Site Status Report for 2020/2021

North Monument
6-Inch Gathering Line AP# 34

HollyFrontier

August 15, 2022

→ The Power of Commitment

Contents

Figure index

Table index

Appendices

1. Introduction

This Site Status report is submitted by GHD, on behalf of HollyFrontier for the North Monument 6 inch Gathering Line Release (Site) (AP# 34) located in Lea County, New Mexico (**Figure 1**). The release, which occurred in 2002, was a result of leaks from a pipeline owned by Holly Energy Partners. The C141 report was submitted in October 2002. The Stage 1 Abatement Plan was submitted in April 2004 and the Stage 2 Abatement Plan was submitted in October 2012. Annual status reports were submitted in 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019. This report covers activities at the Site for March 2020 to December 2021 and contains information on the status of the crude oil recovery in the area of the release, toxicity of the crude oil and the results of groundwater monitoring.

1.1 Site Background

On October 5, 2002, a leak was suspected in a 6-inch crude oil gathering line as a result of a 2,100 barrels (bbls) inventory discrepancy. The line was relatively new, having been installed in 2000, but the leak may have been a result of acidized crude oil found in the line. The line was exposed in the area of the leak and a 600-foot section of the damaged pipe was removed and replaced in 2002. Between five and seven leaks were found in this section of pipe in the area mainly located east of Maddox Road and secondarily west of Maddox Road. The corroded section was replaced with new pipe and relocated approximately 150 feet to the south of the leak area to not interfere with remedial efforts. Petroleum-stained soil was removed from the leak area encompassing approximately 300 feet by 700 feet to approximately 15 feet deep.

1.2 Site Setting

The Site is located on State of New Mexico land and approximately 2 miles northwest of Monument, New Mexico, in the NW ¼ of the SW ¼ of Section 30, Township 19 South, Range 37 East (N 32o 37’ 50.2”, W 103o 17’ 52.8”) (**Figure 1**). The release occurred on the Holly Energy Partners pipeline Right of Way, approximately 0.5 miles north of NM 322 (County Road 42) and adjacent to Maddox Road (County Road 41). The topography at the Site is relatively flat and the average elevation is 3,637 feet mean sea level (**Figure 1**). The surrounding land contains oil and gas production wells and open rangeland.

1.3 Summary of Previous Investigations

Based on the available site information, in October 2002, approximately 2,100 bbls of crude oil were released from a 6 inch crude oil pipeline to the subsurface, impacting an area encompassing approximately 700 feet by 300 feet oriented in the direction of the pipeline (east west) on the west and east sides of Maddox Road (**Figure 2**). From 2002 to 2011, seven groundwater monitor wells and 164 temporary borehole wells were used to characterize the subsurface soil and groundwater and to recover the released crude oil at the Site. Of the 164 borehole wells, 102 were completed as temporary borehole wells. Approximately 1,079 bbls of crude oil were recovered from these wells by March 2004 and records indicate approximately 100 barrels were recovered from the borehole wells from 2004 to 2011 using manually controlled total fluid pumps. Since 2011, approximately 130 barrels have been recovered from wells. Most of the borehole wells were abandoned in 2015 due to a lack of water or oil. Presently, there are 32 wells remaining that are used to recover crude oil and to measure crude oil with 23 wells consistently containing measurable crude oil.

Hydrocarbon impacts at the Site are limited to soil and groundwater in the area of the pipeline leaks. The majority of the petroleum-stained soil, that was located on the east side of Maddox Road and in an area adjacent to the north side of the pipeline, was excavated in 2004 to a depth of approximately 15 feet. However, hydrocarbon saturated soils were observed below the bottom of the excavation in the impacted area. For safety reasons, the excavation was backfilled at the time. Due to the presence of monitoring and borehole wells in the area, only a limited amount of soil was removed from the south side of the pipeline and away from the pipeline leaks. Soil borings located within close

proximity to the leak area did detect hydrocarbons in soil above the New Mexico Oil Conservation Division (NMOCD) recommended remediation action levels.

Of the seven original monitor wells that were installed following the release, two of the monitor wells (MW-2 and MW-4) were abandoned in 2002 after free product was measured in these wells. Two additional monitor wells (MW-6 and MW-7) were installed in 2008, bringing the total number of monitor wells to five (**Figure 2**). From 2004 to 2006, monitor well MW-3 had benzene detections above the NMWQCC standard and the last time MW-5 had benzene detections above the NMWQCC standard was in 2004. Monitor well MW-6 had benzene detections above the NMWQCC standard in 2010 and 2014. Monitor well (MW-1) located approximately 150 feet to the northwest from the release, and in a up gradient direction from the release, did not have soil staining or any detections of hydrocarbons above the state standard in the soil or groundwater.

In February 2013, 14 4-inch wells were installed to recover the free product in area of the release and immediately east of Maddox Road (**Figure 2**). A crude oil only recovery system was installed at the Site in September 2013 and oil was recovered from the new wells until March 2015, when it was discovered that the pumps were damaged by the released acidified crude oil and could no longer be used to recover oil. Since June 2015, the crude oil has been recovered using a vacuum truck and oil absorbent socks.

The maximum thickness of oil accumulation on top of groundwater since 2012 was measured in WBH-20 at 3.32 feet in September 2020. The site total accumulated thickness (total of all the wells thickness) has decreased by approximately 38 feet since 2013 when it was 52.12. The site total accumulated thickness in December 2021 was 5.74 feet.

The dissolved phase hydrocarbon concentrations in the groundwater monitor wells have remained below the New Mexico Water Quality Control Commission (NMWQCC) standards for benzene, toluene, ethylbenzene, and total xylenes (BTEX) since 2014. Polycyclic aromatic hydrocarbons (PAHs) have not been detected above state standards in any of the monitor wells.

1.4 Site Conceptual Model

The Site is located on New Mexico State land within the pipeline Right of Way for the 6-inch gathering line associated with area oil production. There are no surface water bodies within 1,000 feet of the Site. Based on the depth to groundwater 16 feet below ground surface (ft-bgs), it is unlikely that any perennial stream would exist at any time within 1,000 feet of the Site. The Site is located in an area of multiple well pads and crude oil gathering lines and is about two miles northwest of Monument, New Mexico. The closest residences are approximately 0.8 miles southeast from the Site. One windmill well is located approximately 1,500 feet to the east and down gradient of the Site. This well was sampled for hydrocarbons following the discovery of the release and was found to be not impacted by the release.

The soil types encountered at the Site are of variable thickness and include carbonate indurated, locally referred to as “caliche”, fine grained sand, gravelly sand, caliche sandstone, and fractured silica indurated sandstone. Groundwater at the Site is found at approximately 14 to 22 ft bgs and the groundwater flow direction is towards the east at average gradient of 0.005 feet/foot (ft/ft).

Since 2002, the majority of the crude oil originating from the release has remained in the near vicinity of the release. The groundwater down gradient of the release has not shown any crude oil in any of the monitor wells. Crude oil has been removed from the area of the release since 2004 and was removed using a vacuum truck throughout 2020 and 2021. The total accumulated thickness of crude oil measured in all of the wells at the Site has decreased since 2012 from approximately 52 feet to approximately 5.74 feet, presently.

The dissolved phase hydrocarbon concentrations in groundwater have been below the New Mexico Water Quality Control Commission (NMWQCC) standards for benzene, toluene, ethyl benzene and total xylenes (BTEX) since 2014. Benzene was detected once above the NMWQCC standard of 10 µg/L in well MW-6 at a concentration 11.5 µg/L in

December 2014. There have been no detections of any BTEX constituents since 2014 nor PAHs in 2018 above the state standards.

The primary chemicals of concern are hydrocarbon constituents that originated from the crude oil. The NMWQCC standards for hydrocarbons in groundwater are as follows:

– 10 micrograms per liter (µg/L) for benzene
– 750 µg/L for toluene
– 750 µg/L for ethylbenzene
– 620 µg/L for total xylenes

There appears to be no immediate threat to the environment or to drinking water wells located in the area, caused by the release and any remaining impacts. The remaining crude oil impacts are confined to the immediate area of the release and have not migrated from this area since the release. The crude oil has a very low mobility and does not readily desorb nor dissolve due to the high amount of paraffin in the oil. The crude oil impacts are decreasing, suggesting that the majority of the soil impacts have been mitigated and supporting the conclusion that the released crude oil has a low mobility rate and is not readily dissolved in groundwater. The Site will close when oil is removed to a negligible amount and there are no detections of hydrocarbons above the standards in any of the monitoring wells for eight consecutive quarters.

2. Site Activities

Site activities have included groundwater monitoring, fluid level measurements and oil recovery. Groundwater monitoring has been conducted at the Site on a quarterly basis since December 2017. Fluid levels were measured on a quarterly basis and as needed for crude oil recovery. Monitoring has included fluid levels in all wells, acquisition of groundwater samples for laboratory analyses for BETX, total petroleum hydrocarbon gasoline range organics (TPH GRO) and total petroleum hydrocarbon diesel range organics (TPH DRO). Enhanced fluid recovery (EFR) using a vacuum truck has been used at the Site since June 2015 to recover crude oil. Oil absorbent socks have been used in wells containing less than 0.25 feet of crude oil since December 2015. Presently, there are five monitoring wells used for groundwater sampling and 32 other wells used to measure fluids and to recover oil.

3. Groundwater Monitoring Procedures and Results

For this reporting period, groundwater monitoring was conducted at the Site in 2020 and 2021 in March, June, September, and December. Fluid levels were measured in all five monitor wells and 32 borehole/recovery wells. Groundwater samples were collected from all five monitor wells during all the sampling events.

Prior to purging of the wells and obtaining groundwater samples, fluid levels were measured in all monitor wells using a water level indicator and all other wells using an oil/water level indicator. The meter used for the field parameters was calibrated prior to use. Field parameters obtained during purging included temperature, specific conductance, pH, dissolved oxygen and oxidation reduction potential (ORP). The final parameter readings for both sampling events are detailed in **Appendix B**. The groundwater samples were analyzed for BTEX by Method 8260C, TPH GRO by 8015V and TPH DRO by Method 8015D. Groundwater samples were immediately placed into the appropriate laboratory provided containers following field parameter measurements and placed in an ice chilled cooler for transport to DHL

laboratory, Round Rock, Texas under chain of custody procedures. The laboratory reports for all sampling events are contained in **Appendix D**.

March 2020

Crude oil was not measured in any of the monitor wells during the March 2020 monitoring event but was measured in 19 of the 32 borehole wells. The maximum crude oil thickness in March was measured in well BH-17 at 1.63 feet. The crude oil thicknesses for 2020 are detailed in **Appendix A** and shown in **Figure 13**.

The groundwater levels for the monitor wells that were measured in March 2020 were approximately 0.75 feet higher than the water elevations that were measured in March 2019. For March 2020 monitoring period, the depth to groundwater across the Site varied from approximately 14 ft bgs (MW-6) to approximately 20 ft bgs (MW-5). The groundwater flow in March (**Figure 3**) was towards the east and the groundwater gradient was relatively flat with a gradient of 0.006 ft/ft (0.008 ft/ft in March 2019).

The March 2020 hydrocarbon concentrations for each monitor well are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in March 2020, as also observed in December 2019. The highest TPH GRO concentration of 0.775 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 1.08 mg/L was detected in well MW-6 (**Table 1**).

June 2020

Crude oil was not measured in any of the monitor wells during the June 2020 monitoring event but was measured in 23 of the 32 borehole wells. The maximum crude oil thickness was measured at well WBH-13 at 2.25 feet in June. The crude oil thicknesses for 2020 are detailed in **Appendix A** and shown in **Figure 13**.

Groundwater levels were similar in June 2020 and June 2019. For this monitoring period, the depth to groundwater across the Site varied from approximately 15 ft bgs (MW-6) to 21 ft bgs (MW-5). The groundwater flow in June 2020 (**Figure 4**) was towards the east and the groundwater gradient was 0.005 ft/ft (0.005 ft/ft in June 2019).

The hydrocarbon concentrations for each monitor well sampled in June 2020 are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in June 2020, as observed in June 2019. The highest TPH GRO concentration of 0.444 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 0.706 mg/L was detected in well MW-6 (**Table 1**).

September 2020

Crude oil was not measured in any of the monitor wells during the September 2020 monitoring event but was measured in 20 of the 32 borehole wells. The maximum crude oil thickness was measured in well WBH-20 at 2.32 feet in September. The crude oil thicknesses for 2020 Site are detailed in **Appendix A** and shown in **Figure 13**.

Groundwater elevations were approximately 0.40 feet lower in September 2020 than in September 2019. For this monitoring period, the depth to groundwater across the Site varied from approximately 15 ft bgs (MW-6) to 21 ft bgs (MW-5). The groundwater flow in September 2020 (**Figure 5**) was towards the east and the groundwater gradient was 0.005 ft/ft (0.005 ft/ft in September 2019).

The hydrocarbon concentrations for each monitor well sampled in September 2020 are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in September 2020. The highest TPH GRO concentration of 1.02 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 1.01 mg/L was detected in well MW-6 (**Table 1**).

December 2020

Crude oil was not measured in any of the monitor wells during the December 2020 monitoring event but was measured in 19 of the 32 borehole wells. The maximum crude oil thickness was measured at well BH-17 at 2.12 feet in December. The crude oil thicknesses for 2020 are shown in **Figure 13** and detailed in **Appendix A**.

Groundwater levels were approximately 0.75 feet lower in December 2020 than in December 2019. For this monitoring period, the depth to groundwater across the Site varied from approximately 15 ft bgs (MW-6) to 21 ft bgs (MW-5). The groundwater flow in December 2020 (**Figure 6**) was towards the east and the groundwater gradient was 0.005 ft/ft (0.005 ft/ft in December 2019).

The hydrocarbon concentrations for each monitor well sampled in December 2020 are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in December 2020. The highest TPH GRO concentration of 0.901 mg/L was detected int well MW-6 and the highest TPH DRO concentration of 0.785 mg/L was detected in well MW-6 (**Table 1**).

March 2021

Crude oil was not measured in any of the monitor wells during the March 2020 monitoring event but was measured in 17 of the 32 borehole wells. The maximum crude oil thickness in March was measured in well BH-17 at 2.38 feet. The crude oil thicknesses for 2021 are detailed in **Appendix A** and shown in **Figure 14**.

The groundwater levels for the monitor wells that were measured in March 2021 were almost 1.50 feet lower than the water levels that were measured in March 2020. For March 2021 monitoring period, the depth to groundwater across the Site varied from approximately 16 ft bgs (MW-6) to approximately 23 ft bgs (MW-5). The groundwater flow in March (**Figure 7**) was towards the east and the groundwater gradient was relatively flat with a gradient of 0.005 ft/ft (0.006 ft/ft in March 2020).

The March 2021 hydrocarbon concentrations for each monitor well are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in March 2021. The highest TPH GRO concentration of 0.950 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 0.714 mg/L was detected in well MW-6 (**Table 1**).

June 2021

Crude oil was not measured in any of the monitor wells during the June 2021 monitoring event but was measured in 22 of the 32 borehole wells. The maximum crude oil thickness was measured at well WBH-13 at 2.56 feet in June. The crude oil thicknesses for 2021 are detailed in **Appendix A** and shown in **Figure 14**.

Groundwater elevations were approximately 0.75 ft lower in June 2021 than in June 2020. For this monitoring period, the depth to groundwater across the Site varied from approximately 15 ft bgs (MW-6) to 22 ft bgs (MW-5). The groundwater flow in June 2021 (**Figure 8**) was towards the east and the groundwater gradient was 0.005 ft/ft (0.005 ft/ft in June 2020).

The hydrocarbon concentrations for each monitor well sampled in June 2021 are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in June 2021, as observed in June 2020. The highest TPH GRO concentration of 0.983 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 0.523 mg/L was detected in well MW-6 (**Table 1**).

September 2021

Crude oil was not measured in any of the monitor wells during the September 2021 monitoring event but was measured in 11 of the 32 borehole wells. The maximum crude oil thickness was measured in well BH-39 at 1.10 feet in September. The crude oil thicknesses for 2021 are detailed in **Appendix A** and shown in **Figure 14**.

Groundwater elevations were approximately 0.80 feet higher in September 2021 than in September 2020. For this monitoring period, the depth to groundwater across the Site varied from approximately 14 ft bgs (MW-6) to 20 ft bgs

(MW-5). The groundwater flow in September 2021 (**Figure 9**) was towards the east and the groundwater gradient was 0.006 ft/ft (0.005 ft/ft in September 2020).

The hydrocarbon concentrations for each monitor well sampled in September 2021 are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in September 2021. The highest TPH GRO concentration of 0.539 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 0.822 mg/L was detected in well MW-6 (**Table 1**).

December 2021

Crude oil was not measured in any of the monitor wells during the December 2021 monitoring event but was measured in 17 of the 32 borehole wells. The maximum crude oil thickness was measured at well WBH-13 at 1.04 feet in December. The crude oil thicknesses for 2021 are shown in **Figure 14** and detailed in **Appendix A**.

Groundwater levels were approximately 0.40 feet higher in December 2021 than in December 2020. For this monitoring period, the depth to groundwater across the Site varied from approximately 15 ft bgs (MW-6) to 21 ft bgs (MW-5). The groundwater flow in December 2021 **(Figure 10**) was towards the east and the groundwater gradient was 0.005 ft/ft (0.005 ft/ft in December 2020).

The hydrocarbon concentrations for each monitor well sampled in December 2021 are shown in **Figure 11** and summarized in **Table 1**. There were no detections of any of the BTEX constituents above the NMWQCC standards in the five monitor wells that were sampled at the Site in December 2021. The highest TPH GRO concentration of 0.550 mg/L was detected in well MW-6 and the highest TPH DRO concentration of 0.407 mg/L was detected in well MW-6 (Table 1).

4. QA/QC Results

Quality Assurance/Quality Control (QA/QC) measures were followed according to the abatement plan. For this reporting period, QA/QC samples included duplicate samples for each monitoring period and trip blanks for March, June, September, and December. Trip blanks were analyzed for BTEX, and TPH-GRO. The duplicate samples were analyzed for BTEX, TPH-GRO, and TPH-DRO. There were no detections above the lower laboratory reporting limit for the constituents in any of the trip blanks. There were no differences in the hydrocarbon results for the duplicate samples (**Table 2**). All samples were analyzed within the holding times and all coolers were received at the proper temperature. Based on this evaluation, all of the data meets acceptance criteria and is suitable for use in this report.

5. Remediation Status

Crude oil was recovered from recovery wells using a crude oil only skimmer pump system from 2013 to 2015 and oil absorbent socks and EFR since 2015. The oil recovery system was shut down due to the damage to the pumps caused by acidified oil in March 2015. Oil absorbent socks are being used in wells containing less than 0.25 feet of crude oil and EFR is being used on all other wells on a bi-monthly or monthly basis.

The crude oil thickness has been declining since 2012 with the maximum thickness declining from a high of 3.00 feet measured in well MRW 5 in 2013 to the maximum thickness measured in well WBH-13 at 1.04 feet in December. The total accumulated thickness of the crude oil as measured in all wells for the Site has declined from 52.12 feet in June 2013 to the Site total accumulated thickness of 5.74 feet in December 2021(**Figure 12**).

The amount of crude oil has decreased from 20.12 feet in 2020 to 5.74 feet in 2021 (**Figure 12**). For Well WBH-13 crude oil has decreased from a high of 2.70 feet in March 2019 to 1.04 feet in December 2021. Well WBH-20 crude

oil has decreased from 2.34 feet in August 2020 to 0.21 feet in December 2021. Well BH-17 crude oil has decreased from 2.38 feet in March 2020 to 0.66 feet in December 2021. The number of wells containing crude oil has decreased from 20 wells in December 2020 to 16 wells in December 2021. **Appendix C** contains graphs of fluid levels for selected wells.

6. Crude Oil Toxicology Analysis

To assess potential solubility and toxicity of a free phase hydrocarbon product ("whole product") sample originating from the Site GHD consulted available Site information and conducted a literature review of available information on toxicity and solubility of hydrocarbons and their mixtures. The results are presented in this section, as well as a preliminary high-level evaluation of potential human health risks based on the toxicity and solubility information.

6.1 Whole Product Characterization

The crude oil was characterized over a series of analyses in the spring and summer of 2021 based on samples obtained from wells at the Site.

Microbial Insights (MI) reported a full scan semi-quantitative characterization by GC/Mass Spectrometer (MS) on samples 034SE-1 (well WBH-13), 034SE-2 (well BH-111), and 034SE-3 (well BH-42). This analysis was capable of identifying hydrocarbons between C8 and C40 through identification of ions with the MS. However, only relative peak heights within chemical classes were available (for example, methylcyclohexane has the highest relative peak height of all of the alkylcyclohexanes identified at ion 83 m/z in sample 034SE-1), but no information was given concerning how the abundance of methylcyclohexane may compare to chemicals from other classes, with the exception of the aromatics across classes. See **Appendix E** for the laboratory results of the GC/MS analysis.

MI reported a Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins (PIANO) analysis on product from BH-42 (sample 052SF) June 2021. This analysis identified volatile hydrocarbon compounds in the range C3 to C12, and the results are presented in **Appendix E**. The highest concentration was for 1-decene, an olefin, at 31,730 mg/kg, or about 3.2% mass fraction. The next highest were 2,3-dimethylheptane and 2,5-dimethylheptane at 1.2% and 0.79% mass fraction, respectively, followed by methylcyclohexane and 2,4-dimethylheptane at roughly 0.65% mass fraction each. However, the detected compounds in the sample comprised only 9.76% in the sample by mass, indicating that the remainder of the product was comprised of non-volatile compounds and those heavier than C12.

MI then reported a Detailed Hydrocarbon Analysis (DHA) on the same sample 052SF from BH-42. This DHA analysis is capable of identifying compounds as light as methane (C1) up to 1-methylnaphthalene and other C13 compounds, and the results are presented in **Appendix E**. In this analysis, the mass, volume, and mole fractions of each of the constituents in the mixture were identified. As shown in the results, the chemical with the highest mass, volume, and mole fraction present in the mixture is again methylcyclohexane (4.90%, 4.86%, and 6.42%, respectively). Other constituents present with higher mass, volume, or mole fractions were 3-methylheptane (3.37%, 3.64%, and 3.79%, respectively) and a C8 naphthene labelled N8-[1] (2.77%, 2.71%, and 3.18%, respectively), among others.

MI reported PIANO analyses for WBH-13 (sample 034SE-1) and BH-111 (sample 034SE-2). For the sample from WBH-13, the compound with the highest mass fraction was methylcyclohexane (1.1%), and the total mass fraction for detected compounds was 6.9%. For the sample from BH-111, the compound with the highest mass fraction was again methylcyclohexane (0.86%). The total mass fraction for detected compounds was 5.0%. The full results of this analysis are presented in **Appendix E**.

6.2 Toxicity Assessment

The testing of the toxicity of environmental contaminants directly on humans is of course not ethical, so GHD presents herein a hypothesis as to the overall toxicity of the whole product based on available regulatory guidance and literature from two perspectives: toxicity of individual components of the mixture and toxicity of the whole product.

6.2.1 Toxicity of Individual Hydrocarbons

In order to examine the toxicity of individual components of the whole product, GHD consulted available human toxicity information databases to find quantitative estimates of toxicity (that is, Toxicity Reference Values or TRVs), as follows:

- United States Environmental Protection Agency (US EPA) Integrated Risk Information System (IRIS) Database, accessed August 2021.
- Provisional Peer Reviewed Toxicity Values (PPRTV) Database, accessed August 2021.
- Agency for Toxic Substances and Disease Registry (ATSDR) Database, accessed August 2021.
- Health Effects Assessment Summary Tables (HEAST), EPA 540/R-97-036, July 1997
- Texas Commission on Environmental Quality (TCEQ) Final Development Support Documents (DSDs), accessed August 2021.
- Texas Risk Reduction Program (TRRP), Toxicity Factors Table, January 2021.
- National Center for Environmental Assessment (NCEA),
- California Office of Environmental Health Hazard Assessment (OEHHA), accessed August 2021.

Where TRVs were not available from these sources, surrogate TRVs were selected for hydrocarbon compounds based on carbon number and range, and TCEQ guidance.

The toxicity of environmental contaminants to humans may occur through oral, inhalation, and dermal exposure routes through such pathways as drinking water ingestion or direct contact with soil, among many others. Potential health effects due to these contaminants may differ between these exposure routes, and although oral and inhalation effects are generally assessed separately, potential effects due to dermal exposures are usually assessed using an adjustment to the oral toxicity approach.

Health effects were considered in two major classes, based on whether they showed evidence of being carcinogenic (cancer-causing) or non-carcinogenic. Some compounds, such as benzene, fell into both classes because they are known to cause multiple health effects. The TRVs assembled by GHD were based on assumed chronic (long-term) exposures, where information was available to support this approach.

6.2.2 Non-Cancer Health Effects

Table F-1 presents the oral and dermal TRVs for non-cancer effects for the 150 chemicals in the PIANO analyses, with units of daily dose, being milligrams of contaminant per kilogram of body weight per day (mg/kg-day). This Table also summarizes the primary target organ of toxicity for each of the TRVs and combined uncertainty and modifying factors for each one. **Table F-2** presents the inhalation TRVs for non-cancer effects for the chemicals in the PIANO analyses, which are given in units of air concentration, milligrams per cubic metre of air (mg/m3). Both of these types of TRVs are indicative of a threshold approach to toxicity; that is, the TRV represents a daily dose or air concentration, below which no adverse health effects are expected. Generally, for non-cancer TRVs, the lower the TRV, the lower the threshold for toxicity, so chemicals with lower non-cancer TRVs are considered more toxic than those with higher non-cancer TRVs.

For the oral and dermal exposure routes summarized in **Table F-1**, the most common target organs and systems affected by exposure appear to be to the central nervous system, liver, kidneys, and body weight, although certain constituents may affect the immune, endocrine, reproductive, or respiratory systems. The TRVs based on these health

effects ranged from 0.001 mg/kg-day for ethyl tert-butyl ether (ETBE) up to 5 mg/kg-day for cyclohexane and methylcyclohexane. These non-cancer adverse health effects cannot be ruled out for daily doses of these chemicals beyond these thresholds.

For the inhalation exposure route summarized in **Table F-2**, the most common target organs and systems affected by exposure appear to be the central nervous system, kidney, body weight, and respiratory system. In addition, certain constituents appear to affect the immune system, vision, the liver, nasal cavity, and development of a fetus. The TRVs based on these health effects ranged from 0.003 mg/m^3 for indene and naphthalene, up to 24 mg/m^3 for pentane. These non-cancer adverse health effects cannot be ruled out for inhalation of air concentrations in excess of these thresholds.

6.2.3 Non-Volatile and Heavier Hydrocarbons

As indicated above, the 150 product constituents resulting from the PIANO analyses only accounted for volatile compounds making up between five and ten percent of the total mass of the product, with the remaining being non-volatile and/or heavier hydrocarbon compounds. Additional TRVs were therefore required to characterize the toxicity of heavier hydrocarbons with higher carbon numbers. As such, the Total Petroleum Hydrocarbons Criteria Working Group (1997) was consulted for recommendations, which are summarized as follows:

- For aliphatic (that is, without benzene rings in the structure) compounds between C12 and C16, an oral/dermal TRV of 0.1 mg/kg-day and an inhalation TRV of 1.0 mg/m3 were recommended based on hepatic and hematological changes as critical health effects. Both of these TRVs were derived using JP-8 (jet fuel) toxicity data.
- For aliphatic compounds between C16 and C35, an oral/dermal TRV of 2.0 mg/kg-day was recommended based on hepatic (foreign body reaction) granuloma. This TRV was derived using white mineral oil toxicity data. Compounds in this carbon number range and higher are not considered volatile, and an inhalation TRV was therefore not considered necessary.
- For aromatic (that is, with at least one benzene ring in the structure) compounds between C12 and C16, an oral/dermal TRV of 0.04 mg/kg-day (using naphthalene toxicity data) and an inhalation TRV of 0.2 mg/m^3 (using toxicity data from a mixture of C9 aromatic substances) were recommended based on decreased body weight as a critical health effect.
- For aromatic compounds between C16 and C35, an oral/dermal TRV of 0.03 mg/kg-day was recommended based on nephrotoxicity (kidney effects). This TRV was derived using pyrene toxicity data. Compounds in this carbon number range and higher are not considered volatile, and an inhalation TRV was therefore not considered necessary.
- No recommendations were made by TPHCWG (1997) for hydrocarbons beyond C35.

The GC/MS analysis conducted by MI indicated that several heavier hydrocarbons were indeed present, and therefore, potential adverse health effects to humans at daily doses beyond these thresholds cannot be ruled out.

6.2.4 Cancer

Turning to the potential for carcinogenic effects, **Table F-3** presents the oral and dermal TRVs for oral or dermal carcinogens in the PIANO analyses (benzene, 1,2-dichloroethane, 1,2-dibromoethane, 1-methylnaphthalene, and methyl tert-butyl ether, MTBE), and **Table F-4** presents the inhalation TRVs for inhalation carcinogens in the PIANO analyses (benzene, 1,2-dichloroethane, 1,2-dibromoethane, and MTBE). For the oral or dermal carcinogens, the TRVs are Cancer Slope Factors, CSFs, with units given in probability per unit daily dose ((mg/kg-day)-1), and for inhalation carcinogens, the TRVs are Unit Risks, URs, with units of probability per unit concentration ((mg/m3)-1). For these effects, there is no threshold, below which no adverse effects are expected; in contrast, any exposure may lead to the development of cancer. Specifically, the TRV indicates how much the probability of developing cancer increases with each unit of daily dose or air concentration. Generally, then, for both types of TRVs for carcinogenic effects, the higher

the TRV, the greater the probability of developing cancer, and the higher CSFs and URs therefore indicate higher toxicity (carcinogenicity).

Of the identified carcinogens, 1,2-dichloroethane, 1,2-dibromoethane, and MTBE were not detected in any of the whole product samples, and they are therefore not expected to contribute to potential health effects. However, benzene (0.026% in WBH-13, 0.019% in BH-111, not detected in BH-42) and 1-methylnaphthalene (0.14% in WBH-13, 0.13% in BH-111, 0.019% in BH-42) were detected to varying degrees in the samples, and development of carcinogenic effects based on oral (benzene and 1-methylnaphthalene) or inhalation (benzene) exposures to the whole product therefore cannot be ruled out.

6.3 Toxicity of Mixtures of Hydrocarbons

The toxicity of a mixture of the individual constituents discussed above to humans may also be greater than the sum of the toxicity of the constituents, since many of the chemicals affect the same few target organs and systems. The toxicities of mixtures of petroleum hydrocarbons were therefore also investigated.

6.3.1 Non-Cancer Health Effects

ATSDR proposed the use of several Minimal Risk Levels (MRLs) for acute (short-term; one to fourteen days), intermediate (fifteen to 364 days), and chronic (1 year or longer) exposures to whole fuel products, including the following:

- For JP-4 jet fuel, an intermediate inhalation MRL of 9 mg/m^3 based on liver effects (1995).
- For JP-5 jet fuel, an intermediate inhalation MRL of 2 mg/m^3 based on liver effects (2017).
- For JP-7 jet fuel, a chronic inhalation MRL of 0.3 mg/m^3 based on liver effects (1995).
- For JP-8 jet fuel, an intermediate inhalation MRL of 3 mg/m^3 based on neurological effects (2017), an acute oral MRL of 3 mg/kg-day based on immunological effects (2017), and an intermediate oral MRL of 0.3 mg/kg-day based on developmental effects (to a developing fetus; 2017).
- For kerosene, an intermediate inhalation MRL of 0.01 mg/m^3 based on liver effects (1995).

All of these MRLs are in the range of TRVs identified for individual volatile PIANO compounds above, and although the whole product on the Site is not necessarily any of these, it does contain similar compounds.

6.3.2 Cancer

The International Agency for Research on Cancer (IARC) published a monograph (no. 45) in 1989 concerning the carcinogenicity of various types of fuels, as well as occupational exposures to hydrocarbons. IARC concluded that crude oil, jet fuel, distillate (light) diesel fuels, and distillate (light) fuel oils were Group 3, “not classifiable as to carcinogenicity,” indicating that insufficient evidence was available to determine whether they were carcinogenic or not. However, IARC also concluded that gasoline, marine diesel fuel, and residual (heavy) fuel oils were Group 2B, “possibly carcinogenic to humans,” indicating that some evidence was found that exposures to these types of fuels caused cancer. The possible carcinogenicity of these fuels may be influenced by the presence of benzene, a known human carcinogen, in gasoline, and the presence of carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) in residual (heavy) fuel oils. For the whole product in question, PAHs were found in MI’s GC/MS analysis in all three samples analyzed, and the carcinogenicity of the mixture as a whole therefore cannot be ruled out.

6.4 Aqueous Solubility Assessment

In addition to assessing the toxicity of the components of the whole product, the solubilities of the components in water were also examined in order to determine the potential for leaching into the groundwater, to which receptors may become exposed. To accomplish this task, data was collected on pure aqueous solubility for each of the 150

constituents identified in the whole product. The effective solubility of each constituent was then calculated in order to account for the fact that the individual constituents were part of a hydrocarbon mixture and not in a pure aqueous solution. The effective solubilities were then analyzed to determine the theoretical potential for leaching into the groundwater, where constituents with higher effective solubilities were considered more likely to leach to, and contaminate, surrounding groundwater, than constituents with lower effective solubilities.

6.4.1 Theoretical Aqueous Solubility of Individual Hydrocarbons

In order to examine the aqueous solubilities of individual components of the whole product, GHD consulted available chemical information databases to find quantitative estimates of solubility. The following sources were consulted in order of preference until a solubility value was found:

– United States Environmental Protection Agency (USEPA). 2021. USEPA Regional Screening Levels (RSL) – Chemical Specific Parameters. May.
– Williams, A.J., Grulke, C.M., Edwards, J. et al. The CompTox Chemistry Dashboard: a community data resource for environmental chemistry. J Cheminform 9, 61 (2017). https://doi.org/10.1186/s13321-017-0247-6
– Centers for Disease Control and Prevention. 2019. NIOSH Pocket Guide to Chemical Hazards.

The aqueous solubility values taken from the second source listed, the CompTox database, were further divided into experimental values and predicted values. GHD selected experimental values in preference to predicted values where available. The database's experimental values were obtained from a combination of six sources, determined by which sources had an aqueous solubility value for a given constituent. The sources used for each constituent are listed in **Table F-5** (Hughes et al., 2008; Kovdienko et al., 2010, Lewis et al., 2016; Ran et al., 2002; Tetko et al., 2001; PHYSPROP). The maximum value from these sources for each constituent was taken to be representative of that constituent in order to be conservative in the calculations.

If experimental values were not given in the CompTox database, predicted values were selected instead if available. These predicted values were generated based on a combination of four different estimation platforms. The sources used are listed in **Table F-5** (EPISUITE, TEST, OPERA). Note that the CompTox database also included values generated by the ACD/Labs Percepta Platform, but GHD removed these values from consideration due to their unrealistic nature – specifically, the aqueous solubility of several hydrocarbons was listed as exactly 7 moles per liter (mol/L), which would be several orders of magnitude too large for the compounds in question. The maximum value from the remaining three sources was taken to be representative of a constituent's solubility in order to be conservative in the calculations.

Solubility values obtained from the CompTox database were given in mol/L, and thus needed to be converted to mg/L to match the values obtained from the RSL Chemical Specific Parameters table (ENDMEMO, 2020). The results of this activity are presented in **Table F-5**.

6.4.2 Theoretical Aqueous Solubility of Mixtures of Hydrocarbons

As previously discussed, pure component aqueous solubilities are not accurate representations of the solubility of a mixture of individual constituents. It was therefore necessary to calculate the effective solubility, or the solubility of a constituent in the context of a hydrocarbon mixture, in order to accurately determine the potential for leaching into groundwater from a whole hydrocarbon product. The following equation was used to calculate effective solubility (USEPA, 2021):

$$C_{eff} = m * C_{sat}$$

Here, C_{eff} represents effective solubility, m represents the mole fraction of the constituent in fuel, and C_{sat} represents the aqueous solubility. The mole fraction (m) was not given in the PIANO analyses, but was instead calculated with the following equation:

$$m = MF * \left(\frac{MW_o}{MW_x}\right)$$

Here, *MF* represents the mass fraction of the constituent in fuel (see Attachments 3 and 5), MW_o represents the average molecular weight of the fuel, and MW_x represents the molecular weight of the selected constituent (see Williams et al., 2017). The average molecular weight of the fuel was 128.6001 g/mol, as presented in the DHA (**Appendix E**).

Results of this analysis can be found in Table 6. When averaged across the three samples, benzene had the highest effective solubility at 0.66 mg/L, followed by cyclohexane at 0.37 mg/L and methylcyclohexane at 0.17 mg/L. The remaining 147 constituents all had effective solubilities below 0.10 mg/L. The higher the effective solubility, the more likely the constituent is to leach into groundwater. Thus, theoretically, these three constituents are of highest concern and do have the potential to contaminate the surrounding groundwater. The remaining 147 constituents have lower leaching potential, with the lowest effective solubilities representing the smallest potential impacts to groundwater on a theoretical basis.

6.4.3 Measurement of Aqueous Solubilities

In order to provide an additional line of evidence for the theoretical results derived above, GHD collected groundwater samples from the same locations as the whole product samples discussed previously (WBH-13, BH-111, and BH-42) on October 20, 2021, and submitted all three samples, as well as a trip blank sample, for PIANO analysis to determine groundwater concentrations of the whole product constituents. The results are presented in Attachment 6, which shows that 42 compounds were detected in the groundwater samples, compared to the 150 compounds, for which theoretical solubilities were derived. For the majority of the detected chemicals, the mean theoretical estimates of solubility were within one order of magnitude of their mean measured concentrations across the three samples, with the exception of 1,2,4,5-tetramethylbenzene, 2-methylnonane, 3-methylnonane, decane, undecane, and dodecane. Concentrations of these six hydrocarbons were underpredicted by the theoretical model by at least one order of magnitude.

6.5 Preliminary Risk Evaluation

In order to provide a high-level preliminary evaluation of potential human health risks, the theoretical solubilities and measured concentrations of the various hydrocarbons presented above were compared to available Human Health Standards for groundwater from section 20.6.2.3103 A of the New Mexico Administrative Code (NMAC). These standards for hydrocarbons in groundwater are summarized in the following table:

Hydrocarbon	Units	Maximum Theoretical Solubility based on PIANO [a]	Maximum Measured Groundwater Concentration	Human Health Standard	Exceeds
Benzene	µg/L	763 (WBH-13)	2,700 (BH-42)	5	Yes
Ethylbenzene	µg/L	53.2 (WBH-13)	36.8 (WBH-13)	700	No
Naphthalene [c]	µg/L	88 (WBH-13)	363 (WBH-13)	30	Yes
Toluene	µg/L	Not detected in PIANO analysis	Not detected in groundwater	1000	No
Xylenes	µg/L	Not detected in PIANO analysis	46.1 (WBH-13)	620	No

Notes:
a. See Table F-5.
b. See Appendix E.
c. Includes naphthalene and monomethylnaphthalenes (1-methylnaphthalene and 2-methylnaphthalene).
Shading indicates exceedance of the Human Health Standard.

Based on these comparisons, concentrations of benzene and the sum of concentrations naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene exceed their respective Human Health Standards. As such, further investigation of the potential for human health risks was undertaken.

Potential human health risks may arise where complete exposure pathways exist between chemicals from a contamination source area and human receptors. Considering how humans may be exposed to contaminated groundwater, exposure pathways for humans that may be complete could include the following broad categories:

– Domestic. Exposure to chemicals from free product or groundwater as part of domestic (residential) water use, including ingestion of drinking water, skin contact with household water, and inhalation of vapors volatilizing from household water.
– Agriculture. Uptake of chemicals into crops through irrigation and into livestock from watering from free product or groundwater, followed by ingestion of the food grown or raised through this process.
– Vapor intrusion. Volatilization of lighter, more volatile contaminants from groundwater or free product into soil gas and infiltration into buildings, where they may inhaled by building occupants or pass through the skin.
– Surface water. Transport of free product or groundwater to surface water followed by drinking or skin contact with surface water, either through drinking water or recreational activities such as swimming.

The first of these sets of exposure pathways is typical for residential receptors. However, the nearest residence is 0.8 miles away; there are no residences in the current area of the whole product. GHD has also previously established that no drinking water wells have been affected by the contamination, nor are any expected to be affected, given the relative immobility of the whole product its associated groundwater contamination. As such, the residential exposure pathways are considered incomplete, both on-Site and off-Site.

Concerning the agricultural pathways, the Site is currently not used for growing crops, nor keeping livestock. Site groundwater is therefore not used for any agricultural purposes. In addition, because no off-Site groundwater wells are currently affected, the uses of groundwater for agricultural purposes off-Site are also not expected to be complete pathways. Furthermore, the groundwater has been measured to be at least 16 ft-bgs, out of the typical range of crop plants roots.

For volatilization into buildings, currently no buildings are present on the Site in the area of the whole product, and on-Site vapor intrusion is therefore not considered a concern. As stated above, the nearest residential receptors are located 0.8 miles from the Site, far from the whole product and its associated contamination, so this pathway is also not considered complete off-Site.

Concerning transport of free product or groundwater to surface water, no surface water bodies are present on or within 1,000 ft of the Site. Based on the depth to groundwater, GHD also does not expect any perennial streams to be present under or within 1000 ft of the Site. Because of the relative immobility of the whole product and its associated groundwater contamination, transport to surface water bodies followed by human use of the surface water is not considered likely, and these pathways are also considered to be incomplete.

Based on the above analysis, all potential human health exposure pathways are expected to be incomplete, and the exceedances of the NM Human Health Standards are not anticipated to lead to potential human health risks.

Based on the provided laboratory analyses and the available TRVs, the whole product at the Site is considered likely to be toxic to humans through oral, dermal, and inhalation exposure routes. For chemicals that do not cause cancer, adverse health effects cannot be ruled out for daily doses higher than their respective non-cancer TRVs. For carcinogens, the development of cancer cannot be ruled out if they are present in the whole product.

GHD notes, however, that in order for a health risk to be present, toxicity of a chemical is not sufficient; humans must also be exposed to that chemical in order to generate a risk. Based on a preliminary high-level evaluation of potential human health risks, no complete exposure pathways between the whole product and its associated groundwater contamination are currently present on-Site or in the vicinity of the Site. As such, based on GHD's knowledge of the Site, potential health risks to humans can be ruled out under current conditions

7. Conclusion and Recommendations

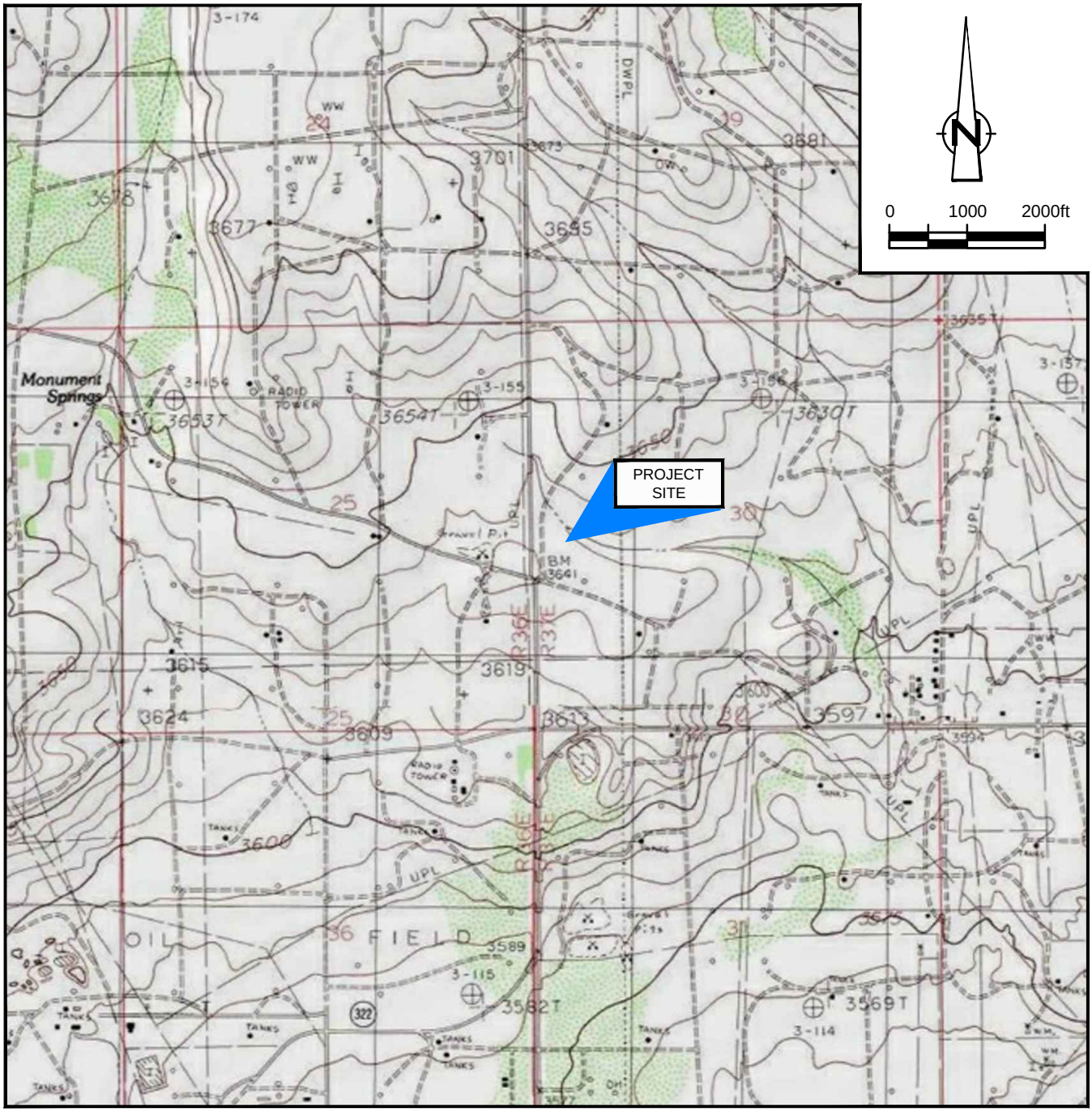
The measured thicknesses of the crude oil have decreased since the release in 2002 and none of the monitoring wells have shown hydrocarbon concentrations above the state standards since 2014. Crude oil thickness has decreased due to removal of the crude oil by pumping, the use of EFR and absorbent socks. In 2021, crude oil thickness decreased at the Site with no increase in thickness of the crude oil in the wells as observed in 2020 (**Figure 12**).

The crude oil pipeline that was the original source of the release was taken out of service in May 2020 and was purged with Nitrogen at that time. The data shows that the thickness of oil in wells increased marginally after May 2020 until June 2021 but has decreased in oil since June 2021 (**Figure 12**) and is currently at or near historic lows. This trend will be re-evaluated in 2022.

The remedial strategy for site closure is based on the current NMOCD requirements. To close the Site with no further action, the crude oil would first have to be removed to negligible amount separately from groundwater (19.15.17.13 NMAC). If crude oil is no longer recoverable at the Site, site closure will be requested from NMOCD. Based on existing site groundwater conditions and removal of the crude oil, the site closure will meet State standards.

Monitor wells will continue to be sampled and analyzed for BTEX, TPH GRO, TPH DRO and inorganic constituents on a quarterly basis in 2022. PAHs were analyzed for four quarters in 2018 and there were no detections of PAHs above the lower laboratory limit in any of the wells in 2018. Fluid levels in borehole wells will be measured on a quarterly basis and EFR will be used on a bimonthly to monthly basis during the upcoming year.

Figures



SOURCE: USGS 7.5 MINUTE QUAD
"MONUMENT NORTH, NEW MEXICO"

LAT/LONG: 32.6306° NORTH, 103.2980° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

figure 1

SITE LOCATION MAP
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

I:\CAD\Files\Eight Digit Job Numbers\1121----\11211495-HF-North Monument\RPT001\11211495-GHD-0000-RPT-EN-0101_DL-001 Mar 24, 2021

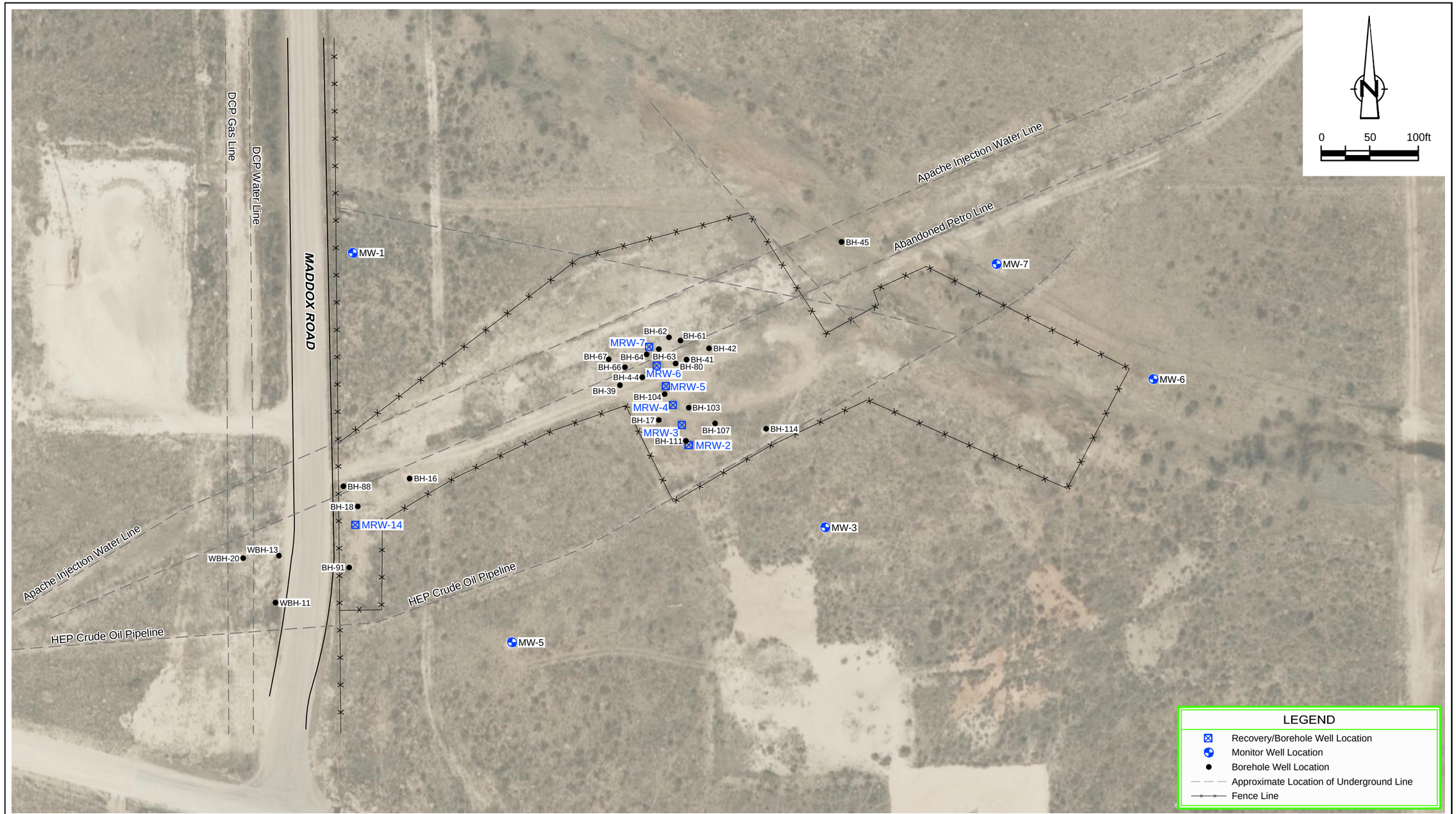


figure 2

SITE MAP
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

I:\CAD\Files\Eight Digit Job Numbers\1121----\11211495-HF-North Monument\11211495-02(000)GN-DL001 Sep 22, 2020

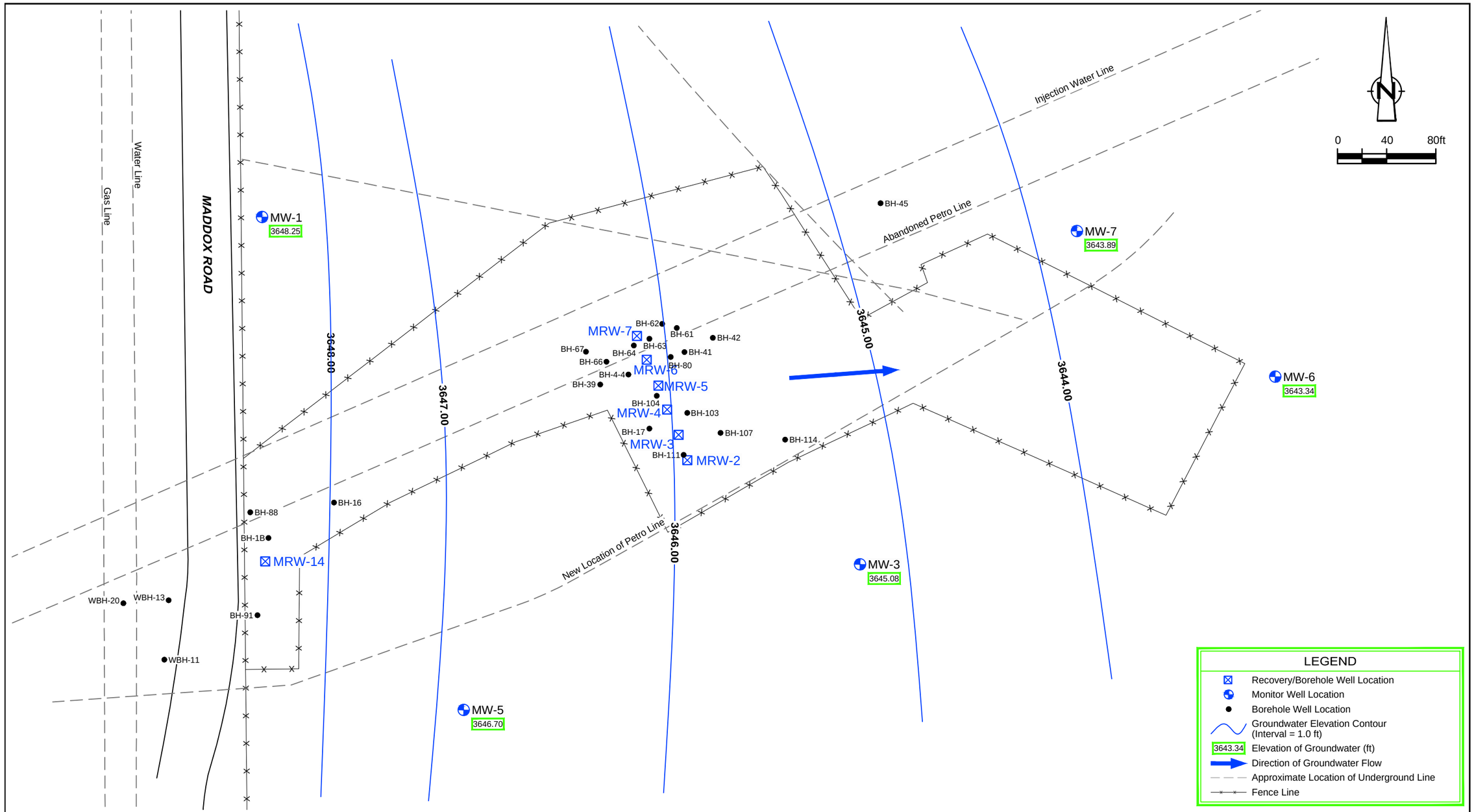


figure 3

GROUNDWATER POTENTIOMETRIC SURFACE MAP - MARCH 2020
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

I:\CAD\Files\Eight Digit Job Numbers\1121----\11211495-HF-North Monument\RPT001\11211495-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 21, 2021

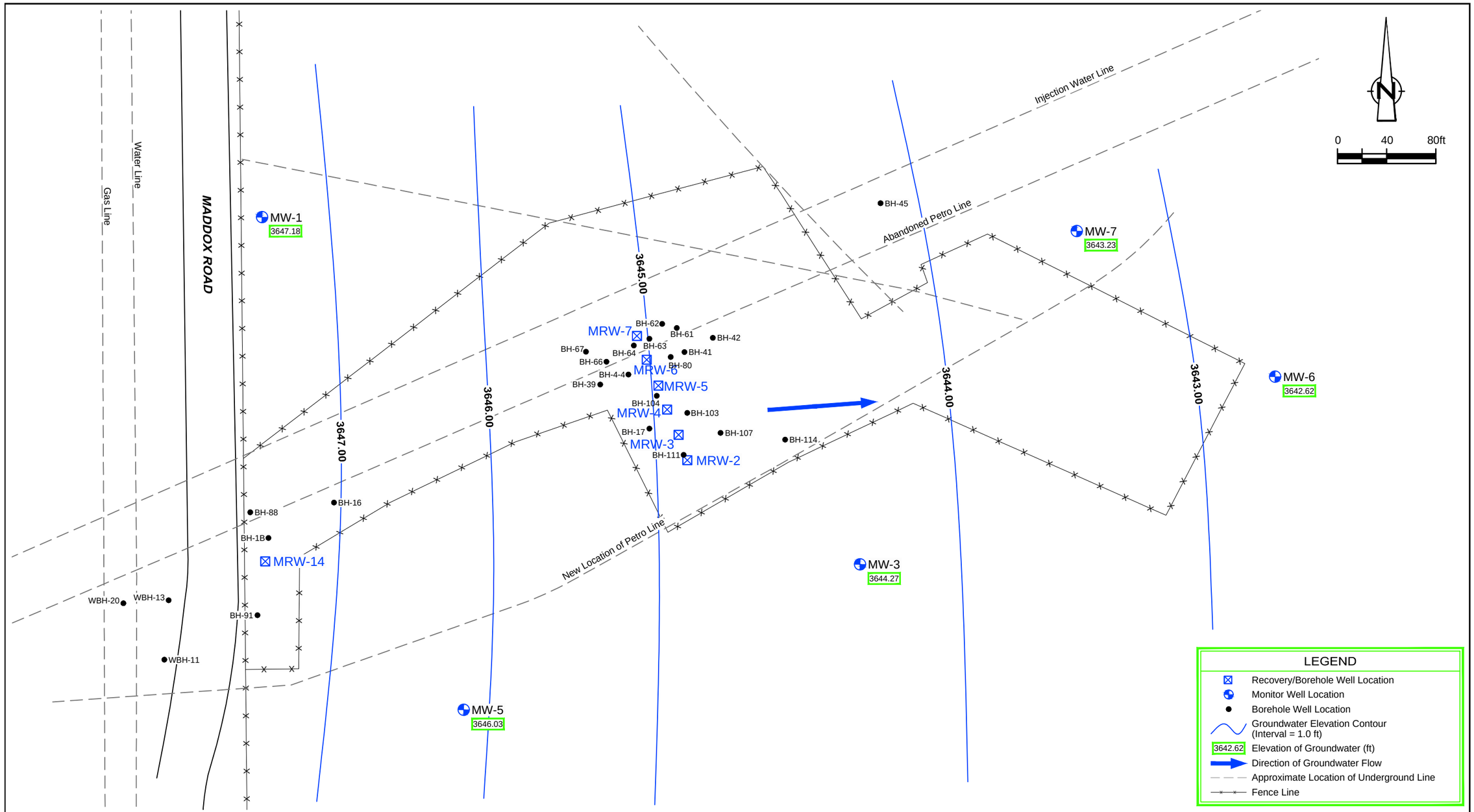


figure 4

GROUNDWATER POTENTIOMETRIC SURFACE MAP - JUNE 2020
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

I:\CAD\Files\Eight Digit Job Numbers\1121----\11211495-HF-North Monument\RPT001\11211495-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 21, 2021

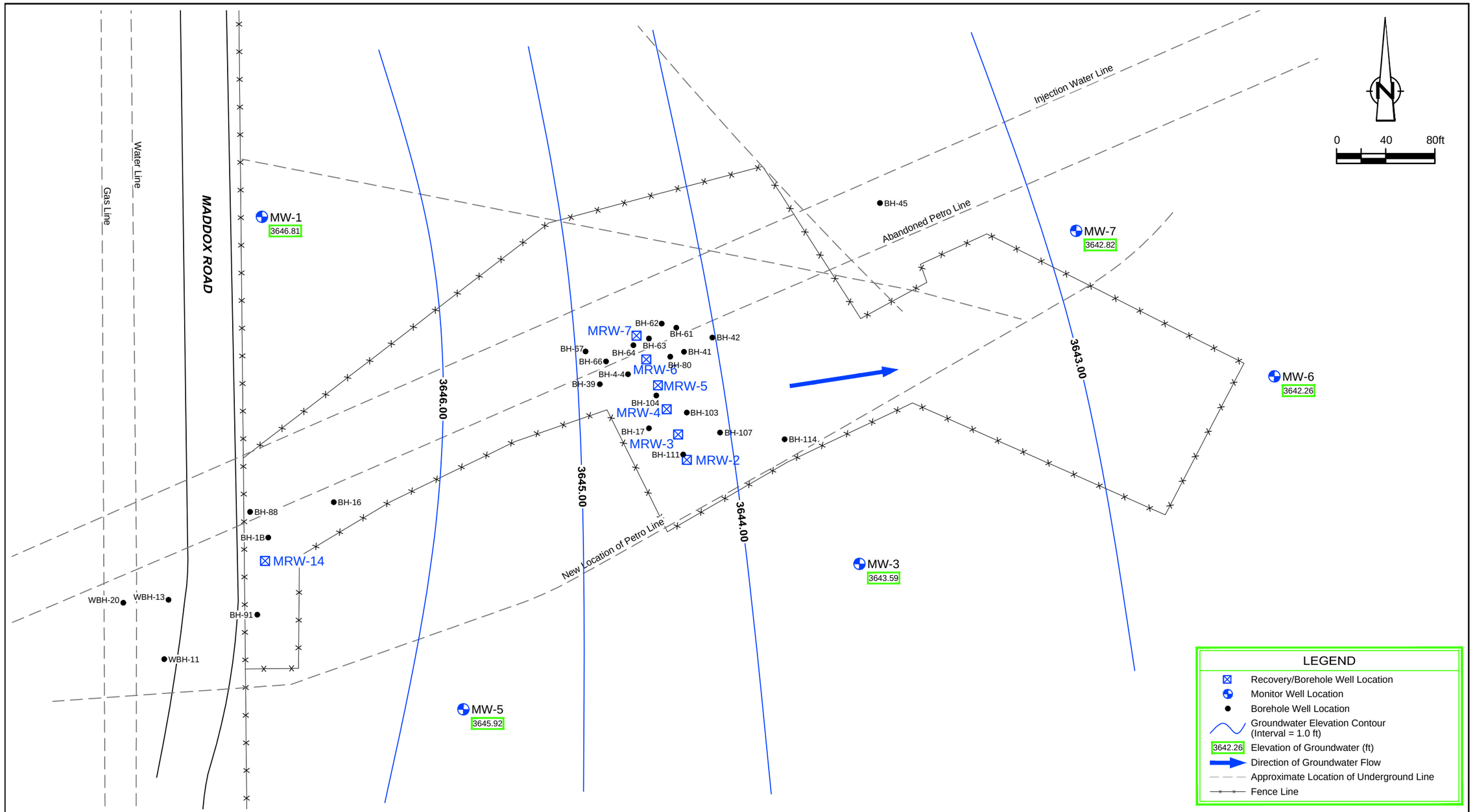


figure 5

GROUNDWATER POTENTIOMETRIC SURFACE MAP - SEPTEMBER 2020
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

I:\CAD\Files\Eight Digit Job Numbers\1121----\11211495-HF-North Monument\RPT001\11211495-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 21, 2021

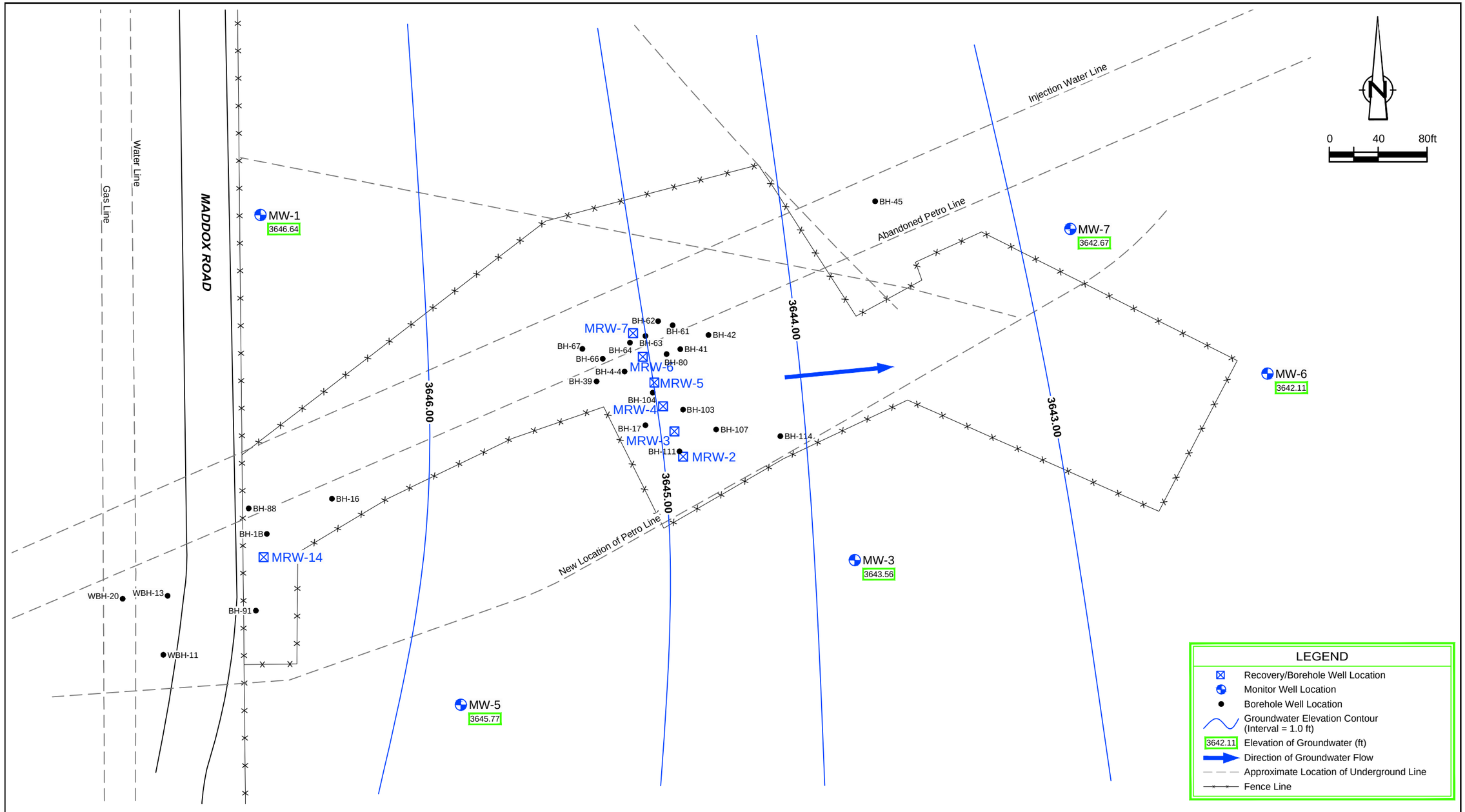


figure 6

GROUNDWATER POTENTIOMETRIC SURFACE MAP - DECEMBER 2020
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

I:\CAD\Files\Eight Digit Job Numbers\1121----\11211495-HF-North Monument\RPT001\11211495-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 21, 2021

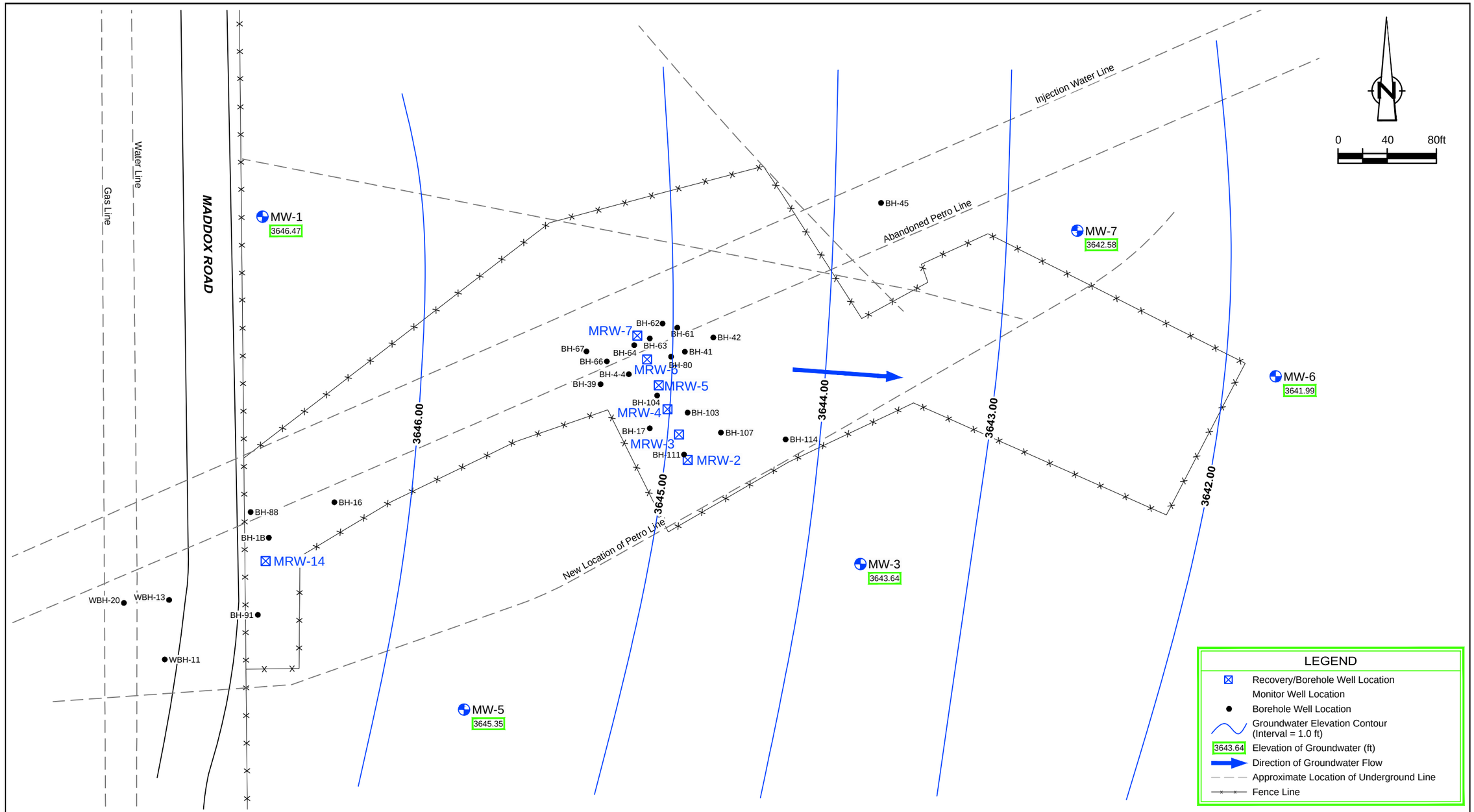


figure 7

GROUNDWATER POTENTIOMETRIC SURFACE MAP - MARCH 2021
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 14, 2022

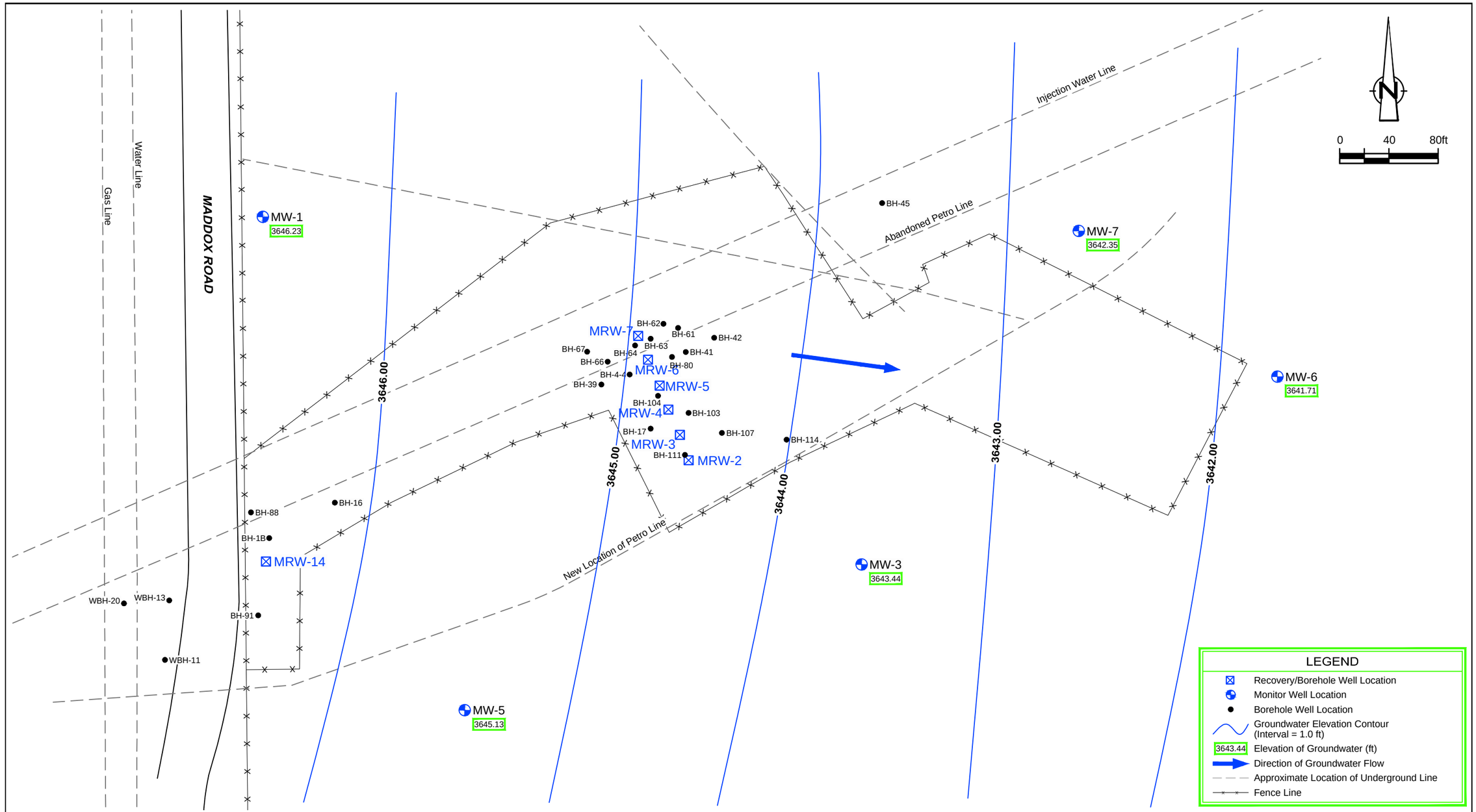


figure 8

GROUNDWATER POTENTIOMETRIC SURFACE MAP - JUNE 2021
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 14, 2022

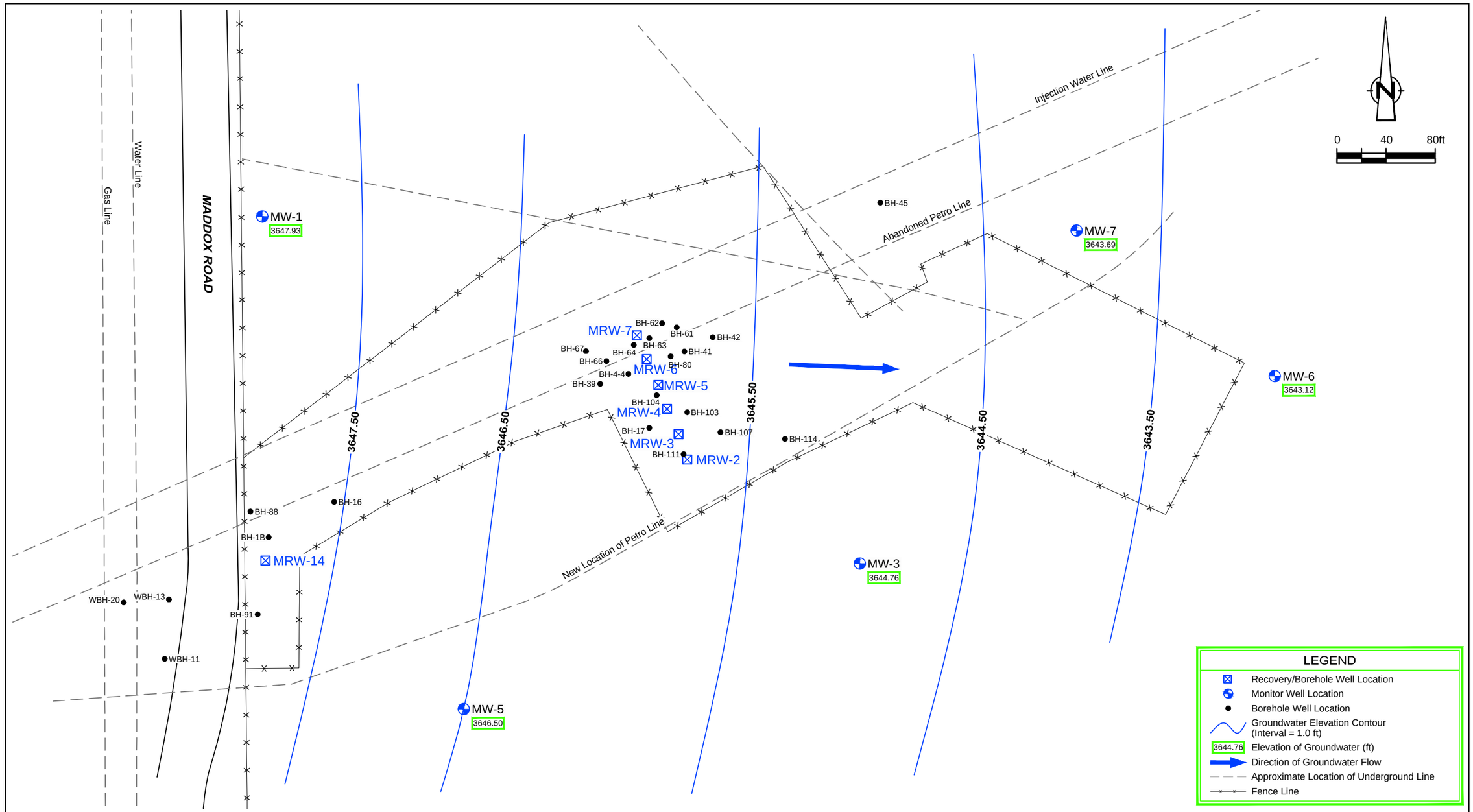


figure 9

GROUNDWATER POTENTIOMETRIC SURFACE MAP - SEPTEMBER 2021
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 14, 2022

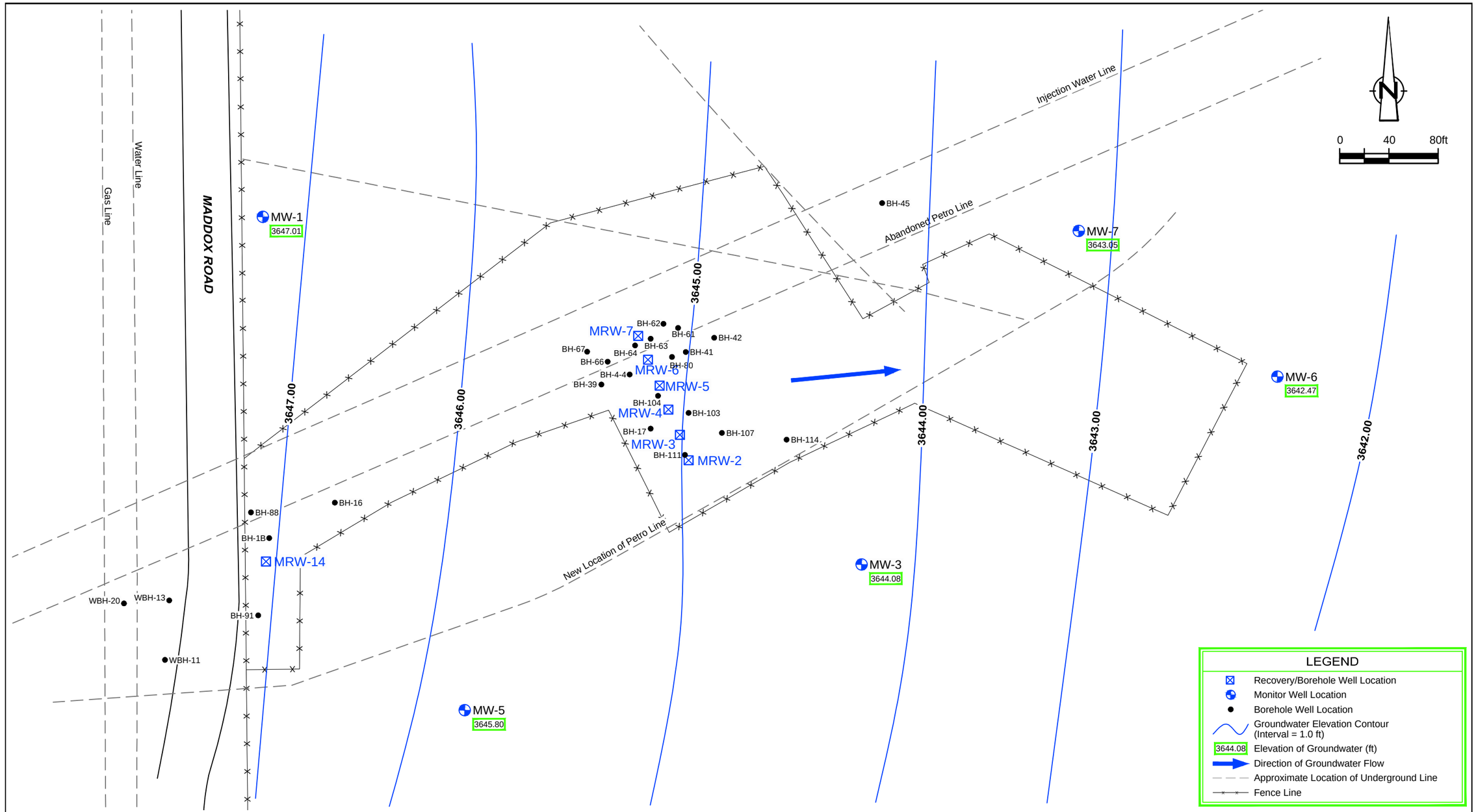
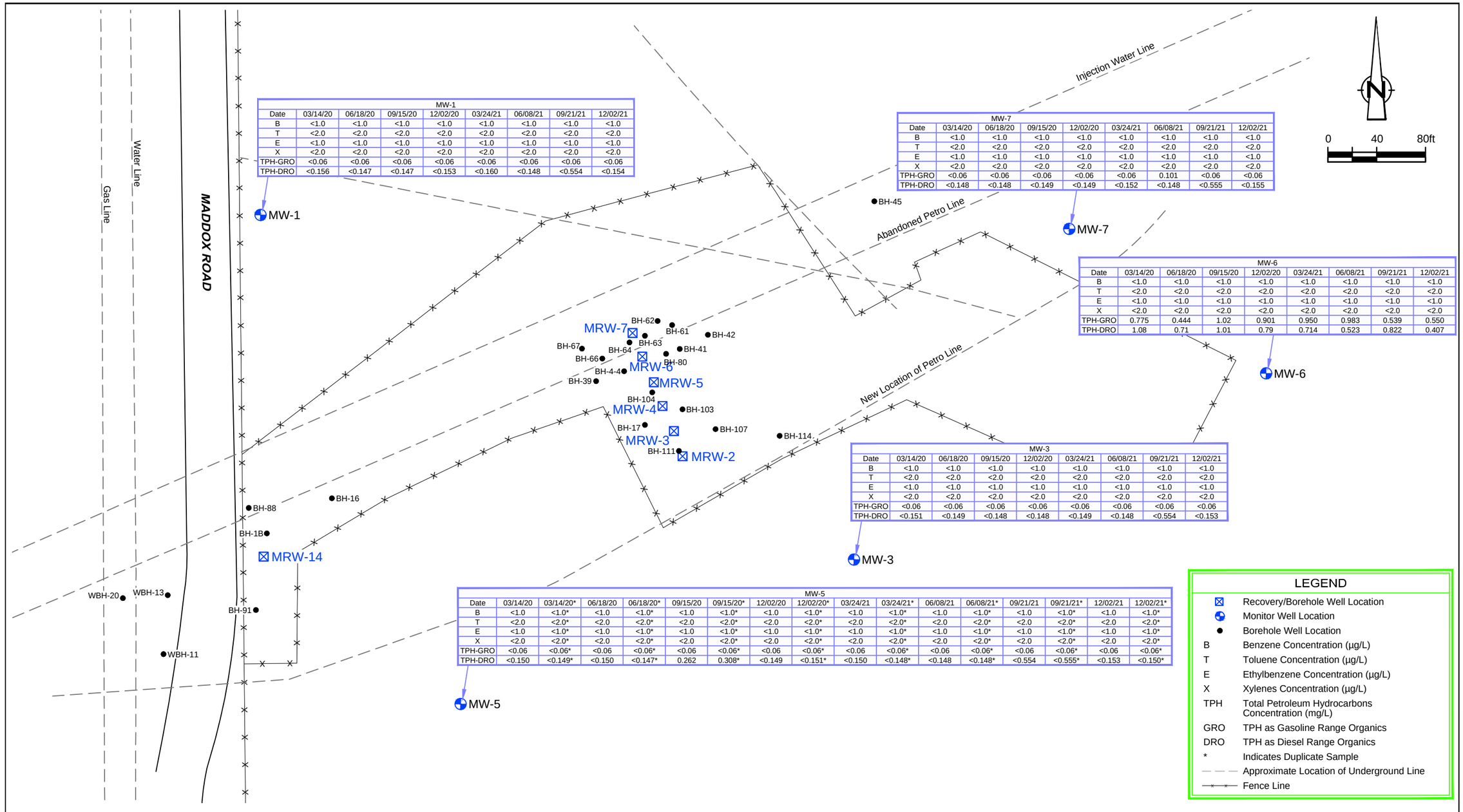


figure 10

GROUNDWATER POTENTIOMETRIC SURFACE MAP - DECEMBER 2021
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

GHD

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: APR 14, 2022



MW-1								
Date	03/14/20	06/18/20	09/15/20	12/02/20	03/24/21	06/08/21	09/21/21	12/02/21
B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
T	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
E	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
X	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-GRO	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
TPH-DRO	<0.156	<0.147	<0.147	<0.153	<0.160	<0.148	<0.554	<0.154

MW-7								
Date	03/14/20	06/18/20	09/15/20	12/02/20	03/24/21	06/08/21	09/21/21	12/02/21
B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
T	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
E	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
X	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-GRO	<0.06	<0.06	<0.06	<0.06	<0.06	0.101	<0.06	<0.06
TPH-DRO	<0.148	<0.148	<0.149	<0.149	<0.152	<0.148	<0.555	<0.155

MW-6								
Date	03/14/20	06/18/20	09/15/20	12/02/20	03/24/21	06/08/21	09/21/21	12/02/21
B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
T	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
E	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
X	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-GRO	0.775	0.444	1.02	0.901	0.950	0.983	0.539	0.550
TPH-DRO	1.08	0.71	1.01	0.79	0.714	0.523	0.822	0.407

MW-3								
Date	03/14/20	06/18/20	09/15/20	12/02/20	03/24/21	06/08/21	09/21/21	12/02/21
B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
T	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
E	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
X	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-GRO	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
TPH-DRO	<0.151	<0.149	<0.148	<0.148	<0.149	<0.148	<0.554	<0.153

MW-5																
Date	03/14/20	03/14/20*	06/18/20	06/18/20*	09/15/20	09/15/20*	12/02/20	12/02/20*	03/24/21	03/24/21*	06/08/21	06/08/21*	09/21/21	09/21/21*	12/02/21	12/02/21*
B	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*
T	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*
E	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*	<1.0	<1.0*
X	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*	<2.0	<2.0*
TPH-GRO	<0.06	<0.06*	<0.06	<0.06*	<0.06	<0.06*	<0.06	<0.06*	<0.06	<0.06*	<0.06	<0.06*	<0.06	<0.06*	<0.06	<0.06*
TPH-DRO	<0.150	<0.149*	<0.150	<0.147*	0.262	0.308*	<0.149	<0.151*	<0.150	<0.148*	<0.148	<0.148*	<0.554	<0.555*	<0.153	<0.150*

LEGEND

⊠	Recovery/Borehole Well Location
◓	Monitor Well Location
●	Borehole Well Location
B	Benzene Concentration (µg/L)
T	Toluene Concentration (µg/L)
E	Ethylbenzene Concentration (µg/L)
X	Xylenes Concentration (µg/L)
TPH	Total Petroleum Hydrocarbons Concentration (mg/L)
GRO	TPH as Gasoline Range Organics
DRO	TPH as Diesel Range Organics
*	Indicates Duplicate Sample
— — —	Approximate Location of Underground Line
—×—×—	Fence Line

figure 11

GROUNDWATER HYDROCARBON ANALYTICAL RESULTS MAP FOR MARCH 2020 TO DECEMBER 2021
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

GHD

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: MAR 08, 2022

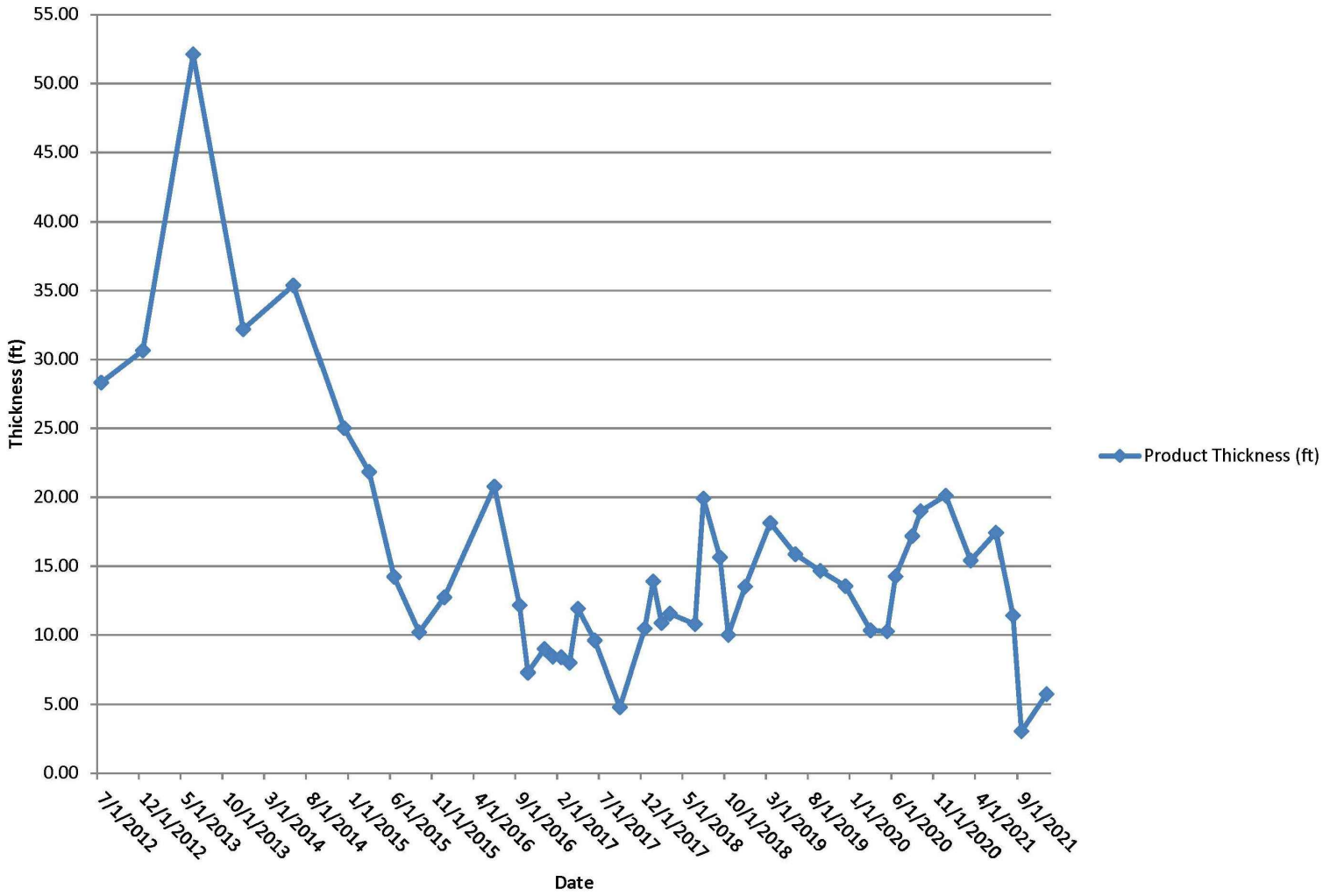
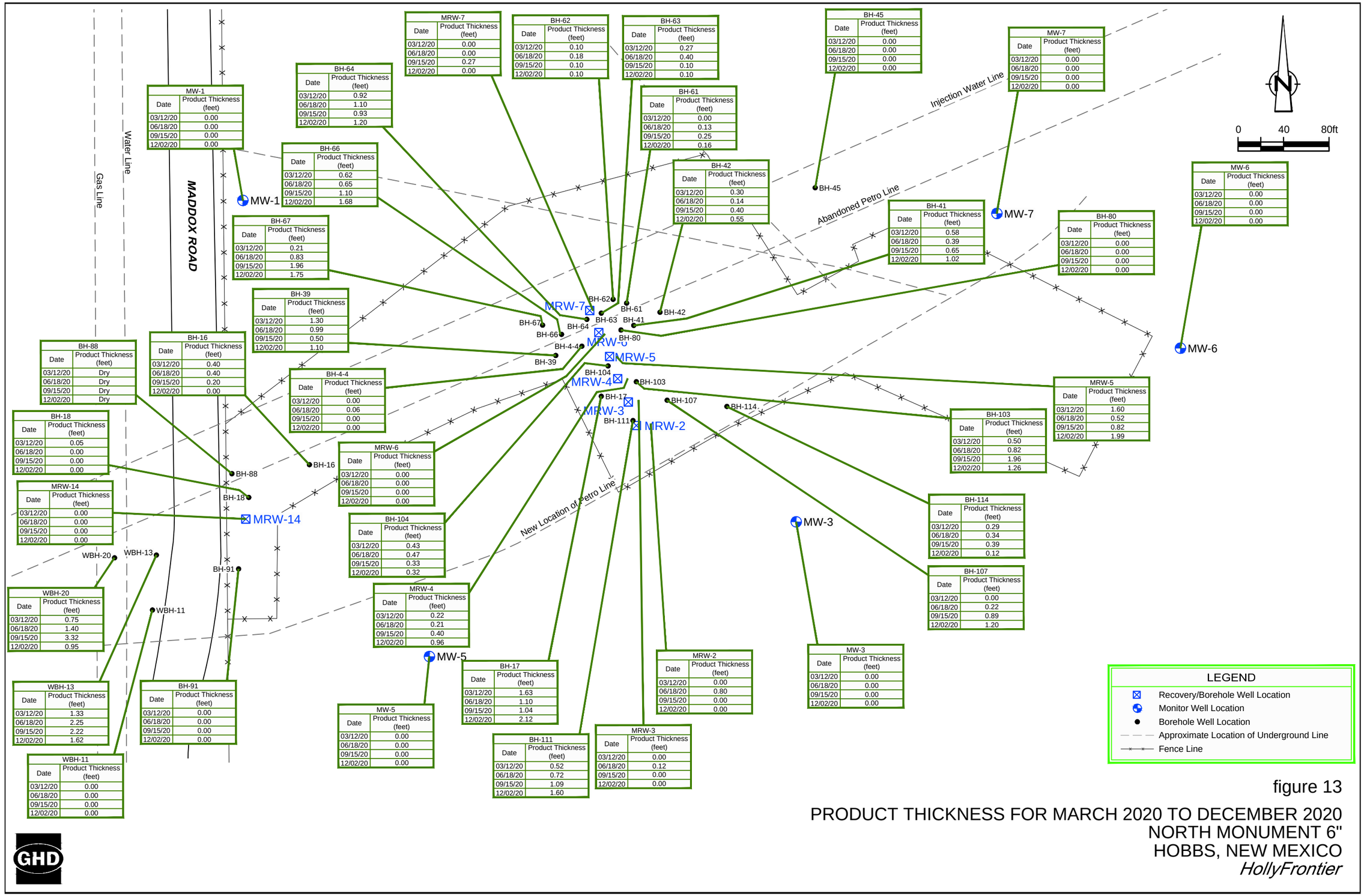


figure 12

SITE TOTAL ACCUMULATED THICKNESS
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: MAR 08, 2022



MW-1	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

MRW-7	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.27
12/02/20	0.00

BH-62	
Date	Product Thickness (feet)
03/12/20	0.10
06/18/20	0.18
09/15/20	0.10
12/02/20	0.10

BH-63	
Date	Product Thickness (feet)
03/12/20	0.27
06/18/20	0.40
09/15/20	0.10
12/02/20	0.10

BH-45	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

MW-7	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

MW-6	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

BH-64	
Date	Product Thickness (feet)
03/12/20	0.92
06/18/20	1.10
09/15/20	0.93
12/02/20	1.20

BH-61	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.13
09/15/20	0.25
12/02/20	0.16

BH-66	
Date	Product Thickness (feet)
03/12/20	0.62
06/18/20	0.65
09/15/20	1.10
12/02/20	1.68

BH-42	
Date	Product Thickness (feet)
03/12/20	0.30
06/18/20	0.14
09/15/20	0.40
12/02/20	0.55

BH-41	
Date	Product Thickness (feet)
03/12/20	0.58
06/18/20	0.39
09/15/20	0.65
12/02/20	1.02

BH-80	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

BH-67	
Date	Product Thickness (feet)
03/12/20	0.21
06/18/20	0.83
09/15/20	1.96
12/02/20	1.75

BH-39	
Date	Product Thickness (feet)
03/12/20	1.30
06/18/20	0.99
09/15/20	0.50
12/02/20	1.10

BH-88	
Date	Product Thickness (feet)
03/12/20	Dry
06/18/20	Dry
09/15/20	Dry
12/02/20	Dry

BH-16	
Date	Product Thickness (feet)
03/12/20	0.40
06/18/20	0.40
09/15/20	0.20
12/02/20	0.00

BH-4-4	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.06
09/15/20	0.00
12/02/20	0.00

MRW-5	
Date	Product Thickness (feet)
03/12/20	1.60
06/18/20	0.52
09/15/20	0.82
12/02/20	1.99

BH-18	
Date	Product Thickness (feet)
03/12/20	0.05
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

MRW-6	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

BH-103	
Date	Product Thickness (feet)
03/12/20	0.50
06/18/20	0.82
09/15/20	1.96
12/02/20	1.26

MRW-14	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

BH-104	
Date	Product Thickness (feet)
03/12/20	0.43
06/18/20	0.47
09/15/20	0.33
12/02/20	0.32

BH-114	
Date	Product Thickness (feet)
03/12/20	0.29
06/18/20	0.34
09/15/20	0.39
12/02/20	0.12

BH-107	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.22
09/15/20	0.89
12/02/20	1.20

MRW-4	
Date	Product Thickness (feet)
03/12/20	0.22
06/18/20	0.21
09/15/20	0.40
12/02/20	0.96

WBH-20	
Date	Product Thickness (feet)
03/12/20	0.75
06/18/20	1.40
09/15/20	3.32
12/02/20	0.95

BH-17	
Date	Product Thickness (feet)
03/12/20	1.63
06/18/20	1.10
09/15/20	1.04
12/02/20	2.12

MRW-2	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.80
09/15/20	0.00
12/02/20	0.00

MW-3	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

WBH-13	
Date	Product Thickness (feet)
03/12/20	1.33
06/18/20	2.25
09/15/20	2.22
12/02/20	1.62

BH-91	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

MW-5	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

BH-111	
Date	Product Thickness (feet)
03/12/20	0.52
06/18/20	0.72
09/15/20	1.09
12/02/20	1.60

MRW-3	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.12
09/15/20	0.00
12/02/20	0.00

WBH-11	
Date	Product Thickness (feet)
03/12/20	0.00
06/18/20	0.00
09/15/20	0.00
12/02/20	0.00

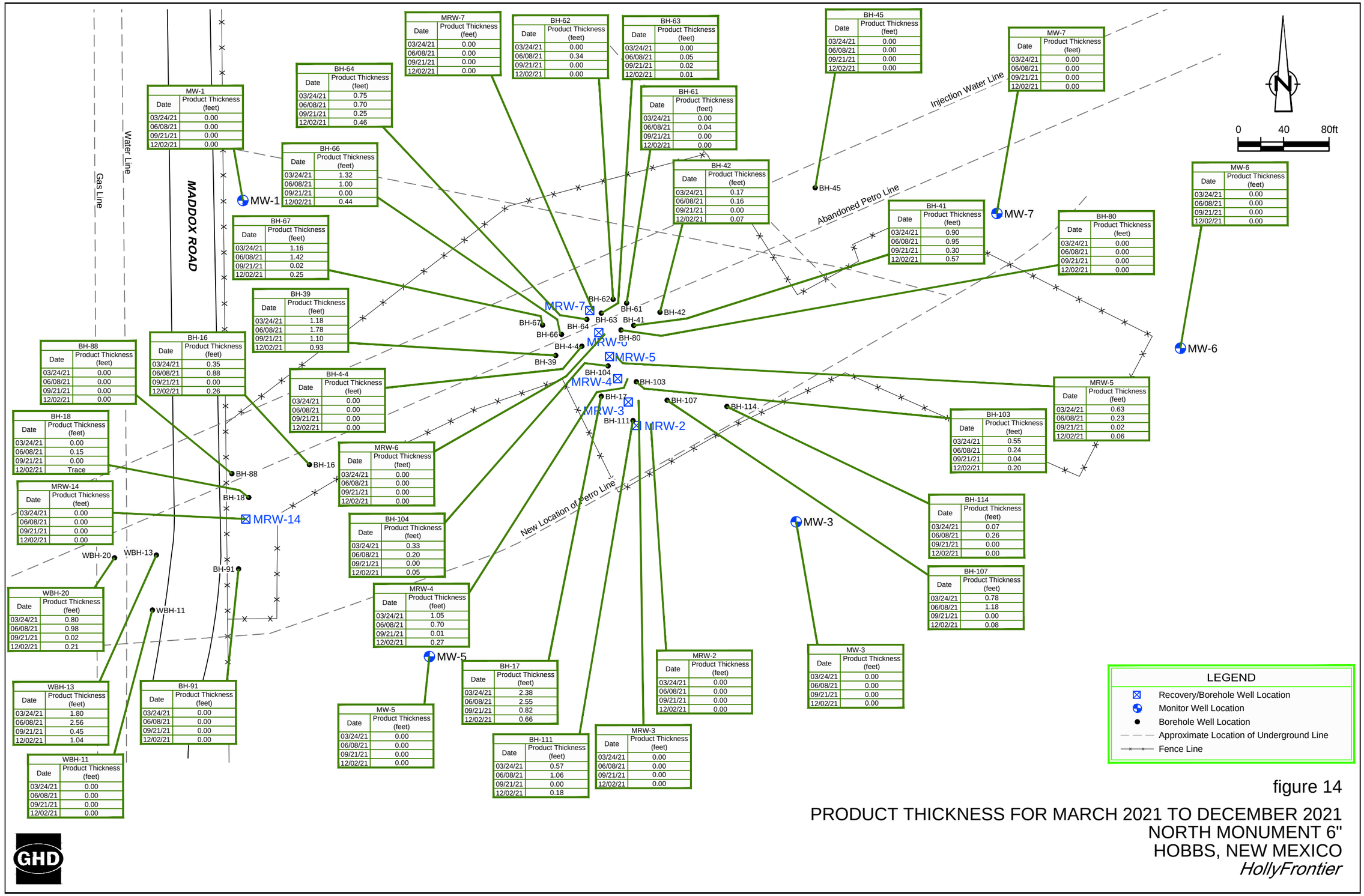
LEGEND

- Recovery/Borehole Well Location
- Monitor Well Location
- Borehole Well Location
- Approximate Location of Underground Line
- Fence Line

figure 13

PRODUCT THICKNESS FOR MARCH 2020 TO DECEMBER 2020
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: MAR 08, 2022



MW-1	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

MRW-7	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-62	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.34
09/21/21	0.00
12/02/21	0.00

BH-63	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.05
09/21/21	0.02
12/02/21	0.01

BH-45	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

MW-7	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-64	
Date	Product Thickness (feet)
03/24/21	0.75
06/08/21	0.70
09/21/21	0.25
12/02/21	0.46

BH-61	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.04
09/21/21	0.00
12/02/21	0.00

BH-66	
Date	Product Thickness (feet)
03/24/21	1.32
06/08/21	1.00
09/21/21	0.00
12/02/21	0.44

BH-42	
Date	Product Thickness (feet)
03/24/21	0.17
06/08/21	0.16
09/21/21	0.00
12/02/21	0.07

MW-6	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-67	
Date	Product Thickness (feet)
03/24/21	1.16
06/08/21	1.42
09/21/21	0.02
12/02/21	0.25

BH-41	
Date	Product Thickness (feet)
03/24/21	0.90
06/08/21	0.95
09/21/21	0.30
12/02/21	0.57

BH-80	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-39	
Date	Product Thickness (feet)
03/24/21	1.18
06/08/21	1.78
09/21/21	1.10
12/02/21	0.93

BH-88	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-16	
Date	Product Thickness (feet)
03/24/21	0.35
06/08/21	0.88
09/21/21	0.00
12/02/21	0.26

BH-4-4	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

MRW-5	
Date	Product Thickness (feet)
03/24/21	0.63
06/08/21	0.23
09/21/21	0.02
12/02/21	0.06

BH-18	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.15
09/21/21	0.00
12/02/21	Trace

MRW-6	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-103	
Date	Product Thickness (feet)
03/24/21	0.55
06/08/21	0.24
09/21/21	0.04
12/02/21	0.20

MRW-14	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-104	
Date	Product Thickness (feet)
03/24/21	0.33
06/08/21	0.20
09/21/21	0.00
12/02/21	0.05

BH-114	
Date	Product Thickness (feet)
03/24/21	0.07
06/08/21	0.26
09/21/21	0.00
12/02/21	0.00

BH-107	
Date	Product Thickness (feet)
03/24/21	0.78
06/08/21	1.18
09/21/21	0.00
12/02/21	0.08

WBH-20	
Date	Product Thickness (feet)
03/24/21	0.80
06/08/21	0.98
09/21/21	0.02
12/02/21	0.21

MRW-4	
Date	Product Thickness (feet)
03/24/21	1.05
06/08/21	0.70
09/21/21	0.01
12/02/21	0.27

MRW-2	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

MW-3	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

WBH-13	
Date	Product Thickness (feet)
03/24/21	1.80
06/08/21	2.56
09/21/21	0.45
12/02/21	1.04

BH-91	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

MW-5	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

BH-17	
Date	Product Thickness (feet)
03/24/21	2.38
06/08/21	2.55
09/21/21	0.82
12/02/21	0.66

BH-111	
Date	Product Thickness (feet)
03/24/21	0.57
06/08/21	1.06
09/21/21	0.00
12/02/21	0.18

MRW-3	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

WBH-11	
Date	Product Thickness (feet)
03/24/21	0.00
06/08/21	0.00
09/21/21	0.00
12/02/21	0.00

figure 14

PRODUCT THICKNESS FOR MARCH 2021 TO DECEMBER 2021
NORTH MONUMENT 6"
HOBBS, NEW MEXICO
HollyFrontier

\\ghdnet\ghd\US\Golden\Projects\562\11225604\Digital_Design\ACAD 2017\Figures\RPT001\11225604-GHD-0000-RPT-EN-0101_DL-001.dwg Plot Date: MAR 08, 2022

Tables

Table 1 - Summary of Groundwater Hydrocarbon Results for March 2020 to December 2021
HollyFrontier- North Monument - Lea County, New Mexico

