First Phase of Remedial Investigation Report

Jacks Auto Repair Site
Ecology Facility/Site ID: 13693544
Ecology Cleanup Site ID: 7996
1400 Bethel Street NE
Olympia, Washington

Prepared for:

City of Olympia
PO Box 1967
Olympia, Washington 98507

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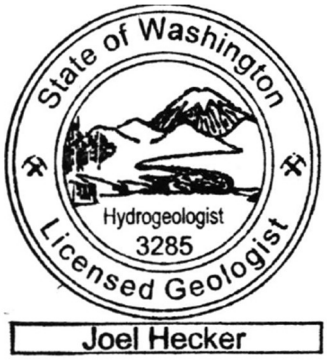
Professional Certification

This document was prepared under my direction. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that I was in responsible charge of the work performed for this document.



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Executive Summary

The purpose of this First Phase of Remedial Investigation (RI) Report for the Jacks Auto Repair Site (Site) is to summarize the RI activities completed in 2021 and the RI results obtained to date (i.e., results from 2012 and 2021 investigation activities) on the 1400 Bethel Street NE parcel. The parcel was previously used as a gasoline service station and for auto repair. Limited investigation and remediation activities were previously completed between 1990 and 2012. Six underground storage tanks (USTs) and associated impacted soil were removed in 1990, and the excavated soil was treated ex-situ and returned to the excavations in 1991. Four soil samples were collected in 2012 around the dispenser island and service station building. The purpose of the 2021 RI activities was to provide a better understanding of the subsurface environmental conditions in order to spur redevelopment of the parcel. The 2021 RI activities included advancing and sampling soil borings and installing and sampling monitoring wells.

The 2021 RI activities confirmed that the Site contains subsurface soil and groundwater contamination at concentrations exceeding Model Toxics Control Act (MTCA) screening levels (SLs) for unrestricted land use. Most of the soil-to-groundwater and groundwater SL exceedances were gasoline-related exceedances associated with the former UST basin in the southwest portion of the parcel. Gasoline-related groundwater SL exceedances are present near the western parcel boundary and the groundwater flow direction is to the west-northwest. The only soil direct contact exceedances were relatively minor exceedances beneath the floor of the service station building that can likely be remedied relatively easily via soil removal and/or a cap/cover. Preliminary vapor intrusion SLs were relatively widespread in the samples collected near the former UST basin west of the service station building and underneath the service station building.

Based on the RI results obtained to date, further cleanup will be needed for the Site to comply with MTCA regulations. Although it is premature to select a cleanup remedy, remedial components might include soil excavation, additional source area remediation (e.g., in-situ groundwater treatment), cap/cover, monitored natural attenuation, vapor intrusion mitigation, and institutional controls. However, a number of RI data gaps will need to be filled prior to completion of a Final RI Report and selection of the cleanup remedy. In summary, the RI data gaps include determining the vertical and horizontal extent of groundwater contamination, assessing groundwater seasonal variability, further characterizing the source area, evaluating potential vapor intrusion concerns on-parcel and off-parcel, evaluating potential methane gas generation, and completing a terrestrial ecological evaluation. A timeline is not available at this time for filling the RI data gaps or completing other phases of the MTCA cleanup process. However, if the City of Olympia is able to garner additional United States Environmental Protection Agency (USEPA) brownfield assessment grant funds during the fiscal year 2022 application period, RI data gap investigation activities and cleanup planning will likely be completed for the Site in 2022 and/or 2023. If acquired, USEPA brownfield grant funds may be used to complete a RI/Feasibility Study Report, which would support redevelopment of the parcel and hopefully lead to a revitalized neighborhood center.

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List of Acronyms

Acronym	Explanation
AEG	Associated Environmental Group, LLC
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
City	City of Olympia
CLARC	Cleanup Levels and Risk Calculation
COI	Constituent of Interest
COPC	Constituent of Potential Concern
cPAHs	Carcinogenic PAHs
CSM	Conceptual Site Model
EAG	Ecology Assessment Group LLC
Ecology	Washington State Department of Ecology
GWM	Groundwater Monitoring
LNAPL	Light Non-Aqueous Phase Liquid
mg/kg	Milligrams per Kilogram
MTCA	Model Toxics Control Act
MW	Monitoring Well
NAVD88	North American Vertical Datum of 1988
NTU	Nephelometric Turbidity Units
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PID	Photoionization Detector
PIONEER	PIONEER Technologies Corporation
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QC	Quality Control
Report	First Phase of RI Report
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
Site	Jacks Auto Repair Site
SL	Screening Level
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbon
TPH-D	TPH in the Diesel Range
TPH-G	TPH in the Gasoline Range

Acronym	Explanation
TPH-HO	TPH in the Heavy Oil Range
ug/L	Micrograms per Liter
USEPA	United States Environmental Protection Agency
VI	Vapor Intrusion
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

SECTION 1: INTRODUCTION

1.1 Purpose

The purpose of this First Phase of Remedial Investigation (RI) Report (Report) for the Jacks Auto Repair Site (Site) is to summarize the RI activities completed in 2021 and the RI results obtained to date (i.e., results from 2012 and 2021 investigation activities). The purpose of the 2021 investigation activities was to provide a better understanding of the subsurface environmental conditions in order to spur redevelopment of the parcel. Limited investigation and remediation activities were previously completed on the Site between 1990 and 2012. However, additional investigation activities were necessary in order to determine if the Site is suitable for future reuse as a mixed residential and commercial land use, which is the most likely future land use.

The City of Olympia (City) funded this Report and the associated RI field activities with its United States Environmental Protection Agency (USEPA) brownfield assessment grant funds for hazardous substances and petroleum (BF01J66201).

1.2 Location

The Site is located at 1400 Bethel Street NE, in Olympia, Washington (see Figure 1). The Site is located at the northeast corner of San Francisco Avenue NE and Bethel Street NE and is located in a mixed-use commercial and residential area northeast of downtown Olympia.

1.3 Report Organization

The remainder of this Report is organized as follows:

- Section 2: Background Information
- Section 3: 2021 RI Activities
- Section 4: RI Results and Discussion
- Section 5: Conclusions and Path Forward
- Section 6: References

SECTION 2: BACKGROUND INFORMATION

A summary of key background information is presented in this section to provide context for the investigation and evaluation activities and results presented in this Report.

2.1 Environmental Setting

2.1.1 Current and Future Land Use

The 0.19-acre parcel at 1400 Bethel Street NE is currently covered with asphalt and concrete pavement, a 946 square foot single-story service station building, an attached 420 square foot canopy, and grass. The current zoning for the parcel is Neighborhood Retail (City of Olympia 2021). Mr. Byung Kook Lee purchased the parcel in 2021 and hopes to eventually construct a mixed-use commercial and residential development on the parcel and adjoining parcel to the north (1408 Bethel Street NE). Thomas Architecture Studio prepared conceptual development designs for the parcel as part of community visioning meetings with local neighborhood groups that occurred in 2017 (see Appendix A).[1]

2.1.2 Climate

The Site is located within the marine-influenced and relatively mild climate of the Puget Sound region. The current average annual precipitation for Olympia is approximately 51 inches, with most of the precipitation falling between October and April. The current average daily low and high temperatures are 41 and 60 degrees Fahrenheit, respectively (National Oceanic and Atmospheric Administration 2021).

2.1.3 Topography and Drainage

The current topography at the Site is relatively flat, with elevations ranging from approximately 177 feet to 179 feet North American Vertical Datum of 1988 (NAVD88). Stormwater on the eastern portion of the Site currently infiltrates to upland soil. The western two-thirds of the Site are covered with impermeable surfaces, and although some cracks in the impermeable surfaces are present, the vast majority of stormwater on the western portion of the Site drains via sheet flow towards storm drains in Bethel Street NE and San Francisco Avenue NE.

2.1.4 Geology

Several feet of fill material consisting of sand with varying amounts of clay, silt, gravel, cobbles, and plastic were present at many boring locations, associated with historical development. Interbedded sands and silts with gravels and cobbles, consistent with glacial till, were encountered beneath the fill materials (see Appendix B). The regional geology is dominated by Quaternary age glacial deposits (e.g., sand and gravel aquifers associated with glacial outwash and low permeability glacial till deposits containing clay and silt).

[1] Note that the conceptual designs are not actual plans for the parcel, but future development may be similar.

2.1.5 Hydrogeology

Based on July 2021 measurements in monitoring wells (MWs), shallow groundwater is present within the native sands and silts at approximately 18 to 22 feet below ground surface (bgs), depending on location (see Table 1).[2] This is the hydrogeologic unit of interest at the Site. The direction of groundwater flow is generally to the northwest towards Budd Inlet at a gradient of approximately 0.045 to 0.053 feet per foot (see Figure 2). Additional groundwater monitoring (GWM) events will be needed to confirm GW flow direction as it may vary seasonally.

2.2 Overview of Operational History

The parcel was developed with a grocery store prior to 1934 (White Newton Grocery). By 1946, a gasoline service station (Horner's Service and Grocery) was in operation on the parcel.[3] The gasoline service station changed ownership multiple times and was identified as Bob's Richfield Service Station (1958), Jim's Signal Service Station (1963), Steve's Enco Service Station (1968), and Humphrey's Exxon Service Station (1973).[4] By 1978, the parcel was identified as Henderson's Twenty-Four Hour Towing & Repair. Two hoists were present within the service station building and five underground storage tanks (USTs) were present to the southwest of the service station building between at least the 1960s and 1990; a sixth UST was present northeast of the service station building (see Figure 3). According to local residents, several other entities also performed auto repair in the service station building and vehicles were stored in the grass field east of the gasoline service station building until at least the early 2000s. The current parcel owner is Byung Kook Lee, who purchased the parcel in 2021. The previous owner was So Cho, who purchased the parcel from Charisvia Inc. in 2018.

2.3 Overview of Previous Investigation and Remediation Activities

In 1990, Ecology Assessment Group LLC (EAG) removed the six USTs associated with the former service station (EAG 1990). The USTs included one waste oil UST that historically contained gasoline (UST 1), four gasoline USTs (USTs 2 through 5), and one fuel oil UST (UST 6) as shown on Figure 3. During the removal of USTs west of the service station building (UST 1-5), visual indications of contamination were reported in the vicinity of the UST fill ports (likely associated with overflows during filling the USTs) and at the bottom of UST 1. EAG reported that the "heaviest" contamination was reported under UST 1 and that UST 3 was corroded and had a hole in the bottom. As a result, additional excavation occurred beyond what was required to remove USTs 1-5 in order to attempt to remove all evidence of contamination (EAG 1991a, 1991b). The additional excavation required dewatering once the depth exceeded 15 feet bgs (EAG 1991a). Approximately 5,000 gallons of water were pumped out of the excavation and disposed of off-site. EAG reported that constraints such as low-hanging electric lines,

[2] The top of the casing (TOC) at each MW is approximately six inches bgs. Table 1 refers to depths below TOC.

[3] According to the Thurston County Auditor, the existing service station building and associated canopy was constructed in 1957. The 1946 structure may have been a previous structure or the date of construction provided by Thurston County may be incorrect.

[4] City directories are presented in five-year intervals, so specific ownership between the dates mentioned is unknown.

sidewalks, nearby streets, and the type of excavator limited the excavation from extending further vertically or laterally and that evidence of contamination was left in place (EAG 1990, 1991a). The approximate final extents of the UST 1-5 excavation and the UST 6 excavation are shown on Figure 3. The UST 1-5 excavation reportedly extended to a depth of 17.5 feet bgs in the east and 19.3 feet bgs in the west and the UST 6 excavation extended to approximately 6 feet bgs. In total, approximately 159 cubic yards of contaminated soil were removed from the UST 1-5 excavation and approximately 4 cubic yards were removed from the UST 6 excavation. Clean overburden material and contaminated soil were stockpiled separately on-site.

EAG collected composite soil samples from directly beneath each UST at the time of removal (EAG 1991a).[5] Soil samples were analyzed for total petroleum hydrocarbons (TPH) by USEPA Method 418.1 and a subset of volatile organic compounds (VOCs) consisting of benzene, toluene, ethylbenzene, and xylenes (BTEX). BTEX were not detected in the soil samples with the exception of ethylbenzene (0.013 milligrams per kilogram [mg/kg]) and total xylenes (0.20 mg/kg) in the sample collected from beneath UST 1. TPH concentrations reported from beneath each UST at the time of excavation were as follows:

UST Number	TPH Concentration (mg/kg)	Sample Depth (in feet bgs)
UST 1	1,763	8
UST 2	117	10
UST 3	84	8
UST 4	192	11
UST 5	152	9
UST 6	362	5

Samples were also collected during over-excavation work, but specific sample locations and laboratory analytical reports are unavailable. Reportedly, the TPH concentration at the final UST 1-5 excavation floor was 330 mg/kg on the eastern portion (at 17.5 feet bgs beneath UST 1) and 173 mg/kg on the western portion (at 19.3 feet bgs beneath UST 4). The soil beneath the fuel oil UST (UST 6) was also over-excavated and a soil sample was collected from the excavation floor; the TPH concentration from the floor of the UST 6 excavation was 2.0 mg/kg.

Two groundwater samples were collected from the open UST 1-5 excavation and analyzed for BTEX (EAG 1991a). Elevated concentrations of benzene (79 micrograms per liter [ug/L]), toluene (1,200 ug/L), ethylbenzene (2,100 ug/L), and xylenes (5,100 ug/L) were reported in the first sample. The second sample collected one week later still contained elevated, but lower, concentrations of BTEX: benzene (10 ug/L), toluene (320 ug/L), ethylbenzene (less than 1.0 ug/L), and xylenes (4,500 ug/L).

