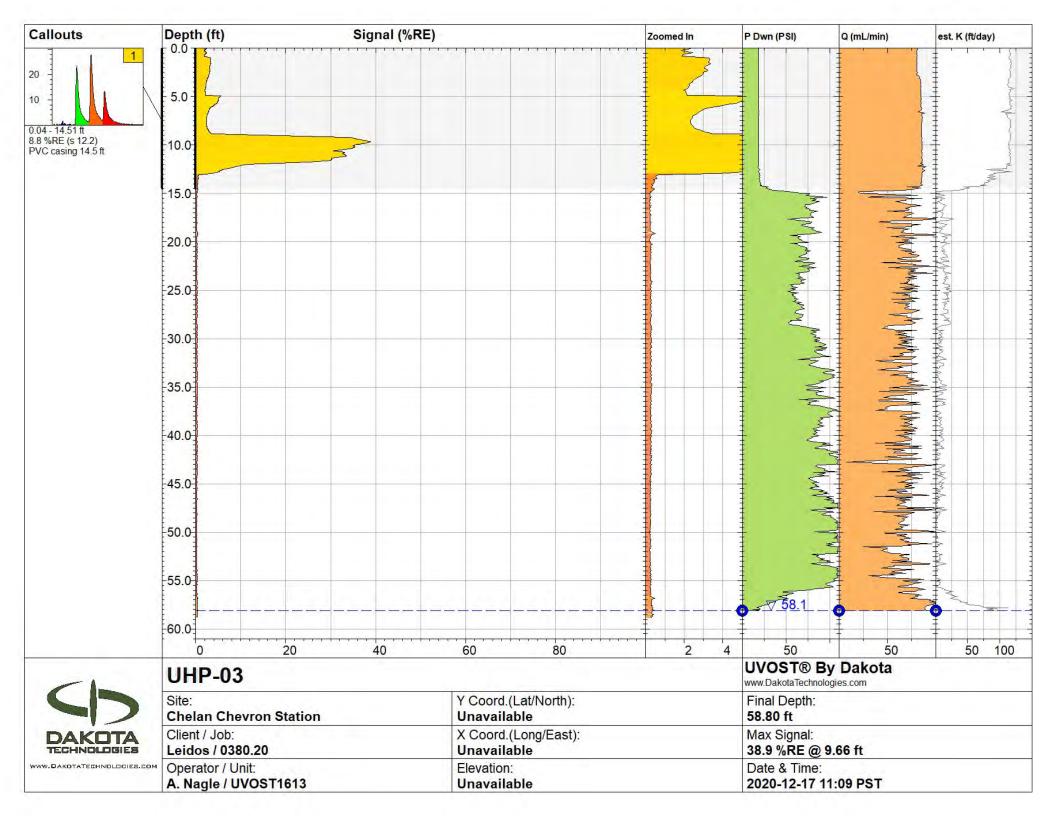
### **Appendix C**

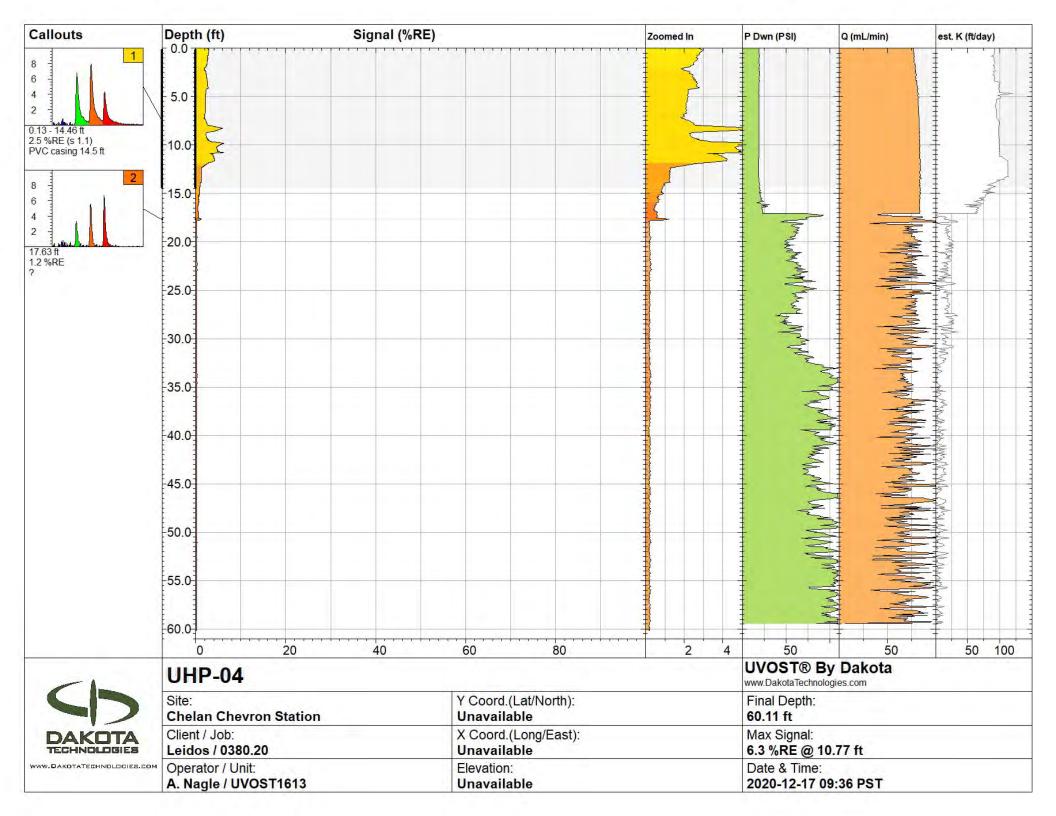
UVOST®-HP Logs 100 % RE

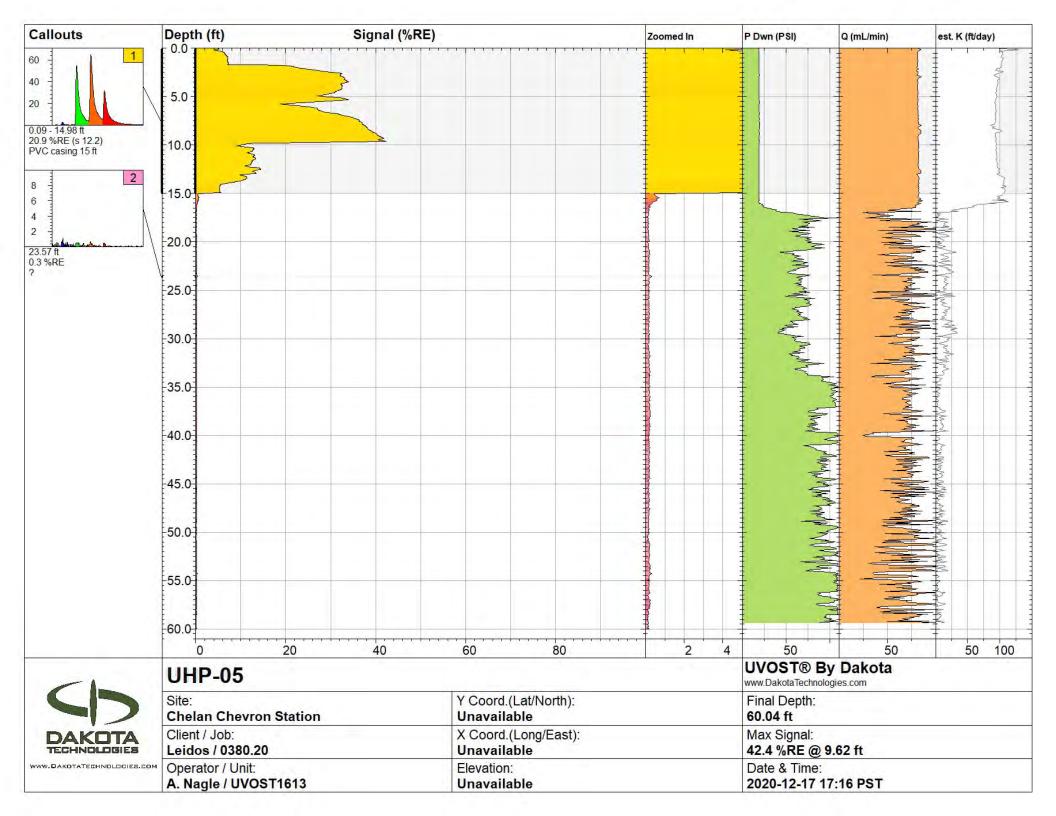


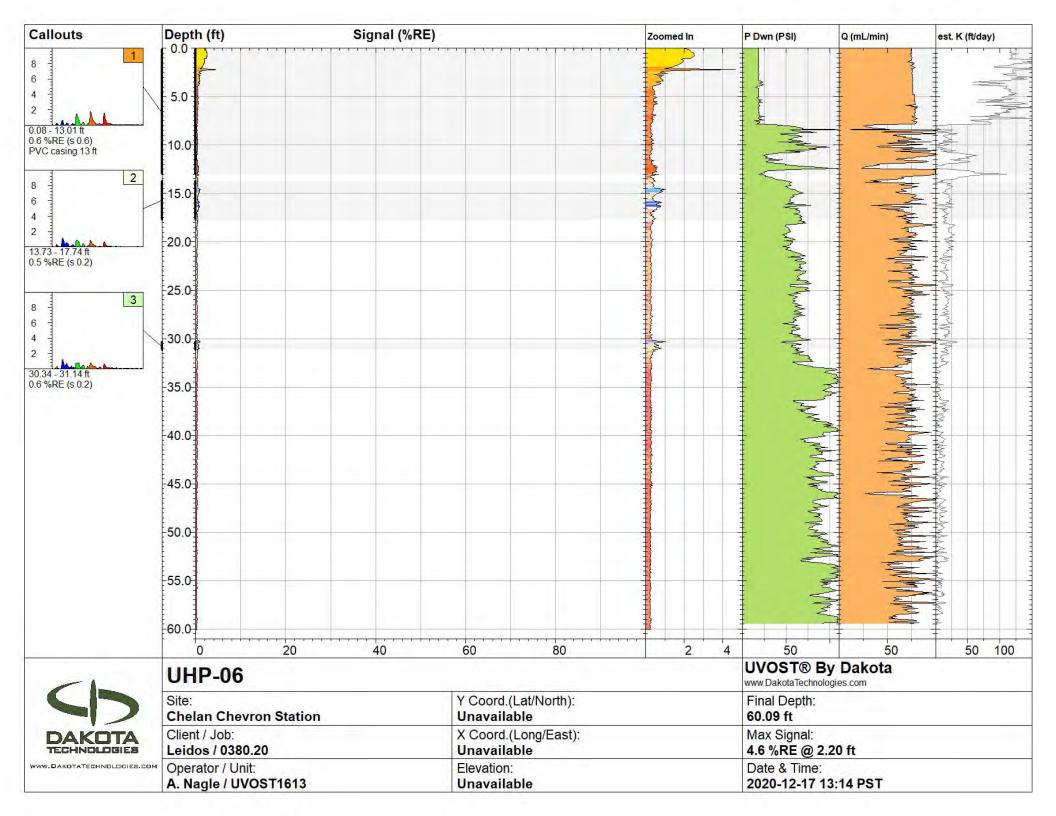












## Appendix D UVOST®-HP Reference Log





## Dakota Technologies UVOST®-HP Reference Log

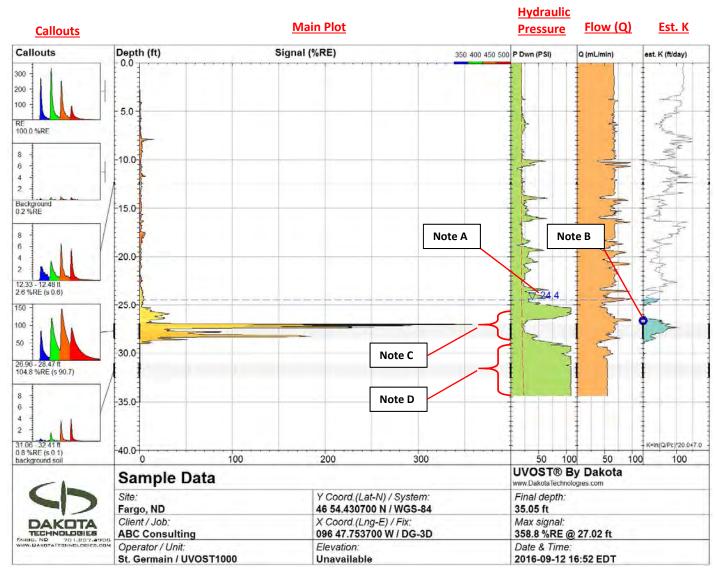
<u>Callouts:</u> Waveforms from selected depths or depth ranges showing the multi-wavelength waveform for that depth. The four peaks are due to fluorescence at four wavelengths and referred to as "channels". Each channel is assigned a color. Various NAPLs will have a unique waveform "fingerprint" due to the relative amplitude of the four channels and/or broadening of one or more channels. Basic waveform statistics and any operator notes are given below the callout.