Monitoring Well	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	Depth to Water (ft-bmp)	Groundwater Elevation (ft-msl)
NMWQCC Groundwater Standards		10	750	750	620	NE	NE		
MW-1	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.156	21.80	3,648.25
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147	22.87	3,647.18
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147	23.24	3,646.81
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153	23.41	3,646.64
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.160	23.58	3,646.47
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	23.82	3,646.23
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554	22.12	3,647.93
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.154	23.04	3,647.01
MW-3	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.151	21.33	3,645.08
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	22.14	3,644.27
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	22.82	3,643.59
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	22.85	3,643.56
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	22.77	3,643.64
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	22.97	3,643.44
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554	21.65	3,644.76
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153	22.33	3,644.08
MW-5	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	23.73	3,646.70
duplicate	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	23.73	3,646.70
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	24.40	3,646.03
duplicate	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147	24.40	3,646.03
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	0.262	24.51	3,645.92
duplicate	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	0.308	24.51	3,645.92
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	24.66	3,645.77
duplicate	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.151	24.66	3,645.77
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	25.08	3,645.35
duplicate	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	25.08	3,645.35
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	25.30	3,645.13
duplicate	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	25.30	3,645.13
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554	23.93	3,646.50
duplicate	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.555	23.93	3,646.50
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153	24.63	3,645.80
duplicate	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	24.63	3,645.80
MW-6	3/14/2020	<1.0	<2.0	<1.0	<2.0	0.775	1.08	17.16	3,643.34
	6/18/2020	<1.0	<2.0	<1.0	<2.0	0.444	0.706	17.88	3,642.62
	9/15/2020	<1.0	<2.0	<1.0	<2.0	1.02	1.01	18.24	3,642.26
	12/2/2020	<1.0	<2.0	<1.0	<2.0	0.901	0.785	18.39	3,642.11
	3/24/2021	<1.0	<2.0	<1.0	<2.0	0.950	0.714	18.51	3,641.99
	6/8/2021	<1.0	<2.0	<1.0	<2.0	0.983	0.523	18.79	3,641.71
	9/21/2021	<1.0	<2.0	<1.0	<2.0	0.539	0.822	17.38	3,643.12
	12/2/2021	<1.0	<2.0	<1.0	<2.0	0.550	0.407	18.03	3,642.47
MW-7	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	18.58	3,643.89
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	19.24	3,643.23
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	19.65	3,642.82
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	19.80	3,642.67
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.152	19.89	3,642.58
	6/8/2021	<1.0	<2.0	<1.0	<2.0	0.101	<0.148	20.12	3,642.35
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.555	18.78	3,643.69
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.155	19.42	3,643.05

BOLD = Exceeds New Mexico Water Quality Commission (NMWQC) Standard
µg/L = micrograms/Liter
mg/L = milligrams/Liter
ft-bmp = feet - below measuring point
ft-msl = feet - mean sea level
< = analyte not detected above reporting limit
BTEX = benzene, toluene, ethylbenzene & total xylenes
BTEX analyzed by Method 8260C
TPH-GRO = total petroleum hydrocarcbons- gasoline range organics
TPH-DRO = total petroleum hydrocarcbons- diesel gasoline range organics
TPH-GRO analyzed by Method 8015V
TPH-DRO analyzed by Method 8015D
NA = not analyzed
NE= Not Established

Table 2 Summary of Groundwater QA/QC Results for 2020/2021
HollyFrontier- North Monument - Lea County, New Mexico

Well	Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-GRO	TPH-DRO
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)
NMWQC Groundwater Standards		**10**	**750**	**750**	**620**	**NE**	**NE**
MW-5	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150
MW-5	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150
MW-5	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	0.262
MW-5	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	0.308
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.151
Trip Blank	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	NA
Trip Blank	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	NA
Trip Blank	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	NA
Trip Blank	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	NA
MW-5	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150
MW-5	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148
MW-5	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554
MW-5	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.555
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150
Trip Blank	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	NA
Trip Blank	6/8/2021	<1.0	<2.0	<1.0	<1.0	<0.06	NA
Trip Blank	9/21/2021	<1.0	<2.0	<1.0	<1.0	<0.06	NA
Trip Blank	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	NA

BOLD = Exceeds New Mexico Water Quality Commission (NMWQC) Standard
µg/L = micrograms per liter
< = Not detected above indicated level
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
BTEX analyzed by Method EPA 8260C
TPH-GRO = total petroleum hydrocarcbons- gasoline range organics
TPH-DRO = total petroleum hydrocarcbons- diesel gasoline range organics
TPH-GRO analyzed by Method 8015V
TPH-DRO analyzed by Method 8015D
NA = not analyzed
NE= Not Established
TDS = Total Disolved Solids
Mercury analyzed by Method SW7470A #DIV/0!
Chloride analyzed by Method E300
TDS analyzed by Method M2540C
All other metals analyzed by Method SW6020A

Appendices

Appendix A

Historical Fluid Levels

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
WBH-11	7/26/2012	24.41	25.03	0.62	30.28
3670	12/20/2012	24.40	25.69	1.29	
	6/19/2013	24.29	26.36	2.07	
	12/12/2013	23.47	25.27	1.80	
	6/26/2014	23.32	24.87	1.55	
	12/18/2014	23.43	24.35	0.92	
	3/18/2015	24.10	25.04	0.94	
	6/8/2015	23.83	24.50	0.67	
	9/15/2015	24.40	24.54	0.14	
	12/16/2015		24.29	0.00	
	6/6/2016	24.60	24.98	0.38	
	9/25/2016	22.80	22.84	0.04	
	10/28/2016	22.79	22.84	0.05	
	12/11/2016		24.05	0.00	
	1/21/2017		24.25	0.00	
	2/19/2017	24.38	24.40	0.02	
	3/14/2017		25.40	0.00	
	4/20/2017	24.50	24.60	0.10	
	6/6/2017	24.55	24.57	0.02	
	9/19/2017	23.68	23.72	0.04	
	12/6/2017	24.32	24.42	0.10	
	1/24/2018	24.68	24.75	0.07	
	2/21/2018		24.55	0.00	
	3/15/2018		22.58	0.00	
	6/6/2018		24.70	0.00	
	7/17/2018	24.90	24.93	0.03	
	9/24/2018	Trace	24.18	0.00	
	10/10/2018	Trace	24.35	0.00	
	12/11/2018		24.20	0.00	
	3/13/2019		24.68	0.00	
	6/26/2019		24.95	0.00	
	9/21/2019		25.04	0.00	
	12/3/2019		24.70	0.00	
	3/12/2020		22.23	0.00	
	5/20/2020		24.80	0.00	
	6/18/2020		25.06	0.00	
	8/13/2020		25.78	0.00	
	9/15/2020		25.40	0.00	
	12/2/2020		24.93	0.00	
	3/24/2021		25.70	0.00	
	6/8/2021		25.82	0.00	
	8/5/2021		22.98	0.00	
	9/21/2021		24.45	0.00	
	12/2/2021		23.23	0.00	
WBH-13	7/26/2012	24.99	25.05	0.06	30.32
	12/20/2012	25.04	25.12	0.08	
	6/19/2013	25.16	25.20	0.04	
	12/12/2013	24.16	24.36	0.20	
	6/26/2014	23.95	24.32	0.37	
	12/18/2014	23.98	24.22	0.24	
	3/18/2015	24.67	25.05	0.38	
	6/8/2015	24.37	24.48	0.11	
	9/15/2015		24.90	0.00	
	12/6/2015		24.75	0.00	
	6/6/2016	25.08	25.24	0.16	
	9/25/2016	23.15	23.38	0.23	
	12/11/2016	24.45	24.90	0.45	
	1/21/2017	24.60	25.07	0.47	
	2/19/2017	24.77	25.37	0.60	
	3/14/2017	24.80	25.30	0.50	
	4/20/2017	24.90	25.75	0.85	
	6/6/2017	24.80	25.48	0.68	
	9/19/2017	24.02	24.30	0.28	
	12/6/2017	23.63	24.20	0.57	
	1/24/2018	24.69	26.29	1.60	
	2/21/2018	22.75	23.40	0.65	
	3/15/2018	24.67	26.55	1.88	
	6/6/2018	24.68	26.88	2.20	
	7/17/2018	25.00	27.70	2.70	
	9/24/2018	24.40	25.78	1.38	
	10/10/2018	24.66	25.80	1.14	
	12/11/2018	24.55	25.75	1.20	
	1/23/2019	24.76	26.60	1.84	
	3/13/2019	24.65	27.35	2.70	
	6/26/2019	25.08	27.17	2.09	
	9/21/2019	25.15	27.22	2.07	
	12/3/2019	24.87	26.80	1.93	
	3/12/2020	24.50	25.83	1.33	
	5/20/2020	24.90	26.93	2.03	
	6/18/2020	25.10	27.35	2.25	
	8/13/2020	24.48	25.83	1.35	
	9/15/2020	25.48	27.70	2.22	
	11/12/2020	25.68	27.62	1.94	
	12/2/2020	24.63	26.25	1.62	
	3/24/2021	25.90	27.70	1.80	
	6/8/2021	25.90	28.46	2.56	
	8/5/2021	25.23	26.58	1.35	
	9/21/2021	22.85	23.30	0.45	
	12/2/2021	25.48	26.52	1.04	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
WBH-20	7/26/2012	23.71	24.79	1.08	30.31
3670	12/20/2012	23.81	24.92	1.11	
	6/19/2013	23.75	25.11	1.36	
	12/12/2013	22.95	24.10	0.36	
	6/26/2014	22.76	23.76	1.00	
	12/18/2014	22.81	23.80	0.99	
	3/18/2015	23.47	24.55	1.08	
	6/8/2015	23.22	23.95	0.73	
	9/15/2015	23.78	24.02	0.24	
	12/16/2015	23.65	23.82	0.17	
	6/6/2016	23.89	25.04	1.15	
	9/25/2016	21.98	23.38	1.40	
	10/28/2016	21.96	23.40	1.44	
	12/11/2016	23.35	24.10	0.75	
	1/21/2017	24.57	25.07	0.50	
	2/19/2017	24.70	25.20	0.50	
	3/14/2017	23.70	24.38	0.68	
	4/20/2017	23.80	24.65	0.85	
	6/6/2017	23.95	24.83	0.88	
	9/19/2017	22.97	23.57	0.60	
	12/6/2017	24.60	25.55	0.95	
	1/24/2018	23.78	24.29	0.51	
	2/21/2018	22.85	23.64	0.79	
	3/15/2018	23.87	24.77	0.90	
	6/6/2018	23.98	24.98	1.00	
	7/17/2018	24.07	25.60	1.53	
	9/24/2018	22.42	23.58	1.16	
	10/10/2018	23.66	24.33	0.67	
	12/11/2018	23.52	24.20	0.68	
	1/23/2019	23.82	24.70	0.88	
	3/13/2019	23.90	25.15	1.25	
	6/26/2019	24.11	25.52	1.41	
	9/21/2019	24.20	25.75	1.55	
	12/3/2019	23.93	25.15	1.22	
	3/12/2020	23.53	24.28	0.75	
	5/20/2020	24.00	25.33	1.33	
	6/18/2020	24.20	25.60	1.40	
	8/13/2020	25.38	27.72	2.34	
	9/15/2020	22.58	25.90	3.32	
	11/12/2020	24.80	25.61	0.81	
	12/2/2020	24.75	25.70	0.95	
	3/24/2021	25.00	25.80	0.80	
	6/8/2021	25.10	26.08	0.98	
	8/5/2021	24.28	24.80	0.52	
	9/21/2021	23.95	23.97	0.02	
	12/2/2021	24.58	24.79	0.21	
BH-18	7/26/2012	24.53	25.01	0.48	30.41
	12/20/2012	24.52	25.12	0.60	
	6/19/2013	24.25	25.36	1.11	
	12/12/2013			0.00	
	6/26/2014			0.00	
	12/18/2014	23.51	24.31	0.80	
	3/18/2015	24.28	24.95	0.67	
	6/9/2015	23.97	24.48	0.51	
	9/15/2015	24.50	24.65	0.15	
	12/16/2015	24.36	24.41	0.05	
	6/6/2016	24.74	24.75	0.01	
	9/25/2016		22.80	0.00	
	10/28/2016		23.78	0.00	
	12/11/2016		24.14	0.00	
	1/21/2017		24.35	0.00	
	2/19/2017		24.47	0.00	
	3/14/2017		24.15	0.00	
	4/20/2017		24.60	0.00	
	6/6/2017		24.66	0.00	
	9/19/2017		23.88	0.00	
	12/6/2017		24.40	0.00	
	1/24/2018		24.60	0.00	
	2/21/2018		23.90	0.00	
	3/15/2018		24.84	0.00	
	6/6/2018		22.98	0.00	
	7/17/2018		23.02	0.00	
	9/24/2018		22.25	0.00	
	10/10/2018		22.64	0.00	
	12/11/2018		24.30	0.00	
	3/13/2019		24.70	0.00	
	6/26/2019		24.35	0.00	
	9/21/2019		23.04	0.00	
	12/3/2019	24.85	24.90	0.05	
	3/12/2020	24.10	24.15	0.05	
	5/20/2020		24.55	0.00	
	6/18/2020		24.60	0.00	
	9/15/2020		24.07	0.00	
	12/2/2020		24.85	0.00	
	3/24/2021		25.92	0.00	
	6/8/2021	25.85	26.00	0.15	
	8/5/2021	25.18	25.20	0.02	
	9/21/2021		24.63	0.00	
	12/2/2021	t	23.52	t	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-4-4	7/26/2012	18.88	19.05	0.17	25.36
	12/20/2012	18.90	19.07	0.17	
	6/19/2013	19.02	19.28	0.26	
	12/12/2013	18.04	18.43	0.39	
	6/26/2014	17.91	18.65	0.74	
	12/18/2014	17.90	18.49	0.59	
	3/18/2015	18.66	19.22	0.56	
	6/8/2015	18.23	18.77	0.54	
	9/15/2015	18.87	18.98	0.11	
	12/16/2015		18.71	0.00	
	6/6/2016	24.83	24.84	0.01	
	9/25/2016		17.22	0.00	
	10/28/2016	18.02	18.06	0.04	
	12/11/2016	18.48	18.55	0.07	
	1/21/2017		18.65	0.00	
	2/19/2017	18.78	18.80	0.02	
	3/14/2017		18.83	0.00	
	4/20/2017	18.95	19.05	0.10	
	6/6/2017	18.97	18.99	0.02	
	9/19/2017	18.08	18.11	0.03	
	12/6/2017		18.80	0.00	
	1/24/2018	19.94	20.00	0.06	
	2/21/2018		19.26	0.00	
	3/15/2018		19.26	0.00	
	6/6/2018		19.16	0.00	
	7/17/2018		19.33	0.00	
	9/24/2018		19.06	0.00	
	10/10/2018		19.24	0.00	
	12/11/2018		18.97	0.00	
	1/23/2019		19.02	0.00	
	3/13/2019		19.10	0.00	
	6/26/2019		19.46	0.00	
	9/21/2019		19.50	0.00	
	12/3/2019		19.42	0.00	
	3/12/2020		18.65	0.00	
	5/20/2020		18.88	0.00	
	6/18/2020	20.42	20.48	0.06	
	9/15/2020		20.18	0.00	
	12/2/2020		19.82	0.00	
	3/24/2021		19.00	0.00	
	6/8/2021		20.53	0.00	
	8/5/2021		19.48	0.00	
	9/21/2021		20.05	0.00	
	12/2/2021		20.68	0.00	
BH-16	7/26/2012	22.85	23.20	0.35	29.50
	12/20/2012	22.83	23.17	0.34	
	6/19/2013	22.90	23.32	0.42	
	12/12/2013	22.08	22.50	0.42	
	6/26/2014	21.89	22.33	0.44	
	12/18/2014	21.90	22.31	0.41	
	3/18/2015	22.57	23.05	0.48	
	6/9/2015	22.29	22.63	0.34	
	9/15/2015	22.78	22.88	0.10	
	12/16/2015	22.65	22.81	0.16	
	6/6/2016	23.01	23.21	0.20	
	9/25/2016	21.10	21.40	0.30	
	10/28/2016	21.98	22.09	0.11	
	12/11/2016	22.42	22.58	0.16	
	1/21/2017	22.62	22.73	0.11	
	2/19/2017	22.70	22.86	0.16	
	3/14/2017	22.76	22.90	0.14	
	4/20/2017	22.85	23.10	0.25	
	6/6/2017	22.92	23.03	0.11	
	9/19/2017		21.04	0.00	
	12/6/2017	22.84	22.95	0.11	
	1/24/2018	22.82	23.02	0.20	
	2/21/2018	22.90	23.04	0.14	
	3/15/2018		22.97	0.00	
	6/6/2018	23.10	23.20	0.10	
	7/17/2019	23.22	23.60	0.38	
	9/24/2018	22.50	22.85	0.35	
	10/10/2018	22.70	22.95	0.25	
	12/11/2018	22.58	22.70	0.12	
	1/23/2019	22.92	23.02	0.10	
	3/13/2019	23.00	23.10	0.10	
	6/26/2019	23.60	23.83	0.23	
	9/21/2019	23.60	23.75	0.15	
	12/3/2019	23.05	23.32	0.27	
	3/12/2020	22.58	22.98	0.40	
	5/20/2020	23.11	23.60	0.49	
	6/18/2020	23.26	23.66	0.40	
	9/15/2020	23.77	23.97	0.20	
	12/2/2020		23.42	0.00	
	3/24/2021	24.05	24.40	0.35	
	6/8/2021	24.12	25.00	0.88	
	8/5/2021	23.38	23.82	0.44	
	9/21/2021		23.63	0.00	
	12/2/2021	23.52	23.78	0.26	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-17	7/26/2012	21.85	22.45	0.60	27.60
	12/20/2012	21.77	23.08	1.31	
	6/19/2013	21.63	23.82	2.19	
	12/12/2013	20.92	22.66	1.74	
	6/26/2014	20.80	22.72	1.92	
	12/18/2014	20.89	21.98	1.09	
	3/18/2015	21.64	22.23	0.59	
	6/8/2015	21.30	21.87	0.57	
	9/15/2015	21.70	23.31	1.61	
	12/16/2015	21.43	23.53	2.10	
	6/6/2016	21.67	24.57	2.90	
	9/25/2016	20.13	20.31	0.18	
	10/28/2016	20.99	21.56	0.57	
	12/11/2016	21.30	22.60	1.30	
	1/21/2017	21.55	22.80	1.25	
	2/19/2017	21.66	22.97	1.31	
	3/14/2017	21.72	22.90	1.18	
	4/20/2017	21.80	23.15	1.35	
	6/6/2017	21.87	22.96	1.09	
	9/19/2017	21.11	21.40	0.29	
	12/6/2017	21.70	22.48	0.78	
	1/24/2018	21.76	23.25	1.49	
	2/21/2018	21.84	23.25	1.41	
	3/15/2018	21.88	23.10	1.22	
	6/6/2018	22.04	23.02	0.98	
	7/17/2018	22.72	23.96	1.24	
	9/24/2018	20.73	22.17	1.44	
	10/10/2018	21.70	22.72	1.02	
	12/11/2018	21.49	22.65	1.16	
	1/23/2019	21.74	23.20	1.46	
	3/13/2019	21.90	23.35	1.45	
	6/26/2019	22.20	23.34	1.14	
	9/21/2019	22.30	23.55	1.25	
	12/3/2019	22.05	22.95	0.90	
	3/12/2020	21.45	23.08	1.63	
	5/20/2020	22.20	22.85	0.65	
	6/18/2020	22.22	23.32	1.10	
	8/13/2020	22.52	23.98	1.46	
	9/15/2020	21.48	22.52	1.04	
	11/12/2020	22.75	24.38	1.63	
	12/2/2020	22.63	24.75	2.12	
	3/24/2021	22.80	25.18	2.38	
	6/8/2021	22.90	25.45	2.55	
	8/5/2021	22.20	24.04	1.84	
	9/21/2021	21.83	22.65	0.82	
	12/2/2021	22.58	23.24	0.66	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-39	7/26/2012	20.10	20.31	0.21	29.01
	12/20/2012	20.04	20.36	0.32	
	6/19/2013	20.11	20.62	0.51	
	12/12/2013	18.45	18.95	0.50	
	6/26/2014	18.37	18.85	0.48	
	12/18/2014	18.50	19.39	0.89	
	3/18/2015	18.99	20.00	1.01	
	6/8/2015	18.64	19.50	0.86	
	9/15/2015	19.28	19.64	0.36	
	12/16/2015	19.10	19.49	0.39	
	6/6/2016	19.39	20.10	0.71	
	9/25/2016	17.58	18.18	0.60	
	10/28/2016	18.42	19.09	0.67	
	12/11/2016	18.75	19.90	1.15	
	1/21/2017	18.95	20.08	1.13	
	2/19/2017	19.08	20.18	1.10	
	3/14/2017	19.10	20.15	1.05	
	4/20/2017	19.30	20.40	1.10	
	6/6/2017	19.31	20.42	1.11	
	9/19/2017	18.50	19.08	0.58	
	12/6/2017	19.15	19.70	0.55	
	1/24/2018	19.25	19.90	0.65	
	2/21/2018	19.38	20.32	0.94	
	3/15/2018	19.38	20.17	0.79	
	6/6/2018	19.46	20.28	0.82	
	7/17/2018	19.45	20.76	1.31	
	9/24/2018	18.83	20.25	1.42	
	10/10/2018	19.06	20.24	1.18	
	12/11/2018	18.90	19.80	0.90	
	1/23/2019	19.82	21.12	1.30	
	3/13/2019	19.40	20.05	0.65	
	6/26/2019	19.68	20.44	0.76	
	9/21/2019	19.75	20.65	0.90	
	12/3/2019	19.42	20.55	1.13	
	3/12/2020	18.87	20.17	1.30	
	5/20/2020	19.52	20.20	0.68	
	6/18/2020	19.75	20.74	0.99	
	8/13/2020	20.05	20.78	0.73	
	9/15/2020	20.20	20.70	0.50	
	11/12/2020	20.35	20.95	0.60	
	12/2/2020	20.44	21.54	1.10	
	3/24/2021	20.42	21.60	1.18	
	6/8/2021	20.40	22.18	1.78	
	8/5/2021	19.68	20.46	0.78	
	9/21/2021	19.33	20.43	1.10	
	12/2/2021	20.05	20.98	0.93	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-41	7/26/2012	18.90	19.46	0.56	29.50
	12/20/2012	18.94	19.49	0.55	
	6/19/2013	19.03	19.73	0.70	
	12/12/2013	18.09	18.63	0.54	
	6/26/2014	18.01	18.65	0.64	
	12/18/2014	17.98	18.72	0.74	
	3/18/2015	18.65	19.31	0.66	
	6/8/2015	18.32	18.70	0.38	
	9/15/2015	18.93	19.30	0.37	
	12/16/2015	18.77	18.94	0.17	
	6/6/2016	19.33	19.34	0.01	
	9/25/2016		17.22	0.00	
	10/28/2016	18.15	18.17	0.02	
	12/11/2016		18.53	0.00	
	1/21/2017		18.73	0.00	
	2/19/2017	18.87	18.92	0.05	
	3/14/2017	18.90	18.95	0.05	
	4/20/2017	19.00	19.15	0.15	
	6/6/2017	19.02	19.40	0.38	
	9/19/2017	18.20	18.55	0.35	
	12/6/2017	18.75	19.55	0.80	
	1/24/2018	18.90	19.60	0.70	
	2/21/2018	19.00	19.62	0.62	
	3/15/2018	18.98	19.74	0.76	
	6/6/2018	19.11	19.90	0.79	
	7/17/2018	19.27	20.22	0.95	
	9/24/2018	18.50	19.60	1.10	
	10/10/2018	18.80	19.15	0.35	
	12/11/2018	19.12	20.35	1.23	
	1/23/2019	18.92	19.60	0.68	
	3/13/2019	19.10	19.50	0.40	
	6/26/2019	19.40	20.03	0.63	
	9/21/2019	20.45	21.19	0.74	
	12/3/2019	19.11	19.90	0.79	
	3/12/2020	18.60	19.18	0.58	
	5/20/2020	19.28	19.77	0.49	
	6/18/2020	19.06	19.45	0.39	
	8/13/2020	19.68	20.80	1.12	
	9/15/2020	19.80	20.45	0.65	
	11/12/2020	19.93	20.60	0.67	
	12/2/2020	20.08	21.10	1.02	
	3/24/2021	20.05	20.95	0.90	
	6/8/2021	20.20	21.15	0.95	
	8/5/2021	19.45	19.85	0.40	
	9/21/2021	18.95	19.25	0.30	
	12/2/2021	19.65	20.22	0.57	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-42	7/26/2012	19.52	20.43	0.91	29.66
	12/20/2012	19.55	20.36	0.81	
	6/19/2013	19.65	20.50	0.85	
	12/12/2013	18.69	19.53	0.84	
	6/26/2014	18.66	19.52	0.86	
	12/18/2014	18.65	19.05	0.40	
	3/18/2015	19.31	19.77	0.46	
	6/8/2015	19.02	19.31	0.29	
	9/15/2015	19.58	19.88	0.30	
	12/16/2015	19.38	19.70	0.32	
	6/6/2016	19.84	19.94	0.10	
	9/25/2016		17.80	0.00	
	10/28/2016		18.75	0.00	
	12/11/2016		dry	0.00	
	1/21/2017		dry	0.00	
	2/19/2017		dry	0.00	
	3/14/2017		dry	0.00	
	4/20/2017	19.70	19.80	0.10	
	6/6/2017	19.73	19.80	0.07	
	9/19/2017	18.78	19.10	0.32	
	12/6/2017	19.43	19.90	0.47	
	1/24/2018	19.62	19.90	0.28	
	2/21/2018	19.70	19.98	0.28	
	3/15/2018	19.95	20.07	0.12	
	6/6/2018	20.08	20.53	0.45	
	7/17/2018	21.05	21.34	0.29	
	9/24/2018	20.18	20.95	0.77	
	10/10/2018	19.35	20.28	0.93	
	12/11/2018	19.12	20.35	1.23	
	1/23/2019	19.45	20.60	1.15	
	3/13/2019	19.70	20.45	0.75	
	6/26/2019	20.00	20.45	0.45	
	9/21/2019	20.14	20.65	0.51	
	12/3/2019	19.80	20.18	0.38	
	3/12/2020	18.28	18.58	0.30	
	5/20/2020	19.90	20.28	0.38	
	6/18/2020	20.38	20.52	0.14	
	8/13/2020	20.32	20.83	0.51	
	9/15/2020	20.48	20.88	0.40	
	11/12/2020	20.63	20.92	0.29	
	12/2/2020	20.75	21.30	0.55	
	3/24/2021	21.17	21.34	0.17	
	6/8/2021	20.06	20.22	0.16	
	8/5/2021	20.08	20.25	0.17	
	9/21/2021		19.60	0.00	
	12/2/2021	20.35	20.42	0.07	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-45	7/26/2012	16.17	17.70	1.53	26.01
	12/20/2012	16.20	16.72	0.52	
	6/19/2013	16.31	17.00	0.69	
	12/12/2013	15.20	15.48	0.28	
	6/26/2014	14.99	15.29	0.30	
	12/18/2014	15.17	15.20	0.03	
	3/18/2015		18.92	0.00	
	6/8/2015		15.53	0.00	
	9/15/2015	16.14	16.15	0.01	
	12/16/2015	15.94	15.96	0.02	
	6/6/2016	16.36	16.40	0.04	
	9/25/2016		14.18	0.00	
	12/11/2016		15.62	0.00	
	1/21/2017		15.89	0.00	
	2/19/2017		16.04	0.00	
	3/14/2017		14.08	0.00	
	4/20/2017		16.20	0.00	
	6/6/2017		16.25	0.00	
	9/19/2017		15,20	0.00	
	12/6/2017		15.95	0.00	
	1/24/2018		16.07	0.00	
	2/21/2018		16.16	0.00	
	3/15/2018		16.28	0.00	
	6/6/2018		16.78	0.00	
	7/17/2018	t	15.86	0.00	
	9/24/2018		15.77	0.00	
	10/10/2018		15.97	0.00	
	12/11/2018		15.70	0.00	
	3/13/2019		16.40	0.00	
	6/26/2019		16.32	0.00	
	9/21/2019		16.85	0.00	
	12/3/2019		16.45	0.00	
	3/12/2020		15.88	0.00	
	5/20/2020		16.55	0.00	
	6/18/2020		16.68	0.00	
	9/15/2020		17.12	0.00	
	12/2/2020		16.34	0.00	
	3/24/2021		16.03	0.00	
	6/8/2021		16.55	0.00	
	8/5/2021		16.33	0.00	
	9/21/2021		17.22	0.00	
	12/2/2021		17.99	0.00	
BH-61	7/26/2012	19.46	19.97	0.51	29.23
	12/20/2012	19.49	20.03	0.54	
	6/19/2013	19.55	20.10	0.55	
	12/12/2013	18.61	19.25	0.64	
	6/26/2014	18.51	19.16	0.65	
	12/18/2014	18.55	19.28	0.73	
	8/13/2015	19.19	19.85	0.66	
	6/8/2015	18.88	19.00	0.12	
	9/15/2015		19.48	0.00	
	12/16/2015		19.30	0.00	
	6/6/2016	19.80	19.81	0.01	
	9/25/2016		17.85	0.00	
	10/28/2016		17.82	0.00	
	12/11/2016	19.02	19.07	0.05	
	1/21/2017	19.22	19.30	0.08	
	2/19/2017	19.35	19.49	0.14	
	3/14/2017	19.40	19.45	0.05	
	4/20/2017	19.50	19.60	0.10	
	6/6/2017	19.52	19.58	0.06	
	9/19/2017	18.66	19.09	0.43	
	12/6/2017	19.30	19.55	0.25	
	1/24/2018	17.48	17.68	0.20	
	2/21/2018	19.82	19.90	0.08	
	3/15/2018	19.55	20.04	0.49	
	6/6/2018	19.69	19.83	0.14	
	7/17/2018	19.83	20.17	0.34	
	9/24/2018	19.08	19.42	0.34	
	10/10/2018	19.30	19.60	0.30	
	12/11/2018	19.11	19.35	0.24	
	3/13/2019	18.65	18.93	0.28	
	6/26/2019		19.90	0.00	
	9/21/2019	19.98	20.25	0.27	
	12/3/2019	19.80	19.85	0.05	
	3/12/2020		19.25	0.00	
	5/20/2020		19.90	0.00	
	6/18/2020	20.05	20.18	0.13	
	8/13/2020		20.84	0.00	
	9/15/2020	20.55	20.80	0.25	
	11/12/2020	21.68	21.70	0.02	
	12/2/2020	19.76	19.92	0.16	
	3/24/2021		20.95	0.00	
	6/8/2021	20.98	21.02	0.04	
	8/5/2021	20.34	20.36	0.02	
	9/21/2021		19.48	0.00	
	12/2/2021		19.79	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-62	7/26/2012	18.88	19.67	0.79	27.92
	12/20/2012	18.85	19.82	0.97	
	6/19/2013	18.90	20.28	1.38	
	12/12/2013	17.94	19.28	1.34	
	6/26/2014	17.83	19.13	1.30	
	12/18/2014	17.90	19.30	1.40	
	3/18/2015	18.51	19.91	1.40	
	6/8/2015	18.24	18.93	0.69	
	9/15/2015		18.90	0.00	
	12/16/2015	18.69	18.70	0.01	
	6/6/2016	19.01	19.08	0.07	
	9/25/2016		17.40	0.00	
	10/28/2016		17.58	0.00	
	12/11/2016		18.45	0.00	
	1/21/2017		18.66	0.00	
	2/19/2017		18.82	0.00	
	3/14/2017		18.85	0.00	
	4/20/2017	18.95	19.00	0.05	
	6/6/2017	18.97	19.00	0.03	
	9/19/2017	18.18	18.40	0.22	
	12/6/2017		18.80	0.00	
	1/24/2018	18.95	19.00	0.05	
	2/21/2018	19.04	19.10	0.06	
	3/15/2018	19.06	19.11	0.05	
	6/6/2018	19.18	19.40	0.22	
	7/17/2018	20.34	20.74	0.40	
	9/24/2018	18.60	18.72	0.12	
	10/10/2018	18.80	18.83	0.03	
	12/11/2018	18.60	18.72	0.12	
	3/13/2019	19.15	19.25	0.10	
	6/26/2019		19.45	0.00	
	9/21/2019	19.45	19.80	0.35	
	12/3/2019	19.18	19.32	0.14	
	3/12/2020	18.60	18.70	0.10	
	5/20/2020	19.35	19.50	0.15	
	6/18/2020	19.50	19.68	0.18	
	8/13/2020	20.82	20.88	0.06	
	9/15/2020	19.95	20.05	0.10	
	11/12/2020	21.00	21.05	0.05	
	12/2/2020	20.20	20.30	0.10	
	3/24/2021		20.25	0.00	
	6/8/2021	20.88	21.22	0.34	
	8/5/2021		19.50	0.00	
	9/21/2021		18.99	0.00	
	12/2/2021		19.78	0.00	
BH-63	7/26/2012	19.71	20.05	0.34	28.45
	12/20/2012		20.06	0.00	
	6/19/2013	19.80	20.31	0.51	
	12/12/2013	18.83	19.55	0.72	
	6/26/2014	18.72	19.58	0.86	
	12/18/2014	18.80	20.05	1.25	
	3/18/2015	19.37	20.38	1.01	
	6/8/2015	19.08	19.36	0.28	
	9/15/2015	19.68	19.96	0.28	
	12/16/2015		19.55	0.00	
	6/6/2016	19.81	20.27	0.46	
	9/25/2016	17.98	18.38	0.40	
	10/28/2016	17.95	18.40	0.45	
	12/11/2016	19.28	19.58	0.30	
	1/21/2017	19.45	20.00	0.55	
	2/19/2017	19.57	20.18	0.61	
	3/14/2017	19.60	20.06	0.46	
	4/20/2017	19.70	20.40	0.70	
	6/6/2017	19.75	20.15	0.40	
	9/19/2017	18.88	19.14	0.26	
	12/6/2017	19.46	19.50	0.04	
	1/24/2018	19.65	20.43	0.78	
	2/21/2018	19.75	20.40	0.65	
	3/15/2018	19.78	20.33	0.55	
	6/6/2018	19.92	20.29	0.37	
	7/17/2018	20.34	20.74	0.40	
	9/24/2018	19.28	20.28	1.00	
	10/10/2018	18.53	18.87	0.34	
	12/11/2018	19.32	20.10	0.78	
	1/23/2019	19.67	20.40	0.73	
	3/13/2019	19.85	20.33	0.48	
	6/26/2019	20.10	20.60	0.50	
	9/21/2019	20.25	20.50	0.25	
	12/3/2019	19.90	20.90	1.00	
	3/12/2020	19.38	19.65	0.27	
	5/20/2020	20.02	20.33	0.31	
	6/18/2020	20.22	20.62	0.40	
	8/13/2020	20.48	20.93	0.45	
	9/15/2020	20.65	20.75	0.10	
	11/12/2020	20.75	20.85	0.10	
	12/2/2020	20.95	21.05	0.10	
	3/24/2021		21.00	0.00	
	6/8/2021	21.10	21.15	0.05	
	8/5/2021	20.09	20.55	0.46	
	9/21/2021	19.63	19.65	0.02	
	12/2/2021	20.42	20.43	0.01	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-64	7/26/2012	20.00	21.64	1.64	28.77
	12/20/2012	19.93	22.09	2.16	
	6/19/2013	20.07	22.40	2.33	
	12/12/2013	19.01	21.67	2.66	
	6/26/2014	18.91	21.72	2.81	
	12/18/2014	19.18	20.28	1.10	
	3/18/2015	19.85	21.02	1.17	
	6/8/2015	19.52	20.40	0.88	
	9/15/2015	20.20	20.57	0.37	
	12/16/2015	19.98	20.50	0.52	
	6/6/2016	20.18	21.76	1.58	
	9/25/2016	18.42	19.58	1.16	
	12/11/2016	19.72	20.38	0.66	
	1/21/2017	19.94	20.60	0.66	
	2/19/2017	20.08	20.64	0.56	
	3/14/2017	20.15	20.60	0.45	
	4/20/2017	20.20	21.00	0.80	
	6/6/2017	20.34	20.90	0.56	
	9/19/2017		19.48	0.00	
	12/6/2017	20.00	20.78	0.78	
	1/24/2018	20.10	21.10	1.00	
	2/21/2018	20.25	21.05	0.80	
	3/15/2018	20.24	21.03	0.79	
	6/6/2018	20.45	20.90	0.45	
	7/17/2018	20.54	21.92	1.38	
	9/24/2018	19.74	21.05	1.31	
	10/10/2018	20.20	20.80	0.60	
	12/11/2018	19.80	20.70	0.90	
	1/23/2019	20.05	21.25	1.20	
	3/13/2019	20.25	21.50	1.25	
	6/26/2019	20.52	21.80	1.28	
	9/21/2019	20.70	21.60	0.90	
	12/3/2019	20.32	21.56	1.24	
	3/12/2020	19.83	20.75	0.92	
	5/20/2020	20.47	21.47	1.00	
	6/18/2020	20.64	21.74	1.10	
	8/13/2020	20.92	21.90	0.98	
	9/15/2020	21.15	22.08	0.93	
	11/12/2020	21.25	21.90	0.65	
	12/2/2020	21.45	22.65	1.20	
	3/24/2021	21.45	22.20	0.75	
	6/8/2021	21.70	22.40	0.70	
	8/5/2021	20.65	21.70	1.05	
	9/21/2021	20.18	20.43	0.25	
	12/2/2021	20.98	21.44	0.46	
BH-66	7/26/2012	20.84	21.38	0.54	30.37
	12/20/2012	20.85	21.37	0.52	
	6/19/2013	20.92	21.53	0.61	
	12/12/2013	19.68	22.44	2.76	
	6/26/2014	19.56	22.58	3.02	
	12/18/2014	19.70	21.85	2.15	
	3/18/2015	20.34	22.57	2.23	
	6/8/2015	20.01	21.97	1.96	
	9/15/2015	20.82	21.32	0.50	
	12/16/2015	20.53	21.83	1.30	
	6/6/2016	21.01	21.36	0.35	
	9/25/2016	19.05	19.30	0.25	
	10/28/2016	19.91	21.20	1.29	
	12/11/2016	20.24	21.92	1.68	
	1/21/2017	20.60	21.40	0.80	
	2/19/2017	20.75	20.99	0.24	
	3/14/2017	20.84	21.15	0.31	
	4/20/2017	20.95	21.25	0.30	
	6/6/2017	20.84	21.32	0.48	
	9/19/2017	20.10	20.32	0.22	
	12/6/2017	20.55	22.30	1.75	
	1/24/2018	20.82	21.62	0.80	
	2/21/2018	20.95	21.35	0.40	
	3/15/2018	20.98	21.27	0.29	
	6/6/2018	21.13	21.73	0.60	
	7/17/2018	21.34	21.68	0.34	
	9/24/2018	20.55	20.66	0.11	
	10/10/2018	20.79	20.86	0.07	
	12/11/2018	20.40	21.80	1.40	
	1/23/2019	20.80	21.35	0.55	
	3/13/2019	21.00	21.35	0.35	
	6/26/2019	21.33	21.83	0.50	
	9/21/2019	21.48	21.85	0.37	
	12/3/2019	21.10	21.55	0.45	
	3/12/2020	20.60	21.22	0.62	
	5/20/2020	21.21	21.68	0.47	
	6/18/2020	21.42	22.07	0.65	
	8/13/2020	20.62	21.82	1.20	
	9/15/2020	21.70	22.80	1.10	
	11/12/2020	21.92	22.81	0.89	
	12/2/2020	21.98	23.66	1.68	
	3/24/2021	22.00	23.32	1.32	
	6/8/2021	21.98	22.98	1.00	
	8/5/2021	21.38	22.10	0.72	
	9/21/2021		21.02	0.00	
	12/2/2021	21.63	22.07	0.44	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-67	7/26/2012	20.11	20.85	0.74	26.50
	12/20/2012	20.07	21.04	0.97	
	6/19/2013	20.18	21.37	1.19	
	12/12/2013	19.21	20.08	0.87	
	6/26/2014	19.12	20.23	1.11	
	12/18/2014	19.27	19.97	0.70	
	3/18/2015	19.90	20.43	0.53	
	6/8/2015	19.57	19.86	0.29	
	9/15/2015	20.17	20.30	0.13	
	12/16/2015	20.01	20.07	0.06	
	6/6/2016	20.39	20.40	0.01	
	9/25/2016		21.59	0.00	
	10/28/2016		21.57	0.00	
	12/11/2016	19.78	20.08	0.30	
	1/21/2017	19.95	20.23	0.28	
	2/19/2017	20.07	20.27	0.20	
	3/14/2017	20.12	20.30	0.18	
	4/20/2017	20.25	20.40	0.15	
	6/6/2017	20.28	20.30	0.02	
	9/19/2017	19.40	19.52	0.12	
	12/6/2017	20.02	20.43	0.41	
	1/24/2018	20.20	20.40	0.20	
	2/21/2018		20.54	0.00	
	3/15/2018	22.30	22.32	0.02	
	6/6/2018		dry	0.00	
	7/17/2018		dry	0.00	
	9/24/2018		dry	0.00	
	10/10/2018		dry	0.00	
	12/11/2018	19.85	19.90	0.05	
	3/13/2019		dry	0.00	
	6/26/2019	20.60	20.88	0.28	
	9/21/2019	20.62	21.24	0.62	
	12/3/2019	20.40	20.85	0.45	
	3/12/2020	19.83	20.04	0.21	
	5/20/2020	20.58	21.00	0.42	
	6/18/2020	20.67	21.50	0.83	
	8/13/2020	20.83	22.20	1.37	
	9/15/2020	20.98	22.94	1.96	
	11/12/2020	21.15	22.45	1.30	
	12/2/2020	21.20	22.95	1.75	
	3/24/2021	21.34	22.50	1.16	
	6/8/2021	21.38	22.80	1.42	
	8/5/2021	20.80	20.92	0.12	
	9/21/2021	20.22	20.24	0.02	
	12/2/2021	20.95	21.20	0.25	
BH-80	7/26/2012	18.53	19.27	0.74	27.09
	12/20/2012	18.55	19.33	0.78	
	6/19/2013	18.60	19.63	1.03	
	12/12/2013	17.68	18.65	0.97	
	6/26/2014	17.59	18.60	1.01	
	12/18/2014	17.45	18.62	1.17	
	8/13/2015	18.29	19.02	0.73	
	6/8/2015	17.95	18.45	0.50	
	9/15/2015	18.53	19.00	0.47	
	12/16/2015	18.38	18.66	0.28	
	6/6/2016	18.81	18.82	0.01	
	9/25/2016		16.97	0.00	
	10/28/2016	17.95	17.96	0.01	
	12/11/2016		18.18	0.00	
	1/21/2017		18.38	0.00	
	2/19/2017		18.58	0.00	
	3/14/2017	18.54	18.62	0.08	
	4/20/2017	18.65	18.80	0.15	
	6/6/2017	19.02	19.40	0.38	
	9/19/2017	17.70	17.88	0.18	
	12/6/2017	18.40	18.70	0.30	
	1/24/2018	18.45	18.88	0.43	
	2/21/2018	18.65	18.95	0.30	
	3/15/2018	18.55	18.96	0.41	
	6/6/2018	18.70	19.04	0.34	
	7/17/2018	18.85	19.33	0.48	
	9/24/2018	18.30	18.55	0.25	
	10/10/2018	18.30	18.70	0.40	
	12/11/2018	18.10	18.55	0.45	
	3/13/2019	18.70	19.00	0.30	
	6/26/2019	18.90	19.00	0.10	
	9/21/2019	19.00	19.10	0.10	
	12/3/2019		18.88	0.00	
	3/12/2020		18.25	0.00	
	5/20/2020		18.88	0.00	
	6/18/2020		19.05	0.00	
	9/15/2020		19.50	0.00	
	12/2/2020		18.97	0.00	
	3/24/2021		19.80	0.00	
	6/8/2021		20.00	0.00	
	8/5/2021		20.01	0.00	
	9/21/2021		18.62	0.00	
	12/2/2021		19.02	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-88	7/26/2012	24.56	24.93	0.37	31.49
	12/20/2012	24.56	24.90	0.34	
	6/19/2013	24.68	25.18	0.50	
	12/12/2013	23.77	24.29	0.52	
	6/26/2014	23.57	24.02	0.45	
	12/18/2014	23.58	23.98	0.40	
	3/18/2015	24.29	24.62	0.33	
	6/9/2015	24.04	24.29	0.25	
	9/15/2015	24.50	24.60	0.10	
	12/16/2015		24.38	0.00	
	6/6/2016		24.94	0.00	
	9/25/2016		22.75	0.00	
	10/28/2016		23.74	0.00	
	12/11/2016		dry	0.00	
	1/21/2017		dry	0.00	
	2/19/2017		24.45	0.00	
	3/14/2017		25.15	0.00	
	4/20/2017		dry	0.00	
	6/6/2017		24.68	0.00	
	9/19/2017		23.88	0.00	
	12/6/2017		dry	0.00	
	1/24/2018		dry	0.00	
	2/21/2018		dry	0.00	
	3/15/2018		dry	0.00	
	6/6/2018		dry	0.00	
	7/17/2018		dry	0.00	
	9/24/2018		dry	0.00	
	10/10/2018		dry	0.00	
	12/11/2018		dry	0.00	
	3/13/2019		dry	0.00	
	6/26/2019		dry	0.00	
	9/21/2019		dry	0.00	
	12/3/2019		dry	0.00	
	3/12/2020		dry	0.00	
	5/20/2020		dry	0.00	
	6/18/2020		dry	0.00	
	9/15/2020		dry	0.00	
	12/2/2020		dry	0.00	
	3/24/2021		dry	0.00	
	6/8/2021		dry	0.00	
	8/5/2021		dry	0.00	
	9/21/2021		dry	0.00	
	12/2/2021		dry	0.00	
BH-91	7/26/2012	24.01	25.01	1.00	30.28
	12/20/2012	23.92	25.50	1.58	
	6/19/2013	23.01	26.01	3.00	
	12/12/2013	23.11	25.19	2.08	
	6/26/2014	22.94	24.81	1.87	
	12/18/2014	22.97	24.45	1.48	
	3/18/2015	23.68	25.08	1.40	
	6/9/2015	23.45	24.44	0.99	
	9/15/2015	24.00	24.40	0.40	
	12/16/2015	23.87	24.26	0.39	
	6/6/2016	24.22	24.69	0.47	
	9/25/2016		22.47	0.00	
	10/28/2016	23.28	23.40	0.12	
	12/11/2016	23.68	23.92	0.24	
	1/21/2017	21.90	22.04	0.14	
	2/19/2017	23.99	24.20	0.21	
	3/14/2017	24.04	24.18	0.14	
	4/20/2017	24.15	24.35	0.20	
	6/6/2017	24.25	24.35	0.10	
	9/19/2017	23.30	23.40	0.10	
	12/6/2017	23.98	24.40	0.42	
	1/24/2018	24.10	24.35	0.25	
	2/21/2018	20.20	20.32	0.12	
	3/15/2018		22.95	0.00	
	6/6/2018		24.38	0.00	
	7/17/2018	24.52	24.70	0.18	
	9/24/2018	23.50	23.87	0.37	
	10/10/2018	23.98	24.25	0.27	
	12/11/2018	23.85	23.98	0.13	
	3/13/2019	24.30	24.38	0.08	
	6/26/2019	24.55	24.60	0.05	
	9/21/2019	22.64	22.74	0.10	
	12/3/2019		24.40	0.00	
	3/12/2020		23.91	0.00	
	5/20/2020		24.45	0.00	
	6/18/2020		24.68	0.00	
	9/15/2020		25.03	0.00	
	12/2/2020		24.35	0.00	
	3/24/2021		25.32	0.00	
	6/8/2021		23.48	0.00	
	8/5/2021		dry	0.00	
	9/21/2021		24.22	0.00	
	12/2/2021		dry	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-103	7/26/2012	20.48	20.72	0.24	25.60
	12/20/2012	20.50	20.98	0.48	
	6/19/2013	20.38	22.35	1.97	
	12/12/2013	19.03	20.08	1.05	
	6/26/2014	18.97	20.94	1.97	
	12/18/2014	19.18	20.04	0.86	
	3/18/2015	19.82	20.44	0.62	
	6/8/2015	19.43	20.39	0.96	
	9/15/2015	20.08	20.12	0.04	
	12/16/2015	19.85	20.33	0.48	
	6/6/2016	20.29	20.44	0.15	
	9/25/2016		18.32	0.00	
	10/28/2016	19.23	19.55	0.32	
	12/11/2016		NM	0.00	
	1/21/2017	19.80	20.08	0.28	
	2/19/2017	19.95	20.18	0.23	
	3/14/2017		20.04	0.00	
	4/20/2017	20.15	20.35	0.20	
	6/6/2017	20.14	20.21	0.07	
	9/19/2017	19.25	19.35	0.10	
	12/6/2017	19.85	20.58	0.73	
	1/24/2018	20.02	20.78	0.76	
	2/21/2018	20.10	20.61	0.51	
	3/15/2018	20.35	20.50	0.15	
	6/6/2018	20.35	20.85	0.50	
	7/17/2018	21.30	22.38	1.08	
	9/24/2018	19.70	20.68	0.98	
	10/10/2018	19.92	20.22	0.30	
	12/11/2018	19.73	20.30	0.57	
	1/23/2019	20.03	20.73	0.70	
	3/13/2019	20.25	20.75	0.50	
	6/26/2019	20.40	21.32	0.92	
	9/21/2019	20.46	22.04	1.58	
	12/3/2019	20.30	20.75	0.45	
	3/12/2020	19.28	19.78	0.50	
	5/20/2020	20.40	20.62	0.22	
	6/18/2020	20.50	21.32	0.82	
	8/13/2020	20.61	21.60	0.99	
	9/15/2020	20.72	22.68	1.96	
	11/12/2020	20.87	22.51	1.64	
	12/2/2020	20.94	22.20	1.26	
	3/24/2021	21.25	21.80	0.55	
	6/8/2021	21.38	21.62	0.24	
	8/5/2021	20.48	21.08	0.60	
	9/21/2021	20.18	20.22	0.04	
	12/2/2021	20.82	21.02	0.20	
BH-104	7/26/2012	20.23	21.64	1.41	24.74
	12/20/2012	20.12	22.45	2.33	
	6/19/2013	20.21	22.61	2.40	
	12/12/2013	19.46	20.08	0.62	
	6/26/2014	19.38	20.99	1.61	
	12/18/2014	19.45	19.89	0.44	
	3/18/2015	20.21	20.38	0.17	
	6/8/2015	19.86	20.07	0.21	
	9/15/2015	20.37	20.89	0.52	
	12/16/2015	20.25	20.50	0.25	
	6/6/2016	20.23	22.29	2.06	
	9/25/2016	17.70	17.81	0.11	
	10/28/2016	19.65	19.71	0.06	
	12/11/2016	19.98	20.03	0.05	
	1/21/2017	20.20	20.28	0.08	
	2/19/2017	20.32	20.42	0.10	
	3/14/2017	20.40	20.55	0.15	
	4/20/2017	20.40	21.40	1.00	
	6/6/2017	20.56	20.97	0.41	
	9/19/2017	19.68	19.73	0.05	
	12/6/2017	20.38	20.45	0.07	
	1/24/2018	20.48	20.74	0.26	
	2/21/2018	20.60	20.78	0.18	
	3/15/2018	20.48	21.04	0.56	
	6/6/2018	20.58	21.08	0.50	
	7/17/2018	20.78	22.24	1.46	
	9/24/2018	20.05	20.45	0.40	
	10/10/2018	20.30	20.70	0.40	
	12/11/2018	20.12	20.50	0.38	
	3/13/2019	21.40	23.15	1.75	
	6/26/2019	20.78	21.12	0.34	
	9/21/2019	21.05	21.18	0.13	
	12/3/2019	20.65	21.06	0.41	
	3/12/2020	20.22	20.65	0.43	
	5/20/2020	20.78	21.24	0.46	
	6/18/2020	20.98	21.45	0.47	
	8/13/2020	21.20	21.84	0.64	
	9/15/2020	21.35	21.68	0.33	
	11/12/2020	21.53	21.68	0.15	
	12/2/2020	21.70	22.02	0.32	
	3/24/2021	21.72	22.05	0.33	
	6/8/2021	21.80	22.00	0.20	
	8/5/2021	20.95	21.43	0.48	
	9/21/2021		20.58	0.00	
	12/2/2021	21.25	21.30	0.05	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-107	7/26/2012	21.21	21.50	0.29	26.77
	12/20/2012	21.23	21.81	0.58	
	6/19/2013	20.28	21.35	1.07	
	12/12/2013	20.45	20.82	0.37	
	6/26/2014	20.28	21.23	0.95	
	12/18/2014	20.21	20.31	0.10	
	3/18/2015	21.43	22.05	0.62	
	6/8/2015	20.67	20.95	0.28	
	9/15/2015	21.10	22.25	1.15	
	12/16/2015	20.89	22.18	1.29	
	6/6/2016	21.28	22.34	1.06	
	9/25/2016	19.40	20.30	0.90	
	10/28/2016	20.40	20.44	0.04	
	12/11/2016	20.84	20.95	0.11	
	1/21/2017	21.02	21.27	0.25	
	2/19/2017	21.14	21.37	0.23	
	3/14/2017	21.15	21.62	0.47	
	4/20/2017	21.22	21.98	0.76	
	6/6/2017	21.30	21.70	0.40	
	9/19/2017		20.45	0.00	
	12/6/2017		21.10	0.00	
	1/24/2018	21.25	21.78	0.53	
	2/21/2018	21.30	21.77	0.47	
	3/15/2018	21.34	21.68	0.34	
	6/6/2018	21.51	21.55	0.04	
	7/17/2018	21.70	21.92	0.22	
	9/24/2018	20.93	20.99	0.06	
	10/10/2018	21.15	21.17	0.02	
	12/11/2018	20.98	20.99	0.01	
	3/13/2019	21.40	21.95	0.55	
	6/26/2019		21.70	0.00	
	9/21/2019	21.80	22.00	0.20	
	12/3/2019	21.50	21.85	0.35	
	3/12/2020		21.38	0.00	
	5/20/2020	22.20	22.28	0.08	
	6/18/2020	22.38	22.60	0.22	
	9/15/2020	22.58	23.47	0.89	
	11/12/2020	22.22	22.65	0.43	
	12/2/2020	22.08	23.28	1.20	
	3/24/2021	22.40	23.18	0.78	
	6/8/2021	22.40	23.58	1.18	
	8/5/2021	21.60	22.40	0.80	
	9/21/2021		21.32	0.00	
	12/2/2021	21.97	22.05	0.08	
BH-111	7/26/2012	21.36	22.90	1.54	27.14
	12/20/2012	21.38	23.19	1.81	
	6/19/2013	21.48	23.52	2.04	
	12/12/2013	20.73	21.63	0.90	
	6/26/2014	20.65	21.42	0.77	
	12/18/2014	20.61	20.96	0.35	
	3/18/2015	21.21	22.30	1.09	
	6/8/2015	20.94	21.71	0.77	
	9/15/2015	21.36	23.00	1.64	
	12/16/2015	21.26	22.30	1.04	
	6/6/2016	21.48	23.53	2.05	
	9/25/2016	19.78	20.02	0.24	
	10/28/2016	20.67	21.24	0.57	
	12/11/2016	21.10	21.80	0.70	
	1/21/2017	21.25	22.37	1.12	
	2/19/2017	21.35	22.60	1.25	
	3/14/2017	21.38	22.62	1.24	
	4/20/2017	21.47	22.93	1.46	
	6/6/2017	21.48	23.00	1.52	
	9/19/2017	20.78	21.05	0.27	
	12/6/2017	21.38	22.28	0.90	
	1/24/2018	21.48	22.88	1.40	
	2/21/2018	21.50	22.92	1.42	
	3/15/2018	21.53	22.95	1.42	
	6/6/2018	21.64	22.58	0.94	
	7/17/2018	21.80	23.48	1.68	
	9/24/2018	21.18	22.02	0.84	
	10/10/2018	21.30	22.23	0.93	
	12/11/2018	21.11	22.20	1.09	
	1/23/2019	21.48	21.74	0.26	
	3/13/2019	21.60	22.90	1.30	
	6/26/2019	21.90	23.08	1.18	
	9/21/2019	22.04	23.00	0.96	
	12/3/2019	21.72	23.07	1.35	
	3/12/2020	21.30	21.82	0.52	
	5/20/2020	21.80	22.80	1.00	
	6/18/2020	22.08	22.80	0.72	
	8/13/2020	22.32	23.21	0.89	
	9/15/2020	22.38	23.47	1.09	
	11/12/2020	22.58	23.37	0.79	
	12/2/2020	22.02	23.62	1.60	
	3/24/2021	22.80	23.37	0.57	
	6/8/2021	22.84	23.90	1.06	
	8/5/2021	22.03	22.44	0.41	
	9/21/2021		21.62	0.00	
	12/2/2021	22.30	22.48	0.18	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
BH-114	7/26/2012	20.85	21.29	0.44	27.44
	12/20/2012	20.66	22.55	1.89	
	6/19/2013	20.73	23.05	2.32	
	12/12/2013	20.10	20.50	0.40	
	6/26/2014	20.00	20.40	0.40	
	12/18/2014	19.91	19.98	0.07	
	3/18/2015	21.00	21.01	0.01	
	6/8/2015	20.27	20.65	0.00	
	9/15/2015	20.78	21.42	0.64	
	12/16/2015	20.63	21.10	0.47	
	6/6/2016	20.84	22.39	1.55	
	9/25/2016	18.93	19.18	0.25	
	10/28/2016	19.98	20.23	0.25	
	12/11/2016	20.48	20.60	0.12	
	1/21/2017	20.65	20.85	0.20	
	2/19/2017	20.80	21.08	0.28	
	3/14/2017	21.84	22.08	0.24	
	4/20/2017	20.92	21.38	0.46	
	6/6/2017	21.02	21.38	0.36	
	9/19/2017	17.03	17.24	0.21	
	12/6/2017		20.78	0.00	
	1/24/2018	20.90	21.40	0.50	
	2/21/2018	20.95	21.55	0.60	
	3/15/2018	21.49	21.68	0.19	
	6/6/2018	21.28	21.48	0.20	
	7/17/2018	21.20	22.28	1.08	
	9/24/2018	20.54	21.03	0.49	
	10/10/2018	20.77	21.03	0.26	
	12/11/2018	20.60	20.74	0.14	
	3/13/2019	21.05	21.75	0.70	
	6/26/2019	21.30	21.98	0.68	
	9/21/2019	21.41	21.92	0.51	
	12/3/2019	21.15	21.30	0.15	
	3/12/2020	20.80	21.09	0.29	
	5/20/2020	20.98	21.25	0.27	
	6/18/2020	21.38	21.72	0.34	
	8/13/2020	21.63	21.84	0.21	
	9/15/2020	21.75	22.14	0.39	
	11/12/2020	21.90	22.09	0.19	
	12/2/2020	21.90	22.02	0.12	
	3/24/2021	22.10	22.17	0.07	
	6/8/2021	22.18	22.44	0.26	
	8/5/2021		21.38	0.00	
	9/21/2021		20.78	0.00	
	12/2/2021		21.65	0.00	
MRW-2	6/19/2013	19.42	19.62	0.20	35.20
	12/12/2013	17.64	18.50	0.86	
	6/26/2014	17.63	17.76	0.13	
	12/18/2014	17.60	17.80	0.20	
	3/18/2015	18.25	18.60	0.35	
	6/8/2015	17.94	18.42	0.48	
	9/15/2015	18.40	18.99	0.59	
	12/16/2015	18.25	18.87	0.62	
	6/6/2016	18.65	19.44	0.79	
	9/25/2016	16.70	16.95	0.25	
	10/28/2016	17.61	17.80	0.19	
	12/11/2016	18.10	18.19	0.09	
	1/21/2017	18.30	18.38	0.08	
	2/19/2017	18.40	18.50	0.10	
	3/14/2017	18.48	18.52	0.04	
	4/20/2017	18.55	18.68	0.13	
	6/6/2017	18.57	18.67	0.10	
	9/19/2017		17.70	0.00	
	12/6/2017		18.40	0.00	
	1/24/2018	18.58	18.70	0.12	
	2/21/2018		18.75	0.00	
	3/15/2018		18.60	0.00	
	6/6/2018		20.46	0.00	
	7/17/2018	19.01	19.02	0.01	
	9/24/2018	18.20	18.28	0.08	
	10/10/2018	18.41	18.42	0.01	
	12/11/2018	18.20	18.28	0.08	
	3/13/2019		18.70	0.00	
	6/26/2019	18.95	19.00	0.05	
	9/21/2019		19.08	0.00	
	12/3/2019		18.75	0.00	
	3/12/2020		18.72	0.00	
	5/20/2020		18.80	0.00	
	6/18/2020	18.04	18.84	0.80	
	9/15/2020	19.20	19.28	0.08	
	11/12/2020		19.65	0.00	
	12/2/2020		18.75	0.00	
	3/24/2021		19.04	0.00	
	6/8/2021		19.80	0.00	
	8/5/2021		19.69	0.00	
	9/21/2021		18.28	0.00	
	12/2/2021		19.22	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
MRW-3	6/19/2013	19.10	20.02	0.92	34.98
	12/12/2013	17.44	18.26	0.82	
	6/26/2014	17.92	17.99	0.07	
	12/18/2014	17.39	17.45	0.06	
	3/18/2015	18.03	18.3	0.27	
	6/8/2015	17.64	18.06	0.42	
	9/15/2015	18.15	19.06	0.91	
	12/16/2015	18.01	18.8	0.79	
	6/6/2016	18.33	19.43	1.10	
	9/25/2016	16.42	17.00	0.58	
	10/28/2016	17.54	17.74	0.20	
	12/11/2016	17.90	18.02	0.12	
	1/21/2017	18.08	18.15	0.07	
	2/19/2017	18.22	18.32	0.10	
	3/14/2017	18.24	18.38	0.14	
	4/20/2017	18.35	18.5	0.15	
	6/6/2017	18.39	18.5	0.11	
	9/19/2017		17.48	0.00	
	12/6/2017		18.18	0.00	
	1/24/2018	18.32	18.50	0.18	
	2/21/2018		18.72	0.00	
	3/15/2018	18.38	18.61	0.23	
	6/6/2018		20.42	0.00	
	7/17/2018	17.63	17.64	0.01	
	9/24/2018	17.87	18.18	0.31	
	10/10/2018	18.18	18.23	0.05	
	12/11/2018	17.60	17.70	0.10	
	3/13/2019	18.45	18.90	0.45	
	6/26/2019	18.70	18.95	0.25	
	9/21/2019	18.85	18.98	0.13	
	12/3/2019	18.50	18.62	0.12	
	3/12/2020		18.02	0.00	
	5/20/2020		18.63	0.00	
	6/18/2020	18.80	18.92	0.12	
	9/15/2020		19.20	0.00	
	12/2/2020		18.54	0.00	
	3/24/2021		19.64	0.00	
	6/8/2021		19.70	0.00	
	8/5/2021		19.45	0.00	
	9/21/2021		18.33	0.00	
	12/2/2021		19.54	0.00	
MRW-4	6/19/2013	18.68	20.63	1.95	34.72
	12/12/2013	16.94	18.35	1.41	
	6/26/2014	16.69	18.22	1.53	
	12/18/2014	16.92	17.72	0.80	
	3/18/2015	17.52	18.57	1.05	
	6/8/2015	17.17	18.11	0.94	
	9/15/2015	17.85	18.2	0.35	
	12/16/2015	17.70	17.98	0.28	
	6/6/2016	17.91	19.05	1.14	
	9/25/2016	16.04	16.64	0.60	
	10/28/2016	17.09	17.32	0.23	
	12/11/2016	17.45	17.65	0.20	
	1/21/2017	17.7	17.8	0.10	
	2/19/2017	17.72	17.86	0.14	
	3/14/2017	17.2	17.55	0.35	
	4/20/2017	17.95	18.1	0.15	
	6/6/2017	17.99	18.03	0.04	
	9/19/2017		17.10	0.00	
	12/6/2017	17.78	17.98	0.20	
	1/24/2018	17.92	18.15	0.23	
	2/21/2018	18.00	18.12	0.12	
	3/15/2018	18.00	18.09	0.09	
	6/6/2018		18.14	0.00	
	7/17/2018	18.07	19.20	1.13	
	9/24/2018	17.58	17.93	0.35	
	10/10/2018	17.80	17.88	0.08	
	12/11/2018	17.60	17.70	0.10	
	3/13/2019	18.10	18.30	0.20	
	6/26/2019	18.35	18.40	0.05	
	9/21/2019	18.40	18.90	0.50	
	12/3/2019	18.15	18.38	0.23	
	3/12/2020	17.60	17.82	0.22	
	5/20/2020	18.15	18.18	0.03	
	6/18/2020	18.41	18.62	0.21	
	9/15/2020	18.78	19.18	0.40	
	11/12/2020	19.05	19.25	0.20	
	12/2/2020	19.05	20.01	0.96	
	3/24/2021	19.00	20.05	1.05	
	6/8/2021	19.12	19.82	0.70	
	8/5/2021	18.40	18.62	0.22	
	9/21/2021	17.97	17.98	0.01	
	12/2/2021	20.15	20.42	0.27	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
MRW-5	6/19/2013	17.80	20.80	3.00	35.40
3638.48	12/12/2013	16.29	18.98	2.69	
	6/26/2014	16.59	16.73	0.14	
	12/18/2014	16.60	16.68	0.08	
	3/18/2015	17.20	17.50	0.30	
	6/8/2015	16.80	17.40	0.60	
	9/15/2015	17.37	18.15	0.78	
	12/16/2015	17.17	18.13	0.96	
	6/6/2016	17.46	19.08	1.62	
	9/25/2016	13.15	17.50	4.35	
	10/28/2016	16.63	17.16	0.53	
	12/11/2016	17.03	17.35	0.32	
	1/21/2017	17.28	17.50	0.22	
	2/19/2017	17.72	17.86	0.14	
	3/14/2017	17.87	17.92	0.05	
	4/20/2017	17.50	17.75	0.25	
	6/6/2017	17.54	17.71	0.17	
	9/19/2017	16.70	16.80	0.10	
	12/6/2017	17.35	17.55	0.20	
	1/24/2018	17.47	17.88	0.41	
	2/21/2018	17.55	17.88	0.33	
	3/15/2018	17.58	17.88	0.30	
	6/6/2018	17.72	17.84	0.12	
	7/17/2018	17.80	18.80	1.00	
	9/24/2018	17.02	18.02	1.00	
	10/10/2018	17.31	17.70	0.39	
	12/11/2018	17.15	17.40	0.25	
	3/13/2019	17.40	18.35	0.95	
	6/26/2019	17.85	18.60	0.75	
	9/21/2019	18.08	18.60	0.52	
	12/3/2019	17.70	18.20	0.50	
	3/12/2020	17.02	18.62	1.60	
	5/20/2020	17.60	18.04	0.44	
	6/18/2020	17.95	18.47	0.52	
	8/13/2020	18.18	19.23	1.05	
	9/15/2020	18.28	19.10	0.82	
	11/12/2020	18.42	19.12	0.70	
	12/2/2020	18.45	20.44	1.99	
	3/24/2021	18.66	19.29	0.63	
	6/8/2021	19.80	20.03	0.23	
	8/5/2021	17.90	18.92	1.02	
	9/21/2021	17.46	17.48	0.02	
	12/2/2021	19.96	20.02	0.06	
MRW-6	6/19/2013	20.08	20.30	0.22	33.43
	12/12/2013	16.59	16.82	0.23	
	6/26/2014	16.49	16.58	0.09	
	12/18/2014	16.51	16.61	0.10	
	3/18/2015	17.14	17.20	0.06	
	6/8/2015	16.77	16.90	0.13	
	9/15/2015		17.35	0.00	
	12/16/2015		17.20	0.00	
	6/6/2016	17.54	17.55	0.01	
	9/25/2016		15.64	0.00	
	10/28/2016		16.62	0.00	
	12/11/2016		16.95	0.00	
	1/21/2017		17.18	0.00	
	2/19/2017	17.3	17.32	0.02	
	3/14/2017		17.33	0.00	
	4/20/2017	18.44	18.45	0.01	
	6/6/2017	18.17	18.18	0.01	
	9/19/2017		16.60	0.00	
	12/6/2017	17.18	17.20	0.02	
	1/24/2018	16.90	17.02	0.12	
	2/21/2018		18.67	0.00	
	3/15/2018		17.52	0.00	
	6/6/2018		17.68	0.00	
	7/17/2018	17.80	18.09	0.29	
	9/24/2018		17.05	0.00	
	10/10/2018	17.75	17.76	0.01	
	12/11/2018	17.09	17.10	0.01	
	3/13/2019		17.60	0.00	
	6/26/2019		17.85	0.00	
	9/21/2019		17.97	0.00	
	12/3/2019		17.65	0.00	
	3/12/2020		17.08	0.00	
	5/20/2020		17.49	0.00	
	6/18/2020		17.91	0.00	
	9/15/2020		18.30	0.00	
	12/2/2020		17.76	0.00	
	3/24/2021		18.68	0.00	
	6/8/2021		18.78	0.00	
	8/5/2021		18.45	0.00	
	9/21/2021		17.88	0.00	
	12/2/2021		19.10	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
MRW-7	6/19/2013	19.40	19.41	0.01	33.20
	12/12/2013	16.10	16.12	0.02	
	6/26/2014	15.92	16.35	0.43	
	12/18/2014	16.04	16.14	0.10	
	3/18/2015	16.60	17.09	0.49	
	6/8/2015	16.23	16.62	0.39	
	9/15/2015	16.78	17.08	0.30	
	12/16/2015	16.60	17.21	0.61	
	6/6/2016	16.95	17.45	0.50	
	9/25/2016	15.29	15.61	0.32	
	10/28/2016	16.13	16.26	0.13	
	12/11/2016	16.45	16.62	0.17	
	1/21/2017	16.64	16.7	0.06	
	2/19/2017	16.80	16.87	0.07	
	3/14/2017	16.81	16.84	0.03	
	4/20/2017	16.95	17.00	0.05	
	6/6/2017	16.98	17.00	0.02	
	9/19/2017	16.10	16.14	0.04	
	12/6/2017	16.75	16.82	0.07	
	1/24/2018	16.90	17.02	0.12	
	2/21/2018		15.25	0.00	
	3/15/2018		17.25	0.00	
	6/6/2018		17.15	0.00	
	7/17/2018		17.2	0.00	
	9/24/2018		16.52	0.00	
	10/10/2018	16.69	16.7	0.01	
	12/11/2018	16.70	16.9	0.20	
	3/13/2019		17.05	0.00	
	6/26/2019		16.34	0.00	
	9/21/2019		16.65	0.00	
	12/3/2019		17.08	0.00	
	3/12/2020		16.57	0.00	
	5/20/2020		17.11	0.00	
	6/18/2020		17.43	0.00	
	9/15/2020	17.88	18.15	0.27	
	12/2/2020		17.18	0.00	
	3/24/2021		18.18	0.00	
	6/8/2021		18.28	0.00	
	8/5/2021		18.11	0.00	
	9/21/2021		17.67	0.00	
	12/2/2021		18.34	0.00	
MRW-14	6/19/2013	25.25	25.35	0.10	38.50
	12/12/2013	21.90	22.12	0.22	
	6/26/2014	21.69	21.89	0.20	
	12/18/2014	21.73	21.81	0.08	
	3/18/2015	22.39	22.56	0.17	
	6/8/2015	22.10	22.29	0.19	
	9/15/2015	22.55	22.8	0.25	
	12/16/2015		22.44	0.00	
	6/6/2016	22.81	22.93	0.12	
	9/25/2016		19.88	0.00	
	10/28/2016		21.29	0.00	
	12/11/2016		22.24	0.00	
	1/21/2017		23.45	0.00	
	2/19/2017		22.62	0.00	
	3/14/2017		22.6	0.00	
	4/20/2017		22.7	0.00	
	6/6/2017		22.7	0.00	
	9/19/2017		22.08	0.00	
	12/6/2017		22.62	0.00	
	1/24/2018		22.80	0.00	
	2/21/2018		23.03	0.00	
	3/15/2018		22.79	0.00	
	6/6/2018	23.90	23.93	0.03	
	7/17/2018	23.06	23.07	0.01	
	9/24/2018	TRACE	22.32	0.00	
	10/10/2018		22.70	0.00	
	12/11/2018		22.38	0.00	
	3/13/2019		22.66	0.00	
	6/26/2019		22.34	0.00	
	9/21/2019		23.30	0.00	
	12/3/2019		22.90	0.00	
	3/12/2020		22.19	0.00	
	5/20/2020		22.58	0.00	
	6/18/2020		23.16	0.00	
	9/15/2020		23.58	0.00	
	12/2/2020		22.85	0.00	
	3/24/2021		23.95	0.00	
	6/8/2021		24.08	0.00	
	8/5/2021		23.18	0.00	
	9/21/2021		22.88	0.00	
	12/2/2021		23.87	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
MW-1	7/26/2012		22.02	0.00	38.77
	12/20/2012		22.27	0.00	
	6/23/2013		22.32	0.00	
	12/12/2013		21.30	0.00	
	6/26/2014		21.10	0.00	
	12/18/2014		21.50	0.00	
	3/18/2015		22.08	0.00	
	6/9/2015		21.67	0.00	
	12/16/2015		22.01	0.00	
	6/6/2016		22.46	0.00	
	12/13/2016		21.82	0.00	
	6/7/2017		22.40	0.00	
	12/6/2017		22.20	0.00	
	3/15/2018		20.35	0.00	
	6/6/2018		22.48	0.00	
	9/24/2018		21.92	0.00	
	12/11/2018		21.95	0.00	
	3/13/2019		22.53	0.00	
	6/26/2019		22.68	0.00	
	9/21/2019		22.84	0.00	
	12/3/2019		22.55	0.00	
	3/14/2020		21.80	0.00	
	6/18/2029		22.87	0.00	
	9/15/2020		23.24	0.00	
	12/2/2020		23.41	0.00	
	3/24/2021		23.58	0.00	
	6/8/2021		23.82	0.00	
	9/21/2021		22.12	0.00	
	12/2/2021		23.04	0.00	
MW-3	7/26/2012		21.72	0.00	37.52
	12/20/2012		21.75	0.00	
	6/23/2013		21.10	0.00	
	12/12/2013		21.10	0.00	
	6/26/2014		20.97	0.00	
	12/18/2014		20.55	0.00	
	3/18/2015		21.42	0.00	
	6/9/2015		21.14	0.00	
	12/16/2015		21.48	0.00	
	6/6/2016		21.86	0.00	
	12/13/2016		21.27	0.00	
	6/7/2017		21.83	0.00	
	12/6/2017		21.58	0.00	
	3/15/2018		21.17	0.00	
	6/6/2018		21.98	0.00	
	9/24/2018		21.43	0.00	
	12/11/2018		21.54	0.00	
	3/13/2019		21.90	0.00	
	6/26/2019		22.11	0.00	
	9/21/2019		22.25	0.00	
	12/3/2019		24.95	0.00	
	3/14/2020		21.33	0.00	
	6/18/2020		22.14	0.00	
	9/15/2020		22.82	0.00	
	12/2/2020		22.85	0.00	
	3/24/2021		22.77	0.00	
	6/8/2021		22.97	0.00	
	9/21/2021		21.65	0.00	
	12/2/2021		22.33	0.00	
MW-5	7/26/2012		24.00	0.00	39.36
	12/20/2012		23.99	0.00	
	6/23/2013		21.36	0.00	
	12/12/2013		23.33	0.00	
	6/26/2014		23.13	0.00	
	12/18/2014		23.05	0.00	
	3/18/2015		23.69	0.00	
	6/9/2015		23.44	0.00	
	12/16/2015		23.68	0.00	
	6/6/2016		24.11	0.00	
	12/13/2016		23.50	0.00	
	6/7/2017		24.07	0.00	
	12/6/2017		23.87	0.00	
	3/15/2018		23.95	0.00	
	6/6/2018		24.19	0.00	
	9/24/2018		23.69	0.00	
	12/11/2018		23.67	0.00	
	3/13/2019		24.10	0.00	
	6/26/2019		24.32	0.00	
	9/21/2019		24.49	0.00	
	12/3/2019		24.14	0.00	
	3/14/2020		23.73	0.00	
	6/18/2020		24.40	0.00	
	9/15/2020		24.51	0.00	
	12/2/2020		24.66	0.00	
	3/24/2021		25.08	0.00	
	6/8/2021		25.30	0.00	
	9/21/2021		23.93	0.00	
	12/2/2021		24.63	0.00	

Appendix A- Historical Fluid Levels
HollyFrontier- North Monument
Lea County, New Mexico

Well ID	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod Thick (feet)	TD (ft-bmp)
MW-6	7/26/2012		16.42	0.00	32.62
	12/20/2012		17.50	0.00	
	6/23/2013		19.78	0.00	
	12/12/2013		16.80	0.00	
	6/26/2014		16.63	0.00	
	12/18/2014		16.10	0.00	
	3/18/2015		17.11	0.00	
	6/8/2015		16.76	0.00	
	12/16/2015		17.18	0.00	
	6/6/2016		17.58	0.00	
	1/21/2017		16.92	0.00	
	6/7/2017		17.54	0.00	
	12/6/2017		17.21	0.00	
	3/15/2018		17.50	0.00	
	6/6/2018		17.72	0.00	
	9/24/2018		17.12	0.00	
	12/11/2018		17.12	0.00	
	3/13/2019		17.63	0.00	
	6/26/2019		17.81	0.00	
	9/21/2019		18.01	0.00	
	12/3/2019		17.68	0.00	
	3/14/2020		17.16	0.00	
	6/18/2020		17.88	0.00	
	9/15/2020		18.24	0.00	
	12/2/2020		18.39	0.00	
	3/24/2021		18.51	0.00	
	6/8/2021		18.79	0.00	
	9/21/2021		17.38	0.00	
	12/2/2021		18.03	0.00	
MW-7	7/26/2012		18.84	0.00	32.27
	12/20/2012		18.93	0.00	
	6/23/2013		19.08	0.00	
	12/12/2013		18.16	0.00	
	6/26/2014		17.93	0.00	
	12/18/2014		17.70	0.00	
	3/18/2015		18.59	0.00	
	6/9/2015		18.25	0.00	
	12/16/2015		18.62	0.00	
	6/6/2016		18.59	0.00	
	12/13/2016		18.35	0.00	
	6/7/2017		18.95	0.00	
	12/6/2017		18.67	0.00	
	3/15/2018		18.92	0.00	
	6/6/2018		19.16	0.00	
	9/24/2018		18.67	0.00	
	12/11/2018		18.55	0.00	
	3/13/2019		19.03	0.00	
	6/26/2019		19.24	0.00	
	9/21/2019		19.39	0.00	
	12/3/2019		19.04	0.00	
	3/14/2020		18.58	0.00	
	6/18/2020		19.24	0.00	
	9/15/2020		19.65	0.00	
	12/2/2020		19.80	0.00	
	3/24/2021		19.89	0.00	
	6/8/2021		20.12	0.00	
	9/21/2021		18.78	0.00	
	12/2/2021		19.42	0.00	

ft-bmp = feet-below measuring point

Appendix B

Summary of Historical Groundwater Data

Appendix B - Summary of Historical Groundwater Data
HollyFrontier- North Monument - Lea County, New Mexico

Monitoring Well	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH-GRO (mg/L)	TPH_DRO (mg/L)	Depth to Water (ft bmp)	Groundwater Elevation (ft-msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)
MW-1	10/21/2002	<2	<2	<2	<6									
MP =	12/27/2002	<2	<2	<2	<6									
3,670.05	5/21/2003	<2	<2	<2	<6									
	10/15/2003	<2	<2	<2	<6									
	3/15/2004	<2	<2	<2	<6									
	10/8/2004	<2	<2	<2	<6									
	1/12/2005	<2	<2	<2	<6									
	10/24/2005	<2	<2	<2	<6									
	3/7/2006	<2	<2	<2	<6									
	6/27/2006	<2	<2	<2	<6									
	9/7/2006	<0.5	<0.5	<0.5	<1.0									
	12/19/2006	<0.5	<0.5	<0.5	<1.0									
	3/13/2007	<0.5	<0.5	<0.5	<1.0									
	6/21/2007	<0.5	<0.5	<0.5	<1.0									
	9/21/2007	<0.5	<0.5	<0.5	<1.0									
	12/6/2007	<0.5	<0.5	<0.5	<1.0									
	3/4/2008	<0.5	<0.5	<0.5	<1.0									
	6/3/2008	<0.5	<0.5	<0.5	<1.0									
	9/23/2008	<0.5	<0.5	<0.5	<1.0									
	12/22/2008	<0.5	<0.5	<0.5	<1.0									
	3/12/2009	<0.5	<0.5	<0.5	<1.0									
	6/23/2009	<1.0	<1.0	<1.0	<2.0									
	9/8/2009	<1.0	<1.0	<1.0	<2.0									
	12/17/2009	<1.0	<1.0	<1.0	<2.0									
	3/9/2010	<1.0	<1.0	<1.0	<1.5									
	6/16/2010	<1.0	<1.0	<1.0	<2.0									
	8/30/2010	<1.0	<1.0	<1.0	<2.0									
	12/6/2010	<1.0	<1.0	<1.0	<2.0									
	3/18/2011	<1.0	<1.0	<1.0	<2.0									
	6/23/2011	<1.0	<1.0	<1.0	<2.0									
	10/7/2011	<1.0	<1.0	<1.0	<2.0									
	12/8/2011	<1.0	<1.0	<1.0	<2.0									
	12/18/2012	<1.0	<2.0	<1.0	<2.0			22.27	3,647.78	20.1	0.954	0.5	6.77	-278
	6/23/2013	<1.0	<2.0	<1.0	<2.0			22.32	3,647.73	22.0	1.086	0.25	6.65	303.7
duplicate	6/23/2013	<1.0	<2.0	<1.0	<2.0			22.32	3,647.73	22.0	1.086	0.25	6.65	303.7
	12/12/2013	<1.0	<2.0	<1.0	<2.0			21.3	3,648.75	19.87	1.23	0.97	7.37	51
	6/26/2014	<1.0	<2.0	<1.0	<2.0			21.1	3,648.95	21.8	1.033	3.4	7.03	-62.6
duplicate	6/26/2014	<1.0	<2.0	<1.0	<2.0			21.1	3,648.95	21.8	1.033	3.4	7.03	-62.6
	12/11/2014	<1.0	<2.0	<1.0	<1.0	<0.10	0.098	21.5	3,648.55	19.1	1.062	1.15	6.95	96.5
	6/11/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.10	21.67	3,648.38	21.9	1.978	1.2	6.74	71.8
	12/15/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.10	22.01	3,648.04	16.9	1.084	1.54	7.13	212.1
	6/7/2016	<1.0	<2.0	<1.0	<1.0	<0.10	0.157	22.46	3,647.59	27.2	1.778	1.43	6.75	86.6
	12/13/2016	<1.0	<2.0	<1.0	<2.0	<0.06	0.125	21.82	3,648.23	19.4	1.37	2.43	7.47	74.8
	6/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.104	22.40	3,647.65	19.5	1.168	2.5	7.11	116.9
duplicate	6/6/2017	<1.0	<2.0	<1.0	<2.0	NA	NA	22.40	3,647.65	19.5	1.168	2.5	7.11	116.9
	12/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.202	22.20	3,647.85	17.5	1.098	2.66	6.97	106.3
	3/15/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0763	20.35	3,649.70	18.9	1.067	2.2	7.01	91.2
duplicate	3/15/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0761	20.35	3,649.70	18.9	1.067	2.2	7.01	91.2
	6/5/2018	<1.0	<2.0	<1.0	<2.0	0.075	<0.0751	22.48	3,647.57	23.2	1.003	1.9	7.22	101.6
	9/24/2018	<1.0	<2.0	<1.0	<2.0	<0.06	0.088	21.92	3,648.13	20.4	1.665	2.2	7.23	98.6
	12/11/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0757	21.95	3,648.10	18.1	1.223	2.44	7.07	44.3
	3/12/2019	<1.0	<2.0	<1.0	<2.0	<0.06	0.104	22.53	3,647.52	19.2	1.116	1.98	6.89	101.2
	6/26/2019	<1.0	<2.0	<1.0	<2.0	<0.06	0.094	22.68	3,647.37	22.9	1.324	2.13	7.29	89.7
	9/22/2019	<1.0	<2.0	<1.0	<2.0	<0.06	0.186	22.84	3,647.21	21.4	1.116	2.26	7.17	52.6
	12/3/2019	<1.0	<2.0	<1.0	<2.0	<0.06	0.096	22.55	3,647.50	18.6	1.228	2.02	7.2	110.3
	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.156	21.80	3,648.25	19.6	1.114	1.98	7.26	88.6
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147	22.87	3,647.18	22.7	1.306	2.33	7.09	99.6
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147	23.24	3,646.81	23.6	1.223	2.01	7.26	101.2
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153	23.41	3,646.64	19.2	1.016	1.88	7.07	67
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.160	23.58	3,646.47	20.3	1.298	2.02	7.12	56.4
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	23.82	3,646.23	22.8	1.116	2.13	7.23	93.7
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554	22.12	3,647.93	23.4	1.223	2.22	7.08	88.6
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.154	23.04	3,647.01	21.8	1.312	1.98	7.33	102.1

Appendix B - Summary of Historical Groundwater Data
HollyFrontier- North Monument - Lea County, New Mexico

Monitoring Well	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH-GRO (mg/L)	TPH_DRO (mg/L)	Depth to Water (ft bmp)	Groundwater Elevation (ft-msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)
MW-3	10/21/2002	<2	<2	<2	<6									
MP =	12/27/2002	<2	<2	<2	<6									
3,666.41	5/21/2003	<2	<2	<2	<6									
	10/15/2003	<2	<2	<2	<6									
	3/15/2004	10	<2	<2	<6									
	10/8/2004	19	<2	<2	<6									
	1/12/2005	43	<2	<2	<6									
	10/24/2005	80	<2	<2	<6									
	3/7/2006	25.7	<2.00	<2.00	7.1									
	6/27/2006	<2.00	<2.00	<2.00	<6.00									
	9/7/2006	8.2	<0.5	<0.5	<1.0									
	12/19/2006	23	<0.5	<0.5	<1.0									
	3/13/2007	35	<0.5	<0.5	<1.0									
	6/21/2007	1.6	<0.5	<0.5	<1.0									
	9/21/2007	<0.5	<0.5	<0.5	<1.0									
	12/6/2007	0.6	<0.5	<0.5	<1.0									
	3/4/2008	<0.5	<0.5	<0.5	<1.0									
	6/3/2008	<0.5	<0.5	<0.5	<1.0									
	9/23/2008	<0.5	<0.5	<0.5	<1.0									
	12/22/2008	<0.5	<0.5	<0.5	<1.0									
	3/12/2009	<0.5	<0.5	<0.5	<1.0									
	6/23/2009	<1.0	<1.0	<1.0	<2.0									
	9/8/2009	<1.0	<1.0	<1.0	<2.0									
	12/17/2009	<1.0	<1.0	<1.0	<2.0									
	3/9/2010	<1.0	<1.0	<1.0	<1.5									
	6/16/2010	<1.0	<1.0	<1.0	<2.0									
	8/30/2010	<1.0	<1.0	<1.0	<2.0									
	12/6/2010	<1.0	<1.0	<1.0	<2.0									
	3/18/2011	<1.0	<1.0	<1.0	<2.0									
	6/23/2011	<1.0	<1.0	<1.0	<2.0									
	10/7/2011	<1.0	<1.0	<1.0	<2.0									
	12/8/2011	<1.0	<1.0	<1.0	<2.0									
	12/18/2012	<1.0	<2.0	<1.0	<2.0			21.75	3,644.66	20.4	1.465	0.84	6.84	-391
	6/23/2013	<1.0	<2.0	<1.0	<2.0			21.10	3,645.31	21.4	1.691	1.4	6.66	184
	12/12/2013	<1.0	<2.0	<1.0	<2.0			21.75	3,644.66	19.87	1.23	0.97	7.37	51
	6/26/2014	<1.0	<2.0	<1.0	<2.0			16.55	3,649.86	22.4	1.426	1.1	7.74	9.8
	12/11/2014	<1.0	<2.0	<1.0	<1.0	<0.10	<0.09	20.55	3,645.86	19.16	1.478	1.21	6.73	-6.2
duplicate	12/11/2014	<1.0	<2.0	<1.0	<1.0	0.069	<0.09	20.55	3,645.86	19.16	1.478	1.21	6.73	-6.2
	6/11/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.09	23.99	3,642.42	25.93	1.534	0.36	6.82	-31.7
	12/15/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.104	21.48	3,644.93	17.75	1.535	1.2	7.05	56.9
	6/7/2016	<1.0	<2.0	<1.0	<1.0	<0.10	<0.09	21.86	3,644.55	22.96	1.583	2.44	7.31	74.8
	12/13/2016	<1.0	<2.0	<1.0	<2.0	<0.06	0.108	21.27	3,645.14	19.85	1.978	2.59	7.29	1.3
	6/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.092	21.83	3,644.58	19.3	1.563	3.79	7.07	92.2
	12/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.164	21.58	3,644.83	19.12	1.416	2.89	6.86	26.6
	3/15/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0758	21.17	3,645.24	20.6	1.302	3.06	6.93	-2
	6/5/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0752	21.98	3,644.43	23.6	1.466	1.96	7.11	89.6
duplicate	6/5/2018	<1.0	<2.0	<1.0	<2.0	0.070	<0.0765	21.98	3,644.43	23.6	1.466	1.96	7.11	89.6
	9/24/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0754	21.43	3,644.98	22.8	1.399	2.02	6.98	67.7
duplicate	9/24/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0766	21.43	3,644.98	22.8	1.399	2.02	6.98	67.7
	12/11/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0758	21.54	3,644.87	19.98	1.422	2.65	7.08	32.1
	3/12/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0754	21.90	3,644.51	21.7	1.298	2.76	7.13	77.2
	6/26/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0796	22.11	3,644.30	23.2	1.326	2.02	7.22	90.1
	9/22/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0741	22.25	3,644.16	22.6	1.402	1.92	6.92	44.6
	12/3/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0744	24.95	3,641.46	19.2	1.265	2.22	7.14	52.3
	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.151	21.33	3,645.08	21.4	1.299	2.54	7.07	88.6
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	22.14	3,644.27	23.6	1.304	2.33	7.26	33.1
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	22.82	3,643.59	22.9	1.505	1.88	7.01	89.6
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	22.85	3,643.56	19.4	1.367	2.02	7.13	78.1
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	22.77	3,643.64	20.6	1.229	2.44	7.2	88.6
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	22.97	3,643.44	21.9	1.457	2.13	7.22	68.7
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554	21.65	3,644.76	22.6	1.443	1.98	7.02	77.6
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153	22.33	3,644.08	20.2	1.212	2.03	7.32	88.7

Appendix B - Summary of Historical Groundwater Data
HollyFrontier- North Monument - Lea County, New Mexico

Monitoring Well	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH-GRO (mg/L)	TPH_DRO (mg/L)	Depth to Water (ft bmp)	Groundwater Elevation (ft-msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)
MW-5	12/30/2002	<2	<2	<2	<6									
MP =	5/21/2003	<2	<2	<2	<6									
3,670.43	10/15/2003	45	<2	<2	<6									
	11/6/2003	70	<2	<2	<6									
	3/16/2004	56	<2	<2	<6									
	10/8/2004	55	<2	<2	<6									
	1/12/2005	<2	<2	<2	<6									
	10/24/2005	<2	<2	<2	<6									
	3/7/2006	<2.00	<2.00	<2.00	<6.00									
	6/27/2006	<2.00	<2.00	<2.00	<6.00									
	9/7/2006	<0.5	<0.5	<0.5	<1.0									
	12/19/2006	<0.5	<0.5	<0.5	<1.0									
	3/13/2007	<0.5	<0.5	<0.5	<1.0									
	6/21/2007	<0.5	<0.5	<0.5	<1.0									
	9/21/2007	<0.5	<0.5	<0.5	<1.0									
	12/6/2007	<0.5	<0.5	<0.5	<1.0									
	3/4/2008	<0.5	<0.5	<0.5	<1.0									
	6/3/2008	<0.5	<0.5	<0.5	<1.0									
	9/23/2008	<0.5	<0.5	<0.5	<1.0									
	12/22/2008	<0.5	<0.5	<0.5	<1.0									
	3/12/2009	<0.5	<0.5	<0.5	<1.0									
	6/23/2009	<1.0	<1.0	<1.0	<2.0									
	9/8/2009	<1.0	<1.0	<1.0	<2.0									
	12/17/2009	<1.0	<1.0	<1.0	<2.0									
	3/9/2010	<1.0	<1.0	<1.0	<1.5									
	6/16/2010	<1.0	<1.0	<1.0	<2.0									
	8/30/2010	<1.0	<1.0	<1.0	<2.0									
	12/6/2010	<1.0	<1.0	<1.0	<2.0									
	3/18/2011	<1.0	<1.0	<1.0	<2.0									
	6/23/2011	<1.0	<1.0	<1.0	<2.0									
	10/7/2011	<1.0	<1.0	<1.0	<2.0									
	12/8/2011	<1.0	<1.0	<1.0	<2.0									
	12/18/2012	<1.0	<2.0	<1.0	<2.0			23.99	3,646.44	19.9	1.417	0.72	6.77	-322
duplicate	12/18/2012	<1.0	<2.0	<1.0	<2.0			23.99	3,646.44	19.9	1.417	0.72	6.77	-322
	6/23/2013	<1.0	<2.0	<1.0	<2.0			21.36	3,649.07	23.2	1.69	0.96	6.7	226.2
	12/12/2013	<1.0	<2.0	<1.0	<2.0			23.33	3,647.10	20.77	1.85	1.28	7.21	44.0
	6/26/2014	<1.0	<2.0	<1.0	<2.0			16.23	3,654.20	23.6	1.482	2.8	7.65	44.5
	12/11/2014	<1.0	<2.0	<1.0	<1.0	0.0622	<0.10	23.05	3,647.38	18.66	1.65	2.07	6.74	73.4
	6/11/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.09	19.78	3,650.65	26.84	1.711	0.42	6.78	-13.3
duplicate	6/11/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.09	19.78	3,650.65	26.84	1.711	0.42	6.78	-13.3
	12/15/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.104	23.68	3,646.75	17.66	1.645	1.34	7.05	195.1
	6/7/2016	<1.0	<2.0	<1.0	<1.0	<0.10	<0.106	24.11	3,646.32	24.97	1.894	1.12	7.54	37.1
	12/13/2016	<1.0	<2.0	<1.0	<2.0	<0.06	0.105	23.50	3,646.93	19.92	1.976	4.36	7.41	46.4
duplicate	12/13/2016	<1.0	<2.0	<1.0	<2.0	<0.06	<0.08	23.50	3,646.93	19.92	1.976	4.36	7.41	46.4
	6/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.114	24.07	3,646.36	19.39	1.549	1.8	7.09	127.9
	12/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0757	23.87	3,646.56	18.6	1.234	0.96	6.83	98.6
duplicate	12/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.112	23.87	3,646.56	18.6	1.234	0.96	6.83	98.6
	3/15/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0754	23.95	3,646.48	21.5	1.643	1.1	7.26	23.6
	6/5/2018	<1.0	<2.0	<1.0	<2.0	0.070	<0.0753	24.19	3,646.24	23.8	1.708	1.8	7.14	56.1
	9/24/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0752	23.69	3,646.74	20.7	1.687	1.01	7.06	44.4
	12/11/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0755	23.67	3,646.76	19.9	1.778	1.11	6.96	23.6
	3/12/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0751	24.10	3,646.33	19.9	1.676	0.88	7.12	88.6
duplicate	3/12/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0753	24.10	3,646.33	19.9	1.676	0.88	7.12	88.6
	6/26/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0791	24.32	3,646.11	22.6	1.381	1.34	7.22	74.5
duplicate	6/26/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0783	24.32	3,646.11	22.6	1.381	1.34	7.22	74.5
	9/22/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0747	24.49	3,645.94	21.8	1.778	0.9	6.87	33.6
duplicate	9/22/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0736	24.49	3,645.94	21.8	1.778	0.9	6.87	33.6
	12/3/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0790	24.14	3,646.29	20.1	1.543	1.13	7.01	101.6
duplicate	12/3/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0794	24.14	3,646.29	20.1	1.543	1.13	7.01	101.6
	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	23.73	3,646.70	21.6	1.226	1.26	6.92	98.6
duplicate	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	23.73	3,646.70	21.6	1.226	1.26	6.92	98.6
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	24.40	3,646.03	22.3	1.607	1.32	7.18	55.6
duplicate	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.147	24.40	3,646.03	22.3	1.607	1.32	7.18	55.6
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	0.262	24.51	3,645.92	23.8	1.404	1.21	7.29	89.7
duplicate	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	0.308	24.51	3,645.92	23.8	1.404	1.21	7.29	89.7
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	24.66	3,645.77	20.2	1.386	1.33	7.06	102
duplicate	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.151	24.66	3,645.77	20.2	1.386	1.33	7.06	102
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	25.08	3,645.35	21.6	1.229	1.1	6.98	99.7
duplicate	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	25.08	3,645.35	21.6	1.229	1.1	6.98	99.7
	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	25.30	3,645.13	22.4	1.587	1.45	7.11	104.7
duplicate	6/8/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	25.30	3,645.13	22.4	1.587	1.45	7.11	104.7
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.554	23.93	3,646.50	23.2	1.488	1.2	7.08	89.7
duplicate	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.555	23.93	3,646.50	23.2	1.488	1.2	7.08	89.7
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.153	24.63	3,645.80	20.7	1.345	1.11	7.12	97.6
duplicate	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.150	24.63	3,645.80	20.7	1.345	1.11	7.12	97.6

Appendix B - Summary of Historical Groundwater Data
HollyFrontier- North Monument - Lea County, New Mexico

Monitoring Well	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH-GRO (mg/L)	TPH_DRO (mg/L)	Depth to Water (ft bmp)	Groundwater Elevation (ft-msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)
MW-6	6/3/2008	2.7	1.3	49	53									
MP =	9/23/2008	2.0	0.9	47	9.6									
3,660.50	12/22/2008	2.0	0.6	28	3.1									
	3/12/2009	1.4	<0.5	18	2.2									
	6/23/2009	1.4	<1.0	19	<2.0									
	9/8/2009	2.2	<1.0	18	<2.0									
	12/17/2009	1.1	<1.0	12	<2.0									
	3/9/2010	<1.0	<1.0	17	<1.5									
	6/16/2010	1.0	<1.0	16	<2.0									
	8/30/2010	**20**	<1.0	31	<2.0									
	12/6/2010	7.3	<1.0	20	<2.0									
	3/18/2011	3.2	<1.0	16	2.5									
	6/23/2011	2.7	<1.0	25	<2.0									
	10/7/2011	1.7	<1.0	20	<2.0									
	12/8/2011	2.2	<1.0	27	<2.0									
	12/18/2012	2.56	<2.0	84.4	<2.0			17.50	3,643.00	21.3	1.053	0.55	6.67	-384
	6/23/2013	<1.0	<2.0	<1.0	<2.0			19.78	3,640.72	23.0	1.169	0.13	6.62	-87.4
	12/12/2013	4.74	<2.0	<1.0	<2.0			16.80	3,643.70	21.42	1.33	2.02	6.83	-124
	6/26/2014	<1.0	<2.0	<1.0	<2.0			16.02	3,644.48	21.3	0.98	1.3	6.78	-65.7
	12/11/2014	**11.5**	<2.0	0.35	<1.0	1.15	0.499	16.10	3,644.40	20.2	1.142	0.68	6.64	-79.8
	6/11/2015	2.28	<2.0	<1.0	<1.0	<0.10	0.368	18.16	3,642.34	23.2	1.183	0.33	6.71	-84.34
	12/15/2015	1.16	<2.0	<1.0	<1.0	1.66	0.655	17.18	3,643.32	18.5	1.18	0.85	6.95	-10
	6/7/2016	0.610	<2.0	<1.0	<1.0	0.779	0.714	17.58	3,642.92	25.4	1.471	1.05	6.47	-82.4
	1/24/2017	8.25	<2.0	<1.0	<2.0	1.31	1.41	16.92	3,643.58	18.2	1.273	1.22	6.92	-54
	6/6/2017	2.61	<2.0	<1.0	<2.0	1.71	0.951	17.54	3,642.96	19.3	1.198	1.78	7.03	-5.5
	12/6/2017	3.69	<2.0	<1.0	<2.0	0.856	5.27	17.21	3,643.29	18.9	1.262	0.98	6.88	-1.2
	3/15/2018	1.84	<2.0	<1.0	<2.0	1.03	1.18	17.50	3,643.00	20.6	1.231	1,1	6.93	16.7
	6/5/2018	0.980	<2.0	<1.0	<2.0	1.07	1.30	17.72	3,642.78	24.3	1.065	0.89	7.14	-23.1
	9/24/2018	0.372	<2.0	<1.0	<2.0	1.04	3.09	17.12	3,643.38	22.5	1.187	1.2	7.07	-22
	12/11/2018	<1.0	<2.0	<1.0	<2.0	0.883	1.66	17.12	3,643.38	19.8	1.265	0.98	6.88	12.6
	3/12/2019	<1.0	<2.0	<1.0	<2.0	0.562	0.939	17.63	3,642.87	20.2	1,333	1.11	7.12	-12
	6/26/2019	<1.0	<2.0	<1.0	<2.0	0.977	0.567	17.81	3,642.69	23.9	1.132	1.23	7.18	-88
	9/22/2019	<1.0	<2.0	<1.0	<2.0	0.862	1.27	18.01	3,642.49	22.6	1.112	0.88	7.07	22.6
	12/3/2019	<1.0	<2.0	<1.0	<2.0	0.837	1.29	17.68	3,642.82	21.9	1.078	1.1	6.97	-18
	3/14/2020	<1.0	<2.0	<1.0	<2.0	0.775	1.08	17.16	3,643.34	20.6	1.206	0.92	7.22	-22
	6/18/2020	<1.0	<2.0	<1.0	<2.0	0.444	0.706	17.88	3,642.62	23.2	1.322	1.01	7.06	13.1
	9/15/2020	<1.0	<2.0	<1.0	<2.0	1.02	1.01	18.24	3,642.26	22.9	1.226	1.25	7.13	33.6
	12/2/2020	<1.0	<2.0	<1.0	<2.0	0.901	0.785	18.39	3,642.11	19.8	1.116	0.97	7.09	22.9
	3/24/2021	<1.0	<2.0	<1.0	<2.0	0.950	0.714	18.51	3,641.99	20.6	1.219	1.14	7.21	33.2
	6/8/2021	<1.0	<2.0	<1.0	<2.0	0.983	0.523	18.79	3,641.71	22.3	1.299	1.01	7.19	44.6
	9/21/2021	<1.0	<2.0	<1.0	<2.0	0.539	0.822	17.38	3,643.12	22.9	1.321	1.33	7.22	12.2
	12/2/2021	<1.0	<2.0	<1.0	<2.0	0.550	0.407	18.03	3,642.47	21.1	1.168	1.22	7.04	33.2

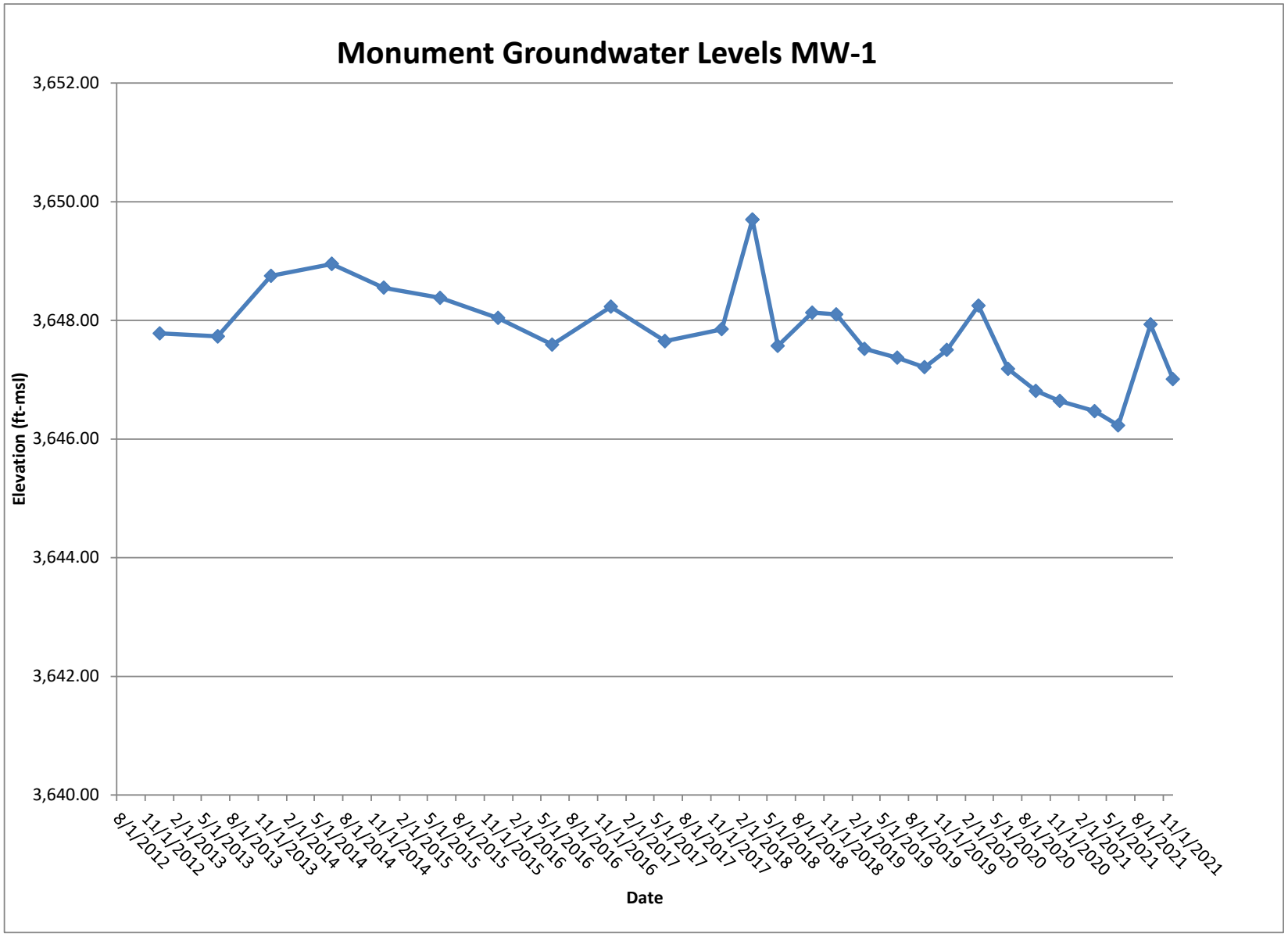
Appendix B - Summary of Historical Groundwater Data
HollyFrontier- North Monument - Lea County, New Mexico