EAG remediated the contaminated soil stockpile(s) generated from the UST 1-5 and UST 6 excavations using ex-situ vapor extraction methodologies and heat (i.e., blowing heated air through pipes within the

[5] The samples collected from directly beneath the USTs were subsequently over-excavated and are no longer in place.

stockpile[s]) in 1991 (EAG 1991b). Analytical data are unavailable, but multiple samples were reportedly collected from the stockpile(s) after treatment. The portions of the stockpile(s) containing the highest pre-remediation TPH concentrations reportedly contained less than 1.0 mg/kg of TPH following remediation activities. Clean gravel imported from off-site, stockpiled excavation overburden soil, and the remediated soil were used to backfill the UST 1-5 excavation. The clean gravel was placed in the open UST 1-5 excavation from the excavation floor to approximately 14 feet bgs (above the groundwater level; average thickness of approximately 3 feet based on area/volume calculations), followed by stockpiled overburden soil, and then the remediated soil (approximately the uppermost 3.5 feet of soil based on area/volume calculations). Remediated soil was reportedly returned to the portion of the excavation from which it originated (e.g., the area of UST 1 was backfilled with remediated soil that originated from UST 1). UST 6 was reportedly backfilled entirely with the remediated soil from that excavation. It is unknown how successful this effort was to return soil to the location from which it originated. It does not appear that any soil was hauled off-site for disposal. After compaction, the UST 1-5 excavation was paved with asphalt.

Although the aforementioned EAG 1990-1991 soil and groundwater data are helpful to understand some aspects of the gasoline releases, these data are not included as RI results in the tables and figures of this Report since laboratory analytical reports and definitive sampling locations are missing for many of the results, TPH was analyzed by USEPA Method 418.1, and these results are no longer representative of current subsurface conditions.

In 2012, Associated Environmental Group, LLC (AEG) completed a limited Phase II ESA of the parcel (AEG 2012). AEG advanced four soil borings and collected soil samples around the dispenser island and service station building (see Figure 3). AEG did not encounter groundwater to the maximum explored depth of their borings (17 feet bgs). Each soil sample was analyzed for VOCs and TPH in the gasoline range (TPH-G). AEG documented elevated photoionization detector (PID) readings and strong petroleum odors from four to 15 feet bgs at location B-1, southeast of the previous UST 1-5 excavation (see Figure 3). TPH-G was detected in soil at B-1 at concentrations exceeding the Model Toxics Control Act (MTCA) soil-to-groundwater screening level (SL). VOCs were also detected in soil at B-1 but did not exceed MTCA soil direct contact SLs for unrestricted land use or soil-to-groundwater SLs. Boring locations B-2 and B-3 were located on the southern and northern ends of the dispenser island, respectively, and location B-4 was located directly northwest of the service station building. Soil samples collected from B-2, B-3, and B-4 did not exceed MTCA soil direct contact SLs for unrestricted land use or soil-to-groundwater SLs. In addition, no elevated PID readings were recorded from soil borings B-2 through B-4.[6]

The Washington State Department of Ecology (Ecology) completed a Site Hazard Assessment in 2013 (Ecology 2013). Ecology reported that previous investigations have confirmed the presence of TPH in subsurface soil at the Site. Ecology also concluded that groundwater impacts had not been confirmed and that the extent of contamination has not been fully delineated.

[6] Unlike the EAG 1990-1991 results, the 2012 AEG data are included as RI results in figures and tables of this Report.

2.4 Regulatory Context

The Facility/Site ID for the Site is 13693544 and the Cleanup Site ID for the Site is 7996. It is expected that the identified contamination will eventually be addressed at an undetermined future date through Ecology's Voluntary Cleanup Program as described in Washington Administrative Code (WAC) 173-340-515.

2.5 Sampling and Analysis Plan

Based on a review of the above-mentioned historical reports, the following data gaps associated with the Site's environmental conditions were identified and were the impetus for conducting additional investigation activities:

- Identifying whether groundwater contamination is associated with former USTs, hoists, or other historical on-site operations.
- Identifying whether additional soil contamination is associated with former USTs, hoists, or other historical on-site operations beyond that which was previously remediated.
- Confirming excavated soil returned to the Site as backfill was remediated, since limited analytical data was available for review.

PIONEER Technologies Corporation (PIONEER) designed a Sampling and Analysis Plan (SAP) to fill these data gaps (see Appendix C). Ecology's brownfield and Voluntary Cleanup Program team provided an informal courtesy review and provided comments on the SAP, which were incorporated into the final version. The final version of the SAP was reviewed and approved by USEPA on June 10, 2021.

2.6 Key Transport and Exposure Pathways

At this point in the RI process, the following transport and exposure pathways were considered the key pathways for conservative screening purposes:

- The soil direct contact exposure pathways;
- The soil-to-groundwater transport pathway;
- The groundwater as drinking water exposure pathways; and
- The vapor intrusion (VI) transport and exposure pathways.

The presentation and evaluation of results in this Report is organized in the context of the aforementioned pathways. A preliminary evaluation of the exposure pathways based on data obtained to date is presented in the current conceptual site model (CSM; see Section 4.7).

The groundwater-to-surface water transport pathway is not considered relevant due to the distance to the nearest surface water body. The nearest surface water bodies are Mission Creek, which is approximately 1,400 feet to the northeast, and the East Bay of Budd Inlet, which is approximately 2,400 feet to the west of the parcel (see Figure 1).

SECTION 3: 2021 RI ACTIVITIES

The purpose of this section is to summarize the RI activities completed at the Site in 2021.

3.1 Summary of RI Activities

The 2021 RI activities included advancing and sampling soil borings, installing and sampling MWs, and other investigation activities. The first activity was a geophysical survey to search the Site for additional USTs, oil-water separators, or septic leach fields. Soil samples were then collected from nine soil borings (SB101 through SB109) and a groundwater sample was collected from a temporary MW in SB101 (see Figure 4). Subsequently, soil samples were collected from eight additional borings (SB201 and MW1 through MW7), and permanent MWs MW1 through MW7 were installed and developed (see Figure 4). A GWM event for the seven permanent MWs was completed in July 2021. A hazardous materials survey (i.e. asbestos and lead-based paint) was also completed for the parcel under separate cover (Landau Associates 2021).

The soil and groundwater sample locations were selected to evaluate the MTCA concerns associated with the Site. Soil borings SB101 through SB105 were located in and around the previous UST 1-5 excavation to characterize remediated backfill and soil beyond the vertical and horizontal extents of the excavation. Soil borings SB106, SB107, and SB109 were located within and south of the service station building to characterize potential releases associated with the service station building. Soil boring SB108 was advanced adjacent to the former fuel oil UST (UST 6) to characterize subsurface soil near the UST. MW1 through MW7 were located along the perimeter of the parcel or in the San Francisco Avenue/ Bethel Street rights-of-way to assess potential groundwater impacts from historical on-site releases.[7] Each MW screen was positioned based on the shallowest depth to groundwater encountered during drilling. Boring logs for the 10 soil borings and construction details for the seven permanent MWs are included in Appendix B. The locations of all documented and representative soil sampling locations (i.e., the 2012 and 2021 soil borings) and the seven MW locations are shown on Figure 4.

3.2 Summary of Key Field Procedures

Key field activities to date have included (1) a geophysical survey, (2) soil sampling, (3) MW installation, development, and surveying, and (4) a GWM event. These field activities were completed in accordance with USEPA-approved SAP and the Quality Assurance Project Plan (QAPP) prepared for the City of Olympia's USEPA brownfield assessment grant (PIONEER 2020, 2021a, 2021b) since the grant funded the investigation activities. Components of the field procedures that are particularly relevant to the purpose of this Report are summarized in the following subsections.

[7] The groundwater flow direction on the Site was unknown at the time of MW installation.

3.2.1 Geophysical Survey

GPRS conducted a geophysical survey prior to any drilling and sampling activities. The objectives of the survey were to (1) identify current or former USTs not previously identified, (2) identify any current or former septic systems, (3) obtain information regarding the historical excavation boundaries, and (4) assess potential utilities near proposed drilling locations. GPRS utilized ground penetrating radar and electromagnetic conductivity tools to conduct the survey. GPRS conducted the survey on both the 1400 Bethel Street NE parcel and the adjoining property to the north (1408 Bethel Street NE), which was owned by the same owner.

3.2.1 Soil Sampling

Soil samples were collected continuously at each locations using standard direct push and sonic drilling methodologies. PIONEER field personnel visually classified the soil samples in accordance with the ASTM International Practice D2488, noted any visual or olfactory indicators of environmental contamination, and screened soil for the presence of ionizable VOCs using a PID equipped with a 10.6 eV lamp. Sub-samples for PID screening were collected at intervals of no more than two feet apart. PID screening was conducted by placing the sub-sample into a sealable Ziploc® bag, inserting the tip of the PID into the headspace of the bag, and recording the screening result. The PID detection limit was 0.1 part per million. The logged lithology, PID field screening results, and visual and olfactory observations are included on the soil boring logs in Appendix B.

PIONEER field personnel selected soil samples for laboratory analyses based on the interpreted worst-case location(s) within a given soil boring. Factors considered in the selection of soil sample intervals included PID field measurements, visual and olfactory observations, the nature and depth of fill material, and professional judgement. Soil samples for VOC and TPH-G analyses were collected first and in accordance with USEPA Method SW846-5035 by placing the soil sample into new, unpreserved 40-milliliter vials, which were immediately preserved by the lab upon arrival. Soil samples for non-VOC analyses were placed in unpreserved, 4-ounce, glass jars. Pre-cleaned sample containers supplied by the laboratory were used for collecting all samples.

3.2.2 MW Installation, Development, and Surveying

All MWs were installed by a licensed Washington driller in accordance with WAC 173-160 Part II. Construction details for the seven permanent MWs are included in Appendix B.

All permanent MWs were developed by over-pumping the MW with a whaler pump until the turbidity in the development water was less than 5 nephelometric turbidity units (NTU) or 10 MW volumes were purged (if the MWs purged dry during development). If it was clearly not practical to continue development to reach the 5 NTU goal, then a development goal of 50 NTU was used instead. A calibrated field turbidity meter was used to measure the turbidity.

A licensed Washington surveyor established the vertical and horizontal location of the top of casing for all permanent MWs. The vertical elevation was surveyed to an accuracy of 0.01-foot NAVD88.

3.2.3 GWM Event

During the GWM event, PIONEER field personnel used an electronic interface probe to measure the static water level and any measurable light non-aqueous phase liquid (LNAPL) thickness in the seven permanent MWs that had been previously installed. The depth-to-water and any LNAPL thickness were recorded to the nearest 0.01 foot from the top of the MW casing.

PIONEER field personnel used the following low-flow purging procedures to purge water from each permanent MW prior to sampling.

A peristaltic pump, equipped with dedicated polyethylene tubing, was used to purge water from the MW. The tubing intake was typically positioned approximately two feet below the top of the MW screen or two feet below the water level, whichever was lower. A variable-frequency drive controller on the pump was used to limit the purging flow rate to less than 300 milliliters per minute. During purging, relative water levels were monitored with an interface probe or electronic water level indicator, and water quality parameters (i.e., pH, specific conductivity, turbidity, dissolved oxygen, temperature, and oxidation/reduction potential) were measured with a calibrated water quality meter to verify stabilization. In the event that water quality parameters did not stabilize, purging was considered complete after 60 minutes of continuous purging. Groundwater samples were collected immediately following purging without turning off the pumping system.

The one direct-push groundwater sample (SB1) was collected from a temporary MW installed in the soil boring. The temporary groundwater MW was constructed with a 5-foot long, 1-inch diameter, 0.10-inch slotted polyvinyl chloride (PVC) screen and associated sand prepack and PVC risers. The temporary MW was installed such that the screen intersected the depth where groundwater was encountered. After gauging the depth to water and total well depth, the temporary MW was purged using a peristaltic pump at low flow rates. Limited purging occurred due to low transmissivity and limited groundwater being available to sample (approximately three inches of water was at the bottom of the temporary MW screen).

Pre-cleaned sample containers supplied by the laboratory were used for collecting all samples. Groundwater samples for VOC and TPH-G analyses were collected first and filled to a positive meniscus so that the containers did not contain any headspace. Samples for metals analyses were filtered in the field using a 0.45-micron filter.

3.3 Constituents of Interest

The initial constituents of interest (COIs) for RI activities were (1) the constituents identified in soil or groundwater during the 1990 removal of the USTs (EAG 1990, 1991a, 1991b) and/or the 2012 limited Phase II ESA (AEG 2012), and (2) other constituents that might reasonably be associated with the historical gasoline and auto repair operations. Thus, the initial COIs included VOCs, TPH-G, TPH in the diesel range (TPH-D), TPH in the heavy oil range (TPH-HO), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and lead.