Main Plot: Signal (total fluorescence) versus depth where signal is relative to the Reference Emitter (RE). The total area of the waveform is divided by the total area of the Reference Emitter yielding the %RE. This %RE scales with the NAPL fluorescence. The fill color is based on the relative distribution of each channel's area to the total waveform area (see callout waveform). The channel-to-color relationship and corresponding wavelengths are given in the upper right corner of the plot.

Hydraulic Pressure (P Dwn): Downhole hydraulic pressure is measured in response to pumping water into the formation at a constant rate. Measurements are logged simultaneously with UVOST data. The resulting log gives insight into the permeability of the soils.

Flow (Q): Water is pumped out of the port of the UVOST-HP probe at a constant rate of 60 mL/min. A change in flow (usually accompanied by an inverse pressure change) is an indicator of hydraulic properties of the soil.

Estimated K: The estimated hydraulic conductivity (K) is internally calculated by utilizing pressure and flow data in conjunction with dissipation test(s) performed at each location. The estimated K is calculated by the equation:  $K = \ln(Q/P')*20.0 + 7.0$ .



**Note A**: The water table has been calculated and plotted at 24.4' bgs.

**Note B:** The circle on the Estimated K plot represents the location(s) of dissipation tests. Here, a single dissipation test was performed at 26.67 bgs'.

**Note C:** The highest LNAPL response in this log is present in an area of relatively higher permeability, as indicated by low pressure and higher estimated k values at approximately 26' to 28'.

**Note D:** The increase in pressure starting near 29' (transducer is maxed out, 100 psi) is due to low permeability conditions. In this example, the increase in pressure below the LNAPL represents a potential confining unit.