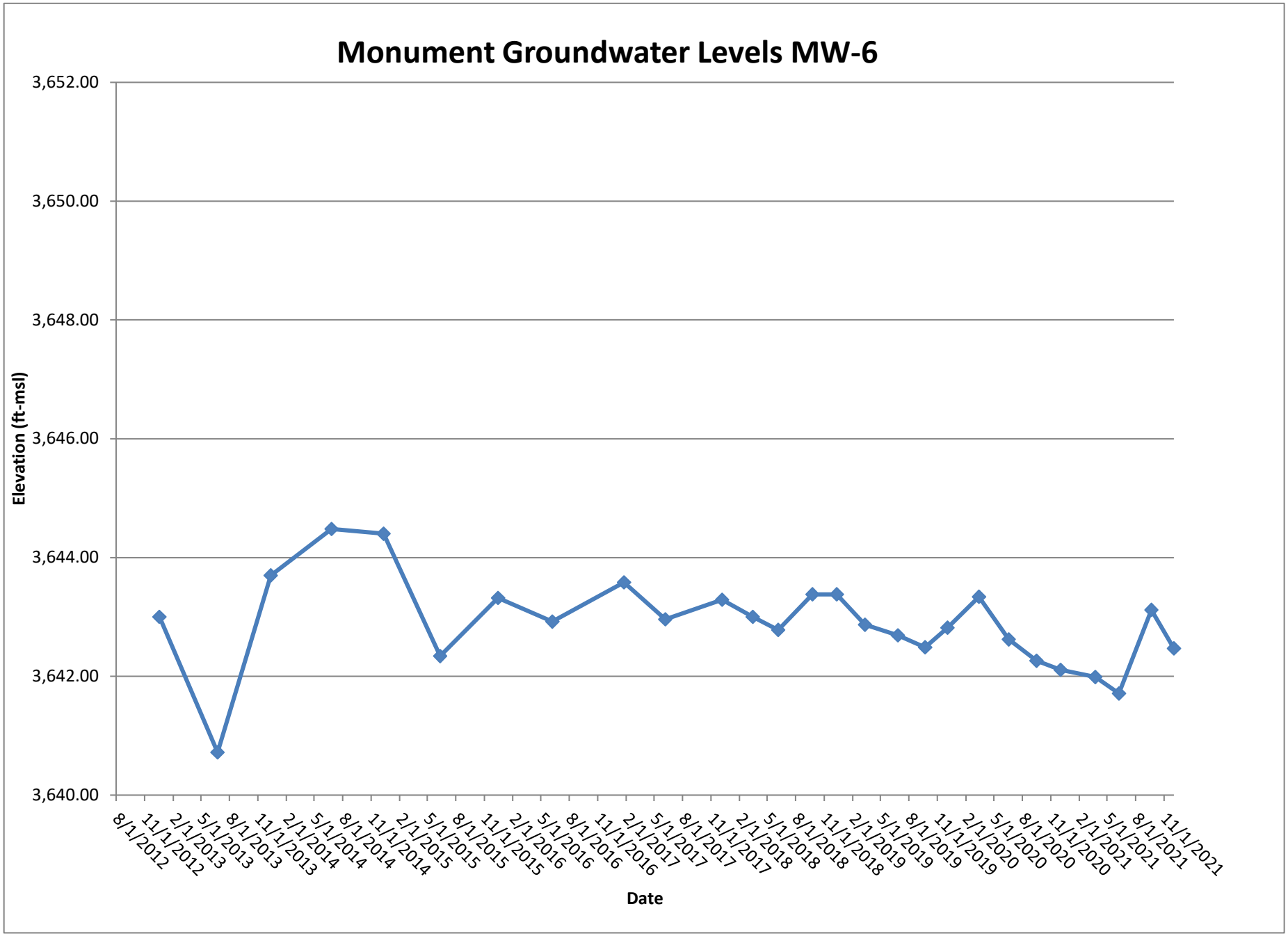
Monitoring Well	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH-GRO (mg/L)	TPH_DRO (mg/L)	Depth to Water (ft bmp)	Groundwater Elevation (ft-msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)
MW-7	6/3/2008	0.9	0.6	1.5	1.7									
3,662.47	9/23/2008	0.5	<0.5	0.8	1.9									
	12/22/2008	<0.5	<0.5	0.8	1									
	3/12/2009	<0.5	<0.5	0.9	1.6									
	6/23/2009	<1.0	<1.0	<1.0	<2.0									
	9/8/2009	<1.0	<1.0	1.4	<2.0									
	12/17/2009	<1.0	<1.0	1	<2.0									
	3/9/2010	<1.0	<1.0	<1.0	<1.5									
	6/16/2010	<1.0	<1.0	<1.0	<2.0									
	8/30/2010	1.7	<1.0	1.8	<2.0									
	12/6/2010	<1.0	<1.0	<1.0	<2.0									
	3/18/2011	<1.0	<1.0	<1.0	<2.0									
	6/23/2011	<1.0	<1.0	<1.0	<2.0									
	10/7/2011	<1.0	<1.0	<1.0	<2.0									
	12/8/2011	<1.0	<1.0	1.7	<2.0									
	12/18/2012	0.24	<2.0	<1.0	<2.0			18.93	3,643.54	19.9	0.856	0.47	6.77	-400
	6/23/2013	<1.0	<2.0	<1.0	<2.0			19.08	3,643.39	22.4	0.996	0.4	6.79	185.7
	12/12/2013	0.32	<2.0	0.37	<2.0			18.16	3,644.31	20.76	1.11	2.38	6.6	-73
duplicate	12/12/2013	0.31	<2.0	0.39	<2.0			18.16	3,644.31	20.76	1.11	2.38	6.6	-73
	6/26/2014	<1.0	<2.0	<1.0	<2.0			17.73	3,644.74	21.7	1.28	0.909	6.93	-18.4
	12/11/2014	0.400	<2.0	<1.0	<1.0	0.115	<0.10	17.70	3,644.77	20.42	0.974	1.22	6.76	-22.0
duplicate	12/11/2014	0.380	<2.0	<1.0	<1.0	0.073	<0.09	17.70	3,644.77	20.42	0.974	1.22	6.76	-22.0
	6/11/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.10	18.25	3,644.22	22.32	0.963	0.35	6.8	-1.1
	12/15/2015	<1.0	<2.0	<1.0	<1.0	<0.10	<0.10	18.62	3,643.85	18.22	0.966	0.42	7.11	52.3
	6/7/2016	<1.0	<2.0	<1.0	<1.0	<0.10	<0.10	18.59	3,643.88	26.16	1.408	0.9	7.76	-55.2
	12/13/2016	<1.0	<2.0	<1.0	<2.0	<0.06	0.127	18.35	3,644.12	20.1	1.26	2.1	7.42	19.8
	6/6/2017	<1.0	<2.0	<1.0	<2.0	<0.06	0.159	18.95	3,643.52	19.5	0.997	3.3	7.16	80.7
	12/6/2017	<1.0	<2.0	<1.0	<2.0	0.089	0.456	18.67	3,643.80	18.6	0.921	1,1	6.92	-11.6
	3/15/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0756	18.92	3,643.55	20.1	1.162	0.98	7.07	22.1
	6/5/2018	<1.0	<2.0	<1.0	<2.0	0.070	<0.0761	19.16	3,643.31	25.6	0.975	1.6	6.89	18.1
	9/24/2018	<1.0	<2.0	<1.0	<2.0	0.070	0.101	18.67	3,643.80	24.2	1.077	2.02	6.93	24.6
	12/11/2018	<1.0	<2.0	<1.0	<2.0	0.077	<0.0753	18.55	3,643.92	20.1	0.987	1.34	7.23	19.6
duplicate	12/11/2018	<1.0	<2.0	<1.0	<2.0	<0.06	<0.0757	18.55	3,643.92	20.1	0.987	1.34	7.23	19.6
	3/12/2019	<1.0	<2.0	<1.0	<2.0	0.124	<0.0757	19.03	3,643.44	21.6	1.116	0.88	7.16	33.1
	6/26/2019	<1.0	<2.0	<1.0	<2.0	0.095	<0.0794	19.24	3,643.23	22.3	1.012	1.12	7.08	76.5
	9/22/2019	<1.0	<2.0	<1.0	<2.0	<0.06	0.154	19.39	3,643.08	24.2	0.976	1.86	6.94	33.4
	12/3/2019	<1.0	<2.0	<1.0	<2.0	<0.06	<0.155	19.04	3,643.43	21.6	1.117	1.57	7.03	23.2
	3/14/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	18.58	3,643.89	20.9	0.992	0.98	7.2	64.3
	6/18/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.148	19.24	3,643.23	23.8	1.206	1.22	7.03	55.6
	9/15/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	19.65	3,642.82	24.6	0.982	1.01	7.14	44.3
	12/2/2020	<1.0	<2.0	<1.0	<2.0	<0.06	<0.149	19.80	3,642.67	21.1	1.114	0.97	7.22	87.6
	3/24/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.152	19.89	3,642.58	20.3	1.198	1.1	7.08	56.4
	6/8/2021	<1.0	<2.0	<1.0	<2.0	0.101	<0.148	20.12	3,642.35	22.6	1.234	1.23	7.19	75.4
	9/21/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.555	18.78	3,643.69	23.6	1.387	1.18	7.23	44.4
	12/2/2021	<1.0	<2.0	<1.0	<2.0	<0.06	<0.155	19.42	3,643.05	21.8	1.637	1.02	7.22	56.7
		5	**1000**	**700**	**620**	NE	NE							

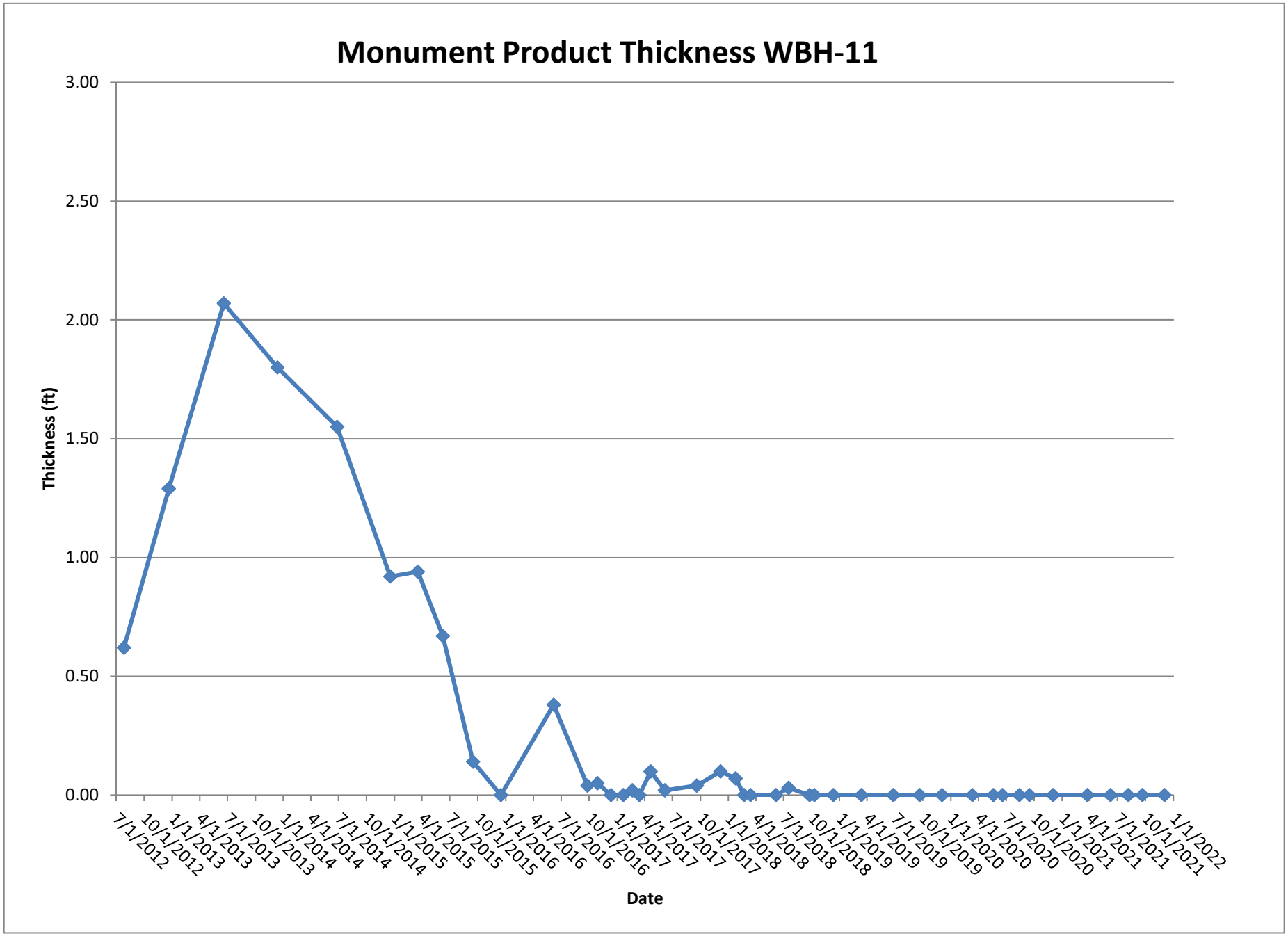
BOLD = Exceeds New Mexico Water Quality Commission (NMWQC) Standard
µg/L = micrograms/Liter
mg/L = milligrams/Liter
ft-bmp = feet - below measuring point
ft-msl = feet - mean sea level
deg-C = degrees Celcius
mS/cm = milliSiemens/ centimeter
mV = millivolts
DO = Dissolved Oxygen
ORP = oxygen reduiction potential
< = analyte not detected above reporting limit
BTEX = Benzene, Toluene, Ethylbenzene & Total Xylenes
BTEX analyzed by Method 8260C
TPH-GRO = total petroleum hydrocarbons- gasoline range organics
TPH-DRO = total petroleum hydrocarbons- diesel gasoline range organics
TPH-GRO analyzed by Method 8015V
TPH-DRO analyzed by Method 8015D
NA = not analyzed
NE= Not Established

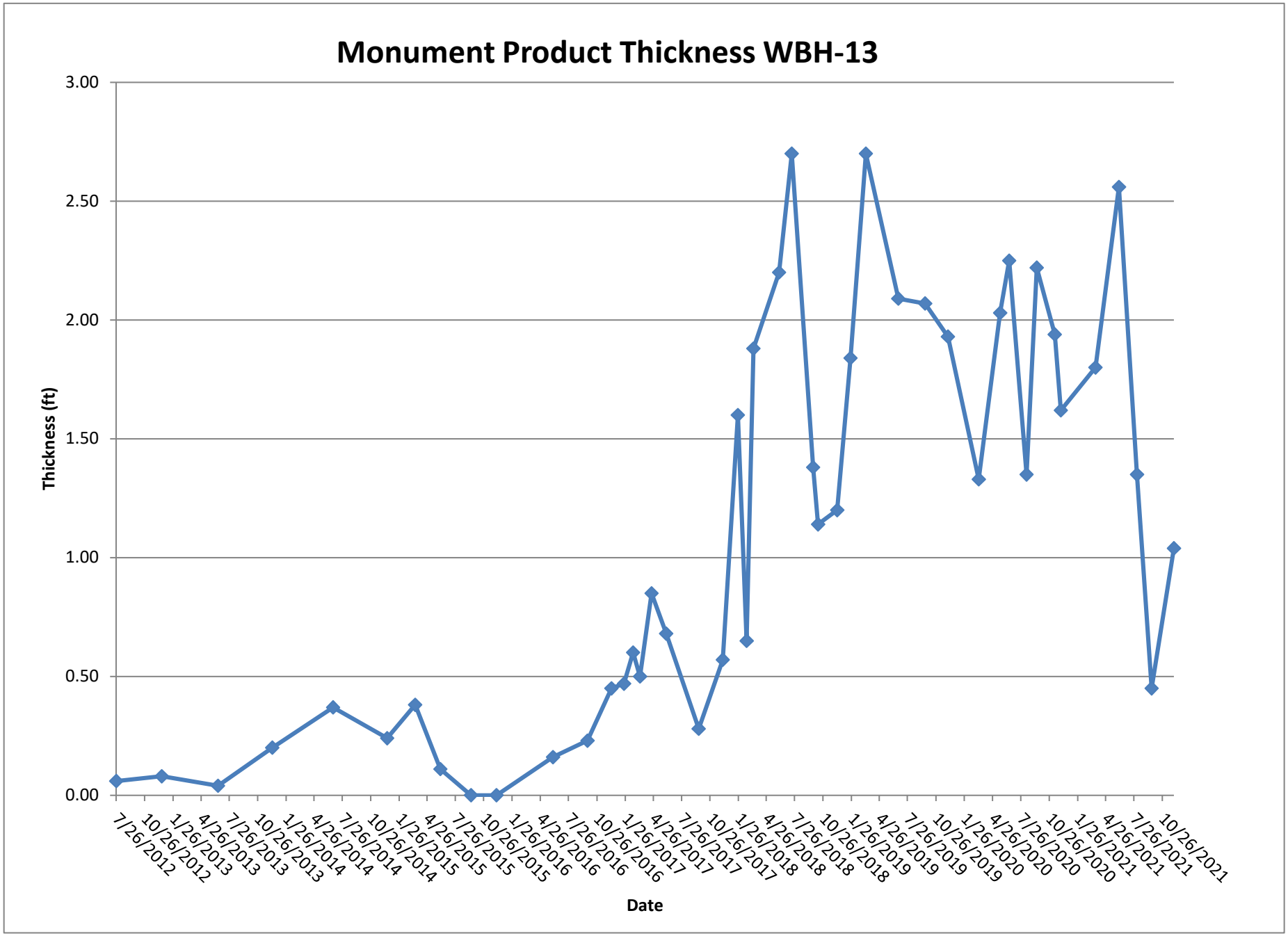
Appendix C

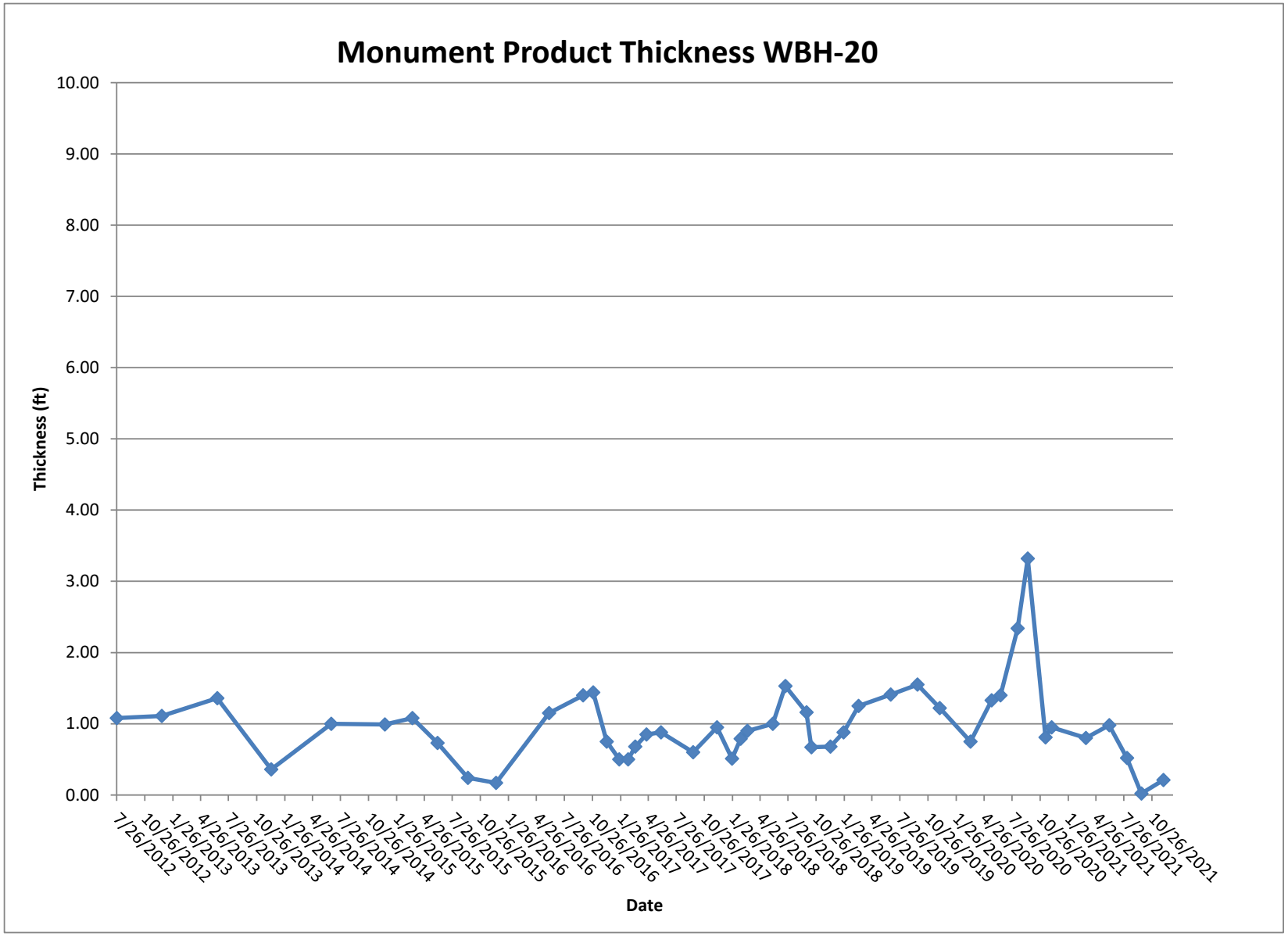
Graphs











Appendix D
Laboratory Reports

March 26, 2020

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX (432) 686-0186

Order No.: 2003141

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 3/17/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 81247
CHAIN-OF-CUSTODY

CLIENT: GHD
ADDRESS: 14988 W 6TH AVE #800 GOLDEN
PHONE: 3039416156 FAX/E-MAIL: BRAD.STEPHENSON@GHD.COM
DATA REPORTED TO: BSTEPHENSON
ADDITIONAL REPORT COPIES TO: JCLOUD

DATE: 3/16/2020 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2003141
PROJECT LOCATION OR NAME: MONUMENT
CLENT PROJECT #: 078802 COLLECTOR: BSTEPHENSON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☑ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO (METHOD 8015) ☑ DRO (METHOD 8105) ☑	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☑ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☑ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☑ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☑ TSS ☐ % MOISTURE ☐ CYANIDE ☐	FIELD NOTES
MW-1	01	3/14/2020	1000	W		10						X	X					X	X	X			X					
MW-3	02		0930	W		10						X	X					X	X	X			X					
MW-5	03		0845	W		10						X	X					X	X	X			X					
MW-5D	04		0845	W		10						X	X					X	X	X			X					
MW-6	05		1100	W		10						X	X					X	X	X			X					
MW-7	06	3/14/20	1030	W		10						X	X					X	X	X			X					
TRIP	07					1						X	X GHD															

RELINQUISHED BY: (Signature) DATE/TIME 3/16/20 1030 RECEIVED BY: (Signature) TO FEDEX
RELINQUISHED BY: (Signature) DATE/TIME 3.17.20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 9:15 RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return 3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.6 2.8 5.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☑ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD | Date Received: 3/17/2020

Work Order Number 2003141 | Received by: JH

Checklist completed by: [signature] Signature | 3/17/2020 Date | Reviewed by [initials] Initials | 3/17/2020 Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.6 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *26-Mar-20*

CLIENT: GHD
Project: Monument
Lab Order: 2003141

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition, E300 and Standard Methods.

For DRO analysis an MS/MSD was not performed due to insufficient sample volume. An LCS/LCSD was performed instead.

For GRO analysis (batch 95602) an MS/MSD was not performed as per project specifications. An LCS/LCSD was performed instead.

All method blanks, sample duplicates, laboratory spikes, and/or matrix spikes met quality assurance objectives except where noted in the following. For DRO analysis by method M8015D the surrogate recovery for the method blank was slightly below control limits for Isopropylbenzene. This is flagged accordingly in the QC summary report. The remaining surrogate was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2003141-01
Project No:	078802	**Collection Date:**	03/14/20 10:00 AM
Lab Order:	2003141	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.156	0.156	0.195		mg/L	1	03/22/20 11:56 AM
Surr: Isopropylbenzene	83.5	0	47-142		%REC	1	03/22/20 11:56 AM
Surr: Octacosane	81.7	0	51-124		%REC	1	03/22/20 11:56 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/23/20 02:44 PM
Surr: Tetrachlorethene	120	0	74-138		%REC	1	03/23/20 02:44 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00814	0.00200	0.00500		mg/L	1	03/19/20 11:03 AM
Barium	0.251	0.00300	0.0100		mg/L	1	03/19/20 11:03 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 11:03 AM
Chromium	0.0276	0.00200	0.00500		mg/L	1	03/19/20 11:03 AM
Lead	0.00282	0.000300	0.00100		mg/L	1	03/19/20 11:03 AM
Selenium	0.00773	0.00200	0.00500		mg/L	1	03/19/20 11:03 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/19/20 11:03 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/20/20 11:11 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 06:49 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 06:49 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 06:49 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 06:49 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 06:49 PM
Surr: 1,2-Dichloroethane-d4	97.8	0	72-119		%REC	1	03/19/20 06:49 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	03/19/20 06:49 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	03/19/20 06:49 PM
Surr: Toluene-d8	103	0	81-120		%REC	1	03/19/20 06:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	61.4	3.00	10.0		mg/L	10	03/24/20 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	636	10.0	10.0		mg/L	1	03/20/20 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2003141-02
Project No:	078802	**Collection Date:**	03/14/20 09:30 AM
Lab Order:	2003141	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.151	0.151	0.189		mg/L	1	03/22/20 12:05 PM
Surr: Isopropylbenzene	85.5	0	47-142		%REC	1	03/22/20 12:05 PM
Surr: Octacosane	83.0	0	51-124		%REC	1	03/22/20 12:05 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/23/20 03:08 PM
Surr: Tetrachlorethene	112	0	74-138		%REC	1	03/23/20 03:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0150	0.00200	0.00500		mg/L	1	03/19/20 11:05 AM
Barium	0.353	0.00300	0.0100		mg/L	1	03/19/20 11:05 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 11:05 AM
Chromium	0.0111	0.00200	0.00500		mg/L	1	03/19/20 11:05 AM
Lead	0.00322	0.000300	0.00100		mg/L	1	03/19/20 11:05 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/19/20 11:05 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/19/20 11:05 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/20/20 11:13 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 07:12 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 07:12 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 07:12 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 07:12 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 07:12 PM
Surr: 1,2-Dichloroethane-d4	97.6	0	72-119		%REC	1	03/19/20 07:12 PM
Surr: 4-Bromofluorobenzene	103	0	76-119		%REC	1	03/19/20 07:12 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	03/19/20 07:12 PM
Surr: Toluene-d8	102	0	81-120		%REC	1	03/19/20 07:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	293	3.00	10.0		mg/L	10	03/24/20 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	837	10.0	10.0		mg/L	1	03/20/20 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2003141-03
Project No:	078802	**Collection Date:**	03/14/20 08:45 AM
Lab Order:	2003141	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.150	0.150	0.188		mg/L	1	03/22/20 12:14 PM
Surr: Isopropylbenzene	88.4	0	47-142		%REC	1	03/22/20 12:14 PM
Surr: Octacosane	80.2	0	51-124		%REC	1	03/22/20 12:14 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/23/20 03:31 PM
Surr: Tetrachlorethene	131	0	74-138		%REC	1	03/23/20 03:31 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0152	0.00200	0.00500		mg/L	1	03/19/20 11:07 AM
Barium	0.626	0.00300	0.0100		mg/L	1	03/19/20 11:07 AM
Cadmium	0.000622	0.000300	0.00100	J	mg/L	1	03/19/20 11:07 AM
Chromium	0.0170	0.00200	0.00500		mg/L	1	03/19/20 11:07 AM
Lead	0.00650	0.000300	0.00100		mg/L	1	03/19/20 11:07 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/19/20 11:07 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/19/20 11:07 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/20/20 11:16 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 07:36 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 07:36 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 07:36 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 07:36 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 07:36 PM
Surr: 1,2-Dichloroethane-d4	98.0	0	72-119		%REC	1	03/19/20 07:36 PM
Surr: 4-Bromofluorobenzene	104	0	76-119		%REC	1	03/19/20 07:36 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	03/19/20 07:36 PM
Surr: Toluene-d8	104	0	81-120		%REC	1	03/19/20 07:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	305	3.00	10.0		mg/L	10	03/24/20 03:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	823	10.0	10.0		mg/L	1	03/20/20 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2003141-04
Project No:	078802	**Collection Date:**	03/14/20 08:45 AM
Lab Order:	2003141	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.149	0.149	0.186		mg/L	1	03/22/20 12:23 PM
Surr: Isopropylbenzene	95.5	0	47-142		%REC	1	03/22/20 12:23 PM
Surr: Octacosane	81.2	0	51-124		%REC	1	03/22/20 12:23 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/23/20 03:55 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	03/23/20 03:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0106	0.00200	0.00500		mg/L	1	03/19/20 11:10 AM
Barium	0.390	0.00300	0.0100		mg/L	1	03/19/20 11:10 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 11:10 AM
Chromium	0.00673	0.00200	0.00500		mg/L	1	03/19/20 11:10 AM
Lead	0.00255	0.000300	0.00100		mg/L	1	03/19/20 11:10 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/19/20 11:10 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/19/20 11:10 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/20/20 11:18 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:00 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:00 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 08:00 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:00 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 08:00 PM
Surr: 1,2-Dichloroethane-d4	98.2	0	72-119		%REC	1	03/19/20 08:00 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	03/19/20 08:00 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	03/19/20 08:00 PM
Surr: Toluene-d8	103	0	81-120		%REC	1	03/19/20 08:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	305	3.00	10.0		mg/L	10	03/24/20 04:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	848	10.0	10.0		mg/L	1	03/20/20 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2003141-05
Project No:	078802	**Collection Date:**	03/14/20 11:00 AM
Lab Order:	2003141	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	1.08	0.149	0.186		mg/L	1	03/22/20 12:32 PM
Surr: Isopropylbenzene	97.7	0	47-142		%REC	1	03/22/20 12:32 PM
Surr: Octacosane	92.5	0	51-124		%REC	1	03/22/20 12:32 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.775	0.0600	0.100		mg/L	1	03/23/20 04:18 PM
Surr: Tetrachlorethene	106	0	74-138		%REC	1	03/23/20 04:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00596	0.00200	0.00500		mg/L	1	03/19/20 11:12 AM
Barium	4.66	0.0300	0.100		mg/L	10	03/19/20 11:32 AM
Cadmium	0.000505	0.000300	0.00100	J	mg/L	1	03/19/20 11:12 AM
Chromium	0.0219	0.00200	0.00500		mg/L	1	03/19/20 11:12 AM
Lead	0.00546	0.000300	0.00100		mg/L	1	03/19/20 11:12 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/19/20 11:12 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/19/20 11:12 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/20/20 11:20 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:23 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:23 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 08:23 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:23 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 08:23 PM
Surr: 1,2-Dichloroethane-d4	99.8	0	72-119		%REC	1	03/19/20 08:23 PM
Surr: 4-Bromofluorobenzene	103	0	76-119		%REC	1	03/19/20 08:23 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	03/19/20 08:23 PM
Surr: Toluene-d8	105	0	81-120		%REC	1	03/19/20 08:23 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	131	3.00	10.0		mg/L	10	03/24/20 04:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	664	10.0	10.0		mg/L	1	03/20/20 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2003141-06
Project No:	078802	**Collection Date:**	03/14/20 10:30 AM
Lab Order:	2003141	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	03/22/20 12:41 PM
Surr: Isopropylbenzene	92.4	0	47-142		%REC	1	03/22/20 12:41 PM
Surr: Octacosane	82.1	0	51-124		%REC	1	03/22/20 12:41 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/23/20 04:41 PM
Surr: Tetrachlorethene	76.9	0	74-138		%REC	1	03/23/20 04:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0145	0.00200	0.00500		mg/L	1	03/19/20 11:25 AM
Barium	0.883	0.00300	0.0100		mg/L	1	03/19/20 11:25 AM
Cadmium	0.000623	0.000300	0.00100	J	mg/L	1	03/19/20 11:25 AM
Chromium	0.0218	0.00200	0.00500		mg/L	1	03/19/20 11:25 AM
Lead	0.00503	0.000300	0.00100		mg/L	1	03/19/20 11:25 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/19/20 11:25 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/19/20 11:25 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/20/20 11:27 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:47 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:47 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 08:47 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 08:47 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 08:47 PM
Surr: 1,2-Dichloroethane-d4	96.2	0	72-119		%REC	1	03/19/20 08:47 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	03/19/20 08:47 PM
Surr: Dibromofluoromethane	97.8	0	85-115		%REC	1	03/19/20 08:47 PM
Surr: Toluene-d8	104	0	81-120		%REC	1	03/19/20 08:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	104	3.00	10.0		mg/L	10	03/24/20 05:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	619	10.0	10.0		mg/L	1	03/20/20 03:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Mar-20*

CLIENT:	GHD	**Client Sample ID:**	TRIP
Project:	Monument	**Lab ID:**	2003141-07
Project No:	078802	**Collection Date:**	03/14/20
Lab Order:	2003141	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/20/20 01:45 PM
Surr: Tetrachlorethene	127	0	74-138		%REC	1	03/20/20 01:45 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 04:28 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 04:28 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 04:28 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/19/20 04:28 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/19/20 04:28 PM
Surr: 1,2-Dichloroethane-d4	96.8	0	72-119		%REC	1	03/19/20 04:28 PM
Surr: 4-Bromofluorobenzene	103	0	76-119		%REC	1	03/19/20 04:28 PM
Surr: Dibromofluoromethane	96.9	0	85-115		%REC	1	03/19/20 04:28 PM
Surr: Toluene-d8	103	0	81-120		%REC	1	03/19/20 04:28 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *26-Mar-20*

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_200322A

The QC data in batch 95462 applies to the following samples: 2003141-01E, 2003141-02E, 2003141-03E, 2003141-04E, 2003141-05E, 2003141-06E

Sample ID: **MB-95462** Batch ID: **95462** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_200322A** Analysis Date: **3/22/2020 9:58:24 AM** Prep Date: **3/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100								
Surr: Isopropylbenzene	0.0375		0.1000		37.5	47	142			S
Surr: Octacosane	0.0569		0.1000		56.9	51	124			

Sample ID: **LCS-95462** Batch ID: **95462** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_200322A** Analysis Date: **3/22/2020 10:07:28 AM** Prep Date: **3/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	1.06	0.100	1.250	0	85.1	50	114			
Surr: Isopropylbenzene	0.0624		0.1000		62.4	47	142			
Surr: Octacosane	0.0813		0.1000		81.3	51	124			

Sample ID: **LCSD-95462** Batch ID: **95462** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_200322A** Analysis Date: **3/22/2020 10:16:31 AM** Prep Date: **3/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	1.12	0.100	1.250	0	89.9	50	114	5.54	30	
Surr: Isopropylbenzene	0.0866		0.1000		86.6	47	142	0	0	
Surr: Octacosane	0.0836		0.1000		83.6	51	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_200320A

The QC data in batch 95551 applies to the following samples: 2003141-07B

Sample ID: **LCS-95551**	Batch ID: **95551**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCS**	Run ID: **GC4_200320A**	Analysis Date: **3/20/2020 10:37:13 AM**	Prep Date: **3/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.71	0.100	2.500	0	108	67	136			
Surr: Tetrachlorethene	0.452		0.4000		113	74	138			

Sample ID: **LCSD-95551**	Batch ID: **95551**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCSD**	Run ID: **GC4_200320A**	Analysis Date: **3/20/2020 11:00:23 AM**	Prep Date: **3/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.69	0.100	2.500	0	108	67	136	0.482	30	
Surr: Tetrachlorethene	0.467		0.4000		117	74	138	0	0	

Sample ID: **MB-95551**	Batch ID: **95551**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GC4_200320A**	Analysis Date: **3/20/2020 12:11:10 PM**	Prep Date: **3/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.455		0.4000		114	74	138			

Sample ID: **2003111-01BMS**	Batch ID: **95551**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MS**	Run ID: **GC4_200320A**	Analysis Date: **3/20/2020 4:27:55 PM**	Prep Date: **3/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.52	0.100	2.500	0	101	67	136			
Surr: Tetrachlorethene	0.487		0.4000		122	74	138			

Sample ID: **2003111-01BMSD**	Batch ID: **95551**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MSD**	Run ID: **GC4_200320A**	Analysis Date: **3/20/2020 4:51:37 PM**	Prep Date: **3/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.79	0.100	2.500	0	112	67	136	10.0	30	
Surr: Tetrachlorethene	0.486		0.4000		122	74	138	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_200323A

The QC data in batch 95602 applies to the following samples: 2003141-01B, 2003141-02B, 2003141-03B, 2003141-04B, 2003141-05B, 2003141-06B

Sample ID: **LCS-95602**	Batch ID: **95602**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCS**	Run ID: **GC4_200323A**	Analysis Date: **3/23/2020 11:07:28 AM**	Prep Date: **3/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.58	0.100	2.500	0	103	67	136			
Surr: Tetrachlorethene	0.427		0.4000		107	74	138			

Sample ID: **LCSD-95602**	Batch ID: **95602**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCSD**	Run ID: **GC4_200323A**	Analysis Date: **3/23/2020 11:31:47 AM**	Prep Date: **3/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.64	0.100	2.500	0	106	67	136	2.48	30	
Surr: Tetrachlorethene	0.457		0.4000		114	74	138	0	0	

Sample ID: **MB-95602**	Batch ID: **95602**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GC4_200323A**	Analysis Date: **3/23/2020 12:44:58 PM**	Prep Date: **3/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.477		0.4000		119	74	138			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200320A

The QC data in batch 95522 applies to the following samples: 2003141-01C, 2003141-02C, 2003141-03C, 2003141-04C, 2003141-05C, 2003141-06C

Sample ID: **MB-95522**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 10:44:23 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95522**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 10:46:39 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID: **LCSD-95522**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 10:48:55 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	4.19	15	

Sample ID: **2003140-01C MS**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 10:53:29 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00194	0.000200	0.00200	0	97.0	80	120			

Sample ID: **2003140-01C MSD**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 10:55:44 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120	0.517	15	

Sample ID: **2003140-01C SD**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 10:58:00 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2003140-01C PDS**	Batch ID: **95522**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200320A**	Analysis Date: **3/20/2020 11:00:15 AM**	Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00234	0.000200	0.00250	0	93.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200319A

The QC data in batch 95490 applies to the following samples: 2003141-01C, 2003141-02C, 2003141-03C, 2003141-04C, 2003141-05C, 2003141-06C

Sample ID: **MB-95490** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 10:41:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Selenium	<0.00200	0.00500								
Silver	<0.00100	0.00200								

Sample ID: **LCS-95490** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 10:43:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0	101	80	120			
Barium	0.198	0.0100	0.200	0	98.8	80	120			
Cadmium	0.201	0.00100	0.200	0	101	80	120			
Chromium	0.195	0.00500	0.200	0	97.5	80	120			
Lead	0.194	0.00100	0.200	0	96.8	80	120			
Selenium	0.205	0.00500	0.200	0	103	80	120			
Silver	0.197	0.00200	0.200	0	98.6	80	120			

Sample ID: **LCSD-95490** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 10:45:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.346	15	
Barium	0.200	0.0100	0.200	0	100	80	120	1.19	15	
Cadmium	0.201	0.00100	0.200	0	101	80	120	0.041	15	
Chromium	0.197	0.00500	0.200	0	98.3	80	120	0.833	15	
Lead	0.196	0.00100	0.200	0	97.9	80	120	1.10	15	
Selenium	0.210	0.00500	0.200	0	105	80	120	2.27	15	
Silver	0.197	0.00200	0.200	0	98.5	80	120	0.162	15	

Sample ID: **2003140-01C SD** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 10:52:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0.00771				0	20	
Barium	0.139	0.0500	0	0.139				0.325	20	
Cadmium	<0.00150	0.00500	0	0.000313				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200319A

Sample ID: **2003140-01C SD** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 10:52:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	<0.00150	0.00500	0	0.000383				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Silver	<0.00500	0.0100	0	0				0	20	

Sample ID: **2003140-01C PDS** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 11:14:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.196	0.00500	0.200	0.00771	94.2	75	125			
Barium	0.332	0.0100	0.200	0.139	96.8	75	125			
Cadmium	0.201	0.00100	0.200	0.000313	100	75	125			
Chromium	0.200	0.00500	0.200	0	100	75	125			
Lead	0.197	0.00100	0.200	0.000383	98.1	75	125			
Selenium	0.184	0.00500	0.200	0	92.0	75	125			
Silver	0.197	0.00200	0.200	0	98.4	75	125			

Sample ID: **2003140-01C MS** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 11:16:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.201	0.00500	0.200	0.00771	96.6	75	125			
Barium	0.331	0.0100	0.200	0.139	96.1	75	125			
Cadmium	0.199	0.00100	0.200	0.000313	99.5	75	125			
Chromium	0.197	0.00500	0.200	0	98.4	75	125			
Lead	0.194	0.00100	0.200	0.000383	96.8	75	125			
Selenium	0.186	0.00500	0.200	0	93.2	75	125			
Silver	0.196	0.00200	0.200	0	98.2	75	125			

Sample ID: **2003140-01C MSD** Batch ID: **95490** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200319A** Analysis Date: **3/19/2020 11:18:00 AM** Prep Date: **3/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0.00771	96.9	75	125	0.299	15	
Barium	0.329	0.0100	0.200	0.139	95.1	75	125	0.601	15	
Cadmium	0.198	0.00100	0.200	0.000313	98.7	75	125	0.829	15	
Chromium	0.193	0.00500	0.200	0	96.7	75	125	1.71	15	
Lead	0.195	0.00100	0.200	0.000383	97.2	75	125	0.381	15	
Selenium	0.187	0.00500	0.200	0	93.4	75	125	0.157	15	
Silver	0.195	0.00200	0.200	0	97.4	75	125	0.769	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_200319A

The QC data in batch 95534 applies to the following samples: 2003141-01A, 2003141-02A, 2003141-03A, 2003141-04A, 2003141-05A, 2003141-06A, 2003141-07A

Sample ID: **LCS-95534** Batch ID: **95534** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS5_200319A** Analysis Date: **3/19/2020 3:17:00 PM** Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0238	0.00100	0.0232	0	103	81	122			
Ethylbenzene	0.0231	0.00100	0.0232	0	99.6	80	120			
m,p-Xylene	0.0470	0.00200	0.0464	0	101	80	120			
o-Xylene	0.0238	0.00100	0.0232	0	103	80	120			
Toluene	0.0238	0.00200	0.0232	0	103	80	120			
Surr: 1,2-Dichloroethane-d4	206		200.0		103	72	119			
Surr: 4-Bromofluorobenzene	199		200.0		99.6	76	119			
Surr: Dibromofluoromethane	201		200.0		101	85	115			
Surr: Toluene-d8	199		200.0		99.5	81	120			

Sample ID: **MB-95534** Batch ID: **95534** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS5_200319A** Analysis Date: **3/19/2020 3:41:00 PM** Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	190		200.0		95.0	72	119			
Surr: 4-Bromofluorobenzene	208		200.0		104	76	119			
Surr: Dibromofluoromethane	195		200.0		97.3	85	115			
Surr: Toluene-d8	205		200.0		102	81	120			

Sample ID: **2003179-04AMS** Batch ID: **95534** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS5_200319A** Analysis Date: **3/19/2020 11:32:00 PM** Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0240	0.00100	0.0232	0	103	81	122			
Ethylbenzene	0.0227	0.00100	0.0232	0	98.0	80	120			
m,p-Xylene	0.0460	0.00200	0.0464	0	99.1	80	120			
o-Xylene	0.0232	0.00100	0.0232	0	99.9	80	120			
Toluene	0.0236	0.00200	0.0232	0	102	80	120			
Surr: 1,2-Dichloroethane-d4	207		200.0		104	72	119			
Surr: 4-Bromofluorobenzene	196		200.0		98.2	76	119			
Surr: Dibromofluoromethane	201		200.0		101	85	115			
Surr: Toluene-d8	195		200.0		97.4	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_200319A

Sample ID: **2003179-04AMSD** Batch ID: **95534** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS5_200319A** Analysis Date: **3/19/2020 11:55:00 PM** Prep Date: **3/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0241	0.00100	0.0232	0	104	81	120	0.432	20	
Ethylbenzene	0.0226	0.00100	0.0232	0	97.4	80	120	0.556	20	
m,p-Xylene	0.0458	0.00200	0.0464	0	98.8	80	120	0.379	20	
o-Xylene	0.0230	0.00100	0.0232	0	99.0	80	120	0.936	20	
Toluene	0.0236	0.00200	0.0232	0	102	80	120	0.246	20	
Surr: 1,2-Dichloroethane-d4	206		200.0		103	72	119	0	0	
Surr: 4-Bromofluorobenzene	194		200.0		96.8	76	119	0	0	
Surr: Dibromofluoromethane	202		200.0		101	85	115	0	0	
Surr: Toluene-d8	199		200.0		99.3	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200324A

The QC data in batch 95612 applies to the following samples: 2003141-01D, 2003141-02D, 2003141-03D, 2003141-04D, 2003141-05D, 2003141-06D

Sample ID: **MB-95612**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 10:32:37 AM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-95612**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 10:48:37 AM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			

Sample ID: **LCSD-95612**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 11:04:37 AM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	0.106	20	

Sample ID: **2003140-01DMS**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 6:33:22 PM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	299	10.0	200.0	109.4	94.6	90	110			

Sample ID: **2003140-01DMSD**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 6:49:22 PM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	302	10.0	200.0	109.4	96.5	90	110	1.27	20	

Sample ID: **2003140-02DMS**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 7:05:22 PM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	294	10.0	200.0	110.7	91.5	90	110			

Sample ID: **2003140-02DMSD**	Batch ID: **95612**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200324A**	Analysis Date: **3/24/2020 7:21:22 PM**	Prep Date: **3/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	302	10.0	200.0	110.7	95.7	90	110	2.84	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2003141
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_200320A**

The QC data in batch 95552 applies to the following samples: 2003141-01D, 2003141-02D, 2003141-03D, 2003141-04D, 2003141-05D, 2003141-06D

Sample ID: **MB-95552**	Batch ID: **95552**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **WC_200320A**		Analysis Date: **3/20/2020 3:15:00 PM**				Prep Date: **3/20/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	<10.0	10.0									

Sample ID: **LCS-95552**	Batch ID: **95552**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **LCS**	Run ID: **WC_200320A**		Analysis Date: **3/20/2020 3:15:00 PM**				Prep Date: **3/20/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	740	10.0	745.6	0	99.2	90	113				

Sample ID: **2003148-01A-DUP**	Batch ID: **95552**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **DUP**	Run ID: **WC_200320A**		Analysis Date: **3/20/2020 3:15:00 PM**				Prep Date: **3/20/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	1040	50.0	0	1035				0	5		

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 10 of 10
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

June 26, 2020

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX: (432) 686-0186

Order No.: 2006209

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 8 sample(s) on 6/19/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 71195

CHAIN-OF-CUSTODY

CLIENT: GHD
ADDRESS: 14988 W 6TH AVE #800 Golden
PHONE: 3039416156 FAX/E-MAIL: BRAD.STEPHENSON@GHD.com
DATA REPORTED TO: BSTEPHESON
ADDITIONAL REPORT COPIES TO: JCLOUD

DATE: 6/18/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2006209
PROJECT LOCATION OR NAME: MONUMENT
CLENT PROJECT #: 112/1495 COLLECTOR: BSTEPHENSON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-1	01	6/18/20	0910	W		10						X	
MW-3	02		0845	W		10						X	
MW-5	03		0815	W		10						X	
MW-5D	04		0810	W		10						X	
MW-6	05		1000	W		10						X	
MW-7	06	6/18/20	0930	W		10						X	
TRIP 1	07			W		2						X	
TRIP 2	08			W		2						X	

ANALYSES: BTEX ❑ MTBE ❑ (METHOD 8021) TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO (METHOD 8015) ❑ DRO (METHOD 8105) ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ RCRA ❑ TX11 ❑ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	6/18/20 1400	TO FEDEX
RELINQUISHED BY: (Signature) Fed Ex	DATE/TIME 6/19/20 0918	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ❑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 2.1°C / 3.5°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

ORIGIN ID:HOBA (303) 941-6156

GHD
14998 W 6TH AVE STE 800

GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 18JUN20
ACTWGT: 43.00 LB
CAD: 6994246/SSFE2110
DIMS: 24x14x13 IN

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222

INV:
PO:
REF:
DEPT:

FedEx
Express

1 of 2

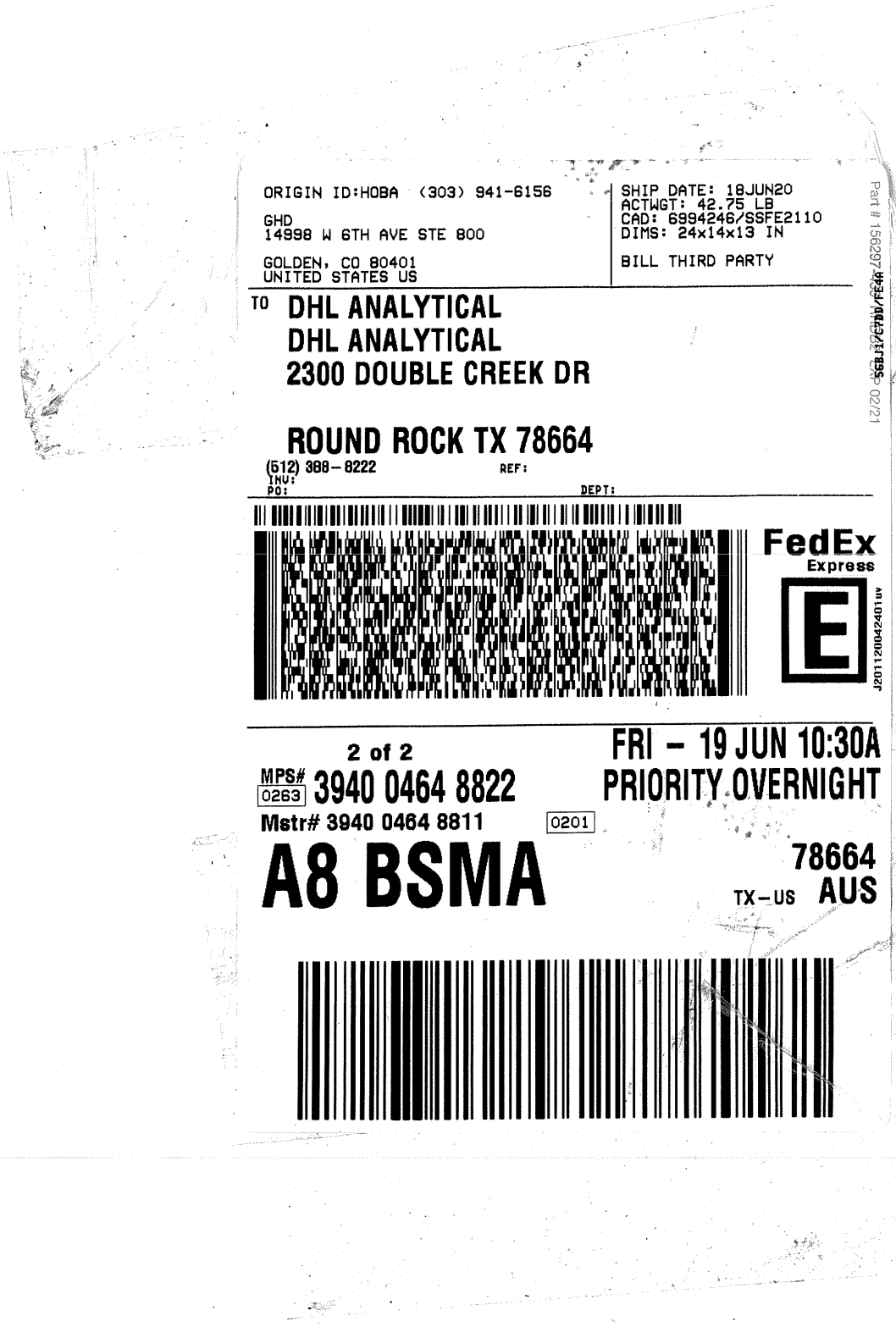
TRK# 0201 3940 0464 8811

FRI - 19 JUN 10:30A
PRIORITY OVERNIGHT

MASTER

A8 BSMA

78664
TX-US AUS



ORIGIN ID:HOBA (303) 941-6156
GHD
14998 W 6TH AVE STE 800
GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 18JUN20
ACTWGT: 42.75 LB
CAD: 6994246/SSFE2110
DIMS: 24x14x13 IN
BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 2
MPS# 0263 3940 0464 8822
Mstr# 3940 0464 8811 0201

FRI - 19 JUN 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

Part # 156207-114 REV 02/21

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 6/19/2020

Work Order Number 2006209 Received by: EL

Checklist completed by: EL (Signature) 6/19/2020 (Date) Reviewed by 03 (Initials) 6/19/2020 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.1 °C /3.5°C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *26-Jun-20*

CLIENT: GHD
Project: Monument
Lab Order: 2006209

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition, EPA and Standard Methods.

For Volatiles analysis an MS/MSD was not performed due to insufficient sample volume. The QC includes the method blank and LCS.

For DRO analysis an MS/MSD was not performed due to insufficient sample volume. An LCS/LCSD was performed instead.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2006209-01
Project No:	11211495	**Collection Date:**	06/18/20 09:10 AM
Lab Order:	2006209	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.147	0.147	0.184		mg/L	1	06/23/20 01:21 PM
Surr: Isopropylbenzene	50.5	0	47-142		%REC	1	06/23/20 01:21 PM
Surr: Octacosane	80.8	0	51-124		%REC	1	06/23/20 01:21 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 08:23 PM
Surr: Tetrachlorethene	115	0	74-138		%REC	1	06/22/20 08:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00671	0.00200	0.00500		mg/L	1	06/23/20 12:02 PM
Barium	0.105	0.00300	0.0100		mg/L	1	06/23/20 12:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:02 PM
Chromium	0.00421	0.00200	0.00500	J	mg/L	1	06/23/20 12:02 PM
Lead	0.000375	0.000300	0.00100	J	mg/L	1	06/23/20 12:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:02 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	06/23/20 12:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/22/20 01:18 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 11:27 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 11:27 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 11:27 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 11:27 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 11:27 PM
Surr: 1,2-Dichloroethane-d4	114	0	72-119		%REC	1	06/22/20 11:27 PM
Surr: 4-Bromofluorobenzene	99.2	0	76-119		%REC	1	06/22/20 11:27 PM
Surr: Dibromofluoromethane	109	0	85-115		%REC	1	06/22/20 11:27 PM
Surr: Toluene-d8	92.7	0	81-120		%REC	1	06/22/20 11:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	112	3.00	10.0		mg/L	10	06/19/20 01:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	681	10.0	10.0		mg/L	1	06/22/20 03:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2006209-02
Project No:	11211495	**Collection Date:**	06/18/20 08:45 AM
Lab Order:	2006209	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.149	0.149	0.186		mg/L	1	06/23/20 01:30 PM
Surr: Isopropylbenzene	76.7	0	47-142		%REC	1	06/23/20 01:30 PM
Surr: Octacosane	78.4	0	51-124		%REC	1	06/23/20 01:30 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 08:47 PM
Surr: Tetrachlorethene	74.8	0	74-138		%REC	1	06/22/20 08:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0366	0.00200	0.00500		mg/L	1	06/23/20 12:04 PM
Barium	0.263	0.00300	0.0100		mg/L	1	06/23/20 12:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:04 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:04 PM
Lead	0.00127	0.000300	0.00100		mg/L	1	06/23/20 12:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:04 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	06/23/20 12:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/22/20 01:20 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 11:52 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 11:52 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 11:52 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 11:52 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 11:52 PM
Surr: 1,2-Dichloroethane-d4	116	0	72-119		%REC	1	06/22/20 11:52 PM
Surr: 4-Bromofluorobenzene	97.1	0	76-119		%REC	1	06/22/20 11:52 PM
Surr: Dibromofluoromethane	109	0	85-115		%REC	1	06/22/20 11:52 PM
Surr: Toluene-d8	92.2	0	81-120		%REC	1	06/22/20 11:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	294	3.00	10.0		mg/L	10	06/19/20 01:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	858	10.0	10.0		mg/L	1	06/22/20 03:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2006209-03
Project No:	11211495	**Collection Date:**	06/18/20 08:15 AM
Lab Order:	2006209	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.150	0.150	0.187		mg/L	1	06/23/20 01:39 PM
Surr: Isopropylbenzene	75.8	0	47-142		%REC	1	06/23/20 01:39 PM
Surr: Octacosane	80.9	0	51-124		%REC	1	06/23/20 01:39 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 09:13 PM
Surr: Tetrachlorethene	115	0	74-138		%REC	1	06/22/20 09:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00935	0.00200	0.00500		mg/L	1	06/23/20 12:06 PM
Barium	0.303	0.00300	0.0100		mg/L	1	06/23/20 12:06 PM
Cadmium	0.000725	0.000300	0.00100	J	mg/L	1	06/23/20 12:06 PM
Chromium	0.00316	0.00200	0.00500	J	mg/L	1	06/23/20 12:06 PM
Lead	0.00381	0.000300	0.00100		mg/L	1	06/23/20 12:06 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:06 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	06/23/20 12:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/22/20 01:22 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:16 AM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:16 AM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 12:16 AM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:16 AM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 12:16 AM
Surr: 1,2-Dichloroethane-d4	117	0	72-119		%REC	1	06/23/20 12:16 AM
Surr: 4-Bromofluorobenzene	98.7	0	76-119		%REC	1	06/23/20 12:16 AM
Surr: Dibromofluoromethane	109	0	85-115		%REC	1	06/23/20 12:16 AM
Surr: Toluene-d8	92.3	0	81-120		%REC	1	06/23/20 12:16 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	290	3.00	10.0		mg/L	10	06/19/20 02:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	830	10.0	10.0		mg/L	1	06/22/20 03:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2006209-04
Project No:	11211495	**Collection Date:**	06/18/20 08:15 AM
Lab Order:	2006209	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.147	0.147	0.184		mg/L	1	06/23/20 01:48 PM
Surr: Isopropylbenzene	67.0	0	47-142		%REC	1	06/23/20 01:48 PM
Surr: Octacosane	81.4	0	51-124		%REC	1	06/23/20 01:48 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 09:37 PM
Surr: Tetrachlorethene	113	0	74-138		%REC	1	06/22/20 09:37 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00525	0.00200	0.00500		mg/L	1	06/23/20 12:08 PM
Barium	0.202	0.00300	0.0100		mg/L	1	06/23/20 12:08 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:08 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:08 PM
Lead	0.000451	0.000300	0.00100	J	mg/L	1	06/23/20 12:08 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:08 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	06/23/20 12:08 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/22/20 01:24 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:41 AM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:41 AM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 12:41 AM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:41 AM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 12:41 AM
Surr: 1,2-Dichloroethane-d4	117	0	72-119		%REC	1	06/23/20 12:41 AM
Surr: 4-Bromofluorobenzene	98.5	0	76-119		%REC	1	06/23/20 12:41 AM
Surr: Dibromofluoromethane	109	0	85-115		%REC	1	06/23/20 12:41 AM
Surr: Toluene-d8	92.0	0	81-120		%REC	1	06/23/20 12:41 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	292	3.00	10.0		mg/L	10	06/19/20 02:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	815	10.0	10.0		mg/L	1	06/23/20 05:00 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2006209-05
Project No:	11211495	**Collection Date:**	06/18/20 10:00 AM
Lab Order:	2006209	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.706	0.149	0.186		mg/L	1	06/23/20 01:57 PM
Surr: Isopropylbenzene	76.0	0	47-142		%REC	1	06/23/20 01:57 PM
Surr: Octacosane	98.6	0	51-124		%REC	1	06/23/20 01:57 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.444	0.0600	0.100		mg/L	1	06/22/20 10:00 PM
Surr: Tetrachlorethene	112	0	74-138		%REC	1	06/22/20 10:00 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00287	0.00200	0.00500	J	mg/L	1	06/23/20 12:11 PM
Barium	4.50	0.0300	0.100		mg/L	10	06/23/20 12:28 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 12:11 PM
Chromium	0.00214	0.00200	0.00500	J	mg/L	1	06/23/20 12:11 PM
Lead	0.00187	0.000300	0.00100		mg/L	1	06/23/20 12:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:11 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	06/23/20 12:11 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/22/20 01:27 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 01:06 AM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 01:06 AM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 01:06 AM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 01:06 AM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 01:06 AM
Surr: 1,2-Dichloroethane-d4	116	0	72-119		%REC	1	06/23/20 01:06 AM
Surr: 4-Bromofluorobenzene	98.3	0	76-119		%REC	1	06/23/20 01:06 AM
Surr: Dibromofluoromethane	109	0	85-115		%REC	1	06/23/20 01:06 AM
Surr: Toluene-d8	95.5	0	81-120		%REC	1	06/23/20 01:06 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	126	3.00	10.0		mg/L	10	06/19/20 02:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	656	10.0	10.0		mg/L	1	06/22/20 03:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2006209-06
Project No:	11211495	**Collection Date:**	06/18/20 09:30 AM
Lab Order:	2006209	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.186		mg/L	1	06/23/20 02:07 PM
Surr: Isopropylbenzene	70.1	0	47-142		%REC	1	06/23/20 02:07 PM
Surr: Octacosane	81.0	0	51-124		%REC	1	06/23/20 02:07 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 10:24 PM
Surr: Tetrachlorethene	76.3	0	74-138		%REC	1	06/22/20 10:24 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0192	0.00200	0.00500		mg/L	1	06/23/20 12:13 PM
Barium	0.319	0.00300	0.0100		mg/L	1	06/23/20 12:13 PM
Cadmium	0.000642	0.000300	0.00100	J	mg/L	1	06/23/20 12:13 PM
Chromium	0.00653	0.00200	0.00500		mg/L	1	06/23/20 12:13 PM
Lead	0.00513	0.000300	0.00100		mg/L	1	06/23/20 12:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/23/20 12:13 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	06/23/20 12:13 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/22/20 01:29 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 01:30 AM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 01:30 AM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 01:30 AM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/23/20 01:30 AM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/23/20 01:30 AM
Surr: 1,2-Dichloroethane-d4	116	0	72-119		%REC	1	06/23/20 01:30 AM
Surr: 4-Bromofluorobenzene	97.4	0	76-119		%REC	1	06/23/20 01:30 AM
Surr: Dibromofluoromethane	108	0	85-115		%REC	1	06/23/20 01:30 AM
Surr: Toluene-d8	92.6	0	81-120		%REC	1	06/23/20 01:30 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	105	3.00	10.0		mg/L	10	06/19/20 02:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	621	10.0	10.0		mg/L	1	06/22/20 03:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	Trip 1
Project:	Monument	**Lab ID:**	2006209-07
Project No:	11211495	**Collection Date:**	06/18/20
Lab Order:	2006209	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 02:43 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	06/22/20 02:43 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 06:30 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 06:30 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 06:30 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 06:30 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 06:30 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	06/22/20 06:30 PM
Surr: 4-Bromofluorobenzene	98.3	0	76-119		%REC	1	06/22/20 06:30 PM
Surr: Dibromofluoromethane	106	0	85-115		%REC	1	06/22/20 06:30 PM
Surr: Toluene-d8	93.4	0	81-120		%REC	1	06/22/20 06:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *26-Jun-20*

CLIENT:	GHD	**Client Sample ID:**	Trip 2
Project:	Monument	**Lab ID:**	2006209-08
Project No:	11211495	**Collection Date:**	06/18/20
Lab Order:	2006209	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/22/20 03:07 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	06/22/20 03:07 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 06:55 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 06:55 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 06:55 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/22/20 06:55 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/22/20 06:55 PM
Surr: 1,2-Dichloroethane-d4	110	0	72-119		%REC	1	06/22/20 06:55 PM
Surr: 4-Bromofluorobenzene	96.9	0	76-119		%REC	1	06/22/20 06:55 PM
Surr: Dibromofluoromethane	109	0	85-115		%REC	1	06/22/20 06:55 PM
Surr: Toluene-d8	92.7	0	81-120		%REC	1	06/22/20 06:55 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *26-Jun-20*

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_200623A

The QC data in batch 96868 applies to the following samples: 2006209-01E, 2006209-02E, 2006209-03E, 2006209-04E, 2006209-05E, 2006209-06E

Sample ID: **MB-96868** Batch ID: **96868** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_200623A** Analysis Date: **6/23/2020 11:04:24 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100								
Surr: Isopropylbenzene	0.0540		0.1000		54.0	47	142			
Surr: Octacosane	0.0808		0.1000		80.8	51	124			

Sample ID: **LCS-96868** Batch ID: **96868** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_200623A** Analysis Date: **6/23/2020 11:13:28 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.955	0.100	1.250	0	76.4	50	114			
Surr: Isopropylbenzene	0.0546		0.1000		54.6	47	142			
Surr: Octacosane	0.0847		0.1000		84.7	51	124			

Sample ID: **LCSD-96868** Batch ID: **96868** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_200623A** Analysis Date: **6/23/2020 11:38:21 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.950	0.100	1.250	0	76.0	50	114	0.451	30	
Surr: Isopropylbenzene	0.0550		0.1000		55.0	47	142	0	0	
Surr: Octacosane	0.0847		0.1000		84.7	51	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_200622A

The QC data in batch 96877 applies to the following samples: 2006209-01B, 2006209-02B, 2006209-03B, 2006209-04B, 2006209-05B, 2006209-06B, 2006209-07B, 2006209-08B

Sample ID: **LCS-96877**	Batch ID: **96877**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCS**	Run ID: **GC4_200622A**	Analysis Date: **6/22/2020 11:54:12 AM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.50	0.100	2.500	0	99.9	67	136			
Surr: Tetrachlorethene	0.409		0.4000		102	74	138			

Sample ID: **LCSD-96877**	Batch ID: **96877**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCSD**	Run ID: **GC4_200622A**	Analysis Date: **6/22/2020 12:19:05 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.60	0.100	2.500	0	104	67	136	3.82	30	
Surr: Tetrachlorethene	0.413		0.4000		103	74	138	0	0	

Sample ID: **MB-96877**	Batch ID: **96877**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GC4_200622A**	Analysis Date: **6/22/2020 1:31:11 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.443		0.4000		111	74	138			

Sample ID: **2006184-01BMSD**	Batch ID: **96877**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MSD**	Run ID: **GC4_200622A**	Analysis Date: **6/22/2020 11:13:50 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.46	0.100	2.500	0	98.5	67	136	2.86	30	
Surr: Tetrachlorethene	0.404		0.4000		101	74	138	0	0	

Sample ID: **2006184-01BMS**	Batch ID: **96877**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MS**	Run ID: **GC4_200622A**	Analysis Date: **6/23/2020 10:20:57 AM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.39	0.100	2.500	0	95.8	67	136			
Surr: Tetrachlorethene	0.364		0.4000		91.1	74	138			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200622A

The QC data in batch 96869 applies to the following samples: 2006209-01C, 2006209-02C, 2006209-03C, 2006209-04C, 2006209-05C, 2006209-06C

Sample ID: **MB-96869**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:23:40 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96869**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:28:12 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	85	115			

Sample ID: **LCSD-96869**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:30:28 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	85	115	0	15	

Sample ID: **2006167-01A MS**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:35:00 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0104	0.00100	0.0100	0	104	80	120			

Sample ID: **2006167-01A MSD**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:37:15 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0102	0.00100	0.0100	0	103	80	120	1.45	15	

Sample ID: **2006167-01A SD**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:39:31 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2006167-01A PDS**	Batch ID: **96869**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200622A**	Analysis Date: **6/22/2020 12:41:47 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200623A

The QC data in batch 96873 applies to the following samples: 2006209-01C, 2006209-02C, 2006209-03C, 2006209-04C, 2006209-05C, 2006209-06C

Sample ID: **MB-96873** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:15:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Selenium	<0.00200	0.00500								
Silver	<0.00100	0.00200								

Sample ID: **LCS-96873** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:17:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Chromium	0.199	0.00500	0.200	0	99.7	80	120			
Lead	0.192	0.00100	0.200	0	96.2	80	120			
Selenium	0.206	0.00500	0.200	0	103	80	120			
Silver	0.195	0.00200	0.200	0	97.4	80	120			

Sample ID: **LCSD-96873** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:20:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.199	0.00500	0.200	0	99.6	80	120	2.23	15	
Barium	0.197	0.0100	0.200	0	98.4	80	120	1.72	15	
Cadmium	0.201	0.00100	0.200	0	101	80	120	0.641	15	
Chromium	0.195	0.00500	0.200	0	97.5	80	120	2.21	15	
Lead	0.191	0.00100	0.200	0	95.7	80	120	0.553	15	
Selenium	0.200	0.00500	0.200	0	99.8	80	120	3.21	15	
Silver	0.193	0.00200	0.200	0	96.3	80	120	1.15	15	

Sample ID: **2006184-03C SD** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:26:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0.00525				0	20	
Barium	0.194	0.0500	0	0.193				0.237	20	
Cadmium	<0.00150	0.00500	0	0.000400				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200623A

Sample ID: **2006184-03C SD** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:26:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	<0.00150	0.00500	0	0.00108				0	20	
Selenium	<0.0100	0.0250	0	0.00247				0	20	
Silver	<0.00500	0.0100	0	0				0	20	

Sample ID: **2006184-03C PDS** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:48:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.201	0.00500	0.200	0.00525	98.1	75	125			
Barium	0.396	0.0100	0.200	0.193	101	75	125			
Cadmium	0.209	0.00100	0.200	0.000400	105	75	125			
Chromium	0.214	0.00500	0.200	0	107	75	125			
Lead	0.206	0.00100	0.200	0.00108	103	75	125			
Selenium	0.195	0.00500	0.200	0.00247	96.4	75	125			
Silver	0.197	0.00200	0.200	0	98.4	75	125			

Sample ID: **2006184-03C MS** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:51:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.198	0.00500	0.200	0.00525	96.3	75	125			
Barium	0.392	0.0100	0.200	0.193	99.6	75	125			
Cadmium	0.199	0.00100	0.200	0.000400	99.4	75	125			
Chromium	0.198	0.00500	0.200	0	99.1	75	125			
Lead	0.195	0.00100	0.200	0.00108	96.7	75	125			
Selenium	0.189	0.00500	0.200	0.00247	93.1	75	125			
Silver	0.191	0.00200	0.200	0	95.4	75	125			

Sample ID: **2006184-03C MSD** Batch ID: **96873** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200623A** Analysis Date: **6/23/2020 11:53:00 AM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.196	0.00500	0.200	0.00525	95.6	75	125	0.734	15	
Barium	0.399	0.0100	0.200	0.193	103	75	125	1.66	15	
Cadmium	0.199	0.00100	0.200	0.000400	99.2	75	125	0.165	15	
Chromium	0.199	0.00500	0.200	0	99.7	75	125	0.567	15	
Lead	0.194	0.00100	0.200	0.00108	96.6	75	125	0.106	15	
Selenium	0.189	0.00500	0.200	0.00247	93.4	75	125	0.269	15	
Silver	0.193	0.00200	0.200	0	96.3	75	125	0.897	15	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_200622B

The QC data in batch 96880 applies to the following samples: 2006209-01A, 2006209-02A, 2006209-03A, 2006209-04A, 2006209-05A, 2006209-06A, 2006209-07A, 2006209-08A

Sample ID: **LCS-96880** Batch ID: **96880** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS7_200622B** Analysis Date: **6/22/2020 4:12:00 PM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0247	0.00100	0.0232	0	106	81	122			
Ethylbenzene	0.0233	0.00100	0.0232	0	101	80	120			
m,p-Xylene	0.0470	0.00200	0.0464	0	101	80	120			
o-Xylene	0.0234	0.00100	0.0232	0	101	80	120			
Toluene	0.0253	0.00200	0.0232	0	109	80	120			
Surr: 1,2-Dichloroethane-d4	209		200.0		104	72	119			
Surr: 4-Bromofluorobenzene	195		200.0		97.3	76	119			
Surr: Dibromofluoromethane	213		200.0		106	85	115			
Surr: Toluene-d8	188		200.0		93.8	81	120			

Sample ID: **MB-96880** Batch ID: **96880** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS7_200622B** Analysis Date: **6/22/2020 5:15:00 PM** Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	212		200.0		106	72	119			
Surr: 4-Bromofluorobenzene	194		200.0		96.9	76	119			
Surr: Dibromofluoromethane	215		200.0		107	85	115			
Surr: Toluene-d8	186		200.0		92.8	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200619A

The QC data in batch 96862 applies to the following samples: 2006209-01D, 2006209-02D, 2006209-03D, 2006209-04D, 2006209-05D, 2006209-06D

Sample ID: **MB-96862**	Batch ID: **96862**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_200619A**	Analysis Date: **6/19/2020 11:37:03 AM**	Prep Date: **6/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-96862**	Batch ID: **96862**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_200619A**	Analysis Date: **6/19/2020 11:53:03 AM**	Prep Date: **6/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			

Sample ID: **LCSD-96862**	Batch ID: **96862**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_200619A**	Analysis Date: **6/19/2020 12:09:03 PM**	Prep Date: **6/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.130	20	

Sample ID: **2006209-01DMS**	Batch ID: **96862**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200619A**	Analysis Date: **6/19/2020 1:17:18 PM**	Prep Date: **6/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	301	10.0	200.0	112.2	94.2	90	110			

Sample ID: **2006209-01DMSD**	Batch ID: **96862**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200619A**	Analysis Date: **6/19/2020 1:33:18 PM**	Prep Date: **6/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	294	10.0	200.0	112.2	90.9	90	110	2.22	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_200622A**

The QC data in batch 96878 applies to the following samples: 2006209-01D, 2006209-02D, 2006209-03D, 2006209-04D, 2006209-05D, 2006209-06D

Sample ID: **MB-96878**	Batch ID: **96878**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200622A**	Analysis Date: **6/22/2020 3:20:00 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-96878**	Batch ID: **96878**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200622A**	Analysis Date: **6/22/2020 3:20:00 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID: **2006190-05B-DUP**	Batch ID: **96878**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200622A**	Analysis Date: **6/22/2020 3:20:00 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	22900	200	0	23020				0.523	5	

Sample ID: **2006200-01D-DUP**	Batch ID: **96878**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200622A**	Analysis Date: **6/22/2020 3:20:00 PM**	Prep Date: **6/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4720	50.0	0	4725				0.212	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2006209
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200623B

The QC data in batch 96900 applies to the following samples: 2006209-04D

Sample ID: **MB-96900**	Batch ID: **96900**	TestNo: **M2540C**				Units: **mg/L**	
SampType: **MBLK**	Run ID: **WC_200623B**	Analysis Date: **6/23/2020 5:00:00 PM**				Prep Date: **6/23/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-96900**	Batch ID: **96900**	TestNo: **M2540C**				Units: **mg/L**	
SampType: **LCS**	Run ID: **WC_200623B**	Analysis Date: **6/23/2020 5:00:00 PM**				Prep Date: **6/23/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	748	10.0	745.6	0	100	90	113			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL ANALYTICAL

September 24, 2020

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX: (432) 686-0186

Order No.: 2009113

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 9/16/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 69584

CHAIN-OF-CUSTODY

CLIENT: GHD
ADDRESS: 14998 W 6th #500 Golden, CO 80401
PHONE: 303-941-6156 FAX/E-MAIL: BRAD.STEPHENSON@GHD.COM
DATA REPORTED TO: BStephenson
ADDITIONAL REPORT COPIES TO:

DATE: 9/15/20 PAGE 1 OF 1
PO #:
DHL WORK ORDER #: 2009113
PROJECT LOCATION OR NAME: MONUMENT
CLENT PROJECT #: 11211495 COLLECTOR: BStephenson

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX X; MTBE ❑; TPH 1005 ❑; TPH 1006 ❑; HOLD 1006 ❑; GRO (METHOD 8015) ❑; DRO (METHOD 8105) ❑; VOC 8260 ❑; VOC 624 ❑; VOC 8260/5035 ❑; SVOC 8270 ❑; PAH 8270 ❑; HOLD PAH ❑; SVOC 625 ❑; 8270 PEST ❑; 625 PEST/PCB ❑; 608 PCB ❑; 8270 PCB ❑; 8270 O-P PEST ❑; 8082 PCB ❑; 8321 HERB ❑; T PHOS, AMMONIA ❑; METALS 6020 ❑; METALS 200.8 ❑; DISS. METALS ❑; RCRA X; TX11 ❑; PH ❑; HEX CHROM ❑; ALKALINITY ❑; COD ❑; CHLORIDE X; ANIONS ❑; TCLP SVOC ❑; VOC ❑; PEST ❑; HERB ❑; TCLP METALS ❑; RCRA 8 ❑; TX-11 ❑; Pb ❑; RCI ❑; FLASHPOINT ❑; DGAS ❑; TDS X; TSS ❑; % MOISTURE ❑; CYANIDE ❑

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-1	01	9/15/20	1220	W		10						X	
MW-3	02		1400	W		10						X	
MW-5	03		1330	W		10						X	
MW-5D	04		1330	W		10						X	
MW-6	05		1250	W		10						X	
MW-7	06	9/15/20	1310	W		10						X	
Trip	07			W		2						X	GHD

RELINQUISHED BY: (Signature) DATE/TIME 1530 9/15/20 RECEIVED BY: (Signature) to FED EX
RELINQUISHED BY: (Signature) fedEx DATE/TIME 9/16/20 0948 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ❑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 5.6°C/5.9°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☑ NOT USED
CARRIER: ❑ LONE STAR ☑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

0

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 11211495
INV:
PO: DEPT:

12/06/21

FedEx
Express

J202020071401uv

1 of 2
TRK# 0201 3968 5757 5291
MASTER

WED - 16 SEP 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

RT 712 1
FZ 10:30 C
5291
09.16


DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF: 11211495
INV:
PO:
DEPT:
FedEx
Express
RDB EXP 06/21
2 of 2
MPS# 0263 3968 5757 5306
Mstr# 3968 5757 5291
0201
WED - 16 SEP 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 9/16/2020

Work Order Number 2009113 Received by: RA

Checklist completed by: EL (Signature) 9/16/2020 (Date) Reviewed by DL (Initials) 9/16/2020 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	5.6 °C / 5.9°C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *24-Sep-20*

CLIENT: GHD
Project: Monument
Lab Order: 2009113

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition, EPA and Standard Methods.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2009113-01
Project No:	11211495	**Collection Date:**	09/15/20 12:20 PM
Lab Order:	2009113	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.147	0.147	0.184		mg/L	1	09/22/20 12:00 PM
Surr: Isopropylbenzene	65.4	0	47-142		%REC	1	09/22/20 12:00 PM
Surr: Octacosane	84.3	0	51-124		%REC	1	09/22/20 12:00 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/22/20 01:00 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	09/22/20 01:00 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.00580	0.00200	0.00500		mg/L	1	09/21/20 01:53 PM
Barium	0.102	0.00300	0.0100		mg/L	1	09/21/20 01:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	09/21/20 01:53 PM
Chromium	0.00760	0.00200	0.00500		mg/L	1	09/21/20 01:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/21/20 01:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 01:53 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	09/21/20 01:53 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/21/20 12:46 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 04:52 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 04:52 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 04:52 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 04:52 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 04:52 PM
Surr: 1,2-Dichloroethane-d4	107	0	72-119		%REC	1	09/17/20 04:52 PM
Surr: 4-Bromofluorobenzene	100	0	76-119		%REC	1	09/17/20 04:52 PM
Surr: Dibromofluoromethane	93.6	0	85-115		%REC	1	09/17/20 04:52 PM
Surr: Toluene-d8	97.4	0	81-120		%REC	1	09/17/20 04:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	117	3.00	10.0		mg/L	10	09/17/20 03:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	676	10.0	10.0		mg/L	1	09/18/20 04:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2009113-02
Project No:	11211495	**Collection Date:**	09/15/20 02:00 PM
Lab Order:	2009113	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	09/22/20 12:09 PM
Surr: Isopropylbenzene	54.9	0	47-142		%REC	1	09/22/20 12:09 PM
Surr: Octacosane	84.4	0	51-124		%REC	1	09/22/20 12:09 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/22/20 01:25 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	09/22/20 01:25 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.0139	0.00200	0.00500		mg/L	1	09/21/20 01:55 PM
Barium	0.307	0.00300	0.0100		mg/L	1	09/21/20 01:55 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	09/21/20 01:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 01:55 PM
Lead	0.000705	0.000300	0.00100	J	mg/L	1	09/21/20 01:55 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 01:55 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	09/21/20 01:55 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/21/20 12:48 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 05:16 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 05:16 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 05:16 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 05:16 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 05:16 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	09/17/20 05:16 PM
Surr: 4-Bromofluorobenzene	99.6	0	76-119		%REC	1	09/17/20 05:16 PM
Surr: Dibromofluoromethane	95.1	0	85-115		%REC	1	09/17/20 05:16 PM
Surr: Toluene-d8	97.9	0	81-120		%REC	1	09/17/20 05:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	311	3.00	10.0		mg/L	10	09/17/20 03:34 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	821	10.0	10.0		mg/L	1	09/18/20 04:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2009113-03
Project No:	11211495	**Collection Date:**	09/15/20 01:30 PM
Lab Order:	2009113	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.262	0.149	0.186		mg/L	1	09/22/20 12:18 PM
Surr: Isopropylbenzene	55.4	0	47-142		%REC	1	09/22/20 12:18 PM
Surr: Octacosane	81.9	0	51-124		%REC	1	09/22/20 12:18 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/22/20 01:49 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	09/22/20 01:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.0100	0.00200	0.00500		mg/L	1	09/21/20 01:57 PM
Barium	0.372	0.00300	0.0100		mg/L	1	09/21/20 01:57 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	09/21/20 01:57 PM
Chromium	0.0150	0.00200	0.00500		mg/L	1	09/21/20 01:57 PM
Lead	0.00392	0.000300	0.00100		mg/L	1	09/21/20 01:57 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 01:57 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	09/21/20 01:57 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/21/20 12:50 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 05:40 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 05:40 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 05:40 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 05:40 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 05:40 PM
Surr: 1,2-Dichloroethane-d4	107	0	72-119		%REC	1	09/17/20 05:40 PM
Surr: 4-Bromofluorobenzene	100	0	76-119		%REC	1	09/17/20 05:40 PM
Surr: Dibromofluoromethane	94.7	0	85-115		%REC	1	09/17/20 05:40 PM
Surr: Toluene-d8	98.4	0	81-120		%REC	1	09/17/20 05:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	309	3.00	10.0		mg/L	10	09/17/20 03:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	843	10.0	10.0		mg/L	1	09/18/20 04:30 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2009113-04
Project No:	11211495	**Collection Date:**	09/15/20 01:30 PM
Lab Order:	2009113	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.308	0.148	0.185		mg/L	1	09/22/20 12:27 PM
Surr: Isopropylbenzene	53.4	0	47-142		%REC	1	09/22/20 12:27 PM
Surr: Octacosane	95.7	0	51-124		%REC	1	09/22/20 12:27 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/22/20 02:13 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	09/22/20 02:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.00779	0.00200	0.00500		mg/L	1	09/21/20 01:59 PM
Barium	0.306	0.00300	0.0100		mg/L	1	09/21/20 01:59 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	09/21/20 01:59 PM
Chromium	0.00753	0.00200	0.00500		mg/L	1	09/21/20 01:59 PM
Lead	0.00209	0.000300	0.00100		mg/L	1	09/21/20 01:59 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 01:59 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	09/21/20 01:59 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/21/20 12:52 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:04 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:04 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 06:04 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:04 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 06:04 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	09/17/20 06:04 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	09/17/20 06:04 PM
Surr: Dibromofluoromethane	93.4	0	85-115		%REC	1	09/17/20 06:04 PM
Surr: Toluene-d8	97.1	0	81-120		%REC	1	09/17/20 06:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	301	3.00	10.0		mg/L	10	09/17/20 04:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	844	10.0	10.0		mg/L	1	09/18/20 04:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2009113-05
Project No:	11211495	**Collection Date:**	09/15/20 12:50 PM
Lab Order:	2009113	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	1.01	0.148	0.185		mg/L	1	09/22/20 12:36 PM
Surr: Isopropylbenzene	75.3	0	47-142		%REC	1	09/22/20 12:36 PM
Surr: Octacosane	111	0	51-124		%REC	1	09/22/20 12:36 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	1.02	0.0600	0.100		mg/L	1	09/22/20 02:36 PM
Surr: Tetrachlorethene	113	0	74-138		%REC	1	09/22/20 02:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 02:01 PM
Barium	3.80	0.0300	0.100		mg/L	10	09/22/20 11:15 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	09/21/20 02:01 PM
Chromium	0.00449	0.00200	0.00500	J	mg/L	1	09/21/20 02:01 PM
Lead	0.00115	0.000300	0.00100		mg/L	1	09/21/20 02:01 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 02:01 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	09/21/20 02:01 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/21/20 12:55 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:27 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:27 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 06:27 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:27 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 06:27 PM
Surr: 1,2-Dichloroethane-d4	106	0	72-119		%REC	1	09/17/20 06:27 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	09/17/20 06:27 PM
Surr: Dibromofluoromethane	94.7	0	85-115		%REC	1	09/17/20 06:27 PM
Surr: Toluene-d8	96.0	0	81-120		%REC	1	09/17/20 06:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	123	3.00	10.0		mg/L	10	09/17/20 04:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	659	10.0	10.0		mg/L	1	09/18/20 04:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2009113-06
Project No:	11211495	**Collection Date:**	09/15/20 01:10 PM
Lab Order:	2009113	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.149	0.149	0.186		mg/L	1	09/22/20 12:45 PM
Surr: Isopropylbenzene	64.9	0	47-142		%REC	1	09/22/20 12:45 PM
Surr: Octacosane	88.5	0	51-124		%REC	1	09/22/20 12:45 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/22/20 03:01 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	09/22/20 03:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.0100	0.00200	0.00500		mg/L	1	09/21/20 02:02 PM
Barium	0.377	0.00300	0.0100		mg/L	1	09/21/20 02:02 PM
Cadmium	0.000323	0.000300	0.00100	J	mg/L	1	09/21/20 02:02 PM
Chromium	0.00622	0.00200	0.00500		mg/L	1	09/21/20 02:02 PM
Lead	0.00140	0.000300	0.00100		mg/L	1	09/21/20 02:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/20 02:02 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	09/21/20 02:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/21/20 12:57 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:51 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:51 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 06:51 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 06:51 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 06:51 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	09/17/20 06:51 PM
Surr: 4-Bromofluorobenzene	100	0	76-119		%REC	1	09/17/20 06:51 PM
Surr: Dibromofluoromethane	93.3	0	85-115		%REC	1	09/17/20 06:51 PM
Surr: Toluene-d8	97.6	0	81-120		%REC	1	09/17/20 06:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	102	3.00	10.0		mg/L	10	09/17/20 04:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	620	10.0	10.0		mg/L	1	09/18/20 04:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Sep-20*

CLIENT:	GHD	**Client Sample ID:**	Trip
Project:	Monument	**Lab ID:**	2009113-07
Project No:	11211495	**Collection Date:**	09/15/20
Lab Order:	2009113	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/22/20 12:35 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	09/22/20 12:35 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **CC**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 03:40 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 03:40 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 03:40 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/17/20 03:40 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/17/20 03:40 PM
Surr: 1,2-Dichloroethane-d4	105	0	72-119		%REC	1	09/17/20 03:40 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	09/17/20 03:40 PM
Surr: Dibromofluoromethane	94.1	0	85-115		%REC	1	09/17/20 03:40 PM
Surr: Toluene-d8	98.0	0	81-120		%REC	1	09/17/20 03:40 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *24-Sep-20*

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_200922A

The QC data in batch 97960 applies to the following samples: 2009113-01E, 2009113-02E, 2009113-03E, 2009113-04E, 2009113-05E, 2009113-06E

Sample ID: **MB-97960** Batch ID: **97960** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_200922A** Analysis Date: **9/22/2020 11:14:09 AM** Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100								
Surr: Isopropylbenzene	0.0576		0.1000		57.6	47	142			
Surr: Octacosane	0.0876		0.1000		87.6	51	124			

Sample ID: **LCS-97960** Batch ID: **97960** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_200922A** Analysis Date: **9/22/2020 11:23:13 AM** Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.995	0.100	1.250	0	79.6	50	114			
Surr: Isopropylbenzene	0.0589		0.1000		58.9	47	142			
Surr: Octacosane	0.0866		0.1000		86.6	51	124			

Sample ID: **LCSD-97960** Batch ID: **97960** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_200922A** Analysis Date: **9/22/2020 11:32:16 AM** Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.972	0.100	1.250	0	77.7	50	114	2.42	30	
Surr: Isopropylbenzene	0.0496		0.1000		49.6	47	142	0	0	
Surr: Octacosane	0.0861		0.1000		86.1	51	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_200922A

The QC data in batch 97969 applies to the following samples: 2009113-01B, 2009113-02B, 2009113-03B, 2009113-04B, 2009113-05B, 2009113-06B, 2009113-07B

Sample ID: **LCS-97969** Batch ID: **97969** TestNo: **M8015V** Units: **mg/L**
SampType: **LCS** Run ID: **GC4_200922A** Analysis Date: **9/22/2020 10:35:59 AM** Prep Date: **9/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.46	0.100	2.500	0	98.3	67	136			
Surr: Tetrachlorethene	0.386		0.4000		96.6	74	138			

Sample ID: **LCSD-97969** Batch ID: **97969** TestNo: **M8015V** Units: **mg/L**
SampType: **LCSD** Run ID: **GC4_200922A** Analysis Date: **9/22/2020 10:59:48 AM** Prep Date: **9/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.57	0.100	2.500	0	103	67	136	4.56	30	
Surr: Tetrachlorethene	0.420		0.4000		105	74	138	0	0	

Sample ID: **MB-97969** Batch ID: **97969** TestNo: **M8015V** Units: **mg/L**
SampType: **MBLK** Run ID: **GC4_200922A** Analysis Date: **9/22/2020 12:11:13 PM** Prep Date: **9/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.510		0.4000		127	74	138			

Sample ID: **2009113-01BMS** Batch ID: **97969** TestNo: **M8015V** Units: **mg/L**
SampType: **MS** Run ID: **GC4_200922A** Analysis Date: **9/22/2020 9:01:05 PM** Prep Date: **9/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.32	0.100	2.500	0	92.8	67	136			
Surr: Tetrachlorethene	0.412		0.4000		103	74	138			

Sample ID: **2009113-01BMSD** Batch ID: **97969** TestNo: **M8015V** Units: **mg/L**
SampType: **MSD** Run ID: **GC4_200922A** Analysis Date: **9/22/2020 9:24:37 PM** Prep Date: **9/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.45	0.100	2.500	0	97.9	67	136	5.36	30	
Surr: Tetrachlorethene	0.401		0.4000		100	74	138	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200921A

The QC data in batch 97959 applies to the following samples: 2009113-01C, 2009113-02C, 2009113-03C, 2009113-04C, 2009113-05C, 2009113-06C

Sample ID: **MB-97959**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:25:46 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-97959**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:30:18 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.000200	0.00200	0	95.5	85	115			

Sample ID: **LCSD-97959**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:32:35 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	85	115	1.04	15	

Sample ID: **2009092-01C MS**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:37:07 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00945	0.00100	0.0100	0	94.5	80	120			

Sample ID: **2009092-01C MSD**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:39:22 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00980	0.00100	0.0100	0	98.0	80	120	3.64	15	

Sample ID: **2009092-01C SD**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:41:38 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2009092-01C PDS**	Batch ID: **97959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200921A**	Analysis Date: **9/21/2020 12:43:54 PM**	Prep Date: **9/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0112	0.00100	0.0125	0	90.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200921C

The QC data in batch 97920 applies to the following samples: 2009113-01C, 2009113-02C, 2009113-03C, 2009113-04C, 2009113-05C, 2009113-06C

Sample ID: **MB-97920** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 2:31:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Selenium	<0.00200	0.00500								
Silver	<0.00100	0.00200								

Sample ID: **LCS-97920** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 2:33:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.198	0.00500	0.200	0	99.2	80	120			
Barium	0.196	0.0100	0.200	0	97.9	80	120			
Cadmium	0.201	0.00100	0.200	0	101	80	120			
Chromium	0.206	0.00500	0.200	0	103	80	120			
Lead	0.197	0.00100	0.200	0	98.7	80	120			
Selenium	0.196	0.00500	0.200	0	97.8	80	120			
Silver	0.203	0.00200	0.200	0	102	80	120			

Sample ID: **LCSD-97920** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 2:35:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.200	0.00500	0.200	0	99.8	80	120	0.597	15	
Barium	0.199	0.0100	0.200	0	99.7	80	120	1.79	15	
Cadmium	0.205	0.00100	0.200	0	103	80	120	2.17	15	
Chromium	0.208	0.00500	0.200	0	104	80	120	0.743	15	
Lead	0.200	0.00100	0.200	0	99.9	80	120	1.17	15	
Selenium	0.193	0.00500	0.200	0	96.5	80	120	1.39	15	
Silver	0.207	0.00200	0.200	0	104	80	120	2.05	15	

Sample ID: **2009097-05B SD** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 2:45:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0				0	20	
Barium	<0.0150	0.0500	0	0.0115				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200921C

Sample ID: **2009097-05B SD** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 2:45:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	<0.00150	0.00500	0	0.000311				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Silver	<0.00500	0.0100	0	0				0	20	

Sample ID: **2009097-05B PDS** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 3:09:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.210	0.00500	0.200	0	105	75	125			
Barium	0.220	0.0100	0.200	0.0115	104	75	125			
Cadmium	0.201	0.00100	0.200	0	100	75	125			
Chromium	0.211	0.00500	0.200	0	105	75	125			
Lead	0.211	0.00100	0.200	0.000311	105	75	125			
Selenium	0.218	0.00500	0.200	0	109	75	125			
Silver	0.193	0.00200	0.200	0	96.3	75	125			

Sample ID: **2009097-05B MS** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 3:11:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.215	0.00500	0.200	0	107	75	125			
Barium	0.215	0.0100	0.200	0.0115	102	75	125			
Cadmium	0.198	0.00100	0.200	0	98.9	75	125			
Chromium	0.205	0.00500	0.200	0	102	75	125			
Lead	0.205	0.00100	0.200	0.000311	102	75	125			
Selenium	0.215	0.00500	0.200	0	108	75	125			
Silver	0.194	0.00200	0.200	0	97.0	75	125			

Sample ID: **2009097-05B MSD** Batch ID: **97920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_200921C** Analysis Date: **9/21/2020 3:13:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.210	0.00500	0.200	0	105	75	125	2.09	15	
Barium	0.214	0.0100	0.200	0.0115	101	75	125	0.392	15	
Cadmium	0.196	0.00100	0.200	0	98.0	75	125	0.981	15	
Chromium	0.204	0.00500	0.200	0	102	75	125	0.245	15	
Lead	0.203	0.00100	0.200	0.000311	102	75	125	0.724	15	
Selenium	0.211	0.00500	0.200	0	105	75	125	1.99	15	
Silver	0.195	0.00200	0.200	0	97.3	75	125	0.254	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_200917B

The QC data in batch 97940 applies to the following samples: 2009113-01A, 2009113-02A, 2009113-03A, 2009113-04A, 2009113-05A, 2009113-06A, 2009113-07A

Sample ID: **LCS-97940** Batch ID: **97940** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS5_200917B** Analysis Date: **9/17/2020 1:06:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0266	0.00100	0.0232	0	115	81	122			
Ethylbenzene	0.0248	0.00100	0.0232	0	107	80	120			
m,p-Xylene	0.0495	0.00200	0.0464	0	107	80	120			
o-Xylene	0.0241	0.00100	0.0232	0	104	80	120			
Toluene	0.0257	0.00200	0.0232	0	111	80	120			
Surr: 1,2-Dichloroethane-d4	203		200.0		101	72	119			
Surr: 4-Bromofluorobenzene	196		200.0		98.1	76	119			
Surr: Dibromofluoromethane	188		200.0		94.0	85	115			
Surr: Toluene-d8	191		200.0		95.7	81	120			

Sample ID: **LCSD-97940** Batch ID: **97940** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCSD** Run ID: **GCMS5_200917B** Analysis Date: **9/17/2020 1:30:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0283	0.00100	0.0232	0	122	81	122	6.32	20	
Ethylbenzene	0.0263	0.00100	0.0232	0	113	80	120	5.85	20	
m,p-Xylene	0.0528	0.00200	0.0464	0	114	80	120	6.49	20	
o-Xylene	0.0259	0.00100	0.0232	0	112	80	120	7.47	20	
Toluene	0.0275	0.00200	0.0232	0	118	80	120	6.64	20	
Surr: 1,2-Dichloroethane-d4	200		200.0		100	72	119	0	0	
Surr: 4-Bromofluorobenzene	195		200.0		97.4	76	119	0	0	
Surr: Dibromofluoromethane	188		200.0		94.0	85	115	0	0	
Surr: Toluene-d8	192		200.0		96.1	81	120	0	0	

Sample ID: **MB-97940** Batch ID: **97940** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS5_200917B** Analysis Date: **9/17/2020 2:18:00 PM** Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	206		200.0		103	72	119			
Surr: 4-Bromofluorobenzene	202		200.0		101	76	119			
Surr: Dibromofluoromethane	186		200.0		92.8	85	115			
Surr: Toluene-d8	195		200.0		97.7	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200917A

The QC data in batch 97927 applies to the following samples: 2009113-01D, 2009113-02D, 2009113-03D, 2009113-04D, 2009113-05D, 2009113-06D

Sample ID: **MB-97927**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 11:47:17 AM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-97927**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 12:03:17 PM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			

Sample ID: **LCSD-97927**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 12:19:17 PM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.368	20	

Sample ID: **2009113-01DMS**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 9:01:05 PM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	326	10.0	200.0	117.5	104	90	110			

Sample ID: **2009113-01DMSD**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 9:17:05 PM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	323	10.0	200.0	117.5	103	90	110	0.718	20	

Sample ID: **2009113-02DMS**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 9:33:05 PM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	493	10.0	200.0	310.8	91.1	90	110			

Sample ID: **2009113-02DMSD**	Batch ID: **97927**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200917A**	Analysis Date: **9/17/2020 9:49:05 PM**	Prep Date: **9/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	491	10.0	200.0	310.8	90.2	90	110	0.368	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2009113
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200918D

The QC data in batch 97945 applies to the following samples: 2009113-01D, 2009113-02D, 2009113-03D, 2009113-04D, 2009113-05D, 2009113-06D

Sample ID: **MB-97945**	Batch ID: **97945**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **WC_200918D**		Analysis Date: **9/18/2020 4:30:00 PM**				Prep Date: **9/18/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	<10.0	10.0									

Sample ID: **LCS-97945**	Batch ID: **97945**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **LCS**	Run ID: **WC_200918D**		Analysis Date: **9/18/2020 4:30:00 PM**				Prep Date: **9/18/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	763	10.0	745.6	0	102	90	113				

Sample ID: **2009114-01A-DUP**	Batch ID: **97945**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **DUP**	Run ID: **WC_200918D**		Analysis Date: **9/18/2020 4:30:00 PM**				Prep Date: **9/18/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	970	10.0	0	969.0				0.103	5		

Sample ID: **2009114-02A-DUP**	Batch ID: **97945**		TestNo: **M2540C**				Units: **mg/L**				
SampType: **DUP**	Run ID: **WC_200918D**		Analysis Date: **9/18/2020 4:30:00 PM**				Prep Date: **9/18/2020**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera	815	10.0	0	811.0				0.492	5		

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 8 of 8
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

DHL ANALYTICAL

December 09, 2020

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX (432) 686-0186

Order No.: 2012026

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 12/3/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69386

CHAIN-OF-CUSTODY

CLIENT: GHD
ADDRESS: 14965 W 6th AVE #800 GOLDEN, CO
PHONE: 3039416156 FAX/E-MAIL: BRAD.STEPHENSON @ GHD.COM
DATA REPORTED TO: BSTEPHENSON
ADDITIONAL REPORT COPIES TO: J CLOUD

DATE: 12/2/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2012026
PROJECT LOCATION OR NAME: MONUMENT
CLENT PROJECT #: 11211495-01-01 COLLECTOR: BS

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ☒ MTBE ❑ [METHOD 8021]	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO [METHOD 8015] ❑ DRO [METHOD 8105] ☒	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ☒ TX11 ❑	PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑	CHLORIDE ☒ ANIONS ❑	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ☒ TSS ❑ % MOISTURE ❑ CYANIDE ❑	FIELD NOTES
MW-1	01	12/2/20	1400	W		10						X	X							X	X			X					
MW-3	02		1300	W		10						X	X							X	X			X					
MW-5	03		1330	W		10						X	X							X	X			X					
MW-5D	04		1330	W		10						X	X							X	X			X					
MW-6	05		1420	W		10						X	X							X	X			X					
MW-7	06		1440	W		10						X	X							X	X			X					
TRIP	07	12/2/20		W		2						X	X (GHD)																Per Brad S. @ 12/3/20

RELINQUISHED BY: (Signature) DATE/TIME 12/2/20 1600 RECEIVED BY: (Signature) to FED EX
RELINQUISHED BY: (Signature) FedEX DATE/TIME 12/3/20 11 AM RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ❑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 4.4°C / 4.2°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Do Not Lift Using This Tag

ORIGIN ID:HOBA (303) 941-6156
BRAD STEVENSON

14998 W 6TH AVE STE 800

GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 02DEC20
ACTWGT: 36.45 LB
CAD: 6994246/SSFE2121
DIMS: 24x14x14 IN

BILL THIRD PARTY

TO

DHL ANALYSTICS
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV: DEPT:

PO:

FedEx Express

J202002071401uv

3 of 4

MPS# 3997 5463 6331

0263

Mstr# 3997 5463 6310

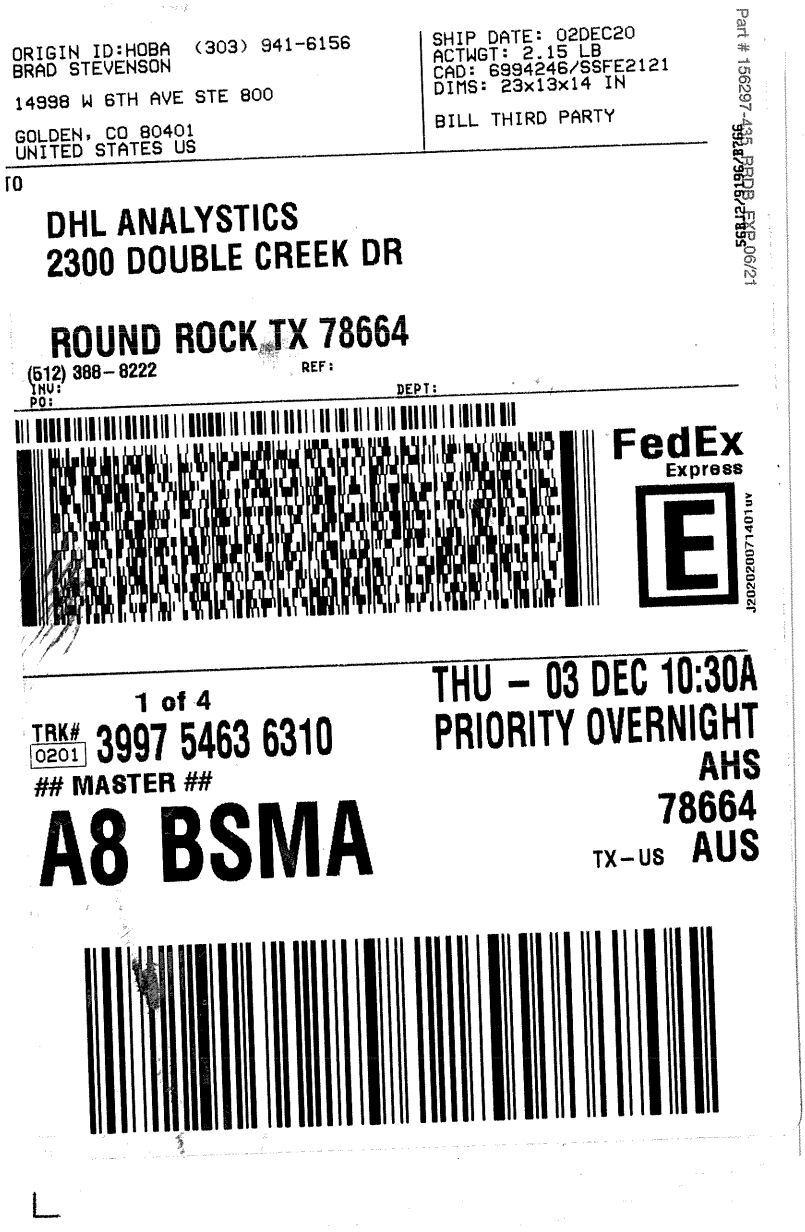
0201

A8 BSMA

THU - 03 DEC 10:30A
PRIORITY OVERNIGHT

78664
TX-US AUS

Part # 156297-495 RRDB EXP 06/21



ORIGIN ID:HOBA (303) 941-6156
BRAD STEVENSON

14998 W 6TH AVE STE 800

GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 02DEC20
ACTWGT: 2.15 LB
CAD: 6994246/SSFE2121
DIMS: 23x13x14 IN

BILL THIRD PARTY

Part # 156297-435 RRDB EXP 06/21

TO

DHL ANALYSTICS
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV:

PO: DEPT:

FedEx
Express

1 of 4

TRK# 0201 3997 5463 6310

MASTER

A8 BSMA

THU - 03 DEC 10:30A
PRIORITY OVERNIGHT

AHS
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 12/3/2020

Work Order Number 2012026 Received by: RA

Checklist completed by: [signature] 12/3/2020 (Signature / Date) Reviewed by DL 12/3/2020 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.4 °C / 4.2°C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *09-Dec-20*

CLIENT: GHD
Project: Monument
Lab Order: 2012026

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition, E300 and Standard Methods.

For DRO analysis an MS/MSD was not performed due to insufficient sample volume. An LCS/LCSD was performed instead.

All method blanks, sample duplicates, laboratory spikes, and/or matrix spikes met quality assurance objectives.