3.4 Laboratory Analyses

Laboratory analyses were performed in accordance with the USEPA-approved QAPP for the City of Olympia's USEPA brownfield assessment grant (PIONEER 2020, 2021a). The following analytical methods were used to analyze investigation samples:

- VOCs by USEPA Method SW846-8260D
- TPH-G by Ecology Method NWTPH-Gx
- TPH-D and TPH-HO by Ecology Method NWTPH-Dx
- PAHs by USEPA Method SW846-8270C
- PCBs by USEPA Method SW846-8082
- Lead by USEPA Method SW846-7010
- Extractable Petroleum Hydrocarbons by Ecology Method NWEPH
- Volatile Petroleum Hydrocarbons by Ecology Method NWVPH
- Total Organic Carbon by USEPA Method 9060

Libby Environmental in Olympia, Washington (and their subcontracted laboratory Fremont Analytical) analyzed the soil and groundwater samples. Laboratory analytical reports for the investigation activities are included in Appendix D.

Quality control (QC) was conducted and evaluated in accordance with the USEPA-approved QAPP for the City of Olympia's USEPA brownfield assessment grant (PIONEER 2020, 2021a). The results for the field QC samples and the laboratory QC samples are presented in Appendix D. A cursory review of the field QC and laboratory QC results was performed in order to determine if the overall data set was valid and of usable quality. The review of QC results and the associated data quality conclusions are summarized Appendix D. The cursory review determined that the overall data set is of usable quality and meets the Property-specific objectives.

3.5 SAP Deviations

The RI activities were completed in general accordance with the site-specific SAP (see Appendix C). The only identified deviations from the SAP were:

- Due to hard soil conditions (i.e., glacial till), SB101 through SB109 were not advanced to the depths proposed in the SAP. Drilling refusal was encountered in these borings at depths between 14 and 17 feet bgs. In addition, proposed groundwater samples could not be collected from the proposed temporary MWs at SB103 through SB106 and SB108 because groundwater was not encountered prior to drilling refusal.
- Although groundwater was encountered at SB101, the limited flow and recovery in the temporary MW prevented collection of sufficient groundwater for all proposed analyses. As a result, the SB101 groundwater sample was only analyzed for VOCs, TPH-G, TPH-D, and TPH-HO.
- An additional soil boring (SB109) was advanced south of the service station building to delineate field evidence of impact observed within the service station building.
- Several soil borings and MWs were shifted slightly to accommodate underground utilities and overhead obstructions.

- Subsequent to Ecology approval of proposed permanent MW locations, several MWs were shifted and renumbered based on field evidence of contamination. The direction of groundwater flow was unknown at the time of MW installations and submittal of the SAP. For example, the proposed northeastern-most MW was relocated to the south of the service station building in order to better bound potential contamination flowing in a southerly direction. The other MWs were only slightly shifted (less than 15 feet) from their proposed locations.

These SAP deviations did not impact the project objectives or the use of the data obtained during the RI activities.

SECTION 4: RI RESULTS AND DISCUSSION

The purpose of this section is to present and discuss the RI results to date (i.e., geophysical survey results and soil and groundwater results from the 2012 and 2021 samples) relative to pathway-specific SLs. Laboratory analytical reports for all laboratory analyses of the 2021 RI samples are included in Appendix D. The AEG report (and the associated laboratory analytical report for the 2012 soil samples) is included in Appendix E. The soil results for constituents detected in at least one soil or groundwater sample are presented in Table 2 relative to soil direct contact SLs and soil-to-groundwater SLs. The groundwater results for constituents detected in at least one soil or groundwater sample are presented in Table 3 relative to groundwater SLs.

4.1 Geophysical Survey Results

Historical excavation boundaries were consistent with those previously identified (see Figure 3). No previously unidentified current or former USTs, septic systems, or utility conflicts were identified on the 1400 Bethel Street NE parcel or the adjoining property to the north (1408 Bethel Street NE), which was owned by the same owner.

4.2 Screening Levels

Pathway-specific SLs were calculated for constituents detected in at least one soil or groundwater sample. The SL calculations are presented in Appendix F, with the exception of preliminary soil VI SLs, which were established as defined in MTCA regulations. The following subsections summarize the methodology used to calculate the pathway-specific SLs.

4.2.1 Soil Direct Contact SLs

Soil direct contact SLs were calculated for an unrestricted land use scenario and a commercial/industrial land use scenario. With the exception of TPH, the soil direct contact SLs for an unrestricted land use scenario were Standard Method B soil cleanup levels calculated in accordance with WAC 173-340-740(3)(b)(iii)(B), subject to any necessary adjustments per WAC 173-340-740. With the exception of TPH, the soil direct contact SLs for a commercial/industrial land use scenario were Standard Method C soil cleanup levels calculated in accordance with WAC 173-340-745(5)(b)(iii)(B), subject to any necessary adjustments per WAC 173-340-745. The TPH soil direct contact SLs were values Ecology calculated for default TPH compositions when developing Method A soil cleanup levels (Ecology 2001a, 2001b).

4.2.2 Soil-to-Groundwater SLs

With the exception of TPH, the soil-to-groundwater SLs were calculated using the MTCA variable parameter three-phase partitioning model in accordance with WAC 173-340-747(5), subject to (1) any necessary residual saturation adjustments required by WAC 173-340-747(10), and/or (2) any necessary adjustments per WAC 173-340-740. MTCA defaults in WAC 173-340-747(4) were used as the input parameters in the three-phase partitioning model calculations. The groundwater SLs described in the next subsection were used as the target groundwater concentrations for the three-phase partitioning

model calculations. The TPH soil-to-groundwater SLs were based on MTCA Method A soil cleanup levels, which in turn were based on the more stringent of the results from the four-phase partitioning model per WAC 173-340-747(6) and the residual soil saturation concentrations in Table 747-5 of MTCA regulations for default TPH compositions.

4.2.3 Groundwater SLs

The groundwater SLs were calculated for protection of the groundwater as drinking water exposure pathways. With the exception of TPH, the groundwater as drinking water SLs were Standard Method B groundwater cleanup levels calculated in accordance with WAC 173-340-720(4)(b)(i) and WAC 173-340-720(4)(b)(iii), subject to any necessary adjustments per WAC 173-340-720. The TPH-D, TPH-G, and TPH-HO groundwater as drinking water SLs were MTCA Method A groundwater cleanup levels, which were based on values calculated for default TPH compositions in accordance with WAC 173-340-720(4)(b)(iii).

4.2.4 Preliminary Vapor Intrusion SLs

Preliminary soil VI SLs and preliminary groundwater VI SLs for volatile constituents detected in at least one soil or groundwater sample were established to conservatively screen existing soil and groundwater results. The preliminary soil VI SLs were established as defined in MTCA regulations. Specifically, the preliminary soil VI SLs for VOCs and TPH-G equal the soil-to-groundwater SLs (see Section 4.2.2) in accordance with WAC 173-340-740(3)(b)(iii)(C) and WAC 173-340-745(5)(b)(iii)(C). The preliminary soil VI SL for TPH-D is 10,000 mg/kg as defined in WAC 173-340-740(3)(b)(iii)(C)(II) and WAC 173-340-745(5)(b)(iii)(C)(II). As shown in Appendix F, the preliminary groundwater VI SLs were calculated as the more stringent of the groundwater VI carcinogenic and non-carcinogenic values from the Ecology Cleanup Levels and Risk Calculation (CLARC) database (Ecology 2021).

4.3 Soil Direct Contact Results and Discussion

A comparison of soil concentrations in soil samples with soil direct contact SLs is presented in Table 2 and summarized in Figure 5. In general, there were very few soil direct contact SL exceedances. The only soil direct contact SL exceedances were:

- A total PCBs soil concentration of 0.88 mg/kg in the shallow soil sample from SB106 (beneath the floor of the service station building) slightly exceeded the soil direct contact SL for unrestricted land use (0.70 mg/kg).
- TPH-HO soil concentrations in the shallow soil samples from SB106 and SB107 (beneath the floor of the service station building) exceeded the soil direct contact SL for unrestricted land use.

These few minor soil direct contact SL exceedances do not pose a significant concern and can likely be remedied relatively easily via soil removal due to their shallow nature (between one and six feet bgs) and/or a cap/cover. Deeper samples collected from these locations do not exceed the soil direct contact SLs for unrestricted land use. Maintaining the existing cap/cover (e.g., service station building and surrounding pavement), completing a focused soil excavation, and/or installing a new cap/cover would likely be a suitable remedy to address these minor soil direct contact exceedances and satisfy MTCA regulations.

4.4 Soil-to-Groundwater Results and Discussion

A comparison of soil concentrations in soil samples with soil-to-groundwater SLs is presented in Table 2 and summarized in Figure 6. In general, the soil-to-groundwater SL exceedances were located beyond the horizontal and vertical extent of the previously excavated and remediated soil. The soil-to-groundwater SL exceedances were:

- TPH-G soil concentrations (and in one case ethylbenzene concentrations) exceeded soil-to-groundwater SLs in the samples collected from the previously excavated and remediated soil. These samples included the shallow soil samples collected from SB102 (2-4 feet bgs) and SB103 (4-6 feet bgs) and the deeper soil sample collected from SB101 (15-17 feet bgs). Deeper soil samples at SB102 and SB103 (8-10 and 14-16 feet bgs at SB102 and 14-16 feet bgs at SB103) and the shallow soil sample collected from SB101 (4-6 feet bgs) did not exceed soil-to-groundwater SLs.
- TPH-G soil concentrations (and in some cases total naphthalenes concentrations) exceeded soil-to-groundwater SLs in the soil samples beyond the vertical and lateral extent of the previously completed excavation. These samples included the composite sample from AEG B-1 (4-15 feet bgs), the deeper sample from SB104 (14-16 feet bgs), the deeper sample from SB105 (14-16 feet bgs), the only sample from SB109 (13-15 feet bgs), both samples from MW6 (12-14 and 20-22 feet bgs), and the deepest sample at MW7 (26-28 feet bgs).
- TPH-G, TPH-HO, benzene, ethylbenzene, total xylenes, total naphthalenes, chloroform, methylene chloride, and/or tetrachloroethylene (PCE) soil concentrations in soil samples collected from beneath the service station building exceeded soil-to-groundwater SLs. These samples included the samples collected from SB106 (4-6 and 14-16 feet bgs) and SB107 (1-3 and 12-14 feet bgs)
- The only soil concentrations that exceeded ten times the soil-to-groundwater SLs were the TPH-G concentrations in the samples collected from AEG B-1 (4-15 feet bgs), SB101 (15-17 feet bgs), SB105 (14-16 feet bgs), SB106 (4-6 feet bgs), SB109 (13-15 feet bgs), and MW6 (12-14 feet bgs), and the total naphthalenes concentration in the samples collected from SB101 (15-17 feet bgs) and SB106 (4-6 feet bgs).

The gasoline-related soil-to-groundwater SL exceedances (i.e., TPH-G, benzene, ethylbenzene, total xylenes, and total naphthalenes) pose a concern because gasoline-related groundwater SL exceedances are present in groundwater near the western parcel boundary, as discussed in the next section. Further cleanup will likely be required to reduce concentrations of gasoline-related constituents within and/or surrounding the previous UST 1-5 excavation footprint to address off-property migration of gasoline-related impacts.

Although there were soil-to-groundwater SL exceedances for several constituents unrelated to gasoline in soil underneath the service station building (i.e., TPH-HO, chloroform, methylene chloride, and/or PCE in SB106 and SB107 samples), these soil-to-groundwater SL exceedances have not caused any groundwater SL exceedances in groundwater, as presented in the next section.

4.5 Groundwater Results and Discussion

A comparison of concentrations in the groundwater samples with groundwater SLs is presented in Table 3 and summarized in Figure 7. In addition, field water quality parameters obtained during the groundwater sampling are shown in Table 4. The only groundwater SL exceedances were gasoline-related constituents in three groundwater samples located near the western parcel boundary. Specifically, concentrations of TPH-G, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, and/or total naphthalenes exceeded groundwater SLs at SB101 (within the previous UST 1-5 excavation), MW6, and MW7. The TPH-G concentration of 20,000 ug/L in MW6 was the only groundwater concentration that exceeded ten times the groundwater SL.

Given the completed UST removals and soil remediation activities in 1990-1991 and the propensity for gasoline to naturally degrade in the subsurface over time (e.g., natural source zone depletion, natural degradation on the distal ends of gasoline plumes), gasoline-related constituent concentrations have likely decreased over the past few decades since gasoline was released and the extent of the gasoline plume is likely limited. In addition, existing data from MW1 through MW5 and MW7 indicate the gasoline plume is delineated to the north, east, and south. However, the remaining TPH-G concentration of 20,000 ug/L at MW6 near the western parcel boundary is significant and will likely warrant further cleanup. Although it is premature to determine a recommended remedy until the full nature and extent of the gasoline plume is defined, there are many appropriate remedial techniques that may be feasible to remediation the plume, including but not limited to (1) further source area soil removal, (2) in-situ groundwater treatment (e.g., bioremediation), (3) a permeable reactive barrier along the western parcel boundary, and/or (4) monitored natural attenuation.