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2012026-01
Project No:	11211495-01-01	**Collection Date:**	12/02/20 02:00 PM
Lab Order:	2012026	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.153	0.153	0.192		mg/L	1	12/08/20 11:37 AM
Surr: Isopropylbenzene	59.0	0	47-142		%REC	1	12/08/20 11:37 AM
Surr: Octacosane	84.0	0	51-124		%REC	1	12/08/20 11:37 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/08/20 05:48 PM
Surr: Tetrachlorethene	101	0	74-138		%REC	1	12/08/20 05:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00589	0.00200	0.00500		mg/L	1	12/07/20 11:19 AM
Barium	0.0718	0.00300	0.0100		mg/L	1	12/07/20 11:19 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/07/20 11:19 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:19 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/07/20 11:19 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:19 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	12/07/20 11:19 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/09/20 11:45 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 08:55 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 08:55 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 08:55 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 08:55 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 08:55 PM
Surr: 1,2-Dichloroethane-d4	107	0	72-119		%REC	1	12/04/20 08:55 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	12/04/20 08:55 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	12/04/20 08:55 PM
Surr: Toluene-d8	95.9	0	81-120		%REC	1	12/04/20 08:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	111	3.00	10.0		mg/L	10	12/07/20 04:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	662	10.0	10.0		mg/L	1	12/04/20 03:30 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2012026-02
Project No:	11211495-01-01	**Collection Date:**	12/02/20 01:00 PM
Lab Order:	2012026	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	12/08/20 11:46 AM
Surr: Isopropylbenzene	60.9	0	47-142		%REC	1	12/08/20 11:46 AM
Surr: Octacosane	82.6	0	51-124		%REC	1	12/08/20 11:46 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/08/20 06:12 PM
Surr: Tetrachlorethene	109	0	74-138		%REC	1	12/08/20 06:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0134	0.00200	0.00500		mg/L	1	12/07/20 10:59 AM
Barium	0.263	0.00300	0.0100		mg/L	1	12/07/20 10:59 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/07/20 10:59 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 10:59 AM
Lead	0.00132	0.000300	0.00100		mg/L	1	12/07/20 10:59 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 10:59 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	12/07/20 10:59 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/09/20 12:03 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 09:19 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 09:19 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 09:19 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 09:19 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 09:19 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	12/04/20 09:19 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	12/04/20 09:19 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	12/04/20 09:19 PM
Surr: Toluene-d8	96.5	0	81-120		%REC	1	12/04/20 09:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	285	3.00	10.0		mg/L	10	12/07/20 05:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	833	10.0	10.0		mg/L	1	12/04/20 03:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2012026-03
Project No:	11211495-01-01	**Collection Date:**	12/02/20 01:30 PM
Lab Order:	2012026	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.149	0.149	0.186		mg/L	1	12/08/20 11:55 AM
Surr: Isopropylbenzene	58.1	0	47-142		%REC	1	12/08/20 11:55 AM
Surr: Octacosane	84.3	0	51-124		%REC	1	12/08/20 11:55 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/08/20 06:36 PM
Surr: Tetrachlorethene	110	0	74-138		%REC	1	12/08/20 06:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00787	0.00200	0.00500		mg/L	1	12/07/20 11:31 AM
Barium	0.259	0.00300	0.0100		mg/L	1	12/07/20 11:31 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/07/20 11:31 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:31 AM
Lead	0.00302	0.000300	0.00100		mg/L	1	12/07/20 11:31 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:31 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	12/07/20 11:31 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	0.000149	0.0000800	0.000200	J	mg/L	1	12/09/20 12:05 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 09:44 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 09:44 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 09:44 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 09:44 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 09:44 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	12/04/20 09:44 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	12/04/20 09:44 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	12/04/20 09:44 PM
Surr: Toluene-d8	95.5	0	81-120		%REC	1	12/04/20 09:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	274	3.00	10.0		mg/L	10	12/07/20 06:41 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	857	10.0	10.0		mg/L	1	12/04/20 03:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2012026-04
Project No:	11211495-01-01	**Collection Date:**	12/02/20 01:30 PM
Lab Order:	2012026	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.151	0.151	0.189		mg/L	1	12/08/20 12:04 PM
Surr: Isopropylbenzene	64.6	0	47-142		%REC	1	12/08/20 12:04 PM
Surr: Octacosane	82.9	0	51-124		%REC	1	12/08/20 12:04 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/08/20 07:00 PM
Surr: Tetrachlorethene	109	0	74-138		%REC	1	12/08/20 07:00 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00753	0.00200	0.00500		mg/L	1	12/07/20 11:33 AM
Barium	0.262	0.00300	0.0100		mg/L	1	12/07/20 11:33 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/07/20 11:33 AM
Chromium	0.00230	0.00200	0.00500	J	mg/L	1	12/07/20 11:33 AM
Lead	0.00345	0.000300	0.00100		mg/L	1	12/07/20 11:33 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:33 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	12/07/20 11:33 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	0.000158	0.0000800	0.000200	J	mg/L	1	12/09/20 12:08 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:09 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:09 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 10:09 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:09 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 10:09 PM
Surr: 1,2-Dichloroethane-d4	109	0	72-119		%REC	1	12/04/20 10:09 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	12/04/20 10:09 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	12/04/20 10:09 PM
Surr: Toluene-d8	96.9	0	81-120		%REC	1	12/04/20 10:09 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	271	3.00	10.0		mg/L	10	12/07/20 06:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	861	10.0	10.0		mg/L	1	12/04/20 03:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2012026-05
Project No:	11211495-01-01	**Collection Date:**	12/02/20 02:20 PM
Lab Order:	2012026	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.785	0.149	0.186		mg/L	1	12/08/20 12:13 PM
Surr: Isopropylbenzene	62.1	0	47-142		%REC	1	12/08/20 12:13 PM
Surr: Octacosane	107	0	51-124		%REC	1	12/08/20 12:13 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.901	0.0600	0.100		mg/L	1	12/08/20 07:23 PM
Surr: Tetrachlorethene	100	0	74-138		%REC	1	12/08/20 07:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00433	0.00200	0.00500	J	mg/L	1	12/07/20 11:35 AM
Barium	4.92	0.0300	0.100		mg/L	10	12/07/20 11:41 AM
Cadmium	0.000436	0.000300	0.00100	J	mg/L	1	12/07/20 11:35 AM
Chromium	0.00222	0.00200	0.00500	J	mg/L	1	12/07/20 11:35 AM
Lead	0.00276	0.000300	0.00100		mg/L	1	12/07/20 11:35 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:35 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	12/07/20 11:35 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/09/20 12:10 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:34 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:34 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 10:34 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:34 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 10:34 PM
Surr: 1,2-Dichloroethane-d4	109	0	72-119		%REC	1	12/04/20 10:34 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	12/04/20 10:34 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	12/04/20 10:34 PM
Surr: Toluene-d8	100	0	81-120		%REC	1	12/04/20 10:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	107	3.00	10.0		mg/L	10	12/07/20 07:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	639	10.0	10.0		mg/L	1	12/07/20 05:30 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2012026-06
Project No:	11211495-01-01	**Collection Date:**	12/02/20 02:40 PM
Lab Order:	2012026	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.149	0.149	0.186		mg/L	1	12/08/20 12:22 PM
Surr: Isopropylbenzene	57.6	0	47-142		%REC	1	12/08/20 12:22 PM
Surr: Octacosane	86.6	0	51-124		%REC	1	12/08/20 12:22 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/08/20 07:46 PM
Surr: Tetrachlorethene	108	0	74-138		%REC	1	12/08/20 07:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0104	0.00200	0.00500		mg/L	1	12/07/20 11:37 AM
Barium	0.250	0.00300	0.0100		mg/L	1	12/07/20 11:37 AM
Cadmium	0.000584	0.000300	0.00100	J	mg/L	1	12/07/20 11:37 AM
Chromium	0.00488	0.00200	0.00500	J	mg/L	1	12/07/20 11:37 AM
Lead	0.00354	0.000300	0.00100		mg/L	1	12/07/20 11:37 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/07/20 11:37 AM
Silver	<0.00100	0.00100	0.00200		mg/L	1	12/07/20 11:37 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/09/20 12:12 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:59 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:59 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 10:59 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 10:59 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 10:59 PM
Surr: 1,2-Dichloroethane-d4	106	0	72-119		%REC	1	12/04/20 10:59 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	12/04/20 10:59 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	12/04/20 10:59 PM
Surr: Toluene-d8	96.2	0	81-120		%REC	1	12/04/20 10:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	91.7	3.00	10.0		mg/L	10	12/07/20 07:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	640	10.0	10.0		mg/L	1	12/07/20 05:30 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *09-Dec-20*

CLIENT:	GHD	**Client Sample ID:**	Trip
Project:	Monument	**Lab ID:**	2012026-07
Project No:	11211495-01-01	**Collection Date:**	12/02/20
Lab Order:	2012026	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/08/20 12:53 PM
Surr: Tetrachlorethene	113	0	74-138		%REC	1	12/08/20 12:53 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 05:37 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 05:37 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 05:37 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/04/20 05:37 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/04/20 05:37 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	12/04/20 05:37 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	12/04/20 05:37 PM
Surr: Dibromofluoromethane	99.8	0	85-115		%REC	1	12/04/20 05:37 PM
Surr: Toluene-d8	96.3	0	81-120		%REC	1	12/04/20 05:37 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *09-Dec-20*

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_201208A

The QC data in batch 98775 applies to the following samples: 2012026-01E, 2012026-02E, 2012026-03E, 2012026-04E, 2012026-05E, 2012026-06E

Sample ID: **MB-98775** Batch ID: **98775** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_201208A** Analysis Date: **12/8/2020 9:57:24 AM** Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100								
Surr: Isopropylbenzene	0.0586		0.1000		58.6	47	142			
Surr: Octacosane	0.0812		0.1000		81.2	51	124			

Sample ID: **LCS-98775** Batch ID: **98775** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_201208A** Analysis Date: **12/8/2020 10:06:28 AM** Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.882	0.100	1.250	0	70.5	50	114			
Surr: Isopropylbenzene	0.0612		0.1000		61.2	47	142			
Surr: Octacosane	0.0827		0.1000		82.7	51	124			

Sample ID: **LCSD-98775** Batch ID: **98775** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_201208A** Analysis Date: **12/8/2020 10:15:32 AM** Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.884	0.100	1.250	0	70.8	50	114	0.325	30	
Surr: Isopropylbenzene	0.0538		0.1000		53.8	47	142	0	0	
Surr: Octacosane	0.0857		0.1000		85.7	51	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_201208A

The QC data in batch 98791 applies to the following samples: 2012026-01B, 2012026-02B, 2012026-03B, 2012026-04B, 2012026-05B, 2012026-06B, 2012026-07B

Sample ID: **LCS-98791** Batch ID: **98791** TestNo: **M8015V** Units: **mg/L**
SampType: **LCS** Run ID: **GC4_201208A** Analysis Date: **12/8/2020 10:50:14 AM** Prep Date: **12/8/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.82	0.100	2.500	0	113	67	136			
Surr: Tetrachlorethene	0.395		0.4000		98.7	74	138			

Sample ID: **LCSD-98791** Batch ID: **98791** TestNo: **M8015V** Units: **mg/L**
SampType: **LCSD** Run ID: **GC4_201208A** Analysis Date: **12/8/2020 11:15:07 AM** Prep Date: **12/8/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.91	0.100	2.500	0	116	67	136	2.96	30	
Surr: Tetrachlorethene	0.414		0.4000		103	74	138	0	0	

Sample ID: **MB-98791** Batch ID: **98791** TestNo: **M8015V** Units: **mg/L**
SampType: **MBLK** Run ID: **GC4_201208A** Analysis Date: **12/8/2020 12:29:07 PM** Prep Date: **12/8/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.421		0.4000		105	74	138			

Sample ID: **2012026-06BMS** Batch ID: **98791** TestNo: **M8015V** Units: **mg/L**
SampType: **MS** Run ID: **GC4_201208A** Analysis Date: **12/8/2020 8:34:31 PM** Prep Date: **12/8/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.83	0.100	2.500	0	113	67	136			
Surr: Tetrachlorethene	0.431		0.4000		108	74	138			

Sample ID: **2012026-06BMSD** Batch ID: **98791** TestNo: **M8015V** Units: **mg/L**
SampType: **MSD** Run ID: **GC4_201208A** Analysis Date: **12/8/2020 8:57:59 PM** Prep Date: **12/8/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.91	0.100	2.500	0	117	67	136	2.81	30	
Surr: Tetrachlorethene	0.428		0.4000		107	74	138	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_201209B

The QC data in batch 98762 applies to the following samples: 2012026-01C, 2012026-02C, 2012026-03C, 2012026-04C, 2012026-05C, 2012026-06C

Sample ID: **MB-98762** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:23:01 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-98762** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:25:17 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	85	115			

Sample ID: **LCSD-98762** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:27:33 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	85	115	0	15	

Sample ID: **2012026-01C MS** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:47:57 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00210	0.000200	0.00200	0	105	80	120			

Sample ID: **2012026-01C MSD** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:50:14 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.000200	0.00200	0	104	80	120	0.477	15	

Sample ID: **2012026-01C SD** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:52:30 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2012026-01C PDS** Batch ID: **98762** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_201209B** Analysis Date: **12/9/2020 11:54:46 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00261	0.000200	0.00250	0	104	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201207A

The QC data in batch 98759 applies to the following samples: 2012026-01C, 2012026-02C, 2012026-03C, 2012026-04C, 2012026-05C, 2012026-06C

Sample ID: **MB-98759** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 10:51:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Selenium	<0.00200	0.00500								
Silver	<0.00100	0.00200								

Sample ID: **LCS-98759** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 10:53:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.207	0.00500	0.200	0	103	80	120			
Barium	0.206	0.0100	0.200	0	103	80	120			
Cadmium	0.209	0.00100	0.200	0	104	80	120			
Chromium	0.207	0.00500	0.200	0	103	80	120			
Lead	0.203	0.00100	0.200	0	101	80	120			
Selenium	0.202	0.00500	0.200	0	101	80	120			
Silver	0.206	0.00200	0.200	0	103	80	120			

Sample ID: **LCSD-98759** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 10:55:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.208	0.00500	0.200	0	104	80	120	0.626	15	
Barium	0.206	0.0100	0.200	0	103	80	120	0.036	15	
Cadmium	0.208	0.00100	0.200	0	104	80	120	0.364	15	
Chromium	0.207	0.00500	0.200	0	104	80	120	0.411	15	
Lead	0.204	0.00100	0.200	0	102	80	120	0.663	15	
Selenium	0.202	0.00500	0.200	0	101	80	120	0.169	15	
Silver	0.206	0.00200	0.200	0	103	80	120	0.239	15	

Sample ID: **2012026-02C SD** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 11:01:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0139	0.0250	0	0.0134				4.14	20	
Barium	0.262	0.0500	0	0.263				0.235	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201207A

Sample ID: **2012026-02C SD** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 11:01:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	<0.00150	0.00500	0	0.00132				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Silver	<0.00500	0.0100	0	0				0	20	

Sample ID: **2012026-02C PDS** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 11:21:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.221	0.00500	0.200	0.0134	104	75	125			
Barium	0.459	0.0100	0.200	0.263	97.8	75	125			
Cadmium	0.209	0.00100	0.200	0	104	75	125			
Chromium	0.210	0.00500	0.200	0	105	75	125			
Lead	0.211	0.00100	0.200	0.00132	105	75	125			
Selenium	0.198	0.00500	0.200	0	98.8	75	125			
Silver	0.184	0.00200	0.200	0	91.9	75	125			

Sample ID: **2012026-02C MS** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 11:23:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.220	0.00500	0.200	0.0134	103	75	125			
Barium	0.473	0.0100	0.200	0.263	105	75	125			
Cadmium	0.203	0.00100	0.200	0	102	75	125			
Chromium	0.202	0.00500	0.200	0	101	75	125			
Lead	0.205	0.00100	0.200	0.00132	102	75	125			
Selenium	0.196	0.00500	0.200	0	98.0	75	125			
Silver	0.197	0.00200	0.200	0	98.4	75	125			

Sample ID: **2012026-02C MSD** Batch ID: **98759** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_201207A** Analysis Date: **12/7/2020 11:25:00 AM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.222	0.00500	0.200	0.0134	104	75	125	0.968	15	
Barium	0.471	0.0100	0.200	0.263	104	75	125	0.392	15	
Cadmium	0.204	0.00100	0.200	0	102	75	125	0.592	15	
Chromium	0.203	0.00500	0.200	0	101	75	125	0.262	15	
Lead	0.207	0.00100	0.200	0.00132	103	75	125	1.10	15	
Selenium	0.202	0.00500	0.200	0	101	75	125	2.95	15	
Silver	0.198	0.00200	0.200	0	98.8	75	125	0.380	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_201204A

The QC data in batch 98767 applies to the following samples: 2012026-01A, 2012026-02A, 2012026-03A, 2012026-04A, 2012026-05A, 2012026-06A, 2012026-07A

Sample ID: **LCS-98767** Batch ID: **98767** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS7_201204A** Analysis Date: **12/4/2020 12:46:00 PM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0240	0.00100	0.0232	0	104	81	122			
Ethylbenzene	0.0233	0.00100	0.0232	0	100	80	120			
m,p-Xylene	0.0471	0.00200	0.0464	0	101	80	120			
o-Xylene	0.0232	0.00100	0.0232	0	99.8	80	120			
Toluene	0.0241	0.00200	0.0232	0	104	80	120			
Surr: 1,2-Dichloroethane-d4	210		200.0		105	72	119			
Surr: 4-Bromofluorobenzene	197		200.0		98.5	76	119			
Surr: Dibromofluoromethane	199		200.0		99.4	85	115			
Surr: Toluene-d8	193		200.0		96.3	81	120			

Sample ID: **MB-98767** Batch ID: **98767** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS7_201204A** Analysis Date: **12/4/2020 1:36:00 PM** Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	214		200.0		107	72	119			
Surr: 4-Bromofluorobenzene	200		200.0		99.8	76	119			
Surr: Dibromofluoromethane	201		200.0		100	85	115			
Surr: Toluene-d8	194		200.0		96.9	81	120			

Sample ID: **SB-201204** Batch ID: **98767** TestNo: **SW8260D** Units: **mg/L**
SampType: **SBLK** Run ID: **GCMS7_201204A** Analysis Date: **12/4/2020 4:22:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100	0							
Ethylbenzene	<0.000300	0.00100	0							
m,p-Xylene	<0.000600	0.00200	0							
o-Xylene	<0.000300	0.00100	0							
Toluene	<0.000600	0.00200	0							
Surr: 1,2-Dichloroethane-d4	213		0							
Surr: 4-Bromofluorobenzene	207		0							
Surr: Dibromofluoromethane	198		0							
Surr: Toluene-d8	192		0							

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_201204A

Sample ID: **2012029-01AMS**	Batch ID: **98767**	TestNo: **SW8260D**	Units: **mg/L**
SampType: **MS**	Run ID: **GCMS7_201204A**	Analysis Date: **12/5/2020 12:37:00 AM**	Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0220	0.00100	0.0232	0	94.9	81	122			
Ethylbenzene	0.0213	0.00100	0.0232	0	91.6	80	120			
m,p-Xylene	0.0429	0.00200	0.0464	0	92.5	80	120			
o-Xylene	0.0213	0.00100	0.0232	0	91.9	80	120			
Toluene	0.0219	0.00200	0.0232	0	94.2	80	120			
Surr: 1,2-Dichloroethane-d4	209		200.0		105	72	119			
Surr: 4-Bromofluorobenzene	200		200.0		100	76	119			
Surr: Dibromofluoromethane	201		200.0		100	85	115			
Surr: Toluene-d8	191		200.0		95.5	81	120			

Sample ID: **2012029-01AMSD**	Batch ID: **98767**	TestNo: **SW8260D**	Units: **mg/L**
SampType: **MSD**	Run ID: **GCMS7_201204A**	Analysis Date: **12/5/2020 1:02:00 AM**	Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0225	0.00100	0.0232	0	97.0	81	122	2.16	20	
Ethylbenzene	0.0215	0.00100	0.0232	0	92.6	80	120	1.03	20	
m,p-Xylene	0.0433	0.00200	0.0464	0	93.3	80	120	0.858	20	
o-Xylene	0.0216	0.00100	0.0232	0	93.0	80	120	1.21	20	
Toluene	0.0225	0.00200	0.0232	0	96.8	80	120	2.71	20	
Surr: 1,2-Dichloroethane-d4	208		200.0		104	72	119	0	0	
Surr: 4-Bromofluorobenzene	198		200.0		99.1	76	119	0	0	
Surr: Dibromofluoromethane	202		200.0		101	85	115	0	0	
Surr: Toluene-d8	192		200.0		95.8	81	120	0	0	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201207A

The QC data in batch 98766 applies to the following samples: 2012026-01D, 2012026-02D, 2012026-03D, 2012026-04D, 2012026-05D, 2012026-06D

Sample ID: **MB-98766**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 11:19:54 AM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-98766**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 11:35:54 AM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110			

Sample ID: **LCSD-98766**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 11:51:54 AM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.71	1.00	10.00	0	97.1	90	110	0.567	20	

Sample ID: **2012024-02DMS**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 1:53:06 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	220	10.0	200.0	20.53	99.7	90	110			

Sample ID: **2012024-02DMSD**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 2:09:06 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	220	10.0	200.0	20.53	100	90	110	0.264	20	

Sample ID: **2012026-01DMS**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 4:33:06 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	305	10.0	200.0	110.6	97.4	90	110			

Sample ID: **2012026-01DMSD**	Batch ID: **98766**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_201207A**	Analysis Date: **12/7/2020 4:49:06 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	306	10.0	200.0	110.6	97.7	90	110	0.217	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: WC_201204E

The QC data in batch 98761 applies to the following samples: 2012026-01D, 2012026-02D, 2012026-03D, 2012026-04D

Sample ID: **MB-98761**	Batch ID: **98761**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_201204E**	Analysis Date: **12/4/2020 3:30:00 PM**	Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-98761**	Batch ID: **98761**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_201204E**	Analysis Date: **12/4/2020 3:30:00 PM**	Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	773	10.0	745.6	0	104	90	113			

Sample ID: **2012017-01C-DUP**	Batch ID: **98761**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_201204E**	Analysis Date: **12/4/2020 3:30:00 PM**	Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2250	50.0	0	2250				0	5	

Sample ID: **2012024-02D-DUP**	Batch ID: **98761**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_201204E**	Analysis Date: **12/4/2020 3:30:00 PM**	Prep Date: **12/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1420	200	0	1360				4.32	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2012026
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: WC_201207B

The QC data in batch 98781 applies to the following samples: 2012026-05D, 2012026-06D

Sample ID: **MB-98781**	Batch ID: **98781**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_201207B**	Analysis Date: **12/7/2020 5:30:00 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-98781**	Batch ID: **98781**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_201207B**	Analysis Date: **12/7/2020 5:30:00 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	775	10.0	745.6	0	104	90	113			

Sample ID: **2012031-01B-DUP**	Batch ID: **98781**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_201207B**	Analysis Date: **12/7/2020 5:30:00 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	10500	200	0	10660				1.13	5	

Sample ID: **2012031-02B-DUP**	Batch ID: **98781**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_201207B**	Analysis Date: **12/7/2020 5:30:00 PM**	Prep Date: **12/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	10400	200	0	10360				0.385	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL ANALYTICAL

April 02, 2021

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX (432) 686-0186

Order No.: 2103200

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 3/25/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-26

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72860
CHAIN-OF-CUSTODY

CLIENT: GHD SERVICES
ADDRESS: 34127 GAP RD GOLDEN 80403
PHONE: 303 941 6156 FAX/E-MAIL: BRIAN.STEPHENSON@GHD.COM
DATA REPORTED TO: BSTEPHENSON
ADDITIONAL REPORT COPIES TO: ✓ CLOUD

DATE: 3/24/21 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2103200
PROJECT LOCATION OR NAME: MONUMENT
CLENT PROJECT #: 11211495 COLLECTOR: BStephenson

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX X MTBE ❑ | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO IMETHOD 8015 X DRO IMETHOD 8015 X | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA X TX11 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE X ANIONS ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS X TSS ❑ % MOISTURE ❑ CYANIDE ❑

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	FIELD NOTES
MW-1	01	3/24/21	1415	W		10	
MW-3	02		1445	W		10	
MW-5	03		1515	W		10	
MW-5D	04		1515	W		10	
MW-6	05		1530	W		10	
MW-7	06		1600	W		10	
TRIP	07	3/24/21	—	W		2	

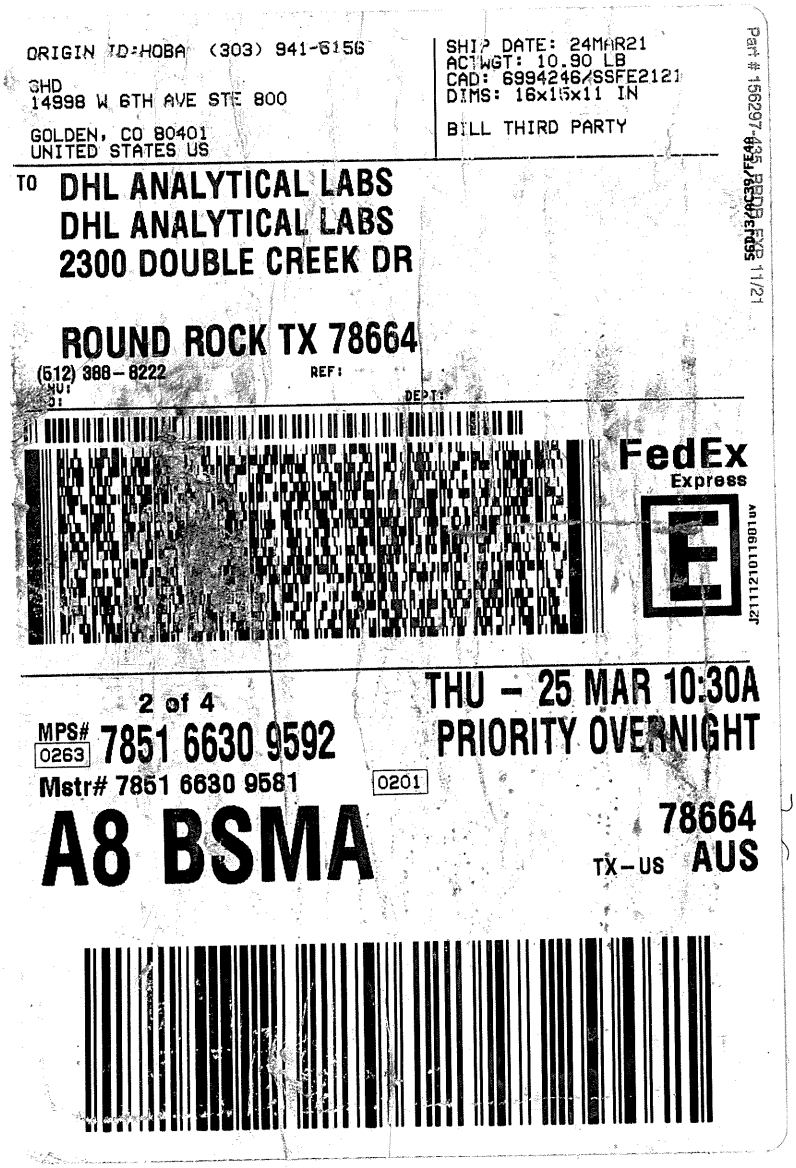
RELINQUISHED BY: (Signature) DATE/TIME 3/24/21 1600 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 3/25/21 0940 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ❑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 4.3 / 3.6 °C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010



ORIGIN ID:HOBA (303) 941-6156
GHD
14998 W 6TH AVE STE 800
GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 24MAR21
ACTWGT: 10.90 LB
CAD: 6994246/SSFE2121
DIMS: 16x15x11 IN
BILL THIRD PARTY

TO DHL ANALYTICAL LABS
DHL ANALYTICAL LABS
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV: DEPT:

FedEx Express

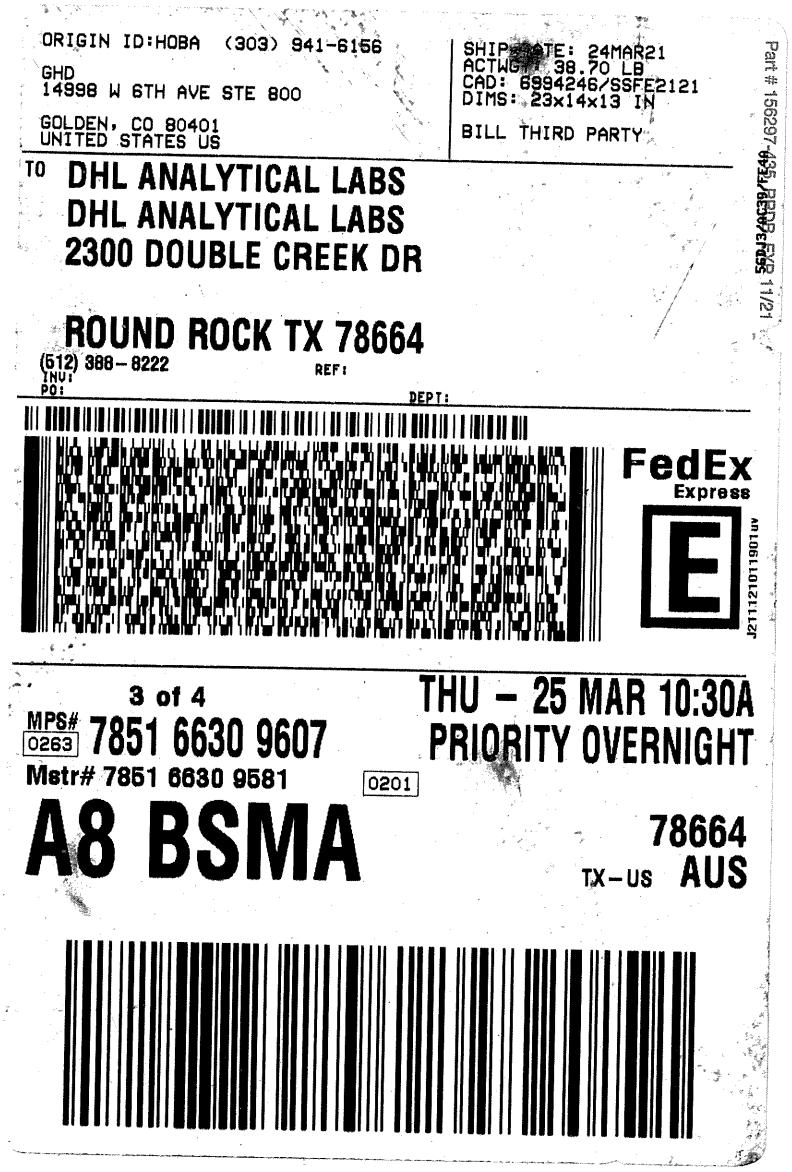
2 of 4
MPS# 0263 7851 6630 9592
Mstr# 7851 6630 9581 0201

THU - 25 MAR 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

Part # 156297-435 RRD0 EXP 11/21


ORIGIN ID:HOBA (303) 941-6156
GHD
14998 W 6TH AVE STE 800
GOLDEN, CO 80401
UNITED STATES US
SHIP DATE: 24MAR21
ACTWGT: 38.70 LB
CAD: 6994246/SSFE2121
DIMS: 23x14x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL LABS
DHL ANALYTICAL LABS
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
3 of 4
MPS# 0263 7851 6630 9607
Mstr# 7851 6630 9581
0201
THU - 25 MAR 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 3/25/2021

Work Order Number 2103200 Received by: EL

Checklist completed by: _____ 3/25/2021 Reviewed by PL 3/25/2021
Signature Date Initials Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.3 °C 13.6°C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by I2.A.
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *02-Apr-21*

CLIENT: GHD
Project: Monument
Lab Order: 2103200

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition, E300 and Standard Methods.

For DRO analysis an MS/MSD was not performed due to insufficient sample volume. An LCS/LCSD was performed instead.

All method blanks, sample duplicates, laboratory spikes, and/or matrix spikes met quality assurance objectives.

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2103200-01
Project No:	11211495	**Collection Date:**	03/24/21 02:15 PM
Lab Order:	2103200	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.160	0.160	0.200		mg/L	1	03/31/21 02:36 PM
Surr: Isopropylbenzene	70.6	0	47-142		%REC	1	03/31/21 02:36 PM
Surr: Octacosane	85.9	0	51-124		%REC	1	03/31/21 02:36 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/30/21 06:48 PM
Surr: Tetrachlorethene	122	0	74-138		%REC	1	03/30/21 06:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.00549	0.00200	0.00500		mg/L	1	03/29/21 12:48 PM
Barium	0.0946	0.00300	0.0100		mg/L	1	03/29/21 12:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/29/21 12:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/29/21 12:48 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/29/21 12:48 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/29/21 12:48 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/29/21 12:48 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/30/21 11:38 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 05:11 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 05:11 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 05:11 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 05:11 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 05:11 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	03/30/21 05:11 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	03/30/21 05:11 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	03/30/21 05:11 PM
Surr: Toluene-d8	101	0	81-120		%REC	1	03/30/21 05:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	124	3.00	10.0		mg/L	10	03/29/21 07:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	657	10.0	10.0		mg/L	1	03/30/21 05:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2103200-02
Project No:	11211495	**Collection Date:**	03/24/21 02:45 PM
Lab Order:	2103200	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.149	0.149	0.186		mg/L	1	03/31/21 02:45 PM
Surr: Isopropylbenzene	56.3	0	47-142		%REC	1	03/31/21 02:45 PM
Surr: Octacosane	70.2	0	51-124		%REC	1	03/31/21 02:45 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/30/21 07:11 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	03/30/21 07:11 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.00947	0.00200	0.00500		mg/L	1	03/29/21 01:32 PM
Barium	0.382	0.00300	0.0100		mg/L	1	03/29/21 01:32 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/29/21 01:32 PM
Chromium	0.0134	0.00200	0.00500		mg/L	1	03/29/21 01:32 PM
Lead	0.00334	0.000300	0.00100		mg/L	1	03/29/21 01:32 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/29/21 01:32 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/29/21 01:32 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	0.000123	0.0000800	0.000200	J	mg/L	1	03/30/21 11:40 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 05:35 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 05:35 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 05:35 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 05:35 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 05:35 PM
Surr: 1,2-Dichloroethane-d4	109	0	72-119		%REC	1	03/30/21 05:35 PM
Surr: 4-Bromofluorobenzene	108	0	76-119		%REC	1	03/30/21 05:35 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	03/30/21 05:35 PM
Surr: Toluene-d8	99.7	0	81-120		%REC	1	03/30/21 05:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	302	3.00	10.0		mg/L	10	03/29/21 09:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	830	10.0	10.0		mg/L	1	03/30/21 05:00 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2103200-03
Project No:	11211495	**Collection Date:**	03/24/21 03:15 PM
Lab Order:	2103200	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.150	0.150	0.188		mg/L	1	03/31/21 02:54 PM
Surr: Isopropylbenzene	70.9	0	47-142		%REC	1	03/31/21 02:54 PM
Surr: Octacosane	80.9	0	51-124		%REC	1	03/31/21 02:54 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/30/21 07:34 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	03/30/21 07:34 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.0345	0.00200	0.00500		mg/L	1	03/29/21 01:34 PM
Barium	1.21	0.00300	0.0100		mg/L	1	03/29/21 01:34 PM
Cadmium	0.00212	0.000300	0.00100		mg/L	1	03/29/21 01:34 PM
Chromium	0.0388	0.00200	0.00500		mg/L	1	03/29/21 01:34 PM
Lead	0.0136	0.000300	0.00100		mg/L	1	03/29/21 01:34 PM
Selenium	0.00547	0.00200	0.00500		mg/L	1	03/29/21 01:34 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/29/21 01:34 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/30/21 11:42 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:00 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:00 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 06:00 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:00 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 06:00 PM
Surr: 1,2-Dichloroethane-d4	109	0	72-119		%REC	1	03/30/21 06:00 PM
Surr: 4-Bromofluorobenzene	109	0	76-119		%REC	1	03/30/21 06:00 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	03/30/21 06:00 PM
Surr: Toluene-d8	102	0	81-120		%REC	1	03/30/21 06:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	298	3.00	10.0		mg/L	10	03/29/21 09:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	822	10.0	10.0		mg/L	1	03/30/21 05:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2103200-04
Project No:	11211495	**Collection Date:**	03/24/21 03:15 PM
Lab Order:	2103200	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.184		mg/L	1	03/31/21 03:03 PM
Surr: Isopropylbenzene	56.5	0	47-142		%REC	1	03/31/21 03:03 PM
Surr: Octacosane	68.0	0	51-124		%REC	1	03/31/21 03:03 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/30/21 07:57 PM
Surr: Tetrachlorethene	127	0	74-138		%REC	1	03/30/21 07:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.0281	0.00200	0.00500		mg/L	1	03/29/21 01:36 PM
Barium	0.804	0.00300	0.0100		mg/L	1	03/29/21 01:36 PM
Cadmium	0.00164	0.000300	0.00100		mg/L	1	03/29/21 01:36 PM
Chromium	0.0240	0.00200	0.00500		mg/L	1	03/29/21 01:36 PM
Lead	0.00880	0.000300	0.00100		mg/L	1	03/29/21 01:36 PM
Selenium	0.00482	0.00200	0.00500	J	mg/L	1	03/29/21 01:36 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/29/21 01:36 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/30/21 11:45 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:24 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:24 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 06:24 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:24 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 06:24 PM
Surr: 1,2-Dichloroethane-d4	110	0	72-119		%REC	1	03/30/21 06:24 PM
Surr: 4-Bromofluorobenzene	106	0	76-119		%REC	1	03/30/21 06:24 PM
Surr: Dibromofluoromethane	103	0	85-115		%REC	1	03/30/21 06:24 PM
Surr: Toluene-d8	100	0	81-120		%REC	1	03/30/21 06:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	293	3.00	10.0		mg/L	10	03/29/21 09:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	821	10.0	10.0		mg/L	1	03/30/21 05:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2103200-05
Project No:	11211495	**Collection Date:**	03/24/21 03:30 PM
Lab Order:	2103200	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.714	0.153	0.191		mg/L	1	03/31/21 03:12 PM
Surr: Isopropylbenzene	62.8	0	47-142		%REC	1	03/31/21 03:12 PM
Surr: Octacosane	73.2	0	51-124		%REC	1	03/31/21 03:12 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.950	0.0600	0.100		mg/L	1	03/30/21 08:21 PM
Surr: Tetrachlorethene	117	0	74-138		%REC	1	03/30/21 08:21 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.00527	0.00200	0.00500		mg/L	1	03/29/21 01:38 PM
Barium	4.91	0.0300	0.100		mg/L	10	03/29/21 01:46 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/29/21 01:38 PM
Chromium	0.00625	0.00200	0.00500		mg/L	1	03/29/21 01:38 PM
Lead	0.00291	0.000300	0.00100		mg/L	1	03/29/21 01:38 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/29/21 01:38 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/29/21 01:38 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/30/21 11:47 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:49 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:49 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 06:49 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 06:49 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 06:49 PM
Surr: 1,2-Dichloroethane-d4	107	0	72-119		%REC	1	03/30/21 06:49 PM
Surr: 4-Bromofluorobenzene	106	0	76-119		%REC	1	03/30/21 06:49 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	03/30/21 06:49 PM
Surr: Toluene-d8	106	0	81-120		%REC	1	03/30/21 06:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	113	3.00	10.0		mg/L	10	03/29/21 10:09 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	638	10.0	10.0		mg/L	1	03/30/21 05:00 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2103200-06
Project No:	11211495	**Collection Date:**	03/24/21 04:00 PM
Lab Order:	2103200	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.152	0.152	0.190		mg/L	1	03/31/21 03:21 PM
Surr: Isopropylbenzene	65.4	0	47-142		%REC	1	03/31/21 03:21 PM
Surr: Octacosane	72.0	0	51-124		%REC	1	03/31/21 03:21 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/30/21 08:44 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	03/30/21 08:44 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Arsenic	0.0208	0.00200	0.00500		mg/L	1	03/29/21 01:40 PM
Barium	1.26	0.00300	0.0100		mg/L	1	03/29/21 01:40 PM
Cadmium	0.000721	0.000300	0.00100	J	mg/L	1	03/29/21 01:40 PM
Chromium	0.0285	0.00200	0.00500		mg/L	1	03/29/21 01:40 PM
Lead	0.00712	0.000300	0.00100		mg/L	1	03/29/21 01:40 PM
Selenium	0.00202	0.00200	0.00500	J	mg/L	1	03/29/21 01:40 PM
Silver	<0.00100	0.00100	0.00200		mg/L	1	03/29/21 01:40 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/30/21 11:49 AM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 07:13 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 07:13 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 07:13 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 07:13 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 07:13 PM
Surr: 1,2-Dichloroethane-d4	106	0	72-119		%REC	1	03/30/21 07:13 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	03/30/21 07:13 PM
Surr: Dibromofluoromethane	103	0	85-115		%REC	1	03/30/21 07:13 PM
Surr: Toluene-d8	101	0	81-120		%REC	1	03/30/21 07:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	99.3	3.00	10.0		mg/L	10	03/29/21 10:25 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	618	10.0	10.0		mg/L	1	03/30/21 05:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT:	GHD	**Client Sample ID:**	Trip
Project:	Monument	**Lab ID:**	2103200-07
Project No:	11211495	**Collection Date:**	03/24/21
Lab Order:	2103200	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	03/30/21 01:58 PM
Surr: Tetrachlorethene	124	0	74-138		%REC	1	03/30/21 01:58 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 03:57 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 03:57 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 03:57 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	03/30/21 03:57 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	03/30/21 03:57 PM
Surr: 1,2-Dichloroethane-d4	108	0	72-119		%REC	1	03/30/21 03:57 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	03/30/21 03:57 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	03/30/21 03:57 PM
Surr: Toluene-d8	101	0	81-120		%REC	1	03/30/21 03:57 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Apr-21*

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_210331A

The QC data in batch 100024 applies to the following samples: 2103200-01E, 2103200-02E, 2103200-03E, 2103200-04E, 2103200-05E, 2103200-06E

Sample ID: **LCS-100024** Batch ID: **100024** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_210331A** Analysis Date: **3/31/2021 12:26:05 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.973	0.100	1.250	0	77.8	50	114			
Surr: Isopropylbenzene	0.0576		0.1000		57.6	47	142			
Surr: Octacosane	0.0753		0.1000		75.3	51	124			

Sample ID: **LCSD-100024** Batch ID: **100024** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_210331A** Analysis Date: **3/31/2021 12:35:07 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.992	0.100	1.250	0	79.4	50	114	1.99	30	
Surr: Isopropylbenzene	0.0575		0.1000		57.5	47	142	0	0	
Surr: Octacosane	0.0715		0.1000		71.5	51	124	0	0	

Sample ID: **MB-100024** Batch ID: **100024** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_210331A** Analysis Date: **3/31/2021 3:36:24 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100								
Surr: Isopropylbenzene	0.0654		0.1000		65.4	47	142			
Surr: Octacosane	0.0722		0.1000		72.2	51	124			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_210330A

The QC data in batch 100027 applies to the following samples: 2103200-01B, 2103200-02B, 2103200-03B, 2103200-04B, 2103200-05B, 2103200-06B, 2103200-07B

Sample ID: **LCS-100027**	Batch ID: **100027**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCS**	Run ID: **GC4_210330A**	Analysis Date: **3/30/2021 11:08:38 AM**	Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.97	0.100	2.500	0	119	67	136			
Surr: Tetrachlorethene	0.432		0.4000		108	74	138			

Sample ID: **LCSD-100027**	Batch ID: **100027**	TestNo: **M8015V**	Units: **mg/L**
SampType: **LCSD**	Run ID: **GC4_210330A**	Analysis Date: **3/30/2021 11:33:07 AM**	Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.99	0.100	2.500	0	120	67	136	0.567	30	
Surr: Tetrachlorethene	0.477		0.4000		119	74	138	0	0	

Sample ID: **MB-100027**	Batch ID: **100027**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GC4_210330A**	Analysis Date: **3/30/2021 12:44:26 PM**	Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.478		0.4000		120	74	138			

Sample ID: **2103200-06BMS**	Batch ID: **100027**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MS**	Run ID: **GC4_210330A**	Analysis Date: **3/30/2021 9:08:36 PM**	Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.83	0.100	2.500	0	113	67	136			
Surr: Tetrachlorethene	0.492		0.4000		123	74	138			

Sample ID: **2103200-06BMSD**	Batch ID: **100027**	TestNo: **M8015V**	Units: **mg/L**
SampType: **MSD**	Run ID: **GC4_210330A**	Analysis Date: **3/30/2021 9:32:37 PM**	Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.89	0.100	2.500	0	116	67	136	2.20	30	
Surr: Tetrachlorethene	0.489		0.4000		122	74	138	0	0	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210330C

The QC data in batch 100013 applies to the following samples: 2103200-01C, 2103200-02C, 2103200-03C, 2103200-04C, 2103200-05C, 2103200-06C

Sample ID: **MB-100013** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:08:24 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-100013** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:10:42 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115			

Sample ID: **LCSD-100013** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:12:59 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	0	15	

Sample ID: **2103198-02C MS** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:24:27 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	80	120			

Sample ID: **2103198-02C MSD** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:26:44 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120	2.03	15	

Sample ID: **2103198-02C SD** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:29:01 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2103198-02C PDS** Batch ID: **100013** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_210330C** Analysis Date: **3/30/2021 11:31:18 AM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210329B

The QC data in batch 99978 applies to the following samples: 2103200-01C, 2103200-02C, 2103200-03C, 2103200-04C, 2103200-05C, 2103200-06C

Sample ID: **MB-99978** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 12:40:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Selenium	<0.00200	0.00500								
Silver	<0.00100	0.00200								

Sample ID: **LCS-99978** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 12:42:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.198	0.00500	0.200	0	98.8	80	120			
Barium	0.204	0.0100	0.200	0	102	80	120			
Cadmium	0.199	0.00100	0.200	0	99.7	80	120			
Chromium	0.205	0.00500	0.200	0	102	80	120			
Lead	0.203	0.00100	0.200	0	102	80	120			
Selenium	0.205	0.00500	0.200	0	102	80	120			
Silver	0.196	0.00200	0.200	0	98.1	80	120			

Sample ID: **LCSD-99978** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 12:44:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.200	0.00500	0.200	0	99.8	80	120	1.02	15	
Barium	0.204	0.0100	0.200	0	102	80	120	0.082	15	
Cadmium	0.199	0.00100	0.200	0	99.7	80	120	0.025	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.274	15	
Lead	0.204	0.00100	0.200	0	102	80	120	0.166	15	
Selenium	0.209	0.00500	0.200	0	104	80	120	1.93	15	
Silver	0.196	0.00200	0.200	0	98.2	80	120	0.146	15	

Sample ID: **2103200-01C SD** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 12:50:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0.00549				0	20	
Barium	0.0964	0.0500	0	0.0946				1.84	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210329B

Sample ID: **2103200-01C SD** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 12:50:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	<0.00150	0.00500	0	0				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Silver	<0.00500	0.0100	0	0				0	20	

Sample ID: **2103200-01C PDS** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 1:10:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0.00549	98.6	75	125			
Barium	0.301	0.0100	0.200	0.0946	103	75	125			
Cadmium	0.201	0.00100	0.200	0	100	75	125			
Chromium	0.211	0.00500	0.200	0	106	75	125			
Lead	0.212	0.00100	0.200	0	106	75	125			
Selenium	0.209	0.00500	0.200	0	104	75	125			
Silver	0.184	0.00200	0.200	0	92.0	75	125			

Sample ID: **2103200-01C MS** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 1:12:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.204	0.00500	0.200	0.00549	99.4	75	125			
Barium	0.299	0.0100	0.200	0.0946	102	75	125			
Cadmium	0.195	0.00100	0.200	0	97.7	75	125			
Chromium	0.204	0.00500	0.200	0	102	75	125			
Lead	0.209	0.00100	0.200	0	105	75	125			
Selenium	0.203	0.00500	0.200	0	102	75	125			
Silver	0.190	0.00200	0.200	0	95.1	75	125			

Sample ID: **2103200-01C MSD** Batch ID: **99978** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_210329B** Analysis Date: **3/29/2021 1:14:00 PM** Prep Date: **3/26/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.204	0.00500	0.200	0.00549	99.2	75	125	0.135	15	
Barium	0.303	0.0100	0.200	0.0946	104	75	125	1.31	15	
Cadmium	0.195	0.00100	0.200	0	97.4	75	125	0.350	15	
Chromium	0.203	0.00500	0.200	0	102	75	125	0.223	15	
Lead	0.209	0.00100	0.200	0	105	75	125	0.000	15	
Selenium	0.208	0.00500	0.200	0	104	75	125	2.00	15	
Silver	0.189	0.00200	0.200	0	94.7	75	125	0.459	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_210330A

The QC data in batch 100036 applies to the following samples: 2103200-01A, 2103200-02A, 2103200-03A, 2103200-04A, 2103200-05A, 2103200-06A, 2103200-07A

Sample ID: **LCS-100036** Batch ID: **100036** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS7_210330A** Analysis Date: **3/30/2021 2:09:00 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0237	0.00100	0.0232	0	102	81	122			
Ethylbenzene	0.0228	0.00100	0.0232	0	98.1	80	120			
m,p-Xylene	0.0464	0.00200	0.0464	0	100	80	120			
o-Xylene	0.0228	0.00100	0.0232	0	98.2	80	120			
Toluene	0.0227	0.00200	0.0232	0	97.7	80	120			
Surr: 1,2-Dichloroethane-d4	202		200.0		101	72	119			
Surr: 4-Bromofluorobenzene	209		200.0		105	76	119			
Surr: Dibromofluoromethane	203		200.0		101	85	115			
Surr: Toluene-d8	202		200.0		101	81	120			

Sample ID: **MB-100036** Batch ID: **100036** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS7_210330A** Analysis Date: **3/30/2021 3:09:00 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	214		200.0		107	72	119			
Surr: 4-Bromofluorobenzene	212		200.0		106	76	119			
Surr: Dibromofluoromethane	207		200.0		103	85	115			
Surr: Toluene-d8	203		200.0		101	81	120			

Sample ID: **2103191-01AMS** Batch ID: **100036** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS7_210330A** Analysis Date: **3/30/2021 8:51:00 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.257	0.0100	0.232	0	111	81	122			
Ethylbenzene	0.237	0.0100	0.232	0	102	80	120			
m,p-Xylene	0.487	0.0200	0.464	0	105	80	120			
o-Xylene	0.241	0.0100	0.232	0	104	80	120			
Toluene	0.252	0.0200	0.232	0.00850	105	80	120			
Surr: 1,2-Dichloroethane-d4	2080		2000		104	72	119			
Surr: 4-Bromofluorobenzene	2080		2000		104	76	119			
Surr: Dibromofluoromethane	2040		2000		102	85	115			
Surr: Toluene-d8	2030		2000		102	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_210330A

Sample ID: **2103191-01AMSD** Batch ID: **100036** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS7_210330A** Analysis Date: **3/30/2021 9:15:00 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.256	0.0100	0.232	0	110	81	122	0.468	20	
Ethylbenzene	0.243	0.0100	0.232	0	105	80	120	2.67	20	
m,p-Xylene	0.492	0.0200	0.464	0	106	80	120	0.919	20	
o-Xylene	0.242	0.0100	0.232	0	104	80	120	0.704	20	
Toluene	0.252	0.0200	0.232	0.00850	105	80	120	0	20	
Surr: 1,2-Dichloroethane-d4	2050		2000		103	72	119	0	0	
Surr: 4-Bromofluorobenzene	2090		2000		104	76	119	0	0	
Surr: Dibromofluoromethane	2030		2000		101	85	115	0	0	
Surr: Toluene-d8	2020		2000		101	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210329A

The QC data in batch 100004 applies to the following samples: 2103200-01D, 2103200-02D, 2103200-03D, 2103200-04D, 2103200-05D, 2103200-06D

Sample ID: **MB-100004** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 12:30:14 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-100004** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 12:46:14 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.79	1.00	10.00	0	97.9	90	110			

Sample ID: **LCSD-100004** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 1:02:14 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.81	1.00	10.00	0	98.1	90	110	0.165	20	

Sample ID: **2103153-01EMS** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 5:05:54 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2220	100	2000	116.7	105	90	110			

Sample ID: **2103153-01EMSD** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 5:21:54 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2190	100	2000	116.7	104	90	110	1.30	20	

Sample ID: **2103200-01DMS** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 7:29:54 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	324	10.0	200.0	124.1	99.8	90	110			

Sample ID: **2103200-01DMSD** Batch ID: **100004** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_210329A** Analysis Date: **3/29/2021 7:45:54 PM** Prep Date: **3/29/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	322	10.0	200.0	124.1	99.0	90	110	0.505	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2103200
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: WC_210330C

The QC data in batch 100032 applies to the following samples: 2103200-01D, 2103200-02D, 2103200-03D, 2103200-04D, 2103200-05D, 2103200-06D

Sample ID: **MB-100032** Batch ID: **100032** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_210330C** Analysis Date: **3/30/2021 5:00:00 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-100032** Batch ID: **100032** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_210330C** Analysis Date: **3/30/2021 5:00:00 PM** Prep Date: **3/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	749	10.0	745.6	0	100	90	113			

Sample ID: **2103198-01D DUP** Batch ID: **100032** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_210330C** Analysis Date: **4/1/2021 12:40:00 PM** Prep Date: **3/31/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1240	200	0	1220				1.63	5	

Sample ID: **2103198-04D DUP** Batch ID: **100032** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_210330C** Analysis Date: **4/1/2021 12:40:00 PM** Prep Date: **3/31/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	760	200	0	800.0				5.13	5	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 9 of 9
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

June 16, 2021

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX (432) 686-0186

Order No.: 2106066

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 6/9/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GHD
ADDRESS: 6260 N 52ND AVE #105 ARVADA, CO 80002
PHONE: 303 941 6156 EMAIL: BRAM.STEPHENSON@GHD.COM
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

LABORATORY USE ONLY
DHL WORKORDER #: 2106066
PO#:
PROJECT LOCATION OR NAME: MONUMENT
CLIENT PROJECT # 11225604-04-01
COLLECTOR: BSTEPHENSON

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

Lab Use Only

W=WATER L=LIQUID S=SOLID SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

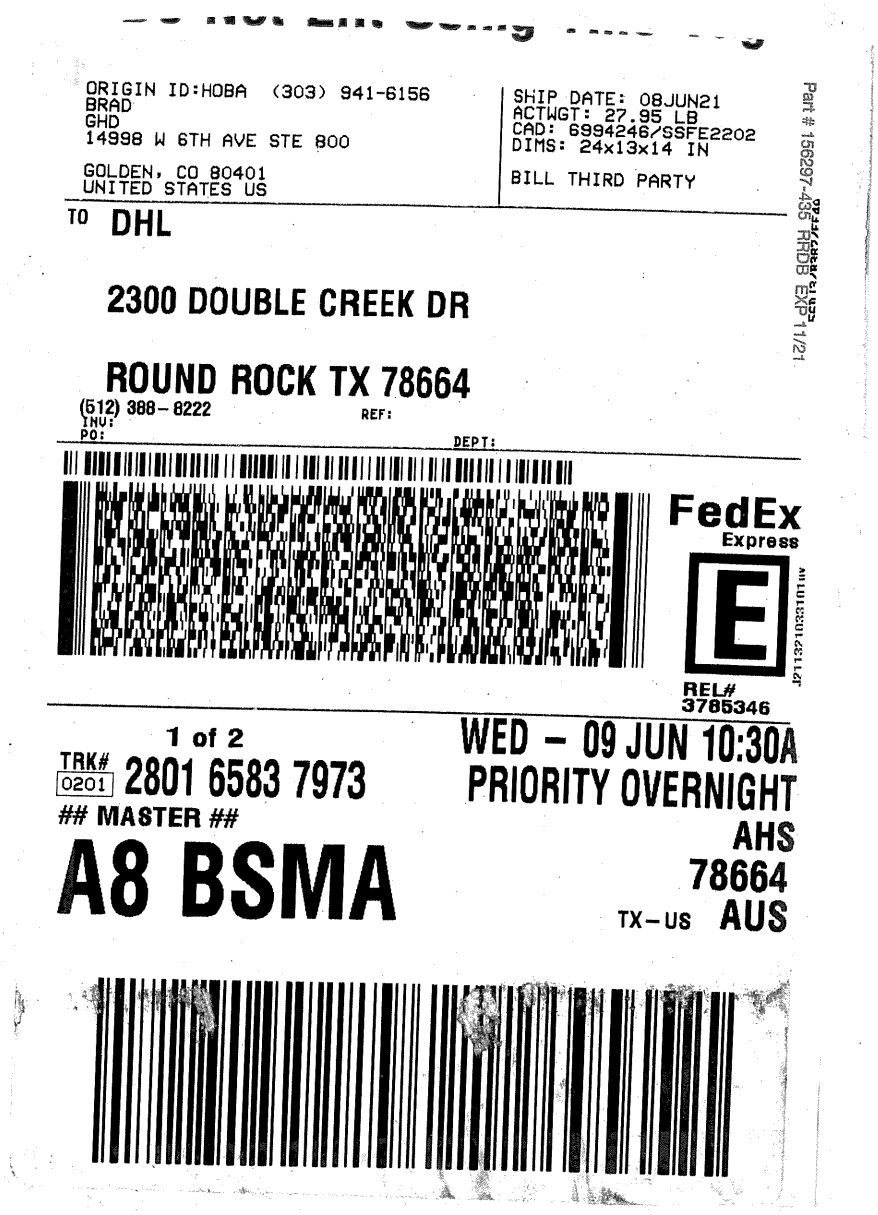
Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☐ UNPRESERVED ☐	ANALYSES: BTEX ☒ MTBE ☐ (METHOD 8260)	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☒ DRO 8015 ☒	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐	pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	ANIONS 300 ☐ 9056 ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	FIELD NOTES
MW-1	01	6/8/21	1150		W	8						X		X															
MW-3	02		1135		W	8						X		X															
MW-5	03		1115		W	8						X		X															
MW-5D	04		1115		W	8						X		X															
MW-6	05		1205		W	8						X		X															
MW-7	06	6/8/21	1225		W	8						X		X															
TRIP	07		—			2						X		Done															

Relinquished By: (Sign)	DATE/TIME 6/8/21 1600	Received by: FEDEX
Relinquished By: (Sign) FedEx	DATE/TIME 6/9/21 0835	Received by:
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☐ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 3.4 °C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**



ORIGIN ID:HOBA (303) 941-6156
BRAD
GHD
14998 W 6TH AVE STE 800

GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 08JUN21
ACTWGT: 27.95 LB
CAD: 6994246/SSFE2202
DIMS: 24x13x14 IN

BILL THIRD PARTY

Part # 156297-435 RRDB EXP 11/21

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV:

PO: DEPT:

FedEx Express

REL# 3785346

1 of 2

TRK# 0201 2801 6583 7973

MASTER

A8 BSMA

WED - 09 JUN 10:30A
PRIORITY OVERNIGHT

AHS
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 6/9/2021

Work Order Number 2106066 Received by: RA

Checklist completed by: _____ 6/9/2021 Reviewed by DL 6/9/2021
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.4 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *16-Jun-21*

CLIENT: GHD
Project: Monument
Lab Order: 2106066

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition and Standard Methods.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives except where noted in the following. For DRO Analysis, the recovery of surrogate Isopropylbenzene for three samples, the Laboratory Control Spike and the Laboratory Control Spike Duplicate (LCS/LCSD-100874) was below the method control limits. These are flagged accordingly in the Analytical Data Report and the QC Summary Report. The remaining surrogate for these samples was within method control limits. No further corrective action was taken.

For Volatiles Analysis, the recovery of Benzene for the Matrix Spike and Matrix Spike Duplicate (2106067-01 MS/MSD) was outside of the method control limits. This is flagged accordingly in the QC Summary Report. This compound was within method control limits in the associated LCS. No further corrective action was taken.

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2106066-01
Project No:	11225604-04-01	**Collection Date:**	06/08/21 11:50 AM
Lab Order:	2106066	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	06/14/21 11:58 AM
Surr: Isopropylbenzene	44.3	0	47-142	S	%REC	1	06/14/21 11:58 AM
Surr: Octacosane	93.7	0	51-124		%REC	1	06/14/21 11:58 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/14/21 01:18 PM
Surr: Tetrachlorethene	121	0	74-138		%REC	1	06/14/21 01:18 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 01:58 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 01:58 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 01:58 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 01:58 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 01:58 PM
Surr: 1,2-Dichloroethane-d4	102	0	72-119		%REC	1	06/09/21 01:58 PM
Surr: 4-Bromofluorobenzene	103	0	76-119		%REC	1	06/09/21 01:58 PM
Surr: Dibromofluoromethane	99.4	0	85-115		%REC	1	06/09/21 01:58 PM
Surr: Toluene-d8	98.7	0	81-120		%REC	1	06/09/21 01:58 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2106066-02
Project No:	11225604-04-01	**Collection Date:**	06/08/21 11:35 AM
Lab Order:	2106066	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	06/14/21 12:07 PM
Surr: Isopropylbenzene	36.3	0	47-142	S	%REC	1	06/14/21 12:07 PM
Surr: Octacosane	107	0	51-124		%REC	1	06/14/21 12:07 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/14/21 01:42 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	06/14/21 01:42 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 02:24 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 02:24 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 02:24 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 02:24 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 02:24 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	06/09/21 02:24 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	06/09/21 02:24 PM
Surr: Dibromofluoromethane	99.1	0	85-115		%REC	1	06/09/21 02:24 PM
Surr: Toluene-d8	99.0	0	81-120		%REC	1	06/09/21 02:24 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2106066-03
Project No:	11225604-04-01	**Collection Date:**	06/08/21 11:15 AM
Lab Order:	2106066	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	06/14/21 12:16 PM
Surr: Isopropylbenzene	54.1	0	47-142		%REC	1	06/14/21 12:16 PM
Surr: Octacosane	93.8	0	51-124		%REC	1	06/14/21 12:16 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/14/21 02:06 PM
Surr: Tetrachlorethene	127	0	74-138		%REC	1	06/14/21 02:06 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 02:50 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 02:50 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 02:50 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 02:50 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 02:50 PM
Surr: 1,2-Dichloroethane-d4	102	0	72-119		%REC	1	06/09/21 02:50 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	06/09/21 02:50 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	06/09/21 02:50 PM
Surr: Toluene-d8	99.3	0	81-120		%REC	1	06/09/21 02:50 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2106066-04
Project No:	11225604-04-01	**Collection Date:**	06/08/21 11:15 AM
Lab Order:	2106066	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	06/14/21 12:25 PM
Surr: Isopropylbenzene	51.8	0	47-142		%REC	1	06/14/21 12:25 PM
Surr: Octacosane	95.7	0	51-124		%REC	1	06/14/21 12:25 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/14/21 02:31 PM
Surr: Tetrachlorethene	122	0	74-138		%REC	1	06/14/21 02:31 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 03:16 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 03:16 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 03:16 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 03:16 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 03:16 PM
Surr: 1,2-Dichloroethane-d4	102	0	72-119		%REC	1	06/09/21 03:16 PM
Surr: 4-Bromofluorobenzene	103	0	76-119		%REC	1	06/09/21 03:16 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	06/09/21 03:16 PM
Surr: Toluene-d8	98.7	0	81-120		%REC	1	06/09/21 03:16 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2106066-05
Project No:	11225604-04-01	**Collection Date:**	06/08/21 12:05 PM
Lab Order:	2106066	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.523	0.147	0.184		mg/L	1	06/14/21 12:34 PM
Surr: Isopropylbenzene	41.0	0	47-142	S	%REC	1	06/14/21 12:34 PM
Surr: Octacosane	94.8	0	51-124		%REC	1	06/14/21 12:34 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.983	0.0600	0.100		mg/L	1	06/14/21 04:39 PM
Surr: Tetrachlorethene	111	0	74-138		%REC	1	06/14/21 04:39 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 03:42 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 03:42 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 03:42 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 03:42 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 03:42 PM
Surr: 1,2-Dichloroethane-d4	101	0	72-119		%REC	1	06/09/21 03:42 PM
Surr: 4-Bromofluorobenzene	100	0	76-119		%REC	1	06/09/21 03:42 PM
Surr: Dibromofluoromethane	99.4	0	85-115		%REC	1	06/09/21 03:42 PM
Surr: Toluene-d8	99.2	0	81-120		%REC	1	06/09/21 03:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2106066-06
Project No:	11225604-04-01	**Collection Date:**	06/08/21 12:25 PM
Lab Order:	2106066	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.148	0.148	0.185		mg/L	1	06/14/21 12:43 PM
Surr: Isopropylbenzene	52.7	0	47-142		%REC	1	06/14/21 12:43 PM
Surr: Octacosane	95.5	0	51-124		%REC	1	06/14/21 12:43 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.101	0.0600	0.100		mg/L	1	06/14/21 05:03 PM
Surr: Tetrachlorethene	125	0	74-138		%REC	1	06/14/21 05:03 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 04:08 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 04:08 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 04:08 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 04:08 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 04:08 PM
Surr: 1,2-Dichloroethane-d4	100	0	72-119		%REC	1	06/09/21 04:08 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	06/09/21 04:08 PM
Surr: Dibromofluoromethane	99.5	0	85-115		%REC	1	06/09/21 04:08 PM
Surr: Toluene-d8	97.7	0	81-120		%REC	1	06/09/21 04:08 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *16-Jun-21*

CLIENT:	GHD	**Client Sample ID:**	Trip
Project:	Monument	**Lab ID:**	2106066-07
Project No:	11225604-04-01	**Collection Date:**	06/08/21
Lab Order:	2106066	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	06/14/21 12:27 PM
Surr: Tetrachlorethene	124	0	74-138		%REC	1	06/14/21 12:27 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 01:32 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 01:32 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 01:32 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 01:32 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	06/09/21 01:32 PM
Surr: 1,2-Dichloroethane-d4	102	0	72-119		%REC	1	06/09/21 01:32 PM
Surr: 4-Bromofluorobenzene	102	0	76-119		%REC	1	06/09/21 01:32 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	06/09/21 01:32 PM
Surr: Toluene-d8	98.2	0	81-120		%REC	1	06/09/21 01:32 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *16-Jun-21*

CLIENT: GHD
Work Order: 2106066
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_210614A

The QC data in batch 100874 applies to the following samples: 2106066-01C, 2106066-02C, 2106066-03C, 2106066-04C, 2106066-05C, 2106066-06C

Sample ID: **MB-100874** Batch ID: **100874** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_210614A** Analysis Date: **6/14/2021 10:11:43 AM** Prep Date: **6/10/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100	0							
Surr: Isopropylbenzene	0.0572		0.1000		57.2	47	142			
Surr: Octacosane	0.0879		0.1000		87.9	51	124			

Sample ID: **LCS-100874** Batch ID: **100874** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_210614A** Analysis Date: **6/14/2021 10:20:47 AM** Prep Date: **6/10/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.959	0.100	1.250	0	76.8	50	114			
Surr: Isopropylbenzene	0.0304		0.1000		30.4	47	142			S
Surr: Octacosane	0.0843		0.1000		84.3	51	124			

Sample ID: **LCSD-100874** Batch ID: **100874** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_210614A** Analysis Date: **6/14/2021 10:29:50 AM** Prep Date: **6/10/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	1.09	0.100	1.250	0	87.1	50	114	12.6	30	
Surr: Isopropylbenzene	0.0298		0.1000		29.8	47	142	0	0	S
Surr: Octacosane	0.0894		0.1000		89.4	51	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2106066
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_210614A

The QC data in batch 100901 applies to the following samples: 2106066-01B, 2106066-02B, 2106066-03B, 2106066-04B, 2106066-05B, 2106066-06B, 2106066-07B

Sample ID: **LCS-100901** Batch ID: **100901** TestNo: **M8015V** Units: **mg/L**
SampType: **LCS** Run ID: **GC4_210614A** Analysis Date: **6/14/2021 10:27:07 AM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.23	0.100	2.500	0	89.3	67	136			
Surr: Tetrachlorethene	0.350		0.4000		87.5	74	138			

Sample ID: **LCSD-100901** Batch ID: **100901** TestNo: **M8015V** Units: **mg/L**
SampType: **LCSD** Run ID: **GC4_210614A** Analysis Date: **6/14/2021 10:51:04 AM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.61	0.100	2.500	0	104	67	136	15.7	30	
Surr: Tetrachlorethene	0.383		0.4000		95.6	74	138	0	0	

Sample ID: **MB-100901** Batch ID: **100901** TestNo: **M8015V** Units: **mg/L**
SampType: **MBLK** Run ID: **GC4_210614A** Analysis Date: **6/14/2021 12:04:24 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.436		0.4000		109	74	138			

Sample ID: **2106066-01BMS** Batch ID: **100901** TestNo: **M8015V** Units: **mg/L**
SampType: **MS** Run ID: **GC4_210614A** Analysis Date: **6/14/2021 2:56:10 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.64	0.100	2.500	0	106	67	136			
Surr: Tetrachlorethene	0.475		0.4000		119	74	138			

Sample ID: **2106066-01BMSD** Batch ID: **100901** TestNo: **M8015V** Units: **mg/L**
SampType: **MSD** Run ID: **GC4_210614A** Analysis Date: **6/14/2021 3:19:48 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.80	0.100	2.500	0	112	67	136	5.77	30	
Surr: Tetrachlorethene	0.492		0.4000		123	74	138	0	0	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2106066
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_210609A

The QC data in batch 100868 applies to the following samples: 2106066-01A, 2106066-02A, 2106066-03A, 2106066-04A, 2106066-05A, 2106066-06A, 2106066-07A

Sample ID: **LCS-100868** Batch ID: **100868** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS5_210609A** Analysis Date: **6/9/2021 12:14:00 PM** Prep Date: **6/9/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0224	0.00100	0.0232	0	96.7	81	122			
Ethylbenzene	0.0222	0.00100	0.0232	0	95.7	80	120			
m,p-Xylene	0.0444	0.00200	0.0464	0	95.8	80	120			
o-Xylene	0.0220	0.00100	0.0232	0	95.0	80	120			
Toluene	0.0224	0.00200	0.0232	0	96.6	80	120			
Surr: 1,2-Dichloroethane-d4	195		200.0		97.7	72	119			
Surr: 4-Bromofluorobenzene	203		200.0		101	76	119			
Surr: Dibromofluoromethane	199		200.0		99.6	85	115			
Surr: Toluene-d8	195		200.0		97.3	81	120			

Sample ID: **MB-100868** Batch ID: **100868** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS5_210609A** Analysis Date: **6/9/2021 1:06:00 PM** Prep Date: **6/9/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	206		200.0		103	72	119			
Surr: 4-Bromofluorobenzene	206		200.0		103	76	119			
Surr: Dibromofluoromethane	202		200.0		101	85	115			
Surr: Toluene-d8	196		200.0		98.2	81	120			

Sample ID: **2106067-01AMS** Batch ID: **100868** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS5_210609A** Analysis Date: **6/9/2021 5:30:00 PM** Prep Date: **6/9/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.829	0.0100	0.232	0.765	27.5	81	122			S
Ethylbenzene	0.254	0.0100	0.232	0.00313	108	80	120			
m,p-Xylene	0.530	0.0200	0.464	0.0300	108	80	120			
o-Xylene	0.285	0.0100	0.232	0.0357	107	80	120			
Toluene	0.350	0.0200	0.232	0.127	96.4	80	120			
Surr: 1,2-Dichloroethane-d4	2030		2000		102	72	119			
Surr: 4-Bromofluorobenzene	1990		2000		99.5	76	119			
Surr: Dibromofluoromethane	2000		2000		99.8	85	115			
Surr: Toluene-d8	1960		2000		97.9	81	120			

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2106066
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_210609A

Sample ID: **2106067-01AMSD** Batch ID: **100868** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS5_210609A** Analysis Date: **6/9/2021 5:56:00 PM** Prep Date: **6/9/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.764	0.0100	0.232	0.765	-0.280	81	122	8.11	20	S
Ethylbenzene	0.237	0.0100	0.232	0.00313	101	80	120	7.05	20	
m,p-Xylene	0.498	0.0200	0.464	0.0300	101	80	120	6.28	20	
o-Xylene	0.263	0.0100	0.232	0.0357	97.8	80	120	8.04	20	
Toluene	0.323	0.0200	0.232	0.127	84.8	80	120	7.99	20	
Surr: 1,2-Dichloroethane-d4	1990		2000		99.5	72	119	0	0	
Surr: 4-Bromofluorobenzene	2020		2000		101	76	119	0	0	
Surr: Dibromofluoromethane	1990		2000		99.5	85	115	0	0	
Surr: Toluene-d8	1950		2000		97.6	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL ANALYTICAL

September 29, 2021

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX (432) 686-0186

Order No.: 2109167

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 9/22/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GHD / HOLLY
ADDRESS:
PHONE: 303 941 6156 EMAIL: BRAD.STEPHENSON@GHD.COM
DATA REPORTED TO: BRAD STEPHENSON
ADDITIONAL REPORT COPIES TO: J. CROUP

DATE: 9/21/21
PO#:
PROJECT LOCATION OR NAME: MONUMENT
CLIENT PROJECT # 11225604 COLLECTOR:

LABORATORY USE ONLY
DHL WORKORDER #: 2109167

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER L=LIQUID S=SOLID SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCL	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☐ UNPRESERVED ☐	ANALYSES: BTEX ☐ [MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☐ DRO 8015 ☐	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐ _____	pH☐ HEX CHROM☐ ALKALINITY☐ COD☐	ANIONS 300 ☐ 9056 ☐ _____	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	FIELD NOTES
MW-1	01	9/21/21	0945	W		8						X		X															
MW-3	02		1130	W		8						X		X															
MW-5	03		1100	W		8						X		X															
MW-5D	04		1100	W		8						X		X															
MW-6	05		1030	W		8						X		X															
MW-7	06	9/21/21	1005	W		8						X		X															
TRIP	07			W		2						X		GRO															

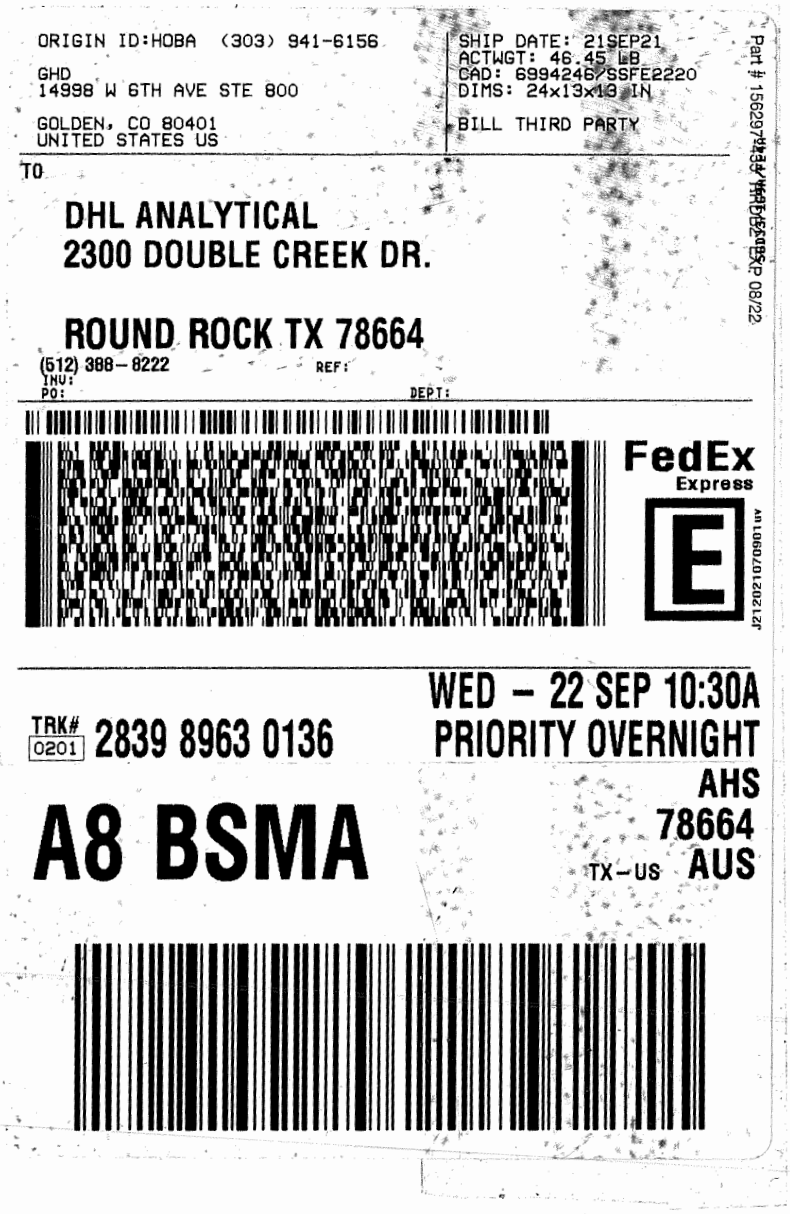
Relinquished By: (Sign) — DATE/TIME 9/21/21 1400 — Received by: FedEx
Relinquished By: (Sign) FedEx — DATE/TIME 9/22/21 0955 — Received by:
Relinquished By: (Sign) — DATE/TIME — Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☐ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 4.8°C THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021



ORIGIN ID:HOBA (303) 941-6156
GHD
14998 W 6TH AVE STE 800
GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 21SEP21
ACTWGT: 46.45 LB
CAD: 6994246/SSFE2220
DIMS: 24x13x13 IN
BILL THIRD PARTY

TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR.
ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

TRK# 0201 2839 8963 0136

WED - 22 SEP 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 9/22/2021

Work Order Number 2109167 Received by: RA

Checklist completed by: _____ 9/22/2021 Reviewed by _____ 9/22/2021
Signature Date Initials Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☐	No ☑	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.8 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: One vial for sample MW-6 broken in transit.

Corrective Action: Proceed with analysis using unbroken vials.

DHL Analytical, Inc. **Date:** *29-Sep-21*

CLIENT: GHD
Project: Monument
Lab Order: 2109167

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition and Standard Methods.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives except where noted in the following. For TPH-DRO Analysis, the recovery of surrogate Isopropylbenzene for three samples was below the method control limits. These are flagged accordingly in the Analytical Data Report. The remaining surrogate for these samples was within method control limits. No further corrective action was taken.

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2109167-01
Project No:	11225604	**Collection Date:**	09/21/21 09:45 AM
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.554	0.554	0.738		mg/L	1	09/28/21 10:43 AM
Surr: Isopropylbenzene	47.0	0	47-142		%REC	1	09/28/21 10:43 AM
Surr: Octacosane	95.1	0	51-124		%REC	1	09/28/21 10:43 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/27/21 01:50 PM
Surr: Tetrachlorethene	118	0	74-138		%REC	1	09/27/21 01:50 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 03:26 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 03:26 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 03:26 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 03:26 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 03:26 PM
Surr: 1,2-Dichloroethane-d4	91.9	0	72-119		%REC	1	09/23/21 03:26 PM
Surr: 4-Bromofluorobenzene	87.2	0	76-119		%REC	1	09/23/21 03:26 PM
Surr: Dibromofluoromethane	105	0	85-115		%REC	1	09/23/21 03:26 PM
Surr: Toluene-d8	88.0	0	81-120		%REC	1	09/23/21 03:26 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2109167-02
Project No:	11225604	**Collection Date:**	09/21/21 11:30 AM
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.554	0.554	0.739		mg/L	1	09/28/21 10:52 AM
Surr: Isopropylbenzene	57.3	0	47-142		%REC	1	09/28/21 10:52 AM
Surr: Octacosane	94.8	0	51-124		%REC	1	09/28/21 10:52 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/27/21 02:15 PM
Surr: Tetrachlorethene	124	0	74-138		%REC	1	09/27/21 02:15 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 03:50 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 03:50 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 03:50 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 03:50 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 03:50 PM
Surr: 1,2-Dichloroethane-d4	91.6	0	72-119		%REC	1	09/23/21 03:50 PM
Surr: 4-Bromofluorobenzene	86.7	0	76-119		%REC	1	09/23/21 03:50 PM
Surr: Dibromofluoromethane	105	0	85-115		%REC	1	09/23/21 03:50 PM
Surr: Toluene-d8	88.0	0	81-120		%REC	1	09/23/21 03:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2109167-03
Project No:	11225604	**Collection Date:**	09/21/21 11:00 AM
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.554	0.554	0.739		mg/L	1	09/28/21 11:02 AM
Surr: Isopropylbenzene	42.3	0	47-142	S	%REC	1	09/28/21 11:02 AM
Surr: Octacosane	90.1	0	51-124		%REC	1	09/28/21 11:02 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/27/21 02:38 PM
Surr: Tetrachlorethene	110	0	74-138		%REC	1	09/27/21 02:38 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 04:14 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 04:14 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 04:14 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 04:14 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 04:14 PM
Surr: 1,2-Dichloroethane-d4	92.8	0	72-119		%REC	1	09/23/21 04:14 PM
Surr: 4-Bromofluorobenzene	87.6	0	76-119		%REC	1	09/23/21 04:14 PM
Surr: Dibromofluoromethane	105	0	85-115		%REC	1	09/23/21 04:14 PM
Surr: Toluene-d8	89.8	0	81-120		%REC	1	09/23/21 04:14 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2109167-04
Project No:	11225604	**Collection Date:**	09/21/21 11:00 AM
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.555	0.555	0.739		mg/L	1	09/28/21 11:11 AM
Surr: Isopropylbenzene	41.1	0	47-142	S	%REC	1	09/28/21 11:11 AM
Surr: Octacosane	92.9	0	51-124		%REC	1	09/28/21 11:11 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/27/21 03:03 PM
Surr: Tetrachlorethene	116	0	74-138		%REC	1	09/27/21 03:03 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 04:39 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 04:39 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 04:39 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 04:39 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 04:39 PM
Surr: 1,2-Dichloroethane-d4	91.2	0	72-119		%REC	1	09/23/21 04:39 PM
Surr: 4-Bromofluorobenzene	85.9	0	76-119		%REC	1	09/23/21 04:39 PM
Surr: Dibromofluoromethane	105	0	85-115		%REC	1	09/23/21 04:39 PM
Surr: Toluene-d8	89.4	0	81-120		%REC	1	09/23/21 04:39 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2109167-05
Project No:	11225604	**Collection Date:**	09/21/21 10:30 AM
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.822	0.555	0.739		mg/L	1	09/28/21 11:20 AM
Surr: Isopropylbenzene	56.7	0	47-142		%REC	1	09/28/21 11:20 AM
Surr: Octacosane	87.4	0	51-124		%REC	1	09/28/21 11:20 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.539	0.0600	0.100		mg/L	1	09/27/21 03:27 PM
Surr: Tetrachlorethene	104	0	74-138		%REC	1	09/27/21 03:27 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 05:03 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 05:03 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 05:03 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 05:03 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 05:03 PM
Surr: 1,2-Dichloroethane-d4	91.3	0	72-119		%REC	1	09/23/21 05:03 PM
Surr: 4-Bromofluorobenzene	88.5	0	76-119		%REC	1	09/23/21 05:03 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	09/23/21 05:03 PM
Surr: Toluene-d8	89.7	0	81-120		%REC	1	09/23/21 05:03 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2109167-06
Project No:	11225604	**Collection Date:**	09/21/21 10:05 AM
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.555	0.555	0.740		mg/L	1	09/28/21 11:29 AM
Surr: Isopropylbenzene	43.3	0	47-142	S	%REC	1	09/28/21 11:29 AM
Surr: Octacosane	87.6	0	51-124		%REC	1	09/28/21 11:29 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/27/21 03:50 PM
Surr: Tetrachlorethene	106	0	74-138		%REC	1	09/27/21 03:50 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 05:28 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 05:28 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 05:28 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 05:28 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 05:28 PM
Surr: 1,2-Dichloroethane-d4	92.2	0	72-119		%REC	1	09/23/21 05:28 PM
Surr: 4-Bromofluorobenzene	88.0	0	76-119		%REC	1	09/23/21 05:28 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	09/23/21 05:28 PM
Surr: Toluene-d8	88.3	0	81-120		%REC	1	09/23/21 05:28 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *29-Sep-21*

CLIENT:	GHD	**Client Sample ID:**	Trip
Project:	Monument	**Lab ID:**	2109167-07
Project No:	11225604	**Collection Date:**	09/21/21
Lab Order:	2109167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	09/27/21 01:02 PM
Surr: Tetrachlorethene	112	0	74-138		%REC	1	09/27/21 01:02 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 01:23 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 01:23 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 01:23 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/23/21 01:23 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/23/21 01:23 PM
Surr: 1,2-Dichloroethane-d4	92.6	0	72-119		%REC	1	09/23/21 01:23 PM
Surr: 4-Bromofluorobenzene	88.0	0	76-119		%REC	1	09/23/21 01:23 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	09/23/21 01:23 PM
Surr: Toluene-d8	88.4	0	81-120		%REC	1	09/23/21 01:23 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *29-Sep-21*

CLIENT: GHD
Work Order: 2109167
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_210928A

The QC data in batch 102198 applies to the following samples: 2109167-01C, 2109167-02C, 2109167-03C, 2109167-04C, 2109167-05C, 2109167-06C

Sample ID: **MB-102198** Batch ID: **102198** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_210928A** Analysis Date: **9/28/2021 9:46:58 AM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.300	0.400								
Surr: Isopropylbenzene	0.0503		0.1000		50.3	47	142			
Surr: Octacosane	0.0921		0.1000		92.1	51	124			

Sample ID: **LCS-102198** Batch ID: **102198** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_210928A** Analysis Date: **9/28/2021 9:56:02 AM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	1.02	0.400	1.250	0	81.4	50	114			
Surr: Isopropylbenzene	0.0526		0.1000		52.6	47	142			
Surr: Octacosane	0.0911		0.1000		91.1	51	124			

Sample ID: **LCSD-102198** Batch ID: **102198** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_210928A** Analysis Date: **9/28/2021 10:05:05 AM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	1.01	0.400	1.250	0	81.0	50	114	0.437	30	
Surr: Isopropylbenzene	0.0515		0.1000		51.5	47	142	0	0	
Surr: Octacosane	0.0941		0.1000		94.1	51	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2109167
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_210927A

The QC data in batch 102197 applies to the following samples: 2109167-01B, 2109167-02B, 2109167-03B, 2109167-04B, 2109167-05B, 2109167-06B, 2109167-07B

Sample ID: **LCS-102197** Batch ID: **102197** TestNo: **M8015V** Units: **mg/L**
SampType: **LCS** Run ID: **GC4_210927A** Analysis Date: **9/27/2021 10:36:56 AM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.70	0.100	2.500	0	108	67	136			
Surr: Tetrachlorethene	0.428		0.4000		107	74	138			

Sample ID: **LCSD-102197** Batch ID: **102197** TestNo: **M8015V** Units: **mg/L**
SampType: **LCSD** Run ID: **GC4_210927A** Analysis Date: **9/27/2021 11:01:05 AM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.69	0.100	2.500	0	108	67	136	0.450	30	
Surr: Tetrachlorethene	0.428		0.4000		107	74	138	0	0	

Sample ID: **MB-102197** Batch ID: **102197** TestNo: **M8015V** Units: **mg/L**
SampType: **MBLK** Run ID: **GC4_210927A** Analysis Date: **9/27/2021 12:13:14 PM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.460		0.4000		115	74	138			

Sample ID: **2109167-01BMS** Batch ID: **102197** TestNo: **M8015V** Units: **mg/L**
SampType: **MS** Run ID: **GC4_210927A** Analysis Date: **9/27/2021 4:40:36 PM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.67	0.100	2.500	0	107	67	136			
Surr: Tetrachlorethene	0.472		0.4000		118	74	138			

Sample ID: **2109167-01BMSD** Batch ID: **102197** TestNo: **M8015V** Units: **mg/L**
SampType: **MSD** Run ID: **GC4_210927A** Analysis Date: **9/27/2021 5:04:09 PM** Prep Date: **9/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.83	0.100	2.500	0	113	67	136	5.71	30	
Surr: Tetrachlorethene	0.479		0.4000		120	74	138	0	0	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2109167
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_210923A

The QC data in batch 102170 applies to the following samples: 2109167-01A, 2109167-02A, 2109167-03A, 2109167-04A, 2109167-05A, 2109167-06A, 2109167-07A

Sample ID: **LCS-102170** Batch ID: **102170** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS7_210923A** Analysis Date: **9/23/2021 12:02:00 PM** Prep Date: **9/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0268	0.00100	0.0232	0	116	81	122			
Ethylbenzene	0.0244	0.00100	0.0232	0	105	80	120			
m,p-Xylene	0.0489	0.00200	0.0464	0	105	80	120			
o-Xylene	0.0244	0.00100	0.0232	0	105	80	120			
Toluene	0.0270	0.00200	0.0232	0	116	80	120			
Surr: 1,2-Dichloroethane-d4	181		200.0		90.4	72	119			
Surr: 4-Bromofluorobenzene	171		200.0		85.3	76	119			
Surr: Dibromofluoromethane	206		200.0		103	85	115			
Surr: Toluene-d8	175		200.0		87.6	81	120			

Sample ID: **MB-102170** Batch ID: **102170** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS7_210923A** Analysis Date: **9/23/2021 12:59:00 PM** Prep Date: **9/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	183		200.0		91.6	72	119			
Surr: 4-Bromofluorobenzene	173		200.0		86.7	76	119			
Surr: Dibromofluoromethane	208		200.0		104	85	115			
Surr: Toluene-d8	180		200.0		90.0	81	120			

Sample ID: **LCSD-102170** Batch ID: **102170** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCSD** Run ID: **GCMS7_210923A** Analysis Date: **9/23/2021 5:52:00 PM** Prep Date: **9/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0258	0.00100	0.0232	0	111	81	122	3.83	20	
Ethylbenzene	0.0237	0.00100	0.0232	0	102	80	120	3.16	20	
m,p-Xylene	0.0475	0.00200	0.0464	0	102	80	120	2.82	20	
o-Xylene	0.0238	0.00100	0.0232	0	103	80	120	2.74	20	
Toluene	0.0264	0.00200	0.0232	0	114	80	120	2.36	20	
Surr: 1,2-Dichloroethane-d4	184		200.0		92.0	72	119	0	0	
Surr: 4-Bromofluorobenzene	166		200.0		83.2	76	119	0	0	
Surr: Dibromofluoromethane	203		200.0		102	85	115	0	0	
Surr: Toluene-d8	174		200.0		87.0	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

December 10, 2021

Brad Stephenson
GHD
14998 W 6th Ave #800
Golden, CO 80401
TEL: (720) 974-0935
FAX (432) 686-0186

Order No.: 2112038

RE: Monument

Dear Brad Stephenson:

DHL Analytical, Inc. received 7 sample(s) on 12/3/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GHD 88007
ADDRESS: 6260 W 52ND AVE #105 ARVADA
PHONE: 3039416156 EMAIL: BRAD.STEPHENSON@GHD.COM
DATA REPORTED TO: BSTEPHENSON GHD.COM
ADDITIONAL REPORT COPIES TO: J CLOUD

DATE: 12/2/21
PO#:
PROJECT LOCATION OR NAME: MONUMENT
CLIENT PROJECT # 11225604 COLLECTOR: BSTEPHENSON

LABORATORY USE ONLY
DHL WORKORDER #: 2112038

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER L=LIQUID S=SOIL SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION HCL	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☐ UNPRESERVED ☐	ANALYSES BTEX ☒ MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☒ DRO 8015 ☒	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐ _____	pH☐ HEX CHROM☐ ALKALINITY☐ COD☐	ANIONS 300 ☐ 9056 ☐ _____	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	FIELD NOTES
MW 1	01	12/2/21	0700			8						X		X																
MW 3	02		0820			8						X		X																
MW 5	03		0800			8						X		X																
MW 5D	04		0800			8						X		X																
MW 6	05		0745			8						X		X																
MW 7	06	12/2/21	0720			8						X		X																
	—																													
TRIP	07					2						X		(X)			(GRO)													

Relinquished By: (Sign) DATE/TIME 12/2/21 1700 Received by: FEDEX
Relinquished By: (Sign) Fed Ex DATE/TIME 12/3/21 1015 Received by:
Relinquished By: (Sign) DATE/TIME Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☐ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 3.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021

ORIGIN ID:DENA (000) 000-0000

GHD
14998 W 6TH AVE STE 800

GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 02DEC21
ACTWGT: 40.70 LB
CAD: 6992847/SSF02220
DIMS: 24x14x13 IN

BILL THIRD PARTY

Part # 156297-435 RRDB2 EXP 09/22

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV:

PO: DEPT:

FedEx Express

REL# 3785346

2 of 2

MPS# 0263 2869 8200 3494

Mstr# 2869 8200 3483 0201

FRI - 03 DEC 11:30A
PRIORITY OVERNIGHT

AHS
78664
TX-US AUS

XA BSMA

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name GHD Date Received: 12/3/2021

Work Order Number 2112038 Received by: EL

Checklist completed by: [signature] 12/3/2021 (Signature / Date) Reviewed by SH 12/3/2021 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.8 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *10-Dec-21*

CLIENT: GHD
Project: Monument
Lab Order: 2112038

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition and Standard Methods.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives except where noted in the following. For DRO Analysis, the recovery of surrogate Isopropylbenzene for two samples, the Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD-103080) was below the method control limits. These are flagged accordingly in the Analytical Data Report and the QC Summary Report. The remaining surrogate for these samples was within method control limits. No further corrective action was taken.

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	MW-1
Project:	Monument	**Lab ID:**	2112038-01
Project No:	11225604	**Collection Date:**	12/02/21 07:00 AM
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.154	0.154	0.193		mg/L	1	12/08/21 11:56 AM
Surr: Isopropylbenzene	53.5	0	47-142		%REC	1	12/08/21 11:56 AM
Surr: Octacosane	82.9	0	51-124		%REC	1	12/08/21 11:56 AM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/07/21 02:05 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	12/07/21 02:05 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 01:31 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 01:31 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 01:31 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 01:31 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 01:31 PM
Surr: 1,2-Dichloroethane-d4	92.3	0	72-119		%REC	1	12/06/21 01:31 PM
Surr: 4-Bromofluorobenzene	85.8	0	76-119		%REC	1	12/06/21 01:31 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	12/06/21 01:31 PM
Surr: Toluene-d8	89.9	0	81-120		%REC	1	12/06/21 01:31 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	MW-3
Project:	Monument	**Lab ID:**	2112038-02
Project No:	11225604	**Collection Date:**	12/02/21 08:20 AM
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.153	0.153	0.191		mg/L	1	12/08/21 12:05 PM
Surr: Isopropylbenzene	40.9	0	47-142	S	%REC	1	12/08/21 12:05 PM
Surr: Octacosane	85.7	0	51-124		%REC	1	12/08/21 12:05 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/07/21 02:28 PM
Surr: Tetrachlorethene	128	0	74-138		%REC	1	12/07/21 02:28 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 01:55 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 01:55 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 01:55 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 01:55 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 01:55 PM
Surr: 1,2-Dichloroethane-d4	91.6	0	72-119		%REC	1	12/06/21 01:55 PM
Surr: 4-Bromofluorobenzene	83.9	0	76-119		%REC	1	12/06/21 01:55 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	12/06/21 01:55 PM
Surr: Toluene-d8	89.1	0	81-120		%REC	1	12/06/21 01:55 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5
Project:	Monument	**Lab ID:**	2112038-03
Project No:	11225604	**Collection Date:**	12/02/21 08:00 AM
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.153	0.153	0.191		mg/L	1	12/08/21 12:14 PM
Surr: Isopropylbenzene	48.0	0	47-142		%REC	1	12/08/21 12:14 PM
Surr: Octacosane	87.3	0	51-124		%REC	1	12/08/21 12:14 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/07/21 02:51 PM
Surr: Tetrachlorethene	116	0	74-138		%REC	1	12/07/21 02:51 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 02:20 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 02:20 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 02:20 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 02:20 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 02:20 PM
Surr: 1,2-Dichloroethane-d4	90.6	0	72-119		%REC	1	12/06/21 02:20 PM
Surr: 4-Bromofluorobenzene	85.2	0	76-119		%REC	1	12/06/21 02:20 PM
Surr: Dibromofluoromethane	99.5	0	85-115		%REC	1	12/06/21 02:20 PM
Surr: Toluene-d8	89.3	0	81-120		%REC	1	12/06/21 02:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	MW-5D
Project:	Monument	**Lab ID:**	2112038-04
Project No:	11225604	**Collection Date:**	12/02/21 08:00 AM
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.150	0.150	0.188		mg/L	1	12/08/21 12:23 PM
Surr: Isopropylbenzene	56.8	0	47-142		%REC	1	12/08/21 12:23 PM
Surr: Octacosane	84.8	0	51-124		%REC	1	12/08/21 12:23 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/07/21 03:14 PM
Surr: Tetrachlorethene	122	0	74-138		%REC	1	12/07/21 03:14 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 02:44 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 02:44 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 02:44 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 02:44 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 02:44 PM
Surr: 1,2-Dichloroethane-d4	90.3	0	72-119		%REC	1	12/06/21 02:44 PM
Surr: 4-Bromofluorobenzene	86.3	0	76-119		%REC	1	12/06/21 02:44 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	12/06/21 02:44 PM
Surr: Toluene-d8	88.1	0	81-120		%REC	1	12/06/21 02:44 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	MW-6
Project:	Monument	**Lab ID:**	2112038-05
Project No:	11225604	**Collection Date:**	12/02/21 07:45 AM
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	0.407	0.149	0.187		mg/L	1	12/08/21 12:32 PM
Surr: Isopropylbenzene	40.0	0	47-142	S	%REC	1	12/08/21 12:32 PM
Surr: Octacosane	84.3	0	51-124		%REC	1	12/08/21 12:32 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	0.550	0.0600	0.100		mg/L	1	12/07/21 03:37 PM
Surr: Tetrachlorethene	107	0	74-138		%REC	1	12/07/21 03:37 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 03:08 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 03:08 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 03:08 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 03:08 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 03:08 PM
Surr: 1,2-Dichloroethane-d4	91.4	0	72-119		%REC	1	12/06/21 03:08 PM
Surr: 4-Bromofluorobenzene	86.4	0	76-119		%REC	1	12/06/21 03:08 PM
Surr: Dibromofluoromethane	99.8	0	85-115		%REC	1	12/06/21 03:08 PM
Surr: Toluene-d8	91.7	0	81-120		%REC	1	12/06/21 03:08 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	MW-7
Project:	Monument	**Lab ID:**	2112038-06
Project No:	11225604	**Collection Date:**	12/02/21 07:20 AM
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **BTJ**
TPH-DRO C10-C28	<0.155	0.155	0.193		mg/L	1	12/08/21 12:41 PM
Surr: Isopropylbenzene	58.4	0	47-142		%REC	1	12/08/21 12:41 PM
Surr: Octacosane	89.0	0	51-124		%REC	1	12/08/21 12:41 PM
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/07/21 04:00 PM
Surr: Tetrachlorethene	126	0	74-138		%REC	1	12/07/21 04:00 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 03:33 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 03:33 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 03:33 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 03:33 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 03:33 PM
Surr: 1,2-Dichloroethane-d4	90.9	0	72-119		%REC	1	12/06/21 03:33 PM
Surr: 4-Bromofluorobenzene	87.2	0	76-119		%REC	1	12/06/21 03:33 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	12/06/21 03:33 PM
Surr: Toluene-d8	88.8	0	81-120		%REC	1	12/06/21 03:33 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *10-Dec-21*

CLIENT:	GHD	**Client Sample ID:**	Trip
Project:	Monument	**Lab ID:**	2112038-07
Project No:	11225604	**Collection Date:**	12/02/21
Lab Order:	2112038	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH PURGEABLE BY GC - WATER		**M8015V**					Analyst: **BTJ**
Gasoline Range Organics	<0.0600	0.0600	0.100		mg/L	1	12/07/21 01:19 PM
Surr: Tetrachlorethene	124	0	74-138		%REC	1	12/07/21 01:19 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **JVR**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 12:42 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 12:42 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 12:42 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	12/06/21 12:42 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	12/06/21 12:42 PM
Surr: 1,2-Dichloroethane-d4	90.2	0	72-119		%REC	1	12/06/21 12:42 PM
Surr: 4-Bromofluorobenzene	87.8	0	76-119		%REC	1	12/06/21 12:42 PM
Surr: Dibromofluoromethane	97.9	0	85-115		%REC	1	12/06/21 12:42 PM
Surr: Toluene-d8	88.9	0	81-120		%REC	1	12/06/21 12:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *10-Dec-21*

CLIENT: GHD
Work Order: 2112038
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC15_211208A

The QC data in batch 103080 applies to the following samples: 2112038-01C, 2112038-02C, 2112038-03C, 2112038-04C, 2112038-05C, 2112038-06C

Sample ID: **MB-103080** Batch ID: **103080** TestNo: **M8015D** Units: **mg/L**
SampType: **MBLK** Run ID: **GC15_211208A** Analysis Date: **12/8/2021 11:29:02 AM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	<0.0800	0.100								
Surr: Isopropylbenzene	0.0543		0.1000		54.3	47	142			
Surr: Octacosane	0.0849		0.1000		84.9	51	124			

Sample ID: **LCS-103080** Batch ID: **103080** TestNo: **M8015D** Units: **mg/L**
SampType: **LCS** Run ID: **GC15_211208A** Analysis Date: **12/8/2021 11:38:06 AM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.876	0.100	1.250	0	70.1	50	114			
Surr: Isopropylbenzene	0.0434		0.1000		43.4	47	142			S
Surr: Octacosane	0.0827		0.1000		82.7	51	124			

Sample ID: **LCSD-103080** Batch ID: **103080** TestNo: **M8015D** Units: **mg/L**
SampType: **LCSD** Run ID: **GC15_211208A** Analysis Date: **12/8/2021 11:47:09 AM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
TPH-DRO C10-C28	0.878	0.100	1.250	0	70.2	50	114	0.194	30	
Surr: Isopropylbenzene	0.0427		0.1000		42.7	47	142	0	0	S
Surr: Octacosane	0.0815		0.1000		81.5	51	124	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 1 of 4
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: GHD
Work Order: 2112038
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GC4_211207A

The QC data in batch 103093 applies to the following samples: 2112038-01B, 2112038-02B, 2112038-03B, 2112038-04B, 2112038-05B, 2112038-06B, 2112038-07B

Sample ID: **LCS-103093** Batch ID: **103093** TestNo: **M8015V** Units: **mg/L**
SampType: **LCS** Run ID: **GC4_211207A** Analysis Date: **12/7/2021 11:24:01 AM** Prep Date: **12/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.59	0.100	2.500	0	104	67	136			
Surr: Tetrachlorethene	0.417		0.4000		104	74	138			

Sample ID: **LCSD-103093** Batch ID: **103093** TestNo: **M8015V** Units: **mg/L**
SampType: **LCSD** Run ID: **GC4_211207A** Analysis Date: **12/7/2021 11:47:25 AM** Prep Date: **12/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.55	0.100	2.500	0	102	67	136	1.36	30	
Surr: Tetrachlorethene	0.433		0.4000		108	74	138	0	0	

Sample ID: **MB-103093** Batch ID: **103093** TestNo: **M8015V** Units: **mg/L**
SampType: **MBLK** Run ID: **GC4_211207A** Analysis Date: **12/7/2021 12:55:41 PM** Prep Date: **12/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	<0.0600	0.100								
Surr: Tetrachlorethene	0.470		0.4000		118	74	138			

Sample ID: **2112039-04BMS** Batch ID: **103093** TestNo: **M8015V** Units: **mg/L**
SampType: **MS** Run ID: **GC4_211207A** Analysis Date: **12/7/2021 5:56:56 PM** Prep Date: **12/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.55	0.100	2.500	0	102	67	136			
Surr: Tetrachlorethene	0.456		0.4000		114	74	138			

Sample ID: **2112039-04BMSD** Batch ID: **103093** TestNo: **M8015V** Units: **mg/L**
SampType: **MSD** Run ID: **GC4_211207A** Analysis Date: **12/7/2021 6:20:15 PM** Prep Date: **12/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics	2.68	0.100	2.500	0	107	67	136	4.92	30	
Surr: Tetrachlorethene	0.467		0.4000		117	74	138	0	0	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2112038
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_211206A

The QC data in batch 103086 applies to the following samples: 2112038-01A, 2112038-02A, 2112038-03A, 2112038-04A, 2112038-05A, 2112038-06A, 2112038-07A

Sample ID: **LCS-103086** Batch ID: **103086** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS7_211206A** Analysis Date: **12/6/2021 11:16:00 AM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0236	0.00100	0.0232	0	102	81	122			
Ethylbenzene	0.0220	0.00100	0.0232	0	95.0	80	120			
m,p-Xylene	0.0442	0.00200	0.0464	0	95.3	80	120			
o-Xylene	0.0219	0.00100	0.0232	0	94.4	80	120			
Toluene	0.0238	0.00200	0.0232	0	102	80	120			
Surr: 1,2-Dichloroethane-d4	181		200.0		90.6	72	119			
Surr: 4-Bromofluorobenzene	167		200.0		83.3	76	119			
Surr: Dibromofluoromethane	194		200.0		97.0	85	115			
Surr: Toluene-d8	176		200.0		87.9	81	120			

Sample ID: **MB-103086** Batch ID: **103086** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS7_211206A** Analysis Date: **12/6/2021 12:17:00 PM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
m,p-Xylene	<0.000600	0.00200								
o-Xylene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Surr: 1,2-Dichloroethane-d4	182		200.0		90.9	72	119			
Surr: 4-Bromofluorobenzene	175		200.0		87.4	76	119			
Surr: Dibromofluoromethane	197		200.0		98.7	85	115			
Surr: Toluene-d8	178		200.0		88.8	81	120			

Sample ID: **2112039-01AMS** Batch ID: **103086** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS7_211206A** Analysis Date: **12/6/2021 5:59:00 PM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.227	0.0100	0.232	0.00300	96.7	81	122			
Ethylbenzene	0.199	0.0100	0.232	0	85.9	80	120			
m,p-Xylene	0.397	0.0200	0.464	0	85.6	80	120			
o-Xylene	0.198	0.0100	0.232	0	85.6	80	120			
Toluene	0.226	0.0200	0.232	0	97.5	80	120			
Surr: 1,2-Dichloroethane-d4	1830		2000		91.3	72	119			
Surr: 4-Bromofluorobenzene	1660		2000		83.1	76	119			
Surr: Dibromofluoromethane	2030		2000		102	85	115			
Surr: Toluene-d8	1710		2000		85.4	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: GHD
Work Order: 2112038
Project: Monument

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS7_211206A

Sample ID: **2112039-01AMSD** Batch ID: **103086** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS7_211206A** Analysis Date: **12/6/2021 6:24:00 PM** Prep Date: **12/6/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.226	0.0100	0.232	0.00300	96.0	81	122	0.662	20	
Ethylbenzene	0.203	0.0100	0.232	0	87.4	80	120	1.79	20	
m,p-Xylene	0.405	0.0200	0.464	0	87.3	80	120	1.99	20	
o-Xylene	0.201	0.0100	0.232	0	86.7	80	120	1.35	20	
Toluene	0.225	0.0200	0.232	0	96.9	80	120	0.665	20	
Surr: 1,2-Dichloroethane-d4	1870		2000		93.7	72	119	0	0	
Surr: 4-Bromofluorobenzene	1680		2000		84.0	76	119	0	0	
Surr: Dibromofluoromethane	1990		2000		99.3	85	115	0	0	
Surr: Toluene-d8	1730		2000		86.5	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Appendix E

Oil Analyses Reports

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

SITE LOGIC Report

C3-C36 Whole Oil Molecular Characterization by GC/FID

Contact:	Brad Stephenson	Phone:	303-941-6156
Address:	GHD 6260 W. 52nd Avenue Suite 105 Arvado, CO 80002	Email:	brad.stephenson@ghd.com

MI Identifier: 034SE Report Date: 05/12/2021

Project: HollyFrontier-North Monument , 11225604-04-01
Comments:

Results

Table 1. Summary of the results obtained for Whole Oil Analysis.

Sample Information	WBH-13	BH-111	BH-42
Type	Product	Product	Product
Sample Date	05/06/2021	05/06/2021	05/06/2021
MI ID	034SE-1	034SE-2	034SE-3
Evaporation			
n-Pentane / n-Heptane	0.47	0.00	0.00
2-Methylpentane / 2-Methylheptane	0.72	0.00	0.00
Waterwashing			
Benzene / Cyclohexane	0.06	0.06	0.06
Toluene + 2,3,3-Trimethylpentane / Methylcyclohexane	0.01	0.00	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.42	0.65	0.58
Aromatics / Naphthenes	0.93	1.55	1.49
Biodegradation			
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	77.89	99.18	183.01
3-Methylhexane / n-Heptane	2.82	0.00	0.00
Methylcyclohexane / n-Heptane	146.17	0.00	0.00
Isoparaffins + Naphthenes / Paraffins	23.76	19.54	21.73
Octane rating			
2,2,4,-Trimethylpentane / Methylcyclohexane	0.00	0.00	0.00
Relative percentages - Bulk hydrocarbon composition as PIANO			
% Paraffinic	2.78	2.89	2.71
% Isoparaffinic	34.70	31.62	34.87
% Aromatic	28.97	38.53	35.72
% Naphthenic	31.23	24.82	23.99
% Olefinic	2.33	2.14	2.71

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Table 2. Summary of the results obtained for Whole Oil Analysis.

	Sample Information	WBH-13	BH-111	BH-42
	Type	Product	Product	Product
	Sample Date	05/06/2021	05/06/2021	05/06/2021
	MI ID	034SE-1	034SE-2	034SE-3
		Relative % area	Relative % area	Relative % area
1	Propane	0.00	0.00	0.00
2	Isobutane	0.02	0.00	0.00
3	Isobutene	0.12	0.06	0.00
4	Butane/Methanol	0.00	0.00	0.00
5	trans-2-Butene	0.00	0.00	0.00
6	cis-2-Butene	0.00	0.00	0.00
7	3-Methyl-1-butene	0.00	0.00	0.00
8	Isopentane	0.64	0.50	0.43
9	1-Pentene	0.00	0.00	0.00
10	2-Methyl-1-butene	0.00	0.00	0.00
11	Pentane	0.04	0.00	0.00
12	trans-2-Pentene	0.00	0.00	0.00
13	cis-2-Pentene/t-Butanol	0.00	0.00	0.00
14	2-Methyl-2-butene	0.00	0.00	0.00
15	2,2-Dimethylbutane	0.07	0.05	0.00
16	Cyclopentane	0.00	0.00	0.00
17	2,3-Dimethylbutane/MTBE	0.26	0.24	0.19
18	2-Methylpentane	0.18	0.05	0.06
19	3-Methylpentane	1.68	1.30	1.17
20	Hexane	0.03	0.00	0.00
21	trans-2-Hexene	0.00	0.00	0.00
22	3-Methylcyclopentene	0.00	0.00	0.00
23	3-Methyl-2-pentene	0.00	0.00	0.00
24	cis-2-Hexene	0.00	0.00	0.00
25	3-Methyl-trans-2-pentene	0.17	0.13	0.13
26	Methylcyclopentane	1.94	0.39	0.00
27	2,4-Dimethylpentane	0.35	0.25	0.26
28	Benzene	0.30	0.23	0.18
29	5-Methyl-1-hexene	0.16	0.13	0.07
30	Cyclohexane	5.35	3.97	3.22
31	2-Methylhexane/TAME	0.07	0.00	0.00
32	2,3-Dimethylpentane	1.23	0.94	0.92
33	3-Methylhexane	0.25	0.00	0.00
34A	1-trans-3-Dimethylcyclopentane	1.95	1.84	1.85
34B	1-cis-3-Dimethylcyclopentane	3.17	2.44	2.51
35	2,2,4-Trimethylpentane	0.00	0.00	0.00
36	n-Heptane	0.09	0.00	0.00
37	Methylcyclohexane	13.06	10.55	11.04
38	2,5-Dimethylhexane	1.14	0.78	0.65
39	2,4-Dimethylhexane	0.95	0.81	0.85
40	2,3,4-Trimethylpentane	0.08	0.00	0.00
41A	Toluene/2,3,3-Trimethylpentane	0.07	0.00	0.00
41B	2,3,3-Trimethylpentane	0.00	0.00	0.00
42	2,3-Dimethylhexane	0.66	0.00	0.59
43	2-Methylheptane	0.25	0.00	0.00
44	4-Methylheptane	0.10	0.00	0.00
45	3,4-Dimethylhexane	0.61	0.52	0.57
46A	3-Ethyl-3-methylpentane	6.45	6.52	7.26
46B	1,4-Dimethylcyclohexane	0.15	0.29	0.35
47	3-Methylheptane	1.23	1.06	1.21
48	2,2,5-Trimethylhexane	1.00	0.87	1.29
49	n-Octane	0.14	0.62	0.73
50	2,2-Dimethylheptane	0.00	0.00	0.00
51	2,4-Dimethylheptane	1.05	0.96	1.08
52	Ethylcyclohexane	5.61	5.35	5.03
53	2,6-Dimethylheptane	4.58	4.32	4.75
54	Ethylbenzene	0.34	1.10	1.17
55	m+p Xylenes	0.82	1.10	1.15

(continued …)

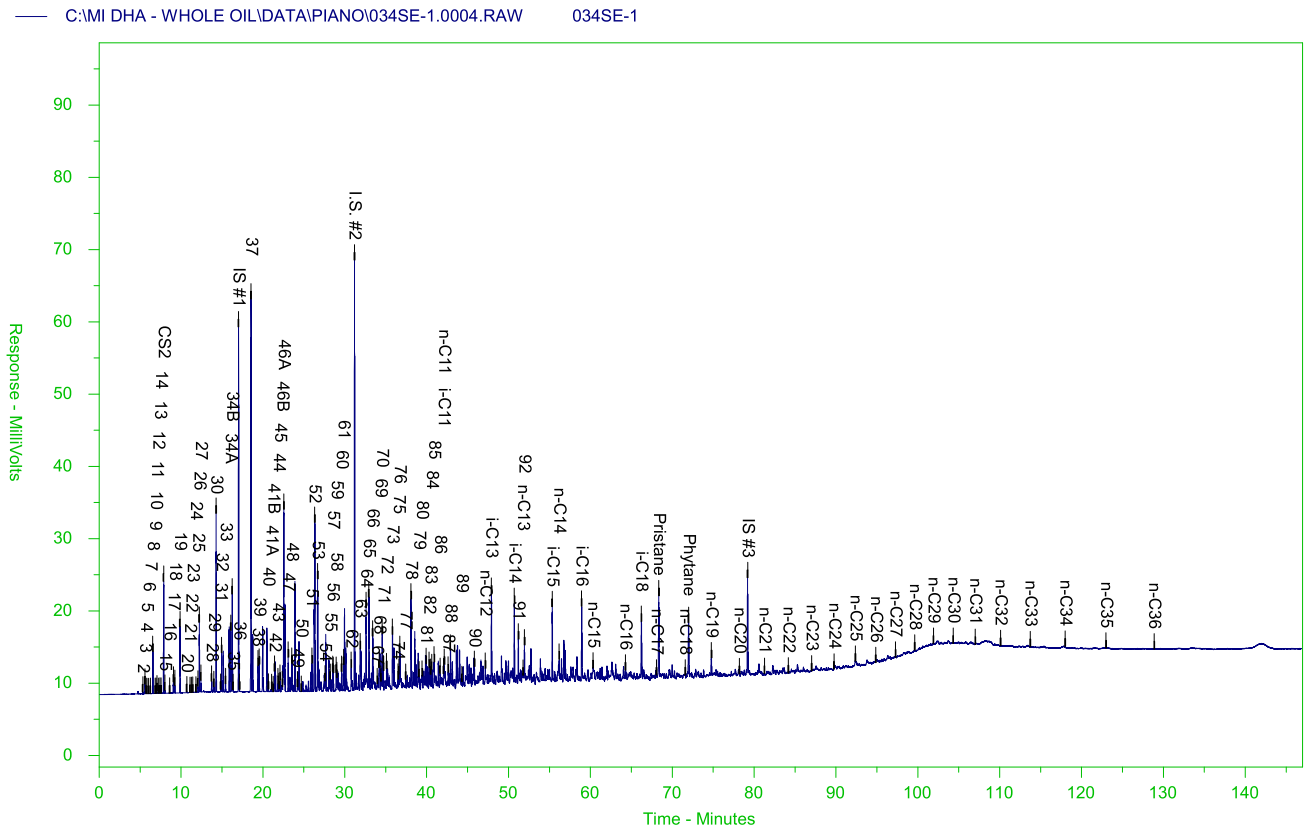
10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Table 2 (continued). Summary of the results obtained for Whole Oil Analysis.

	Sample Information	WBH-13	BH-111	BH-42
	Type	Product	Product	Product
	Sample Date	05/06/2021	05/06/2021	05/06/2021
	MI ID	034SE-1	034SE-2	034SE-3
		Relative % area	Relative % area	Relative % area
56	4-Methyloctane	0.77	0.66	0.80
57	2-Methyloctane	0.61	0.32	0.00
58	3-Ethylheptane	0.65	0.57	0.77
59	3-Methyloctane	0.45	0.31	1.25
60	o-Xylene	0.83	0.80	0.80
61	1-Nonene	1.01	0.95	1.03
62	n-Nonane	0.60	0.66	0.96
63	Isopropylbenzene	1.60	1.71	3.09
64	3,3,5-Trimethylheptane	3.63	3.92	4.14
65	2,4,5-Trimethylheptane	3.19	3.96	3.77
66	n-Propylbenzene	1.88	1.75	2.12
67	1-Methyl-3-ethylbenzene	0.24	0.00	0.00
68	1-Methyl-4-ethylbenzene	1.40	1.32	2.68
69	1,3,5-Trimethylbenzene	0.30	1.39	0.88
70	3,3,4-Trimethylheptane	1.86	2.11	1.27
71	1-Methyl-2-ethylbenzene	0.68	0.51	0.00
72	3-Methylnonane	0.68	0.61	1.61
73	1,2,4-Trimethylbenzene	2.96	1.86	2.30
74	Isobutylbenzene	0.31	0.45	0.28
75	sec-Butylbenzene	0.45	0.48	0.61
76	n-Decane	1.87	1.61	1.02
77	1,2,3-Trimethylbenzene	0.34	0.31	0.00
78	Indan	2.70	4.45	3.47
79	1,3-Diethylbenzene	0.56	2.74	2.74
80	1,4-Diethylbenzene	0.76	1.65	1.41
81	n-Butylbenzene	1.01	0.95	2.39
82	1,3-Dimethyl-5-ethylbenzene	0.80	0.68	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.57	1.25	1.01
84	1,3-Dimethyl-4-ethylbenzene	1.20	1.03	0.00
85	1,2-Dimethyl-4-ethylbenzene	1.26	1.34	0.81
86	Undecene	0.87	0.86	1.48
87	1,2,4,5-Tetramethylbenzene	1.18	1.27	0.90
88	1,2,3,5-Tetramethylbenzene	1.85	2.01	1.55
89	1,2,3,4-Tetramethylbenzene	0.00	0.72	0.56
90	Naphthalene	0.89	0.00	1.22
91	2-Methyl-naphthalene	2.00	3.14	1.58
92	1-Methyl-naphthalene	1.66	4.31	2.83

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

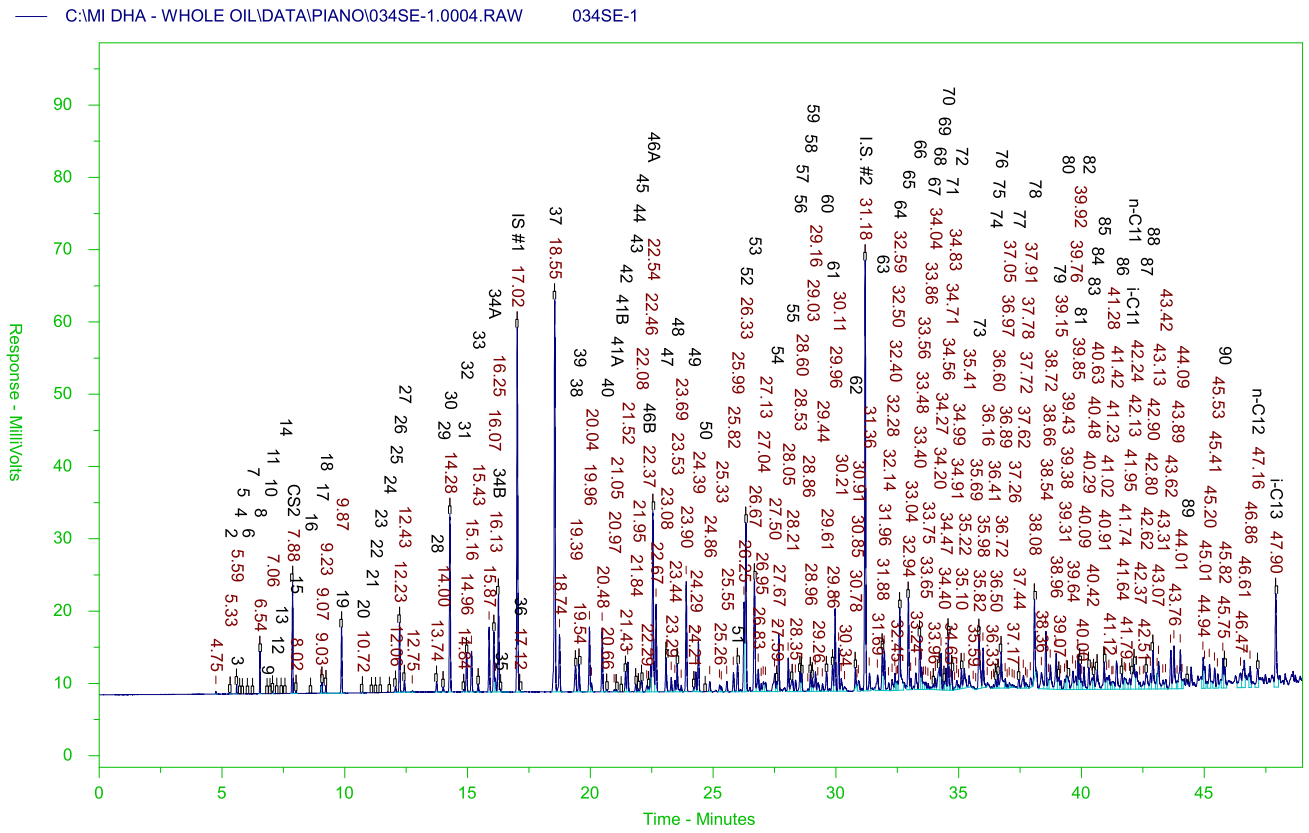
Chrom Perfect Chromatogram Report



Printed on 5/12/2021 10:16:00 AM Page 1 of 1

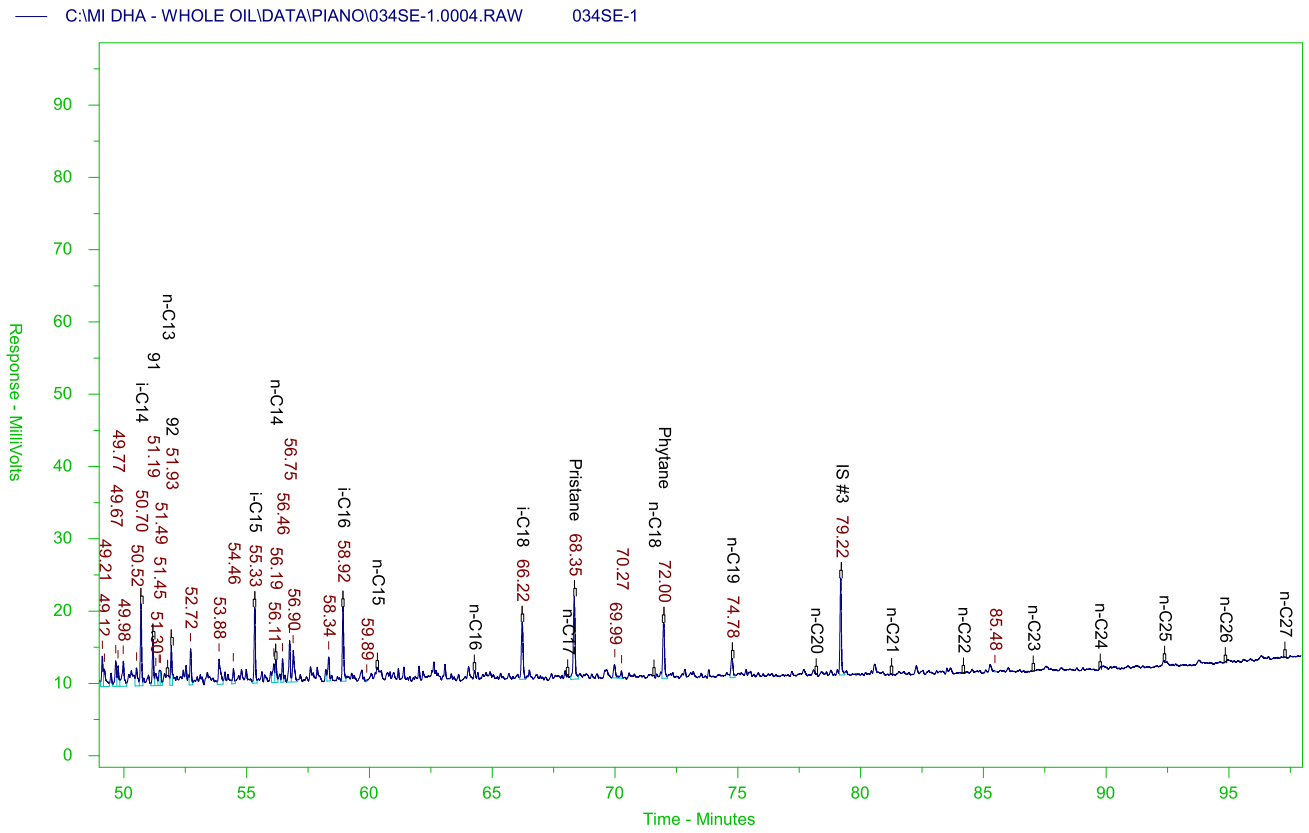
10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report



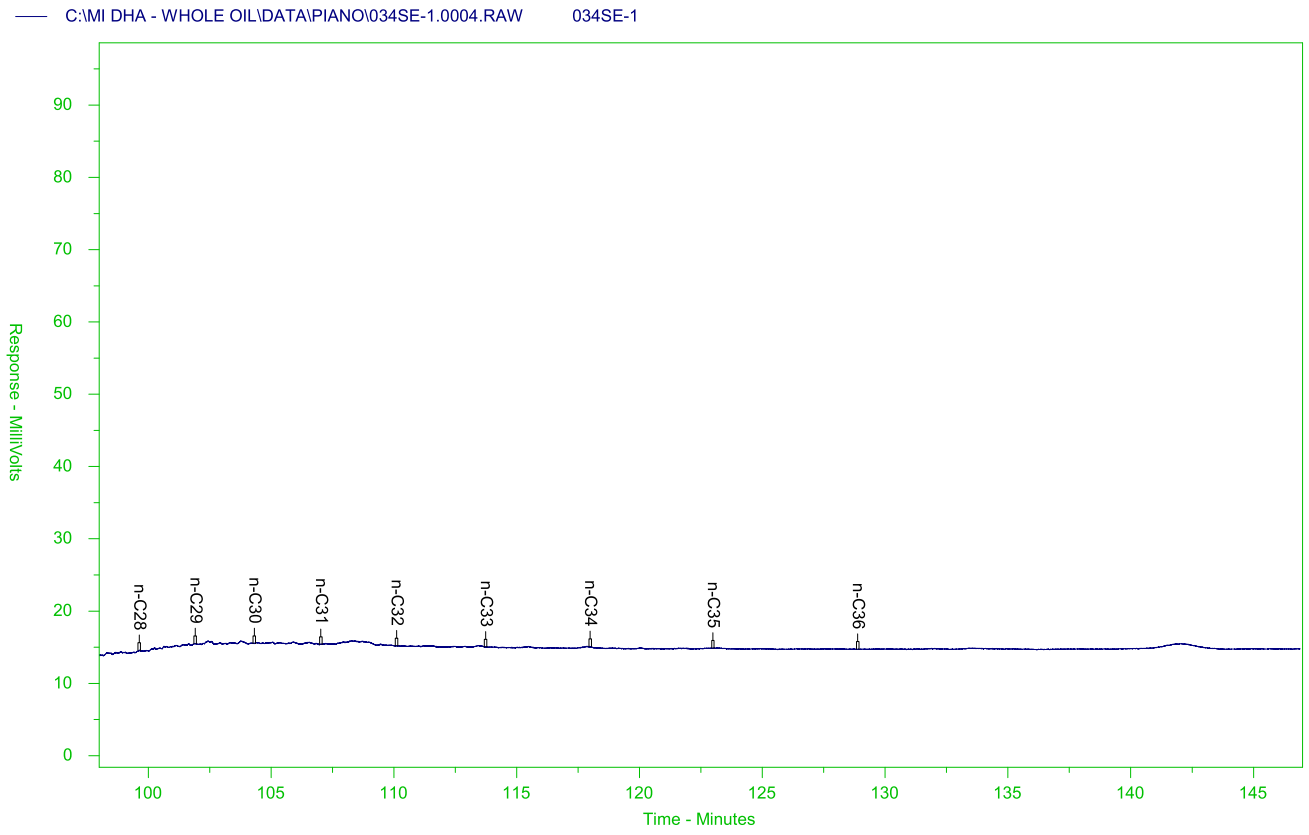
10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report



10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report



Printed on 5/12/2021 10:17:03 AM Page 3 of 3

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Sample Name = 034SE-1

Instrument = DHA-WHOLE-OIL Acquisition Port = DP#
Heading 1 =
Heading 2 =

Raw File Name = C:\MI DHA - WHOLE OIL\DATA\PIANO\034SE-1.0004.RAW Date Taken (end) = 5/7/2021 2:51:13 PM
Method File Name = C:\MI DHA - WHOLE OIL\METHODS\MI-WHOLE-OIL.MET Method Version = 55
Calibration File Name = C:\MI DHA - WHOLE OIL\Calibration files\2020\01182021.cal Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
	4.75	0.0140	485.68
2	5.33	0.0073	254.27
3	5.59	0.0409	1423.57
8	6.54	0.2275	7909.27
11	7.06	0.0149	519.01
CS2	7.88	0.9599	33375.55
15	8.02	0.0247	860.19
	9.03	0.0588	2043.22
17	9.07	0.0936	3254.30
18	9.23	0.0654	2274.97
19	9.87	0.5945	20669.70
20	10.72	0.0094	325.70
25	12.06	0.0612	2126.86
26	12.23	0.6884	23936.19
27	12.43	0.1251	4348.26
	12.75	0.0150	522.48
28	13.74	0.1065	3701.83
29	14.00	0.0570	1982.77
30	14.28	1.8940	65852.39
31	14.84	0.0241	836.67
32	14.96	0.4354	15137.31
	15.16	0.4578	15917.99
33	15.43	0.0891	3097.45
	15.87	0.7058	24541.35
34A	16.07	0.6895	23974.11
	16.13	0.1336	4646.21
34B	16.25	1.1232	39050.32
IS #1	17.02	3.9690	137995.30
36	17.12	0.0316	1099.95
37	18.55	4.6245	160786.20
	18.74	0.7178	24957.06
38	19.39	0.4040	14045.66
39	19.54	0.3361	11684.71
	19.96	0.7533	26190.82
	20.04	0.1008	3504.62
	20.48	0.7343	25530.35
40	20.66	0.0299	1038.86
	20.97	0.0250	870.75
41A	21.05	0.0255	888.29
42	21.43	0.2345	8153.76
	21.52	0.3599	12512.22
43	21.84	0.0903	3138.86
44	21.95	0.0362	1259.01
45	22.08	0.2148	7469.74
	22.29	0.0977	3397.88
46B	22.37	0.0544	1892.50
	22.46	0.3192	11098.58
46A	22.54	2.2843	79422.34
	22.67	1.0124	35199.67
47	23.08	0.4348	15118.75
	23.29	0.1678	5832.45
	23.44	0.1336	4646.28
48	23.53	0.3535	12291.54
	23.69	0.0765	2660.55
	23.90	1.2786	44455.43
49	24.21	0.0511	1775.91
	24.29	0.2354	8184.57
	24.39	0.6011	20899.23
	24.86	0.1259	4376.23
	25.26	0.0814	2829.79
	25.33	0.0564	1962.67
	25.55	0.1200	4170.80
	25.82	0.2283	7937.18
51	25.99	0.3708	12892.28

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
	26.25	1.0968	38132.96
52	26.33	1.9854	69028.65
53	26.67	1.6232	56435.91
	26.83	0.3396	11806.78
	26.95	0.1014	3524.61
	27.04	0.1526	5305.29
	27.13	0.1680	5842.25
	27.50	0.3757	13064.15
54	27.59	0.1200	4172.90
	27.67	0.6793	23617.27
	28.05	0.4140	14394.26
55	28.21	0.2899	10078.62
	28.35	0.1360	4727.18
56	28.53	0.2727	9483.11
57	28.60	0.2160	7508.31
	28.86	0.0306	1062.52
58	28.96	0.2295	7977.93
59	29.03	0.1577	5482.60
	29.16	0.2773	9643.04
	29.26	0.1606	5584.31
	29.44	0.0855	2972.75
60	29.61	0.2930	10187.96
61	29.86	0.3560	12377.94
	29.96	0.9940	34559.82
	30.11	0.5021	17457.45
	30.21	0.1943	6756.91
	30.34	0.0984	3420.90
62	30.78	0.2133	7415.67
	30.85	0.0159	553.83
	30.91	0.1882	6545.09
I.S. #2	31.18	5.0314	174934.00
	31.36	0.2421	8416.30
	31.69	0.2824	9818.23
63	31.88	0.5675	19732.49
	31.96	0.4971	17282.99
	32.14	0.1189	4133.87
	32.28	0.1868	6495.74
	32.40	0.2072	7204.29
	32.45	0.0791	2749.30
	32.50	0.1034	3594.65
64	32.59	1.2857	44701.83
65	32.94	1.1296	39273.92
	33.04	0.1279	4446.93
	33.24	0.2909	10114.50
66	33.40	0.6652	23126.88
	33.48	0.2635	9160.98
	33.56	0.1290	4484.61
	33.65	0.1008	3505.96
	33.75	0.0795	2765.56
	33.86	0.0293	1018.16
67	33.96	0.0865	3006.34
	34.04	0.1382	4806.31
68	34.20	0.4966	17265.04
	34.27	0.4445	15454.57
69	34.40	0.1055	3667.74
	34.47	0.2758	9590.19
70	34.56	0.6581	22881.92
	34.65	0.0544	1889.84
71	34.71	0.2401	8349.05
	34.83	0.0329	1143.40
	34.91	0.1362	4734.83
	34.99	0.0521	1810.23
72	35.10	0.2423	8423.38
	35.22	0.4009	13937.38
	35.41	0.1617	5623.60
	35.59	0.0248	860.79
	35.69	0.0078	272.56
73	35.82	1.0485	36455.06
	35.98	0.5371	18675.80
	36.16	0.0358	1244.44
	36.33	0.0139	482.78
	36.41	0.0382	1328.75
74	36.50	0.1110	3857.99
75	36.60	0.1594	5543.06

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
76	36.72	0.6626	23036.90
	36.89	0.1062	3693.86
	36.97	0.0370	1285.55
	37.05	0.0547	1903.10
	37.17	0.0439	1527.37
	37.26	0.0111	385.12
77	37.44	0.1220	4241.44
	37.62	0.2508	8719.59
	37.72	0.0610	2120.67
	37.78	0.0450	1563.78
	37.91	0.1724	5994.51
78	38.08	0.9563	33250.01
	38.36	0.3719	12931.61
	38.54	0.7322	25459.01
	38.66	0.1390	4832.66
	38.72	0.4181	14538.45
	38.96	0.6199	21554.40
79	39.07	0.1977	6873.79
	39.15	0.1094	3803.76
	39.31	0.1377	4786.72
	39.38	0.1845	6414.02
80	39.43	0.2706	9409.92
	39.64	0.3084	10724.10
	39.76	0.2450	8517.29
	39.85	0.4173	14510.25
81	39.92	0.3568	12405.00
	40.00	0.0955	3320.76
	40.09	0.3267	11357.98
82	40.29	0.2817	9795.27
	40.42	0.2330	8102.48
83	40.48	0.2004	6966.05
84	40.63	0.4262	14817.72
85	40.91	0.4468	15536.09
	41.02	0.2323	8076.36
	41.12	0.2522	8767.80
	41.23	0.1001	3480.86
	41.28	0.1593	5540.34
	41.42	0.5164	17954.84
86	41.64	0.3087	10733.96
	41.74	0.1691	5879.20
	41.79	0.2264	7870.82
	41.95	0.1726	6000.14
n-C11	42.13	0.7362	25595.40
	42.24	0.3530	12272.77
	42.37	0.1078	3746.64
	42.51	0.1520	5285.59
87	42.62	0.4175	14517.37
	42.80	0.2205	7668.16
88	42.90	0.6567	22833.85
	43.07	0.1988	6911.88
	43.13	0.4474	15553.84
	43.31	0.1842	6406.03
	43.42	0.1555	5407.34
	43.62	0.5453	18958.46
	43.76	0.7565	26301.92
	43.89	0.0943	3278.68
	44.01	0.7139	24821.04
	44.09	0.1315	4573.06
	44.94	0.4455	15491.07
	45.01	0.2869	9975.56
	45.20	0.3783	13151.96
	45.41	0.2927	10175.60
	45.53	0.2240	7787.24
	45.75	0.4299	14948.51
90	45.82	0.3162	10995.22
	46.47	0.4086	14206.32
	46.61	0.6171	21454.01
	46.86	0.3094	10755.70
n-C12	47.16	0.3718	12925.43
i-C13	47.90	1.5050	52325.21
	49.12	0.4757	16539.54
	49.21	0.4761	16554.81
	49.67	0.4448	15463.57
	49.77	0.3303	11484.05

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

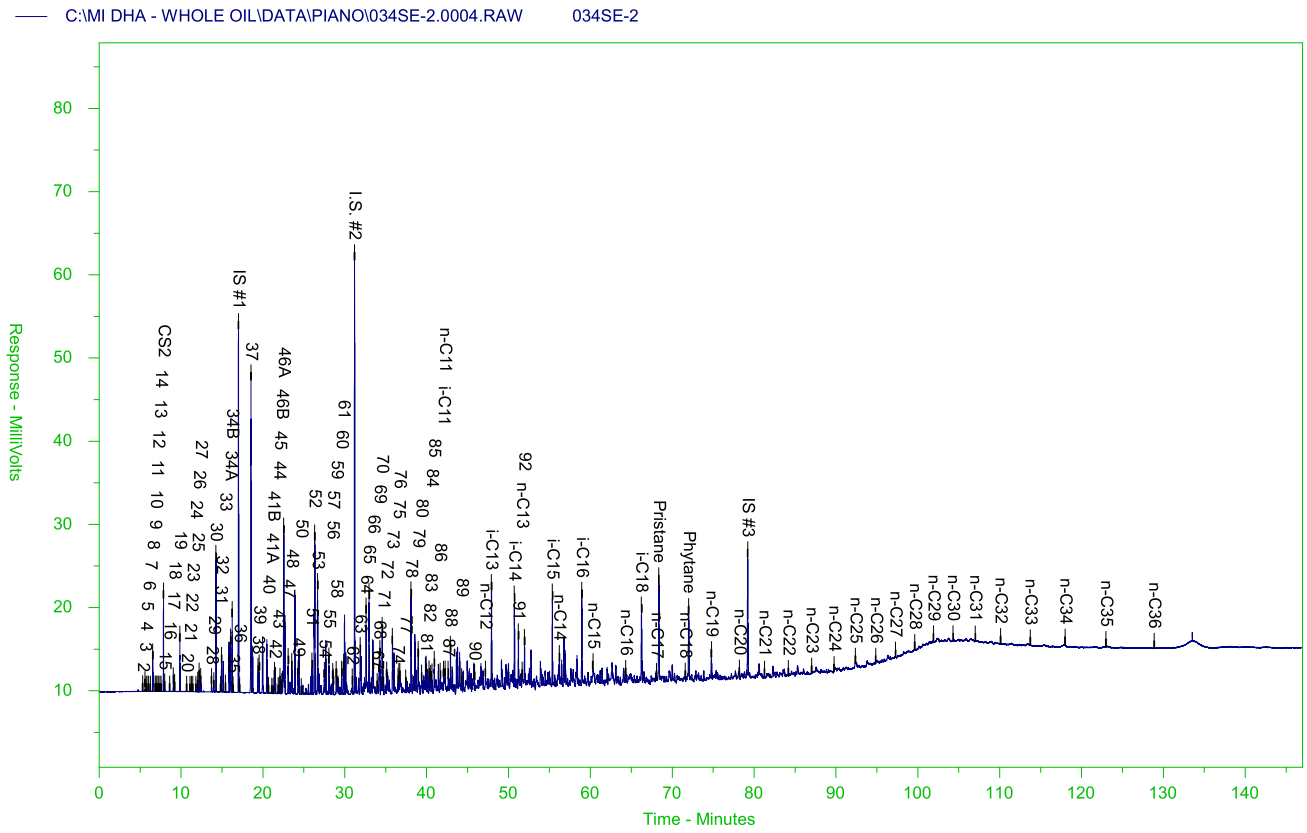
Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
	49.98	0.6730	23399.09
	50.52	0.4110	14291.07
i-C14	50.70	1.1619	40396.75
91	51.19	0.7073	24591.54
	51.30	0.2857	9933.42
	51.45	0.2333	8112.13
	51.49	0.2038	7087.52
92	51.93	0.5886	20463.12
	52.72	0.5622	19547.57
	53.88	0.6436	22376.10
	54.46	0.2619	9107.46
i-C15	55.33	1.1304	39303.57
	56.11	0.3871	13458.77
n-C14	56.19	0.3926	13650.99
	56.46	0.3417	11881.84
	56.75	0.7019	24402.42
	56.90	0.6643	23097.23
	58.34	0.4315	15002.05
i-C16	58.92	1.1958	41577.58
	59.89	0.0147	509.59
i-C18	66.22	1.1668	40566.27
Pristane	68.35	1.7267	60034.58
	69.99	0.2998	10422.06
	70.27	0.1217	4230.36
Phytane	72.00	1.1521	40056.14
n-C19	74.78	0.4767	16575.29
IS #3	79.22	1.5144	52653.89
	85.48	0.0130	450.44

Total Area = 3476854 Total Height = 1004864 Total Amount = 0

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

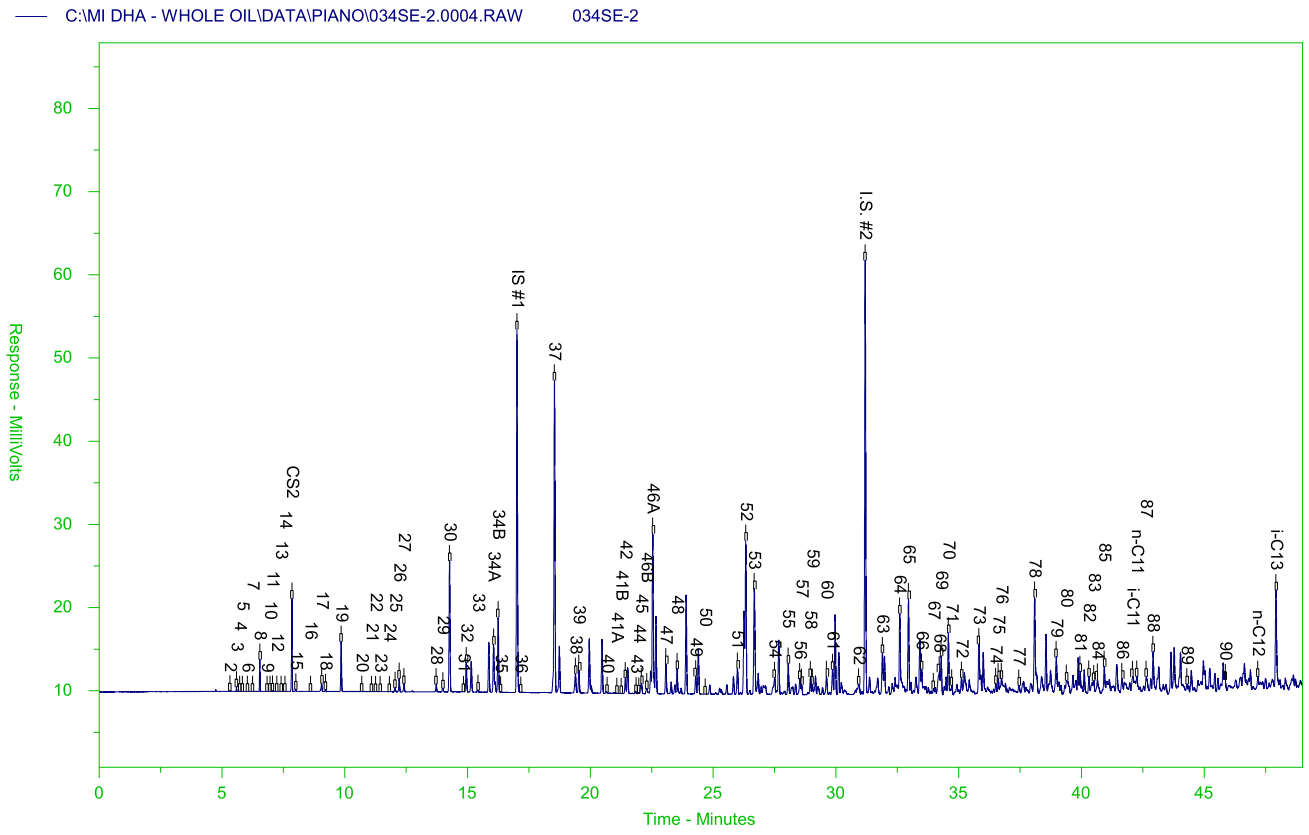
Chrom Perfect Chromatogram Report



Printed on 5/12/2021 10:35:44 AM Page 1 of 1

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

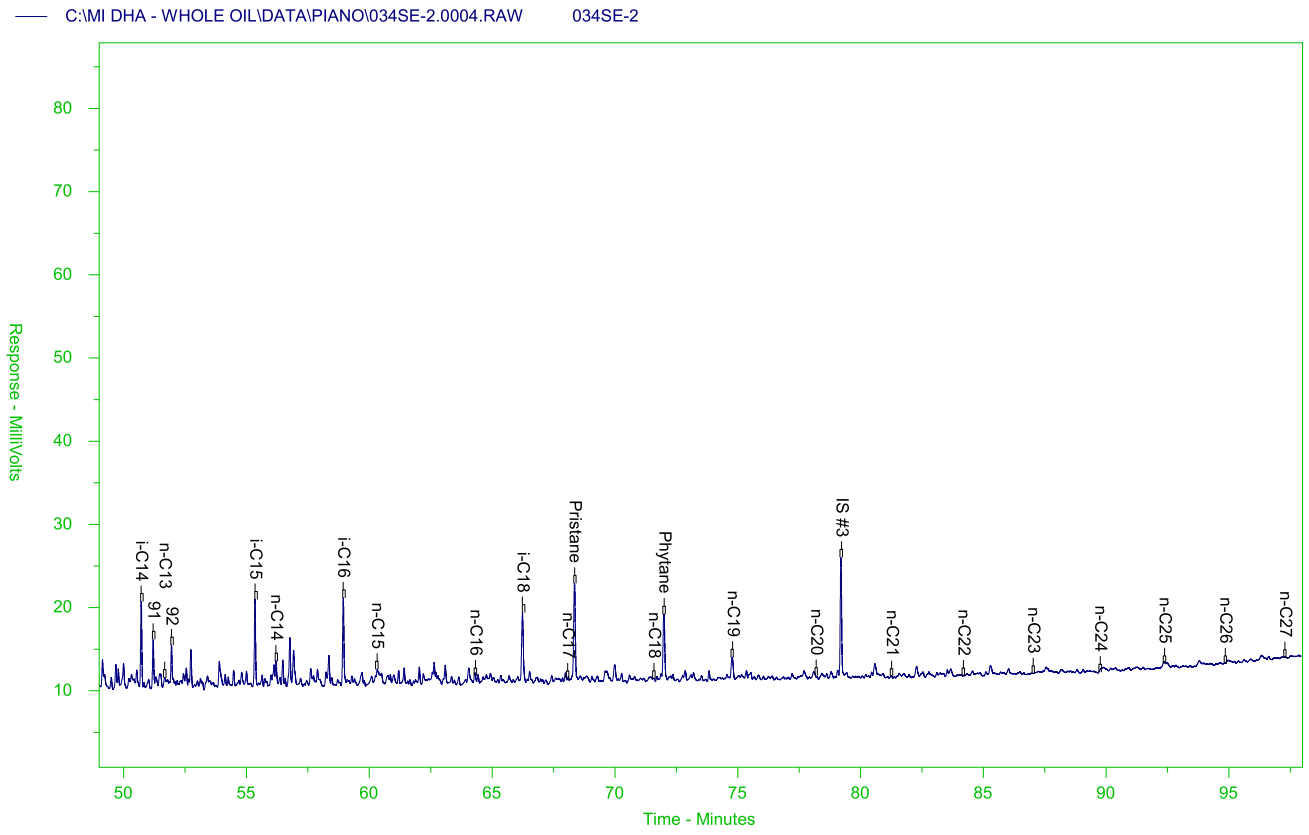
Chrom Perfect Chromatogram Report



Printed on 5/12/2021 10:39:20 AM

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

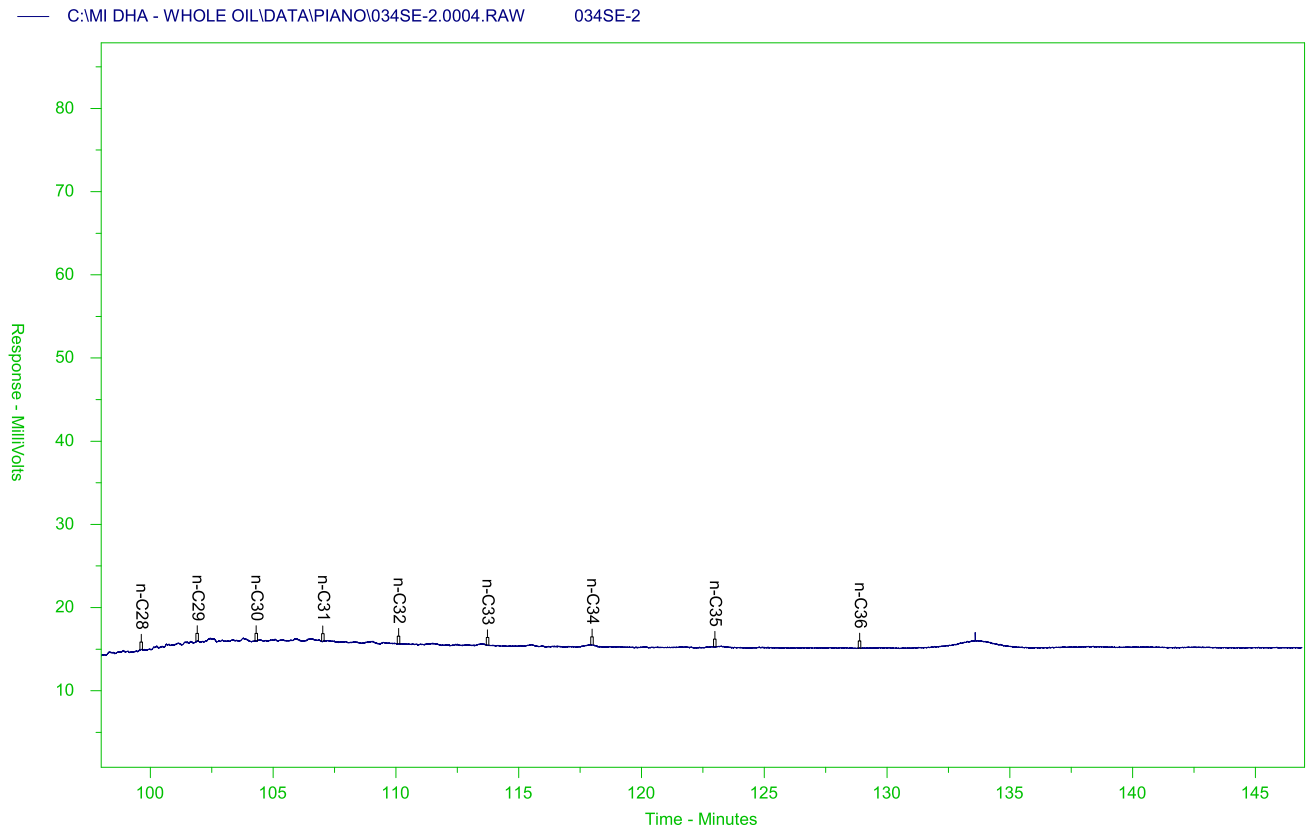
Chrom Perfect Chromatogram Report



Printed on 5/12/2021 10:39:21 AM Page 2 of 3

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report



Printed on 5/12/2021 10:39:21 AM Page 3 of 3

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Sample Name = 034SE-2

Instrument = DHA-WHOLE-OIL Acquisition Port = DP#
Heading 1 =
Heading 2 =

Raw File Name = C:\MI DHA - WHOLE OIL\DATA\PIANO\034SE-2.0004.RAW Date Taken (end) = 5/7/2021 5:36:04 PM
Method File Name = C:\MI DHA - WHOLE OIL\METHODS\MI-WHOLE-OIL.MET Method Version = 57
Calibration File Name = C:\MI DHA - WHOLE OIL\Calibration files\2020\01182021.cal Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
3	5.59	0.0196	660.45
8	6.54	0.1574	5296.47
CS2	7.85	0.6207	20887.26
15	8.00	0.0169	568.87
17	9.05	0.0753	2533.08
18	9.22	0.0166	558.48
19	9.85	0.4086	13750.94
25	12.05	0.0415	1396.14
26	12.21	0.1226	4126.05
27	12.41	0.0788	2651.82
28	13.72	0.0713	2400.21
29	13.99	0.0413	1390.63
30	14.26	1.2499	42060.51
32	14.94	0.2947	9917.50
	15.15	0.3171	10671.36
	15.86	0.4939	16618.90
34A	16.06	0.5790	19482.88
34B	16.24	0.7691	25881.52
IS #1	17.01	3.5817	120530.30
37	18.54	3.3239	111853.60
	18.73	0.5316	17890.64
38	19.39	0.2447	8232.86
39	19.53	0.2562	8621.27
	19.95	0.6514	21920.45
	20.47	0.5582	18784.22
	21.51	0.4444	14954.53
45	22.08	0.1625	5468.14
46B	22.29	0.0918	3090.18
46A	22.54	2.0537	69110.95
	22.67	0.8012	26961.47
47	23.07	0.3336	11225.58
	23.28	0.1221	4109.19
	23.44	0.0909	3058.26
48	23.53	0.2736	9206.06
	23.69	0.0540	1815.54
	23.89	1.0323	34737.60
49	24.28	0.1957	6587.06
	24.39	0.4845	16303.92
	24.86	0.1041	3501.86
	25.26	0.1125	3786.45
	25.55	0.1038	3491.59
	25.82	0.1854	6237.50
51	25.98	0.3028	10189.30
	26.25	0.8595	28922.81
52	26.32	1.6859	56733.66
53	26.67	1.3626	45853.41
	26.83	0.2677	9008.45
	26.95	0.0583	1962.32
54	27.50	0.3465	11661.12
	27.67	0.5727	19270.92
	27.91	0.0504	1694.98
55	28.05	0.3456	11629.54
	28.24	0.1619	5449.57
	28.35	0.1111	3737.09
56	28.53	0.2088	7028.02
57	28.60	0.1004	3378.01
58	28.96	0.1787	6013.09
59	29.03	0.0964	3245.24
	29.16	0.2256	7592.37
	29.26	0.1282	4315.62
	29.45	0.0711	2392.12
60	29.61	0.2510	8447.83
61	29.86	0.3008	10122.09
	29.96	0.8634	29052.90

Printed on 5/12/2021 10:39:49 AM Page 1 of 3

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
	30.11	0.5799	19513.78
	30.79	0.0582	1958.80
	30.86	0.0570	1918.36
62	30.92	0.2078	6991.21
I.S. #2	31.19	4.6179	155399.00
	31.36	0.2996	10080.29
	31.69	0.2627	8838.90
63	31.88	0.5387	18127.25
	31.97	0.4074	13710.59
	32.15	0.1038	3494.49
	32.28	0.1659	5582.66
	32.40	0.3527	11869.92
64	32.59	1.2367	41616.90
65	32.95	1.2477	41985.27
	33.25	0.2722	9159.67
	33.41	0.6086	20480.27
66	33.48	0.5522	18582.66
68	34.21	0.4157	13987.48
69	34.28	0.4394	14785.21
	34.40	0.0902	3035.97
	34.48	0.1956	6583.42
70	34.57	0.6638	22336.74
71	34.72	0.1593	5360.64
	34.92	0.1872	6299.13
72	35.11	0.1929	6489.80
	35.22	0.7409	24932.55
73	35.82	0.5873	19764.60
	35.89	0.1935	6511.80
	35.99	0.4829	16250.33
74	36.50	0.1425	4795.82
75	36.60	0.1504	5061.35
76	36.73	0.5069	17059.01
77	37.44	0.0970	3265.34
	37.63	0.3145	10583.92
	37.93	0.1774	5970.61
78	38.08	1.4032	47218.12
	38.36	0.3505	11795.28
	38.55	0.6951	23392.45
	38.73	0.5112	17201.91
79	38.96	0.8627	29031.19
80	39.38	0.5205	17513.91
	39.65	0.2959	9959.02
	39.85	0.6314	21248.60
81	39.93	0.2998	10089.95
	40.10	0.3873	13033.72
82	40.29	0.2127	7157.93
83	40.49	0.3931	13228.34
84	40.64	0.3234	10883.43
85	40.92	0.4231	14237.68
	41.12	0.7084	23838.11
	41.42	0.4971	16728.61
86	41.64	0.2697	9076.98
	41.74	0.5240	17632.28
i-C11	42.07	0.3839	12917.08
n-C11	42.25	0.5914	19902.18
	42.52	0.1414	4759.11
87	42.63	0.3990	13427.71
	42.81	0.1925	6478.53
88	42.91	0.6338	21328.05
	43.13	0.5967	20079.27
	43.32	0.1740	5853.92
	43.43	0.1422	4785.61
	43.63	0.5258	17692.98
	43.76	0.8140	27392.56
	44.02	0.8996	30272.88
89	44.28	0.2267	7628.13
	44.46	0.4461	15010.57
	44.73	0.2003	6738.72
	44.95	1.0553	35513.05
	45.21	0.4863	16365.06
	45.42	0.2658	8944.55
	45.55	0.2121	7137.12
	45.76	0.6861	23088.75
	45.99	0.2966	9979.43

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

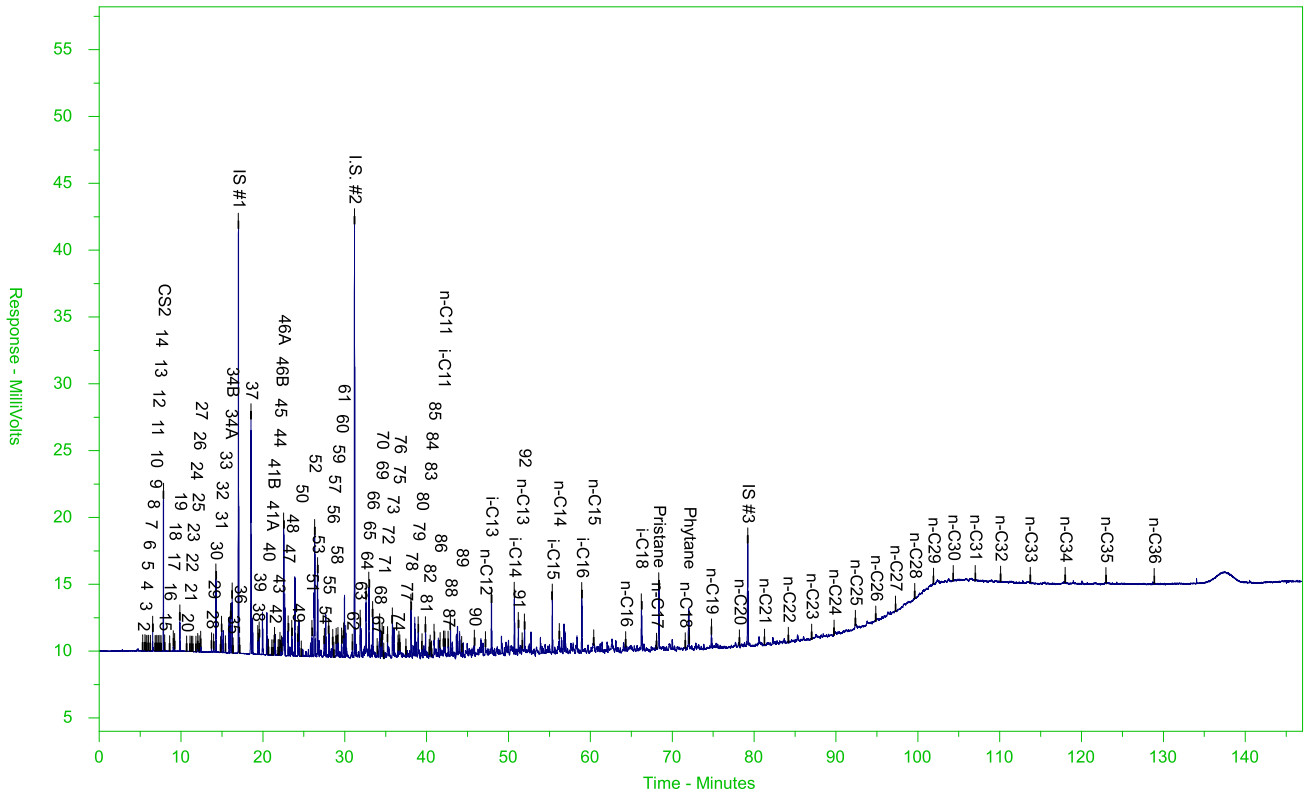
Peak Name	Ret. Time	Area %	Area
	46.26	0.3372	11346.45
	46.48	0.3953	13303.19
	46.62	1.3970	47011.48
n-C12	47.17	0.6657	22401.42
	47.48	0.2401	8080.76
	47.63	0.1669	5614.95
	47.76	0.3341	11243.12
i-C13	47.91	1.6499	55521.41
	48.29	0.2866	9643.20
	48.62	0.7612	25614.38
	48.90	0.3665	12333.15
	49.13	0.8904	29961.94
	49.49	0.2246	7557.94
	49.68	0.7637	25699.23
	49.99	0.6599	22206.00
	50.21	0.2432	8183.69
	50.31	0.5510	18543.44
	50.52	0.4122	13872.38
i-C14	50.71	1.2756	42924.62
	51.01	0.2982	10034.95
91	51.20	0.9903	33326.23
	51.46	0.4430	14907.71
n-C13	51.66	0.2580	8681.25
92	51.94	1.3568	45657.59
	52.73	0.5637	18969.52
	53.89	0.6572	22114.66
	54.47	0.3010	10130.28
	54.80	0.3644	12262.86
	54.99	0.4994	16804.56
i-C15	55.34	1.2909	43439.64
	55.99	0.2377	7997.26
n-C14	56.20	0.8552	28779.35
	56.47	0.5199	17494.82
	56.76	0.8156	27446.72
	56.91	0.7653	25754.11
	57.61	0.6202	20872.17
	57.89	0.4895	16473.51
	58.23	0.2173	7312.00
	58.35	0.7538	25366.80
i-C16	58.93	1.5152	50987.99
	59.70	0.4689	15777.82
n-C15	60.32	0.9843	33123.77
	60.85	0.4557	15336.30
i-C18	66.23	1.2943	43553.89
Pristane	68.36	1.9616	66011.34
Phytane	72.01	1.3726	46188.37
n-C19	74.79	0.4597	15469.17
IS #3	79.23	1.7846	60054.79
	85.14	0.0820	2760.34

Total Area = 3365132 Total Height = 799181.9 Total Amount = 0

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

C:\MI DHA - WHOLE OIL\DATA\PIANO\034SE-3.0004.RAW 034SE-3

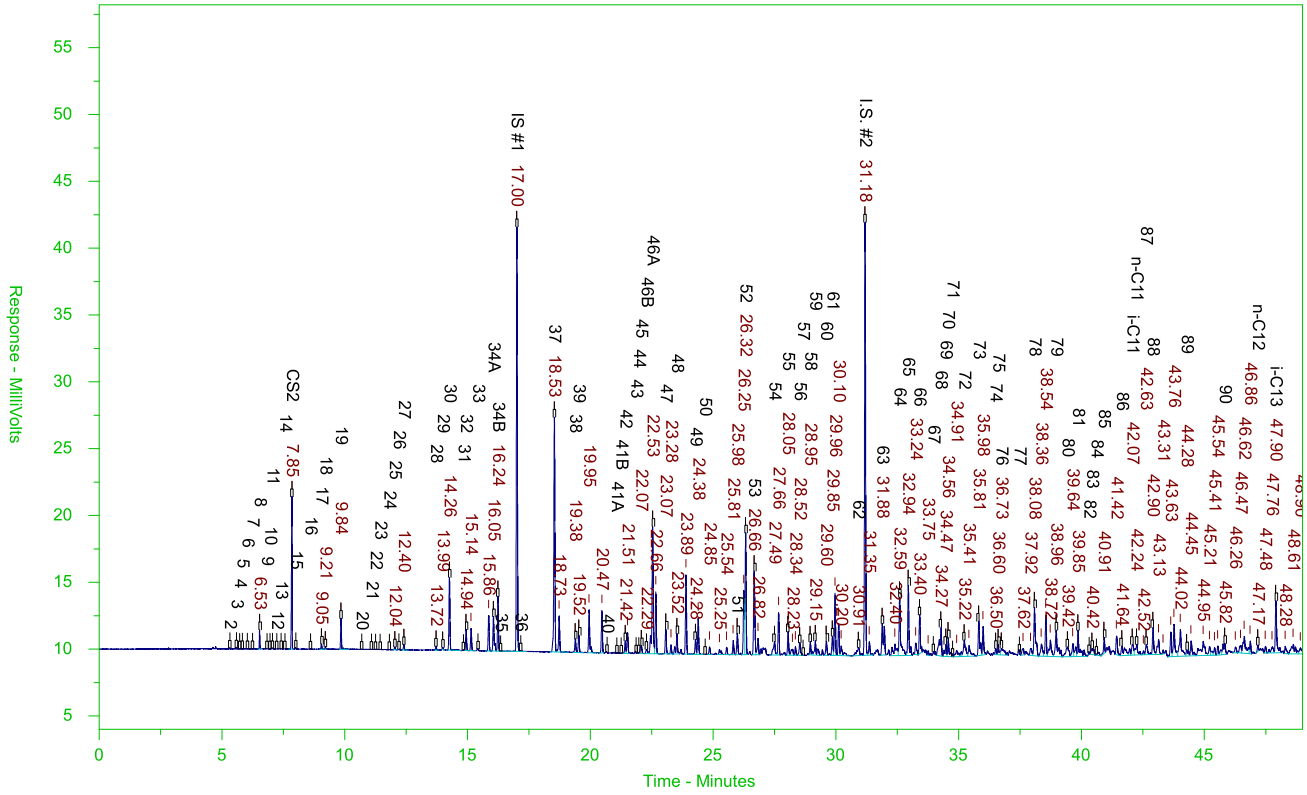


Printed on 5/12/2021 10:57:41 AM Page 1 of 1

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

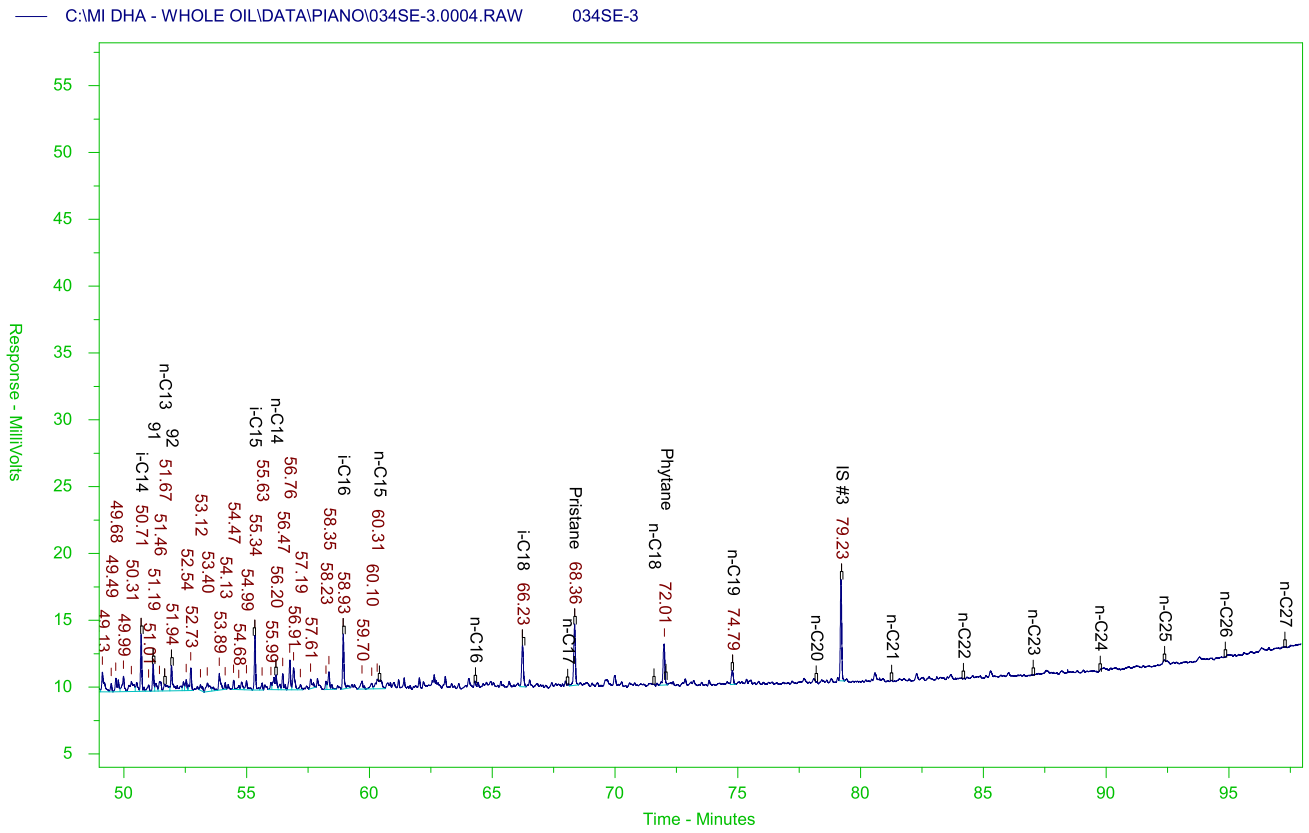
C:\MI DHA - WHOLE OIL\DATA\PIANO\034SE-3.0004.RAW 034SE-3



Printed on 5/12/2021 10:58:13 AM

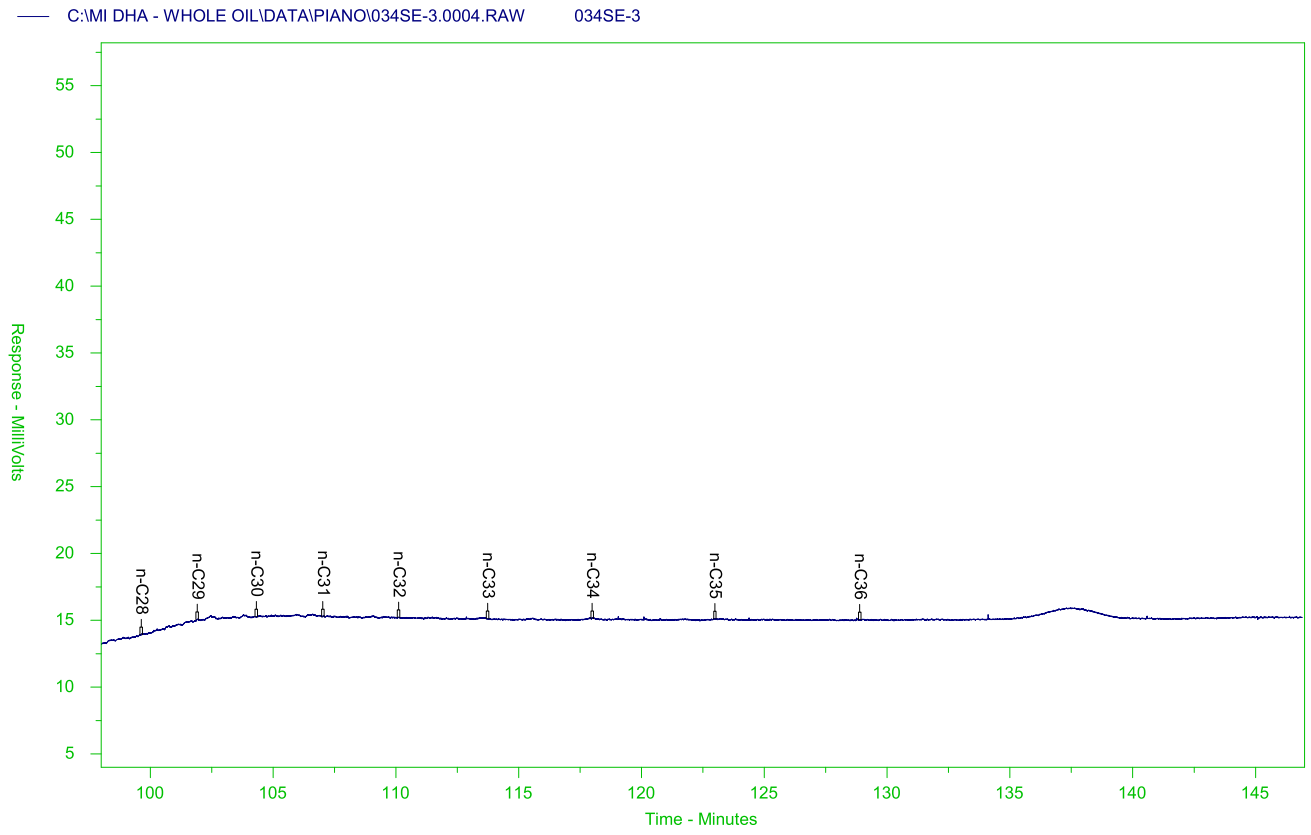
10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report



10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report



10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Sample Name = 034SE-3

Instrument = DHA-WHOLE-OIL Acquisition Port = DP#
Heading 1 =
Heading 2 =

Raw File Name = C:\MI DHA - WHOLE OIL\DATA\PIANO\034SE-3.0004.RAW Date Taken (end) = 5/7/2021 8:21:24 PM
Method File Name = C:\MI DHA - WHOLE OIL\METHODS\MI-WHOLE-OIL.MET Method Version = 57
Calibration File Name = C:\MI DHA - WHOLE OIL\Calibration files\2020\01182021.cal Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.53	0.1516	2021.32
CS2	7.85	1.6135	21515.34
17	9.05	0.0688	917.01
18	9.21	0.0220	293.09
19	9.84	0.4162	5549.48
25	12.04	0.0449	598.85
27	12.40	0.0914	1218.62
28	13.72	0.0637	849.69
29	13.99	0.0244	325.01
30	14.26	1.1481	15309.72
32	14.94	0.3281	4374.82
	15.14	0.3598	4797.24
	15.86	0.5552	7402.94
34A	16.05	0.6578	8771.51
34B	16.24	0.8937	11917.05
IS #1	17.00	6.6016	88027.72
37	18.53	3.9342	52460.38
	18.73	0.6440	8587.21
38	19.38	0.2319	3092.48
39	19.52	0.3017	4022.85
	19.95	0.8033	10712.05
	20.47	0.7072	9430.06
42	21.42	0.2107	2809.88
	21.51	0.3533	4711.17
45	22.07	0.2031	2708.58
46B	22.29	0.1248	1663.53
46A	22.53	2.5862	34485.17
	22.66	1.0148	13531.65
47	23.07	0.4321	5761.81
	23.28	0.1491	1988.12
48	23.52	0.4590	6120.80
	23.89	1.3250	17668.11
49	24.28	0.2583	3444.51
	24.38	0.6257	8343.70
	24.85	0.1298	1730.36
	25.25	0.1484	1979.00
	25.54	0.1265	1686.31
	25.81	0.2327	3102.64
51	25.98	0.3840	5120.19
	26.25	1.3167	17557.66
52	26.32	1.7907	23877.79
53	26.66	1.6938	22585.65
	26.82	0.3379	4505.56
54	27.49	0.4163	5550.89
	27.66	0.7106	9475.22
55	28.05	0.4103	5471.68
	28.23	0.1929	2571.75
	28.34	0.1332	1775.67
56	28.52	0.2849	3799.51
58	28.95	0.2731	3641.19
59	29.15	0.4439	5918.84
60	29.60	0.2836	3780.98
61	29.85	0.3663	4883.88
	29.96	1.0487	13983.44
	30.10	0.5304	7072.86
	30.20	0.3339	4451.82
62	30.91	0.3433	4577.35
I.S. #2	31.18	7.1386	95188.09
	31.35	0.2814	3752.38
63	31.88	1.1016	14689.53
	32.40	0.6048	8063.92
64	32.59	1.4737	19650.56
65	32.94	1.3426	17902.75
	33.24	0.2666	3554.86

Printed on 5/12/2021 10:58:46 AM Page 1 of 3

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
66	33.40	0.7560	10080.73
	33.75	0.0751	1001.87
68	34.27	0.9534	12713.03
69	34.47	0.3146	4194.94
70	34.56	0.4522	6030.01
	34.91	0.2562	3416.54
72	35.22	0.5725	7634.13
	35.41	0.3606	4808.77
73	35.81	0.8183	10910.87
	35.98	0.5374	7165.69
74	36.50	0.0980	1306.82
75	36.60	0.2170	2893.76
76	36.73	0.3637	4850.12
	37.62	0.1935	2580.43
	37.92	0.2082	2775.83
78	38.08	1.2364	16486.99
	38.36	0.3911	5215.23
	38.54	0.7690	10254.40
	38.72	0.5692	7590.19
79	38.96	0.9780	13041.19
80	39.42	0.5021	6694.97
	39.64	0.3133	4177.93
81	39.85	0.8531	11375.58
83	40.42	0.3582	4776.19
85	40.91	0.2903	3870.48
	41.42	0.4227	5636.67
86	41.64	0.5283	7043.94
i-C11	42.07	0.3468	4624.28
n-C11	42.24	0.4053	5404.13
	42.52	0.0761	1014.20
87	42.63	0.3209	4279.60
88	42.90	0.5532	7376.94
	43.13	0.4322	5762.60
	43.31	0.0742	989.80
	43.63	0.4916	6554.52
	43.76	0.8634	11512.78
	44.02	0.9099	12133.02
89	44.28	0.1993	2657.51
	44.45	0.4102	5470.35
	44.95	0.8844	11793.23
	45.21	0.2161	2881.61
	45.41	0.1541	2055.48
	45.54	0.1847	2462.96
90	45.82	0.4348	5797.43
	46.26	0.1467	1956.13
	46.47	0.2315	3086.56
	46.62	0.7372	9829.77
	46.86	0.2258	3010.24
n-C12	47.17	0.1182	1576.65
	47.48	0.1354	1805.41
	47.76	0.2798	3731.29
i-C13	47.90	1.2023	16031.30
	48.28	0.1974	2632.85
	48.61	0.5946	7928.45
	48.90	0.2706	3608.20
	49.13	0.7500	10001.18
	49.49	0.1795	2393.27
	49.68	0.5789	7719.83
	49.99	0.5283	7043.96
	50.31	0.6606	8808.53
i-C14	50.71	1.1954	15939.81
	51.01	0.2067	2756.85
91	51.19	0.5625	7499.90
	51.46	0.3613	4817.52
n-C13	51.67	0.4466	5955.43
92	51.94	1.0072	13430.64
	52.54	0.2732	3643.03
	52.73	0.5430	7240.44
	53.12	0.2105	2806.57
	53.40	0.4845	6460.71
	53.89	0.4975	6634.02
	54.13	0.1387	1849.36
	54.47	0.1826	2435.33
	54.68	0.1218	1624.72

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
	54.99	0.3159	4212.35
i-C15	55.34	1.1581	15442.39
	55.63	0.1797	2396.34
	55.99	0.1465	1953.72
n-C14	56.20	0.6999	9332.99
	56.47	0.4345	5793.66
	56.76	0.7197	9596.04
	56.91	0.6709	8946.27
	57.19	0.1699	2265.39
	57.61	0.3626	4834.69
	58.23	0.1750	2333.85
	58.35	0.5741	7655.43
i-C16	58.93	1.3045	17394.31
	59.70	0.3390	4520.30
	60.10	0.2301	3067.96
	60.31	0.8703	11605.12
i-C18	66.23	1.1869	15827.07
Pristane	68.36	1.6544	22059.99
	72.01	1.2218	16292.37
n-C19	74.79	0.4347	5796.10
IS #3	79.23	2.1909	29213.65

Total Area = 1333429 Total Height = 346051.6 Total Amount = 0

Printed on 5/12/2021 10:58:46 AM Page 3 of 3

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

microbialinsights

10515 Research Dr.
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

SITE LOGIC Report

C8-C40 Full Scan Semi-Quantitative Characterization by GC/MS

Contact: Brad Stephenson
Address: GHD
6260 W. 52nd Avenue
Suite 105
Arvado, CO 80002

Phone: 303-941-6156

Email: brad.stephenson@ghd.com

MI Identifier: 034SE **Report Date:** May 21, 2021

Project: 11225604-04-01, 34052520

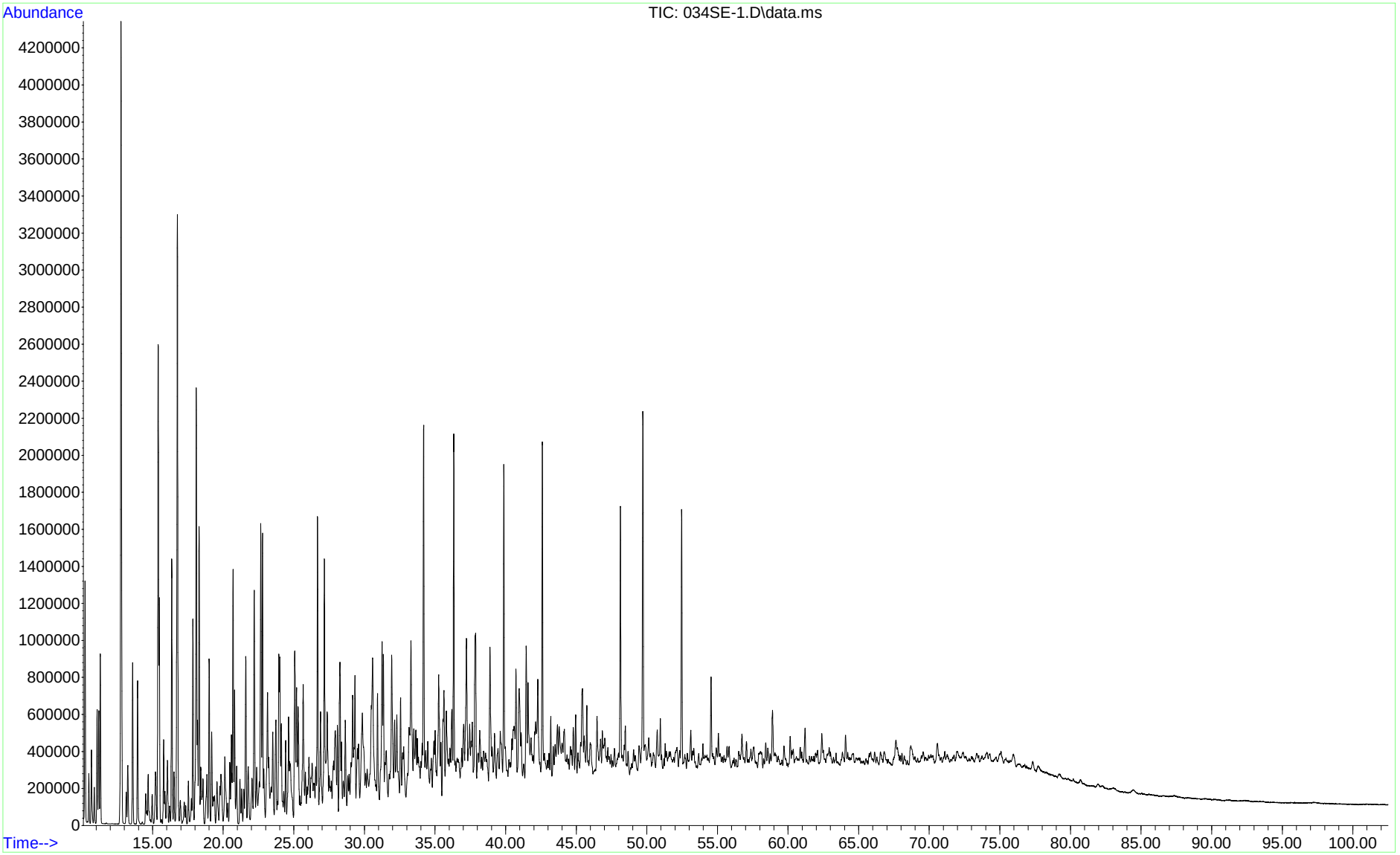
Comments:

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.

10515 Research Dr.
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

Sample Name: 034SE-1
Misc Info : 0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

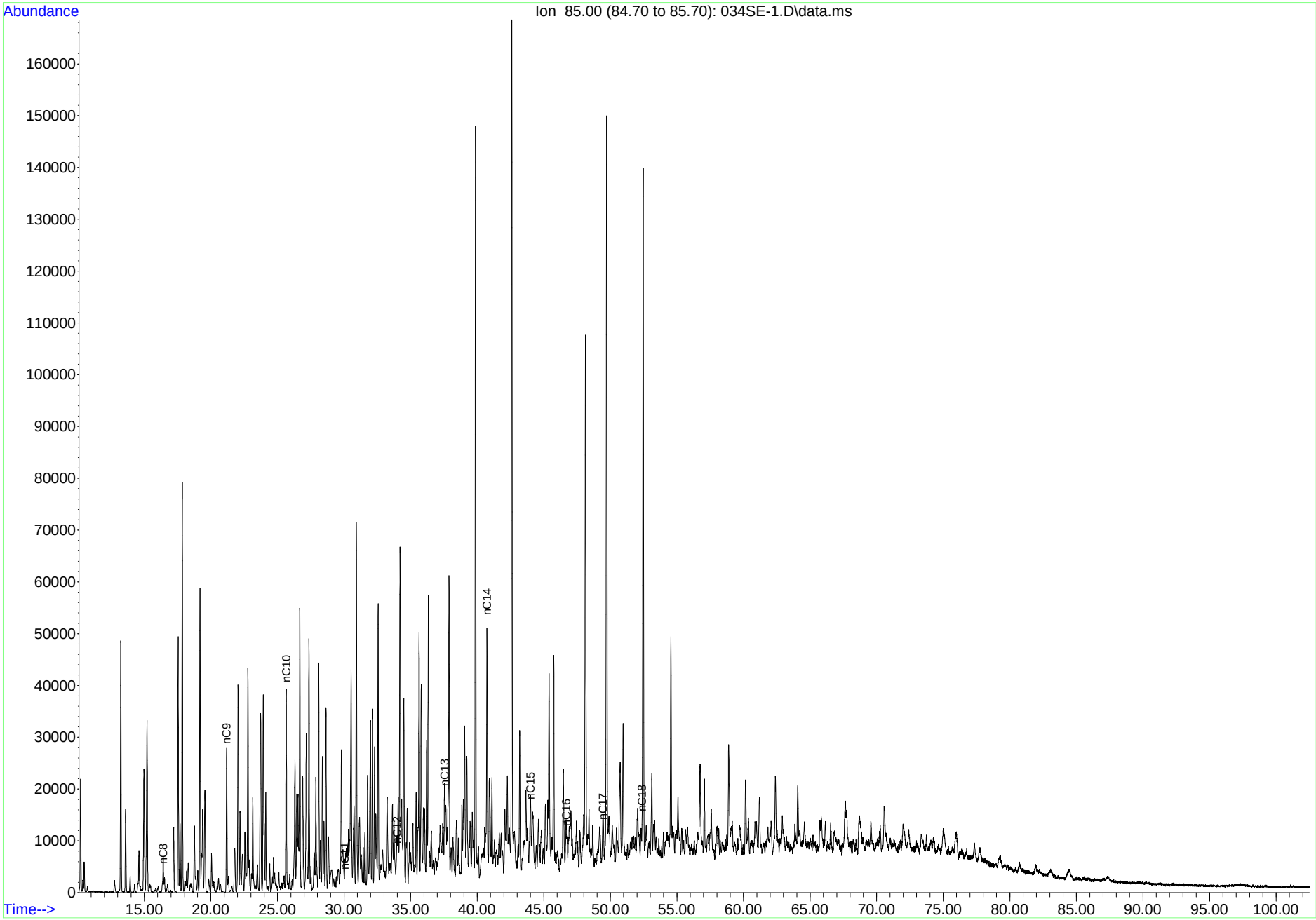
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.4	6756.0	3.5%
n-Nonane	nC9	85	21.2	27859.0	14.3%
n-Decane	nC10	85	25.7	38671.0	19.9%
n-Undecane	nC11	85	30.1	3875.0	2.0%
n-Dodecane	nC12	85	34.0	7619.0	3.9%
n-Tridecane	nC13	85	37.5	16793.0	8.6%
n-Tetradecane	nC14	85	40.7	44114.0	22.7%
n-Pentadecane	nC15	85	44.0	16072.0	8.3%
n-Hexadecane	nC16	85	46.7	9956.0	5.1%
n-Heptadecane	nC17	85	49.5	10285.0	5.3%
n-Octadecane	nC18	85	52.4	12341.0	6.4%
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

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

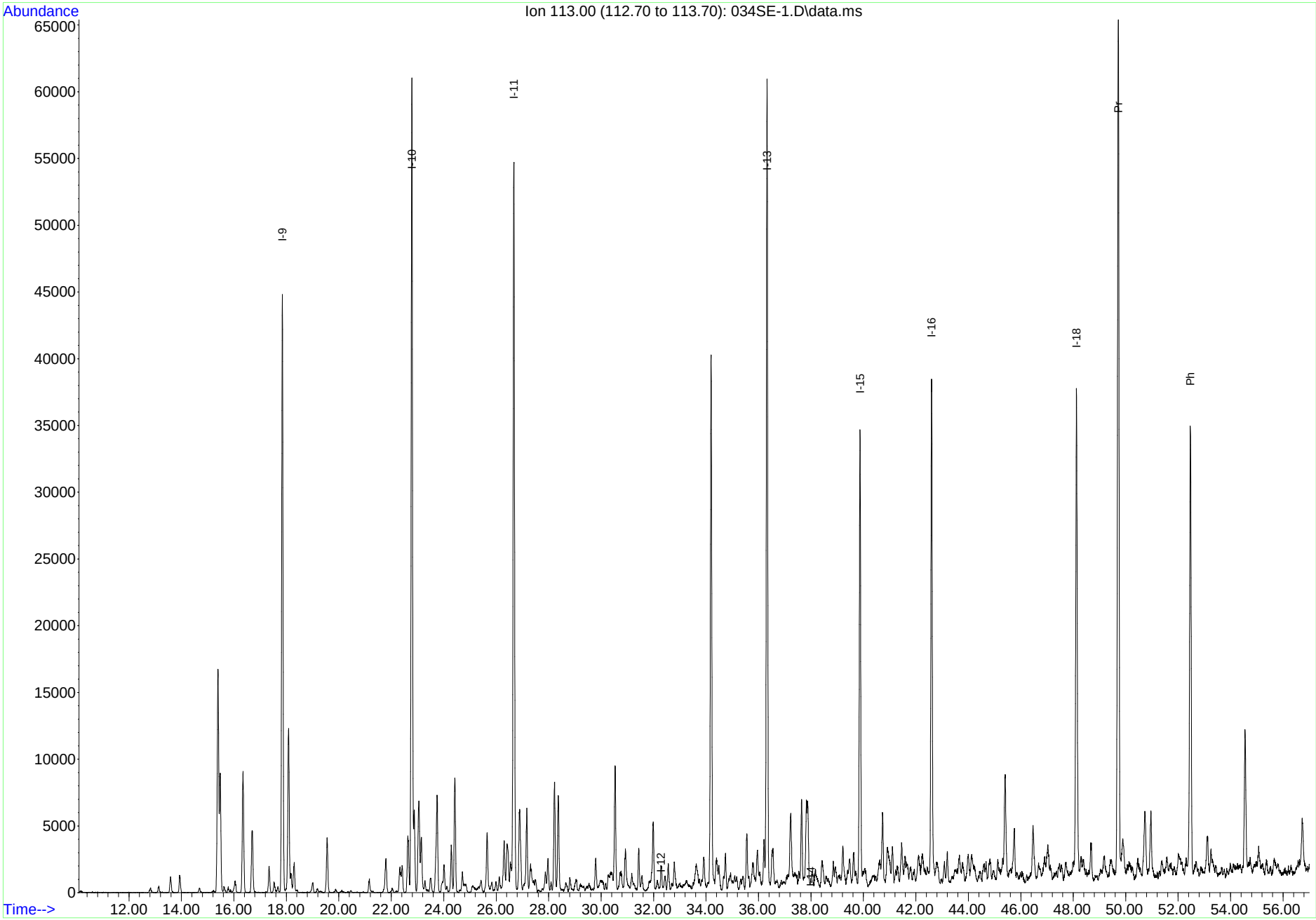
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.8	44768.0	10.5%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	60924.0	14.2%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	54518.0	12.7%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.3	1958.0	0.5%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.3	60265.0	14.1%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	38.0	480.0	0.1%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	34004.0	8.0%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.6	36911.0	8.6%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.1	36169.0	8.5%
Pristane (Isoprenoid - C19)	Pr	113	49.7	64051.0	15.0%
Phytane (Isoprenoid - C20)	Ph	113	52.5	33594.0	7.9%

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

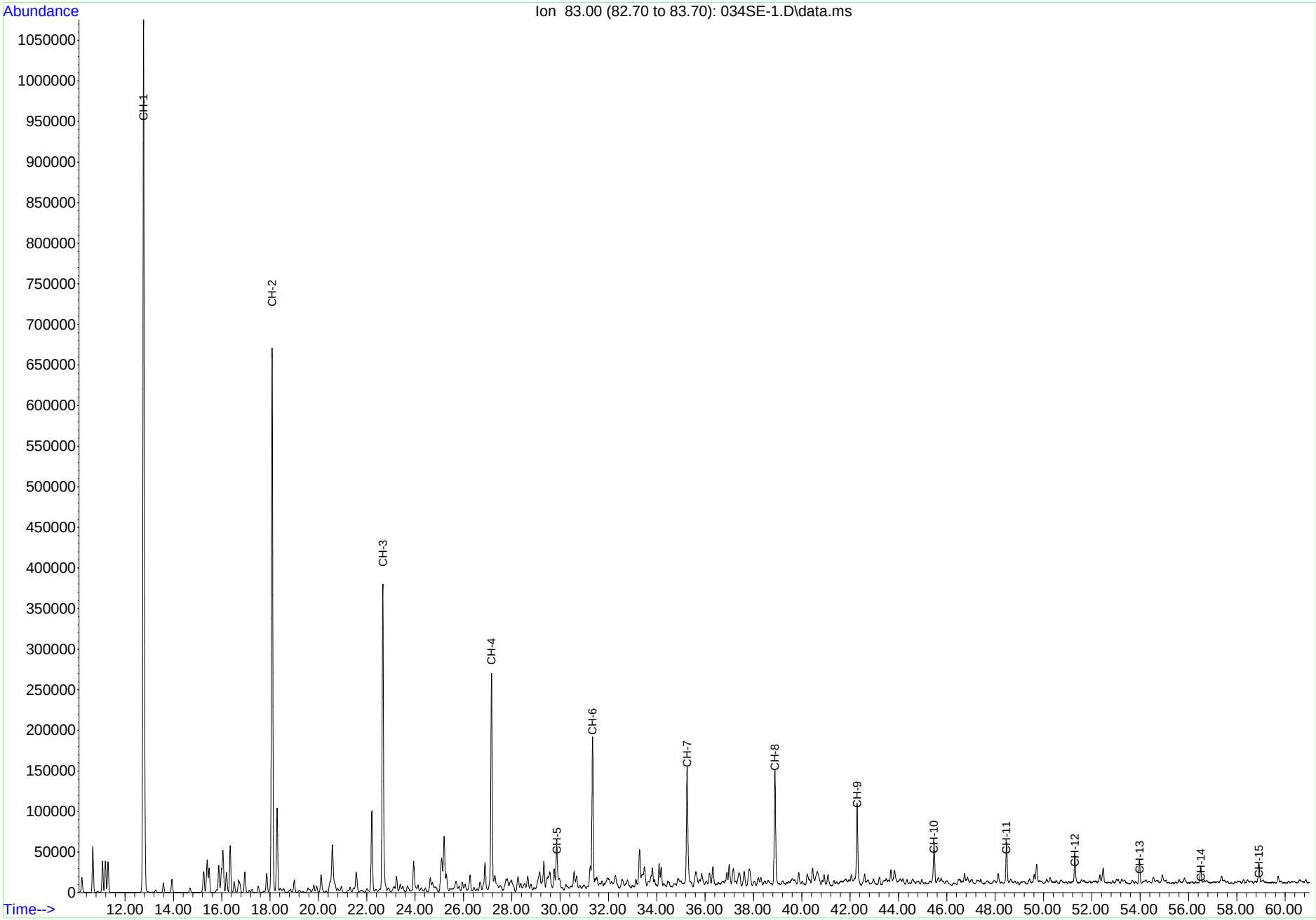
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (83 m/z)
Methylcyclohexane	CH-1	83	12.8	1074977.0	33.7%
Ethylcyclohexane	CH-2	83	18.1	670884.0	21.0%
Propylcyclohexane	CH-3	83	22.7	377413.0	11.8%
Butylcyclohexane	CH-4	83	27.2	266212.0	8.3%
Pentylcyclohexane	CH-5	83	29.9	43875.0	1.4%
Hexylcyclohexane	CH-6	83	31.3	188293.0	5.9%
Heptylcyclohexane	CH-7	83	35.3	147648.0	4.6%
Octylcyclohexane	CH-8	83	38.9	141134.0	4.4%
Nonylcyclohexane	CH-9	83	42.3	95444.0	3.0%
Decylcyclohexane	CH-10	83	45.5	50698.0	1.6%
Undecylcyclohexane	CH-11	83	48.5	51309.0	1.6%
Dodecylcyclohexane	CH-12	83	51.3	34906.0	1.1%
Tridecylcyclohexane	CH-13	83	54.0	29127.0	0.9%
Tetradecylcyclohexane	CH-14	83	56.5	19356.0	0.6%

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

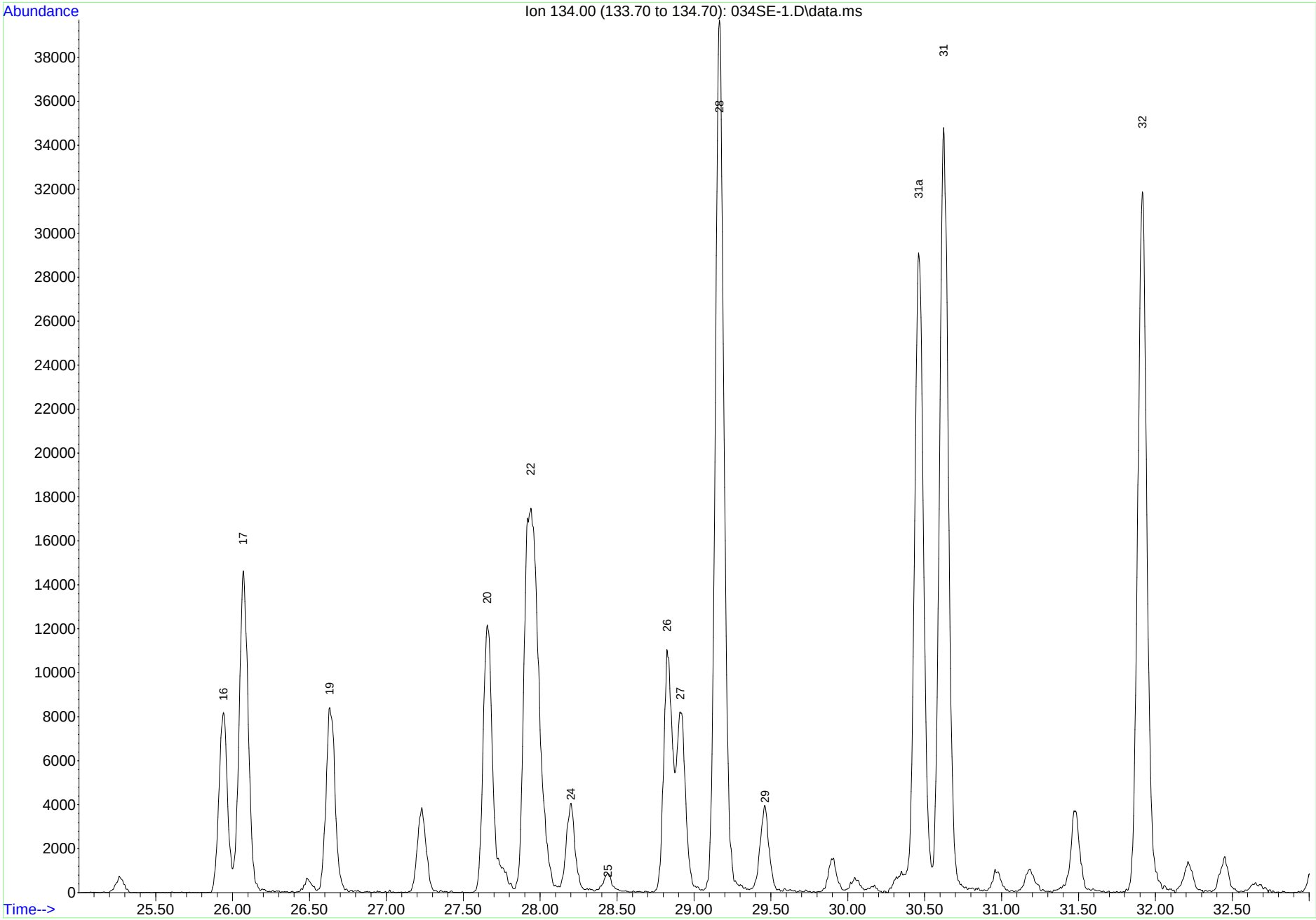
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (134 m/z)
Sec-Butylbenzene	16	134	25.9	8199.0	3.7%
1-Methyl-3-Isopropylbenzene	17	134	26.1	14552.0	6.5%
1-Methyl-4-Isopropylbenzene	18	134	ND	ND	ND
1-Methyl-2-Isopropylbenzene	19	134	26.6	8321.0	3.7%
1,3-Diethylbenzene	20	134	27.7	12185.0	5.5%
1-Methyl-3-Propylbenzene	21	134	ND	ND	ND
Butylbenzene	22	134	27.9	17320.0	7.8%
1,3-Diethyl-5-Ethylbenzene	23	134	ND	ND	ND
1,2-Diethylbenzene	24	134	28.2	3931.0	1.8%
1-Methyl-2-Propylbenzene	25	134	28.4	819.0	0.4%
1,4-Dimethyl-2-Ethylbenzene	26	134	28.8	11029.0	5.0%
1,3-Dimethyl-4-Ethylbenzene	27	134	28.9	8211.0	3.7%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	39591.0	17.8%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	3856.0	1.7%
1,2-Dimethyl-3-Ethylbenzene	30	134	ND	ND	ND
1,2,4,5-Tetramethylbenzene	31a	134	30.5	28169.0	12.7%
1,2,3,5-Tetramethylbenzene	31	134	30.6	34589.0	15.5%
1,2,3,4-Tetramethylbenzene	32	134	31.9	31769.0	14.3%

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

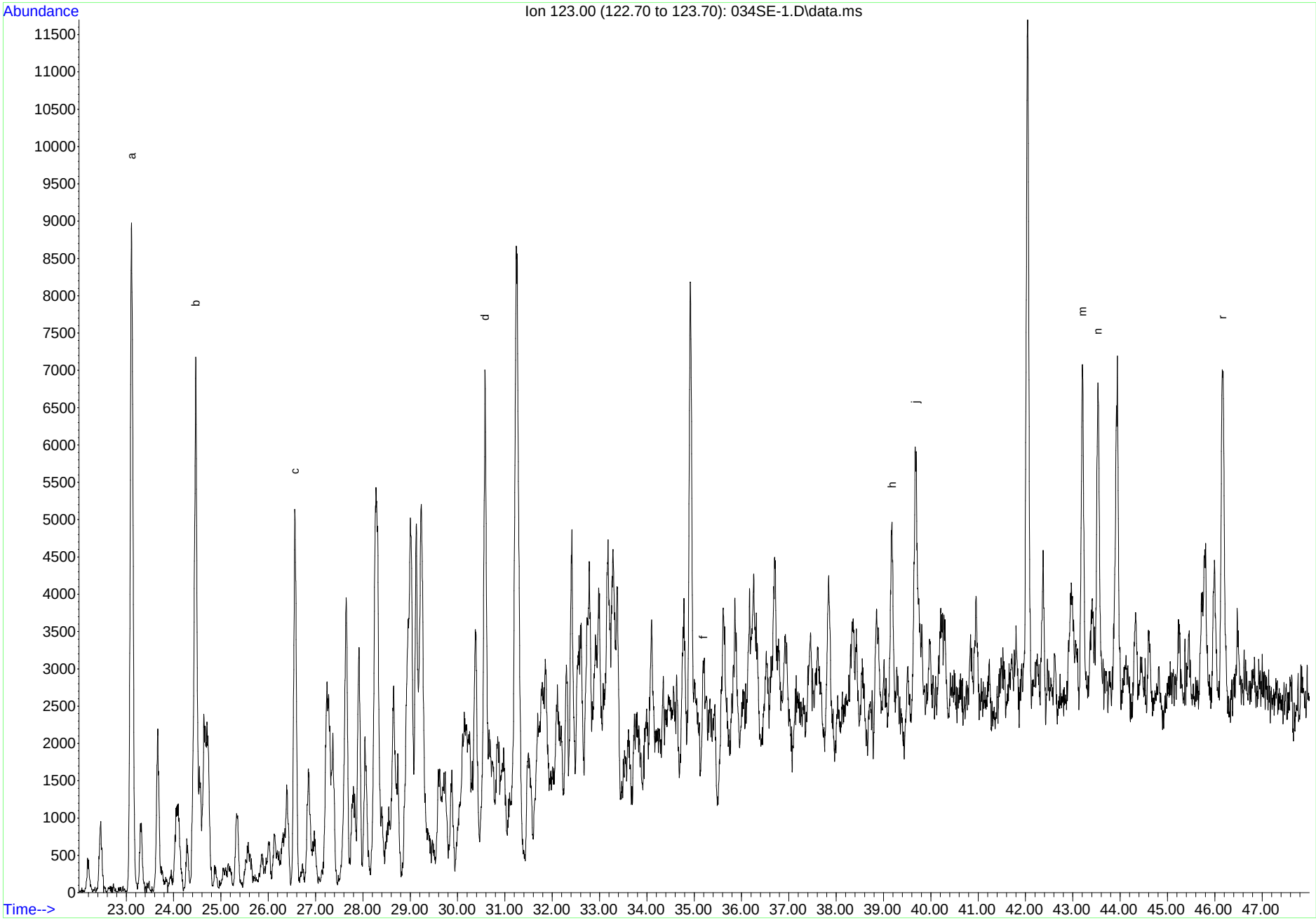
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.1	8945.0	18.2%
C_{10} bicycloalkane	b	123	24.5	6984.0	14.2%
3,3,7-Trimethylbicycloheptane	c	123	26.6	5039.0	10.2%
C_{11} Decalin	d	123	30.6	6327.0	12.9%
Nordrimane	f	123	35.2	1545.0	3.1%
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	39.2	3017.0	6.1%
Rearranged drimane	j	123	39.7	3754.0	7.6%
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	l	123	ND	ND	ND
C_{15} Bicyclic Sesquiterpane	m	123	43.2	4630.0	9.4%
8β (H) Drimane	n	123	43.5	4379.0	8.9%
C_{15} Bicyclic Sesquiterpane	o	123	ND	ND	ND
C_{16} Bicyclic Sesquiterpane	p	123	ND	ND	ND
C_{16} Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	46.2	4591.0	9.3%

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C_{21}-Tricyclic Terpane	1	191	57.7	3569.0	6.6%
C_{22}-Tricyclic Terpane	2	191	58.0	1820.0	3.4%
C_{23}-Tricyclic Terpane	3	191	58.4	48693.0	90.0%
C_{24}-Tricyclic Terpane	4	191	ND	ND	ND
C_{25}-Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C_{24}-Tetracyclic Terpane	Z4	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6a*	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6b	191	ND	ND	ND
C_{28}-Tricyclic Terpane #1	A	191	ND	ND	ND
C_{28}-Tricyclic Terpane #2	B	191	ND	ND	ND
C_{29}-Tricyclic Terpane #1	C	191	ND	ND	ND
C_{29}-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_{30}-Tricyclic Terpane #1	10a*	191	ND	ND	ND
C_{30}-Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	I	191	ND	ND	ND
C_{31}-Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C_{31}-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	O	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	WR	191	ND	ND	ND
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

SAMPLE RESULTS

Chromatogram Key & Numerical Results: 191 m/z Terpanes

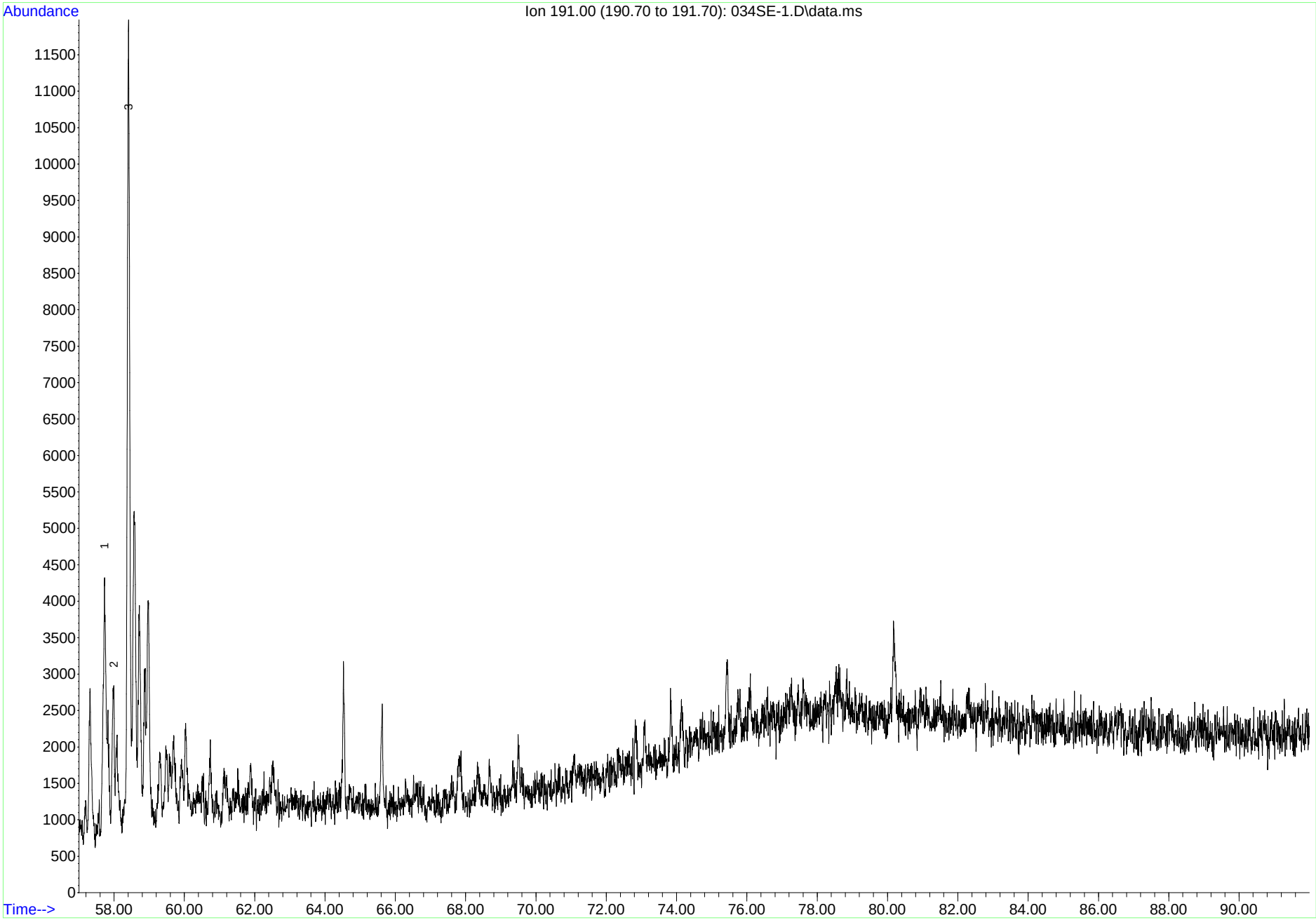
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (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

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 217 m/z Steranes

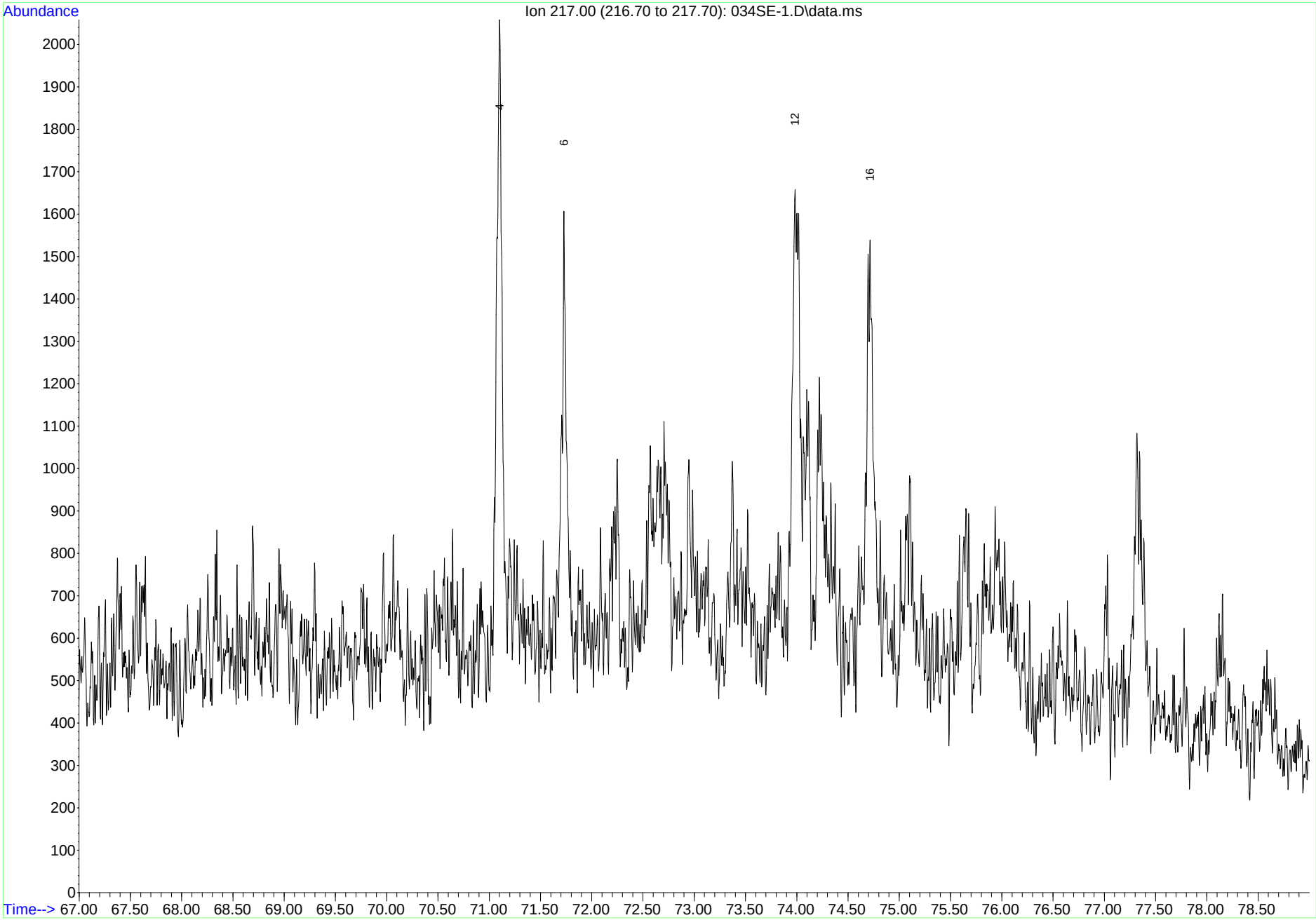
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (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	1612.0	33.2%
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	71.7	1114.0	22.9%
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)+ 14β,17β-Cholestane (20R)	8+8D	217	ND	ND	ND
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	74.0	958.0	19.7%
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	74.7	1173.0	24.2%
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

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

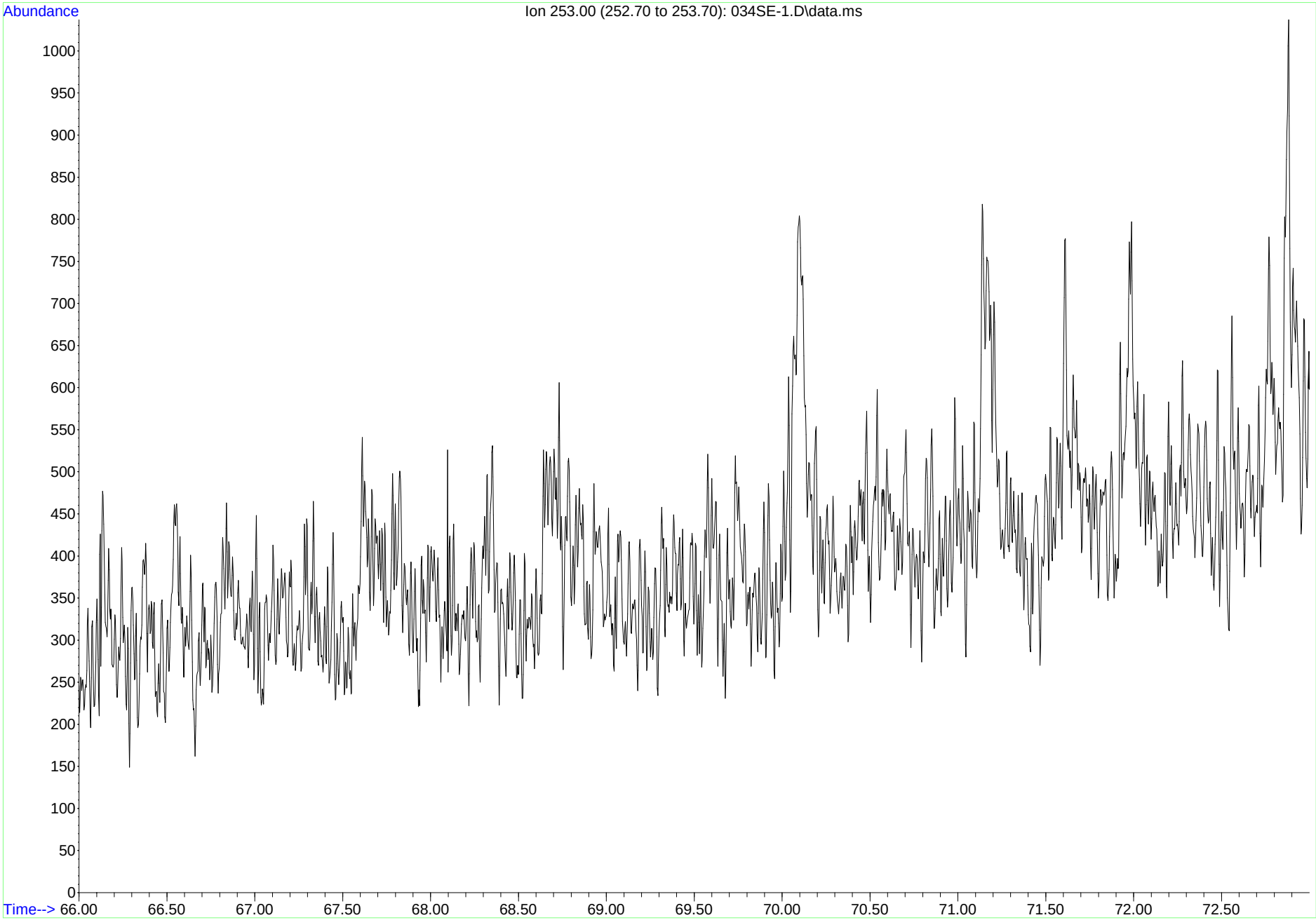
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (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	c	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

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

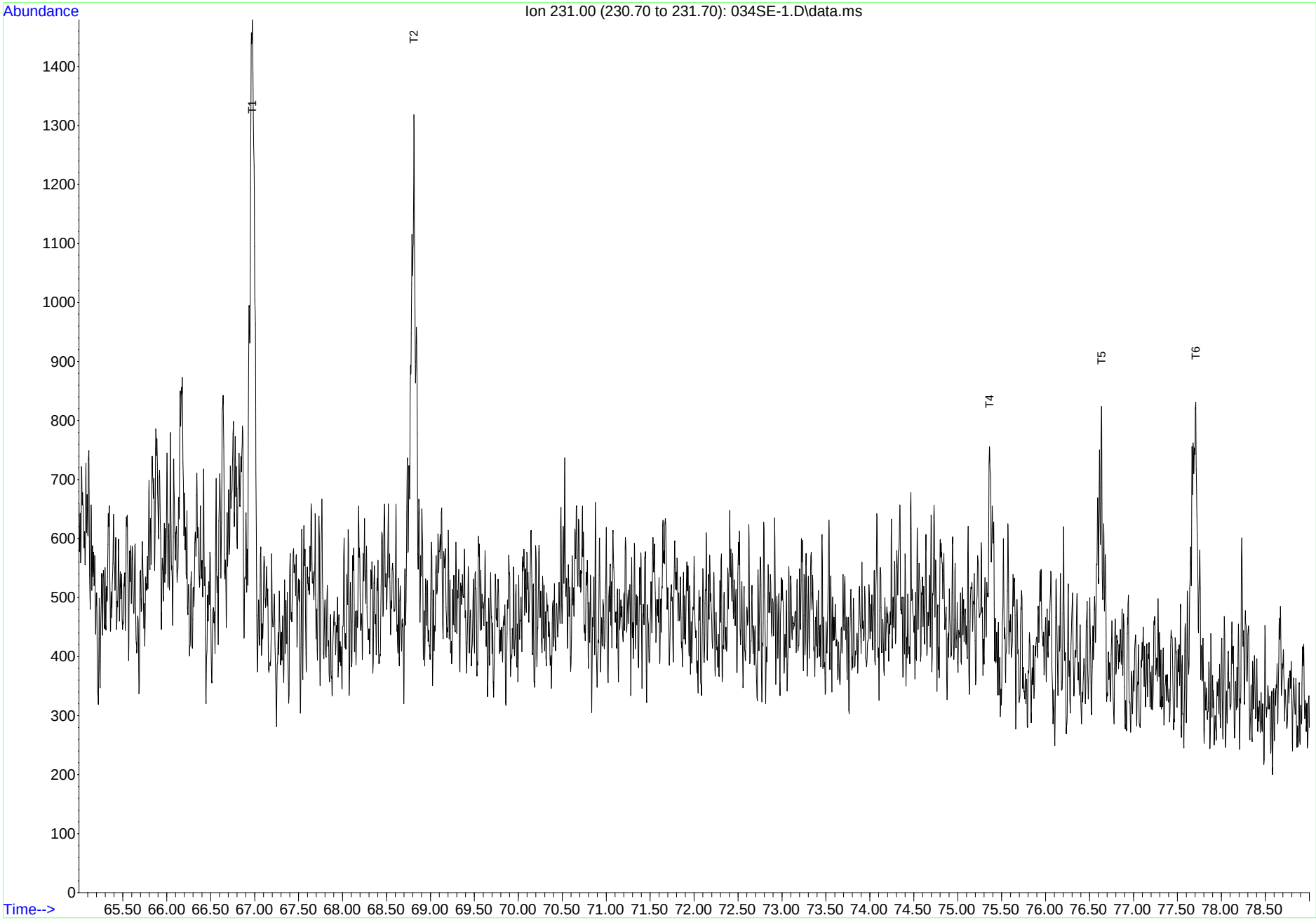
Project Manager:	Brad Stephenson	Lab ID:	034SE-1
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	WBH-13
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C_{20} Triaromatic Sterane	T1	231	67.0	1124.0	29.9%
C_{21} Triaromatic Sterane	T2	231	68.8	948.0	25.2%
20S C_{26} Triaromatic Sterane	T3	231	ND	ND	ND
20R C_{26} + 20S C_{27} Triaromatic Steranes	T4	231	75.4	499.0	13.3%
20S C_{28} Triaromatic Sterane	T5	231	76.6	574.0	15.3%
20R C_{27} Triaromatic Sterane	T6	231	77.7	614.0	16.3%
20R C_{28} Triaromatic Sterane	T7	231	ND	ND	ND

0.4067 g -> 10 ml
FOREN4LA_MI_BACK

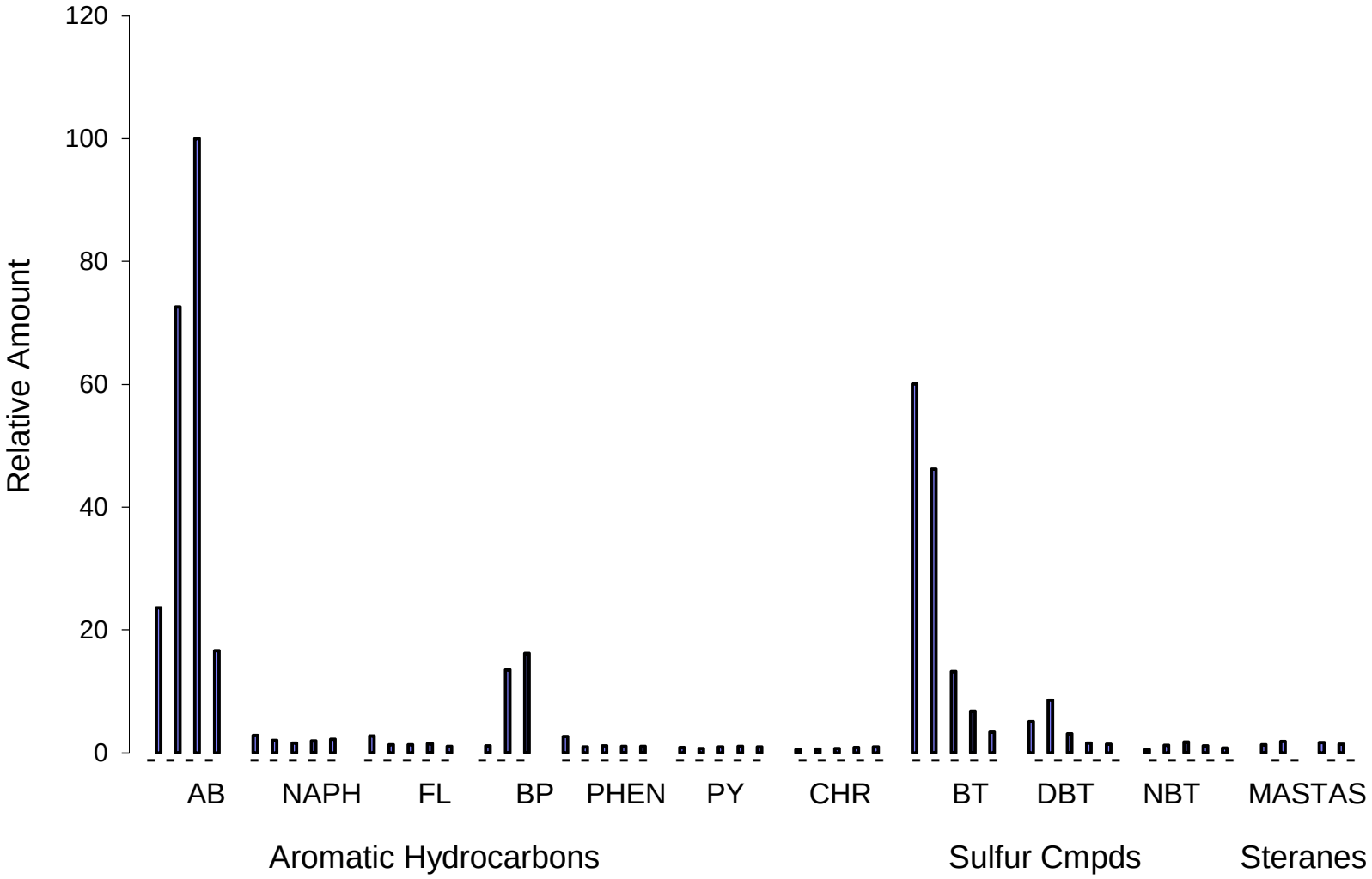
Submitted by,
Microbial Insights, Inc.