4.6 Vapor Intrusion Results and Discussion

A preliminary evaluation of the VI pathway was conducted in order to identify potential VI issues. The preliminary VI evaluation consisted of comparing existing soil and groundwater results with preliminary soil VI SLs and preliminary groundwater VI SLs, respectively. A comparison of soil concentrations in the in-place soil samples with preliminary soil VI SLs is presented in Table 5, and a comparison of groundwater concentrations in the groundwater samples with preliminary groundwater VI SLs is presented in Table 6. The results of these comparisons are summarized in Figure 8. In general, exceedances of preliminary soil VI SLs or preliminary groundwater VI SLs were relatively widespread in the area of the former USTs and auto repair operations. Specifically, the exceedances were:

- TPH-G soil concentrations exceeded preliminary soil VI SLs in soil samples collected from AEG B-1, SB101 through SB107, SB109, MW6, and MW7. Concentrations of other gasoline-related constituents (i.e., benzene, ethylbenzene, total xylenes, and/or total naphthalenes) also exceeded preliminary soil VI SLs in soil samples collected from SB101, SB105, SB106, MW6, and MW7.
- Methylene chloride, PCE, and chloroform soil concentrations exceeded preliminary soil VI SLs in soil samples collected from SB107 beneath the service station building.
- TPH-G, benzene, total xylenes, total naphthalenes, and/or 1,2,4-trimethylbenzene concentrations in groundwater samples collected near the western parcel boundary (MW6 and

MW7) as well as the temporary MW installed in the previous UST 1-5 excavation (SB101) exceeded preliminary groundwater VI SLs.

Since groundwater is encountered at relatively deep depths (greater than 16 feet bgs), the plume is exclusively petroleum-related compounds, and concentrations of TPH-G in groundwater concentrations are less than 30,000 ug/L, it is unlikely that there are widespread gasoline-related groundwater VI issues (Ecology 2016). However, additional VI investigation (e.g., soil gas sampling) and evaluation activities are needed during future RI activities to further assess the VI pathway.

4.7 Current Conceptual Site Model

The current CSM for the Site was developed based on a review of previous Site documents and the results presented and discussed in this Report, and is summarized in this section. The CSM includes a high-level summary of the nature and extent of Site contamination, current constituents of potential concern (COPCs), and exposure pathway elements. The CSM will be updated as necessary when new information is obtained.

4.7.1 Nature and Extent of Site Contamination Summary

Based on existing information and results, the nature and extent of Site contamination can be generally summarized as follows:

- The primary release/source of concern is the gasoline release(s) in the vicinity of former UST 1 through UST 5. A secondary release/source of concern is a release of gasoline, heavy oil, methylene chloride, PCE, and chloroform underneath the service station building.
- All soil and groundwater SL exceedances are from gasoline-related constituents, with the exception of localized TPH-HO, PCBs, methylene chloride, PCE, and chloroform impacts in soil beneath the service station building.
- Elevated soil concentrations of gasoline-related constituents are present within and surrounding the previous UST 1-5 excavation footprint.
- Elevated groundwater concentrations of gasoline-related constituents are present near the western parcel boundary. The highest TPH-G groundwater concentration (20,000 ug/L in MW6) is located immediately downgradient of the previous UST 1-5 excavation. The extent of gasoline-related groundwater SL exceedances to the west and northwest of the parcel boundary is not yet defined.
- Fortunately, gasoline constituents are typically highly amenable to natural biodegradation and attenuation. Thus, it is expected that concentrations of gasoline-related constituents at the Site will decrease over time.
- Additional VI investigation (e.g., soil gas sampling) and evaluation activities are needed during future RI activities to further assess the VI pathway.
- The only exceedances of soil direct contact SLs for unrestricted land use were PCBs and TPH-HO in soil samples beneath the existing concrete floor of the service station building.

4.7.2 Current COPCs

A constituent detected during initial RI activities was identified as a current COPC if any of the following criteria were met for that constituent:

- The concentration in any soil sample exceeded a soil direct contact SL, the soil-to-groundwater SL, or the preliminary soil VI SL; or
- The concentration in any groundwater sample exceeded the groundwater SL or the preliminary groundwater VI SL.

Thus, based on the above criteria, the current COPCs are:

- TPH-G
- TPH-HO
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethlybenzene
- Benzene
- Chloroform
- Ethylbenzene
- Methylene chloride
- PCE
- Total xylenes
- Total naphthalenes
- Total PCBs

4.7.3 Complete and Potentially Complete Exposure Pathways

The USEPA defines an exposure pathway as "the course a chemical or pollutant takes from the source to the organism exposed" and an exposure route as "the way a chemical or pollutant enters an organism after contact" (USEPA 1989). For an exposure pathway to be complete, all four of the following elements must be present: (1) an on-site constituent source, (2) a migration/transport route, (3) a potentially exposed human or ecological receptor, and (4) a route of exposure (e.g., ingestion, dermal contact, inhalation). If any one of the four elements is absent, then the pathway is considered incomplete, and there is no exposure and no risk associated with the pathway.

Based on existing data and information, the following exposure pathways were conservatively considered to be complete or potentially complete for the purpose of this Report:

- Incidental ingestion, dermal contact, and inhalation of particulates from surface and subsurface soil by current and future remediation workers, current and future utility workers, future redevelopment workers, future on-parcel residents, and future on-parcel commercial workers;
- Ingestion of groundwater as drinking water by future on-parcel residents, future on-parcel commercial workers, future off-parcel residents, future off-parcel commercial workers, and future off-parcel students/teachers;
- Dermal contact with groundwater by current and future remediation workers; and
- Inhalation of indoor air vapors on the first floor of occupied spaces by future on-parcel residents, future on-parcel commercial workers, current and future off-parcel residents, and current and future off-parcel commercial workers.

A pathway that is conservatively considered to be complete or potentially complete for the purpose of this Report does not necessarily mean there is an unacceptable risk to human health. For instance,

shallow groundwater on and adjacent to the parcel is not currently used for drinking water and it is highly unlikely that shallow groundwater would ever be used for drinking water in the future. Likewise, based on existing data, it is unlikely that there are any unacceptable indoor air risks for off-parcel receptors.

4.7.4 Incomplete Exposure Pathways

Based on existing data and information, the following exposure pathways are currently considered incomplete for the following reasons:

- Incidental ingestion, dermal contact, and inhalation of particulates from surface and subsurface soil are incomplete pathways for current trespassers because the concrete slab of the service station building serves as a cap/cover over the only locations with exceedances of soil direct contact SLs for unrestricted land uses.
- Incidental ingestion, dermal contact, and inhalation of particulates from surface and subsurface soil are incomplete pathways for current and future off-parcel residents, current and future off-parcel commercial workers, and current and future off-parcel students/teachers because any off-parcel soil impacts near these potential receptors would be at or below the maximum reasonable exposure point depth of 15 feet per WAC 173-340-740(6)(d).
- Ingestion of groundwater as drinking water is an incomplete pathway for current off-parcel residents, current off-parcel commercial workers, and current off-parcel students/teachers because shallow groundwater on and adjacent to the parcel is not used as a drinking water source.
- Ingestion of groundwater as drinking water is an incomplete pathway for current trespassers, current and future remediation workers, current and future utility workers, and future redevelopment workers because shallow groundwater on and adjacent to the parcel is not the source of their drinking water.
- Dermal contact with groundwater is an incomplete pathway for all receptors except current and future remediation workers because these receptors do not and will not have access to groundwater on and adjacent to the parcel (which is encountered at depths greater than 16 feet bgs).
- Inhalation of indoor air vapors is an incomplete pathway for current trespassers, current and future remediation workers, current and future utility workers, and future redevelopment workers because these receptors are outside.
- Inhalation of indoor air vapors is an incomplete pathway for current and future off-parcel students/teachers because groundwater impacts are not present near the locations of these receptors.

4.7.5 Terrestrial Ecological Evaluation

The Site will likely be excluded from a terrestrial ecological evaluation in accordance with WAC 173-340-7491(1)(b), contingent on future development plans and determination of the MTCA Site boundary. The entire parcel has historically been used for industrial uses. Alternatively, a simplified terrestrial ecological evaluation may be applicable.

SECTION 5: CONCLUSIONS AND PATH FORWARD

This section presents conclusions, RI data gaps, and a potential MTCA path forward.

5.1 Conclusions

The 2021 RI activities have confirmed that the Site contains subsurface soil contamination at concentrations exceeding MTCA SLs. The majority of the remaining soil contamination is gasoline-related contamination near the base of the previous UST 1-5 excavation and within and surrounding the footprint of this previous excavation. Some gasoline-related contamination also remains in the soil that was used to backfill the previous UST 1-5 excavation. In addition, some gasoline-related, TPH-HO, PCB, methylene chloride, and PCE contamination is present in soil beneath the concrete slab of the service station building.

Soil direct contact SL exceedances were limited to TPH-HO and total PCBs in soil beneath the floor of the service station building. These few minor soil direct contact SL exceedances do not pose a significant concern and can likely be remedied relatively easily via soil removal due to their shallow nature (between one and six feet bgs) and/or a cap/cover. Deeper samples collected from these locations did not have any exceedances of soil direct contact SLs for unrestricted land use.

Most of the soil-to-groundwater SL exceedances were gasoline-related exceedances within and surrounding the previous UST 1-5 excavation. These gasoline-related soil-to-groundwater SL exceedances (i.e., TPH-G, benzene, ethylbenzene, and total naphthalenes) pose a concern because gasoline-related groundwater SL exceedances are present in groundwater near the western parcel boundary. Further cleanup will likely be required to reduce concentrations of gasoline-related constituents within and/or surrounding the previous UST 1-5 excavation footprint to address off-property migration of gasoline-related impacts. There were also gasoline-related soil-to-groundwater SL exceedances in soil samples collected within the southern portion of and to the south of the service station building (i.e., SB106 and SB109). In addition, there were soil-to-groundwater SL exceedances for TPH-HO, chloroform, methylene chloride, and PCE in soil underneath the service station building. However, the TPH-HO, chloroform, methylene chloride, and PCE soil-to-groundwater SL exceedances have not caused any groundwater SL exceedances in groundwater.

The 2021 RI activities have confirmed that the Site contains groundwater contamination at concentrations exceeding MTCA SLs. The only groundwater SL exceedances were gasoline-related constituents in three groundwater samples located near the western parcel boundary. Given the completed UST removals and soil remediation activities in 1990-1991 and the propensity for gasoline to naturally degrade in the subsurface over time (e.g., natural source zone depletion, natural degradation on the distal ends of gasoline plumes), gasoline-related constituent concentrations have likely decreased over the past few decades since gasoline was released and the extent of the gasoline plume is likely limited. In addition, existing data from MW1 through MW5 indicate the gasoline plume is delineated to the north, east, and south. However, the remaining TPH-G concentration of 20,000 ug/L at MW6 on the

western parcel boundary is significant and will likely warrant further cleanup. Although it is premature to determine a recommended remedy until the full nature and extent of the gasoline plume is defined, there are many appropriate remedial techniques that may be feasible to remediation the plume, including but not limited to (1) further source area soil removal, (2) in-situ groundwater treatment (e.g., bioremediation), (3) a permeable reactive barrier along the western parcel boundary, and/or (4) monitored natural attenuation.

A preliminary evaluation of the VI pathway was conducted in order to identify potential VI issues using soil and groundwater sample data. In general, exceedances of preliminary soil VI SLs or preliminary groundwater VI SLs were relatively widespread in the area of the previous UST 1-5 excavation and the service station building. Since groundwater is encountered at relatively deep depths (greater than 16 feet bgs), the preliminary groundwater VI SL exceedances are exclusively for gasoline-related compounds, and concentrations of TPH-G in groundwater concentrations are less than 30,000 ug/L, it is unlikely that there are widespread gasoline-related groundwater VI issues (Ecology 2016). However, additional VI investigation (e.g., soil gas sampling) and evaluation activities are needed during future RI activities to further assess the VI pathway.

Based on the RI results obtained to date, further cleanup will be needed for the Site to comply with MTCA regulations. The cleanup remedy will be determined following development of a future feasibility study and cleanup action plan, in accordance with MTCA regulations.

5.2 RI Data Gaps

The following RI data gaps remain after this Report and will require further investigation and evaluation prior to completion of a Final RI Report:

- Determining the horizontal extent of off-site groundwater contamination to the west and northwest of the parcel.
- Determining the vertical extent of groundwater contamination on the parcel.
- Assessing seasonal variability of contaminant concentrations in groundwater and groundwater elevation and flow direction both on- and off-parcel.
- Further characterizing source area soil and groundwater contamination in order to support evaluations of cleanup action alternatives in the feasibility study.
- Evaluating potential VI concerns for off-parcel residents and commercial workers associated with groundwater transport of the gasoline plume, including preferential pathways for contamination (i.e., utility corridors).
- Evaluating potential VI concerns for any potential development of the parcel, including preferential pathways for contamination (i.e., utility corridors).
- Evaluating the potential for methane gas generation in subsurface soil vapor (methane can be produced by the natural degradation of petroleum products).
- Completing a terrestrial ecological evaluation.

5.3 Path Forward

A timeline is not available at this time for filling the RI data gaps or completing other phases of the MTCA cleanup process. However, if the City of Olympia is able to garner additional USEPA brownfield assessment grant funds during the fiscal year 2022 application period, RI data gap investigation activities and cleanup planning will likely be completed for the Site in 2022 and/or 2023. If acquired, USEPA brownfield grant funds may be used to complete a RI/Feasibility Study Report, which would support redevelopment of the parcel and hopefully lead to a revitalized neighborhood center.

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Figures

Legend

Parcel Boundary

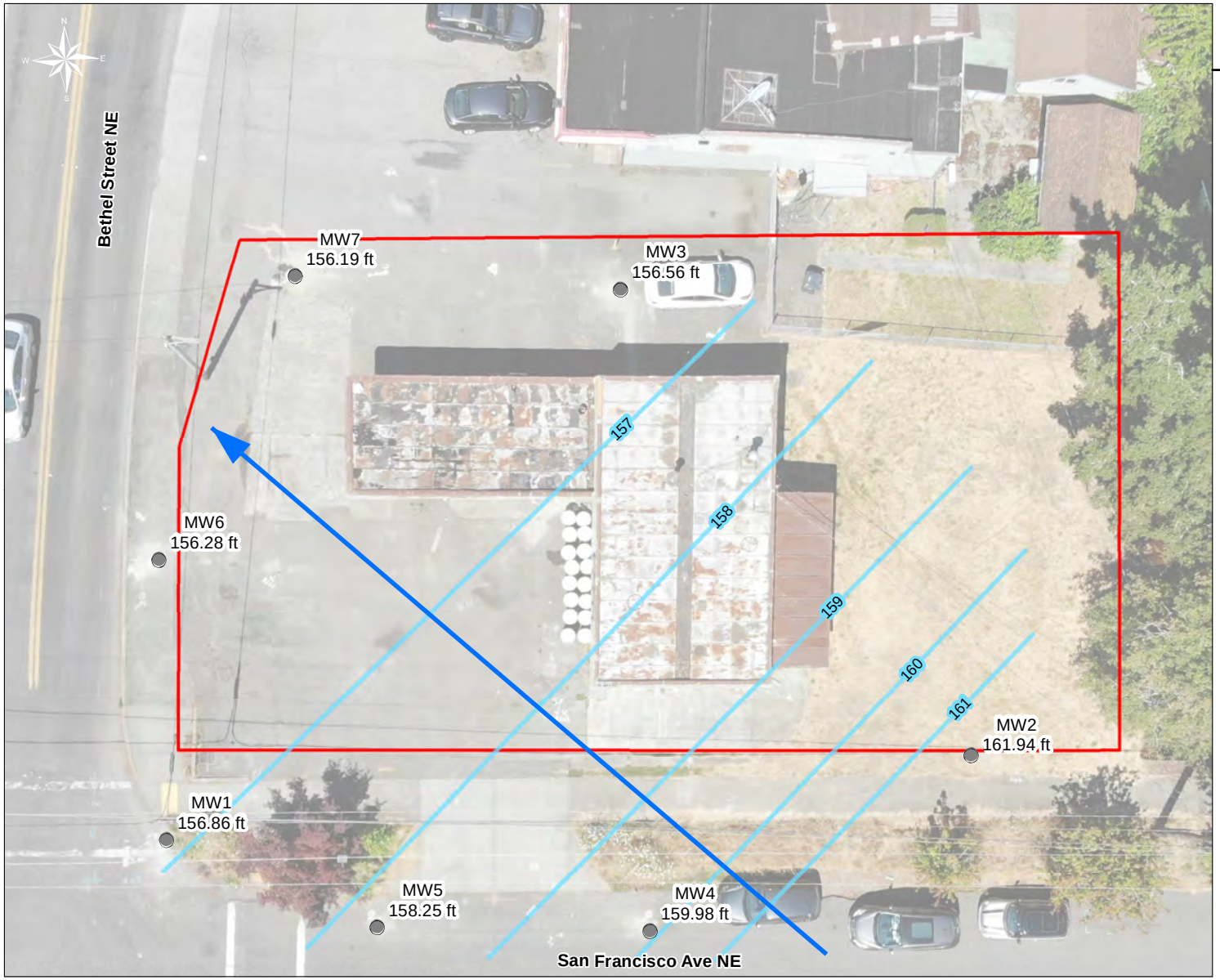
0 1,000 2,000 3,000 Feet

PIONEER TECHNOLOGIES CORPORATION

Site Location Map
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 1

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 1_Site Location.mxd; Author: AR; Date Saved: 10/27/2021



Legend

- Monitoring Wells
- Groundwater Flow Direction
- Groundwater Contours (July 2021)
- Parcel Boundary

Notes:
-Groundwater elevations are shown in feet above mean sea level.
-Contour interval = 1 foot.
-Location of all features are approximate.

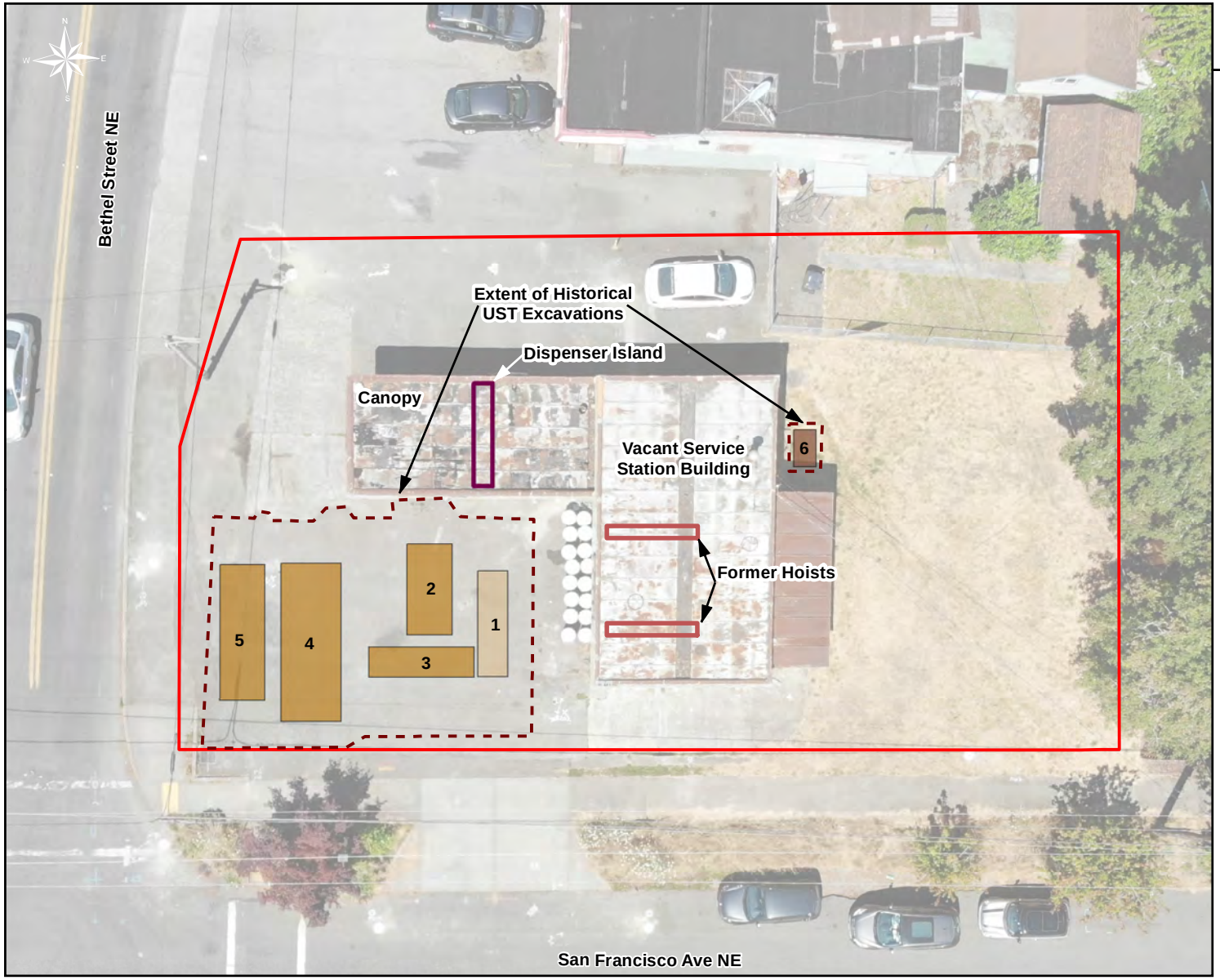
0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Groundwater Flow Map
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 2

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 2_Groundwater Flow Map.mxd; Author: MK; Date Saved: 10/29/2021



Legend

Removed USTs (Labelled 1-6)

- Fuel Oil
- Gasoline
- Waste Oil

Other Historical Features

- Approximate Extent of Historical Excavations
- Former Hoist
- Dispenser Island (above-grade structures removed)
- Parcel Boundary

Notes:
-Location of all features are approximate.

0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Historical Features and Previous Excavations
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 3

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 3_Historical Operations and Excavations.mxd; Author: MK; Date Saved: 10/29/2021

Legend

- Historical Soil Borings (AEG 2012)
- Soil Boring
- Soil Boring with Temporary Monitoring Well
- Monitoring Wells

Other Property Features

- Historical Features
- Parcel Boundary

Notes:
-Soil samples were collected from all soil boring and monitoring well locations.
-Location of all features are approximate.

0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Sampling Locations
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 4

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 4_Sampling Locations.mxd; Author: MK; Date Saved: 10/28/2021

Legend

- Soil Sampling Location

Soil Direct Contact Sampling Results

- All constituent concentrations were less than soil direct contact SLs for unrestricted land use
- The soil concentration for one or more constituents exceeded the soil direct contact SL for unrestricted land use
- The soil concentration for one or more constituents exceeded the soil direct contact SL for commercial/industrial land use

Other Property Features

- Historical Features
- Parcel Boundary

Notes:
-Listed constituents exceeded the soil direct contact SL for unrestricted land use at the associated sampling location.
-Location of all features are approximate.

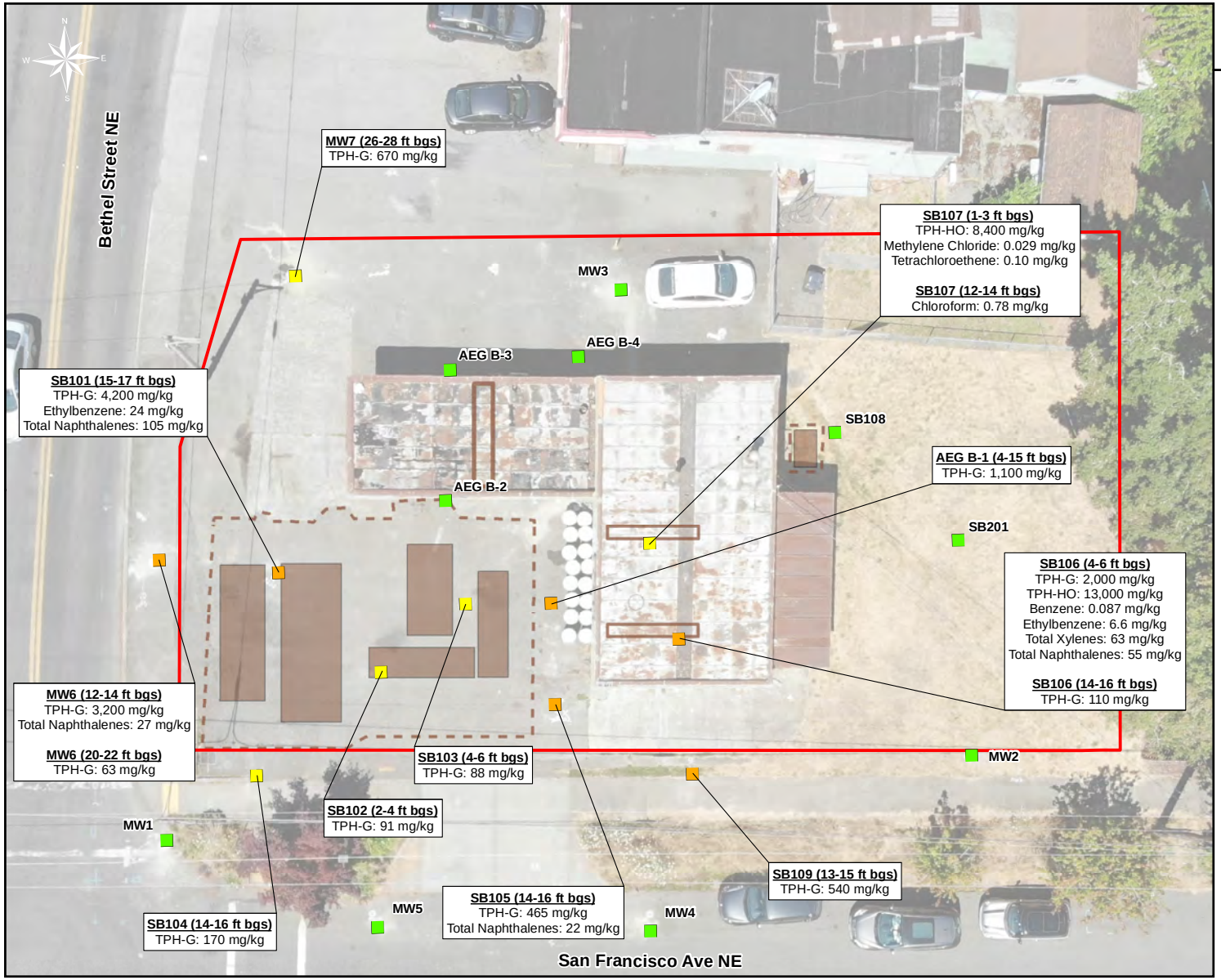
0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Summary of Soil Direct Contact Sampling Results
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 5

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 5_Soil Sampling Results.mxd; Author: AR; Date Saved: 10/28/2021



Legend

- Soil Sampling Location

Soil-to-Groundwater Sampling Results

- All constituent concentrations were less than soil-to-groundwater SLs
- One or more constituents had a soil concentration between the soil-to-groundwater SL and 10 times the soil-to-groundwater SL
- One or more constituents had a soil concentration greater than 10 times the soil-to-groundwater SL

Other Property Features

- Historical Features
- Parcel Boundary

Notes:
-Listed constituents exceeded the soil-to-groundwater SL at the associated sampling location.
-Location of all features are approximate.