034SE-1
0.4067 g -> 10 ml

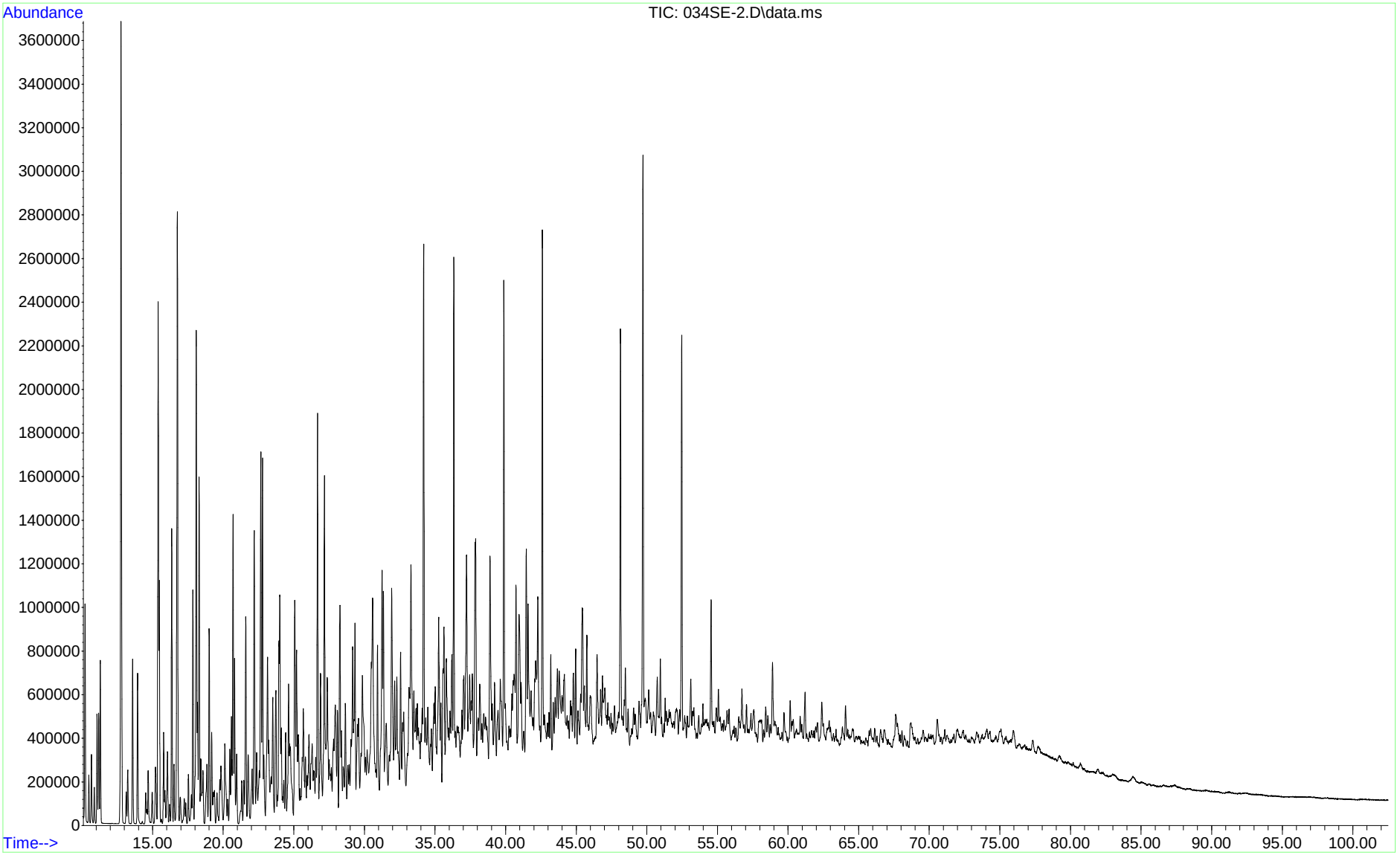


Aromatic Hydrocarbon Distribution

034SE-1



Sample Name: 034SE-2
Misc Info : 0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

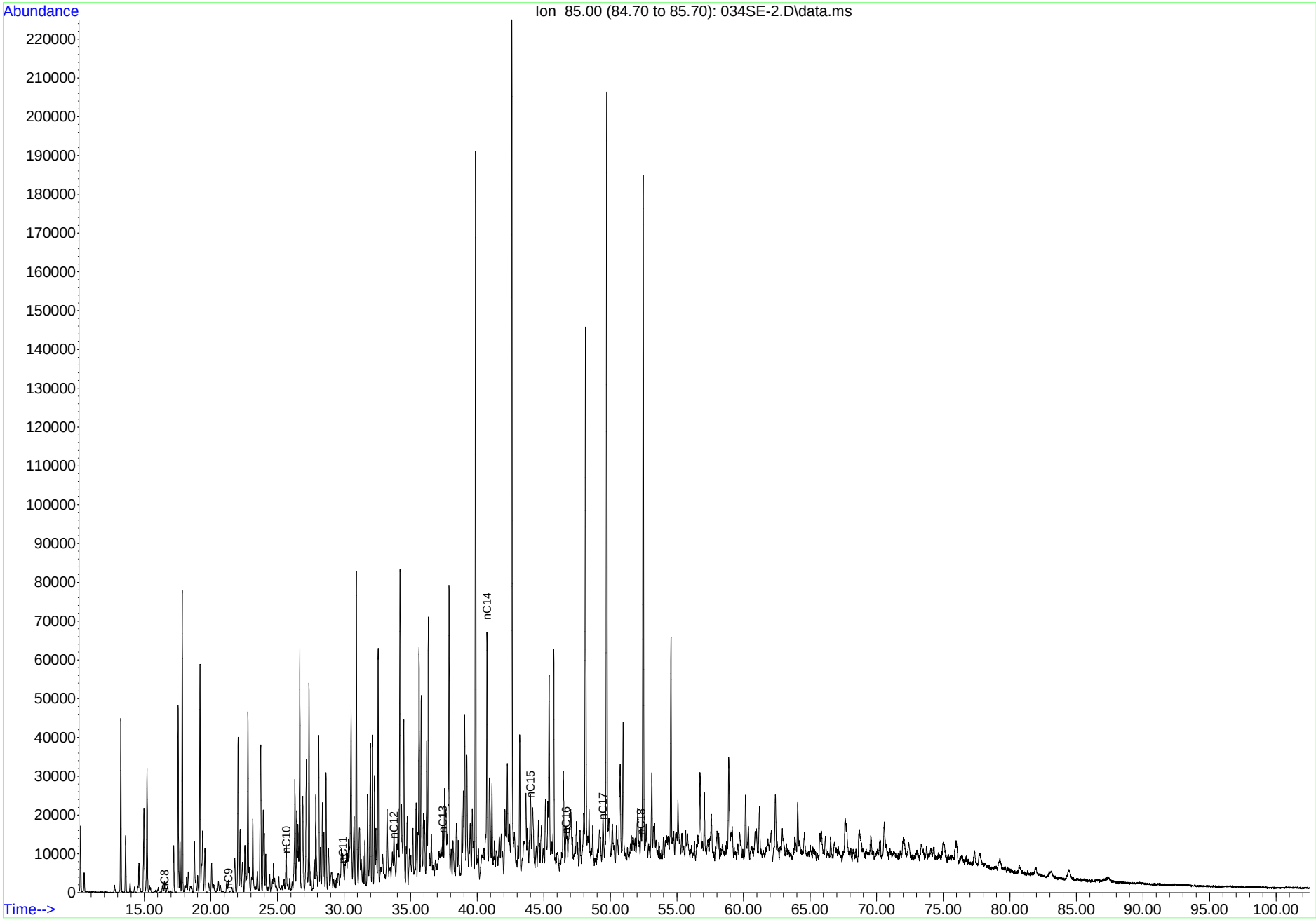
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	2994.0	1.8%
n-Nonane	nC9	85	21.3	3189.0	1.9%
n-Decane	nC10	85	25.7	11921.0	7.0%
n-Undecane	nC11	85	29.9	8134.0	4.8%
n-Dodecane	nC12	85	33.7	13555.0	8.0%
n-Tridecane	nC13	85	37.4	12148.0	7.2%
n-Tetradecane	nC14	85	40.7	58986.0	34.7%
n-Pentadecane	nC15	85	44.0	18610.0	11.0%
n-Hexadecane	nC16	85	46.7	9875.0	5.8%
n-Heptadecane	nC17	85	49.4	17616.0	10.4%
n-Octadecane	nC18	85	52.3	12786.0	7.5%
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

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

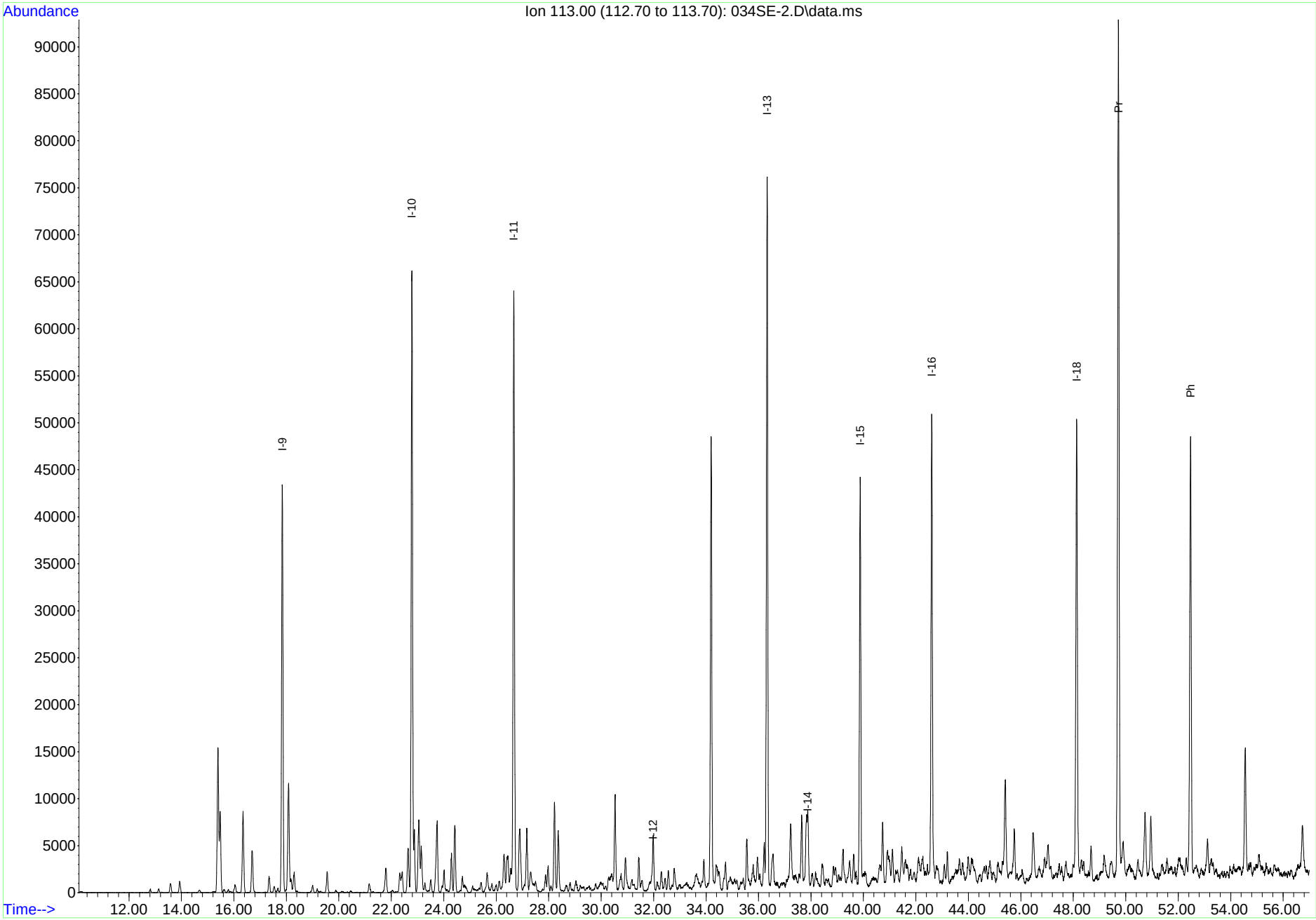
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.8	43368.0	8.0%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	65847.0	12.2%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	63637.0	11.8%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.0	5909.0	1.1%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.3	75696.0	14.0%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.9	8477.0	1.6%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	43335.0	8.0%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.6	49381.0	9.1%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.1	48355.0	8.9%
Pristane (Isoprenoid - C19)	Pr	113	49.7	90636.0	16.8%
Phytane (Isoprenoid - C20)	Ph	113	52.5	46408.0	8.6%

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

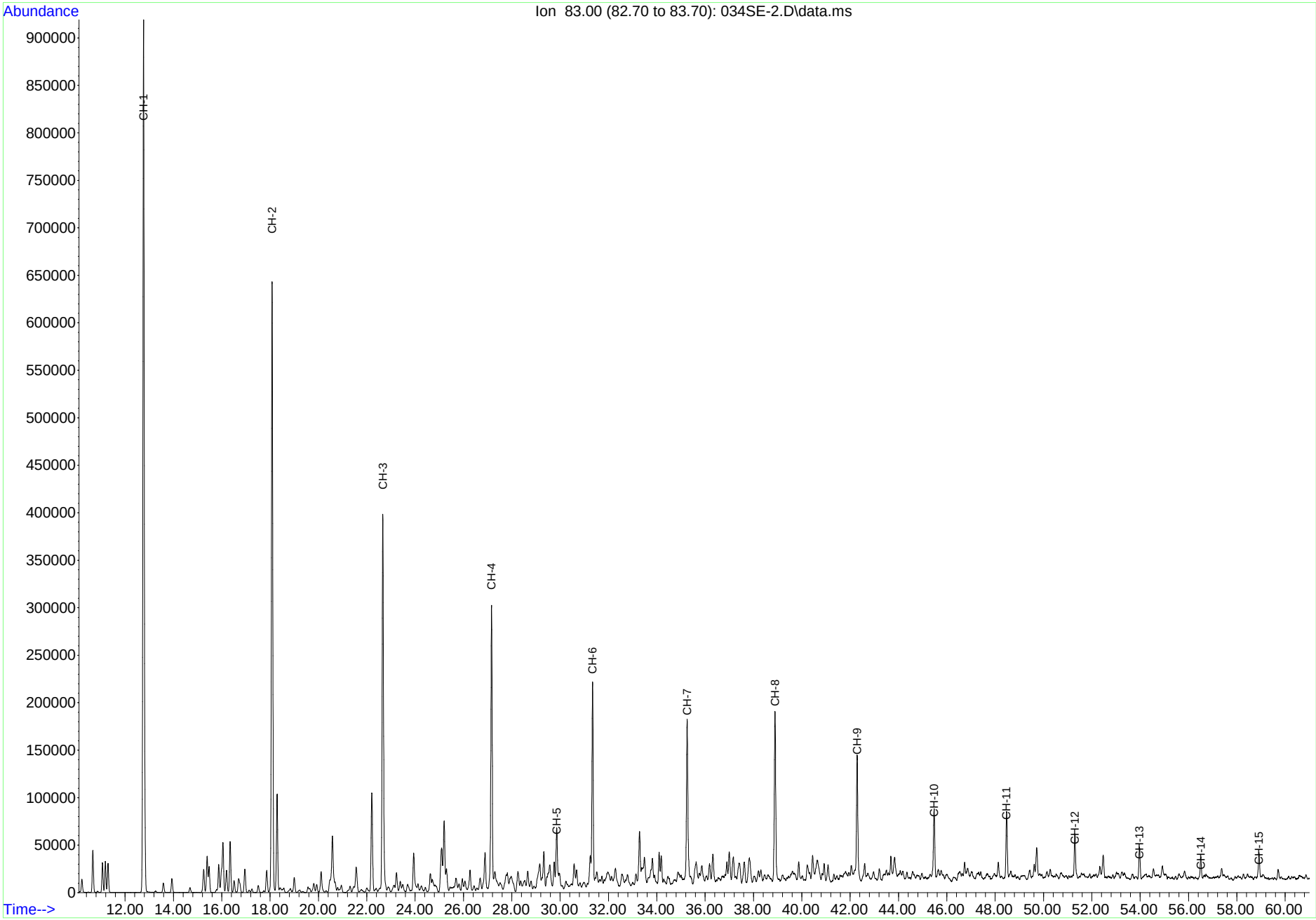
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (83 m/z)
Methylcyclohexane	CH-1	83	12.8	918810.0	28.1%
Ethylcyclohexane	CH-2	83	18.1	643196.0	19.7%
Propylcyclohexane	CH-3	83	22.7	396451.0	12.1%
Butylcyclohexane	CH-4	83	27.2	298638.0	9.1%
Pentylcyclohexane	CH-5	83	29.9	52825.0	1.6%
Hexylcyclohexane	CH-6	83	31.3	215630.0	6.6%
Heptylcyclohexane	CH-7	83	35.3	174970.0	5.4%
Octylcyclohexane	CH-8	83	38.9	180332.0	5.5%
Nonylcyclohexane	CH-9	83	42.3	135543.0	4.1%
Decylcyclohexane	CH-10	83	45.5	72339.0	2.2%
Undecylcyclohexane	CH-11	83	48.5	72838.0	2.2%
Dodecylcyclohexane	CH-12	83	51.3	47523.0	1.5%
Tridecylcyclohexane	CH-13	83	54.0	35578.0	1.1%
Tetradecylcyclohexane	CH-14	83	56.5	23437.0	0.7%

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

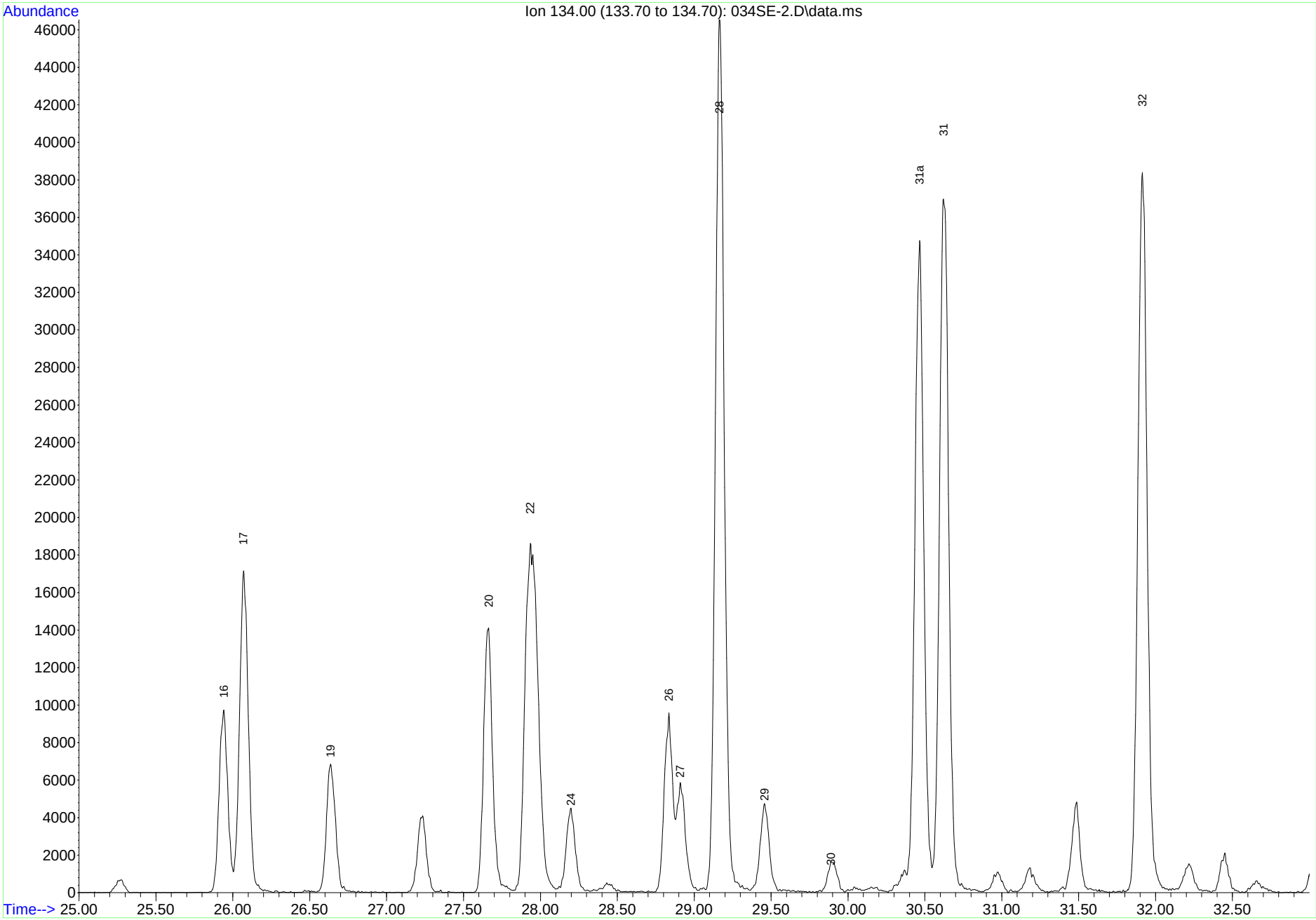
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (134 m/z)
Sec-Butylbenzene	16	134	25.9	9742.0	3.9%
1-Methyl-3-Isopropylbenzene	17	134	26.1	16820.0	6.8%
1-Methyl-4-Isopropylbenzene	18	134	ND	ND	ND
1-Methyl-2-Isopropylbenzene	19	134	26.6	6833.0	2.8%
1,3-Diethylbenzene	20	134	27.7	14104.0	5.7%
1-Methyl-3-Propylbenzene	21	134	ND	ND	ND
Butylbenzene	22	134	27.9	18452.0	7.5%
1,3-Diethyl-5-Ethylbenzene	23	134	ND	ND	ND
1,2-Diethylbenzene	24	134	28.2	4397.0	1.8%
1-Methyl-2-Propylbenzene	25	134	ND	ND	ND
1,4-Dimethyl-2-Ethylbenzene	26	134	28.8	9561.0	3.9%
1,3-Dimethyl-4-Ethylbenzene	27	134	28.9	5860.0	2.4%
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	46380.0	18.8%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	4650.0	1.9%
1,2-Dimethyl-3-Ethylbenzene	30	134	29.9	1609.0	0.7%
1,2,4,5-Tetramethylbenzene	31a	134	30.5	33888.0	13.7%
1,2,3,5-Tetramethylbenzene	31	134	30.6	36594.0	14.8%
1,2,3,4-Tetramethylbenzene	32	134	31.9	38331.0	15.5%

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

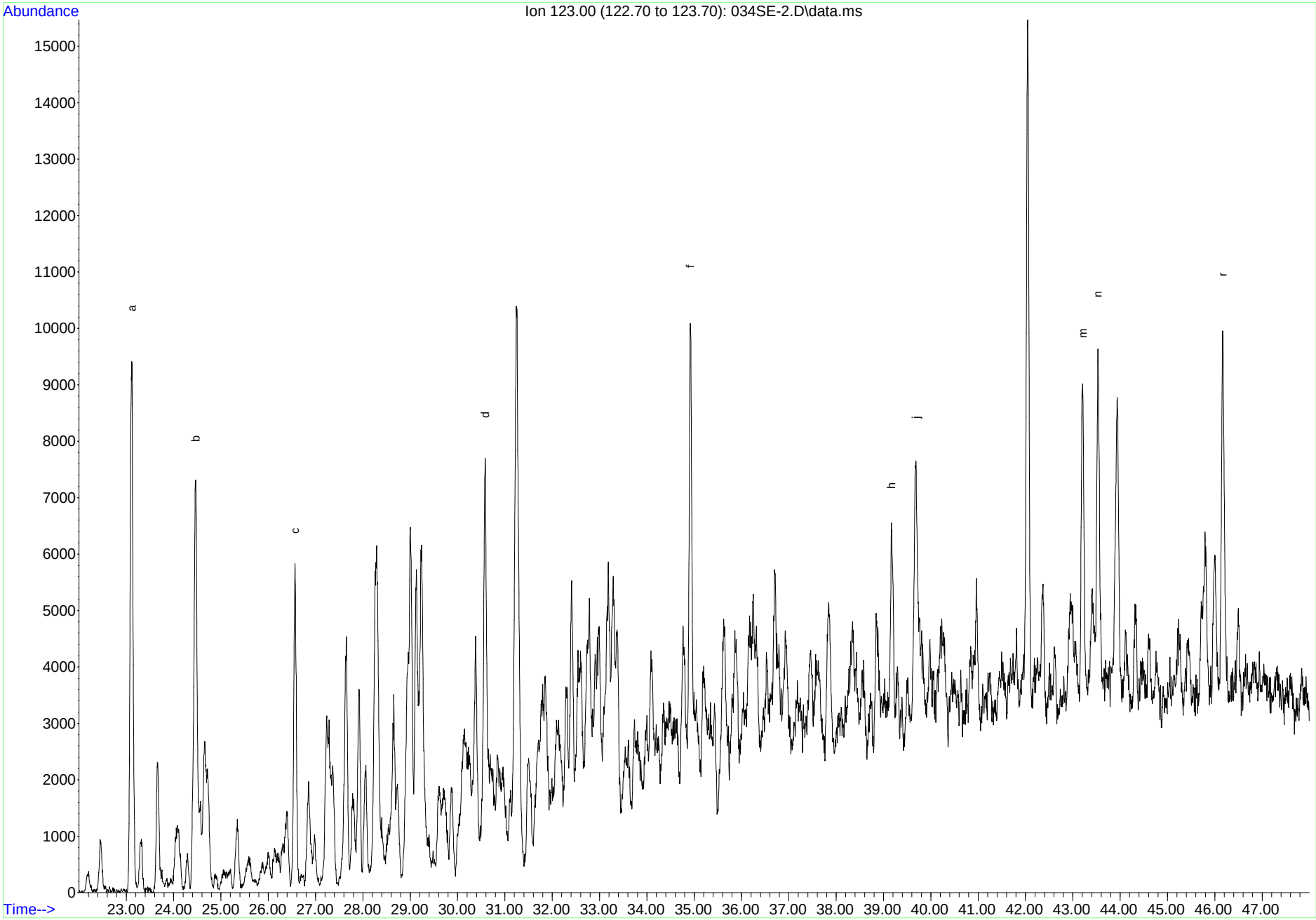
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.1	9396.0	14.2%
C_{10} bicycloalkane	b	123	24.5	7029.0	10.6%
3,3,7-Trimethylbicycloheptane	c	123	26.6	5728.0	8.6%
C_{11} Decalin	d	123	30.6	6723.0	10.1%
Nordrimane	f	123	34.9	8288.0	12.5%
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	39.2	3754.0	5.7%
Rearranged drimane	j	123	39.7	4801.0	7.2%
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	l	123	ND	ND	ND
C_{15} Bicyclic Sesquiterpane	m	123	43.2	6414.0	9.7%
8β (H) Drimane	n	123	43.5	6490.0	9.8%
C_{15} Bicyclic Sesquiterpane	o	123	ND	ND	ND
C_{16} Bicyclic Sesquiterpane	p	123	ND	ND	ND
C_{16} Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	46.2	7629.0	11.5%

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 191 m/z Terpanes

Project Manager: Brad Stephenson
Client: GHD
Address: 6260 W. 52nd Avenue
Arvado, CO 80002
Project: HollyFrontier-North
Project #: 11225604-04-01
Collected by:

Lab ID: 034SE-2
Collected: 5/6/2021
Received: 5/7/2021
Matrix: Product
Client ID: BH-111
Analyzed: 5/14/2021
Q Method: FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C_{21}-Tricyclic Terpane	1	191	57.7	4318.0	6.2%
C_{22}-Tricyclic Terpane	2	191	58.0	2661.0	3.8%
C_{23}-Tricyclic Terpane	3	191	58.4	58648.0	83.9%
C_{24}-Tricyclic Terpane	4	191	ND	ND	ND
C_{25}-Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C_{24}-Tetracyclic Terpane	Z4	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6a*	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6b	191	ND	ND	ND
C_{28}-Tricyclic Terpane #1	A	191	ND	ND	ND
C_{28}-Tricyclic Terpane #2	B	191	ND	ND	ND
C_{29}-Tricyclic Terpane #1	C	191	72.8	1125.0	1.6%
C_{29}-Tricyclic Terpane #2	D	191	73.1	1172.0	1.7%
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_{30}-Tricyclic Terpane #1	10a*	191	ND	ND	ND
C_{30}-Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	I	191	ND	ND	ND
C_{31}-Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C_{31}-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	O	191	ND	ND	ND
22S-17α,21β-30-Homohopane	P	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	80.2	1972.0	2.8%
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
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

SAMPLE RESULTS

Chromatogram Key & Numerical Results: 191 m/z Terpanes

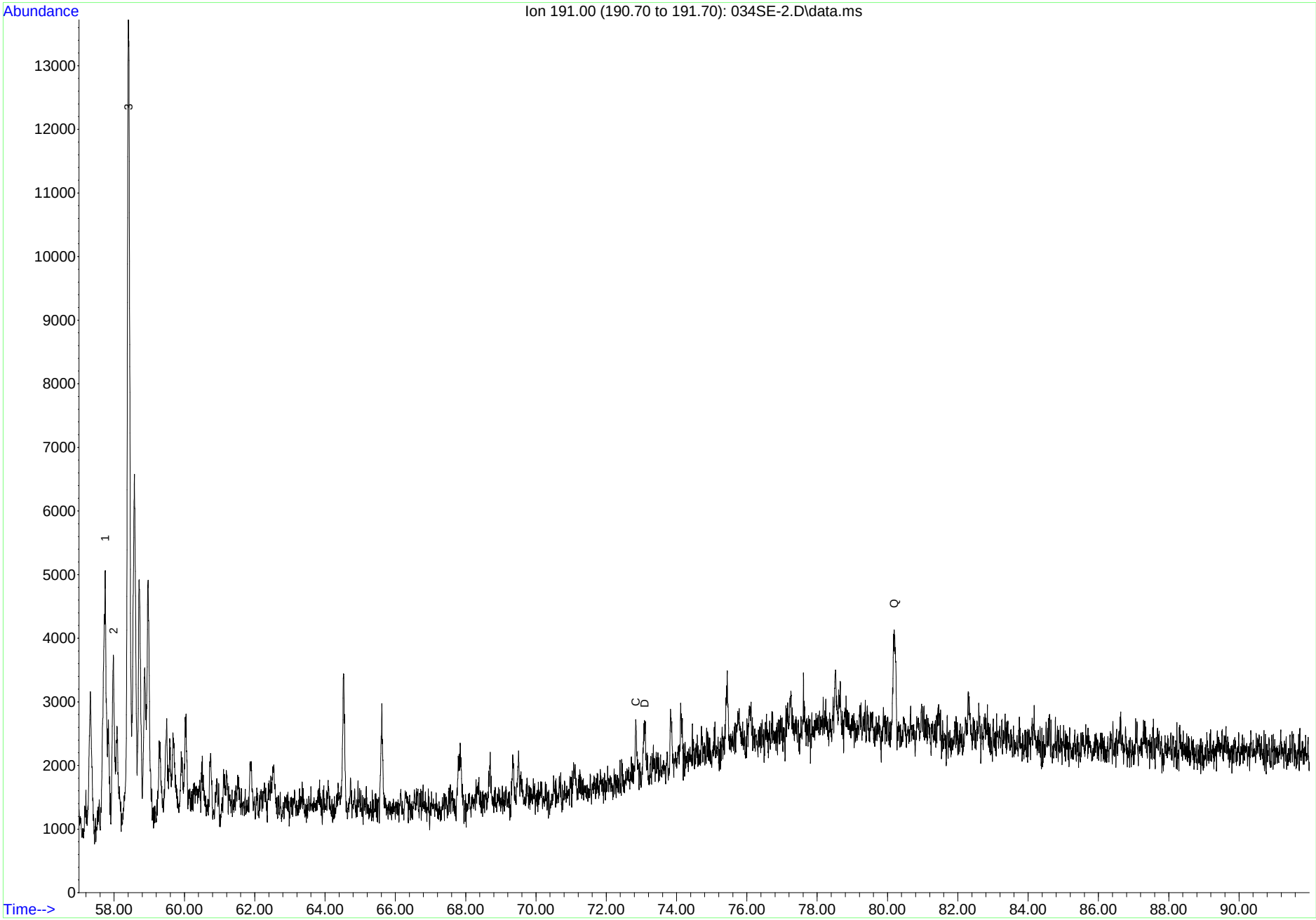
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (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

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 217 m/z Steranes

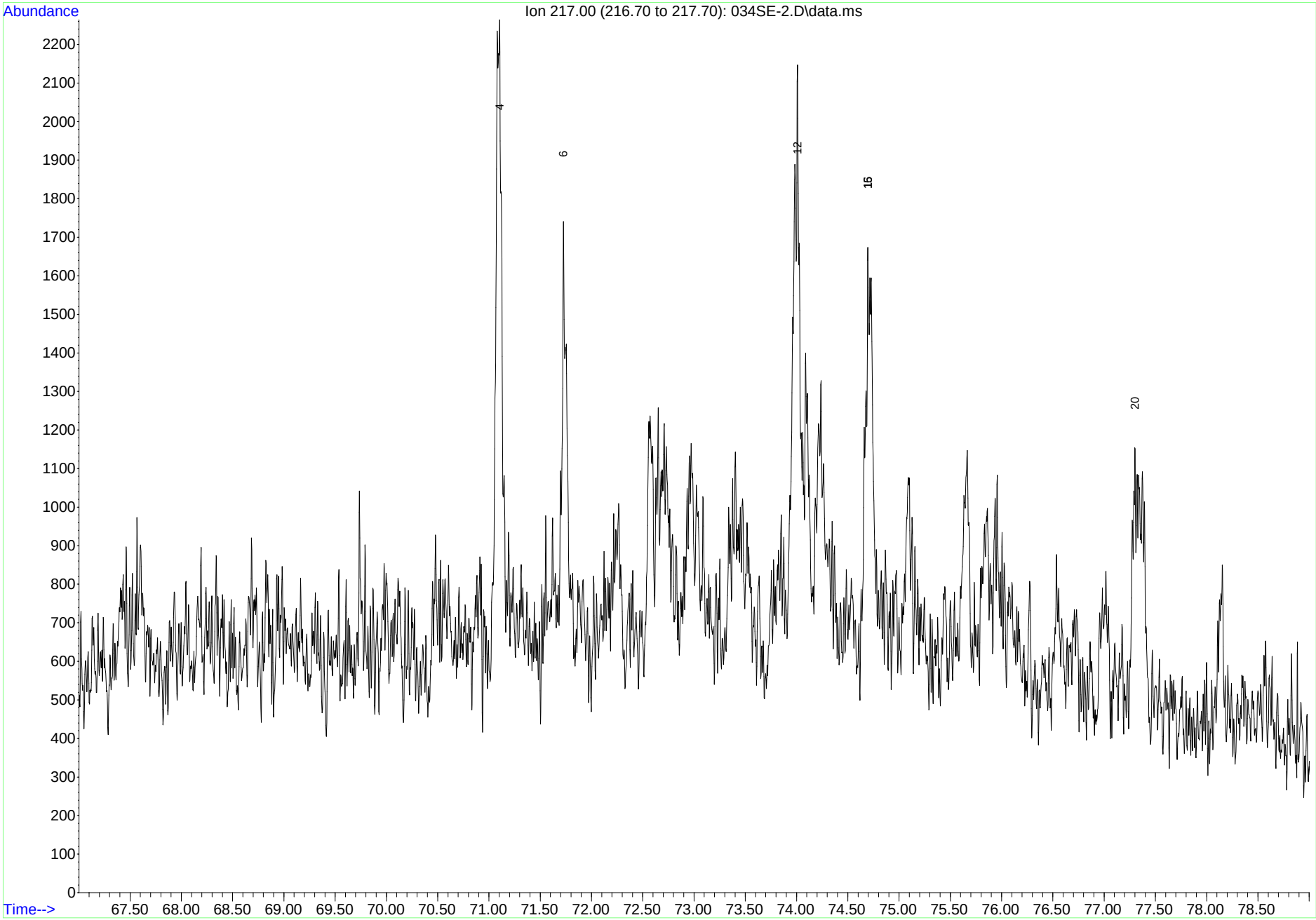
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (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	1685.0	22.0%
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	71.7	1169.0	15.2%
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)+ 14β,17β-Cholestane (20R)	8+8D	217	ND	ND	ND
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	74.0	1433.0	18.7%
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	74.7	1371.0	17.9%
24-methyl-14α, 17α-Cholestane (20R)	16	217	74.7	1167.0	15.2%
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	77.3	842.0	11.0%

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

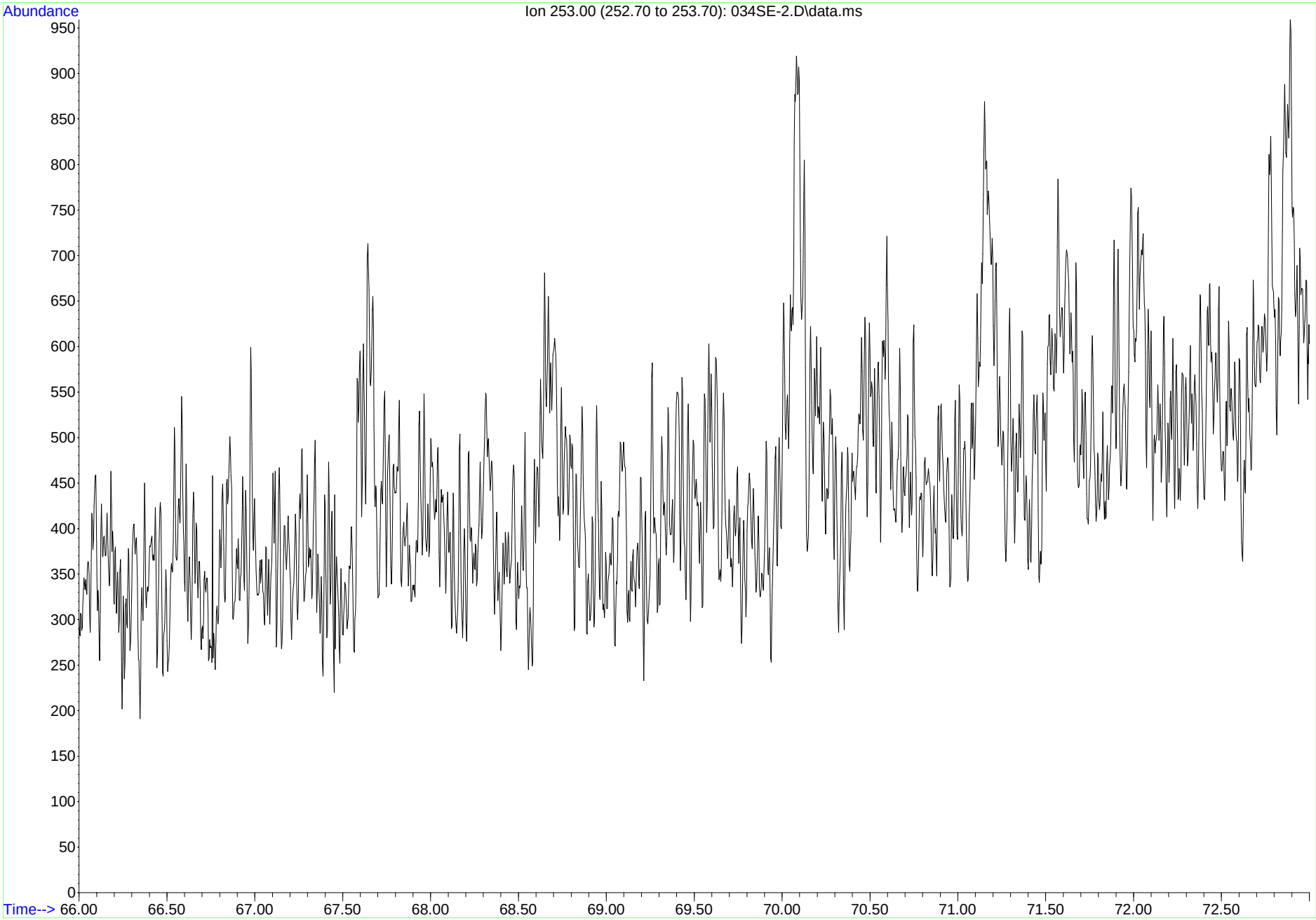
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (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	c	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

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

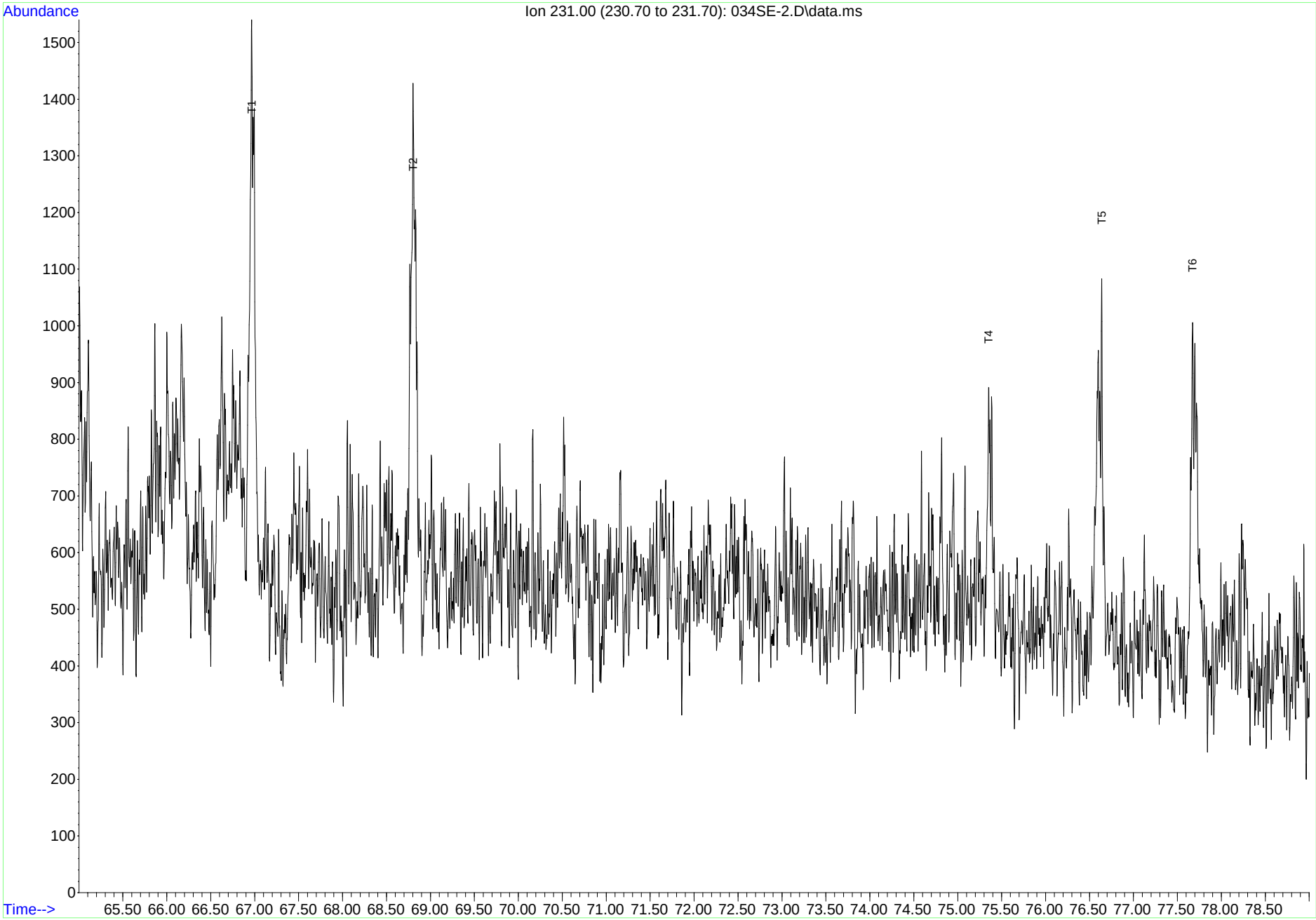
Project Manager:	Brad Stephenson	Lab ID:	034SE-2
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-111
Project #:	11225604-04-01	Analyzed:	5/14/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C_{20} Triaromatic Sterane	T1	231	67.0	1174.0	26.7%
C_{21} Triaromatic Sterane	T2	231	68.8	1089.0	24.8%
20S C_{26} Triaromatic Sterane	T3	231	ND	ND	ND
20R C_{26} + 20S C_{27} Triaromatic Steranes	T4	231	75.4	601.0	13.7%
20S C_{28} Triaromatic Sterane	T5	231	76.6	816.0	18.5%
20R C_{27} Triaromatic Sterane	T6	231	77.7	720.0	16.4%
20R C_{28} Triaromatic Sterane	T7	231	ND	ND	ND

0.4041 g -> 10 ml
FOREN4LA_MI_BACK

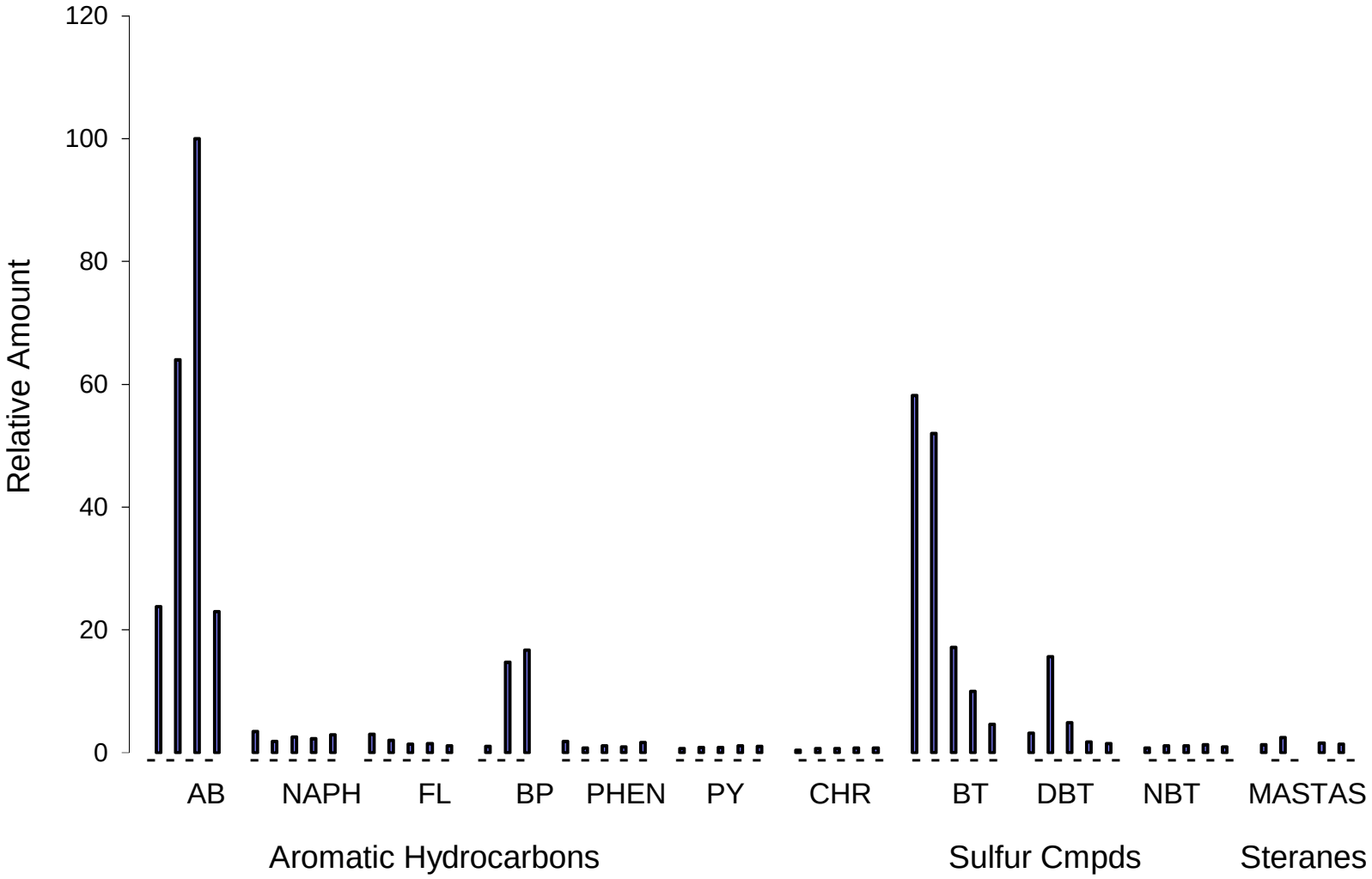
Submitted by,
Microbial Insights, Inc.

034SE-2
0.4041 g -> 10 ml

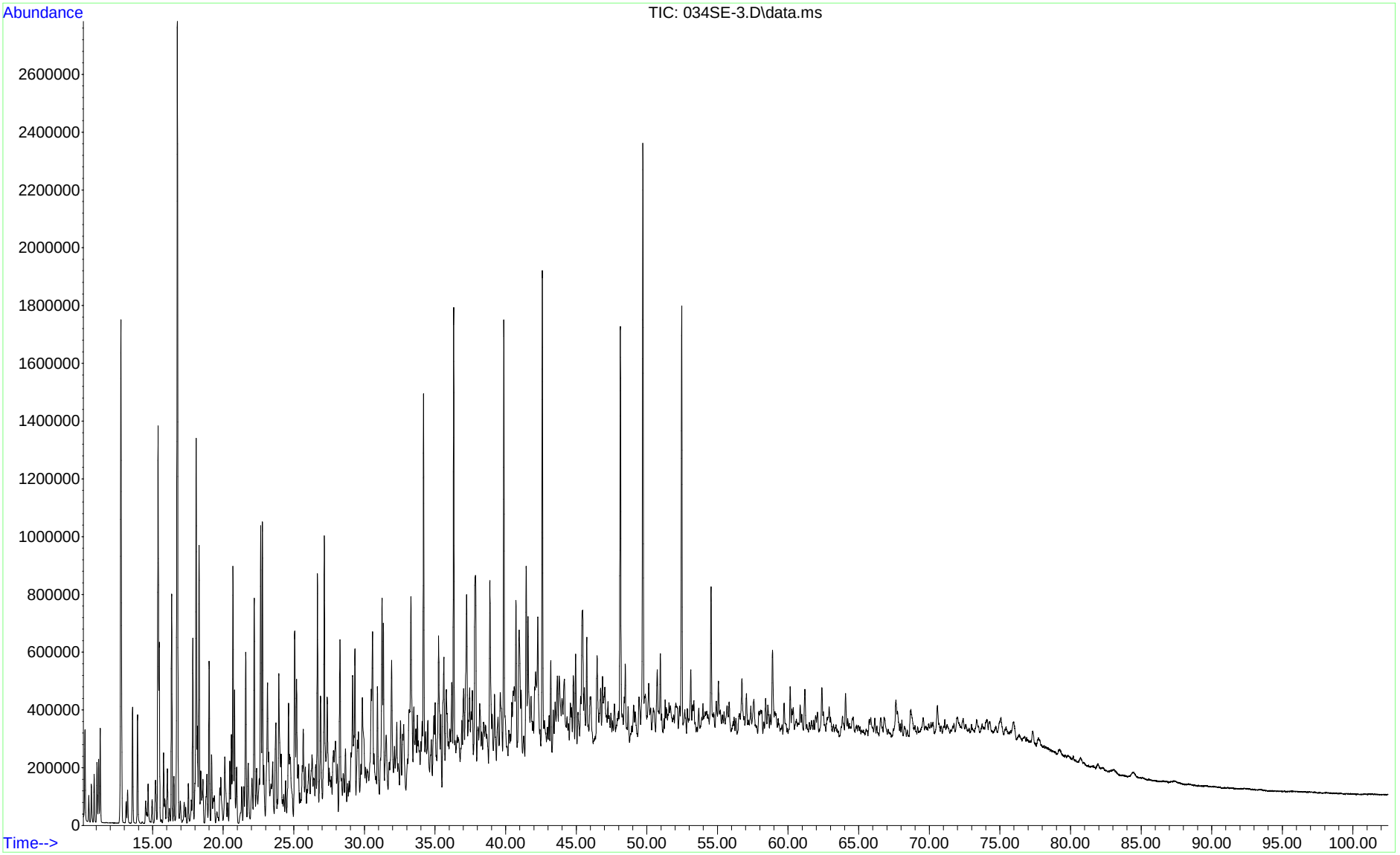


Aromatic Hydrocarbon Distribution

034SE-2



Sample Name: 034SE-3
Misc Info : 0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 85 m/z n-Paraffins

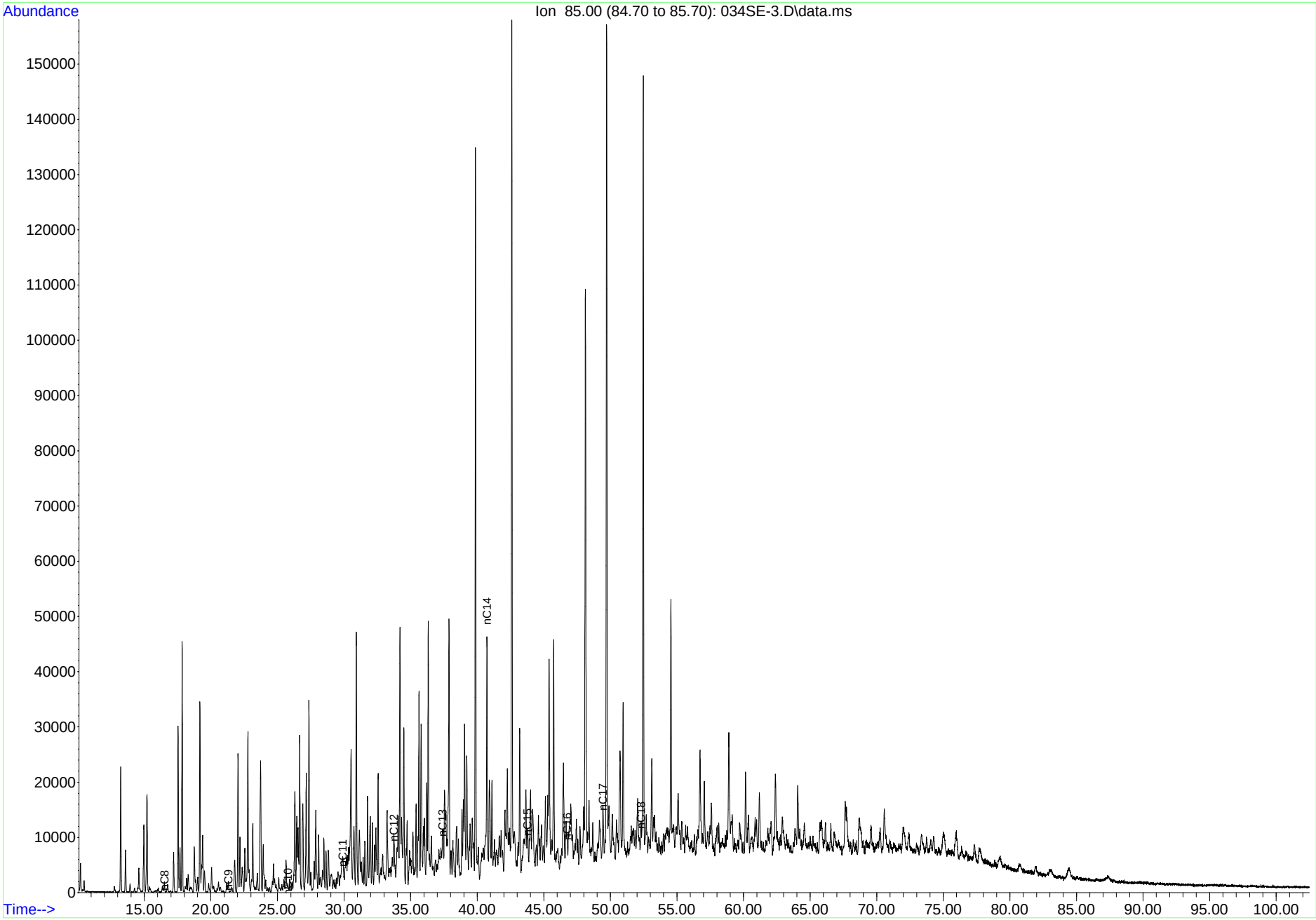
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (85 m/z)
n-Octane	nC8	85	16.5	1889.0	1.8%
n-Nonane	nC9	85	21.3	1976.0	1.9%
n-Decane	nC10	85	25.8	1764.0	1.7%
n-Undecane	nC11	85	29.9	5397.0	5.1%
n-Dodecane	nC12	85	33.7	9161.0	8.6%
n-Tridecane	nC13	85	37.4	8471.0	8.0%
n-Tetradecane	nC14	85	40.7	40170.0	37.7%
n-Pentadecane	nC15	85	43.8	10013.0	9.4%
n-Hexadecane	nC16	85	46.7	9508.0	8.9%
n-Heptadecane	nC17	85	49.4	9193.0	8.6%
n-Octadecane	nC18	85	52.3	8922.0	8.4%
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

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 113 m/z Isoparaffins

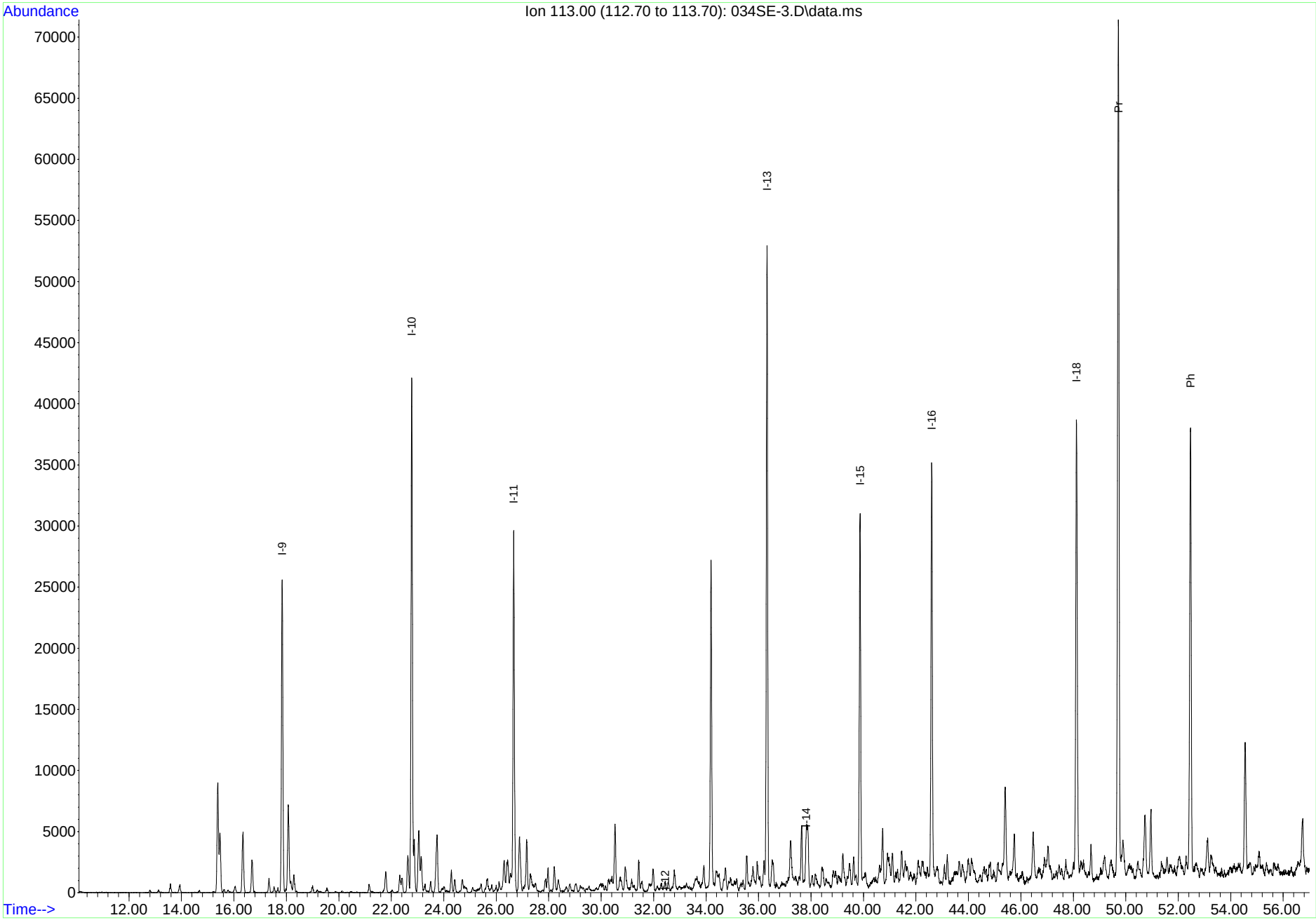
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (113 m/z)
Iso-alkane w/ 9 Carbon Atoms	I-9	113	17.8	25590.0	7.0%
Iso-alkane w/ 10 Carbon Atoms	I-10	113	22.8	42093.0	11.6%
Iso-alkane w/ 11 Carbon Atoms	I-11	113	26.7	29613.0	8.1%
Iso-alkane w/ 12 Carbon Atoms	I-12	113	32.4	703.0	0.2%
Iso-alkane w/ 13 Carbon Atoms	I-13	113	36.3	52327.0	14.4%
Iso-alkane w/ 14 Carbon Atoms	I-14	113	37.8	5390.0	1.5%
Farnesane (Isoprenoid - C15)	I-15	113	39.9	30444.0	8.4%
Iso-alkane w/ 16 Carbon Atoms	I-16	113	42.6	33847.0	9.3%
Iso-alkane w/ 18 Carbon Atoms	I-18	113	48.1	37108.0	10.2%
Pristane (Isoprenoid - C19)	Pr	113	49.7	70022.0	19.3%
Phytane (Isoprenoid - C20)	Ph	113	52.5	36281.0	10.0%

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 83 m/z Alkylcyclohexanes

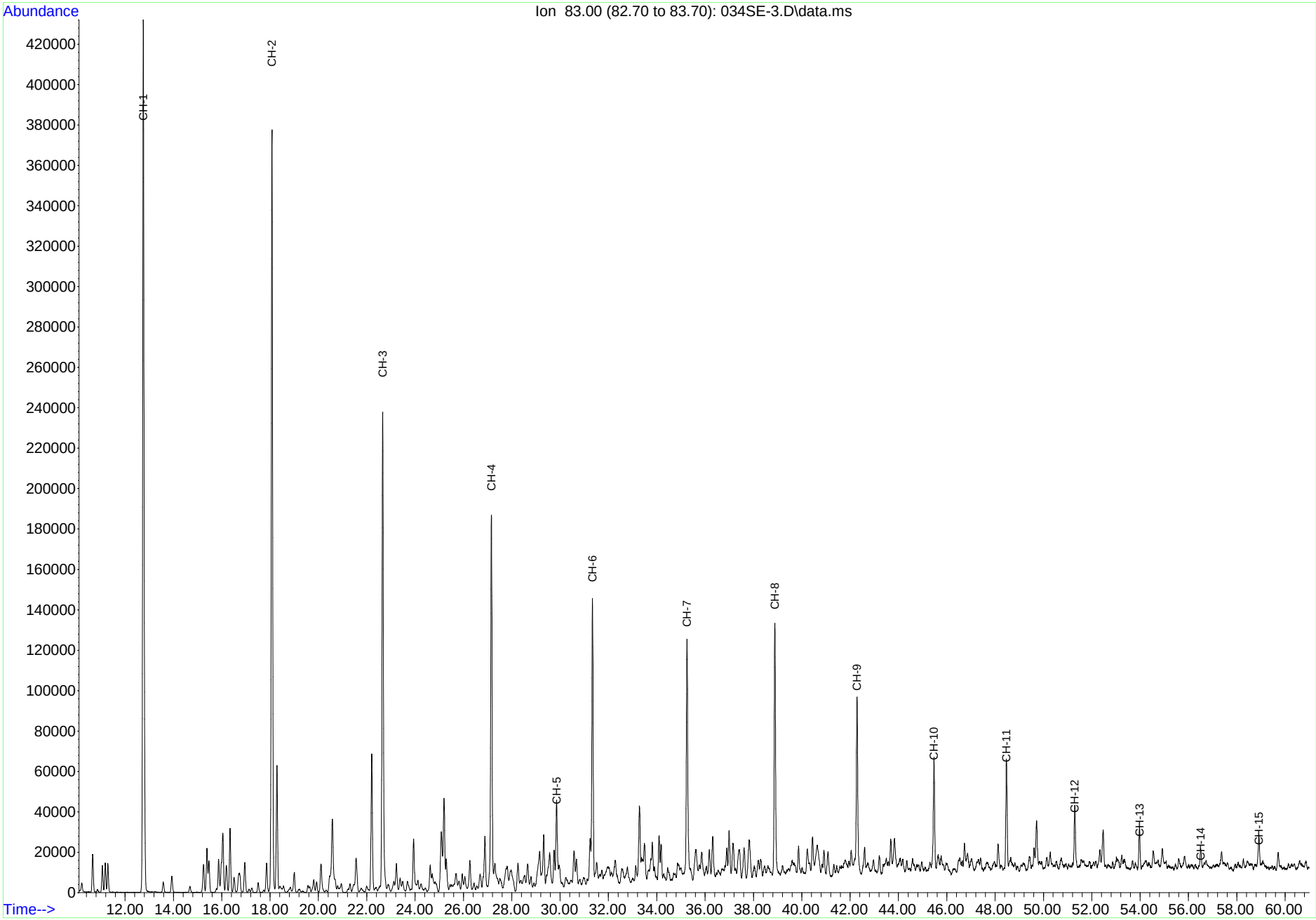
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (83 m/z)
Methylcyclohexane	CH-1	83	12.8	431872.0	22.3%
Ethylcyclohexane	CH-2	83	18.1	377543.0	19.5%
Propylcyclohexane	CH-3	83	22.7	235903.0	12.2%
Butylcyclohexane	CH-4	83	27.2	183936.0	9.5%
Pentylcyclohexane	CH-5	83	29.9	43401.0	2.2%
Hexylcyclohexane	CH-6	83	31.3	145035.0	7.5%
Heptylcyclohexane	CH-7	83	35.3	122601.0	6.3%
Octylcyclohexane	CH-8	83	38.9	131011.0	6.8%
Nonylcyclohexane	CH-9	83	42.3	86932.0	4.5%
Decylcyclohexane	CH-10	83	45.5	58370.0	3.0%
Undecylcyclohexane	CH-11	83	48.5	56244.0	2.9%
Dodecylcyclohexane	CH-12	83	51.3	32714.0	1.7%
Tridecylcyclohexane	CH-13	83	54.0	23111.0	1.2%
Tetradecylcyclohexane	CH-14	83	56.5	11263.0	0.6%

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 134 m/z C3-C4 Monoaromatics

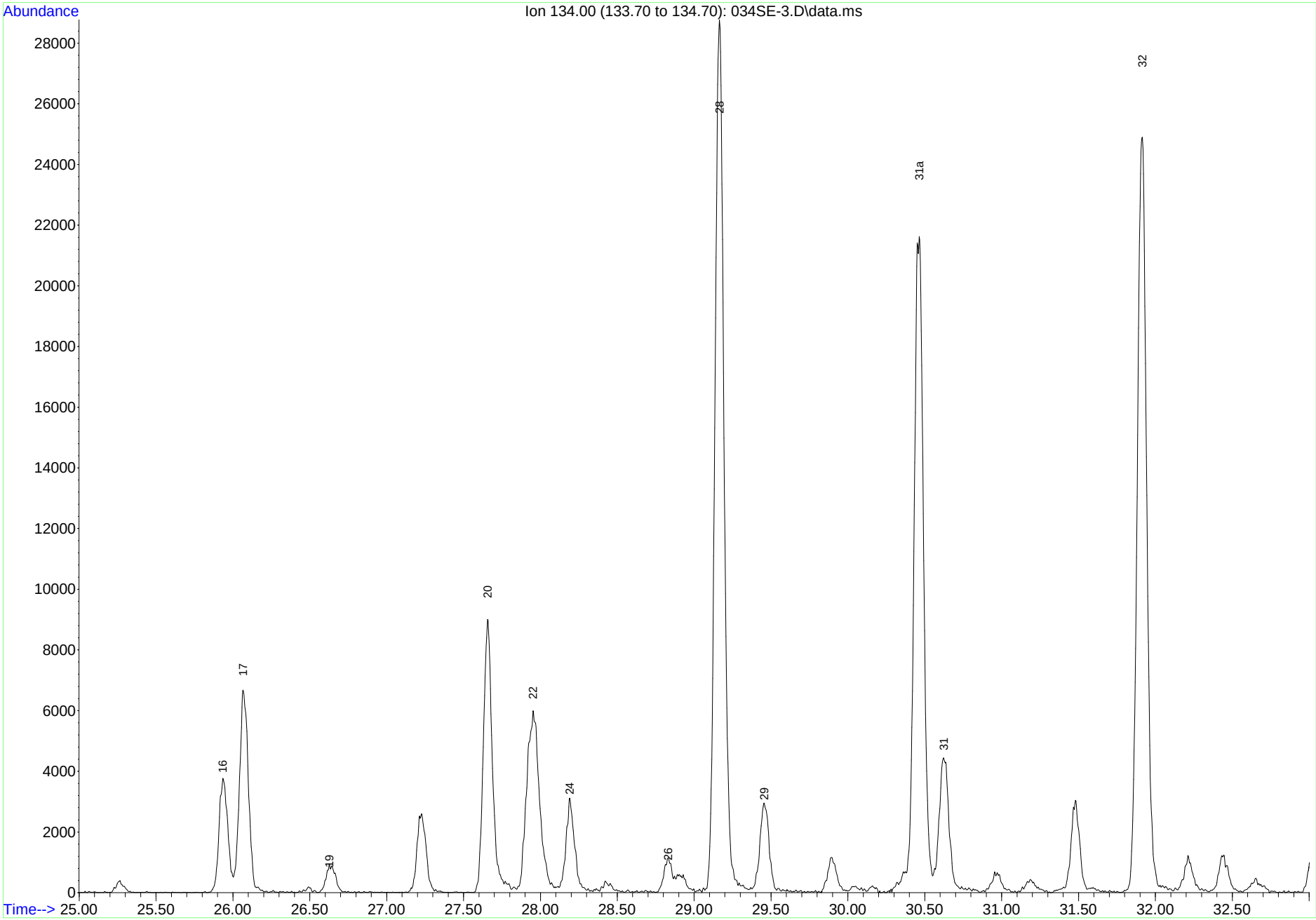
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (134 m/z)
Sec-Butylbenzene	16	134	25.9	3773.0	3.4%
1-Methyl-3-Isopropylbenzene	17	134	26.1	6537.0	5.8%
1-Methyl-4-Isopropylbenzene	18	134	ND	ND	ND
1-Methyl-2-Isopropylbenzene	19	134	26.6	945.0	0.8%
1,3-Diethylbenzene	20	134	27.7	9009.0	8.0%
1-Methyl-3-Propylbenzene	21	134	ND	ND	ND
Butylbenzene	22	134	28.0	5882.0	5.2%
1,3-Diethyl-5-Ethylbenzene	23	134	ND	ND	ND
1,2-Diethylbenzene	24	134	28.2	3035.0	2.7%
1-Methyl-2-Propylbenzene	25	134	ND	ND	ND
1,4-Dimethyl-2-Ethylbenzene	26	134	28.8	1145.0	1.0%
1,3-Dimethyl-4-Ethylbenzene	27	134	ND	ND	ND
1,2-Dimethyl-4-Ethylbenzene	28	134	29.2	28685.0	25.5%
1,3-Dimethyl-2-Ethylbenzene	29	134	29.5	2878.0	2.6%
1,2-Dimethyl-3-Ethylbenzene	30	134	ND	ND	ND
1,2,4,5-Tetramethylbenzene	31a	134	30.5	21433.0	19.1%
1,2,3,5-Tetramethylbenzene	31	134	30.6	4318.0	3.8%
1,2,3,4-Tetramethylbenzene	32	134	31.9	24839.0	22.1%

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 123 m/z Bicyclanes

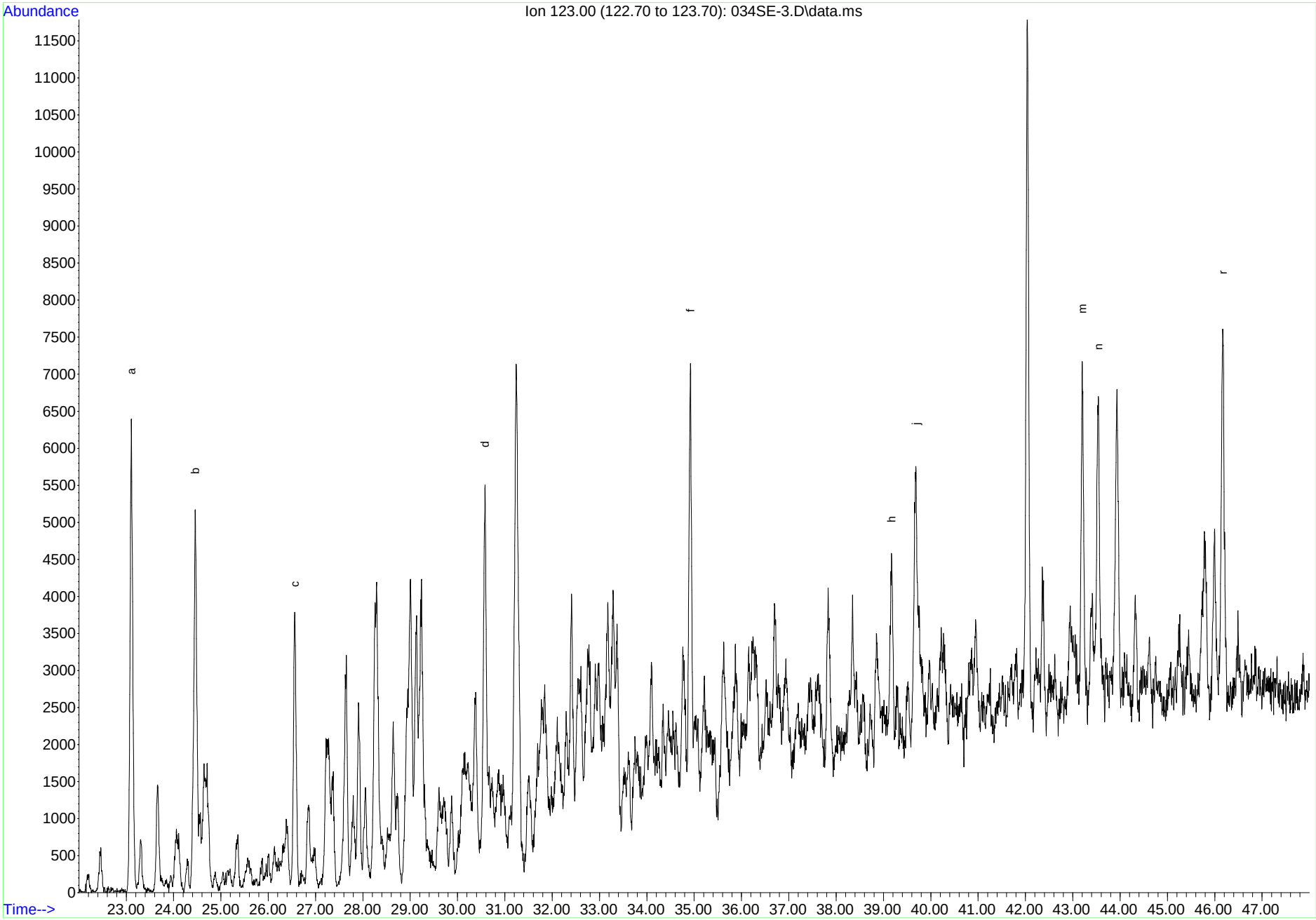
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (123 m/z)
2,2,3-Trimethylbicycloheptane	a	123	23.1	6373.0	12.7%
C_{10} bicycloalkane	b	123	24.5	5069.0	10.1%
3,3,7-Trimethylbicycloheptane	c	123	26.6	3705.0	7.4%
C_{11} Decalin	d	123	30.6	4906.0	9.8%
Nordrimane	f	123	34.9	6204.0	12.4%
Nordrimane	g	123	ND	ND	ND
Rearranged drimane	h	123	39.2	3371.0	6.7%
Rearranged drimane	j	123	39.7	5149.0	10.3%
Isomer of Eudesmane	k	123	ND	ND	ND
4β (H) Eudesmane	l	123	ND	ND	ND
C_{15} Bicyclic Sesquiterpane	m	123	43.2	5404.0	10.8%
8β (H) Drimane	n	123	43.5	4046.0	8.1%
C_{15} Bicyclic Sesquiterpane	o	123	ND	ND	ND
C_{16} Bicyclic Sesquiterpane	p	123	ND	ND	ND
C_{16} Bicyclic Sesquiterpane	q	123	ND	ND	ND
8β (H) Homodrimane	r	123	46.2	5869.0	11.7%

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 191 m/z Terpanes

microbialinsights

Project Manager: Brad Stephenson
Client: GHD
Address: 6260 W. 52nd Avenue
Arvado, CO 80002
Project: HollyFrontier-North
Project #: 11225604-04-01
Collected by:

Lab ID: 034SE-3
Collected: 5/6/2021
Received: 5/7/2021
Matrix: Product
Client ID: BH-42
Analyzed: 5/15/2021
Q Method: FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (191 m/z)
C_{21}-Tricyclic Terpane	1	191	57.7	2687.0	4.7%
C_{22}-Tricyclic Terpane	2	191	58.0	1966.0	3.4%
C_{23}-Tricyclic Terpane	3	191	58.4	47827.0	83.4%
C_{24}-Tricyclic Terpane	4	191	ND	ND	ND
C_{25}-Tricyclic Terpane	5(S+R)	191	ND	ND	ND
C_{24}-Tetracyclic Terpane	Z4	191	ND	ND	ND
C_{26}-Tricyclic Terpane	6a*	191	60.9	310.0	0.5%
C_{26}-Tricyclic Terpane	6b	191	61.5	255.0	0.4%
C_{28}-Tricyclic Terpane #1	A	191	71.7	186.0	0.3%
C_{28}-Tricyclic Terpane #2	B	191	71.9	375.0	0.7%
C_{29}-Tricyclic Terpane #1	C	191	72.8	1068.0	1.9%
C_{29}-Tricyclic Terpane #2	D	191	73.1	981.0	1.7%
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_{30}-Tricyclic Terpane #1	10a*	191	ND	ND	ND
C_{30}-Tricyclic Terpane #2	10b	191	ND	ND	ND
17 α-28,30 Bisnorhopane	I	191	ND	ND	ND
C_{31}-Tricyclic Terpane #1	11a*	191	ND	ND	ND
17α-25-Norhopane	J	191	ND	ND	ND
C_{31}-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	O	191	ND	ND	ND
22S-17α,21β-30-Homohopane	P	191	ND	ND	ND
22R-17α,21β-30-Homohopane	Q	191	80.2	1669.0	2.9%
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
22S-17α,21β-Tetrahomohopane	XS	191	ND	ND	ND

SAMPLE RESULTS

Chromatogram Key & Numerical Results: 191 m/z Terpanes

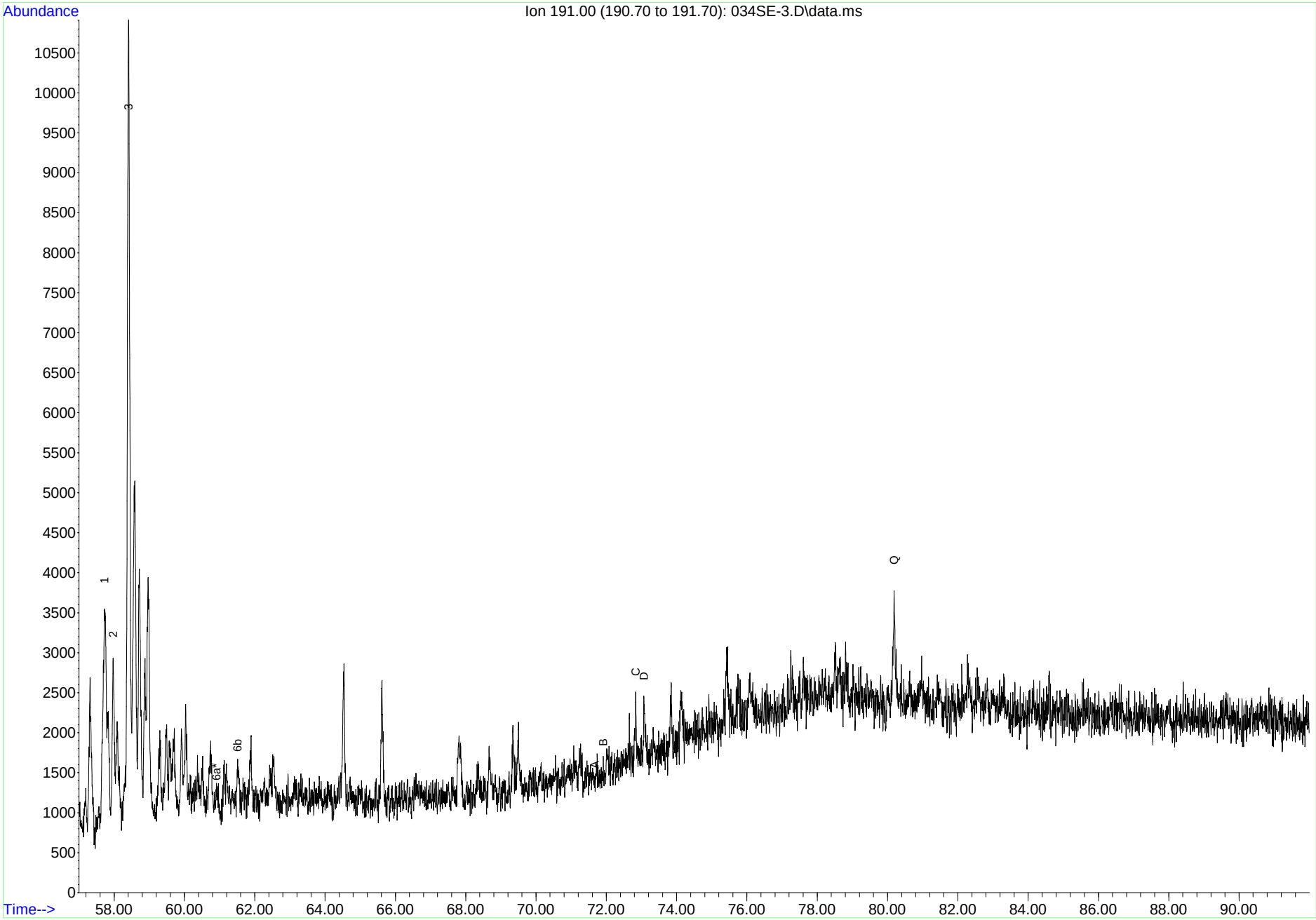
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (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

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 217 m/z Steranes

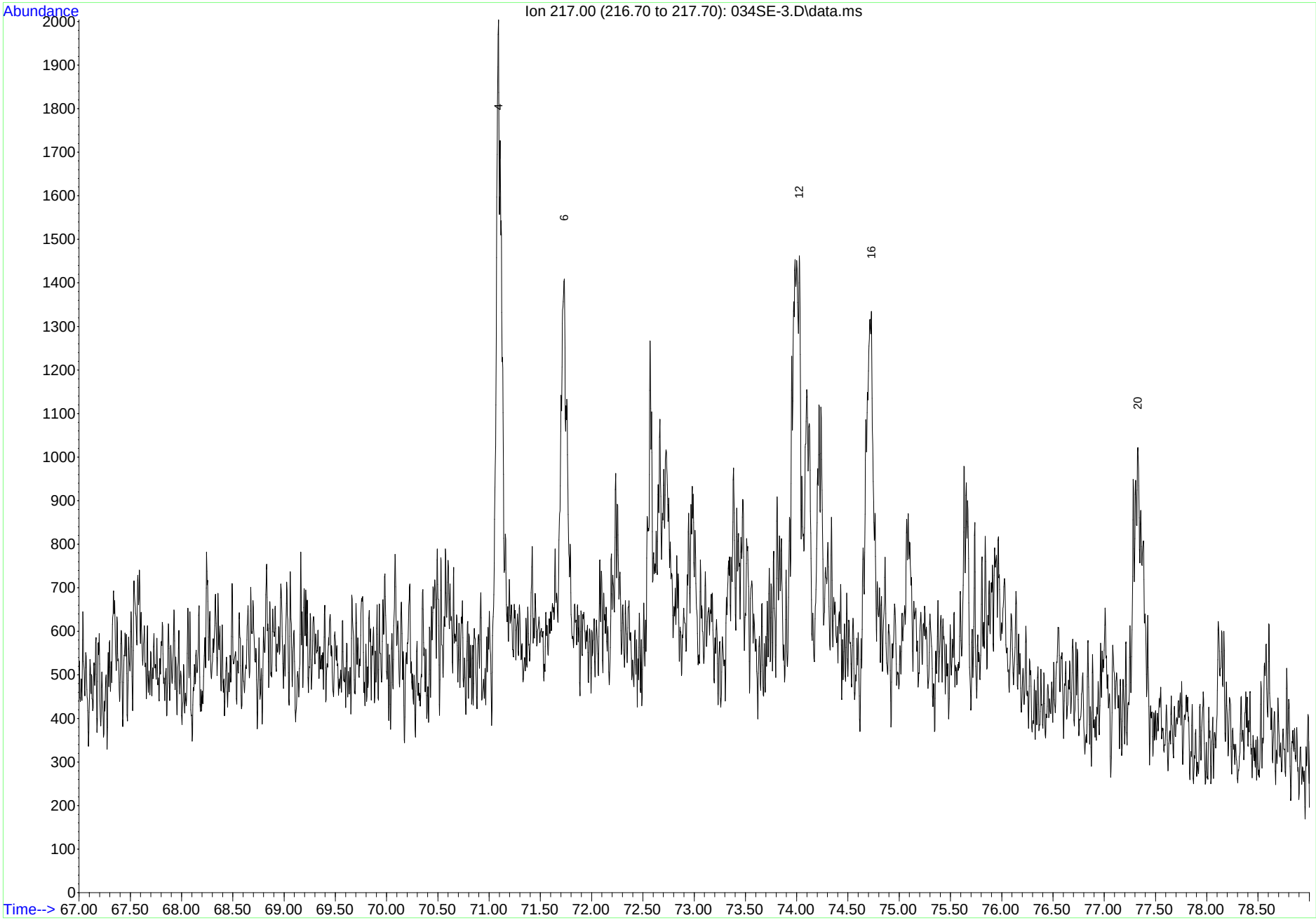
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (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	1622.0	30.6%
24-methyl-13β,17α-Diacholestane (20S)	5	217	ND	ND	ND
24-methyl-13β,17α-Diacholestane (20S)	6	217	71.7	949.0	17.9%
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)+ 14β,17β-Cholestane (20R)	8+8D	217	ND	ND	ND
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	74.0	1026.0	19.3%
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	74.7	927.0	17.5%
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	77.3	780.0	14.7%

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 253 m/z Monoaromatic Steranes

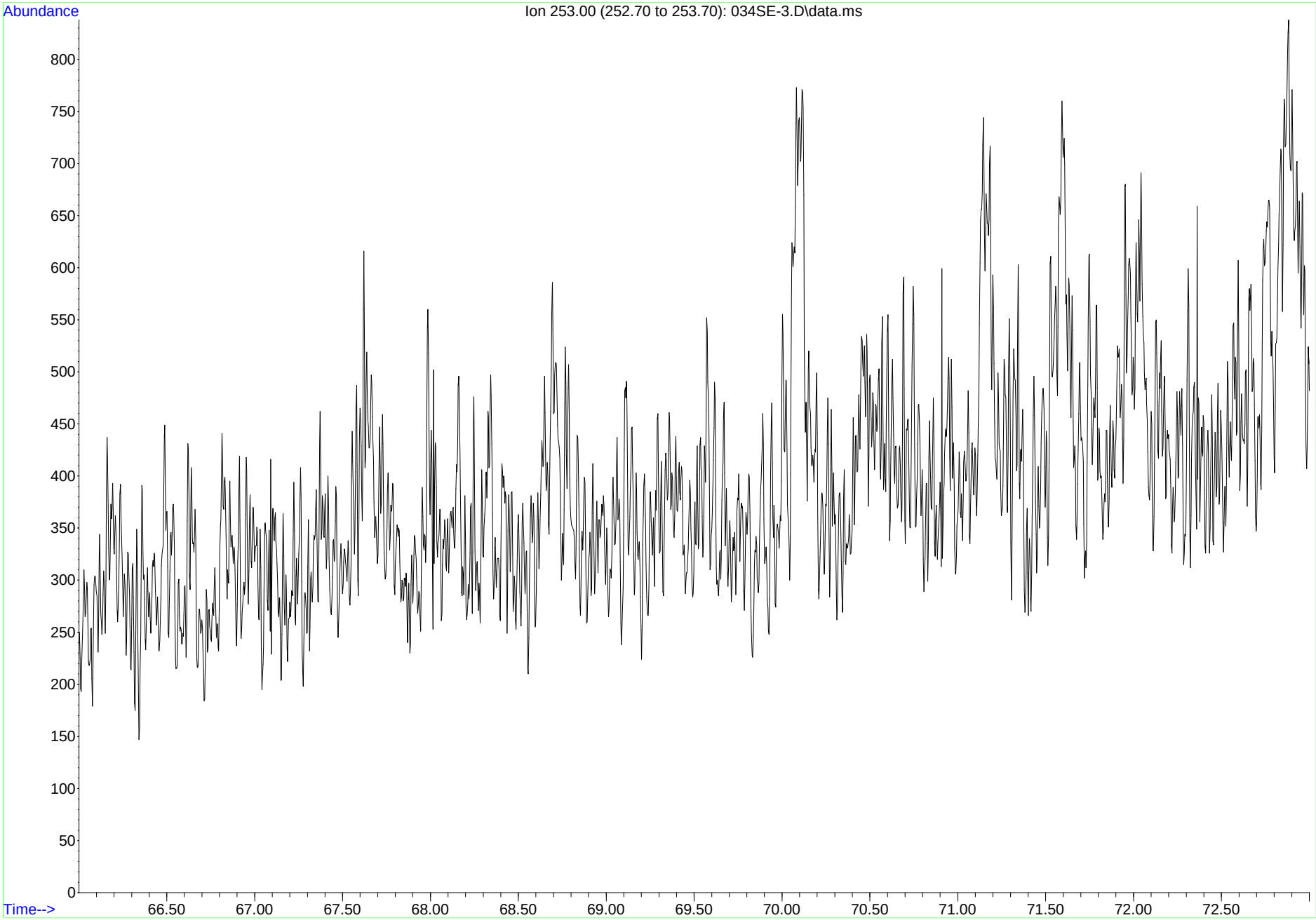
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (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	c	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

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



SAMPLE RESULTS

Chromatogram Key & Numerical Results: 231 m/z Triaromatic Steranes

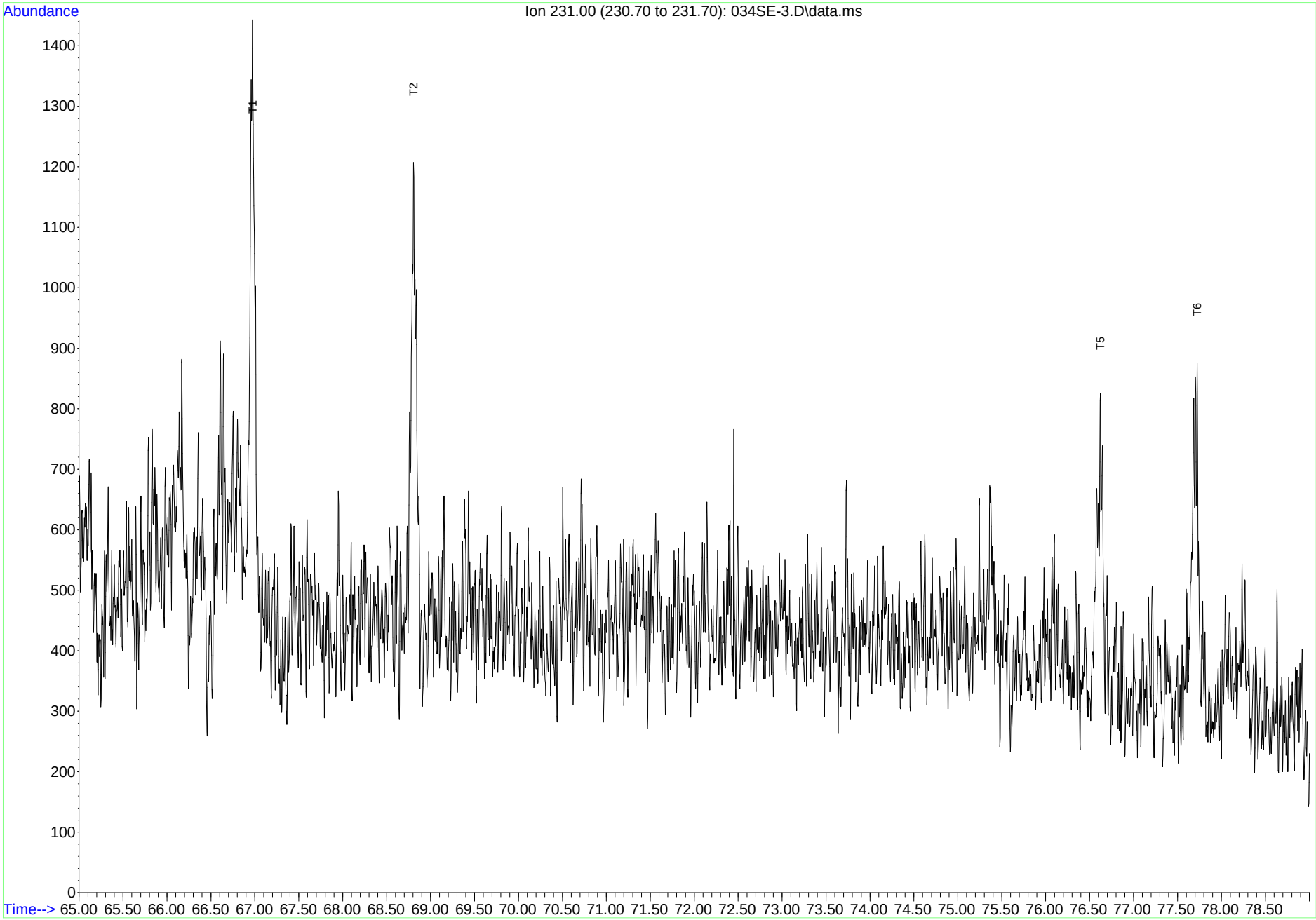
Project Manager:	Brad Stephenson	Lab ID:	034SE-3
Client:	GHD	Collected:	5/6/2021
Address:	6260 W. 52nd Avenue	Received:	5/7/2021
	Arvado, CO 80002	Matrix:	Product
Project:	HollyFrontier-North	Client ID:	BH-42
Project #:	11225604-04-01	Analyzed:	5/15/2021
Collected by:		Q Method:	FSRTL120320.M

Identity	Symbol	Ion (m/z)	Retention Time	Peak Height	Rel. Height % (231 m/z)
C_{20} Triaromatic Sterane	T1	231	67.0	1108.0	33.7%
C_{21} Triaromatic Sterane	T2	231	68.8	891.0	27.1%
20S C_{26} Triaromatic Sterane	T3	231	ND	ND	ND
20R C_{26} + 20S C_{27} Triaromatic Steranes	T4	231	ND	ND	ND
20S C_{28} Triaromatic Sterane	T5	231	76.6	582.0	17.7%
20R C_{27} Triaromatic Sterane	T6	231	77.7	704.0	21.4%
20R C_{28} Triaromatic Sterane	T7	231	ND	ND	ND

0.1563 g -> 4 ml
FOREN4LA_MI_BACK

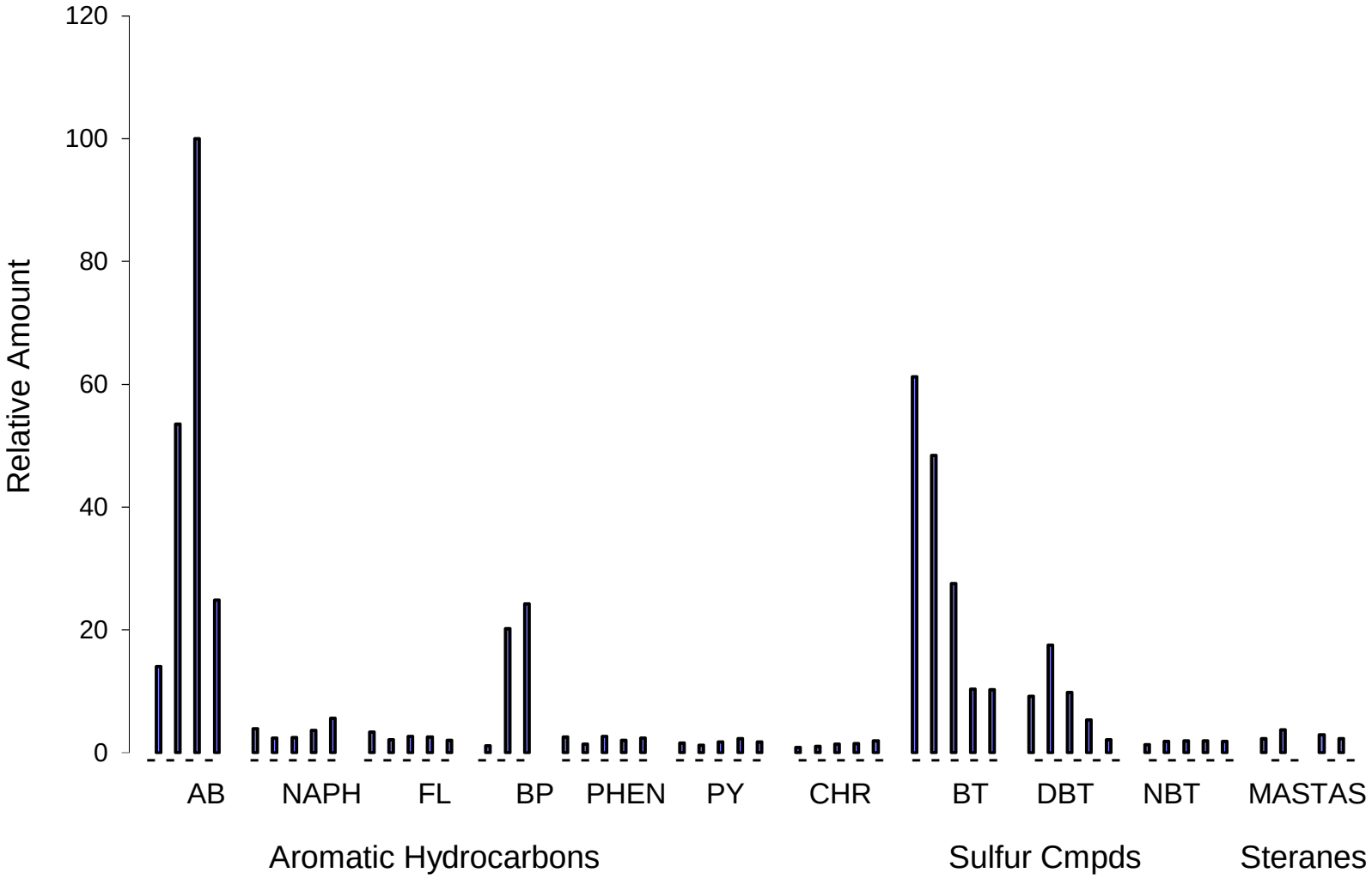
Submitted by,
Microbial Insights, Inc.

034SE-3
0.1563 g -> 4 ml



Aromatic Hydrocarbon Distribution

034SE-3



Key for Identifying Aromatic Hydrocarbons

No	m/z	Abbreviation	Compound
1	120	AB	C_3-alkylbenzenes
2	134		C_4-alkylbenzenes
3	148		C_5-alkylbenzenes
4	162		C_6-alkylbenzenes
5	128	NAPH	C_0-naphthalene
6	142		C_1-naphthalenes
7	156		C_2-naphthalenes
8	170		C_3-naphthalenes
9	184		C_4-naphthalenes
10	166	FL	C_0-fluorene
11	180		C_1-fluorenes
12	194		C_2-fluorenes
13	208		C_3-fluorenes
14	222		C_4-fluorenes
15	154	BP	C_0-biphenyl
16	168		C_1-biphenyls + dibenzofuran
17	182		C_2-biphenyls + C1 Dibenzofuran
18	178	PHEN	C_0-phenanthrene
19	192		C_1-phenanthrenes
20	206		C_2-phenanthrenes
21	220		C_3-phenanthrenes
22	234		C_4-phenanthrenes
23	202	PY	C_0-pyrene/fluoranthene
24	216		C_1-pyrenes/fluoranthenes
25	230		C_2-pyrenes/fluoranthenes
26	244		C_3-pyrenes/fluoranthenes
27	258		C_4-pyrenes/fluoranthenes
28	228	CHR	C_0-chrysene
29	242		C_1-chrysenes
30	256		C_2-chrysenes
31	270		C_3-chrysenes
32	284		C_4-chrysenes
33	148	BT	C_1-benzothiophenes
34	162		C_2-benzothiophenes
35	176		C_3-benzothiophenes
36	190		C_4-benzothiophenes
37	204		C_5-benzothiophenes

Key for Identifying Aromatic Hydrocarbons – Cont.