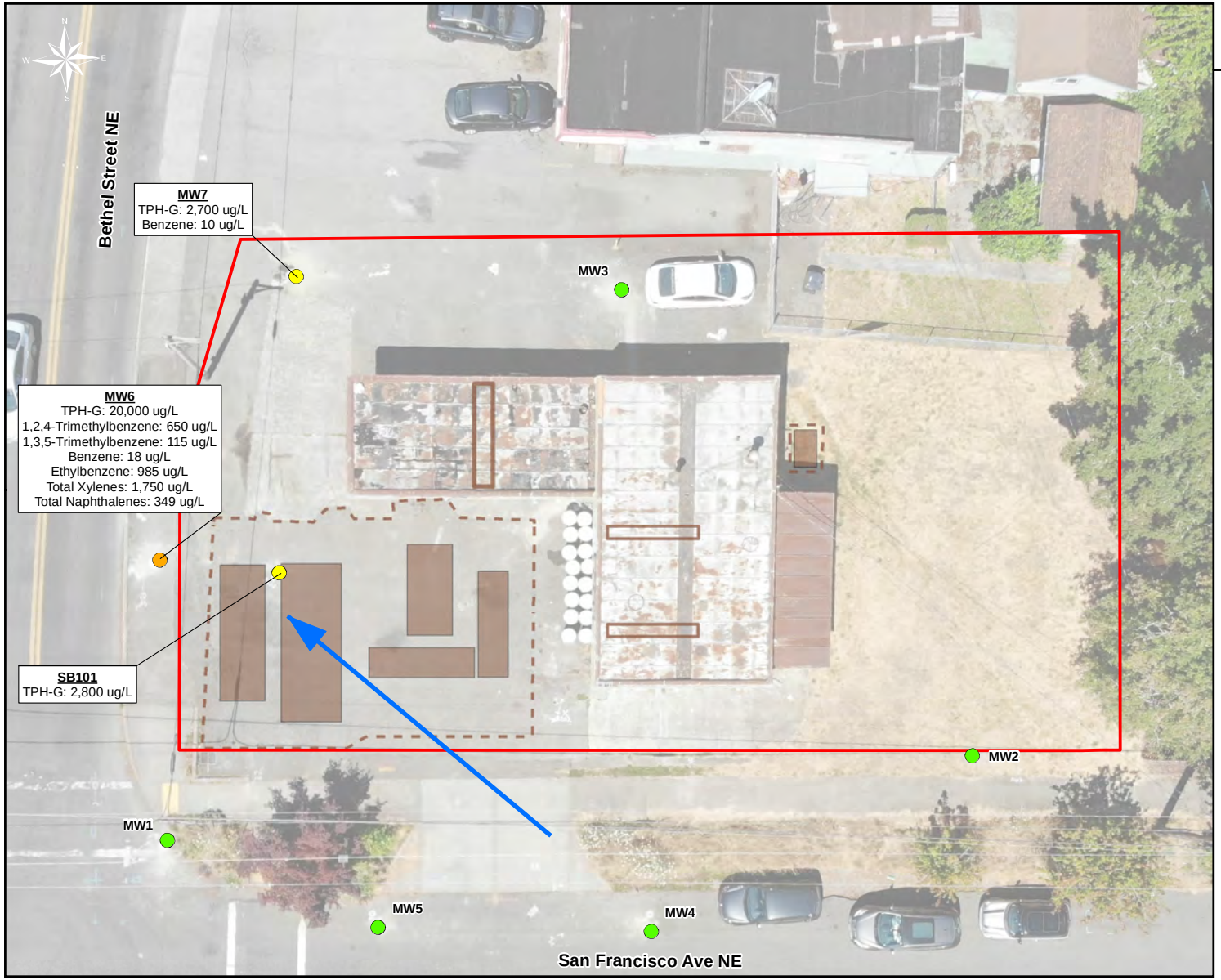
0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Summary of Soil-to-Groundwater Sampling Results
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 6

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 6_Soil to GW Sampling Results.mxd; Author: AR; Date Saved: 10/28/2021



Legend

- Groundwater Sampling Location

Groundwater Sampling Results

- All constituent concentrations were less than groundwater SLs
- One or more constituents had a groundwater concentration between the groundwater SL and 10 times the groundwater SL
- One or more constituents had a groundwater concentration greater than 10 times the groundwater SL

Other Property Features

- Groundwater Flow Direction
- Historical Features
- Parcel Boundary

Notes:
-Listed constituents exceeded the groundwater SL at the associated sampling location.
-Location of all features are approximate.

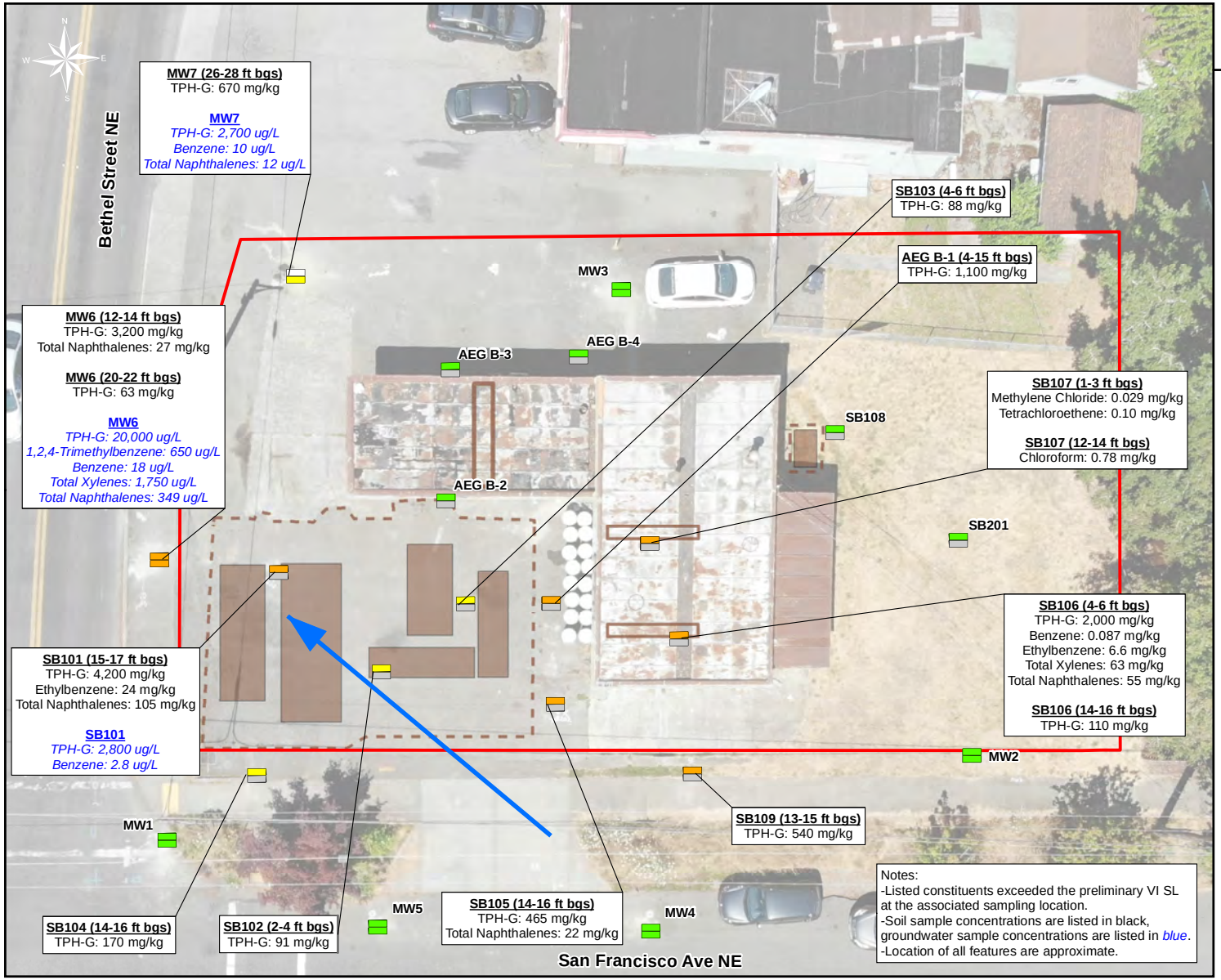
0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Summary of Groundwater Sampling Results
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 7

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 7_GW Sampling Results.mxd; Author: AR; Date Saved: 10/28/2021



PIONEER TECHNOLOGIES CORPORATION

Summary of VI Soil and Groundwater Sampling Results
First Phase of RI Report
1400 Bethel Street NE
Olympia, Washington

Figure 8

Document Path: G:\Projects\City of Olympia\GIS\Maps\2021\Jack's Auto\Remedial Invest. - Phase I Report\Fig 8_VI Soil & GW Results.mxd; Author: AR; Date Saved: 10/28/2021

Tables

Table 1: Groundwater Elevations in Monitoring Wells

Location ID	Northing	Easting	TOC Elevation (feet NAVD88)	July 22, 2021 Groundwater Water Monitoring Event			
				Time (AM)	Measured Depth to Water (feet from TOC)	Measured LNAPL Thickness (feet)	Groundwater Elevation (feet NAVD88)
MW1	637642.3144	1046101.792	176.56	6:52	19.70	--	156.86
MW2	637649.8197	1046208.992	178.45	6:53	16.51	--	161.94
MW3	637713.2637	1046164.628	178.10	6:51	21.54	--	156.56
MW4	637628.0132	1046165.553	177.53	6:55	17.55	--	159.98
MW5	637629.7794	1046129.395	177.16	7:00	18.91	--	158.25
MW6	637679.5235	1046102.105	177.08	7:01	20.80	--	156.28
MW7	637716.5323	1046121.488	177.09	7:03	20.90	--	156.19

Notes:

--: No LNAPL thickness was detected; TOC: top of casing

Northings and Eastings in Washington State Plane, South Zone, North American Datum of 1983 (2011).

Monitoring wells were gauged during a synoptic event prior to sampling.

Table 2: Summary of Soil Analytical Results

Constituent Category	Detected Constituent [1,2]	Soil Screening Levels [3]			Sample Location, Depth Interval (feet bgs), and Sample Date												
		Soil Direct Contact SL for Unrestricted Land Use	Soil Direct Contact SL for Commercial/ Industrial Land Use	Soil-to-Groundwater SL	AEG B-1 4-15 8/9/2012	AEG B-2 1-4 8/9/2012	AEG B-3 4-6 8/9/2012	AEG B-4 3-9 8/9/2012	SB101 4-6 6/21/2021	SB101 15-17 6/21/2021	SB102 2-4 6/21/2021	SB102 8-10 6/21/2021	SB102 14-16 6/21/2021	SB103 4-6 6/21/2021	SB103 14-16 6/21/2021	SB104 8-10 6/21/2021	SB104 14-16 6/21/2021
Petroleum	TPH-D	3,000	39,000	2,000	NA	NA	NA	NA	**66**	50 U	50 U	50 U	50 U	**90**	50 U	50 U	50 U
	TPH-G	4,700	150,000	30	**1,100**	**20**	10 U	**11**	10 U	**4,200**	**91**	10 U	10 U	**88**	10 U	10 U	**170**
	TPH-HO	3,000	39,000	2,000	NA	NA	NA	NA	**310**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
VOCs	1,2,4-Trimethylbenzene	800	35,000	No Value	**9.1**	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	**0.43**	0.03 U	NA	NA
	1,3,5-Trimethylbenzene	800	35,000	No Value	**3.6**	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	**0.39**	0.03 U	NA	NA
	Benzene	18	2,400	0.027	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	Chloroform	32	4,200	0.073	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	**0.023**	0.02 U	NA	NA
	Cumene	8,000	350,000	No Value	**0.34**	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	0.05 U	0.05 U	NA	NA
	Ethylbenzene	8,000	350,000	5.9	**1.4**	0.05 U	0.05 U	0.05 U	0.05 U	**24**	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.20**
	Methylene chloride	94	21,000	0.021	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	0.02 U	0.02 U	NA	NA
	n-Butylbenzene	4,000	180,000	No Value	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	**0.078**	0.05 U	NA	NA
	n-Propylbenzene	8,000	350,000	No Value	**1.7**	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	0.05 U	0.05 U	NA	NA
	p-Isopropyltoluene	No Value	No Value	No Value	**0.54**	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	**0.040**	0.03 U	NA	NA
	sec-Butylbenzene	8,000	350,000	No Value	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	**0.042**	0.03 U	NA	NA
	Styrene	16,000	700,000	2.2	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	0.02 U	0.02 U	NA	NA
	tert-Butylbenzene	8,000	350,000	No Value	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	0.03 U	0.03 U	NA	NA
	Tetrachloroethene	480	21,000	0.050	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	0.02 U	0.02 U	NA	NA
	Toluene	6,400	280,000	4.5	0.05 U	0.05 U	0.05 U	0.05 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Xylenes, Total	16,000	700,000	14	**3.0**	0.15 U	0.15 U	0.15 U	0.15 U	**1.3**	**0.21**	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	**0.15**
PAHs	Acenaphthene	4,800	210,000	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0199 U	0.0193 U	NA	NA
	Acenaphthylene	No Value	No Value	No Value	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0199 U	0.0193 U	NA	NA
	Anthracene	24,000	1,100,000	1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0397 U	0.0386 U	NA	NA
	Benzo(ghi)perylene	No Value	No Value	No Value	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0199 U	0.0193 U	NA	NA
	Fluoranthene	3,200	140,000	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0397 U	0.0386 U	NA	NA
	Fluorene	3,200	140,000	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.034**	0.0193 U	NA	NA
	Naphthalenes, Total [4,5]	1,600	70,000	4.5	**2.1**	0.10 U	0.10 U	0.10 U	0.95 U	**105**	**0.63**	0.95 U	0.95 U	**1.3**	0.057 U	0.95 U	**1.9**
	Phenanthrene	No Value	No Value	No Value	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.062**	0.0386 U	NA	NA
	Pyrene	2,400	110,000	9.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0397 U	0.0386 U	NA	NA
	Total cPAHs TEF [6]	0.19	130	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
PCBs	Total PCBs [4]	0.70	66	2.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.70 U	0.70 U	NA	NA
Metals	Lead	250	1,000	3,000	NA	NA	NA	NA	**4.3 J**	**2.0 J**	**23**	**1.4 J**	**5.0**	**2.6 J**	**1.6 J**	**1.8 J**	**1.1 J**
Other	Total Organic Carbon (%)	Not Applicable			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

J: estimated concentration, NA: constituent not analyzed; No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2021a); U: constituent not detected at shown reporting limit

Bold font concentrations were detections.