No	m/z	Abbreviation	Compound
38	184	DBT	C_0-dibenzothiophene
39	198		C_1-dibenzothiophenes
40	212		C_2-dibenzothiophenes
41	226		C_3-dibenzothiophenes
42	240		C_4-dibenzothiophenes
43	234	NBT	C_0-naphthobenzthiophene
44	248		C_1-naphthobenzthiophenes
45	262		C_2-naphthobenzthiophenes
46	276		C_3-naphthobenzthiophenes
47	290		C_4-naphthobenzthiophenes
48	253	MAS	Monoaromatic steranes
49	267		Monoaromatic steranes
50	239		Monoaromatic steranes
51	231	TAS	Triaromatic steranes
52	245		Triaromatic steranes

10515 Research Dr.
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

SITE LOGIC Report

C3-C12 PIANO

Contact: Brad Stephenson
Phone: 303-941-6156
Address: GHD
6260 W. 52nd Avenue
Suite 105
Arvado, CO 80002
Email: brad.stephenson@ghd.com

MI Identifier: 052SF **Report Date:** June 18, 2021

Project: Holly Frontier-North Monument, 11225604-04-01

Comments:

SAMPLE RESULTS
PAGE 1

Brad Stephenson
GHD
6260 W. 52nd Avenue Suite 105
Arvado, CO 80002

Lab ID: 052SF
Collected: 6/9/2021
Received: 6/10/2021
Matrix: Product

Client ID: BH-42

Project: Holly Frontier-North Monument
Project #: 11225604-04-01
Collected by:

Analyzed: 6/11/2021
Q Method: 121818ICAL.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
Isopentane (2-Methylbutane)	I	IP	87.1	87.1	U
1-Pentene	O	1P	87.1	87.1	U
2-Methyl-1-butene	O	2M1B	87.1	87.1	U
Pentane (nC5)	P	C5	87.1	87.1	U
trans-2-pentene	O	T2P	87.1	87.1	U
cis-2-pentene	O	C2P	87.1	87.1	U
2-Methyl-2-butene (t)	O	2M2B	87.1	87.1	U
t-Butanol (TBA)	ADD	TBA	87.1	87.1	U
2,2-Dimethylbutane (t)	I	22DMB	87.1	87.1	U
Cyclopentane	N	CYP	87.1	87.1	U
2,3-Dimethylbutane	I	23DMB	87.1	87.1	U
2-Methylpentane	I	2MP	87.1	87.1	U
Methyl-tert-butyl ether (MTBE)	ADD	MTBE	65.3	65.3	U
3-Methylpentane	I	3MP	87.1	784.0	
1-Hexene	O	1HX	87.1	87.1	U
Hexane (nC6)	P	C6	87.1	87.1	U
Di-isopropyl ether (DIPE)	ADD	DIPE	65.3	65.3	U
trans-2-hexene (t)	O	T2HE	87.1	87.1	U
2-Methyl-2-pentene (t)	O	2M2P	87.1	87.1	U
cis-2-hexene (t)	O	C2HE	87.1	87.1	U
cis-3-Methyl-2-pentene (t)	O	C3M2P	87.1	87.1	U
Ethyl-tert-butyl ether (ETBE)	ADD	ETBE	65.3	65.3	U
2,2-Dimethylpentane (t)	I	22DMP	87.1	91.2	J
Methylcyclopentane	N	MCYP	87.1	87.1	U
2,4-Dimethylpentane	I	24DMP	87.1	365.6	
1,2-Dichloroethane (EDC)	ADD	EDC	65.3	65.3	U
Benzene	A	B	87.1	87.1	U
3,3-Dimethylpentane (t)	I	33DMP	87.1	245.3	
Thiophene	S	THIO	65.3	65.3	U
Cyclohexane	N	CYH	87.1	3014.8	
2-Methylhexane	I	2MH	87.1	87.9	J
2,3-Dimethylpentane	I	23DMP	87.1	815.1	

SAMPLE RESULTS
PAGE 2

Brad Stephenson
GHD
6260 W. 52nd Avenue Suite 105
Arvado, CO 80002

Lab ID: 052SF
Collected: 6/9/2021
Received: 6/10/2021
Matrix: Product

Client ID: BH-42

Project: Holly Frontier-North Monument
Project #: 11225604-04-01
Collected by:

Analyzed: 6/11/2021
Q Method: 121818ICAL.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
Tert-amyl methyl ether (TAME)	ADD	TAME	65.3	65.3	U
3-Methylhexane	I	3MH	87.1	87.1	U
trans-1,3-Dimethylcyclopentane (t)	N	T13DMCYP	87.1	818.2	
cis-1,3-Dimethylcyclopentane (t)	N	C13DMCYP	87.1	261.2	
trans-1,2-Dimethylcyclopentane (t)	N	T12DMCYP	87.1	1143.5	
2,2,4-Trimethylpentane (isooctane)	I	224TMP	261.3	261.3	U
1-Heptene	O	1HP	87.1	87.1	U
Heptane (nC7)	P	C7	87.1	87.1	U
trans-2-heptene (t)	O	T2HP	87.1	87.1	U
Methylcyclohexane	N	MCYH	1742.2	6546.3	D
2,5-Dimethylhexane	I	25DMH	261.3	947.7	
2,2,3-Trimethylpentane	I	233TMP	87.1	333.8	
2,4-Dimethylhexane	I	24DMH	87.1	1868.2	
2,3,4-Trimethylpentane	I	234TMP	87.1	87.1	U
2,3,3-Trimethylpentane	I	233TMP	87.1	87.1	U
Toluene	A	T	87.1	87.1	U
2-Methylthiophene	S	2MTHIO	65.3	65.3	U
2,3-Dimethylhexane	I	23DMH	87.1	1801.0	
3-Methylthiophene	S	3MTHIO	65.3	65.3	U
2-Methylheptane	I	2MHP	87.1	194.3	
4-Methylheptane (t)	I	4MHP	87.1	92.9	J
3-Methylheptane	I	3MHP	174.2	2007.6	
3-Ethylhexane	I	3EHX	174.2	3267.5	
1,2-Dibromoethane (EDB)	ADD	EDB	87.1	87.1	U
1-Octene	O	1O	1742.2	2141.7	D
Octane (nC8)	P	C8	87.1	912.3	
2,4-Dimethylheptane (t)	I	24DMHP	1742.2	6505.0	D
2,5-Dimethylheptane (t)	I	25DMHP	1742.2	7944.9	D
Ethylbenzene	A	EB	87.1	87.1	U
2-Ethylthiophene	S	2ETHIO	65.3	65.3	U
2,3-Dimethylheptane (t)	I	23DMHP	1742.2	12376.6	D
m-Xylene	A	MX	87.1	87.1	U

SAMPLE RESULTS
PAGE 3

Brad Stephenson
GHD
6260 W. 52nd Avenue Suite 105
Arvado, CO 80002

Lab ID: 052SF
Collected: 6/9/2021
Received: 6/10/2021
Matrix: Product

Client ID: BH-42

Project: Holly Frontier-North Monument
Project #: 11225604-04-01
Collected by:

Analyzed: 6/11/2021
Q Method: 121818ICAL.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
p-Xylene	A	PX	87.1	87.1	U
4-Methyloctane (t)	I	4MO	87.1	763.3	
2-Methyloctane (t)	I	2MO	87.1	317.2	
3-Methyloctane (t)	I	3MO	87.1	1267.8	
Styrene	A	STRE	87.1	87.1	U
o-Xylene	A	OX	87.1	87.1	U
1-Nonene	O	1N	261.3	625.3	
Nonane (nC9)	P	C9	174.2	2808.0	
Isopropylbenzene (cumene)	A	IPROPB	87.1	203.8	
n-Propylbenzene	A	NPRPPB	87.1	333.4	
1-Methyl-3-ethylbenzene	A	1M3EB	87.1	87.1	U
1-Methyl-4-ethylbenzene	A	1M4EB	87.1	87.1	U
1,3,5-Trimethylbenzene (mesitylene)	A	135TMB	87.1	87.1	U
1-Methyl-2-ethylbenzene	A	1M2EB	87.1	87.1	U
1,2,4-Trimethylbenzene	A	124TMB	87.1	87.1	U
1-Decene	O	1D	5226.5	31729.8	D
Decane (nC10)	P	C10	261.3	727.6	
sec-Butylbenzene	A	SBUB	87.1	259.3	
1-Methyl-3-isopropylbenzene (m-cymene)	A	1M3IPROPB	87.1	87.1	U
1-Methyl-4-isopropylbenzene (p-cymene)	A	1M4IPROPB	87.1	87.1	U
Indane	A	IA	87.1	87.1	U
Indene	A	IE	87.1	87.1	U
1-Methyl-2-isopropybenzene (o-cymene)	A	1M2IPROPB	87.1	89.9	J
1-Methyl-3-propylbenzene	A	1M3PROPB	87.1	87.1	U
1-Methyl-4-propylbenzene	A	1M4PROPB	87.1	107.8	J
n-Butylbenzene	A	NBB	87.1	187.6	
1,3-Dimethyl-5-ethylbenzene	A	13DM5EB	87.1	87.1	U
1,2,diethylbenzene	A	12DEB	87.1	91.4	J
1-Methyl-2-propylbenzene	A	1M2PROPB	87.1	87.1	U
1,4-Dimethyl-2-ethylbenzene	A	14DM2EB	87.1	87.1	U
1,3-Dimethyl-4-ethylbenzene	A	13DM4EB	87.1	87.1	U
1,2-Dimethyl-4-ethylbenzene	A	12DM4EB	87.1	906.7	

SAMPLE RESULTS
PAGE 4

Brad Stephenson
GHD
6260 W. 52nd Avenue Suite 105
Arvado, CO 80002

Lab ID: 052SF
Collected: 6/9/2021
Received: 6/10/2021
Matrix: Product

Client ID: BH-42

Project: Holly Frontier-North Monument
Project #: 11225604-04-01
Collected by:

Analyzed: 6/11/2021
Q Method: 121818ICAL.M

CONSTITUENTS	CLASS	ABBR.	ssRL mg/kg	RESULT mg/kg	QUALIFIER
1,3-Dimethyl-2-ethylbenzene	A	13DM2EB	87.1	87.1	U
1,2-Dimethyl-3-ethylbenzene	A	12DM3EB	87.1	87.1	U
Undecane (nC11)	P	C11	261.3	587.4	
1,2,4,5-Tetramethylbenzene	A	1245TMB	87.1	523.7	
1,2,3,5-Tetramethylbenzene (t)	A	1235TMB	87.1	97.4	J
n-Pentylbenzene	A	NPYB	87.1	93.8	J
Naphthalene	A	N	87.1	106.8	J
Benzothiophene	S	BTHIO	65.3	65.3	U
Dodecane (nC12)	P	C12	174.2	364.7	
1,2,3,4-Tetramethylbenzene (t)	A	1234TMB	87.1	514.0	
MMT	ADD	MMT	65.3	65.3	U
2-Methylnaphthalene	A	2MN	87.1	109.9	J
1-Methylnaphthalene	A	1MN	87.1	192.6	

Benzene d-6 (RS)	121.54	%
Toluene-d8 (RS)	99.49	%
Ethylbenzene d10 (RS)	127.73	%

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

052SF-1 100X.D & dilution 052SF-1 2000X.D

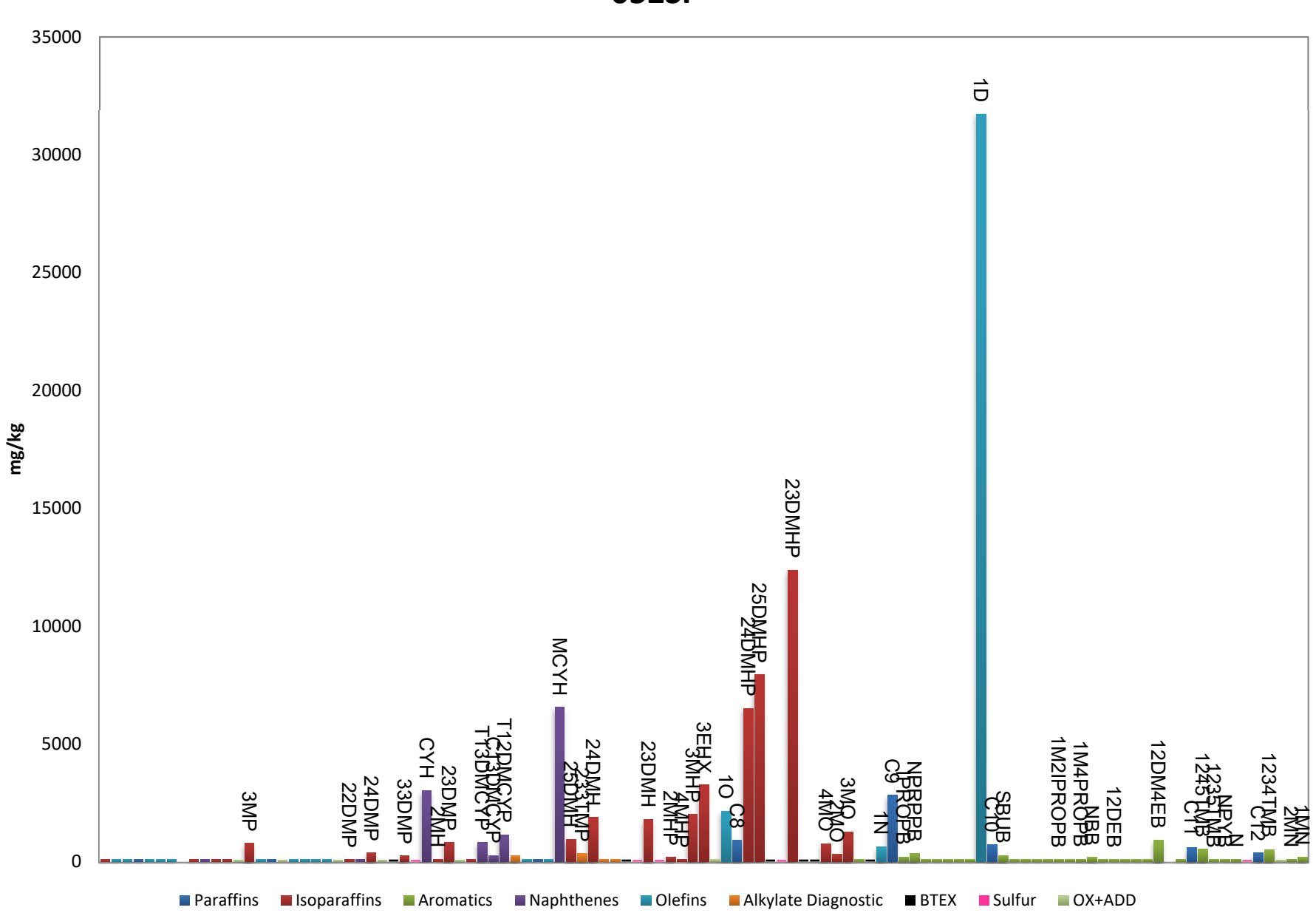
Submitted by,
Microbial Insights, Inc.

DIAGNOSTIC RATIOS PARAMETERS
PAGE 1

MI ID	**052SF**
Sample ID	**BH-42**
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	
Waterwashing	
Benzene / (Benzene+Cyclohexane)	
Toluene / (Toluene+Methylcyclohexane)	
Aromatics / Total Paraffins (n+iso+cyc)	0.06
Aromatics / Naphthenes	0.32
wt% < o-xylene	58.33
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	20.07
3-Methylhexane / n-Heptane	
Methylcyclohexane / n-Heptane	
Isoparaffins + Naphthenes / Paraffins	9.97
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	
2,2,4-Trimethylpentane / Total TMPs	
nC9 / Isopropylbenzene	13.78
nC10 / 1-Methyl-2-ethylbenzene	
nC11 / 1,4-Dimethyl-2-ethylbenzene	
iC5 / (iC5+nC5)	
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	
Naphthalene / (Naphthalene+nC12)	0.23
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	5.5
% Isoparaffinic	43.1
% Aromatic	3.9
% Naphthenic	12.1
% Olefinic	35.4

Note: If field is blank a ratio was not calculable.

SAMPLE HISTOGRAM



10515 Research Dr.
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

SITE LOGIC Report

Detailed Hydrocarbon Analysis

Contact: Brad Stephenson
Address: 6260 W. 52nd Avenue
Suite 105
Arvado, CO 80002

Phone: 303-941-6156

Email: brad.stephenson@ghd.com

MI Identifier: 052SF

Report Date: June 18, 2021

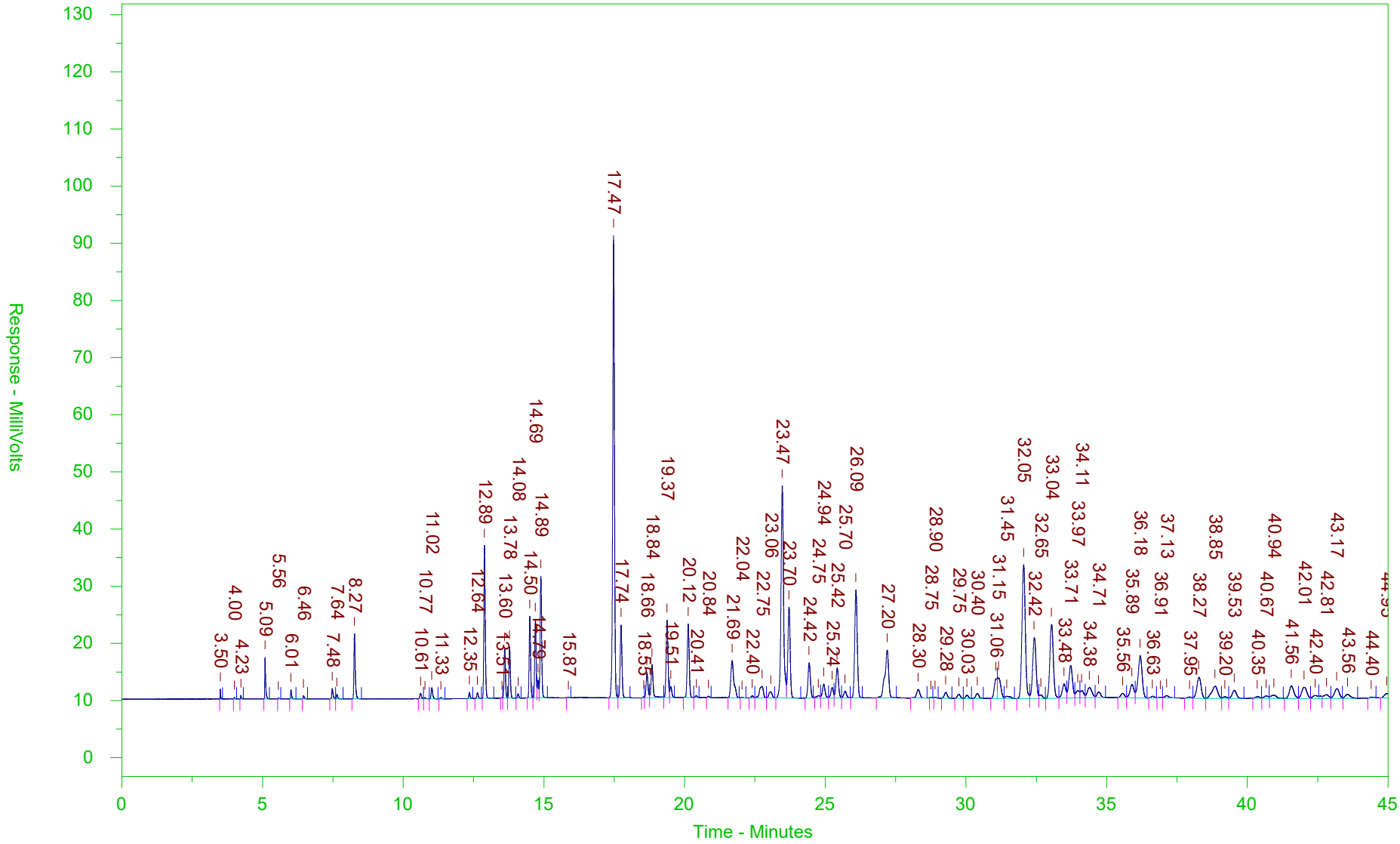
Project: Holly Frontier-North Monument, 11225604-04-01

Comments: Calculations are performed through D6730 DHA Software. Please note that these calculations are based on the theoretical values of known peaks and that any unknown peaks decrease the accuracy of the calculated value. For example, the Calculated Octane Number has an error of ± 4.0 and should only be used to estimate low, mid, or high octane. These calculated values are most useful for comparisons between samples.

MI ID	052SF-1
Sample ID	**BH-42**
Evaporation	
n-Pentane / (n-Pentane+n-Heptane)	0.60
2-Methylpentane / (2-Methylpentane+2-Methylheptane)	0.57
Waterwashing	
Benzene / (Benzene+Cyclohexane)	0.03
Toluene / (Toluene+Methylcyclohexane)	U
Aromatics / Total Paraffins (n+iso+cyc)	0.38
Aromatics / Naphthenes	0.71
wt% < o-xylene	37.82
Biodegradation	
(C4-C8 Para +Isopara) / C4-C8 Olefins	3.88
3-Methylhexane / n-Heptane	8.42
Methylcyclohexane / n-Heptane	1089.16
Isoparaffins + Naphthenes / Paraffins	19.17
Diagnostic Ratios (Refining Properties)	
2,2,4-Trimethylpentane / (2,2,4-Trimethylpentane+Methylcyclohexane)	U
2,2,4-Trimethylpentane / Total TMPs	U
nC9 / Isopropylbenzene	2.27
nC10 / 1-Methyl-2-ethylbenzene	0.06
nC11 / 1,4-Dimethyl-2-ethylbenzene	U
iC5 / (iC5+nC5)	0.73
(2-methylhexane + 2,3dimethylpentane) / (3-methylhexane + 2,4 dimethylpentane)	18.40
Naphthalene / (Naphthalene+nC12)	0.83
Methylcyclohexane/(Methylcyclohexane+Toluene)	U
Toluene/n-Octane	U

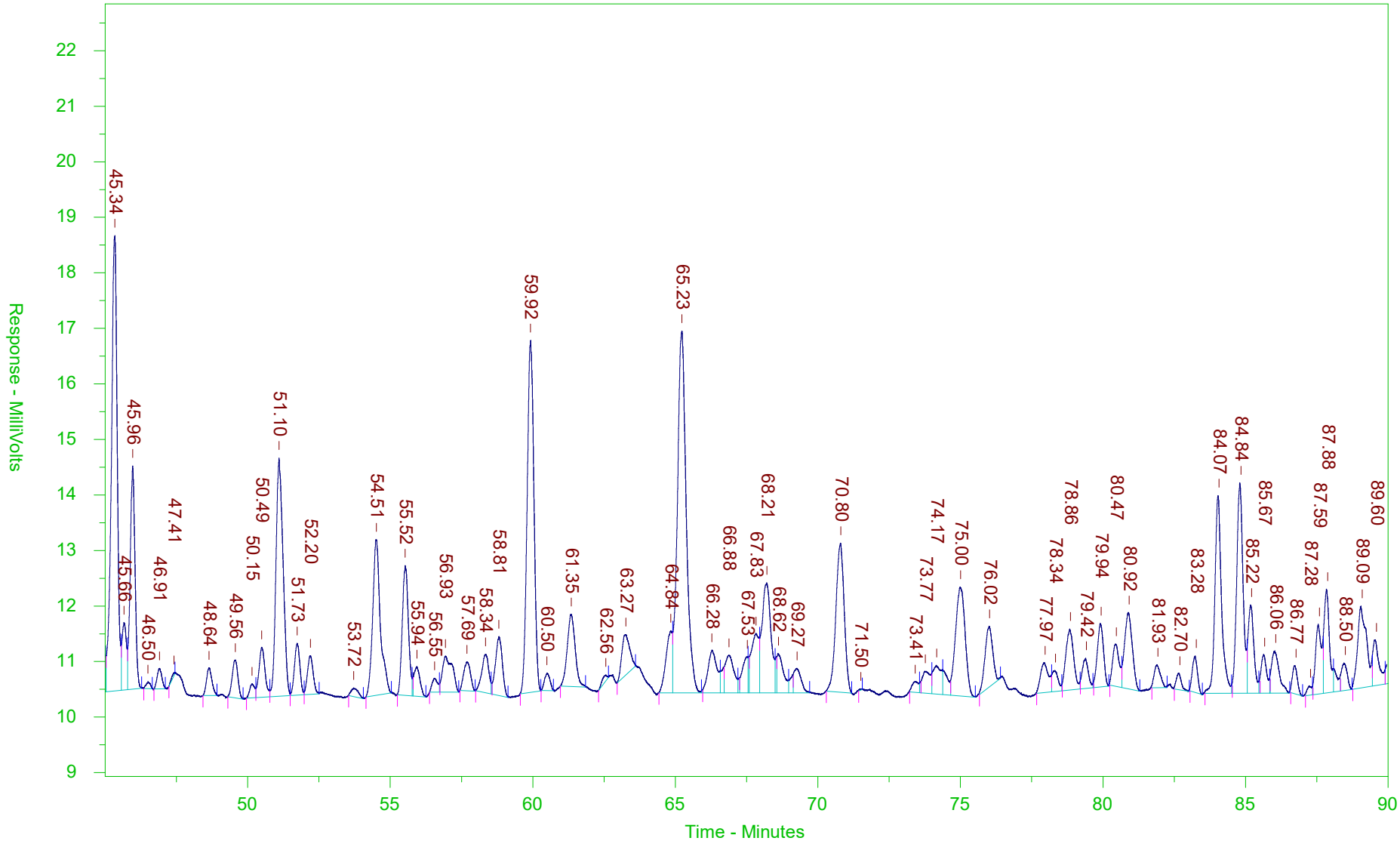
Chrom Perfect Chromatogram Report

C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.RAW 52SF-1 DHA



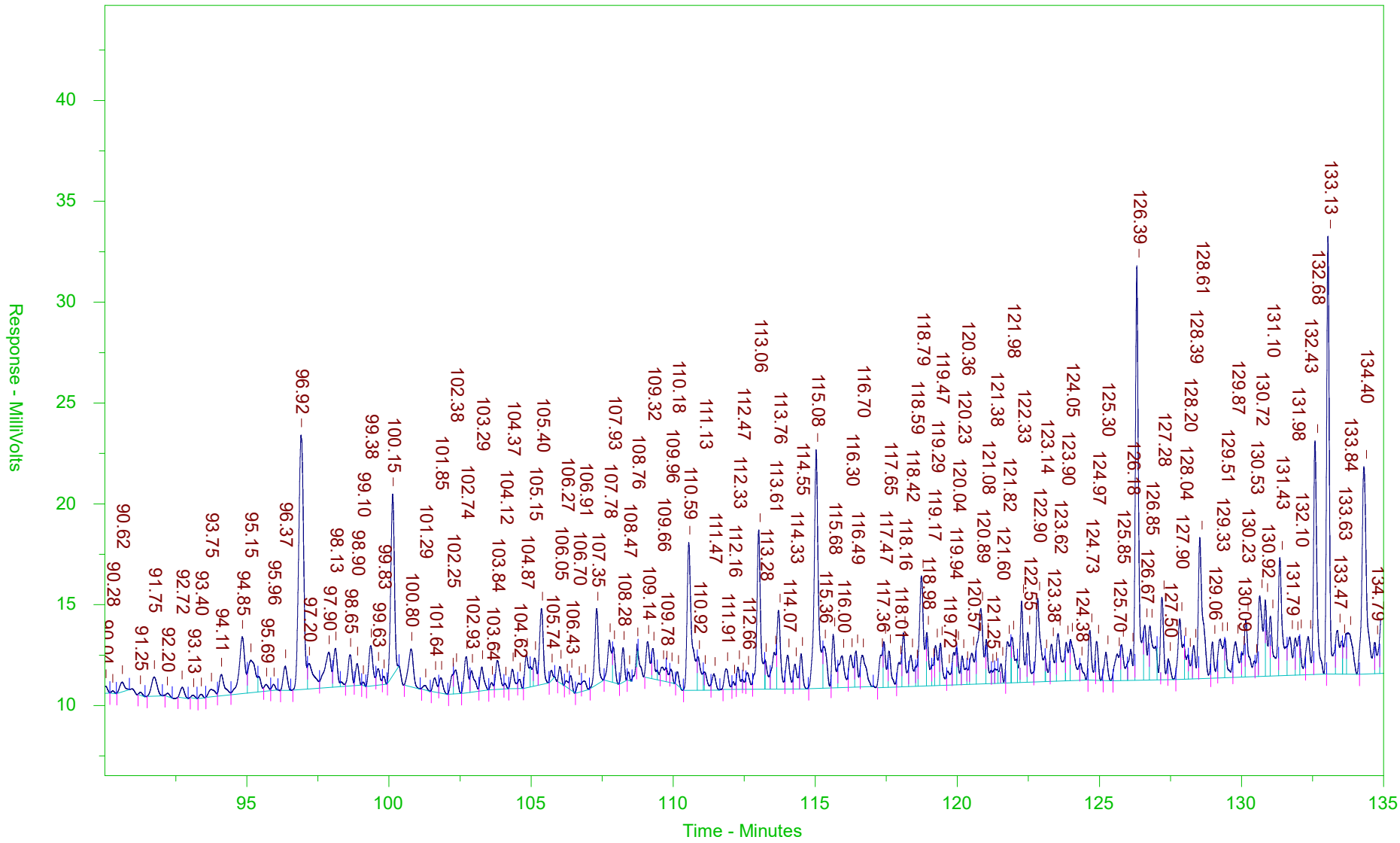
Chrom Perfect Chromatogram Report

C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.RAW 52SF-1 DHA



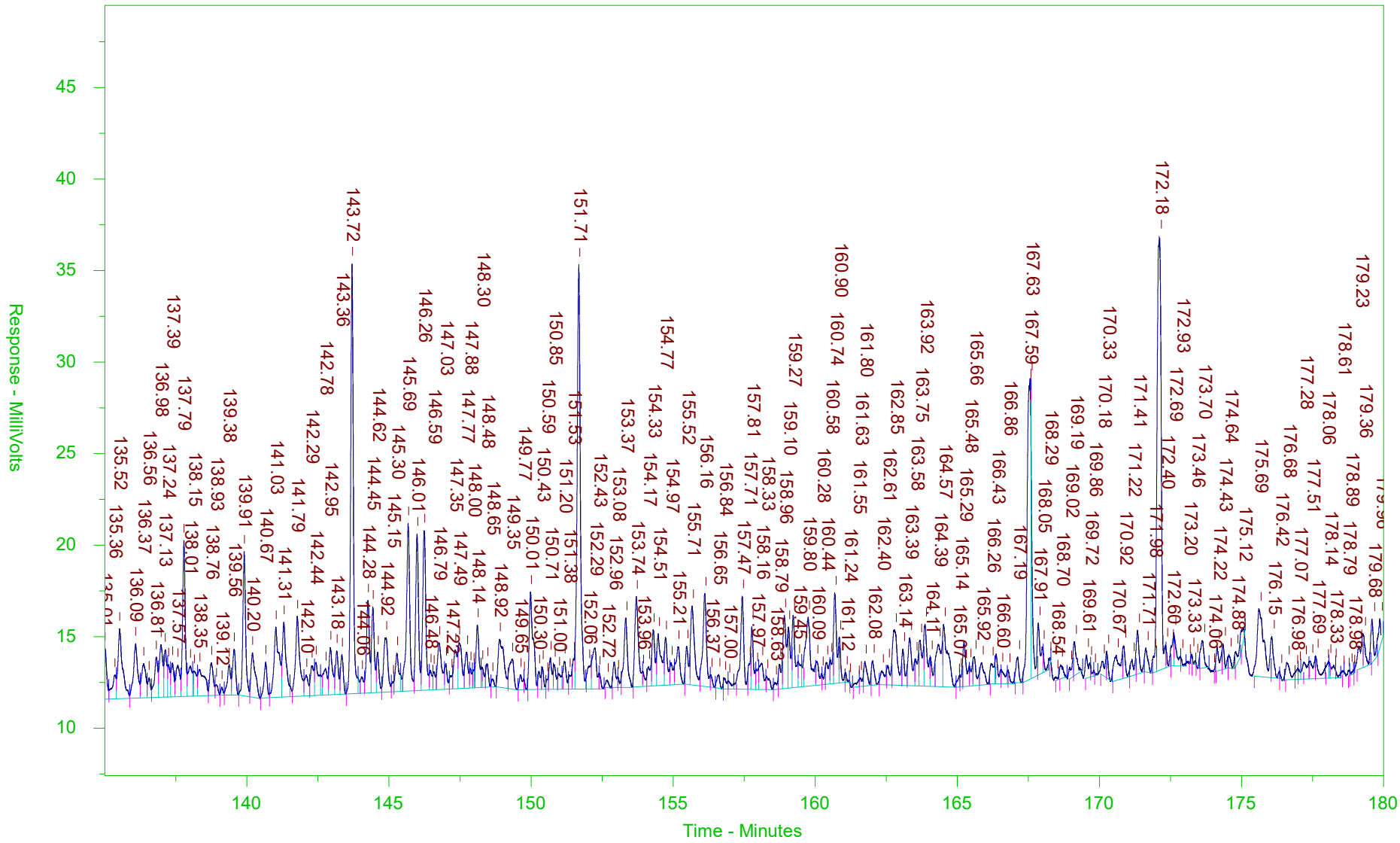
Chrom Perfect Chromatogram Report

C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.RAW 52SF-1 DHA



Chrom Perfect Chromatogram Report

C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.RAW 52SF-1 DHA



Detailed Hydrocarbon Analysis Summary Report -

Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf
Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA
Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Location: DEFAULT
Normalized to 100.0000%

SUMMARY REPORT

Group Type	Total(Mass%)	Total(Vol%)	Total(Mol%)
Paraffins:	2.6096	2.7872	2.6931
I-Paraffins:	21.9334	23.1716	21.7908
Olefins:	6.3593	6.7571	6.5877
Naphthenes:	28.0844	27.5574	32.4537
Aromatics:	19.9029	16.8629	18.8738
Total C14+:	1.5912	1.5914	1.0315
Total Unknowns:	19.5192	21.2725	16.5695

Oxygenates:

Total:	0.0000(Mass%)	0.0000(Vol%)
Total Oxygen Content:	0.0000(Mass%)	

Multisubstituted Aromatics: 11.8962(Mass%) 10.2100(Vol%)

Average Molecular Weight: 128.6001

Relative Density: 0.7629

Reid Vapor Pressure @ 100F: 0.2801psi - 1.9314kPa

Calculated Octane Number: 65.8

Motor Octane Number (Jenkins Calculation): 60.9

	IBP	T10	T50	T90	FBP
BP by Mass (Deg F)	-5.10859E280	32.00		7.9636362E258	1.1016375E241
BP by Vol (Deg F)	-5.10859E280	32.00	254.17	7.9636362E258	1.1016375E241

Percent Carbon: 85.6664
Percent Hydrogen: 14.3336

Bromine Number (D1169): 0.0000

Bromine Index (D2710): 0.0000
MAV (IFP9407): 25.1161

Diene Value (DV UOP326): 13.0016

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Oxygenates

Compound	Mass%	Mass% Oxygen	Vol%
No Oxy Compounds Found	0.0000	0.0000	0.0000

Molecular Weight and Relative Density Data

Group	Avg Mw.	Avg Rel. Density
C1	0.0000	0.0000
C2	0.0000	0.0000
C3	42.0810	0.5053
C4	56.7531	0.5956
C5	71.3996	0.6289
C6	84.6674	0.7382
C7	98.1386	0.7506
C8	112.6479	0.7531
C9	125.6575	0.7595
C10	137.3849	0.8127
C11	150.4729	0.8530
C12	166.2603	0.8159
C13	183.2287	0.7615
Total Sample:	129.00	0.76

Octane Number

Research Octane Number: 65.8

Motor Octane Number: 60.9

(Calculated from Individual Component Values)

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf
Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA
Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments:
Normalized to 100.0000%

Totals by Group Type & Carbon Number (in Mass Percent)

	Paraffins	I-Paraffins	Olefins	Naphthenes	Aromatics	Unknowns	Total
C1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C3	0.0000	0.0000	0.0295	0.0000	0.0000	0.0000	0.0295
C4	0.0068	0.0000	0.0140	0.0000	0.0000	0.0000	0.0208
C5	0.0068	0.2251	0.0760	0.0000	0.0000	0.0000	0.3079
C6	0.0000	0.6589	0.0000	1.2974	0.0448	0.0000	2.0011
C7	0.0045	1.1483	0.1629	7.4059	0.0000	0.0000	8.7216
C8	1.1288	5.8412	0.5679	11.8038	0.9814	0.0000	20.3231
C9	1.0737	2.9022	4.5294	3.9150	2.6338	0.4788	15.5330
C10	0.0178	5.5351	0.6180	2.7590	8.5016	1.4456	18.8772
C11	0.2442	3.1720	0.0037	0.5664	5.3505	1.1425	10.4793
C12	0.1270	2.1718	0.0000	0.3369	2.3907	5.1683	10.1948
C13	0.0000	0.2787	0.3580	0.0000	0.0000	11.2838	11.9205
Total:	2.6096	21.9334	6.3593	28.0844	19.9029	19.5192	78.8896

Oxygenates	0.0000	Total C14+:	1.5912
Total Unknowns:	19.5192	Grand Total:	100.0000

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 4**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
3.4978	288.6000	O3	propylene	0.0295	0.0446	0.0903	-53.896	-47.720	XXX
3.9962	398.6900	P4	n-butane	0.0068	0.0090	0.0151	31.100	-0.500	XXX
4.2283	418.7700	O4	t-butene-2	0.0140	0.0177	0.0321	33.584	0.880	XXX
5.0894	475.5900	I5	i-pentane	0.2251	0.2771	0.4012	82.112	27.840	XXX
5.5647	500.4000	P5	n-pentane	0.0068	0.0083	0.0121	96.908	36.060	XXX
6.0092	517.2500	O5	2-methylbutene-2	0.0533	0.0614	0.0977	101.408	38.560	XXX
6.4586	532.4800	O5	cyclopentadiene	0.0227	0.0266	0.0435	32.000	0.000	XXX
7.4782	562.0300	I6	2,3-dimethylbutane	0.0834	0.0962	0.1245	136.364	57.980	XXX
7.6415	566.2400	I6	2-methylpentane	0.0363	0.0425	0.0542	140.468	60.260	XXX
8.2669	581.3300	I6	3-methylpentane	0.5391	0.6191	0.8045	145.886	63.270	XXX
10.6148	628.3100	O7	cyclic diolefin or triolefin	0.0520	0.0559	0.0814	32.000	0.000	XXX
10.7674	630.9500	I7	2,4-dimethylpentane	0.0103	0.0117	0.0133	176.882	80.490	XXX
11.0157	635.1600	O7	O7-[1]	0.1051	0.1139	0.1605	176.882	80.490	XXX
11.3349	640.4000	I7	2,2,3-trimethylbutane	0.0136	0.0150	0.0174	177.584	80.880	XXX
12.3509	655.9500	A6	benzene	0.0448	0.0389	0.0738	176.162	80.090	XXX
12.6364	660.0500	I7	3,3-dimethylpentane	0.0535	0.0588	0.0686	186.908	86.060	XXX
12.8859	663.5400	N6	cyclohexane	1.2974	1.2714	1.9824	177.296	80.720	XXX
13.5117	671.9500	O7	4-methyl-t/c-hexene-2	0.0058	0.0063	0.0077	187.358	86.310	XXX
13.6044	673.1600	I7	2-methylhexane	0.4316	0.4852	0.5539	194.090	90.050	XXX
13.7776	675.3900	I7	2,3-dimethylpentane	0.4554	0.4998	0.5845	193.604	89.780	XXX
14.0817	679.2300	I7	3-methylhexane	0.0379	0.0421	0.0486	197.330	91.850	XXX
14.4977	684.3300	N7	1c,3-dimethylcyclopentane	0.7018	0.7188	0.9191	195.386	90.770	XXX
14.6938	686.6700	N7	1t,3-dimethylcyclopentane	0.6800	0.6928	0.8907	197.096	91.720	XXX
14.7899	687.8100	I7	3-ethylpentane	0.1460	0.1595	0.1873	200.246	93.470	XXX
14.8897	688.9800	N7	1t,2-dimethylcyclopentane	1.1114	1.1284	1.4556	197.366	91.870	XXX
15.8680	700.0000	P7	n-heptane	0.0045	0.0050	0.0058	209.156	98.420	XXX
17.4735	718.4200	N7	methylcyclohexane	4.9012	4.8596	6.4192	213.674	100.930	XXX
17.7389	721.2800	I8	2,2-dimethylhexane	0.8255	0.9058	0.9294	224.312	106.840	XXX
18.5471	729.7000	N7	ethylcyclopentane	0.0115	0.0114	0.0150	218.246	103.470	XXX
18.6601	730.8400	I8	2,5-dimethylhexane	0.2976	0.3273	0.3350	228.398	109.110	XXX
18.8391	732.6400	I8	2,4-dimethylhexane	0.4356	0.4746	0.4904	228.974	109.430	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 5**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
19.3750	737.9100	N8	1c,2t,4-trimethylcyclopentane	0.8986	0.8980	1.0298	242.132	116.740	XXX
19.5075	739.1800	I8	3,3-dimethylhexane	0.1268	0.1363	0.1428	233.546	111.970	XXX
20.1245	745.0100	N8	1t,2c,3-trimethylcyclopentane	0.8919	0.8832	1.0222	230.738	110.410	XXX
20.4145	747.6800	I8	2,3,4-trimethylpentane	0.0232	0.0246	0.0261	236.246	113.470	XXX
20.8438	751.5500	I8	2,3,3-trimethylpentane	0.0145	0.0153	0.0164	238.586	114.770	XXX
21.6871	758.9200	I8	2,3-dimethylhexane	0.7235	0.7751	0.8145	240.098	115.610	XXX
22.4003	764.9000	I8	2-methylheptane	0.0279	0.0305	0.0314	243.770	117.650	XXX
22.7539	767.7900	N8	1c,2c,4-Trimethylcyclopentane	0.2796	0.2769	0.3204	243.500	117.500	XXX
23.0586	770.2400	N8	1c,3-dimethylcyclohexane	0.1245	0.1246	0.1427	246.848	119.360	XXX
23.4680	773.4800	I8	3-methylheptane	3.3666	3.6388	3.7900	246.074	118.930	XXX
23.7046	775.3200	N8	1t,4-dimethylcyclohexane	1.2970	1.2977	1.4864	246.848	119.360	XXX
24.4206	780.7800	N8	1,1-dimethylcyclohexane	0.5239	0.5118	0.6004	247.190	119.550	XXX
24.7508	783.2400	I9	2,2,5-trimethylhexane	0.0564	0.0609	0.0566	255.362	124.090	XXX
24.9427	784.6600	N8	3c-ethylmethylcyclopentane	0.2313	0.2301	0.2651	249.980	121.100	XXX
25.2391	786.8100	N8	3t-ethylmethylcyclopentane	0.1624	0.1615	0.1861	249.980	121.100	XXX
25.4180	788.1000	O8	octene-1	0.4678	0.4665	0.5361	256.100	124.500	XXX
25.7013	790.1300	N8	1,1-methylethylcyclopentane	0.1168	0.1141	0.1338	250.754	121.530	XXX
26.0852	792.8300	N8	1t,2-dimethylcyclohexane	1.6906	1.6620	1.9374	254.174	123.430	XXX
27.1972	800.3700	P8	n-octane	1.1288	1.2258	1.2707	258.224	125.680	XXX
28.2973	806.7200	O9	O9-[1]	0.1763	0.1869	0.1796	258.224	125.680	XXX
28.7495	809.2600	O8	O8-[1]	0.0028	0.0030	0.0032	258.224	125.680	XXX
28.8971	810.0700	I9	I9-[1]	0.0077	0.0080	0.0077	258.224	125.680	XXX
29.2784	812.1700	N8	i-propylcyclopentane	0.1090	0.1071	0.1250	259.574	126.430	XXX
29.7452	814.6900	I9	2,4,4-trimethylhexane	0.0750	0.0774	0.0752	32.000	0.000	XXX
30.0326	816.2200	O9	O9-[1]	0.0564	0.0598	0.0574	32.000	0.000	XXX
30.4043	818.1800	O8	c-octene-2	0.0972	0.1031	0.0991	32.000	0.000	XXX
31.1533	822.0500	I9	2,3,4-trimethylhexane	0.7482	0.7722	0.7502	282.308	139.060	XXX
32.0455	826.5300	N8	N8-[1]	2.7727	2.7118	3.1775	282.308	139.060	XXX
32.4196	828.3700	O9	2,3,3-trimethylhexene-1	1.2803	1.4309	1.3042	32.000	0.000	XXX
32.6547	829.5100	I9	2,2-dimethylheptane	0.0641	0.0688	0.0642	270.860	132.700	XXX
33.0395	831.3700	N8	1c,2-dimethylcyclohexane	1.5887	1.5222	1.8207	265.532	129.740	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 6**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
33.4847	833.4800		unknown	0.3196	0.3483	0.3663	265.532	129.740	XXX
33.7141	834.5600	N8	N8-[2]	0.7244	0.7085	0.8302	265.532	129.740	XXX
33.9703	835.7600	I9	2,2,3-trimethylhexane	0.1649	0.1759	0.1654	271.220	132.900	XXX
34.1093	836.4000	I9	4,4-dimethylheptane	0.1555	0.1658	0.1559	271.220	132.900	XXX
34.3838	837.6700	N8	n-propylcyclopentane	0.2977	0.2925	0.3411	267.728	130.960	XXX
34.7091	839.1600	I9	3,3-dimethylheptane	0.1300	0.1366	0.1303	278.636	137.020	XXX
35.5649	842.9900	N8	N8-[3]	0.0947	0.0926	0.1085	278.636	137.020	XXX
35.8946	844.4500	A8	ethylbenzene	0.3043	0.2678	0.3686	277.160	136.200	XXX
36.1850	845.7200	O9	2-methyloctene-1	1.0488	1.1721	1.0684	32.000	0.000	XXX
36.6268	847.6200	N9	1c,3c,5c-trimethylcyclohexane	0.0360	0.0352	0.0367	32.000	0.000	XXX
36.9098	848.8300	N9	N9-[1]	0.0121	0.0118	0.0123	32.000	0.000	XXX
37.1318	849.7800	N9	N9-[2]	0.0608	0.0594	0.0619	32.000	0.000	XXX
37.9462	853.1800	A8	1,3-dimethylbenzene	0.0273	0.0241	0.0331	282.416	139.120	XXX
38.2746	854.5400	A8	1,4-dimethylbenzene	0.5175	0.4586	0.6269	281.048	138.360	XXX
38.8494	856.8700	I9	2,3-dimethylheptane	0.4494	0.4723	0.4506	284.900	140.500	XXX
39.1972	858.2700	I9	3,4 -dimethylheptane	0.0386	0.0403	0.0387	285.080	140.600	XXX
39.5311	859.6000	I9	3,4-dimethylheptane	0.2175	0.2269	0.2181	285.080	140.600	XXX
40.3470	862.7900	I9	4-methyloctane	0.0423	0.0448	0.0424	288.392	142.440	XXX
40.6651	864.0200	I9	2-methyloctane	0.0679	0.0726	0.0681	289.904	143.280	XXX
40.9441	865.0900		unknown	0.1139	0.1241	0.1142	289.904	143.280	XXX
41.5620	867.4300	N9	N9-[3]	0.3657	0.3577	0.3726	289.904	143.280	XXX
42.0101	869.1100	I9	3-ethylheptane	0.3707	0.3893	0.3717	289.400	143.000	XXX
42.4040	870.5600	I9	3-methyloctane	0.0999	0.1057	0.1001	291.614	144.230	XXX
42.8072	872.0400	N9	1c,2t,4c-trimethylcyclohexane	0.1225	0.1210	0.1248	275.000	135.000	XXX
43.1687	873.3500	N9	1,1,2-trimethylcyclohexane	0.3022	0.2882	0.3078	293.360	145.200	XXX
43.5599	874.7600	A8	1,2-dimethylbenzene	0.1323	0.1146	0.1602	291.974	144.430	XXX
44.3975	877.7200	I9	I9-[2]	0.0192	0.0201	0.0193	291.974	144.430	XXX
45.3399	880.9900	O9	nonene-1	1.6780	1.6660	1.7094	274.100	134.500	XXX
45.9645	883.1200	N9	N9-[4]	0.6762	0.6613	0.6888	274.100	134.500	XXX
46.9051	886.2600	O9	t-7-methyloctene-3	0.0611	0.0683	0.0623	32.000	0.000	XXX
47.4126	887.9300	N9	N9-[5]	0.0080	0.0078	0.0081	32.000	0.000	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 7**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
48.6386	891.8900	O9	c-nonene-2	0.0935	0.1045	0.0952	32.000	0.000	XXX
49.5623	894.8100	O9	t-nonene-2	0.1351	0.1509	0.1376	32.000	0.000	XXX
50.1527	896.6400		unknown	0.0453	0.0494	0.0462	32.000	0.000	XXX
50.4918	897.6900	I9	I9-[3]	0.1949	0.2037	0.1954	32.000	0.000	XXX
51.0991	899.5400	P9	n-nonane	1.0737	1.1415	1.0766	303.476	150.820	XXX
51.7308	901.6300	N9	1,1-methylethylcyclohexane	0.1758	0.1664	0.1791	305.924	152.180	XXX
52.2038	903.2200	N9	N9-[6]	0.1369	0.1322	0.1395	305.924	152.180	XXX
54.5144	910.7900		unknown	0.7605	0.8288	0.7747	305.924	152.180	XXX
55.5199	913.9800	A9	i-propylbenzene	0.4724	0.4182	0.5055	306.338	152.410	XXX
55.9382	915.2900	N9	N9-[7]	0.1077	0.1040	0.1097	306.338	152.410	XXX
56.5530	917.2000	I10	I10-[1]	0.0505	0.0527	0.0456	306.338	152.410	XXX
56.9340	918.3700	N9	i-propylcyclohexane	0.2233	0.2123	0.2274	310.622	154.790	XXX
57.6881	920.6600	I10	I10-[2]	0.1254	0.1311	0.1133	310.622	154.790	XXX
58.3401	922.6200	I10	2,2-dimethyloctane	0.1700	0.1791	0.1537	314.420	156.900	XXX
58.8072	924.0100	I10	2,4-dimethyloctane	0.2548	0.2676	0.2303	312.620	155.900	XXX
59.9204	927.2800	N9	N9-[8]	1.4840	1.4331	1.5118	312.620	155.900	XXX
61.3517	931.3800	I10	2,5-dimethyloctane	0.3629	0.3792	0.3280	317.300	158.500	XXX
63.2679	936.7300	N9	n-butylcyclopentane	0.2039	0.1983	0.2077	313.916	156.620	XXX
64.8377	940.9800	I10	I10-[3]	0.2586	0.2703	0.2337	313.916	156.620	XXX
65.2298	942.0300	I10	3,3-dimethyloctane	2.0234	2.0888	1.8288	322.160	161.200	XXX
66.2837	944.8100	A9	n-propylbenzene	0.2300	0.2036	0.2461	318.632	159.240	XXX
66.8801	946.3700		unknown	0.2088	0.2276	0.2234	318.632	159.240	XXX
68.2098	949.7800	I10	3-methyl-5-ethylheptane	0.6262	0.6577	0.5660	316.760	158.200	XXX
69.2710	952.4500	N10	N10-[1]	0.1115	0.1063	0.1022	316.760	158.200	XXX
70.7997	956.2300	A9	1,3-methylethylbenzene	0.7404	0.6534	0.7922	322.394	161.330	XXX
71.5044	957.9500	A9	1,4-methylethylbenzene	0.0016	0.0014	0.0017	323.618	162.010	XXX
74.1702	964.2800	I10	I10-[4]	0.1478	0.1523	0.1336	323.618	162.010	XXX
75.0034	966.2100	N10	N10-[2]	0.6633	0.6325	0.6081	323.618	162.010	XXX
76.0224	968.5400	I10	I10-[5]	0.2921	0.3011	0.2640	323.618	162.010	XXX
77.9683	972.9100	I10	I10-[6]	0.1474	0.1520	0.1332	323.618	162.010	XXX
78.3384	973.7300		unknown	0.0839	0.0914	0.0758	323.618	162.010	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 8**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
78.8600	974.8700	A9	1,2-methylethylbenzene	0.2843	0.2462	0.3041	329.324	165.180	XXX
79.4199	976.1000	N10	N10-[3]	0.1134	0.1081	0.1039	329.324	165.180	XXX
79.9378	977.2200	I10	3-methylnonane	0.2521	0.2623	0.2279	334.040	167.800	XXX
80.4707	978.3600	N10	N10-[4]	0.1696	0.1618	0.1555	334.040	167.800	XXX
80.9166	979.3200	O10	3-ethyl-2-methylheptene-2	0.3794	0.4127	0.3479	32.000	0.000	XXX
81.9251	981.4500	I10	I10-[7]	0.0915	0.0943	0.0827	32.000	0.000	XXX
82.6978	983.0700		unknown	0.0537	0.0585	0.0485	32.000	0.000	XXX
83.2758	984.2700	A9	1,2,4-trimethylbenzene	0.1120	0.0976	0.1199	336.884	169.380	XXX
84.0734	985.9200	A9	t-butylbenzene	0.7777	0.6774	0.8321	336.884	169.380	XXX
84.8380	987.4800	N10	i-butylcyclohexane	0.8221	0.7879	0.7537	340.340	171.300	XXX
85.2159	988.2400		unknown	0.3387	0.3691	0.3105	340.340	171.300	XXX
85.6739	989.1700	I10	I10-[8]	0.1344	0.1386	0.1215	340.340	171.300	XXX
86.0649	989.9500	I10	I10-[9]	0.2116	0.2181	0.1912	340.340	171.300	XXX
86.7691	991.3500	I10	I10-[10]	0.0906	0.0934	0.0819	340.340	171.300	XXX
87.2830	992.3700	N10	N10-[5]	0.0223	0.0213	0.0204	340.340	171.300	XXX
87.5930	992.9800	O10	decene-1	0.2386	0.2457	0.2187	339.080	170.600	XXX
87.8836	993.5500	N10	1t-methyl-2-n-propylcyclohexane	0.3606	0.3439	0.3306	339.800	171.000	XXX
88.5004	994.7500	I10	I10-[11]	0.1073	0.1106	0.0970	339.800	171.000	XXX
89.0948	995.9100	A10	i-butylbenzene	0.4230	0.3782	0.4053	343.022	172.790	XXX
89.5969	996.8700	I10	I10-[12]	0.1885	0.1943	0.1703	343.022	172.790	XXX
90.6168	998.8200	A10	sec-butylbenzene	0.0779	0.0689	0.0746	344.012	173.340	XXX
91.2543	1000.0900	P10	n-decane	0.0178	0.0186	0.0160	345.470	174.150	XXX
91.7470	1002.8400	N10	N10-[6]	0.1865	0.1778	0.1710	345.470	174.150	XXX
92.2022	1005.3700		unknown	0.0201	0.0219	0.0185	345.470	174.150	XXX
92.7221	1008.2400		unknown	0.0766	0.0835	0.0702	345.470	174.150	XXX
93.1262	1010.4600	A9	1,2,3-trimethylbenzene	0.0154	0.0131	0.0164	349.016	176.120	XXX
93.3987	1011.9500	A10	1,3-methyl-i-propylbenzene	0.0213	0.0189	0.0204	347.144	175.080	XXX
93.7542	1013.8900	N11	N11-[1]	0.0824	0.0786	0.0687	347.144	175.080	XXX
94.1120	1015.8300	A10	1,4-methyl-i-propylbenzene	0.1861	0.1656	0.1783	350.834	177.130	XXX
94.8474	1019.8000	I11	I11-[1]	0.5749	0.5926	0.4730	350.834	177.130	XXX
95.1454	1021.4000	I11	I11-[2]	0.4084	0.4211	0.3360	350.834	177.130	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 9**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
96.3653	1027.9000	I11	I11-[3]	0.1671	0.1723	0.1375	350.834	177.130	XXX
96.9222	1030.8400	A10	1,2-methyl-i-propylbenzene	2.0694	1.8010	1.9828	352.724	178.180	XXX
97.2031	1032.3200	N10	sec-butylcyclohexane	0.2776	0.2602	0.2545	354.812	179.340	XXX
97.8986	1035.9500	N11	N11-[2]	0.3935	0.3752	0.3279	354.812	179.340	XXX
98.1350	1037.1800	I11	I11-[4]	0.2632	0.2713	0.2165	354.812	179.340	XXX
98.6493	1039.8500	A10	1,3-diethylbenzene	0.1921	0.1696	0.1840	358.052	181.140	XXX
98.8967	1041.1200		unknown	0.1258	0.1371	0.1205	358.052	181.140	XXX
99.3815	1043.6200	I11	I11-[5]	0.2885	0.2974	0.2373	358.052	181.140	XXX
99.6286	1044.8800	A10	1,4-diethylbenzene	0.0991	0.0877	0.0950	362.822	183.790	XXX
100.1504	1047.5400	A10	1,4-methyl-n-propylbenzene	1.0816	0.9612	1.0363	362.156	183.420	XXX
100.7988	1050.8300	A10	1,3-dimethyl-5-ethylbenzene	0.3163	0.2742	0.3031	362.516	183.620	XXX
101.2896	1053.3100	N10	t-decahydronaphthalene	0.0321	0.0306	0.0267	368.960	187.200	XXX
101.6398	1055.0700	N11	N11-[3]	0.0905	0.0863	0.0754	368.960	187.200	XXX
101.8527	1056.1300	A10	1,2-methyl-n-propylbenzene	0.0993	0.0867	0.0951	364.946	184.970	XXX
102.3759	1058.7400	I11	I11-[6]	0.1771	0.1826	0.1457	364.946	184.970	XXX
102.7384	1060.5400	I11	I11-[7]	0.2435	0.2510	0.2003	364.946	184.970	XXX
102.9341	1061.5100		unknown	0.1709	0.1862	0.1406	364.946	184.970	XXX
103.2931	1063.2900	I11	I11-[8]	0.1595	0.1644	0.1312	364.946	184.970	XXX
103.8353	1065.9500	I11	I11-[9]	0.2235	0.2304	0.1838	364.946	184.970	XXX
104.3663	1068.5500	A10	A10-[1]	0.1157	0.1027	0.1109	364.946	184.970	XXX
104.8653	1070.9800	I11	I11-[10]	0.2029	0.2091	0.1669	364.946	184.970	XXX
105.1525	1072.3700		unknown	0.1597	0.1741	0.1314	364.946	184.970	XXX
105.3991	1073.5600	A10	1,2-dimethyl-4-ethylbenzene	0.4761	0.4153	0.4561	373.136	189.520	XXX
106.2736	1077.7700	I11	I11-[11]	0.0372	0.0383	0.0306	373.136	189.520	XXX
107.3469	1082.8800	A10	1,3-dimethyl-2-ethylbenzene	0.4440	0.3804	0.4254	374.090	190.050	XXX
107.7817	1084.9400	I11	I11-[12]	0.2574	0.2653	0.2117	374.090	190.050	XXX
107.9309	1085.6500		unknown	0.1966	0.2143	0.1617	374.090	190.050	XXX
108.2758	1087.2700	I11	I11-[13]	0.1689	0.1742	0.1390	374.090	190.050	XXX
108.7579	1089.5300	O11	undecene-1	0.0037	0.0037	0.0030	378.860	192.700	XXX
109.1392	1091.3100		unknown	0.2142	0.2335	0.1786	378.860	192.700	XXX
109.3214	1092.1600	A11	1,4-methyl-t-butylbenzene	0.1638	0.1470	0.1421	32.000	0.000	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 10**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
109.6595	1093.7300		unknown	0.1043	0.1137	0.0905	32.000	0.000	XXX
109.7831	1094.3000	A10	1,2-dimethyl-3-ethylbenzene	0.0593	0.0507	0.0568	381.110	193.950	XXX
109.9606	1095.1300		unknown	0.0743	0.0810	0.0712	381.110	193.950	XXX
110.5892	1098.0200	A11	1,2-ethyl-i-propylbenzene	1.0737	0.9203	0.9315	32.000	0.000	XXX
110.9209	1099.5500	P11	n-undecane	0.2442	0.2504	0.2009	384.620	195.900	XXX
111.1284	1100.8600		unknown	0.1219	0.1329	0.1003	384.620	195.900	XXX
111.4739	1103.5800	A11	1,4-ethyl-i-propylbenzene	0.1053	0.0903	0.0914	32.000	0.000	XXX
111.9146	1107.0300		unknown	0.1455	0.1586	0.1262	32.000	0.000	XXX
112.1610	1108.9500	A10	1,2,4,5-tetramethylbenzene	0.0321	0.0276	0.0308	386.312	196.840	XXX
112.3289	1110.2600	A11	1,2-methyl-n-butylbenzene	0.1173	0.1005	0.1017	390.200	199.000	XXX
112.4661	1111.3300		unknown	0.0462	0.0504	0.0401	390.200	199.000	XXX
112.6561	1112.8000	A10	1,2,3,5-tetramethylbenzene	0.1076	0.0922	0.1031	388.472	198.040	XXX
113.0613	1115.9400		unknown	1.0365	1.1296	0.9931	388.472	198.040	XXX
113.2750	1117.5900		unknown	0.1707	0.1861	0.1636	388.472	198.040	XXX
113.6060	1120.1400		unknown	0.2421	0.2639	0.2320	388.472	198.040	XXX
113.7593	1121.3200	A11	1,2-methyl-t-butylbenzene	0.5013	0.4297	0.4349	32.000	0.000	XXX
114.0729	1123.7300		unknown	0.2408	0.2625	0.2089	32.000	0.000	XXX
114.3330	1125.7200		unknown	0.1527	0.1665	0.1325	32.000	0.000	XXX
114.5488	1127.3700		unknown	0.1983	0.2161	0.1721	32.000	0.000	XXX
115.0804	1131.4200	A10	5-methylindan	1.5986	1.3703	1.5551	32.000	0.000	XXX
115.3553	1133.5000		unknown	0.3543	0.3861	0.3446	32.000	0.000	XXX
115.6812	1135.9700	A11	1,2-ethyl-n-propylbenzene	0.2738	0.2347	0.2375	32.000	0.000	XXX
116.0011	1138.3800	I12	I12-[1]	0.3300	0.3343	0.2491	32.000	0.000	XXX
116.6967	1143.6100	A10	4-methylindan	0.3037	0.2603	0.2954	32.000	0.000	XXX
117.3626	1148.5800	A11	1,3-methyl-n-butylbenzene	0.1317	0.1129	0.1142	390.200	199.000	XXX
118.0127	1153.4100		unknown	0.1246	0.1357	0.1080	390.200	199.000	XXX
118.1583	1154.4800	N12	1t-M-2-(4-MP)cyclopentane	0.3369	0.3213	0.2574	32.000	0.000	XXX
118.4183	1156.4000		unknown	0.2312	0.2520	0.1767	32.000	0.000	XXX
118.5937	1157.7000	A12	1,2-di-i-propylbenzene	0.0624	0.0535	0.0495	399.200	204.000	XXX
118.7912	1159.1500		unknown	0.7828	0.8531	0.6203	399.200	204.000	XXX
118.9848	1160.5700		unknown	0.2973	0.3240	0.2356	399.200	204.000	XXX

Detailed Hydrocarbon Analysis Detail Report - Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments: Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order **Page: 11**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
119.1729	1161.9500		unknown	0.0894	0.0974	0.0709	399.200	204.000	XXX
119.2902	1162.8100		unknown	0.2352	0.2563	0.1864	399.200	204.000	XXX
119.9421	1167.5700	A12	1,4-di-i-propylbenzene	0.1556	0.1334	0.1233	410.540	210.300	XXX
120.2277	1169.6500	A10	tetrahydronaphthalene	0.1561	0.1229	0.1519	405.716	207.620	XXX
120.3618	1170.6200		unknown	0.0612	0.0667	0.0596	405.716	207.620	XXX
120.8892	1174.4400	A10	naphthalene	0.6423	0.4779	0.6444	424.382	217.990	XXX
121.0837	1175.8500	A12	1-t-butyl-3,5-dimethylbenzene	0.2236	0.1917	0.1772	32.000	0.000	XXX
121.8244	1181.1700	I12	I12-[2]	0.1986	0.2012	0.1500	32.000	0.000	XXX
122.3275	1184.7700	I12	I12-[3]	0.4159	0.4214	0.3141	32.000	0.000	XXX
122.5467	1186.3400	I12	I12-[4]	0.2711	0.2746	0.2047	32.000	0.000	XXX
122.8979	1188.8300		unknown	0.6375	0.6947	0.4814	32.000	0.000	XXX
123.3783	1192.2400	I12	I12-[5]	0.2259	0.2289	0.1706	32.000	0.000	XXX
123.6155	1193.9200	A12	A12-[1]	0.3770	0.3232	0.2988	32.000	0.000	XXX
124.0477	1196.9700	A12	A12-[2]	0.3765	0.3228	0.2984	32.000	0.000	XXX
124.3849	1199.3300	P12	n-dodecane	0.1270	0.1287	0.0959	421.340	216.300	XXX
124.7347	1202.3500		unknown	0.2726	0.2971	0.2058	421.340	216.300	XXX
124.9721	1204.5300		unknown	0.2141	0.2333	0.1616	421.340	216.300	XXX
125.3003	1207.5400		unknown	0.1714	0.1868	0.1294	421.340	216.300	XXX
125.6996	1211.1900		unknown	0.1865	0.2033	0.1408	421.340	216.300	XXX
125.8466	1212.5300	A12	1,3,5-triethylbenzene	0.2396	0.2055	0.1899	420.800	216.000	XXX
126.1812	1215.5800		unknown	0.2291	0.2497	0.1816	420.800	216.000	XXX
126.3904	1217.4800		unknown	2.2126	2.4113	1.7534	420.800	216.000	XXX
126.6712	1220.0300		unknown	0.3770	0.4108	0.2987	420.800	216.000	XXX
126.8511	1221.6600		unknown	0.4503	0.4908	0.3569	420.800	216.000	XXX
127.2757	1225.4900		unknown	0.4447	0.4847	0.3525	420.800	216.000	XXX
127.4985	1227.5000		unknown	0.1225	0.1335	0.0971	420.800	216.000	XXX
127.9021	1231.1200	A12	1,2,4-triethylbenzene	0.3575	0.3065	0.2833	423.500	217.500	XXX
128.0404	1232.3600		unknown	0.1692	0.1844	0.1341	423.500	217.500	XXX
128.1973	1233.7700		unknown	0.1254	0.1366	0.0993	423.500	217.500	XXX
128.3949	1235.5300	A12	1,4-methyl-n-pentylbenzene	0.1929	0.1654	0.1528	32.000	0.000	XXX
128.6095	1237.4500		unknown	1.0671	1.1630	0.8457	32.000	0.000	XXX

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/15/2021 11:10:40 AM

RawFile: C:\MI DHA - WHOLE OIL\DATA\PIANO\52SF-1 DHA.0010.cdf
Acquired: 06/11/21 09:22:49
Sample: 52SF-1 DHA
Analyzed: 6/15/2021 11:10:40 AM
Processed 268 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\Microbial-Insights-Refernce-_03272021.DHA
Comments:
Normalized to 100.0000%

Hold

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)	CAS
129.0584	1241.4400		unknown	0.1880	0.2049	0.1490	32.000	0.000	XXX
129.8732	1248.6600		unknown	0.2916	0.3178	0.2311	32.000	0.000	XXX
130.0948	1250.6200		unknown	0.1118	0.1218	0.0886	32.000	0.000	XXX
130.2337	1251.8400	A12	n-hexylbenzene	0.4055	0.3477	0.3214	32.000	0.000	XXX
130.7212	1256.1300		unknown	0.5580	0.6082	0.4422	32.000	0.000	XXX
130.9193	1257.8600		unknown	0.4078	0.4444	0.3232	32.000	0.000	XXX
131.1004	1259.4500		unknown	0.4238	0.4618	0.3358	32.000	0.000	XXX
131.4323	1262.3500	I12	I12-[6]	0.7304	0.7399	0.5515	32.000	0.000	XXX
132.4331	1271.0400	I13	I13-[1]	0.2787	0.2812	0.1944	32.000	0.000	XXX
132.6777	1273.1600	A11	1,2,3,4,5-pentamethylbenzene	1.2827	0.9785	1.1127	449.600	232.000	XXX
133.1295	1277.0600		unknown	2.0832	2.2704	1.8072	449.600	232.000	XXX
133.8404	1283.1600		unknown	0.5555	0.6054	0.4819	449.600	232.000	XXX
134.3960	1287.9100	A11	2-methylnaphthalene	1.5294	1.1439	1.3738	465.890	241.050	XXX
135.0056	1293.1000	D13	tridecene-1	0.3580	0.3566	0.2525	451.040	232.800	XXX
135.3589	1296.0900	A11	1-methylnaphthalene	0.1716	0.1283	0.1541	472.352	244.640	XXX
135.5237	1297.4900		unknown	0.6217	0.6776	0.5585	472.352	244.640	XXX
135.5237	1297.4900		unknown	0.6217	0.6776	0.5585	472.352	244.640	XXX
135.5237	1297.4900		unknown	0.6217	0.6776	0.5585	472.352	244.640	XXX
135.5237	1297.4900		unknown	0.6217	0.6776	0.5585	472.352	244.640	XXX
135.5237	1297.4900		unknown	0.6217	0.6776	0.5585	472.352	244.640	XXX

microbialinsights

10515 Research Dr.
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

SITE LOGIC Report

C3-C12 PIANO

Contact: Brad Stephenson
Phone: 303-941-6156
Address: GHD
6260 W. 52nd Avenue
Suite 105
Arvado, CO 80002
Email: brad.stephenson@ghd.com

MI Identifier: 034SE **Report Date:** July 29, 2021

Project: HollyFrontier-North Monument 11225604-04-01

Comments: Subcontracted to Alpha Analytical

ANALYTICAL REPORT

Lab Number:	L2137935
Client:	Microbial Insights, Inc. 10515 Research Drive Knoxville, TN 37932
ATTN:	Kate Clark
Phone:	(865) 573-8188
Project Name:	Not Specified
Project Number:	034SE
Report Date:	07/28/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2137935-01	WBH-13, 034SE-1	OIL	Not Specified	05/06/21 09:15	07/15/21
L2137935-02	BH-111, 034SE-2	OIL	Not Specified	05/06/21 08:50	07/15/21

Project Name:	Not Specified	**Lab Number:**	L2137935
Project Number:	034SE	**Report Date:**	07/28/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

PIANO Volatile Organics

L2137935-01D and -02: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

L2137935-01D2 and -02D2: The samples were re-analyzed on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 07/28/21

ORGANICS

VOLATILES

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-01 D2
Client ID: WBH-13, 034SE-1
Sample Location: Not Specified
Date Collected: 05/06/21 09:15
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Oil
Analytical Method: 1,8260B
Analytical Date: 07/22/21 19:15
Analyst: RY
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Methylcyclohexane	11100		mg/kg	1880	254.	200

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-01 D
Client ID: WBH-13, 034SE-1
Sample Location: Not Specified
Date Collected: 05/06/21 09:15
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Oil
Analytical Method: 1,8260B
Analytical Date: 07/22/21 09:44
Analyst: RY
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3-Methyl-1-butene	ND		mg/kg	94.0	14.0	10
Isopentane	693		mg/kg	94.0	17.2	10
1-Pentene	ND		mg/kg	94.0	17.2	10
2-Methyl-1-Butene	ND		mg/kg	94.0	14.6	10
Pentane	50.9	J	mg/kg	94.0	29.3	10
trans-2-Pentene	ND		mg/kg	94.0	12.7	10
Isoprene	ND		mg/kg	94.0	16.8	10
cis-2-Pentene	ND		mg/kg	94.0	15.1	10
Tertiary Butanol	ND		mg/kg	1170	152.	10
2,2-Dimethylbutane	81.4	J	mg/kg	94.0	29.0	10
4-Methyl-1-pentene	ND		mg/kg	94.0	14.6	10
Cyclopentane	185		mg/kg	94.0	24.4	10
2,3-Dimethylbutane	261		mg/kg	94.0	38.8	10
2-Methylpentane	168		mg/kg	94.0	25.5	10
Methyl tert butyl ether	ND		mg/kg	94.0	19.4	10
3-Methylpentane	1780		mg/kg	94.0	14.9	10
1-Hexene	ND		mg/kg	94.0	13.2	10
n-Hexane	ND		mg/kg	94.0	15.5	10
Isopropyl Ether	ND		mg/kg	94.0	11.4	10
trans-2-Hexene	ND		mg/kg	94.0	12.3	10
2-Methyl-2-pentene	ND		mg/kg	94.0	14.4	10
cis-2-Hexene	ND		mg/kg	94.0	12.7	10
Ethyl-Tert-Butyl-Ether	ND		mg/kg	94.0	14.2	10
2,2-Dimethylpentane	179		mg/kg	94.0	12.6	10
Methylcyclopentane	2070		mg/kg	94.0	12.6	10
2,4-Dimethylpentane	349		mg/kg	94.0	11.6	10
2,2,3-Trimethylbutane	37.8	J	mg/kg	94.0	12.7	10
1,2-Dichloroethane	ND		mg/kg	94.0	13.9	10

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-01 D
Client ID: WBH-13, 034SE-1
Sample Location: Not Specified
Date Collected: 05/06/21 09:15
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3,3-Dimethylpentane	172		mg/kg	94.0	17.5	10
Cyclohexane	5880		mg/kg	94.0	11.6	10
2-Methylhexane	51.0	J	mg/kg	94.0	14.8	10
Benzene	259		mg/kg	94.0	14.3	10
2,3-Dimethylpentane	1300		mg/kg	94.0	12.4	10
Thiophene	ND		mg/kg	94.0	13.3	10
1,1-Dimethylcyclopentane	1380		mg/kg	94.0	11.3	10
3-Methylhexane	302		mg/kg	94.0	15.0	10
Tertiary-Amyl Methyl Ether	ND		mg/kg	94.0	11.6	10
1,3-Dimethylcyclopentane (cis)	2340		mg/kg	94.0	14.1	10
3-Ethylpentane	389		mg/kg	94.0	13.6	10
1-Heptene/1,2-DMCP (trans)	4390		mg/kg	188	27.5	10
Isooctane	ND		mg/kg	94.0	10.2	10
trans-3-Heptene	ND		mg/kg	94.0	14.6	10
Heptane	34.6	J	mg/kg	94.0	16.4	10
trans-2-Heptene	ND		mg/kg	94.0	12.0	10
cis-2-Heptene	ND		mg/kg	94.0	18.2	10
2,2-Dimethylhexane	149		mg/kg	94.0	13.6	10
Methylcyclohexane	13400	E	mg/kg	94.0	12.7	10
2,5-Dimethylhexane	738		mg/kg	94.0	16.4	10
2,4-Dimethylhexane	934		mg/kg	94.0	11.4	10
Ethylcyclopentane	534		mg/kg	94.0	12.4	10
2,2,3-Trimethylpentane	38.8	J	mg/kg	94.0	16.3	10
2,3,4-Trimethylpentane	71.9	J	mg/kg	94.0	12.3	10
Xylene (Total)[1]	170	J	mg/kg	94.0	9.82	10
2,3,3-Trimethylpentane	62.4	J	mg/kg	94.0	18.6	10
2,3-Dimethylhexane	730		mg/kg	94.0	22.8	10
2-Methylheptane	356		mg/kg	94.0	15.9	10
4-Methylheptane	120		mg/kg	94.0	16.2	10
3-Methylheptane	194		mg/kg	94.0	13.4	10
3-Ethylhexane	662		mg/kg	94.0	16.8	10
Toluene	ND		mg/kg	94.0	12.7	10
2-Methylthiophene	ND		mg/kg	94.0	7.99	10
1,4-Dimethylcyclohexane (trans)	2950		mg/kg	94.0	12.2	10
3-Methylthiophene	ND		mg/kg	94.0	11.0	10
1-Octene	ND		mg/kg	235	14.4	10
Octane	176		mg/kg	94.0	11.0	10

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-01 D
Client ID: WBH-13, 034SE-1
Sample Location: Not Specified
Date Collected: 05/06/21 09:15
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
1,2-Dimethylcyclohexane (trans)	3900		mg/kg	94.0	13.8	10
1,2-Dibromoethane	ND		mg/kg	94.0	15.0	10
cis-2-Octene	ND		mg/kg	94.0	10.8	10
Isopropylcyclopentane	ND		mg/kg	94.0	13.8	10
1,2-Dimethylcyclohexane (cis)	822		mg/kg	94.0	27.3	10
2,5-Dimethylheptane	1680		mg/kg	94.0	15.7	10
3,5-Dimethylheptane	345		mg/kg	94.0	13.2	10
3,3-Dimethylheptane	165		mg/kg	94.0	11.4	10
1,1,4-Trimethylcyclohexane	676		mg/kg	94.0	9.35	10
2,3-Dimethylheptane	1170		mg/kg	94.0	10.7	10
3,4-Dimethylheptane	998		mg/kg	94.0	16.0	10
4-Methyloctane	175		mg/kg	94.0	15.7	10
2-Methyloctane	621		mg/kg	94.0	24.1	10
Ethylbenzene	260		mg/kg	94.0	10.2	10
2-Ethylthiophene	ND		mg/kg	94.0	8.27	10
3-Methyloctane	403		mg/kg	94.0	10.5	10
3,3-Diethylpentane	ND		mg/kg	94.0	10.9	10
p/m-Xylene	170	J	mg/kg	188	17.9	10
1-Nonene	ND		mg/kg	235	12.7	10
trans-3-Nonene	ND		mg/kg	94.0	11.1	10
cis-3-Nonene	ND		mg/kg	94.0	17.6	10
Nonane (C9)	561		mg/kg	94.0	14.6	10
Styrene	ND		mg/kg	94.0	9.49	10
o-Xylene	ND		mg/kg	94.0	9.82	10
2-Nonene	ND		mg/kg	235	11.9	10
Isopropylcyclohexane	1210		mg/kg	94.0	9.96	10
Isopropylbenzene	513		mg/kg	94.0	8.79	10
3,3-Dimethyloctane	248		mg/kg	94.0	9.49	10
n-Propylbenzene	757		mg/kg	94.0	8.32	10
2-Methylnonane	516		mg/kg	94.0	13.3	10
3-Methylnonane	581		mg/kg	94.0	13.1	10
1-Methyl-3-Ethylbenzene	ND		mg/kg	94.0	14.8	10
1-Methyl-4-Ethylbenzene	217		mg/kg	94.0	13.2	10
1,3,5-Trimethylbenzene	43.0	J	mg/kg	94.0	10.8	10
1-Decene	ND		mg/kg	94.0	12.2	10
Isobutylcyclohexane	ND		mg/kg	94.0	7.66	10
1-Methyl-2-Ethylbenzene	ND		mg/kg	94.0	7.99	10

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-01 D
Client ID: WBH-13, 034SE-1
Sample Location: Not Specified
Date Collected: 05/06/21 09:15
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Decane (C10)	847		mg/kg	94.0	12.7	10
tert-Butylbenzene	ND		mg/kg	94.0	9.92	10
1,2,4-Trimethylbenzene	846		mg/kg	94.0	9.73	10
Isobutylbenzene	178		mg/kg	94.0	12.7	10
sec-Butylbenzene	409		mg/kg	94.0	12.2	10
1-Methyl-3-Isopropylbenzene	ND		mg/kg	94.0	12.1	10
1-Methyl-4-Isopropylbenzene	205		mg/kg	94.0	9.96	10
1,2,3-Trimethylbenzene	42.7	J	mg/kg	94.0	10.5	10
1-Methyl-2-Isopropylbenzene	117		mg/kg	94.0	10.2	10
Indane	90.1	J	mg/kg	94.0	5.78	10
1,3-Diethylbenzene	270		mg/kg	94.0	11.7	10
1-Methyl-3-N-Propylbenzene	26.7	J	mg/kg	94.0	9.49	10
Indene	ND		mg/kg	94.0	5.45	10
1-Methyl-4-N-Propylbenzene	301		mg/kg	94.0	11.7	10
n-Butylbenzene	273		mg/kg	94.0	9.26	10
1,2-Dimethyl-4-Ethylbenzene	42.4	J	mg/kg	94.0	11.5	10
1,2-Diethylbenzene	111		mg/kg	94.0	13.9	10
1-Methyl-2-N-Propylbenzene	20.5	J	mg/kg	94.0	11.7	10
1,4-Dimethyl-2-Ethylbenzene	208		mg/kg	94.0	8.79	10
Undecane	593		mg/kg	94.0	10.4	10
1,3-Dimethyl-4-Ethylbenzene	176		mg/kg	94.0	9.12	10
1,3-Dimethyl-5-Ethylbenzene	745		mg/kg	94.0	11.1	10
1,3-Dimethyl-2-Ethylbenzene	85.4	J	mg/kg	94.0	7.00	10
1,2-Dimethyl-3-Ethylbenzene	ND		mg/kg	94.0	5.97	10
1,2,4,5-Tetramethylbenzene	534		mg/kg	94.0	7.28	10
1,2,3,5-Tetramethylbenzene	484		mg/kg	94.0	7.14	10
N-Pentylbenzene	49.2	J	mg/kg	94.0	11.7	10
1,2,3,4-Tetramethylbenzene	386		mg/kg	94.0	10.0	10
1,3-Dimethyl-5-tert-Butylbenzene	ND		mg/kg	94.0	13.4	10
Dodecane (C12)	330		mg/kg	235	30.9	10
1,3,5-Triethylbenzene	ND		mg/kg	94.0	17.8	10
Naphthalene	591		mg/kg	94.0	39.2	10
Benzothiophene	ND		mg/kg	94.0	49.7	10
1,2,4-Triethylbenzene	ND		mg/kg	94.0	16.0	10
Hexylbenzene	150		mg/kg	94.0	18.1	10
MMT	ND		mg/kg	235	60.4	10
Tridecane	186	J	mg/kg	235	65.5	10

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-01 D
Client ID: WBH-13, 034SE-1
Sample Location: Not Specified
Date Collected: 05/06/21 09:15
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
2-Methylnaphthalene	1660		mg/kg	235	62.1	10
1-Methylnaphthalene	1400		mg/kg	235	69.0	10
Tetradecane (C14)	139	J	mg/kg	235	28.8	10
Pentadecane	200	J	mg/kg	235	52.4	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	91		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	101		70-130

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-02 D2
Client ID: BH-111, 034SE-2
Sample Location: Not Specified
Date Collected: 05/06/21 08:50
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Oil
Analytical Method: 1,8260B
Analytical Date: 07/22/21 20:25
Analyst: RY
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Methylcyclohexane	8590		mg/kg	1870	252.	200

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	89		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	99		70-130

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-02 D
Client ID: BH-111, 034SE-2
Sample Location: Not Specified
Date Collected: 05/06/21 08:50
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Oil
Analytical Method: 1,8260B
Analytical Date: 07/22/21 10:54
Analyst: RY
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3-Methyl-1-butene	ND		mg/kg	93.5	13.9	10
Isopentane	543		mg/kg	93.5	17.1	10
1-Pentene	ND		mg/kg	93.5	17.1	10
2-Methyl-1-Butene	ND		mg/kg	93.5	14.5	10
Pentane	ND		mg/kg	93.5	29.2	10
trans-2-Pentene	ND		mg/kg	93.5	12.6	10
Isoprene	ND		mg/kg	93.5	16.7	10
cis-2-Pentene	ND		mg/kg	93.5	15.1	10
Tertiary Butanol	ND		mg/kg	1170	152.	10
2,2-Dimethylbutane	61.4	J	mg/kg	93.5	28.8	10
4-Methyl-1-pentene	ND		mg/kg	93.5	14.5	10
Cyclopentane	37.0	J	mg/kg	93.5	24.3	10
2,3-Dimethylbutane	199		mg/kg	93.5	38.6	10
2-Methylpentane	44.8	J	mg/kg	93.5	25.4	10
Methyl tert butyl ether	ND		mg/kg	93.5	19.3	10
3-Methylpentane	1350		mg/kg	93.5	14.8	10
1-Hexene	ND		mg/kg	93.5	13.1	10
n-Hexane	ND		mg/kg	93.5	15.4	10
Isopropyl Ether	ND		mg/kg	93.5	11.3	10
trans-2-Hexene	ND		mg/kg	93.5	12.2	10
2-Methyl-2-pentene	ND		mg/kg	93.5	14.3	10
cis-2-Hexene	ND		mg/kg	93.5	12.7	10
Ethyl-Tert-Butyl-Ether	ND		mg/kg	93.5	14.2	10
2,2-Dimethylpentane	122		mg/kg	93.5	12.6	10
Methylcyclopentane	396		mg/kg	93.5	12.5	10
2,4-Dimethylpentane	241		mg/kg	93.5	11.6	10
2,2,3-Trimethylbutane	ND		mg/kg	93.5	12.6	10
1,2-Dichloroethane	ND		mg/kg	93.5	13.8	10

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-02 D
Client ID: BH-111, 034SE-2
Sample Location: Not Specified
Date Collected: 05/06/21 08:50
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3,3-Dimethylpentane	120		mg/kg	93.5	17.4	10
Cyclohexane	4200		mg/kg	93.5	11.6	10
2-Methylhexane	ND		mg/kg	93.5	14.7	10
Benzene	188		mg/kg	93.5	14.3	10
2,3-Dimethylpentane	953		mg/kg	93.5	12.4	10
Thiophene	ND		mg/kg	93.5	13.3	10
1,1-Dimethylcyclopentane	930		mg/kg	93.5	11.2	10
3-Methylhexane	118		mg/kg	93.5	15.0	10
Tertiary-Amyl Methyl Ether	ND		mg/kg	93.5	11.5	10
1,3-Dimethylcyclopentane (cis)	1740		mg/kg	93.5	14.1	10
3-Ethylpentane	348		mg/kg	93.5	13.5	10
1-Heptene/1,2-DMCP (trans)	3280		mg/kg	187	27.4	10
Isooctane	ND		mg/kg	93.5	10.2	10
trans-3-Heptene	ND		mg/kg	93.5	14.5	10
Heptane	ND		mg/kg	93.5	16.3	10
trans-2-Heptene	ND		mg/kg	93.5	12.0	10
cis-2-Heptene	ND		mg/kg	93.5	18.1	10
2,2-Dimethylhexane	93.7		mg/kg	93.5	13.6	10
Methylcyclohexane	10200	E	mg/kg	93.5	12.6	10
2,5-Dimethylhexane	585		mg/kg	93.5	16.3	10
2,4-Dimethylhexane	731		mg/kg	93.5	11.4	10
Ethylcyclopentane	231		mg/kg	93.5	12.4	10
2,2,3-Trimethylpentane	23.9	J	mg/kg	93.5	16.2	10
2,3,4-Trimethylpentane	42.4	J	mg/kg	93.5	12.2	10
Xylene (Total)[1]	ND		mg/kg	93.5	9.78	10
2,3,3-Trimethylpentane	ND		mg/kg	93.5	18.6	10
2,3-Dimethylhexane	542		mg/kg	93.5	22.7	10
2-Methylheptane	ND		mg/kg	93.5	15.8	10
4-Methylheptane	ND		mg/kg	93.5	16.1	10
3-Methylheptane	ND		mg/kg	93.5	13.3	10
3-Ethylhexane	603		mg/kg	93.5	16.7	10
Toluene	ND		mg/kg	93.5	12.7	10
2-Methylthiophene	ND		mg/kg	93.5	7.95	10
1,4-Dimethylcyclohexane (trans)	2460		mg/kg	93.5	12.2	10
3-Methylthiophene	ND		mg/kg	93.5	10.9	10
1-Octene	ND		mg/kg	234	14.4	10
Octane	ND		mg/kg	93.5	11.0	10

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-02 D
Client ID: BH-111, 034SE-2
Sample Location: Not Specified
Date Collected: 05/06/21 08:50
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
1,2-Dimethylcyclohexane (trans)	3330		mg/kg	93.5	13.8	10
1,2-Dibromoethane	ND		mg/kg	93.5	15.0	10
cis-2-Octene	ND		mg/kg	93.5	10.7	10
Isopropylcyclopentane	ND		mg/kg	93.5	13.7	10
1,2-Dimethylcyclohexane (cis)	696		mg/kg	93.5	27.2	10
2,5-Dimethylheptane	1520		mg/kg	93.5	15.7	10
3,5-Dimethylheptane	300		mg/kg	93.5	13.2	10
3,3-Dimethylheptane	162		mg/kg	93.5	11.3	10
1,1,4-Trimethylcyclohexane	649		mg/kg	93.5	9.31	10
2,3-Dimethylheptane	1100		mg/kg	93.5	10.7	10
3,4-Dimethylheptane	900		mg/kg	93.5	15.9	10
4-Methyloctane	80.1	J	mg/kg	93.5	15.6	10
2-Methyloctane	327		mg/kg	93.5	23.9	10
Ethylbenzene	66.1	J	mg/kg	93.5	10.1	10
2-Ethylthiophene	ND		mg/kg	93.5	8.23	10
3-Methyloctane	244		mg/kg	93.5	10.5	10
3,3-Diethylpentane	ND		mg/kg	93.5	10.9	10
p/m-Xylene	ND		mg/kg	187	17.8	10
1-Nonene	ND		mg/kg	234	12.6	10
trans-3-Nonene	ND		mg/kg	93.5	11.1	10
cis-3-Nonene	ND		mg/kg	93.5	17.5	10
Nonane (C9)	60.3	J	mg/kg	93.5	14.5	10
Styrene	ND		mg/kg	93.5	9.45	10
o-Xylene	ND		mg/kg	93.5	9.78	10
2-Nonene	ND		mg/kg	234	11.9	10
Isopropylcyclohexane	1100		mg/kg	93.5	9.92	10
Isopropylbenzene	506		mg/kg	93.5	8.75	10
3,3-Dimethyloctane	286		mg/kg	93.5	9.45	10
n-Propylbenzene	780		mg/kg	93.5	8.28	10
2-Methylnonane	249		mg/kg	93.5	13.2	10
3-Methylnonane	416		mg/kg	93.5	13.0	10
1-Methyl-3-Ethylbenzene	ND		mg/kg	93.5	14.8	10
1-Methyl-4-Ethylbenzene	32.6	J	mg/kg	93.5	13.2	10
1,3,5-Trimethylbenzene	ND		mg/kg	93.5	10.8	10
1-Decene	ND		mg/kg	93.5	12.2	10
Isobutylcyclohexane	ND		mg/kg	93.5	7.62	10
1-Methyl-2-Ethylbenzene	ND		mg/kg	93.5	7.95	10

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-02 D
Client ID: BH-111, 034SE-2
Sample Location: Not Specified
Date Collected: 05/06/21 08:50
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Decane (C10)	165		mg/kg	93.5	12.7	10
tert-Butylbenzene	20.7	J	mg/kg	93.5	9.87	10
1,2,4-Trimethylbenzene	267		mg/kg	93.5	9.68	10
Isobutylbenzene	186		mg/kg	93.5	12.6	10
sec-Butylbenzene	367		mg/kg	93.5	12.1	10
1-Methyl-3-Isopropylbenzene	ND		mg/kg	93.5	12.1	10
1-Methyl-4-Isopropylbenzene	136		mg/kg	93.5	9.92	10
1,2,3-Trimethylbenzene	ND		mg/kg	93.5	10.4	10
1-Methyl-2-Isopropylbenzene	79.2	J	mg/kg	93.5	10.1	10
Indane	83.1	J	mg/kg	93.5	5.75	10
1,3-Diethylbenzene	259		mg/kg	93.5	11.6	10
1-Methyl-3-N-Propylbenzene	ND		mg/kg	93.5	9.45	10
Indene	ND		mg/kg	93.5	5.42	10
1-Methyl-4-N-Propylbenzene	204		mg/kg	93.5	11.7	10
n-Butylbenzene	235		mg/kg	93.5	9.21	10
1,2-Dimethyl-4-Ethylbenzene	ND		mg/kg	93.5	11.4	10
1,2-Diethylbenzene	80.6	J	mg/kg	93.5	13.8	10
1-Methyl-2-N-Propylbenzene	ND		mg/kg	93.5	11.6	10
1,4-Dimethyl-2-Ethylbenzene	147		mg/kg	93.5	8.75	10
Undecane	240		mg/kg	93.5	10.4	10
1,3-Dimethyl-4-Ethylbenzene	97.2		mg/kg	93.5	9.07	10
1,3-Dimethyl-5-Ethylbenzene	696		mg/kg	93.5	11.0	10
1,3-Dimethyl-2-Ethylbenzene	ND		mg/kg	93.5	6.97	10
1,2-Dimethyl-3-Ethylbenzene	ND		mg/kg	93.5	5.94	10
1,2,4,5-Tetramethylbenzene	514		mg/kg	93.5	7.25	10
1,2,3,5-Tetramethylbenzene	454		mg/kg	93.5	7.11	10
N-Pentylbenzene	35.1	J	mg/kg	93.5	11.6	10
1,2,3,4-Tetramethylbenzene	405		mg/kg	93.5	10.0	10
1,3-Dimethyl-5-tert-Butylbenzene	ND		mg/kg	93.5	13.3	10
Dodecane (C12)	111	J	mg/kg	234	30.7	10
1,3,5-Triethylbenzene	ND		mg/kg	93.5	17.8	10
Naphthalene	548		mg/kg	93.5	39.0	10
Benzothiophene	ND		mg/kg	93.5	49.4	10
1,2,4-Triethylbenzene	ND		mg/kg	93.5	15.9	10
Hexylbenzene	68.0	J	mg/kg	93.5	18.0	10
MMT	ND		mg/kg	234	60.1	10
Tridecane	ND		mg/kg	234	65.2	10

Project Name: Not Specified
Lab Number: L2137935
Project Number: 034SE
Report Date: 07/28/21

SAMPLE RESULTS

Lab ID: L2137935-02 D
Client ID: BH-111, 034SE-2
Sample Location: Not Specified
Date Collected: 05/06/21 08:50
Date Received: 07/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
2-Methylnaphthalene	1540		mg/kg	234	61.8	10
1-Methylnaphthalene	1310		mg/kg	234	68.7	10
Tetradecane (C14)	81.6	J	mg/kg	234	28.6	10
Pentadecane	163	J	mg/kg	234	52.2	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	91		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 07/21/21 14:40
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1526458-5					
3-Methyl-1-butene	ND		mg/kg	10.0	1.48
Isopentane	ND		mg/kg	10.0	1.83
1-Pentene	ND		mg/kg	10.0	1.82
2-Methyl-1-Butene	ND		mg/kg	10.0	1.56
Pentane	ND		mg/kg	10.0	3.12
trans-2-Pentene	ND		mg/kg	10.0	1.35
Isoprene	ND		mg/kg	10.0	1.78
cis-2-Pentene	ND		mg/kg	10.0	1.61
Tertiary Butanol	ND		mg/kg	125	16.2
2,2-Dimethylbutane	ND		mg/kg	10.0	3.08
4-Methyl-1-pentene	ND		mg/kg	10.0	1.56
Cyclopentane	ND		mg/kg	10.0	2.60
2,3-Dimethylbutane	ND		mg/kg	10.0	4.13
2-Methylpentane	ND		mg/kg	10.0	2.71
Methyl tert butyl ether	ND		mg/kg	10.0	2.06
3-Methylpentane	ND		mg/kg	10.0	1.58
1-Hexene	ND		mg/kg	10.0	1.40
n-Hexane	ND		mg/kg	10.0	1.64
Isopropyl Ether	ND		mg/kg	10.0	1.21
trans-2-Hexene	ND		mg/kg	10.0	1.30
2-Methyl-2-pentene	ND		mg/kg	10.0	1.53
cis-2-Hexene	ND		mg/kg	10.0	1.36
Ethyl-Tert-Butyl-Ether	ND		mg/kg	10.0	1.52
2,2-Dimethylpentane	ND		mg/kg	10.0	1.34
Methylcyclopentane	ND		mg/kg	10.0	1.34
2,4-Dimethylpentane	ND		mg/kg	10.0	1.24
2,2,3-Trimethylbutane	ND		mg/kg	10.0	1.35
1,2-Dichloroethane	ND		mg/kg	10.0	1.48
3,3-Dimethylpentane	ND		mg/kg	10.0	1.86

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 07/21/21 14:40
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1526458-5					
Cyclohexane	ND		mg/kg	10.0	1.24
2-Methylhexane	ND		mg/kg	10.0	1.58
Benzene	ND		mg/kg	10.0	1.52
2,3-Dimethylpentane	ND		mg/kg	10.0	1.32
Thiophene	ND		mg/kg	10.0	1.42
1,1-Dimethylcyclopentane	ND		mg/kg	10.0	1.20
3-Methylhexane	ND		mg/kg	10.0	1.60
Tertiary-Amyl Methyl Ether	ND		mg/kg	10.0	1.23
1,3-Dimethylcyclopentane (cis)	ND		mg/kg	10.0	1.50
3-Ethylpentane	ND		mg/kg	10.0	1.44
1-Heptene/1,2-DMCP (trans)	ND		mg/kg	20.0	2.92
Isooctane	ND		mg/kg	10.0	1.09
trans-3-Heptene	ND		mg/kg	10.0	1.56
Heptane	ND		mg/kg	10.0	1.74
trans-2-Heptene	ND		mg/kg	10.0	1.28
cis-2-Heptene	ND		mg/kg	10.0	1.94
2,2-Dimethylhexane	ND		mg/kg	10.0	1.45
Methylcyclohexane	ND		mg/kg	10.0	1.35
2,5-Dimethylhexane	ND		mg/kg	10.0	1.74
2,4-Dimethylhexane	ND		mg/kg	10.0	1.22
Ethylcyclopentane	ND		mg/kg	10.0	1.32
2,2,3-Trimethylpentane	ND		mg/kg	10.0	1.74
2,3,4-Trimethylpentane	ND		mg/kg	10.0	1.30
Xylene (Total)[1]	ND		mg/kg	10.0	1.04
2,3,3-Trimethylpentane	ND		mg/kg	10.0	1.98
2,3-Dimethylhexane	ND		mg/kg	10.0	2.42
2-Methylheptane	ND		mg/kg	10.0	1.69
4-Methylheptane	ND		mg/kg	10.0	1.72
3-Methylheptane	ND		mg/kg	10.0	1.42

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 07/21/21 14:40
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1526458-5					
3-Ethylhexane	ND		mg/kg	10.0	1.79
Toluene	ND		mg/kg	10.0	1.36
2-Methylthiophene	ND		mg/kg	10.0	0.850
1,4-Dimethylcyclohexane (trans)	ND		mg/kg	10.0	1.30
3-Methylthiophene	ND		mg/kg	10.0	1.17
1-Octene	ND		mg/kg	25.0	1.54
Octane	ND		mg/kg	10.0	1.18
1,2-Dimethylcyclohexane (trans)	ND		mg/kg	10.0	1.47
1,2-Dibromoethane	ND		mg/kg	10.0	1.60
cis-2-Octene	ND		mg/kg	10.0	1.14
Isopropylcyclopentane	ND		mg/kg	10.0	1.46
1,2-Dimethylcyclohexane (cis)	ND		mg/kg	10.0	2.90
2,5-Dimethylheptane	ND		mg/kg	10.0	1.68
3,5-Dimethylheptane	ND		mg/kg	10.0	1.41
3,3-Dimethylheptane	ND		mg/kg	10.0	1.21
1,1,4-Trimethylcyclohexane	ND		mg/kg	10.0	0.995
2,3-Dimethylheptane	ND		mg/kg	10.0	1.14
3,4-Dimethylheptane	ND		mg/kg	10.0	1.70
4-Methyloctane	ND		mg/kg	10.0	1.67
2-Methyloctane	ND		mg/kg	10.0	2.56
Ethylbenzene	ND		mg/kg	10.0	1.08
2-Ethylthiophene	ND		mg/kg	10.0	0.880
3-Methyloctane	ND		mg/kg	10.0	1.12
3,3-Diethylpentane	ND		mg/kg	10.0	1.16
p/m-Xylene	ND		mg/kg	20.0	1.90
1-Nonene	ND		mg/kg	25.0	1.35
trans-3-Nonene	ND		mg/kg	10.0	1.18
cis-3-Nonene	ND		mg/kg	10.0	1.87
Nonane (C9)	ND		mg/kg	10.0	1.56

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 07/21/21 14:40
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1526458-5					
Styrene	ND		mg/kg	10.0	1.01
o-Xylene	ND		mg/kg	10.0	1.04
2-Nonene	ND		mg/kg	25.0	1.27
Isopropylcyclohexane	ND		mg/kg	10.0	1.06
Isopropylbenzene	ND		mg/kg	10.0	0.935
3,3-Dimethyloctane	ND		mg/kg	10.0	1.01
n-Propylbenzene	ND		mg/kg	10.0	0.885
2-Methylnonane	ND		mg/kg	10.0	1.42
3-Methylnonane	ND		mg/kg	10.0	1.40
1-Methyl-3-Ethylbenzene	ND		mg/kg	10.0	1.58
1-Methyl-4-Ethylbenzene	ND		mg/kg	10.0	1.41
1,3,5-Trimethylbenzene	ND		mg/kg	10.0	1.15
1-Decene	ND		mg/kg	10.0	1.30
Isobutylcyclohexane	ND		mg/kg	10.0	0.815
1-Methyl-2-Ethylbenzene	ND		mg/kg	10.0	0.850
Decane (C10)	ND		mg/kg	10.0	1.36
tert-Butylbenzene	ND		mg/kg	10.0	1.06
1,2,4-Trimethylbenzene	ND		mg/kg	10.0	1.04
Isobutylbenzene	ND		mg/kg	10.0	1.35
sec-Butylbenzene	ND		mg/kg	10.0	1.30
1-Methyl-3-Isopropylbenzene	ND		mg/kg	10.0	1.29
1-Methyl-4-Isopropylbenzene	ND		mg/kg	10.0	1.06
1,2,3-Trimethylbenzene	ND		mg/kg	10.0	1.12
1-Methyl-2-Isopropylbenzene	ND		mg/kg	10.0	1.08
Indane	ND		mg/kg	10.0	0.615
1,3-Diethylbenzene	ND		mg/kg	10.0	1.24
1-Methyl-3-N-Propylbenzene	ND		mg/kg	10.0	1.01
Indene	ND		mg/kg	10.0	0.580
1-Methyl-4-N-Propylbenzene	ND		mg/kg	10.0	1.25

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 07/21/21 14:40
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1526458-5					
n-Butylbenzene	ND		mg/kg	10.0	0.985
1,2-Dimethyl-4-Ethylbenzene	ND		mg/kg	10.0	1.22
1,2-Diethylbenzene	ND		mg/kg	10.0	1.48
1-Methyl-2-N-Propylbenzene	ND		mg/kg	10.0	1.24
1,4-Dimethyl-2-Ethylbenzene	ND		mg/kg	10.0	0.935
Undecane	ND		mg/kg	10.0	1.11
1,3-Dimethyl-4-Ethylbenzene	ND		mg/kg	10.0	0.970
1,3-Dimethyl-5-Ethylbenzene	ND		mg/kg	10.0	1.18
1,3-Dimethyl-2-Ethylbenzene	ND		mg/kg	10.0	0.745
1,2-Dimethyl-3-Ethylbenzene	ND		mg/kg	10.0	0.635
1,2,4,5-Tetramethylbenzene	ND		mg/kg	10.0	0.775
1,2,3,5-Tetramethylbenzene	ND		mg/kg	10.0	0.760
N-Pentylbenzene	ND		mg/kg	10.0	1.24
1,2,3,4-Tetramethylbenzene	ND		mg/kg	10.0	1.07
1,3-Dimethyl-5-tert-Butylbenzene	ND		mg/kg	10.0	1.42
Dodecane (C12)	ND		mg/kg	25.0	3.28
1,3,5-Triethylbenzene	ND		mg/kg	10.0	1.90
Naphthalene	ND		mg/kg	10.0	4.18
Benzothiophene	ND		mg/kg	10.0	5.28
1,2,4-Triethylbenzene	ND		mg/kg	10.0	1.70
Hexylbenzene	ND		mg/kg	10.0	1.92
MMT	ND		mg/kg	25.0	6.43
Tridecane	ND		mg/kg	25.0	6.96
2-Methylnaphthalene	ND		mg/kg	25.0	6.61
1-Methylnaphthalene	ND		mg/kg	25.0	7.34
Tetradecane (C14)	ND		mg/kg	25.0	3.06
Pentadecane	ND		mg/kg	25.0	5.58

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 07/21/21 14:40
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-02 Batch: WG1526458-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1526458-3 WG1526458-4								
1-Pentene	110		110		50-130	0		30
Pentane	102		101		50-130	1		30
Tertiary Butanol	107		106		50-130	1		30
Cyclopentane	101		98		50-130	3		30
2-Methylpentane	99		97		50-130	2		30
Methyl tert butyl ether	98		97		50-130	1		30
3-Methylpentane	101		101		50-130	0		30
1-Hexene	105		106		50-130	1		30
n-Hexane	94		92		50-130	2		30
Isopropyl Ether	100		99		50-130	1		30
Ethyl-Tert-Butyl-Ether	97		97		50-130	0		30
Methylcyclopentane	102		104		50-130	2		30
2,4-Dimethylpentane	102		100		50-130	2		30
Cyclohexane	108		107		50-130	1		30
2-Methylhexane	104		105		50-130	1		30
Benzene	102		103		50-130	1		30
2,3-Dimethylpentane	103		104		50-130	1		30
3-Methylhexane	92		92		50-130	0		30
Tertiary-Amyl Methyl Ether	92		92		50-130	0		30
Isooctane	101		101		50-130	0		30
Heptane	104		105		50-130	1		30
Methylcyclohexane	99		100		50-130	1		30
2-Methylheptane	100		101		50-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1526458-3 WG1526458-4								
3-Methylheptane	100		100		50-130	0		30
Toluene	97		98		50-130	1		30
Octane	102		103		50-130	1		30
Ethylbenzene	95		97		50-130	2		30
p/m-Xylene	99		100		50-130	1		30
Nonane (C9)	89		90		50-130	1		30
o-Xylene	95		97		50-130	2		30
Isopropylbenzene	96		97		50-130	1		30
n-Propylbenzene	96		98		50-130	2		30
1-Methyl-3-Ethylbenzene	95		96		50-130	1		30
1-Methyl-4-Ethylbenzene	98		100		50-130	2		30
1,3,5-Trimethylbenzene	95		96		50-130	1		30
1-Decene	81		81		50-130	0		30
1-Methyl-2-Ethylbenzene	92		94		50-130	2		30
Decane (C10)	104		108		50-130	4		30
1,2,4-Trimethylbenzene	91		93		50-130	2		30
sec-Butylbenzene	96		99		50-130	3		30
1-Methyl-4-N-Propylbenzene	84		86		50-130	2		30
n-Butylbenzene	88		89		50-130	1		30
1,2-Diethylbenzene	88		89		50-130	1		30
Undecane	95		97		50-130	2		30
N-Pentylbenzene	89		91		50-130	2		30
Dodecane (C12)	110		114		50-130	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01-02 Batch: WG1526458-3 WG1526458-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Dibromofluoromethane	100		100		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	97		98		70-130

Project Name: Not Specified
Project Number: 034SE

Lab Number: L2137935
Report Date: 07/28/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2137935-01A	Vial unpreserved 60 ml	A	NA		4.7	Y	Absent		A2-PIANO8260(365)
L2137935-01B	Vial unpreserved 60 ml	A	NA		4.7	Y	Absent		A2-PIANO8260(365)
L2137935-02A	Vial unpreserved 60 ml	A	NA		4.7	Y	Absent		A2-PIANO8260(365)
L2137935-02B	Vial unpreserved 60 ml	A	NA		4.7	Y	Absent		A2-PIANO8260(365)

*Values in parentheses indicate holding time in days

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	Not Specified	**Lab Number:**	L2137935
Project Number:	034SE	**Report Date:**	07/28/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name: Not Specified
Project Number: 034SE
Lab Number: L2137935
Report Date: 07/28/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

MANSFIELD CHAIN OF CUSTODY

PAGE OF

ALPHA ANALYTICAL

Westborough, MA TEL 508-898-9220 FAX 508-898-9193
Mansfield, MA TEL 508-822-9300 FAX 508-822-3288

Date Rec'd in Lab: 7/15/21

ALPHA Job #: L2137935

Project Information

Project Name:

Project Location:

Project #: 034SE

Project Manager: Kate Clark

ALPHA Quote #: 15639

Report Information — Data Deliverables

☐ FAX ☒ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 21-8198

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Client Information

Client: Microbial Insights

Address: 10515 Research Drive

Knoxville, TN 37931

Phone: 865-573-8188 ext. 100

Fax:

Email: kclark@microbe.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☐ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

☐ MS/MSD (at unit cost) will be omitted unless you check here

ANALYSIS

PIANO Volatile Organics, 8260B

SAMPLE HANDLING

Filtration
☐ Done
☐ Not Needed
☐ Lab to do

Preservation
☐ Lab to do

(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PIANO Volatile Organics, 8260B	TOTAL # BOTTLES	Sample Specific Comments
37935-01	WBH-13, 034SE-1	05/06/21	915	Product		☒		
-02	BH-111, 034SE-2	05/06/21	850	Product		☒		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		

Container Type

Preservative

Relinquished By	Date/Time	Received By	Date/Time
AJ Hostetler FEDEX	7/14/21 1425	FEDEX	
	7/15/21 1446	CUCE -AA	7/15/21 1446

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO. 101 (rev. no.) (rev. 5-JAN-12)

ANALYTICAL REPORT

Lab Number:	L2157585
Client:	GHD, Inc. 6260 E 52nd Ave #105 Arvada, CO 80002
ATTN:	Brad Stephenson
Phone:	() -
Project Name:	MONUMENT
Project Number:	11225604-04-01
Report Date:	11/04/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MONUMENT
Project Number: 11225604-04-01

Lab Number: L2157585
Report Date: 11/04/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2157585-01	WBH-13	WATER	MONUMENT, NM	10/20/21 10:00	10/21/21
L2157585-02	BH-111	WATER	MONUMENT, NM	10/20/21 10:30	10/21/21
L2157585-03	BH-42	WATER	MONUMENT, NM	10/20/21 11:00	10/21/21
L2157585-04	TRIP BLANK	WATER	MONUMENT, NM	10/20/21 11:00	10/21/21

Project Name:	MONUMENT	**Lab Number:**	L2157585
Project Number:	11225604-04-01	**Report Date:**	11/04/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	MONUMENT	**Lab Number:**	L2157585
Project Number:	11225604-04-01	**Report Date:**	11/04/21

Case Narrative (continued)

Sample Receipt

L2157585-04: A sample identified as "TRIP BLANK" was received, but not listed on the Chain of Custody. At the client's request, this sample was not analyzed.