Yellow highlighted concentrations exceeded the soil direct contact SL for unrestricted land use.

Orange highlighted concentrations exceeded the soil direct contact SL for commercial/industrial land use.

Concentrations with this shading exceeded the soil-to-groundwater SL, and were less than ten times the SL.

Concentrations with this shading and border were greater than ten times the soil-to-groundwater SL.

(1) Results are shown for constituents that were detected in one or more media during RI activities.

(2) Constituent results are shown as two significant figures in standard notation, except numbers greater than 100 are rounded to a whole number. The following data reduction rules were used for duplicate samples: (a) if both samples had a detected result, then the average concentration was used, (b) if neither sample had a detected result, then the lower reporting limit was used, and (c) if only one of the two samples had a detected result, then the detected concentration was used. The following data reduction rules were used when the laboratory provided two results for the same non-duplicate sample: (a) if one or both results were a detect, then the highest detection was used, and (b) if both results were non-detects, then the lower reporting limit was used.

(3) See Appendix F for calculation of SLs. As mentioned in the Appendix F table footnotes, a non-detect result with a reporting limit greater than a SL was not considered an exceedance since the SL would technically need to be adjusted up to the reporting limit.

(4) The following data reduction rules were used for compound totaling of these constituents: (a) if one or more individual constituent was detected in a sample, the non-detect constituents were assumed to equal one-half of the reporting limit, and (b) if no individual constituents were detected in a sample, the sum of the reporting limits for the individual constituents was used.

(5) The following data reduction rules were used for naphthalene results from USEPA Method SW846-8260 and SW846-8270: (a) if naphthalene was detected by one or both methods, then the highest detection was used, and (b) if naphthalene was not detected by either method, then the lower reporting limit was used.

(6) Total cPAHs concentrations were calculated using MTCA toxicity equivalence factors (TEFs) per WAC 173-340-708(8) and data reduction rules per the 2001 MTCA Concise Explanatory Statement (Ecology 2001c). If a constituent was detected in any sample in any media, non-detect results for that constituent in other samples were assumed to equal half of the laboratory reporting limit in the TEF calculation. If a constituent was non-detect in all samples from all sampled media, non-detect results for that constituent were assumed to equal zero in the TEF calculation. Only benzo(a)pyrene, benzo(a)anthracene, and chrysene were detected in soil or groundwater.

Table 2: Summary of Soil Analytical Results

Constituent Category	Detected Constituent [1,2]	Soil Screening Levels [3]			Sample Location, Depth Interval (feet bgs), and Sample Date												
		Soil Direct Contact SL for Unrestricted Land Use	Soil Direct Contact SL for Commercial/ Industrial Land Use	Soil-to-Groundwater SL	SB105 8-10 6/21/2021	SB105 14-16 6/21/2021	SB106 1-3 6/21/2021	SB106 4-6 6/21/2021	SB106 14-16 6/21/2021	SB107 1-3 6/21/2021	SB107 12-14 6/21/2021	SB108 6-8 6/21/2021	SB108 13-14 6/21/2021	SB109 13-15 6/21/2021	SB201 1-2 7/13/2021	SB201 6-8 7/13/2021	SB201 16-18 7/13/2021
Petroleum	TPH-D	3,000	39,000	2,000	50 U	**180**	50 U	**790**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
	TPH-G	4,700	150,000	30	10 U	**465**	10 U	**2,000**	**110**	10 U	10 U	10 U	10 U	**540**	10 U	10 U	10 U
	TPH-HO	3,000	39,000	2,000	250 U	**1,800**	**2,300**	**13,000**	**320**	**8,400**	**280**	**300**	250 U	**400**	250 U	250 U	250 U
VOCs	1,2,4-Trimethylbenzene	800	35,000	No Value	**0.030**	**14**	0.03 U	**95**	**3.8**	**0.10**	0.03 U	0.03 U	0.03 U	**0.059**	0.03 U	0.03 U	0.03 U
	1,3,5-Trimethylbenzene	800	35,000	No Value	0.03 U	**0.82**	0.03 U	**24**	**0.083**	0.03 U	0.03 U	0.03 U	0.03 U	**0.069**	0.03 U	0.03 U	0.03 U
	Benzene	18	2,400	0.027	0.02 U	0.02 U	0.02 U	**0.087**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	Chloroform	32	4,200	0.073	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.78**	**0.024**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	Cumene	8,000	350,000	No Value	0.05 U	**0.20**	0.05 U	**1.3**	**0.076**	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
	Ethylbenzene	8,000	350,000	5.9	0.05 U	**0.19**	0.05 U	**6.6**	**0.12**	0.05 U	0.05 U	**0.031**	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
	Methylene chloride	94	21,000	0.021	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.029**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	n-Butylbenzene	4,000	180,000	No Value	0.05 U	**1.3**	0.05 U	**4.2**	**0.31**	0.05 U	0.05 U	0.05 U	0.05 U	**0.56**	0.05 U	0.05 U	0.05 U
	n-Propylbenzene	8,000	350,000	No Value	0.05 U	**1.7**	0.05 U	**7.8**	**0.50**	0.05 U	0.05 U	0.05 U	0.05 U	**0.082**	0.05 U	0.05 U	0.05 U
	p-Isopropyltoluene	No Value	No Value	No Value	0.03 U	**0.28**	0.03 U	**0.77**	**0.058**	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
	sec-Butylbenzene	8,000	350,000	No Value	**0.024 J**	**0.33**	0.03 U	**1.5**	**3.1**	0.03 U	0.03 U	0.03 U	0.03 U	**0.36**	0.03 U	0.03 U	0.03 U
	Styrene	16,000	700,000	2.2	0.02 U	0.02 U	0.02 U	**0.11**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	tert-Butylbenzene	8,000	350,000	No Value	0.03 U	**0.023 J**	0.03 U	0.03 U	**0.58**	0.03 U	0.03 U	0.03 U	0.03 U	**0.023 J**	0.03 U	0.03 U	0.03 U
	Tetrachloroethene	480	21,000	0.050	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.10**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	Toluene	6,400	280,000	4.5	0.10 U	0.10 U	0.10 U	**3.3**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Xylenes, Total	16,000	700,000	14	0.15 U	**0.83**	0.15 U	**63**	**0.41**	0.15 U	0.15 U	**0.13 J**	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
PAHs	Acenaphthene	4,800	210,000	22	0.0189 U	**0.082**	0.019 U	0.0206 U	0.0197 U	0.018 U	0.0209 U	0.0194 U	0.0218 U	NA	0.0198 U	0.0203 U	0.0208 U
	Acenaphthylene	No Value	No Value	No Value	0.0189 U	**0.14**	0.019 U	**0.19**	0.0197 U	0.018 U	0.0209 U	0.0194 U	0.0218 U	NA	0.0198 U	0.0203 U	0.0208 U
	Anthracene	24,000	1,100,000	1.0	0.0377 U	**0.11**	0.0379 U	**0.11**	0.0393 U	0.036 U	0.0419 U	0.0387 U	0.0435 U	NA	0.0397 U	0.0406 U	0.0416 U
	Benzo(ghi)perylene	No Value	No Value	No Value	0.0189 U	**0.12**	**0.086**	**0.11**	0.0197 U	**0.16**	0.0209 U	0.0194 U	0.0218 U	NA	0.0198 U	0.0203 U	0.0208 U
	Fluoranthene	3,200	140,000	10	0.0377 U	**0.29**	0.0379 U	**0.29**	0.0393 U	0.036 U	0.0419 U	0.0387 U	0.0435 U	NA	0.0397 U	0.0406 U	0.0416 U
	Fluorene	3,200	140,000	16	0.0189 U	**0.16**	0.019 U	**0.24**	0.0197 U	0.018 U	0.0209 U	0.0194 U	0.0218 U	NA	0.0198 U	0.0203 U	0.0208 U
	Naphthalenes, Total [4,5]	1,600	70,000	4.5	0.057 U	**22**	**0.041**	**55**	**1.9**	**0.094**	0.063 U	0.058 U	0.066 U	**0.60**	0.059 U	0.061 U	0.062 U
	Phenanthrene	No Value	No Value	No Value	0.0377 U	**0.44**	0.0379 U	**0.82**	**0.064**	0.036 U	0.0419 U	0.0387 U	0.0435 U	NA	0.0397 U	0.0406 U	0.0416 U
	Pyrene	2,400	110,000	9.2	0.0377 U	**0.34**	0.0379 U	**0.59**	**0.043**	0.036 U	0.0419 U	0.0387 U	0.0435 U	NA	0.0397 U	0.0406 U	0.0416 U
	Total cPAHs TEF [6]	0.19	130	1.6	0.011 U	**0.10**	0.011 U	**0.099**	0.011 U	**0.010**	0.012 U	0.011 U	0.012 U	NA	0.011 U	0.011 U	0.012 U
PCBs	Total PCBs [4]	0.70	66	2.7	0.10 U	**0.50**	**0.46**	**1.1**	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	NA	0.70 U	0.70 U	0.70 U
Metals	Lead	250	1,000	3,000	**46**	**8.9**	**21**	**2.4 J**	**12**	**1.4 J**	**1.6 J**	**1.1 J**	**1.7 J**	**1.6 J**	5.0 U	5.0 U	5.0 U
Other	Total Organic Carbon (%)	Not Applicable			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

J: estimated concentration, NA: constituent not analyzed; No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2021a); U: constituent not detected at shown reporting limit

Bold font concentrations were detections.

Yellow highlighted concentrations exceeded the soil direct contact SL for unrestricted land use.

Orange highlighted concentrations exceeded the soil direct contact SL for commercial/industrial land use.

Concentrations with this shading exceeded the soil-to-groundwater SL, and were less than ten times the SL.

Concentrations with this shading and border were greater than ten times the soil-to-groundwater SL.

(1) Results are shown for constituents that were detected in one or more media during RI activities.

(2) Constituent results are shown as two significant figures in standard notation, except numbers greater than 100 are rounded to a whole number. The following data reduction rules were used for duplicate samples: (a) if both samples had a detected result, then the average concentration was used, (b) if neither sample had a detected result, then the lower reporting limit was used, and (c) if only one of the two samples had a detected result, then the detected concentration was used. The following data reduction rules were used when the laboratory provided two results for the same non-duplicate sample: (a) if one or both results were a detect, then the highest detection was used, and (b) if both results were non-detects, then the lower reporting limit was used.

(3) See Appendix F for calculation of SLs. As mentioned in the Appendix F table footnotes, a non-detect result with a reporting limit greater than a SL was not considered an exceedance since the SL would technically need to be adjusted up to the reporting limit.

(4) The following data reduction rules were used for compound totaling of these constituents: (a) if one or more individual constituent was detected in a sample, the non-detect constituents were assumed to equal one-half of the reporting limit, and (b) if no individual constituents were detected in a sample, the sum of the reporting limits for the individual constituents was used.

(5) The following data reduction rules were used for naphthalene results from USEPA Method SW846-8260 and SW846-8270: (a) if naphthalene was detected by one or both methods, then the highest detection was used, and (b) if naphthalene was not detected by either method, then the lower reporting limit was used.

(6) Total cPAHs concentrations were calculated using MTCA toxicity equivalence factors (TEFs) per WAC 173-340-708(8) and data reduction rules per the 2001 MTCA Concise Explanatory Statement (Ecology 2001c). If a constituent was detected in any sample in any media, non-detect results for that constituent in other samples were assumed to equal half of the laboratory reporting limit in the TEF calculation. If a constituent was non-detect in all samples from all sampled media, non-detect results for that constituent were assumed to equal zero in the TEF calculation. Only benzo(a)pyrene, benzo(a)anthracene, and chrysene were detected in soil or groundwater.