PIANO Volatile Organics

L2157585-01D through -03D: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 11/04/21

ORGANICS

VOLATILES

Project Name: MONUMENT
Lab Number: L2157585
Project Number: 11225604-04-01
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-01 D
Client ID: WBH-13
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260B
Analytical Date: 11/02/21 10:45
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3-Methyl-1-butene	ND		ug/l	10.0	--	5
Isopentane	182		ug/l	10.0	--	5
1-Pentene	ND		ug/l	10.0	--	5
2-Methyl-1-Butene	ND		ug/l	10.0	--	5
Pentane	ND		ug/l	10.0	--	5
trans-2-Pentene	ND		ug/l	10.0	--	5
Isoprene	ND		ug/l	10.0	--	5
cis-2-Pentene	ND		ug/l	10.0	--	5
Tertiary Butanol	ND		ug/l	125	--	5
2,2-Dimethylbutane	ND		ug/l	10.0	--	5
4-Methyl-1-pentene	ND		ug/l	10.0	--	5
Cyclopentane	56.8		ug/l	10.0	--	5
2,3-Dimethylbutane	18.6		ug/l	10.0	--	5
2-Methylpentane	ND		ug/l	10.0	--	5
Methyl tert butyl ether	ND		ug/l	10.0	--	5
3-Methylpentane	78.9		ug/l	10.0	--	5
1-Hexene	ND		ug/l	10.0	--	5
n-Hexane	ND		ug/l	10.0	--	5
Isopropyl Ether	ND		ug/l	10.0	--	5
trans-2-Hexene	ND		ug/l	10.0	--	5
2-Methyl-2-pentene	ND		ug/l	10.0	--	5
cis-2-Hexene	ND		ug/l	10.0	--	5
Ethyl-Tert-Butyl-Ether	ND		ug/l	10.0	--	5
2,2-Dimethylpentane	ND		ug/l	10.0	--	5
Methylcyclopentane	93.4		ug/l	10.0	--	5
2,4-Dimethylpentane	ND		ug/l	10.0	--	5
2,2,3-Trimethylbutane	ND		ug/l	10.0	--	5
1,2-Dichloroethane	ND		ug/l	10.0	--	5

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-01 D
Client ID: WBH-13
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3,3-Dimethylpentane	ND		ug/l	10.0	--	5
Cyclohexane	639		ug/l	10.0	--	5
2-Methylhexane	ND		ug/l	10.0	--	5
Benzene	754		ug/l	10.0	--	5
2,3-Dimethylpentane	17.9		ug/l	10.0	--	5
Thiophene	ND		ug/l	10.0	--	5
1,1-Dimethylcyclopentane	43.7		ug/l	10.0	--	5
3-Methylhexane	ND		ug/l	10.0	--	5
Tertiary-Amyl Methyl Ether	ND		ug/l	10.0	--	5
1,3-Dimethylcyclopentane (cis)	57.2		ug/l	10.0	--	5
3-Ethylpentane	ND		ug/l	10.0	--	5
1-Heptene/1,2-DMCP (trans)	107		ug/l	20.0	--	5
Isooctane	ND		ug/l	10.0	--	5
trans-3-Heptene	ND		ug/l	10.0	--	5
Heptane	ND		ug/l	10.0	--	5
trans-2-Heptene	ND		ug/l	10.0	--	5
cis-2-Heptene	ND		ug/l	10.0	--	5
2,2-Dimethylhexane	ND		ug/l	10.0	--	5
Methylcyclohexane	353		ug/l	10.0	--	5
2,5-Dimethylhexane	ND		ug/l	10.0	--	5
2,4-Dimethylhexane	ND		ug/l	10.0	--	5
Ethylcyclopentane	ND		ug/l	10.0	--	5
2,2,3-Trimethylpentane	ND		ug/l	10.0	--	5
2,3,4-Trimethylpentane	ND		ug/l	10.0	--	5
2,3,3-Trimethylpentane	ND		ug/l	10.0	--	5
Xylene (Total)[1]	46.1		ug/l	10.0	--	5
2,3-Dimethylhexane	ND		ug/l	10.0	--	5
2-Methylheptane	ND		ug/l	10.0	--	5
4-Methylheptane	ND		ug/l	10.0	--	5
3-Methylheptane	ND		ug/l	10.0	--	5
3-Ethylhexane	ND		ug/l	10.0	--	5
Toluene	ND		ug/l	10.0	--	5
2-Methylthiophene	ND		ug/l	10.0	--	5
1,4-Dimethylcyclohexane (trans)	27.8		ug/l	10.0	--	5
3-Methylthiophene	ND		ug/l	10.0	--	5
1-Octene	ND		ug/l	25.0	--	5
Octane	ND		ug/l	10.0	--	5

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-01 D
Client ID: WBH-13
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
1,2-Dimethylcyclohexane (trans)	53.0		ug/l	10.0	--	5
1,2-Dibromoethane	ND		ug/l	10.0	--	5
cis-2-Octene	ND		ug/l	10.0	--	5
Isopropylcyclopentane	ND		ug/l	10.0	--	5
1,2-Dimethylcyclohexane (cis)	13.2		ug/l	10.0	--	5
2,5-Dimethylheptane	15.3		ug/l	10.0	--	5
3,5-Dimethylheptane	ND		ug/l	10.0	--	5
3,3-Dimethylheptane	ND		ug/l	10.0	--	5
1,1,4-Trimethylcyclohexane	ND		ug/l	10.0	--	5
2,3-Dimethylheptane	13.1		ug/l	10.0	--	5
3,4-Dimethylheptane	12.9		ug/l	10.0	--	5
4-Methyloctane	ND		ug/l	10.0	--	5
2-Methyloctane	ND		ug/l	10.0	--	5
Ethylbenzene	36.8		ug/l	10.0	--	5
2-Ethylthiophene	ND		ug/l	10.0	--	5
3-Methyloctane	ND		ug/l	10.0	--	5
3,3-Diethylpentane	ND		ug/l	10.0	--	5
p/m-Xylene	46.1		ug/l	20.0	--	5
1-Nonene	ND		ug/l	25.0	--	5
trans-3-Nonene	ND		ug/l	10.0	--	5
cis-3-Nonene	ND		ug/l	10.0	--	5
Nonane (C9)	ND		ug/l	10.0	--	5
Styrene	ND		ug/l	10.0	--	5
o-Xylene	ND		ug/l	10.0	--	5
2-Nonene	ND		ug/l	25.0	--	5
Isopropylcyclohexane	23.7		ug/l	10.0	--	5
Isopropylbenzene	45.5		ug/l	10.0	--	5
3,3-Dimethyloctane	ND		ug/l	10.0	--	5
n-Propylbenzene	50.4		ug/l	10.0	--	5
2-Methylnonane	11.4		ug/l	10.0	--	5
3-Methylnonane	12.2		ug/l	10.0	--	5
1-Methyl-3-Ethylbenzene	ND		ug/l	10.0	--	5
1-Methyl-4-Ethylbenzene	18.4		ug/l	10.0	--	5
1,3,5-Trimethylbenzene	ND		ug/l	10.0	--	5
1-Decene	ND		ug/l	10.0	--	5
Isobutylcyclohexane	ND		ug/l	10.0	--	5
1-Methyl-2-Ethylbenzene	ND		ug/l	10.0	--	5

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-01 D
Client ID: WBH-13
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Decane (C10)	27.9		ug/l	10.0	--	5
tert-Butylbenzene	ND		ug/l	10.0	--	5
1,2,4-Trimethylbenzene	113		ug/l	10.0	--	5
Isobutylbenzene	ND		ug/l	10.0	--	5
sec-Butylbenzene	17.5		ug/l	10.0	--	5
1-Methyl-3-Isopropylbenzene	ND		ug/l	10.0	--	5
1-Methyl-4-Isopropylbenzene	ND		ug/l	10.0	--	5
1,2,3-Trimethylbenzene	ND		ug/l	10.0	--	5
1-Methyl-2-Isopropylbenzene	ND		ug/l	10.0	--	5
Indane	15.7		ug/l	10.0	--	5
1,3-Diethylbenzene	16.9		ug/l	10.0	--	5
1-Methyl-3-N-Propylbenzene	ND		ug/l	10.0	--	5
Indene	ND		ug/l	10.0	--	5
1-Methyl-4-N-Propylbenzene	13.0		ug/l	10.0	--	5
n-Butylbenzene	12.0		ug/l	10.0	--	5
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	10.0	--	5
1,2-Diethylbenzene	ND		ug/l	10.0	--	5
1-Methyl-2-N-Propylbenzene	ND		ug/l	10.0	--	5
1,4-Dimethyl-2-Ethylbenzene	13.8		ug/l	10.0	--	5
Undecane	36.0		ug/l	10.0	--	5
1,3-Dimethyl-4-Ethylbenzene	11.7		ug/l	10.0	--	5
1,3-Dimethyl-5-Ethylbenzene	52.5		ug/l	10.0	--	5
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	10.0	--	5
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	10.0	--	5
1,2,4,5-Tetramethylbenzene	34.9		ug/l	10.0	--	5
1,2,3,5-Tetramethylbenzene	33.6		ug/l	10.0	--	5
N-Pentylbenzene	ND		ug/l	10.0	--	5
1,2,3,4-Tetramethylbenzene	42.0		ug/l	10.0	--	5
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	10.0	--	5
Dodecane (C12)	29.9		ug/l	25.0	--	5
1,3,5-Triethylbenzene	ND		ug/l	10.0	--	5
Naphthalene	115		ug/l	10.0	--	5
Benzothiophene	ND		ug/l	10.0	--	5
1,2,4-Triethylbenzene	ND		ug/l	10.0	--	5
Hexylbenzene	ND		ug/l	10.0	--	5
MMT	ND		ug/l	25.0	--	5
Tridecane	ND		ug/l	25.0	--	5

Project Name: MONUMENT
Lab Number: L2157585
Project Number: 11225604-04-01
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-01 D
Client ID: WBH-13
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
2-Methylnaphthalene	128		ug/l	25.0	--	5
1-Methylnaphthalene	120		ug/l	25.0	--	5
Tetradecane (C14)	ND		ug/l	25.0	--	5
Pentadecane	ND		ug/l	25.0	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	99		70-130

Project Name: MONUMENT
Lab Number: L2157585
Project Number: 11225604-04-01
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-02 D
Client ID: BH-111
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:30
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260B
Analytical Date: 11/02/21 11:57
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3-Methyl-1-butene	ND		ug/l	20.0	--	10
Isopentane	61.0		ug/l	20.0	--	10
1-Pentene	ND		ug/l	20.0	--	10
2-Methyl-1-Butene	ND		ug/l	20.0	--	10
Pentane	ND		ug/l	20.0	--	10
trans-2-Pentene	ND		ug/l	20.0	--	10
Isoprene	ND		ug/l	20.0	--	10
cis-2-Pentene	ND		ug/l	20.0	--	10
Tertiary Butanol	ND		ug/l	250	--	10
2,2-Dimethylbutane	ND		ug/l	20.0	--	10
4-Methyl-1-pentene	ND		ug/l	20.0	--	10
Cyclopentane	ND		ug/l	20.0	--	10
2,3-Dimethylbutane	ND		ug/l	20.0	--	10
2-Methylpentane	ND		ug/l	20.0	--	10
Methyl tert butyl ether	ND		ug/l	20.0	--	10
3-Methylpentane	24.2		ug/l	20.0	--	10
1-Hexene	ND		ug/l	20.0	--	10
n-Hexane	ND		ug/l	20.0	--	10
Isopropyl Ether	ND		ug/l	20.0	--	10
trans-2-Hexene	ND		ug/l	20.0	--	10
2-Methyl-2-pentene	ND		ug/l	20.0	--	10
cis-2-Hexene	ND		ug/l	20.0	--	10
Ethyl-Tert-Butyl-Ether	ND		ug/l	20.0	--	10
2,2-Dimethylpentane	ND		ug/l	20.0	--	10
Methylcyclopentane	ND		ug/l	20.0	--	10
2,4-Dimethylpentane	ND		ug/l	20.0	--	10
2,2,3-Trimethylbutane	ND		ug/l	20.0	--	10
1,2-Dichloroethane	ND		ug/l	20.0	--	10

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-02 D
Client ID: BH-111
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:30
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3,3-Dimethylpentane	ND		ug/l	20.0	--	10
Cyclohexane	292		ug/l	20.0	--	10
2-Methylhexane	ND		ug/l	20.0	--	10
Benzene	1320		ug/l	20.0	--	10
2,3-Dimethylpentane	ND		ug/l	20.0	--	10
Thiophene	ND		ug/l	20.0	--	10
1,1-Dimethylcyclopentane	ND		ug/l	20.0	--	10
3-Methylhexane	ND		ug/l	20.0	--	10
Tertiary-Amyl Methyl Ether	ND		ug/l	20.0	--	10
1,3-Dimethylcyclopentane (cis)	21.7		ug/l	20.0	--	10
3-Ethylpentane	ND		ug/l	20.0	--	10
1-Heptene/1,2-DMCP (trans)	41.1		ug/l	40.0	--	10
Isooctane	ND		ug/l	20.0	--	10
trans-3-Heptene	ND		ug/l	20.0	--	10
Heptane	ND		ug/l	20.0	--	10
trans-2-Heptene	ND		ug/l	20.0	--	10
cis-2-Heptene	ND		ug/l	20.0	--	10
2,2-Dimethylhexane	ND		ug/l	20.0	--	10
Methylcyclohexane	131		ug/l	20.0	--	10
2,5-Dimethylhexane	ND		ug/l	20.0	--	10
2,4-Dimethylhexane	ND		ug/l	20.0	--	10
Ethylcyclopentane	ND		ug/l	20.0	--	10
2,2,3-Trimethylpentane	ND		ug/l	20.0	--	10
2,3,4-Trimethylpentane	ND		ug/l	20.0	--	10
2,3,3-Trimethylpentane	ND		ug/l	20.0	--	10
Xylene (Total)[1]	ND		ug/l	20.0	--	10
2,3-Dimethylhexane	ND		ug/l	20.0	--	10
2-Methylheptane	ND		ug/l	20.0	--	10
4-Methylheptane	ND		ug/l	20.0	--	10
3-Methylheptane	ND		ug/l	20.0	--	10
3-Ethylhexane	ND		ug/l	20.0	--	10
Toluene	ND		ug/l	20.0	--	10
2-Methylthiophene	ND		ug/l	20.0	--	10
1,4-Dimethylcyclohexane (trans)	ND		ug/l	20.0	--	10
3-Methylthiophene	ND		ug/l	20.0	--	10
1-Octene	ND		ug/l	50.0	--	10
Octane	ND		ug/l	20.0	--	10

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-02 D
Client ID: BH-111
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:30
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
1,2-Dimethylcyclohexane (trans)	22.0		ug/l	20.0	--	10
1,2-Dibromoethane	ND		ug/l	20.0	--	10
cis-2-Octene	ND		ug/l	20.0	--	10
Isopropylcyclopentane	ND		ug/l	20.0	--	10
1,2-Dimethylcyclohexane (cis)	ND		ug/l	20.0	--	10
2,5-Dimethylheptane	ND		ug/l	20.0	--	10
3,5-Dimethylheptane	ND		ug/l	20.0	--	10
3,3-Dimethylheptane	ND		ug/l	20.0	--	10
1,1,4-Trimethylcyclohexane	ND		ug/l	20.0	--	10
2,3-Dimethylheptane	ND		ug/l	20.0	--	10
3,4-Dimethylheptane	ND		ug/l	20.0	--	10
4-Methyloctane	ND		ug/l	20.0	--	10
2-Methyloctane	ND		ug/l	20.0	--	10
Ethylbenzene	ND		ug/l	20.0	--	10
2-Ethylthiophene	ND		ug/l	20.0	--	10
3-Methyloctane	ND		ug/l	20.0	--	10
3,3-Diethylpentane	ND		ug/l	20.0	--	10
p/m-Xylene	ND		ug/l	40.0	--	10
1-Nonene	ND		ug/l	50.0	--	10
trans-3-Nonene	ND		ug/l	20.0	--	10
cis-3-Nonene	ND		ug/l	20.0	--	10
Nonane (C9)	ND		ug/l	20.0	--	10
Styrene	ND		ug/l	20.0	--	10
o-Xylene	ND		ug/l	20.0	--	10
2-Nonene	ND		ug/l	50.0	--	10
Isopropylcyclohexane	ND		ug/l	20.0	--	10
Isopropylbenzene	31.6		ug/l	20.0	--	10
3,3-Dimethyloctane	ND		ug/l	20.0	--	10
n-Propylbenzene	27.9		ug/l	20.0	--	10
2-Methylnonane	ND		ug/l	20.0	--	10
3-Methylnonane	ND		ug/l	20.0	--	10
1-Methyl-3-Ethylbenzene	ND		ug/l	20.0	--	10
1-Methyl-4-Ethylbenzene	ND		ug/l	20.0	--	10
1,3,5-Trimethylbenzene	ND		ug/l	20.0	--	10
1-Decene	ND		ug/l	20.0	--	10
Isobutylcyclohexane	ND		ug/l	20.0	--	10
1-Methyl-2-Ethylbenzene	ND		ug/l	20.0	--	10

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-02 D
Client ID: BH-111
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:30
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Decane (C10)	ND		ug/l	20.0	--	10
tert-Butylbenzene	ND		ug/l	20.0	--	10
1,2,4-Trimethylbenzene	ND		ug/l	20.0	--	10
Isobutylbenzene	ND		ug/l	20.0	--	10
sec-Butylbenzene	ND		ug/l	20.0	--	10
1-Methyl-3-Isopropylbenzene	ND		ug/l	20.0	--	10
1-Methyl-4-Isopropylbenzene	ND		ug/l	20.0	--	10
1,2,3-Trimethylbenzene	ND		ug/l	20.0	--	10
1-Methyl-2-Isopropylbenzene	ND		ug/l	20.0	--	10
Indane	ND		ug/l	20.0	--	10
1,3-Diethylbenzene	ND		ug/l	20.0	--	10
1-Methyl-3-N-Propylbenzene	ND		ug/l	20.0	--	10
Indene	ND		ug/l	20.0	--	10
1-Methyl-4-N-Propylbenzene	ND		ug/l	20.0	--	10
n-Butylbenzene	ND		ug/l	20.0	--	10
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	20.0	--	10
1,2-Diethylbenzene	ND		ug/l	20.0	--	10
1-Methyl-2-N-Propylbenzene	ND		ug/l	20.0	--	10
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	20.0	--	10
Undecane	ND		ug/l	20.0	--	10
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	20.0	--	10
1,3-Dimethyl-5-Ethylbenzene	26.5		ug/l	20.0	--	10
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	20.0	--	10
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	20.0	--	10
1,2,4,5-Tetramethylbenzene	ND		ug/l	20.0	--	10
1,2,3,5-Tetramethylbenzene	ND		ug/l	20.0	--	10
N-Pentylbenzene	ND		ug/l	20.0	--	10
1,2,3,4-Tetramethylbenzene	22.7		ug/l	20.0	--	10
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	20.0	--	10
Dodecane (C12)	ND		ug/l	50.0	--	10
1,3,5-Triethylbenzene	ND		ug/l	20.0	--	10
Naphthalene	114		ug/l	20.0	--	10
Benzothiophene	ND		ug/l	20.0	--	10
1,2,4-Triethylbenzene	ND		ug/l	20.0	--	10
Hexylbenzene	ND		ug/l	20.0	--	10
MMT	ND		ug/l	50.0	--	10
Tridecane	ND		ug/l	50.0	--	10

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-02 D
Client ID: BH-111
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 10:30
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
2-Methylnaphthalene	99.5		ug/l	50.0	--	10
1-Methylnaphthalene	96.9		ug/l	50.0	--	10
Tetradecane (C14)	ND		ug/l	50.0	--	10
Pentadecane	ND		ug/l	50.0	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-03 D
Client ID: BH-42
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 11:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260B
Analytical Date: 11/02/21 13:08
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3-Methyl-1-butene	ND		ug/l	40.0	--	20
Isopentane	320		ug/l	40.0	--	20
1-Pentene	ND		ug/l	40.0	--	20
2-Methyl-1-Butene	ND		ug/l	40.0	--	20
Pentane	ND		ug/l	40.0	--	20
trans-2-Pentene	ND		ug/l	40.0	--	20
Isoprene	ND		ug/l	40.0	--	20
cis-2-Pentene	ND		ug/l	40.0	--	20
Tertiary Butanol	ND		ug/l	500	--	20
2,2-Dimethylbutane	ND		ug/l	40.0	--	20
4-Methyl-1-pentene	ND		ug/l	40.0	--	20
Cyclopentane	ND		ug/l	40.0	--	20
2,3-Dimethylbutane	ND		ug/l	40.0	--	20
2-Methylpentane	ND		ug/l	40.0	--	20
Methyl tert butyl ether	ND		ug/l	40.0	--	20
3-Methylpentane	105		ug/l	40.0	--	20
1-Hexene	ND		ug/l	40.0	--	20
n-Hexane	ND		ug/l	40.0	--	20
Isopropyl Ether	ND		ug/l	40.0	--	20
trans-2-Hexene	ND		ug/l	40.0	--	20
2-Methyl-2-pentene	ND		ug/l	40.0	--	20
cis-2-Hexene	ND		ug/l	40.0	--	20
Ethyl-Tert-Butyl-Ether	ND		ug/l	40.0	--	20
2,2-Dimethylpentane	ND		ug/l	40.0	--	20
Methylcyclopentane	ND		ug/l	40.0	--	20
2,4-Dimethylpentane	ND		ug/l	40.0	--	20
2,2,3-Trimethylbutane	ND		ug/l	40.0	--	20
1,2-Dichloroethane	ND		ug/l	40.0	--	20

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-03 D
Client ID: BH-42
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 11:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3,3-Dimethylpentane	ND		ug/l	40.0	--	20
Cyclohexane	508		ug/l	40.0	--	20
2-Methylhexane	ND		ug/l	40.0	--	20
Benzene	2700		ug/l	40.0	--	20
2,3-Dimethylpentane	ND		ug/l	40.0	--	20
Thiophene	ND		ug/l	40.0	--	20
1,1-Dimethylcyclopentane	44.3		ug/l	40.0	--	20
3-Methylhexane	ND		ug/l	40.0	--	20
Tertiary-Amyl Methyl Ether	ND		ug/l	40.0	--	20
1,3-Dimethylcyclopentane (cis)	52.9		ug/l	40.0	--	20
3-Ethylpentane	ND		ug/l	40.0	--	20
1-Heptene/1,2-DMCP (trans)	99.7		ug/l	80.0	--	20
Isooctane	ND		ug/l	40.0	--	20
trans-3-Heptene	ND		ug/l	40.0	--	20
Heptane	ND		ug/l	40.0	--	20
trans-2-Heptene	ND		ug/l	40.0	--	20
cis-2-Heptene	ND		ug/l	40.0	--	20
2,2-Dimethylhexane	ND		ug/l	40.0	--	20
Methylcyclohexane	332		ug/l	40.0	--	20
2,5-Dimethylhexane	ND		ug/l	40.0	--	20
2,4-Dimethylhexane	ND		ug/l	40.0	--	20
Ethylcyclopentane	ND		ug/l	40.0	--	20
2,2,3-Trimethylpentane	ND		ug/l	40.0	--	20
2,3,4-Trimethylpentane	ND		ug/l	40.0	--	20
2,3,3-Trimethylpentane	ND		ug/l	40.0	--	20
Xylene (Total)[1]	ND		ug/l	40.0	--	20
2,3-Dimethylhexane	ND		ug/l	40.0	--	20
2-Methylheptane	ND		ug/l	40.0	--	20
4-Methylheptane	ND		ug/l	40.0	--	20
3-Methylheptane	ND		ug/l	40.0	--	20
3-Ethylhexane	ND		ug/l	40.0	--	20
Toluene	ND		ug/l	40.0	--	20
2-Methylthiophene	ND		ug/l	40.0	--	20
1,4-Dimethylcyclohexane (trans)	ND		ug/l	40.0	--	20
3-Methylthiophene	ND		ug/l	40.0	--	20
1-Octene	ND		ug/l	100	--	20
Octane	ND		ug/l	40.0	--	20

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-03 D
Client ID: BH-42
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 11:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
1,2-Dimethylcyclohexane (trans)	ND		ug/l	40.0	--	20
1,2-Dibromoethane	ND		ug/l	40.0	--	20
cis-2-Octene	ND		ug/l	40.0	--	20
Isopropylcyclopentane	ND		ug/l	40.0	--	20
1,2-Dimethylcyclohexane (cis)	ND		ug/l	40.0	--	20
2,5-Dimethylheptane	ND		ug/l	40.0	--	20
3,5-Dimethylheptane	ND		ug/l	40.0	--	20
3,3-Dimethylheptane	ND		ug/l	40.0	--	20
1,1,4-Trimethylcyclohexane	ND		ug/l	40.0	--	20
2,3-Dimethylheptane	ND		ug/l	40.0	--	20
3,4-Dimethylheptane	ND		ug/l	40.0	--	20
4-Methyloctane	ND		ug/l	40.0	--	20
2-Methyloctane	ND		ug/l	40.0	--	20
Ethylbenzene	ND		ug/l	40.0	--	20
2-Ethylthiophene	ND		ug/l	40.0	--	20
3-Methyloctane	ND		ug/l	40.0	--	20
3,3-Diethylpentane	ND		ug/l	40.0	--	20
p/m-Xylene	ND		ug/l	80.0	--	20
1-Nonene	ND		ug/l	100	--	20
trans-3-Nonene	ND		ug/l	40.0	--	20
cis-3-Nonene	ND		ug/l	40.0	--	20
Nonane (C9)	ND		ug/l	40.0	--	20
Styrene	ND		ug/l	40.0	--	20
o-Xylene	ND		ug/l	40.0	--	20
2-Nonene	ND		ug/l	100	--	20
Isopropylcyclohexane	ND		ug/l	40.0	--	20
Isopropylbenzene	63.3		ug/l	40.0	--	20
3,3-Dimethyloctane	ND		ug/l	40.0	--	20
n-Propylbenzene	66.1		ug/l	40.0	--	20
2-Methylnonane	ND		ug/l	40.0	--	20
3-Methylnonane	ND		ug/l	40.0	--	20
1-Methyl-3-Ethylbenzene	ND		ug/l	40.0	--	20
1-Methyl-4-Ethylbenzene	ND		ug/l	40.0	--	20
1,3,5-Trimethylbenzene	ND		ug/l	40.0	--	20
1-Decene	ND		ug/l	40.0	--	20
Isobutylcyclohexane	ND		ug/l	40.0	--	20
1-Methyl-2-Ethylbenzene	ND		ug/l	40.0	--	20

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-03 D
Client ID: BH-42
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 11:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Decane (C10)	ND		ug/l	40.0	--	20
tert-Butylbenzene	ND		ug/l	40.0	--	20
1,2,4-Trimethylbenzene	ND		ug/l	40.0	--	20
Isobutylbenzene	ND		ug/l	40.0	--	20
sec-Butylbenzene	ND		ug/l	40.0	--	20
1-Methyl-3-Isopropylbenzene	ND		ug/l	40.0	--	20
1-Methyl-4-Isopropylbenzene	ND		ug/l	40.0	--	20
1,2,3-Trimethylbenzene	ND		ug/l	40.0	--	20
1-Methyl-2-Isopropylbenzene	ND		ug/l	40.0	--	20
Indane	ND		ug/l	40.0	--	20
1,3-Diethylbenzene	ND		ug/l	40.0	--	20
1-Methyl-3-N-Propylbenzene	ND		ug/l	40.0	--	20
Indene	ND		ug/l	40.0	--	20
1-Methyl-4-N-Propylbenzene	ND		ug/l	40.0	--	20
n-Butylbenzene	ND		ug/l	40.0	--	20
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	40.0	--	20
1,2-Diethylbenzene	ND		ug/l	40.0	--	20
1-Methyl-2-N-Propylbenzene	ND		ug/l	40.0	--	20
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	40.0	--	20
Undecane	ND		ug/l	40.0	--	20
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	40.0	--	20
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	40.0	--	20
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	40.0	--	20
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	40.0	--	20
1,2,4,5-Tetramethylbenzene	ND		ug/l	40.0	--	20
1,2,3,5-Tetramethylbenzene	ND		ug/l	40.0	--	20
N-Pentylbenzene	ND		ug/l	40.0	--	20
1,2,3,4-Tetramethylbenzene	ND		ug/l	40.0	--	20
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	40.0	--	20
Dodecane (C12)	ND		ug/l	100	--	20
1,3,5-Triethylbenzene	ND		ug/l	40.0	--	20
Naphthalene	127		ug/l	40.0	--	20
Benzothiophene	ND		ug/l	40.0	--	20
1,2,4-Triethylbenzene	ND		ug/l	40.0	--	20
Hexylbenzene	ND		ug/l	40.0	--	20
MMT	ND		ug/l	100	--	20
Tridecane	ND		ug/l	100	--	20

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

SAMPLE RESULTS

Lab ID: L2157585-03 D
Client ID: BH-42
Sample Location: MONUMENT, NM
Date Collected: 10/20/21 11:00
Date Received: 10/21/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
2-Methylnaphthalene	ND		ug/l	100	--	20
1-Methylnaphthalene	ND		ug/l	100	--	20
Tetradecane (C14)	ND		ug/l	100	--	20
Pentadecane	ND		ug/l	100	--	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 11/01/21 23:20
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-03 Batch: WG1566110-5					
3-Methyl-1-butene	ND		ug/l	2.00	--
Isopentane	ND		ug/l	2.00	--
1-Pentene	ND		ug/l	2.00	--
2-Methyl-1-Butene	ND		ug/l	2.00	--
Pentane	ND		ug/l	2.00	--
trans-2-Pentene	ND		ug/l	2.00	--
Isoprene	ND		ug/l	2.00	--
cis-2-Pentene	ND		ug/l	2.00	--
Tertiary Butanol	ND		ug/l	25.0	--
2,2-Dimethylbutane	ND		ug/l	2.00	--
4-Methyl-1-pentene	ND		ug/l	2.00	--
Cyclopentane	ND		ug/l	2.00	--
2,3-Dimethylbutane	ND		ug/l	2.00	--
2-Methylpentane	ND		ug/l	2.00	--
Methyl tert butyl ether	ND		ug/l	2.00	--
3-Methylpentane	ND		ug/l	2.00	--
1-Hexene	ND		ug/l	2.00	--
n-Hexane	ND		ug/l	2.00	--
Isopropyl Ether	ND		ug/l	2.00	--
trans-2-Hexene	ND		ug/l	2.00	--
2-Methyl-2-pentene	ND		ug/l	2.00	--
cis-2-Hexene	ND		ug/l	2.00	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	--
2,2-Dimethylpentane	ND		ug/l	2.00	--
Methylcyclopentane	ND		ug/l	2.00	--
2,4-Dimethylpentane	ND		ug/l	2.00	--
2,2,3-Trimethylbutane	ND		ug/l	2.00	--
1,2-Dichloroethane	ND		ug/l	2.00	--
3,3-Dimethylpentane	ND		ug/l	2.00	--

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 11/01/21 23:20
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-03 Batch: WG1566110-5					
Cyclohexane	ND		ug/l	2.00	--
2-Methylhexane	ND		ug/l	2.00	--
Benzene	ND		ug/l	2.00	--
2,3-Dimethylpentane	ND		ug/l	2.00	--
Thiophene	ND		ug/l	2.00	--
1,1-Dimethylcyclopentane	ND		ug/l	2.00	--
3-Methylhexane	ND		ug/l	2.00	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	--
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	--
3-Ethylpentane	ND		ug/l	2.00	--
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	--
Isooctane	ND		ug/l	2.00	--
trans-3-Heptene	ND		ug/l	2.00	--
Heptane	ND		ug/l	2.00	--
trans-2-Heptene	ND		ug/l	2.00	--
cis-2-Heptene	ND		ug/l	2.00	--
2,2-Dimethylhexane	ND		ug/l	2.00	--
Methylcyclohexane	ND		ug/l	2.00	--
2,5-Dimethylhexane	ND		ug/l	2.00	--
2,4-Dimethylhexane	ND		ug/l	2.00	--
Ethylcyclopentane	ND		ug/l	2.00	--
2,2,3-Trimethylpentane	ND		ug/l	2.00	--
2,3,4-Trimethylpentane	ND		ug/l	2.00	--
2,3,3-Trimethylpentane	ND		ug/l	2.00	--
Xylene (Total)[1]	ND		ug/l	2.00	--
2,3-Dimethylhexane	ND		ug/l	2.00	--
2-Methylheptane	ND		ug/l	2.00	--
4-Methylheptane	ND		ug/l	2.00	--
3-Methylheptane	ND		ug/l	2.00	--

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 11/01/21 23:20
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-03 Batch: WG1566110-5					
3-Ethylhexane	ND		ug/l	2.00	--
Toluene	ND		ug/l	2.00	--
2-Methylthiophene	ND		ug/l	2.00	--
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	--
3-Methylthiophene	ND		ug/l	2.00	--
1-Octene	ND		ug/l	5.00	--
Octane	ND		ug/l	2.00	--
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	--
1,2-Dibromoethane	ND		ug/l	2.00	--
cis-2-Octene	ND		ug/l	2.00	--
Isopropylcyclopentane	ND		ug/l	2.00	--
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	--
2,5-Dimethylheptane	ND		ug/l	2.00	--
3,5-Dimethylheptane	ND		ug/l	2.00	--
3,3-Dimethylheptane	ND		ug/l	2.00	--
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	--
2,3-Dimethylheptane	ND		ug/l	2.00	--
3,4-Dimethylheptane	ND		ug/l	2.00	--
4-Methyloctane	ND		ug/l	2.00	--
2-Methyloctane	ND		ug/l	2.00	--
Ethylbenzene	ND		ug/l	2.00	--
2-Ethylthiophene	ND		ug/l	2.00	--
3-Methyloctane	ND		ug/l	2.00	--
3,3-Diethylpentane	ND		ug/l	2.00	--
p/m-Xylene	ND		ug/l	4.00	--
1-Nonene	ND		ug/l	5.00	--
trans-3-Nonene	ND		ug/l	2.00	--
cis-3-Nonene	ND		ug/l	2.00	--
Nonane (C9)	ND		ug/l	2.00	--

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 11/01/21 23:20
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-03 Batch: WG1566110-5					
Styrene	ND		ug/l	2.00	--
o-Xylene	ND		ug/l	2.00	--
2-Nonene	ND		ug/l	5.00	--
Isopropylcyclohexane	ND		ug/l	2.00	--
Isopropylbenzene	ND		ug/l	2.00	--
3,3-Dimethyloctane	ND		ug/l	2.00	--
n-Propylbenzene	ND		ug/l	2.00	--
2-Methylnonane	ND		ug/l	2.00	--
3-Methylnonane	ND		ug/l	2.00	--
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	--
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	--
1,3,5-Trimethylbenzene	ND		ug/l	2.00	--
1-Decene	ND		ug/l	2.00	--
Isobutylcyclohexane	ND		ug/l	2.00	--
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	--
Decane (C10)	ND		ug/l	2.00	--
tert-Butylbenzene	ND		ug/l	2.00	--
1,2,4-Trimethylbenzene	ND		ug/l	2.00	--
Isobutylbenzene	ND		ug/l	2.00	--
sec-Butylbenzene	ND		ug/l	2.00	--
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	--
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	--
1,2,3-Trimethylbenzene	ND		ug/l	2.00	--
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	--
Indane	ND		ug/l	2.00	--
1,3-Diethylbenzene	ND		ug/l	2.00	--
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	--
Indene	ND		ug/l	2.00	--
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	--

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 11/01/21 23:20
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-03 Batch: WG1566110-5					
n-Butylbenzene	ND		ug/l	2.00	--
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	--
1,2-Diethylbenzene	ND		ug/l	2.00	--
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	--
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	--
Undecane	ND		ug/l	2.00	--
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	--
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	--
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	--
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	--
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	--
N-Pentylbenzene	ND		ug/l	2.00	--
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	--
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	--
Dodecane (C12)	ND		ug/l	5.00	--
1,3,5-Triethylbenzene	ND		ug/l	2.00	--
Naphthalene	ND		ug/l	2.00	--
Benzothiophene	ND		ug/l	2.00	--
1,2,4-Triethylbenzene	ND		ug/l	2.00	--
Hexylbenzene	ND		ug/l	2.00	--
MMT	ND		ug/l	5.00	--
Tridecane	ND		ug/l	5.00	--
2-Methylnaphthalene	ND		ug/l	5.00	--
1-Methylnaphthalene	ND		ug/l	5.00	--
Tetradecane (C14)	ND		ug/l	5.00	--
Pentadecane	ND		ug/l	5.00	--

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260B
Analytical Date: 11/01/21 23:20
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01-03 Batch: WG1566110-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: MONUMENT
Project Number: 11225604-04-01

Lab Number: L2157585
Report Date: 11/04/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01-03 Batch: WG1566110-3 WG1566110-4								
1-Pentene	105		110		50-130	5		30
Pentane	98		102		50-130	4		30
Tertiary Butanol	82		87		50-130	6		30
Cyclopentane	94		100		50-130	6		30
2-Methylpentane	99		102		50-130	3		30
Methyl tert butyl ether	94		97		50-130	3		30
3-Methylpentane	101		105		50-130	4		30
1-Hexene	98		102		50-130	4		30
n-Hexane	96		99		50-130	3		30
Isopropyl Ether	92		96		50-130	4		30
Ethyl-Tert-Butyl-Ether	90		92		50-130	2		30
Methylcyclopentane	100		102		50-130	2		30
2,4-Dimethylpentane	100		102		50-130	2		30
Cyclohexane	102		104		50-130	2		30
2-Methylhexane	98		100		50-130	2		30
Benzene	93		96		50-130	3		30
2,3-Dimethylpentane	99		102		50-130	3		30
3-Methylhexane	90		92		50-130	2		30
Tertiary-Amyl Methyl Ether	84		86		50-130	2		30
Isooctane	99		104		50-130	5		30
Heptane	106		108		50-130	2		30
Methylcyclohexane	96		99		50-130	3		30
2-Methylheptane	100		102		50-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MONUMENT
Project Number: 11225604-04-01

Lab Number: L2157585
Report Date: 11/04/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01-03 Batch: WG1566110-3 WG1566110-4								
3-Methylheptane	96		100		50-130	4		30
Toluene	92		96		50-130	4		30
Octane	100		104		50-130	4		30
Ethylbenzene	91		93		50-130	2		30
p/m-Xylene	92		94		50-130	2		30
Nonane (C9)	84		88		50-130	5		30
o-Xylene	93		96		50-130	3		30
Isopropylbenzene	92		94		50-130	2		30
n-Propylbenzene	92		94		50-130	2		30
1-Methyl-3-Ethylbenzene	90		92		50-130	2		30
1-Methyl-4-Ethylbenzene	93		95		50-130	2		30
1,3,5-Trimethylbenzene	90		93		50-130	3		30
1-Decene	75		78		50-130	4		30
1-Methyl-2-Ethylbenzene	92		94		50-130	2		30
Decane (C10)	94		100		50-130	6		30
1,2,4-Trimethylbenzene	87		88		50-130	1		30
sec-Butylbenzene	94		96		50-130	2		30
1-Methyl-4-N-Propylbenzene	90		90		50-130	0		30
n-Butylbenzene	90		91		50-130	1		30
1,2-Diethylbenzene	90		90		50-130	0		30
Undecane	90		94		50-130	4		30
N-Pentylbenzene	88		88		50-130	0		30
Dodecane (C12)	107		112		50-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MONUMENT
Project Number: 11225604-04-01

Lab Number: L2157585
Report Date: 11/04/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01-03 Batch: WG1566110-3 WG1566110-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Dibromofluoromethane	92		92		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	101		101		70-130

Project Name: MONUMENT
Project Number: 11225604-04-01

Lab Number: L2157585
Report Date: 11/04/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2157585-01A	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-01B	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-01C	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-02A	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-02B	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-02C	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-03A	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-03B	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-03C	Vial HCl preserved	A	NA		4.7	Y	Absent		A2-PIANO8260(14)
L2157585-04A	Vial HCl preserved	A	NA		4.7	Y	Absent		ARCHIVE()
L2157585-04B	Vial HCl preserved	A	NA		4.7	Y	Absent		ARCHIVE()

*Values in parentheses indicate holding time in days

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	MONUMENT	**Lab Number:**	L2157585
Project Number:	11225604-04-01	**Report Date:**	11/04/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	MONUMENT	**Lab Number:**	L2157585
Project Number:	11225604-04-01	**Report Date:**	11/04/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name: MONUMENT
Project Number: 11225604-04-01
Lab Number: L2157585
Report Date: 11/04/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE _____ OF _____

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 10/21/21

ALPHA Job #: L2157585

Client Information
Client: GHD SERVICES
Address: 6260 W 52ND AVE #105, ARVADA, CO 80002
Phone: 303 941-6156
Email: BRAD.STEPHENSON@GHD.COM

Project Information
Project Name: MONUMENT
Project Location: MONUMENT, NM
Project #: 12256604-04-01
Project Manager: BRAD STEPHENSON
ALPHA Quote #:

Report Information - Data Deliverables
☐ ADEx ☒ EMAIL

Billing Information
☐ Same as Client info PO #:

Turn-Around Time
☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Regulatory Requirements & Project Information Requirements
☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Additional Project Information:
ANALYZE WATER ONLY
PLEASE CALL ME

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
7585-01	WBH-13	10/20/21	1000	W		X	
-02	BH-111	10/20/21	1030	W		X	
-03	BH-42	10/20/21	1100	W		X	

Container Type	
Preservative	

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	10/20/21 1500	to ECD Ex Cadean AAC	10/20/21 1300 10/21/21 1025

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ALPHA 8 Walkup Dr. Westborough, MA 0158
GHD, Inc.
Delivery: 15-OCT-
Site ID: /Holly Fron
Contact: Brad Stapf

RT 369 FZ 368 1 10:30 0920 10:21

10:30

Part # 156297-205 RATE Exp 08/22

ORIGIN ID:HOBA (303) 941-6156
GHD
14998 W 6TH AVE STE 800
GOLDEN, CO 80401
UNITED STATES US

SHIP DATE: 20OCT21
ACTWGT: 8.90 LB
CAD: 6994246/SSFE2220
DIMS: 13x10x9 IN
BILL THIRD PARTY

TO ALPHA
8 WALKUP DR.
WESTBOROUGH MA 01581
(303) 941-6156
INV:
PO:
REF: 11225604-04-01
DEPT:

FedEx Express
J212021070901UK

THU - 21 OCT 10:30A
PRIORITY OVERNIGHT
AHS
01581
MA-US BOS

TRK# 0201 2851 7260 0920
XE BBFA

Appendix F

Toxicity Tables

Table F-1

Non-Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Oral RfD Value	Oral RfD Units	Oral Absorption Efficiency for Dermal (2)	Absorbed RfD for Dermal (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFD	Date of RfD (4) (MM-YY)
Benzene	NR	4.00E-03	mg/kg-d	100%	4.00E-03	mg/kg-d	immune	300	IRIS	Apr-03
Benzothiophene	--	--	--	--	--	--	--	--	--	--
Butadiene, 2-methyl-1,3- (isoprene)	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Butane, 2,2-dimethyl-	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Butane, 2,3-dimethyl-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	TRRP	Jan-21
Butylbenzene, n-	NR	5.00E-02	mg/kg-d	100%	5.00E-02	mg/kg-d	liver	3000	PPRTV	Sep-10
Butylbenzene, sec-	NR	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	central nervous system	3000	NCEA	1997
Butylbenzene, tert-	NR	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	central nervous system	3000	NCEA	1997
Cumene (isopropylbenzene)	NR	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	kidney	1000	IRIS	Aug-97
Cyclohexane	NR	5.00E+00	mg/kg-d	100%	5.00E+00	mg/kg-d	--	--	TRRP	Jan-21
Cyclopentane	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Cyclopentane, methyl-	NR	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	--	--	TRRP	Jan-21
Cymene, o- (1-Methyl-2-isopropylbenzene)	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Cymene, m- (1-Methyl-3-isopropylbenzene)	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Cymene, p- (1-Methyl-4-isopropylbenzene)	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Decane	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Decene	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dichloroethane, 1,2-	NR	7.80E-02	mg/kg-d	100%	7.80E-02	mg/kg-d	--	--	TRRP	Jan-21
Diethylbenzene, 1,2-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Diethylbenzene, 1,3-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Diethylpentane, 3,3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Diisopropyl ether (2,2'-oxybis-propane)	NR	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	--	--	TRRP	Jan-21
Dimethylbutane, 2,2-	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylbutane, 2,3-	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylcyclohexane, cis-1,2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylcyclohexane, trans-1,2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylcyclohexane, trans-1,4-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylcyclopentane, 1,1-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylcyclopentane, cis-1,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylcyclopentane, trans-1,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylheptane, 2,3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dimethylheptane, 2,4-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dimethylheptane, 2,5-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dimethylheptane, 3,3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dimethylheptane, 3,4-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dimethylheptane, 3,5-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997

Table F-1

Non-Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Oral RfD Value	Oral RfD Units	Oral Absorption Efficiency for Dermal (2)	Absorbed RfD for Dermal (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFD	Date of RfD (4) (MM-YY)
Dimethylhexane, 2,2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylhexane, 2,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylhexane, 2,4-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylhexane, 2,5-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethyloctane, 3,3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Dimethylpentane, 2,2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylpentane, 2,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylpentane, 2,4-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylpentane, 2,4-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethylpentane, 3,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Dimethyl-5-tert-Butylbenzene, 1,3-	C>10-C12 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Dodecane	C>10-C12 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Ethyl benzene	NR	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver & kidney	1000	IRIS	Jan-87
Ethylbenzene, 1,4-Dimethyl-2-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1,3-Dimethyl-4	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1,2-Dimethyl-4-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1,3-Dimethyl-2-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1,2-Dimethyl-3-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1,3-Dimethyl-5	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1-Methyl-2-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1-Methyl-3-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylbenzene, 1-Methyl-4-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Ethylcyclopentane	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Ethyl tert-butyl ether (ETBE, 2-ethyl-2-ethoxypropane)	NR	1.00E-03	mg/kg-d	100%	1.00E-03	mg/kg-d	--	--	TRRP	Jan-21
Ethylene dibromide (dibromoethane, 1,2-)	NR	9.00E-03	mg/kg-d	100%	9.00E-03	mg/kg-d	endrocrine, reproductive, liver	3000	IRIS	Jul-04
Ethylhexane, 3-	C>6-C8 Aromatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	--	--	TRRP	Jan-21
Ethylpentane, 3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Ethylthiophene, 2-	--	--	--	--	--	--	--	--	--	--
Heptane, n-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Heptene, 1-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Heptene, cis-2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Heptene, trans-2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Heptene, trans-3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Hexane, n-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Hexene, 1-	NR	3.30E-01	mg/kg-d	100%	3.30E-01	mg/kg-d	--	--	TRRP	Jan-21

Table F-1

Non-Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Oral RfD Value	Oral RfD Units	Oral Absorption Efficiency for Dermal (2)	Absorbed RfD for Dermal (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFD	Date of RfD (4) (MM-YY)
Hexene, cis-2-	NR	3.30E-01	mg/kg-d	100%	3.30E-01	mg/kg-d	--	--	TRRP	Jan-21
Hexene, trans-2-	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Hexylbenzene	C>10-C12 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Indane	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Indene	NR	2.00E-02	mg/kg-d	100%	2.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Isobutylbenzene	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Isobutylcyclohexane	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Isopentane	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Isopropylcyclohexane	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Isopropylcyclopentane	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methyl cyclohexane	NR	5.00E+00	mg/kg-d	100%	5.00E+00	mg/kg-d	--	--	TRRP	Jan-21
Methyl-1-butene, 2-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Methyl-1-butene, 3-	methylbutenes	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Methyl-2-butene, 2-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Methyl-2-pentene, 2-	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	15%	9.00E-03	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methyl-2-pentene, 3- (cis & trans mixture)	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	15%	9.00E-03	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methyl-1-pentene, 4-	C6 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methylheptane, 2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	7%	4.20E-03	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methylheptane, 3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	7%	4.20E-03	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methylheptane, 4-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	0.7%	4.20E-04	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methylhexane, 2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	0.7%	4.20E-04	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methylhexane, 3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	2.5%	1.50E-03	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Methylnaphthalene, 1-	NR	7.00E-02	mg/kg-d	2.5%	1.75E-03	mg/kg-d	respiratory	1000	ATSDR	Aug-05
Methylnaphthalene, 2-	NR	4.00E-03	mg/kg-d	5%	2.00E-04	mg/kg-d	respiratory	1000	IRIS	Dec-03
Methylnonane, 2-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	5%	5.00E-03	mg/kg-d	liver	1000	TPHCWG	1997
Methylnonane, 3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	1.3%	1.30E-03	mg/kg-d	liver	1000	TPHCWG	1997
Methyloctane, 2-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	1.3%	1.30E-03	mg/kg-d	liver	1000	TPHCWG	1997
Methyloctane, 3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	2.5%	2.50E-03	mg/kg-d	liver	1000	TPHCWG	1997
Methyloctane, 4-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	2.5%	2.50E-03	mg/kg-d	liver	1000	TPHCWG	1997
MMT (Methylcyclopentadienyl manganese tricarbonyl)	--	--	--	--	--	--	--	--	--	--
MTBE (methyl tert-butyl ether)	NR	1.00E-02	mg/kg-d	100%	1.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Naphthalene	NR	2.00E-02	mg/kg-d	100%	2.00E-02	mg/kg-d	body weight	3000	IRIS	Sep-98
Nonane	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Nonene, 1- (n-)	NR	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	--	--	TRRP	Jan-21
Nonene, 2-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997

Table F-1

Non-Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Oral RfD Value	Oral RfD Units	Oral Absorption Efficiency for Dermal (2)	Absorbed RfD for Dermal (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFD	Date of RfD (4) (MM-YY)
Nonene, cis-3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Nonene, trans-3-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Octane, n-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Octene, 1-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Octene, cis-2-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Pentadecane	C>12-C16 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Pentane	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Pentane, 2-methyl-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Pentane, 3-methyl-	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Pentene, 1-	use tox values for 2-Pentene	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Pentene, 2- (cis & trans mixture)	NR	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Pentylbenzene, n-	C>10-C12 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Propylbenzene, n-	NR	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Propylbenzene, 1-Methyl-2-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Propylbenzene, 1-Methyl-3-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Propylbenzene, 1-Methyl-4-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Styrene	NR	2.00E-01	mg/kg-d	100%	2.00E-01	mg/kg-d	liver	1000	IRIS	Jan-87
Tert-amyl-methyl ether (TAME)	NR	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Tert-butyl alcohol (2-methyl-2-propanol) (TBA)	NR	9.00E-02	mg/kg-d	100%	9.00E-02	mg/kg-d	--	--	TRRP	Jan-21
Tetradecane	C>12-C16 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Tetramethylbenzene, 1,2,3,4-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Tetramethylbenzene, 1,2,3,5-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Tetramethylbenzene, 1,2,4,5-	C>8-C10 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Thiophene	--	--	--	--	--	--	--	--	--	--
Thiophene, 2-Methyl-	--	--	--	--	--	--	--	--	--	--
Thiophene, 3-Methyl-	--	--	--	--	--	--	--	--	--	--
Toluene	NR	8.00E-02	mg/kg-d	100%	8.00E-02	mg/kg-d	kidney	3000	IRIS	Sep-05
Tridecane	C>12-C16 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Triethylbenzene, 1,2,4-	C>10-C12 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Triethylbenzene, 1,3,5-	C>10-C12 Aromatic	4.00E-02	mg/kg-d	100%	4.00E-02	mg/kg-d	body weight	--	TPHCWG	1997
Trimethylbenzene, 1,2,3-	NR	3.40E-02	mg/kg-d	100%	3.40E-02	mg/kg-d	--	--	TRRP	Jan-21
Trimethylbenzene, 1,2,4-	NR	3.40E-02	mg/kg-d	100%	3.40E-02	mg/kg-d	--	--	TRRP	Jan-21
Trimethylbenzene, 1,3,5-	NR	3.40E-02	mg/kg-d	100%	3.40E-02	mg/kg-d	--	--	TRRP	Jan-21
Trimethylbutane, 2,2,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Trimethylcyclohexane, 1,1,4-	C>8-C10 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997

Table F-1

Non-Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Oral RfD Value	Oral RfD Units	Oral Absorption Efficiency for Dermal (2)	Absorbed RfD for Dermal (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFD	Date of RfD (4) (MM-YY)
Trimethylpentane, 2,2,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Trimethylpentane, 2,3,3-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Trimethylpentane, 2,2,4- (isooctane)	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Trimethylpentane, 2,3,4-	C>6-C8 Aliphatic <53% n-hexane	6.00E-02	mg/kg-d	100%	6.00E-02	mg/kg-d	central nervous system	10000	HEAST	Jul-97
Undecane	C>10-C12 Aliphatic	1.00E-01	mg/kg-d	100%	1.00E-01	mg/kg-d	liver	1000	TPHCWG	1997
Xylene, m-	NR	2.00E+00	mg/kg-d	100%	2.00E+00	mg/kg-d	central nervous system & body weight	100	HEAST	Jul-97
Xylene, o-	NR	2.00E+00	mg/kg-d	100%	2.00E+00	mg/kg-d	central nervous system & body weight	100	HEAST	Jul-97
Xylene, p-	NR	2.00E+00	mg/kg-d	100%	2.00E+00	mg/kg-d	central nervous system & body weight	100	HEAST	Jul-97
Xylenes	NR	2.00E-01	mg/kg-d	100%	2.00E-01	mg/kg-d	body weight	1000	IRIS	Feb-03

Notes:

-- = Not Available
NR = Not Required
(1) No toxicity data available, therefore surrogate toxicity data implemented.
(2) USEPA, Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Part E Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005, July 2004.
(3) Adjusted Dermal RfD = Oral RfD x Oral to Dermal Adjustment Factor
(4) Integrated Risk Information System (IRIS) Database, accessed August 2021.
Note: dates of RfD provided is the last revision date of the IRIS toxicity data provided (http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList).
Provisional Peer Reviewed Toxicity Values (PPRTV) Database, accessed August 2021.
Note: dates of RfD provided is the last revision date of the PPRTV toxicity data provided (https://hhpprtv.ornl.gov/).
Agency for Toxic Substances and Disease Registry (ATSDR) Database, accessed August 2021.
Note: dates of RfD provided is the last revision date of the ATSDR toxicity data provided (http://www.atsdr.cdc.gov).
Health Effects Assessment Summary Tables (HEAST), EPA 540/R-97-036, July 1997
Texas Commission on Environmental Quality (TCEQ) Final Development Support Documents (DSDs), accessed August 2021.
Note: dates of RfD provided is the last revision date of the TCEQ toxicity data provided (https://www.tceq.texas.gov/toxicology/dsd/final).
Texas Risk Reduction Program (TRRP), Toxicity Factors Table, January 2021.
National Center for Environmental Assessment (NCEA),
California Office of Environmental Health Hazard Assessment (OEHHA), accessed August 2021.
Note: dates of CSF provided is the last revision date of the OEHHA toxicity data provided (https://oehha.ca.gov/chemicals).

Table F-2

Non-Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Value Inhalation RfC	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFC	Date of RfC (2) (MM-YY)
Benzene	NR	2.80E-01	mg/m^3	immune	30	TCEQ	Sep-15
Benzothiophene	--	--	--	--	--	--	--
Butadiene, 2-methyl-1,3- (isoprene)	NR	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Butane, 2,2-dimethyl-	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Butane, 2,3-dimethyl-	NR	1.80E+01	mg/m^3	central nervous system	100	TRRP	Jan-21
Butylbenzene, n-	--	--	--	--	--	--	--
Butylbenzene, sec-	--	--	--	--	--	--	--
Butylbenzene, tert-	--	--	--	--	--	--	--
Cumene (isopropylbenzene)	NR	4.00E-01	mg/m^3	kidney	1000	IRIS	Aug-97
Cyclohexane	NR	6.00E+00	mg/m^3	developmental	300	IRIS	Sep-03
Cyclopentane	NR	2.40E+01	mg/m^3	central nervous system	100	TCEQ	Sep-15
Cyclopentane, methyl-	NR	1.00E+00	mg/m^3	--	--	TRRP	Jan-21
Cymene, o- (1-Methyl-2-isopropylbenzene)	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Cymene, m- (1-Methyl-3-isopropylbenzene)	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Cymene, p- (1-Methyl-4-isopropylbenzene)	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Decane	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Decene	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dichloroethane, 1,2-	NR	4.40E-02	mg/m^3	--	--	TRRP	Jan-21
Diethylbenzene, 1,2-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Diethylbenzene, 1,3-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Diethylpentane, 3,3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Diisopropyl ether (2,2'-oxybis-propane)	NR	7.00E-01	mg/m^3	developmental	100	PPRTV	Apr-11
Dimethylbutane, 2,2-	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylbutane, 2,3-	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylcyclohexane, cis-1,2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylcyclohexane, trans-1,2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylcyclohexane, trans-1,4-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylcyclopentane, 1,1-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylcyclopentane, cis-1,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylcyclopentane, trans-1,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylheptane, 2,3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dimethylheptane, 2,4-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dimethylheptane, 2,5-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21

Table F-2

Non-Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Value Inhalation RfC	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFC	Date of RfC (2) (MM-YY)
Dimethylheptane, 3,3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dimethylheptane, 3,4-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dimethylheptane, 3,5-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dimethylhexane, 2,2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylhexane, 2,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylhexane, 2,4-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylhexane, 2,5-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethyloctane, 3,3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Dimethylpentane, 2,2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylpentane, 2,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylpentane, 2,4-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylpentane, 2,4-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethylpentane, 3,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Dimethyl-5-tert-Butylbenzene, 1,3-	C>10-C12 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Dodecane	C>10-C12 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Ethyl benzene	NR	1.90E+00	mg/m^3	kidney	30	TCEQ	Sep-15
Ethylbenzene, 1,4-Dimethyl-2-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1,3-Dimethyl-4	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1,2-Dimethyl-4-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1,3-Dimethyl-2-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1,2-Dimethyl-3-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1,3-Dimethyl-5	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1-Methyl-2-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1-Methyl-3-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylbenzene, 1-Methyl-4-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Ethylcyclopentane	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Ethyl tert-butyl ether (ETBE, 2-ethyl-2-ethoxypropane)	NR	3.00E-01	mg/m^3	--	--	TRRP	Jan-21
Ethylene dibromide (dibromoethane, 1,2-)	NR	6.70E-02	mg/m^3	inflammation of nasal cavity	300	TCEQ	Nov-17
Ethylhexane, 3-	C>6-C8 Aromatic	1.90E+00	mg/m^3	--	--	TRRP	Jan-21
Ethylpentane, 3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Ethylthiophene, 2-	--	--	--	--	--	--	--
Heptane, n-	NR	9.00E+00	mg/m^3	body weight	180	TCEQ	Sep-16
Heptene, 1-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997

Table F-2

Non-Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Value Inhalation RfC	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFC	Date of RfC (2) (MM-YY)
Heptene, cis-2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Heptene, trans-2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Heptene, trans-3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Hexane, n-	NR	6.70E-01	mg/m^3	central nervous system	300	TCEQ	Aug-17
Hexene, 1-	NR	1.10E-01	mg/m^3	--	--	TRRP	Jan-21
Hexene, cis-2-	NR	1.10E-01	mg/m^3	--	--	TRRP	Jan-21
Hexene, trans-2-	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Hexylbenzene	C>10-C12 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Indane	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Indene	NR	3.00E-03	mg/m^3	--	--	TRRP	Jan-21
Isobutylbenzene	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Isobutylcyclohexane	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Isopentane	NR	2.40E+01	mg/m^3	central nervous system	100	TCEQ	Sep-15
Isopropylcyclohexane	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Isopropylcyclopentane	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methyl cyclohexane	NR	3.00E+00	mg/m^3	kidney	100	HEAST	Jul-97
Methyl-1-butene, 2-	NR	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Methyl-1-butene, 3-	methylbutenes	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Methyl-2-butene, 2-	NR	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Methyl-2-pentene, 2-	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methyl-2-pentene, 3- (cis & trans mixture)	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methyl-1-pentene, 4-	C6 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methylheptane, 2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methylheptane, 3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methylheptane, 4-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methylhexane, 2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methylhexane, 3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Methylnaphthalene, 1-	--	--	--	--	--	--	--
Methylnaphthalene, 2-	--	--	--	--	--	--	--
Methylnonane, 2-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Methylnonane, 3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Methyloctane, 2-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Methyloctane, 3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21

Table F-2

Non-Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Value Inhalation RfC	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFC	Date of RfC (2) (MM-YY)
Methyloctane, 4-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
MMT (Methylcyclopentadienyl manganese tricarbonyl)	--	--	--	--	--	--	--
MTBE (methyl tert-butyl ether)	NR	3.00E+00	mg/m^3	liver	100	IRIS	Sep-93
Naphthalene	NR	3.00E-03	mg/m^3	respiratory & central nervous system	3000	IRIS	Sep-98
Nonane	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Nonene, 1- (n-)	--	--	--	--	--	--	--
Nonene, 2-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Nonene, cis-3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Nonene, trans-3-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Octane, n-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Octene, 1-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Octene, cis-2-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Pentadecane	C>12-C16 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Pentane	NR	2.40E+01	mg/m^3	central nervous system	100	TCEQ	Sep-15
Pentane, 2-methyl-	NR	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Pentane, 3-methyl-	NR	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Pentene, 1-	use tox values for 2-Pentene	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Pentene, 2- (cis & trans mixture)	NR	1.80E+01	mg/m^3	--	--	TRRP	Jan-21
Pentylbenzene, n-	C>10-C12 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Propylbenzene, n-	NR	4.00E-01	mg/m^3	--	--	TRRP	Jan-21
Propylbenzene, 1-Methyl-2-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Propylbenzene, 1-Methyl-3-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Propylbenzene, 1-Methyl-4-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Styrene	NR	4.70E-01	mg/m^3	central nervous system	1	TCEQ	Aug-08
Tert-amyl-methyl ether (TAME)	--	--	--	--	--	--	--
Tert-butyl alcohol (2-methyl-2-propanol) (TBA)	--	--	--	--	--	--	--
Tetradecane	C>12-C16 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Tetramethylbenzene, 1,2,3,4-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Tetramethylbenzene, 1,2,3,5-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Tetramethylbenzene, 1,2,4,5-	C>8-C10 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Thiophene	--	--	--	--	--	--	--
Thiophene, 2-Methyl-	--	--	--	--	--	--	--
Thiophene, 3-Methyl-	--	--	--	--	--	--	--

Table F-2

Non-Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Surrogate (1)	Value Inhalation RfC	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Source of RFC	Date of RfC (2) (MM-YY)
Toluene	NR	4.10E+00	mg/m^3	vision impairment	10	TCEQ	Sep-15
Tridecane	C>12-C16 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Triethylbenzene, 1,2,4-	C>10-C12 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Triethylbenzene, 1,3,5-	C>10-C12 Aromatic	2.00E-01	mg/m^3	body weight	1000	TPHCWG	1997
Trimethylbenzene, 1,2,3-	NR	1.80E-01	mg/m^3	central nervous system	90	TCEQ	Sep-15
Trimethylbenzene, 1,2,4-	NR	1.80E-01	mg/m^3	central nervous system	90	TCEQ	Sep-15
Trimethylbenzene, 1,3,5-	NR	1.80E-01	mg/m^3	central nervous system	90	TCEQ	Sep-15
Trimethylbutane, 2,2,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Trimethylcyclohexane, 1,1,4-	C>8-C10 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Trimethylpentane, 2,2,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Trimethylpentane, 2,3,3-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Trimethylpentane, 2,2,4- (isooctane)	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Trimethylpentane, 2,3,4-	C>6-C8 Aliphatic <53% n-hexane	1.84E+01	mg/m^3	central nervous system	100	TPHCWG	1997
Undecane	C>10-C12 Aliphatic	5.00E-01	mg/m^3	--	--	TRRP	Jan-21
Xylene, m-	NR	6.10E-01	mg/m^3	respiratory & central nervous system	900	TCEQ	Sep-15
Xylene, o-	NR	6.10E-01	mg/m^3	respiratory & central nervous system	900	TCEQ	Sep-15
Xylene, p-	NR	6.10E-01	mg/m^3	respiratory & central nervous system	900	TCEQ	Sep-15
Xylenes	NR	6.10E-01	mg/m^3	respiratory & central nervous system	900	TCEQ	Sep-15

Notes:

-- = Not Available
NR = Not Required
(1) No toxicity data available, therefore surrogate toxicity data implemented.
(2) Integrated Risk Information System (IRIS) Database, accessed August 2021.
Note: dates of RfC provided is the last revision date of the IRIS toxicity data provided (http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList).
Provisional Peer Reviewed Toxicity Values (PPRTV) Database, accessed August 2021
Note: dates of RfC provided is the last revision date of the PPRTV toxicity data provided (https://hhpprtv.ornl.gov/).
Health Effects Assessment Summary Tables (HEAST), EPA 540/R-97-036, July 1997
Texas Commission on Environmental Quality (TCEQ) Final Development Support Documents (DSDs), accessed August 2021
Note: dates of RfC provided is the last revision date of the TCEQ toxicity data provided (https://www.tceq.texas.gov/toxicology/dsd/final).
Texas Risk Reduction Program (TRRP), Toxicity Factors Table, January 2021.
TPHCWG: Total Petroleum Hydrocarbon Working Group, Volume 4: Development of Fraction Scientific Reference Doses (RfDs) and Reference Concentrations (RfCs), 1997.

Table F-3

Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Oral Cancer Slope Factor (CSF)	Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source of CSF	Date of CSF (3) (MM-YY)
Benzene	1.50E-02	100%	1.50E-02	$(mg/kg\text{-}day)^{-1}$	Human carcinogen	TCEQ	Sep-15
Benzothiophene	--	--	--	--	--	--	--
Butadiene, 2-methyl-1,3- (isoprene)	--	--	--	--	—	--	--
Butane, 2,2-dimethyl-	--	--	--	--	—	--	--
Butane, 2,3-dimethyl-	--	--	--	--	—	--	--
Butylbenzene, n-	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Butylbenzene, sec-	--	--	--	--	Inadequate information to assess carcinogenic potential	--	--
Butylbenzene, tert-	--	--	--	--	Inadequate information to assess carcinogenic potential	--	--
Cumene (isopropylbenzene)	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Cyclohexane	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Cyclopentane	--	--	--	--	—	--	--
Cyclopentane, methyl-	--	--	--	--	—	--	--
Cymene, o- (1-Methyl-2-isopropylbenzene)	--	--	--	--	—	--	--
Cymene, m- (1-Methyl-3-isopropylbenzene)	--	--	--	--	—	--	--
Cymene, p- (1-Methyl-4-isopropylbenzene)	--	--	--	--	—	--	--
Decane	--	--	--	--	—	--	--
Decene	--	--	--	--	—	--	--
Dichloroethane, 1,2-	9.10E-02	100%	9.10E-02	$(mg/kg\text{-}day)^{-1}$	Probable human carcinogen based on sufficient evidence of carcinogenicity in animals	IRIS	Mar-87
Diethylbenzene, 1,2-	--	--	--	--	—	--	--
Diethylbenzene, 1,3-	--	--	--	--	—	--	--
Diethylpentane, 3,3-	--	--	--	--	—	--	--
Diisopropyl ether (2,2'-oxybis-propane)	--	--	--	--	—	--	--
Dimethylbutane, 2,2-	--	--	--	--	—	--	--
Dimethylbutane, 2,3-	--	--	--	--	—	--	--
Dimethylcyclohexane, cis-1,2-	--	--	--	--	—	--	--
Dimethylcyclohexane, trans-1,2-	--	--	--	--	—	--	--
Dimethylcyclohexane, trans-1,4-	--	--	--	--	—	--	--
Dimethylcyclopentane, 1,1-	--	--	--	--	—	--	--
Dimethylcyclopentane, cis-1,3-	--	--	--	--	—	--	--
Dimethylcyclopentane, trans-1,3-	--	--	--	--	—	--	--
Dimethylheptane, 2,3-	--	--	--	--	—	--	--
Dimethylheptane, 2,4-	--	--	--	--	—	--	--
Dimethylheptane, 2,5-	--	--	--	--	—	--	--
Dimethylheptane, 3,3-	--	--	--	--	—	--	--

Table F-3

Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Oral Cancer Slope Factor (CSF)	Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source of CSF	Date of CSF (3) (MM-YY)
Dimethylheptane, 3,4-	--	--	--	--	—	--	--
Dimethylheptane, 3,5-	--	--	--	--	—	--	--
Dimethylhexane, 2,2-	--	--	--	--	—	--	--
Dimethylhexane, 2,3-	--	--	--	--	—	--	--
Dimethylhexane, 2,4-	--	--	--	--	—	--	--
Dimethylhexane, 2,5-	--	--	--	--	—	--	--
Dimethyloctane, 3,3-	--	--	--	--	—	--	--
Dimethylpentane, 2,2-	--	--	--	--	—	--	--
Dimethylpentane, 2,3-	--	--	--	--	—	--	--
Dimethylpentane, 2,4-	--	--	--	--	—	--	--
Dimethylpentane, 2,4-	--	--	--	--	—	--	--
Dimethylpentane, 3,3-	--	--	--	--	—	--	--
Dimethyl-5-tert-Butylbenzene, 1,3-	--	--	--	--	—	--	--
Dodecane	--	--	--	--	—	--	--
Ethyl benzene	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Ethylbenzene, 1,4-Dimethyl-2-	--	--	--	--	—	--	--
Ethylbenzene, 1,3-Dimethyl-4	--	--	--	--	—	--	--
Ethylbenzene, 1,2-Dimethyl-4-	--	--	--	--	—	--	--
Ethylbenzene, 1,3-Dimethyl-2-	--	--	--	--	—	--	--
Ethylbenzene, 1,2-Dimethyl-3-	--	--	--	--	—	--	--
Ethylbenzene, 1,3-Dimethyl-5	--	--	--	--	—	--	--
Ethylbenzene, 1-Methyl-2-	--	--	--	--	—	--	--
Ethylbenzene, 1-Methyl-3-	--	--	--	--	—	--	--
Ethylbenzene, 1-Methyl-4-	--	--	--	--	—	--	--
Ethylcyclopentane	--	--	--	--	—	--	--
Ethyl tert-butyl ether (ETBE, 2-ethyl-2-ethoxypropane)	--	--	--	--	—	--	--
Ethylene dibromide (dibromoethane, 1,2-)	2.00E+00	100%	2.00E+00	(mg/kg-day) $^{-1}$	Likely to be carcinogenic to humans	IRIS	Jul-04
Ethylhexane, 3-	—	--	--	--	—	—	
Ethylpentane, 3-	--	--	--	--	—	--	--
Ethylthiophene, 2-	--	--	--	--	--	--	--
Heptane, n-	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Heptene, 1-	--	--	--	--	—	--	--
Heptene, cis-2-	--	--	--	--	—	--	--
Heptene, trans-2-	--	--	--	--	—	--	--

Table F-3

Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Oral Cancer Slope Factor (CSF)	Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source of CSF	Date of CSF (3) (MM-YY)
Heptene, trans-3-	--	--	--	--	--	--	--
Hexane, n-	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Hexene, 1-	--	--	--	--	--	--	--
Hexene, cis-2-	--	--	--	--	--	--	--
Hexene, trans-2-	--	--	--	--	--	--	--
Hexylbenzene	--	--	--	--	--	--	--
Indane	--	--	--	--	--	--	--
Indene	--	--	--	--	--	--	--
Isobutylbenzene	--	--	--	--	--	--	--
Isobutylcyclohexane	--	--	--	--	--	--	--
Isopentane	--	--	--	--	--	--	--
Isopropylcyclohexane	--	--	--	--	--	--	--
Isopropylcyclopentane	--	--	--	--	--	--	--
Methyl cyclohexane	--	--	--	--	Inadequate information to assess carcinogenic potential	--	--
Methyl-1-butene, 2-	--	--	--	--	--	--	--
Methyl-1-butene, 3-	--	--	--	--	--	--	--
Methyl-2-butene, 2-	--	--	--	--	--	--	--
Methyl-2-pentene, 2-	--	--	--	--	--	--	--
Methyl-2-pentene, 3- (cis & trans mixture)	--	--	--	--	--	--	--
Methyl-1-pentene, 4-	--	--	--	--	--	--	--
Methylheptane, 2-	--	--	--	--	--	--	--
Methylheptane, 3-	--	--	--	--	--	--	--
Methylheptane, 4-	--	--	--	--	--	--	--
Methylhexane, 2-	--	--	--	--	--	--	--
Methylhexane, 3-	--	--	--	--	--	--	--
Methylnaphthalene, 1-	2.90E-02	100%	2.90E-02	$(mg/kg\text{-}day)^{-1}$	Suggestive evidence of carcinogenic potential	PPRTV	Jan-08
Methylnaphthalene, 2-	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Methylnonane, 2-	--	--	--	--	--	--	--
Methylnonane, 3-	--	--	--	--	--	--	--
Methyloctane, 2-	--	--	--	--	--	--	--
Methyloctane, 3-	--	--	--	--	--	--	--
Methyloctane, 4-	--	--	--	--	--	--	--
MMT (Methylcyclopentadienyl manganese tricarbonyl)	--	--	--	--	--	--	--
MTBE (methyl tert-butyl ether)	1.80E-03	100%	1.80E-03	$(mg/kg\text{-}day)^{-1}$	Possible human carcinogen	OEHHA	Jan-11

Table F-3

Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Oral Cancer Slope Factor (CSF)	Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source of CSF	Date of CSF (3) (MM-YY)
Naphthalene	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Nonane	--	--	--	--	--	--	--
Nonene, 1- (n-)	--	--	--	--	--	--	--
Nonene, 2-	--	--	--	--	--	--	--
Nonene, cis-3-	--	--	--	--	--	--	--
Nonene, trans-3-	--	--	--	--	--	--	--
Octane, n-	--	--	--	--	--	--	--
Octene, 1-	--	--	--	--	--	--	--
Octene, cis-2-	--	--	--	--	--	--	--
Pentadecane	--	--	--	--	--	--	--
Pentane	--	--	--	--	--	--	--
Pentane, 2-methyl-	--	--	--	--	--	--	--
Pentane, 3-methyl-	--	--	--	--	--	--	--
Pentene, 1-	--	--	--	--	--	--	--
Pentene, 2- (cis & trans mixture)	--	--	--	--	--	--	--
Pentylbenzene, n-	--	--	--	--	--	--	--
Propylbenzene, n-	--	--	--	--	Inadequate information to assess carcinogenic potential	--	--
Propylbenzene, 1-Methyl-2-	--	--	--	--	--	--	--
Propylbenzene, 1-Methyl-3-	--	--	--	--	--	--	--
Propylbenzene, 1-Methyl-4-	--	--	--	--	--	--	--
Styrene	--	--	--	--	--	--	--
Tert-amyl-methyl ether (TAME)	--	--	--	--	--	--	--
Tert-butyl alcohol (2-methyl-2-propanol) (TBA)	--	--	--	--	--	--	--
Tetradecane	--	--	--	--	--	--	--
Tetramethylbenzene, 1,2,3,4-	--	--	--	--	--	--	--
Tetramethylbenzene, 1,2,3,5-	--	--	--	--	--	--	--
Tetramethylbenzene, 1,2,4,5-	--	--	--	--	--	--	--
Thiophene	--	--	--	--	--	--	--
Thiophene, 2-Methyl-	--	--	--	--	--	--	--
Thiophene, 3-Methyl-	--	--	--	--	--	--	--
Toluene	--	--	--	--	Not classifiable as to human carcinogenicity	--	--
Tridecane	--	--	--	--	--	--	--
Triethylbenzene, 1,2,4-	--	--	--	--	--	--	--
Triethylbenzene, 1,3,5-	--	--	--	--	--	--	--

Table F-3

Cancer Toxicity Data - Oral/Dermal Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Oral Cancer Slope Factor (CSF)	Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source of CSF	Date of CSF (3) (MM-YY)
Trimethylbenzene, 1,2,3-	--	--	--	--	—	--	--
Trimethylbenzene, 1,2,4-	--	--	--	--	—	--	--
Trimethylbenzene, 1,3,5-	--	--	--	--	—	--	--
Trimethylbutane, 2,2,3-	--	--	--	--	—	--	--
Trimethylcyclohexane, 1,1,4-	--	--	--	--	—	--	--
Trimethylpentane, 2,2,3-	--	--	--	--	—	--	--
Trimethylpentane, 2,3,3-	--	--	--	--	—	--	--
Trimethylpentane, 2,2,4- (isooctane)	--	--	--	--	—	--	--
Trimethylpentane, 2,3,4-	--	--	--	--	—	--	--
Undecane	--	--	--	--	—	--	--
Xylene, m-	—	--	--	--	Not classifiable as to human carcinogenicity	—	--
Xylene, o-	—	--	--	--	Not classifiable as to human carcinogenicity	—	--
Xylene, p-	—	--	--	--	Not classifiable as to human carcinogenicity	—	--
Xylenes	—	--	--	--	Not classifiable as to human carcinogenicity	—	--

Notes:

-- = Not Available

(1) USEPA, Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Part E Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005, July 2004.

(2) Adjusted Dermal CSF = Oral CSF / Oral to Dermal Adjustment Factor

(3) Integrated Risk Information System (IRIS) Database, accessed August 2021.

Note: dates of CSF provided is the last revision date of the IRIS toxicity data provided (http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList).

Provisional Peer Reviewed Toxicity Values (PPRTV) Database, accessed August 2021.

Note: dates of CSF provided is the last revision date of the PPRTV toxicity data provided (https://hhpprtv.ornl.gov/).

Texas Commission on Environmental Quality (TCEQ) Final Development Support Documents (DSDs), accessed August 2021

Note: dates of CSF provided is the last revision date of the TCEQ toxicity data provided (https://www.tceq.texas.gov/toxicology/dsd/final).

California Office of Environmental Health Hazard Assessment (OEHHA), accessed August 2021.

Note: dates of CSF provided is the last revision date of the OEHHA toxicity data provided (https://oehha.ca.gov/chemicals)

Table F-4

Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Unit Risk Factor (URF)	Units	Weight of Evidence/ Cancer Guideline Description	Source of URF	Date of URF (1) (MM-YY)
Benzene	2.20E-09	$(mg/m^3)^{-1}$	Human carcinogen	TCEQ	Sep-15
Benzothiophene	--	--	--	--	--
Butadiene, 2-methyl-1,3- (isoprene)	--	--	—	--	--
Butane, 2,2-dimethyl-	--	--	—	--	--
Butane, 2,3-dimethyl-	--	--	—	--	--
Butylbenzene, n-	--	--	Not classifiable as to human carcinogenicity	--	--
Butylbenzene, sec-	--	--	Inadequate information to assess carcinogenic potential	--	--
Butylbenzene, tert-	--	--	Inadequate information to assess carcinogenic potential	--	--
Cumene (isopropylbenzene)	--	--	Not classifiable as to human carcinogenicity	--	--
Cyclohexane	--	--	Not classifiable as to human carcinogenicity	--	--
Cyclopentane	--	--	—	--	--
Cyclopentane, methyl-	--	--	—	--	--
Cymene, o- (1-Methyl-2-isopropylbenzene)	--	--	—	--	--
Cymene, m- (1-Methyl-3-isopropylbenzene)	--	--	—	--	--
Cymene, p- (1-Methyl-4-isopropylbenzene)	--	--	—	--	--
Decane	--	--	—	--	--
Decene	--	--	—	--	--
Dichloroethane, 1,2-	3.40E-09	$(mg/m^3)^{-1}$	Probable human carcinogen based on sufficient evidence of carcinogenicity in animals	TRRP	Jan-21
Diethylbenzene, 1,2-	--	--	—	--	--
Diethylbenzene, 1,3-	--	--	—	--	--
Diethylpentane, 3,3-	--	--	—	--	--
Diisopropyl ether (2,2'-oxybis-propane)	--	--	—	--	--
Dimethylbutane, 2,2-	--	--	—	--	--
Dimethylbutane, 2,3-	--	--	—	--	--
Dimethylcyclohexane, cis-1,2-	--	--	—	--	--
Dimethylcyclohexane, trans-1,2-	--	--	—	--	--
Dimethylcyclohexane, trans-1,4-	--	--	—	--	--
Dimethylcyclopentane, 1,1-	--	--	—	--	--
Dimethylcyclopentane, cis-1,3-	--	--	—	--	--
Dimethylcyclopentane, trans-1,3-	--	--	—	--	--
Dimethylheptane, 2,3-	--	--	—	--	--
Dimethylheptane, 2,4-	--	--	—	--	--

Table F-4

Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Unit Risk Factor (URF)	Units	Weight of Evidence/ Cancer Guideline Description	Source of URF	Date of URF (1) (MM-YY)
Dimethylheptane, 2,5-	--	--	–	--	--
Dimethylheptane, 3,3-	--	--	–	--	--
Dimethylheptane, 3,4-	--	--	–	--	--
Dimethylheptane, 3,5-	--	--	–	--	--
Dimethylhexane, 2,2-	--	--	–	--	--
Dimethylhexane, 2,3-	--	--	–	--	--
Dimethylhexane, 2,4-	--	--	–	--	--
Dimethylhexane, 2,5-	--	--	–	--	--
Dimethyloctane, 3,3-	--	--	–	--	--
Dimethylpentane, 2,2-	--	--	–	--	--
Dimethylpentane, 2,3-	--	--	–	--	--
Dimethylpentane, 2,4-	--	--	–	--	--
Dimethylpentane, 2,4-	--	--	–	--	--
Dimethylpentane, 3,3-	--	--	–	--	--
Dimethyl-5-tert-Butylbenzene, 1,3-	--	--	–	--	--
Dodecane	--	--	–	--	--
Ethyl benzene	--	--	Not classifiable as to human carcinogenicity	--	--
Ethylbenzene, 1,4-Dimethyl-2-	--	--	–	--	--
Ethylbenzene, 1,3-Dimethyl-4	--	--	–	--	--
Ethylbenzene, 1,2-Dimethyl-4-	--	--	–	--	--
Ethylbenzene, 1,3-Dimethyl-2-	--	--	–	--	--
Ethylbenzene, 1,2-Dimethyl-3-	--	--	–	--	--
Ethylbenzene, 1,3-Dimethyl-5	--	--	–	--	--
Ethylbenzene, 1-Methyl-2-	--	--	–	--	--
Ethylbenzene, 1-Methyl-3-	--	--	–	--	--
Ethylbenzene, 1-Methyl-4-	--	--	–	--	--
Ethylcyclopentane	--	--	–	--	--
Ethyl tert-butyl ether (ETBE, 2-ethyl-2-ethoxypropane)	--	--	–	--	--
Ethylene dibromide (dibromoethane, 1,2-)	4.40E-08	$(mg/m^3)^{-1}$	Likely to be carcinogenic to humans	TCEQ	Nov-17
Ethylhexane, 3-	--	--	–	--	--
Ethylpentane, 3-	--	--	–	--	--
Ethylthiophene, 2-	--	--	--	--	--

Table F-4

Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Unit Risk Factor (URF)	Units	Weight of Evidence/ Cancer Guideline Description	Source of URF	Date of URF (1) (MM-YY)
Heptane, n-	--	--	Not classifiable as to human carcinogenicity	--	--
Heptene, 1-	--	--	—	--	--
Heptene, cis-2-	--	--	—	--	--
Heptene, trans-2-	--	--	—	--	--
Heptene, trans-3-	--	--	—	--	--
Hexane, n-	--	--	Not classifiable as to human carcinogenicity	--	--
Hexene, 1-	--	--	—	--	--
Hexene, cis-2-	--	--	—	--	--
Hexene, trans-2-	--	--	—	--	--
Hexylbenzene	--	--	—	--	--
Indane	--	--	—	--	--
Indene	--	--	—	--	--
Isobutylbenzene	--	--	—	--	--
Isobutylcyclohexane	--	--	—	--	--
Isopentane	--	--	—	--	--
Isopropylcyclohexane	--	--	—	--	--
Isopropylcyclopentane	--	--	—	--	--
Methyl cyclohexane	--	--	Inadequate information to assess carcinogenic potential	--	--
Methyl-1-butene, 2-	--	--	—	--	--
Methyl-1-butene, 3-	--	--	—	--	--
Methyl-2-butene, 2-	--	--	—	--	--
Methyl-2-pentene, 2-	--	--	—	--	--
Methyl-2-pentene, 3- (cis & trans mixture)	--	--	—	--	--
Methyl-1-pentene, 4-	--	--	—	--	--
Methylheptane, 2-	--	--	—	--	--
Methylheptane, 3-	--	--	—	--	--
Methylheptane, 4-	--	--	—	--	--
Methylhexane, 2-	--	--	—	--	--
Methylhexane, 3-	--	--	—	--	--
Methylnaphthalene, 1-	--	--	Suggestive evidence of carcinogenic potential	--	--
Methylnaphthalene, 2-	--	--	Not classifiable as to human carcinogenicity	--	--
Methylnonane, 2-	--	--	—	--	--

Table F-4

Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Unit Risk Factor (URF)	Units	Weight of Evidence/ Cancer Guideline Description	Source of URF	Date of URF (1) (MM-YY)
Methylnonane, 3-	--	--	–	--	--
Methyloctane, 2-	--	--	–	--	--
Methyloctane, 3-	--	--	–	--	--
Methyloctane, 4-	--	--	–	--	--
MMT (Methylcyclopentadienyl manganese tricarbonyl)	--	--	--	--	--
MTBE (methyl tert-butyl ether)	2.60E-10	$(mg/m^3)^{-1}$	Possible human carcinogen	OEHHA	Jan-11
Naphthalene	--	--	Not classifiable as to human carcinogenicity	--	--
Nonane	--	--	–	--	--
Nonene, 1- (n-)	--	--	–	--	--
Nonene, 2-	--	--	–	--	--
Nonene, cis-3-	--	--	–	--	--
Nonene, trans-3-	--	--	–	--	--
Octane, n-	--	--	–	--	--
Octene, 1-	--	--	–	--	--
Octene, cis-2-	--	--	–	--	--
Pentadecane	--	--	–	--	--
Pentane	--	--	–	--	--
Pentane, 2-methyl-	--	--	–	--	--
Pentane, 3-methyl-	--	--	–	--	--
Pentene, 1-	--	--	–	--	--
Pentene, 2- (cis & trans mixture)	--	--	–	--	--
Pentylbenzene, n-	--	--	–	--	--
Propylbenzene, n-	--	--	Inadequate information to assess carcinogenic potential	--	--
Propylbenzene, 1-Methyl-2-	--	--	–	--	--
Propylbenzene, 1-Methyl-3-	--	--	–	--	--
Propylbenzene, 1-Methyl-4-	--	--	–	--	--
Styrene	--	--	–	--	--
Tert-amyl-methyl ether (TAME)	--	--	–	--	--
Tert-butyl alcohol (2-methyl-2-propanol) (TBA)	--	--	–	--	--
Tetradecane	--	--	–	--	--
Tetramethylbenzene, 1,2,3,4-	--	--	–	--	--
Tetramethylbenzene, 1,2,3,5-	--	--	–	--	--

Table F-4

Cancer Toxicity Data - Inhalation Route of Exposure
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Unit Risk Factor (URF)	Units	Weight of Evidence/ Cancer Guideline Description	Source of URF	Date of URF (1) (MM-YY)
Tetramethylbenzene, 1,2,4,5-	--	--	--	--	--
Thiophene	--	--	--	--	--
Thiophene, 2-Methyl-	--	--	--	--	--
Thiophene, 3-Methyl-	--	--	--	--	--
Toluene	--	--	Not classifiable as to human carcinogenicity	--	--
Tridecane	--	--	--	--	--
Triethylbenzene, 1,2,4-	--	--	--	--	--
Triethylbenzene, 1,3,5-	--	--	--	--	--
Trimethylbenzene, 1,2,3-	--	--	--	--	--
Trimethylbenzene, 1,2,4-	--	--	--	--	--
Trimethylbenzene, 1,3,5-	--	--	--	--	--
Trimethylbutane, 2,2,3-	--	--	--	--	--
Trimethylcyclohexane, 1,1,4-	--	--	--	--	--
Trimethylpentane, 2,2,3-	--	--	--	--	--
Trimethylpentane, 2,3,3-	--	--	--	--	--
Trimethylpentane, 2,2,4- (isooctane)	--	--	--	--	--
Trimethylpentane, 2,3,4-	--	--	--	--	--
Undecane	--	--	--	--	--
Xylene, m-	--	--	Not classifiable as to human carcinogenicity	--	--
Xylene, o-	--	--	Not classifiable as to human carcinogenicity	--	--
Xylene, p-	--	--	Not classifiable as to human carcinogenicity	--	--
Xylenes	--	--	Not classifiable as to human carcinogenicity	--	--

Notes:

-- = Not Available

(1) Texas Commission on Environmental Quality (TCEQ) Final Development Support Documents (DSDs), accessed August 2021.
Note: dates of URF provided is the last revision date of the TCEQ toxicity data provided (https://www.tceq.texas.gov/toxicology/dsd/final).
Texas Risk Reduction Program (TRRP), Toxicity Factors Table, January 2021.
California Office of Environmental Health Hazard Assessment (OEHHA), accessed August 2021.
Note: dates of CSF provided is the last revision date of the OEHHA toxicity data provided (https://oehha.ca.gov/chemicals).

Table F-5

Theoretical Hydrocarbon Solubility Calculations
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Mass Fraction			Solubility mg/L	Solubility References	Molecular Weight g/mol	Average Molecular Weight of Fuel g/mol	Mole Fraction			Effective Solubility mg/L			
	WBH-13	BH-111	BBH-42					WBH-13	BH-111	BBH-42	WBH-13	BH-111	BBH-42	Average
Benzene	0.0003	0.0002		1790.0000	1	78.114	128.6001	4.26E-04	3.10E-04		7.63E-01	5.54E-01		6.59E-01
Cyclohexane	0.0059	0.0042	0.0030	55.0000	1	84.162	128.6001	8.98E-03	6.42E-03	4.61E-03	4.94E-01	3.53E-01	2.53E-01	3.67E-01
Methylcyclohexane	0.0111	0.0086	0.0065	15.2193	2,3,4,5	98.189	128.6001	1.45E-02	1.13E-02	8.57E-03	2.21E-01	1.71E-01	1.30E-01	1.74E-01
1-Heptene/1,2-DMCP (trans)	0.0044	0.0033		18.2632	2,3,4	98.189	128.6001	5.75E-03	4.30E-03		1.05E-01	7.85E-02		9.17E-02
1,1-Dimethylcyclopentane	0.0014	0.0009		58.6188	7,8,9	98.189	128.6001	1.81E-03	1.22E-03		1.06E-01	7.14E-02		8.87E-02
Methylcyclopentane	0.0021	0.0004		42.1652	2,3,4,5	84.162	128.6001	3.16E-03	6.05E-04		1.33E-01	2.55E-02		7.94E-02
1,2-Dimethyl-4-Ethylbenzene			0.0009	76.2381	7,8,9	134.222	128.6001			8.69E-04			6.62E-02	6.62E-02
Cyclopentane	0.0002			160.6092	2,3,4,5	70.135	128.6001	3.39E-04			5.45E-02			5.45E-02
Isopentane	0.0007	0.0005		48.7741	2,3,4	72.151	128.6001	1.24E-03	9.68E-04		6.02E-02	4.72E-02		5.37E-02
Ethylbenzene	0.0003			169.0000	1	106.168	128.6001	3.15E-04			5.32E-02			5.32E-02
1,3-Dimethylcyclopentane (cis)	0.0023	0.0017		17.5758	9	98.189	128.6001	3.06E-03	2.28E-03		5.39E-02	4.01E-02		4.70E-02
2,3-Dimethylheptane (t)			0.0124	3.4373	8,9	128.259	128.6001			1.24E-02			4.27E-02	4.27E-02
1,2,3,4-Tetramethylbenzene (t)			0.0005	79.5936	7,8,9	134.222	128.6001			4.92E-04			3.92E-02	3.92E-02
1,3-Dimethyl-5-Ethylbenzene	0.0007	0.0007		56.7759	7,8,9	134.222	128.6001	7.14E-04	6.67E-04		4.05E-02	3.79E-02		3.92E-02
2-Methylnaphthalene	0.0017	0.0015		24.6000	1	142.201	128.6001	1.50E-03	1.39E-03		3.69E-02	3.43E-02		3.56E-02
3-Methylpentane	0.0018	0.0014	0.0008	18.0112	2,3,4,5	86.178	128.6001	2.66E-03	2.01E-03	1.17E-03	4.78E-02	3.63E-02	2.11E-02	3.51E-02
n-Propylbenzene	0.0008	0.0008	0.0003	52.2000	1	120.195	128.6001	8.10E-04	8.35E-04	3.57E-04	4.23E-02	4.36E-02	1.86E-02	3.48E-02
1,2-Dimethylcyclohexane (trans)	0.0039	0.0033		8.3938	2,4	112.216	128.6001	4.47E-03	3.82E-03		3.75E-02	3.20E-02		3.48E-02
1,2,4-Trimethylbenzene	0.0008	0.0003		57.0000	1	120.195	128.6001	9.05E-04	2.86E-04		5.16E-02	1.63E-02		3.39E-02
1,2,3,4-Tetramethylbenzene	0.0004	0.0004		79.5936	7,8,9	134.222	128.6001	3.70E-04	3.88E-04		2.94E-02	3.09E-02		3.02E-02
2,5-Dimethylheptane (t)			0.0079	3.4502	8,9	128.259	128.6001			7.97E-03			2.75E-02	2.75E-02
Isopropylbenzene	0.0005	0.0005	0.0002	61.3000	1	120.195	128.6001	5.49E-04	5.41E-04	2.18E-04	3.36E-02	3.32E-02	1.34E-02	2.67E-02
trans-1,2-Dimethylcyclopentane (t)			0.0011	17.6740	9	98.189	128.6001			1.50E-03			2.65E-02	2.65E-02
2,4-Dimethylheptane (t)			0.0065	3.5143	8,9	128.259	128.6001			6.52E-03			2.29E-02	2.29E-02
1-Methylnaphthalene	0.0014	0.0013	0.0002	25.8000	1	142.201	128.6001	1.27E-03	1.18E-03	1.74E-04	3.27E-02	3.06E-02	4.49E-03	2.26E-02
Ethylcyclopentane	0.0005	0.0002		44.4796	7,8,9	98.189	128.6001	6.99E-04	3.03E-04		3.11E-02	1.35E-02		2.23E-02
1-Methyl-4-Ethylbenzene	0.0002			95.4348	2,3,4,5	120.195	128.6001	2.32E-04			2.22E-02			2.22E-02
3-Ethylhexane	0.0007	0.0006	0.0033	11.8801	7,8,9	114.232	128.6001	7.45E-04	6.79E-04	3.68E-03	8.85E-03	8.06E-03	4.37E-02	2.02E-02
trans-1,3-Dimethylcyclopentane (t)			0.0008	17.5758	9	98.189	128.6001			1.07E-03			1.88E-02	1.88E-02
2,4-Dimethylhexane	0.0009	0.0007	0.0019	13.7078	7,8,9	114.232	128.6001	1.05E-03	8.23E-04	2.10E-03	1.44E-02	1.13E-02	2.88E-02	1.82E-02
3-Ethylpentane	0.0004	0.0003		37.5769	7,8,9	100.205	128.6001	4.99E-04	4.47E-04		1.88E-02	1.68E-02		1.78E-02
Naphthalene	0.0006	0.0005		31.0000	1	128.174	128.6001	5.93E-04	5.50E-04		1.84E-02	1.70E-02		1.77E-02
1,2,3,5-Tetramethylbenzene	0.0005	0.0005		38.3875	7,8,9	134.222	128.6001	4.64E-04	4.35E-04		1.78E-02	1.67E-02		1.72E-02
1-Decene			0.0317	0.5709	2,3,4	140.27	128.6001			2.91E-02			1.66E-02	1.66E-02
2,3-Dimethylhexane	0.0007	0.0005	0.0018	13.7078	8,9	114.232	128.6001	8.22E-04	6.10E-04	2.03E-03	1.13E-02	8.36E-03	2.78E-02	1.58E-02
1,4-Dimethyl-2-Ethylbenzene	0.0002	0.0001		75.1643	7,8,9	134.222	128.6001	1.99E-04	1.41E-04		1.50E-02	1.06E-02		1.28E-02
1,4-Dimethylcyclohexane (trans)	0.0030	0.0025		3.8041	4	112.216	128.6001	3.38E-03	2.82E-03		1.29E-02	1.07E-02		1.18E-02
1-Methyl-4-N-Propylbenzene	0.0003	0.0002		45.7697	7,8,9	134.222	128.6001	2.88E-04	1.95E-04		1.32E-02	8.95E-03		1.11E-02
1,3-Dimethyl-4-Ethylbenzene	0.0002	0.0001		78.5199	7,8,9	134.222	128.6001	1.69E-04	9.31E-05		1.32E-02	7.31E-03		1.03E-02
2,5-Dimethylhexane	0.0007	0.0006	0.0009	11.8801	7,8,9	114.232	128.6001	8.31E-04	6.59E-04	1.07E-03	9.87E-03	7.82E-03	1.27E-02	1.01E-02
1-Octene			0.0021	4.0959	2,3,4	112.216	128.6001			2.45E-03			1.01E-02	1.01E-02
Isopropylcyclohexane	0.0012	0.0011		7.7134	7,8,9	126.243	128.6001	1.23E-03	1.12E-03		9.51E-03	8.64E-03		9.08E-03
2,3-Dimethylbutane	0.0003	0.0002		22.6648	2,3,4	86.178	128.6001	3.89E-04	2.97E-04		8.83E-03	6.73E-03		7.78E-03
1,2-Diethylbenzene	0.0001			71.1377	2,4	134.222	128.6001	1.06E-04			7.57E-03			7.57E-03
1,2-Dimethylcyclohexane (cis)	0.0008	0.0007		8.3938	2,4	112.216	128.6001	9.42E-04	7.98E-04		7.91E-03	6.70E-03		7.30E-03
2,3-Dimethylpentane	0.0013	0.0010	0.0008	5.2608	2,3,4	100.205	128.6001	1.67E-03	1.22E-03	1.05E-03	8.78E-03	6.43E-03	5.50E-03	6.90E-03
1,3-Diethylbenzene	0.0003	0.0003		24.0257	2,3	134.222	128.6001	2.59E-04	2.48E-04		6.22E-03	5.96E-03		6.09E-03
cis-1,3-Dimethylcyclopentane (t)			0.0003	17.5758	9	98.189	128.6001			3.42E-04			6.01E-03	6.01E-03
sec-Butylbenzene	0.0004	0.0004	0.0003	17.6000	1	134.222	128.6001	3.92E-04	3.52E-04	2.48E-04	6.90E-03	6.19E-03	4.37E-03	5.82E-03
2,5-Dimethylheptane	0.0017	0.0015		3.4502	8,9	128.259	128.6001	1.68E-03	1.52E-03		5.81E-03	5.26E-03		5.53E-03
1,1,4-Trimethylcyclohexane	0.0007	0.0006		7.9281	7,8,9	126.243	128.6001	6.89E-04	6.61E-04		5.46E-03	5.24E-03		5.35E-03
2-Methylpentane	0.0002			15.6844	2,3,4,5	86.178	128.6001	2.51E-04			3.93E-03			3.93E-03
3-Methyloctane (t)			0.0013	3.0910	8,9	128.259	128.6001			1.27E-03			3.93E-03	3.93E-03
2,3-Dimethylheptane	0.0012	0.0011		3.4373	8,9	128.259	128.6001	1.17E-03	1.10E-03		4.03E-03	3.79E-03		3.91E-03
1-Methyl-4-Isopropylbenzene	0.0002	0.0001		23.3546	2,3,4,5,6	134.222	128.6001	1.96E-04	1.30E-04		4.59E-03	3.04E-03		3.82E-03
3,4-Dimethylheptane	0.0010	0.0009		3.5528	8,9	128.259	128.6001	1.00E-03	9.02E-04		3.56E-03	3.21E-03		3.38E-03
n-Butylbenzene	0.0003	0.0002	0.0002	11.8000	1	134.222	128.6001	2.62E-04	2.25E-04	1.80E-04	3.09E-03	2.66E-03	2.12E-03	2.62E-03
1-Methyl-2-Isopropylbenzene	0.0001			23.3546	2,3,4	134.222	128.6001	1.12E-04			2.62E-03			2.62E-03
2,4-Dimethylpentane	0.0003	0.0002	0.0004	5.5113	2,3,4	100.205	128.6001	4.48E-04	3.09E-04	4.69E-04	2.47E-03	1.70E-03	2.59E-03	2.25E-03
3,3-Dimethylpentane (t)			0.0002	5.9221	2,3,4	100.205	128.6001			3.15E-04			1.86E-03	1.86E-03
Isobutylbenzene	0.0002	0.0002		10.1875	3,4,5	134.222	128.6001	1.71E-04	1.78E-04		1.74E-03	1.82E-03		1.78E-03
1,2,4,5-Tetramethylbenzene	0.0005	0.0005	0.0005	3.4764	2,3,4	134.222	128.6001	5.12E-04	4.92E-04	5.02E-04	1.78E-03	1.71E-03	1.74E-03	1.74E-03
2-Methyloctane	0.0006	0.0003		2.8858	8,9	128.259	128.6001	6.23E-04	3.28E-04		1.80E-03	9.46E-04		1.37E-03

Table F-5

Theoretical Hydrocarbon Solubility Calculations
Holly Frontier-North Monument
Lea County, New Mexico

PIANO (Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins)	Mass Fraction			Solubility mg/L	Solubility References	Molecular Weight g/mol	Average Molecular Weight of Fuel g/mol	Mole Fraction			Effective Solubility mg/L			
	WBH-13	BH-111	BBH-42					WBH-13	BH-111	BBH-42	WBH-13	BH-111	BBH-42	Average
3-Methylhexane	0.0003	0.0001		4.9501	2,3,4	100.205	128.6001	3.88E-04	1.51E-04		1.92E-03	7.50E-04		1.33E-03
2-Methylheptane	0.0004		0.0002	3.7811	3	114.232	128.6001	4.01E-04		2.19E-04	1.52E-03		8.27E-04	1.17E-03
3,3-Dimethylpentane	0.0002	0.0001		5.9221	2,3,4	100.205	128.6001	2.21E-04	1.54E-04		1.31E-03	9.12E-04		1.11E-03
4-Methylheptane	0.0001			7.9962	7,8,9	114.232	128.6001	1.35E-04			1.08E-03			1.08E-03
3,5-Dimethylheptane	0.0003	0.0003		3.3219	8,9	128.259	128.6001	3.46E-04	3.01E-04		1.15E-03	9.99E-04		1.07E-03
3,3-Dimethylheptane	0.0002	0.0002		6.4130	7,8,9	128.259	128.6001	1.65E-04	1.62E-04		1.06E-03	1.04E-03		1.05E-03
3-Methyloctane	0.0004	0.0002		3.0910	8,9	128.259	128.6001	4.04E-04	2.45E-04		1.25E-03	7.56E-04		1.00E-03
3-Methylheptane	0.0002		0.0020	0.7916	2,3,4	114.232	128.6001	2.18E-04		2.26E-03	1.73E-04		1.79E-03	9.81E-04
2-Methyloctane (t)			0.0003	2.8858	8,9	128.259	128.6001			3.18E-04			9.18E-04	9.18E-04
3,3-Dimethyloctane	0.0002	0.0003		3.7564	7,8,9	142.286	128.6001	2.24E-04	2.58E-04		8.42E-04	9.71E-04		9.06E-04
2,2,3-Trimethylpentane			0.0003	2.3874	3	114.232	128.6001			3.76E-04			8.97E-04	8.97E-04
2,2-Dimethylpentane	0.0002	0.0001		4.3990	2,3,4	100.205	128.6001	2.30E-04	1.57E-04		1.01E-03	6.89E-04		8.50E-04
1-Nonene			0.0006	1.1248	2,3,4	126.243	128.6001			6.37E-04			7.16E-04	7.16E-04
Octane (nC8)			0.0009	0.6602	2,3,4	114.232	128.6001			1.03E-03			6.78E-04	6.78E-04
Nonane (nC9)			0.0028	0.2200	1	128.259	128.6001			2.82E-03			6.19E-04	6.19E-04
3-Methylnonane	0.0006	0.0004		1.0330	8,9	142.286	128.6001	5.25E-04	3.76E-04		5.42E-04	3.88E-04		4.65E-04
2-Methylnonane	0.0005	0.0002		0.8978	7,8,9	142.286	128.6001	4.66E-04	2.25E-04		4.19E-04	2.02E-04		3.10E-04
Octane	0.0002			0.6602	2,3,4	114.232	128.6001	1.98E-04			1.31E-04			1.31E-04
Nonane (C9)	0.0006			0.2200	1	128.259	128.6001	5.62E-04			1.24E-04			1.24E-04
Hexylbenzene	0.0002			1.0012	2,3,4,5	162.276	128.6001	1.19E-04			1.19E-04			1.19E-04
4-Methyloctane (t)			0.0008	0.1150	2,3,4	128.259	128.6001			7.65E-04			8.80E-05	8.80E-05
Decane (nC10)			0.0007	0.0519	2,3,4	142.286	128.6001			6.58E-04			3.42E-05	3.42E-05
2,2-Dimethylhexane	0.0001	0.0001		0.1999	2,3	114.232	128.6001	1.68E-04	1.05E-04		3.35E-05	2.11E-05		2.73E-05
Decane (C10)	0.0008	0.0002		0.0519	2,3,4	142.286	128.6001	7.66E-04	1.49E-04		3.98E-05	7.74E-06		2.38E-05
4-Methyloctane	0.0002			0.1150	2,3,4	128.259	128.6001	1.75E-04			2.02E-05			2.02E-05
Undecane (nC11)			0.0006	0.0044	2,3,4	156.313	128.6001			4.83E-04			2.13E-06	2.13E-06
Undecane	0.0006	0.0002		0.0044	2,3,4	156.313	128.6001	4.88E-04	1.97E-04		2.15E-06	8.70E-07		1.51E-06
Dodecane (nC12)			0.0004	0.0037	3,4	170.34	128.6001			2.75E-04			1.03E-06	1.03E-06
Dodecane (C12)	0.0003			0.0037	3,4	170.34	128.6001	2.49E-04			9.29E-07			9.29E-07

Notes:
(1) RSL Chemical Properties Database, PHYSPROP
(2) The PHYSPROP data sets are the publicly available data files underpinning the EPISuiteTM prediction models. The data were curated by NCCT using a combination of manual and automated processing routines with only the highest quality data reported.
(3) Kovdienko, Nikolay A., et al. "Application of random forest and multiple linear regression techniques to QSPR prediction of an aqueous solubility for military compounds." Molecular informatics 29.5 (2010): 394-406.
(4) Ran, Y.; He, Y.; Yang, G.; Johnson, J. L. H.; Yalkowsky, S. H. Estimation of aqueous solubility of organic compounds by using the general solubility equation. (Chemosphere 2002, 48, 487–509)
(5) Tetko, Igor V., et al. "Estimation of aqueous solubility of chemical compounds using E-state indices." . J. Chem. Inf. and Comp. Sci. 41.6 (2001): 1488-1493
(6) Lewis, K.A., Tzilivakis, J., Warner, D. and Green, A. (2016). An international database for pesticide risk assessments and management. Human and Ecological Risk Assessment: An International Journal, 22(4): 1050-1064.
(7) EPISUITE Estimation Programs Interface Suite™ is a Windows®-based suite of physical/chemical property and environmental fate estimation programs developed by EPA's and Syracuse Research Corp.
(8) The Toxicity Estimation Software Tool (TEST) is an EPA software application developed to allow users to easily estimate the toxicity of chemicals using Quantitative Structure Activity Relationships (QSARs) methodologies.
(9) OPERA is a free and open source/open data suite of QSAR Models providing predictions and additional information including applicability domain and accuracy assessment, as described in the publication OPERA models for predicting physicochemical properties and environmental fate endpoints. All models were built on curated data and standardized chemical structures as described in the publication An automated curation procedure for addressing chemical errors and inconsistencies in public datasets used in QSAR modelling. All OPERA properties are predicted under ambient conditions of 760mm of Hg at 25 degrees Celsius.
(10) https://www.cdc.gov/niosh/npg/npgd0409.html

Molecular weight: U.S. Environmental Protection Agency. CompTox Chemicals Dashboard. https://comptox.epa.gov/dashboard/DTXSID4021923

Average molecular weight: See Attachment 4 of memo

Values reported in M were converted to mg/L using http://endmemo.com/chem/molarity.php

Effective solubility formula: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/es.html

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 140242

CONDITIONS

Operator:	OGRID:
HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	15694
	Action Number: 140242
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Review of the 2020/2021 Site Status Report: Content satisfactory 1. Continue with the recommendations as stated within this report. 2. Submit next Annual Monitoring Report to the OCD no later than April 1, 2024.	4/6/2023