Table 2: Summary of Soil Analytical Results

Constituent Category	Detected Constituent [1,2]	Soil Screening Levels [3]			Sample Location, Depth Interval (feet bgs), and Sample Date												
		Soil Direct Contact SL for Unrestricted Land Use	Soil Direct Contact SL for Commercial/ Industrial Land Use	Soil-to-Groundwater SL	MW1 14-15 7/9/2021	MW1 21-23 7/9/2021	MW2 1-3 7/13/2021	MW2 17-19 7/13/2021	MW3 1-3 7/12/2021	MW3 17-19 7/12/2021	MW4 15-17 7/8/2021	MW5 18-20 7/8/2021	MW6 12-14 7/8/2021	MW6 20-22 7/8/2021	MW7 7-9 7/9/2021	MW7 19-21 7/9/2021	MW7 26-28 7/9/2021
Petroleum	TPH-D	3,000	39,000	2,000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	**440**	50 U	50 U	50 U	50 U
	TPH-G	4,700	150,000	30	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3,200**	**63**	10 U	10 U	**670**
	TPH-HO	3,000	39,000	2,000	250 U	250 U	250 U	250 U	**360**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
VOCs	1,2,4-Trimethylbenzene	800	35,000	No Value	NA	NA	0.03 U	0.03 U	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
	1,3,5-Trimethylbenzene	800	35,000	No Value	NA	NA	0.03 U	0.03 U	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
	Benzene	18	2,400	0.027	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	Chloroform	32	4,200	0.073	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA
	Cumene	8,000	350,000	No Value	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA
	Ethylbenzene	8,000	350,000	5.9	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.61**	**0.11**	0.05 U	0.05 U	0.05 U
	Methylene chloride	94	21,000	0.021	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA
	n-Butylbenzene	4,000	180,000	No Value	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA
	n-Propylbenzene	8,000	350,000	No Value	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA
	p-Isopropyltoluene	No Value	No Value	No Value	NA	NA	0.03 U	0.03 U	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
	sec-Butylbenzene	8,000	350,000	No Value	NA	NA	0.03 U	0.03 U	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
	Styrene	16,000	700,000	2.2	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA
	tert-Butylbenzene	8,000	350,000	No Value	NA	NA	0.03 U	0.03 U	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
	Tetrachloroethene	480	21,000	0.050	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA
	Toluene	6,400	280,000	4.5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.44**	0.10 U	0.10 U	0.10 U	0.10 U
	Xylenes, Total	16,000	700,000	14	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	**1.9**	0.15 U	0.15 U	0.15 U	0.15 U
PAHs	Acenaphthene	4,800	210,000	22	NA	NA	0.0198 U	0.0201 U	0.0202 U	0.0196 U	0.0206 U	NA	NA	NA	NA	NA	NA
	Acenaphthylene	No Value	No Value	No Value	NA	NA	0.0198 U	0.0201 U	0.0202 U	0.0196 U	0.0206 U	NA	NA	NA	NA	NA	NA
	Anthracene	24,000	1,100,000	1.0	NA	NA	0.0397 U	0.0401 U	0.0403 U	0.0392 U	0.0411 U	NA	NA	NA	NA	NA	NA
	Benzo(ghi)perylene	No Value	No Value	No Value	NA	NA	0.0198 U	0.0201 U	**0.040**	0.0196 U	0.0206 U	NA	NA	NA	NA	NA	NA
	Fluoranthene	3,200	140,000	10	NA	NA	0.0397 U	0.0401 U	0.0403 U	0.0392 U	0.0411 U	NA	NA	NA	NA	NA	NA
	Fluorene	3,200	140,000	16	NA	NA	0.0198 U	0.0201 U	0.0202 U	0.0196 U	0.0206 U	NA	NA	NA	NA	NA	NA
	Naphthalenes, Total [4,5]	1,600	70,000	4.5	0.95 U	0.95 U	0.059 U	0.060 U	0.061 U	0.059 U	0.062 U	0.95 U	**27**	**1.1**	0.95 U	0.95 U	**2.1**
	Phenanthrene	No Value	No Value	No Value	NA	NA	0.0397 U	0.0401 U	0.0403 U	0.0392 U	0.0411 U	NA	NA	NA	NA	NA	NA
	Pyrene	2,400	110,000	9.2	NA	NA	0.0397 U	0.0401 U	0.0403 U	0.0392 U	0.0411 U	NA	NA	NA	NA	NA	NA
	Total cPAHs TEF [6]	0.19	130	1.6	NA	NA	0.011 U	0.011 U	**0.018**	0.011 U	0.012 U	NA	NA	NA	NA	NA	NA
PCBs	Total PCBs [4]	0.70	66	2.7	NA	NA	0.70 U	0.70 U	0.70 U	0.70 U	NA	NA	NA	NA	NA	NA	NA
Metals	Lead	250	1,000	3,000	5.0 U	5.0 U	**37**	5.0 U	**43**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Other	Total Organic Carbon (%)	Not Applicable			NA	NA	**2.1**	NA	NA	NA	NA	0.15 U	NA	NA	NA	NA	NA

Notes:

J: estimated concentration, NA: constituent not analyzed; No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2021a); U: constituent not detected at shown reporting limit

Bold font concentrations were detections.

Yellow highlighted concentrations exceeded the soil direct contact SL for unrestricted land use.

Orange highlighted concentrations exceeded the soil direct contact SL for commercial/industrial land use.

Concentrations with this shading exceeded the soil-to-groundwater SL, and were less than ten times the SL.

Concentrations with this shading and border were greater than ten times the soil-to-groundwater SL.

(1) Results are shown for constituents that were detected in one or more media during RI activities.

(2) Constituent results are shown as two significant figures in standard notation, except numbers greater than 100 are rounded to a whole number. The following data reduction rules were used for duplicate samples: (a) if both samples had a detected result, then the average concentration was used, (b) if neither sample had a detected result, then the lower reporting limit was used, and (c) if only one of the two samples had a detected result, then the detected concentration was used. The following data reduction rules were used when the laboratory provided two results for the same non-duplicate sample: (a) if one or both results were a detect, then the highest detection was used, and (b) if both results were non-detects, then the lower reporting limit was used.

(3) See Appendix F for calculation of SLs. As mentioned in the Appendix F table footnotes, a non-detect result with a reporting limit greater than a SL was not considered an exceedance since the SL would technically need to be adjusted up to the reporting limit.

(4) The following data reduction rules were used for compound totaling of these constituents: (a) if one or more individual constituent was detected in a sample, the non-detect constituents were assumed to equal one-half of the reporting limit, and (b) if no individual constituents were detected in a sample, the sum of the reporting limits for the individual constituents was used.

(5) The following data reduction rules were used for naphthalene results from USEPA Method SW846-8260 and SW846-8270: (a) if naphthalene was detected by one or both methods, then the highest detection was used, and (b) if naphthalene was not detected by either method, then the lower reporting limit was used.

(6) Total cPAHs concentrations were calculated using MTCA toxicity equivalence factors (TEFs) per WAC 173-340-708(8) and data reduction rules per the 2001 MTCA Concise Explanatory Statement (Ecology 2001c). If a constituent was detected in any sample in any media, non-detect results for that constituent in other samples were assumed to equal half of the laboratory reporting limit in the TEF calculation. If a constituent was non-detect in all samples from all sampled media, non-detect results for that constituent were assumed to equal zero in the TEF calculation. Only benzo(a)pyrene, benzo(a)anthracene, and chrysene were detected in soil or groundwater.

Table 3: Summary of Groundwater Analytical Results

Constituent Category	Detected Constituent [1,2]	Groundwater SL [3]	Sample Location and Sample Date							
			SB101-GW	MW1	MW2	MW3	MW4	MW5	MW6	MW7
			6/21/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
TPH	TPH-D	500	**441**	200 U	200 U	200 U	200 U	200 U	200 U	200 U
	TPH-G	800	**2,800**	**110**	100 U	100 U	100 U	100 U	**20,000**	**2,700**
	TPH-HO	500	400 U	400 U	400 U	400 U	400 U	400 U	400 U	400 U
VOCs	1,2,4-Trimethylbenzene	80	**24**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**650**	**3.9**
	1,3,5-Trimethylbenzene	80	**3.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**115**	**2.8**
	Benzene	5.0	**2.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**18**	**10**
	Chloroform	14	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Cumene	800	**44**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**99**	**1.4**
	Ethylbenzene	700	**225**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**985**	**1.7**
	Methylene chloride	5.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	n-Butylbenzene	400	**13**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**17**	**1.1**
	n-Propylbenzene	800	**120**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**210**	**2.9**
	p-Isopropyltoluene	No Value	**2.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**4.6**	**1.2**
	sec-Butylbenzene	800	**6.3**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**11**	1.0 U
	Styrene	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	tert-Butylbenzene	800	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**87**	1.0 U
	Tetrachloroethene	5.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Toluene	640	**3.1**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**11**	**2.7**
	Total Xylenes	1,600	**29**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**1,750**	**2.5**
PAHs	Acenaphthene	960	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	**0.56**	0.0996 U
	Acenaphthylene	No Value	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	**0.22**	0.0996 U
	Anthracene	4,800	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	0.0983 U	0.0996 U
	Benzo(ghi)perylene	No Value	NA	0.0997 U	**0.10**	0.0992 U	0.0993 U	0.0987 U	0.0983 U	0.0996 U
	Fluoranthene	640	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	0.0983 U	0.0996 U
	Fluorene	640	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	**1.2**	0.0996 U
	Naphthalenes, Total [4,5]	160	NA	**1.5**	0.30 U	0.30 U	0.30 U	0.30 U	**349**	**12**
	Phenanthrene	No Value	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	**1.7**	0.0996 U
	Pyrene	480	NA	0.0997 U	0.099 U	0.0992 U	0.0993 U	0.0987 U	0.0983 U	0.0996 U
	Total cPAHs TEF [6]	0.20	NA	0.056 U	0.056 U	0.056 U	0.054 U	0.056 U	0.054 U	0.056 U
PCBs	Total PCBs [4]	0.44	NA	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
Metals	Lead	15	NA	5.0 U	5.0 U	5.0 U	5.0 U	**7.2**	5.0 U	5.0 U

Notes:

NA: constituent not analyzed, No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2021a); U: constituent not detected at the shown reporting limit.

Bold font concentrations were detections.

Yellow highlighted concentrations exceeded than the groundwater SL, and were less than ten times the SL.

Orange highlighted concentrations were greater than ten times the groundwater SL.

[1] Results are shown for constituents that were detected in one or more media during RI activities.

[2] Constituent results are shown as two significant figures in standard notation, except numbers greater than 100 are rounded to a whole number. The following data reduction rules were used for duplicate samples: (a) if both samples had a detected result, then the average concentration was used, (b) if neither sample had a detected result, then the lower reporting limit was used, and (c) if only one of the two samples had a detected result, then the detected concentration was used. The following data reduction rules were used when the laboratory provided two results for the same non-duplicate sample: (a) if one or both results were a detect, then the highest detection was used, and (b) if both results were non-detects, then the lower reporting limit was used.

[3] See Appendix F for calculation of SLs. As mentioned in the Appendix F table footnotes, a non-detect result with a reporting limit greater than a SL was not considered an exceedance since the SL would technically need to be adjusted up to the reporting limit.

[4] The following data reduction rules were used for compound totaling of these constituents: (a) if one or more individual constituent was detected in a sample, the non-detect constituents were assumed to equal one-half of the reporting limit, and (b) if no individual constituents were detected in a sample, the sum of the reporting limits for the individual constituents was used.

[5] The following data reduction rules were used for naphthalene results from USEPA Method SW846-8260 and SW846-8270: (a) if naphthalene was detected by one or both methods, then the highest detection was used, and (b) if naphthalene was not detected by either method, then the lower reporting limit was used.

[6] Total cPAHs were calculated using MTCA toxicity equivalence factors (TEFs) per WAC 173-340-708(8) and data reduction rules per the 2001 MTCA Concise Explanatory Statement (Ecology 2001c). If a constituent was detected in any sample in any media, non-detect results for that constituent in other samples were assumed to equal half of the laboratory reporting limit in the TEF calculation. If a constituent was non-detect in all samples from all sampled media, non-detect results for that constituent were assumed to equal zero in the TEF calculation. Only benzo(a)pyrene, benzo(a)anthracene, and chrysene were detected in soil or groundwater.

Table 4: Field Water Quality Parameter Results

Location	Sample Date	Dissolved Oxygen (mg/L)	pH (standard units)	ORP (mV)	Specific Conductance (µS/cm)	Temperature (°C)	Turbidity (NTU)	Odor	Color
MW1	7/22/2021	1.23	6.46	-534.1	176	16.1	48.59	No odor	Clear
MW2	7/22/2021	4.79	6.67	-239.7	167	13.9	6.95	No odor	Clear
MW3	7/22/2021	6.42	6.56	-330.1	140	13.7	5.6	No odor	Clear
MW4	7/22/2021	6.09	6.45	37.1	176	15.9	4.41	No odor	Clear
MW5	7/22/2021	2.62	6.39	-315.6	170	17	4.33	No odor	Clear
MW6	7/22/2021	0.88	6.55	-375.2	380	16.5	11.0	Hydrocarbon odor	Clear
MW7	7/22/2021	0.78	7.40	-582.8	270	16.0	315	Hydrocarbon odor	Turbid

Notes:

°C: Degrees Celsius; mg/L: milligram per liter; mV: millivolts; NTU: nephelometric turbidity units; ORP: oxidation reduction potential; µS/cm: microsiemens per centimeter

All results were obtained from unfiltered field samples.

Table 5: Preliminary Vapor Intrusion Screening of Soil Results

Volatile Constituent Detected in Soil	Total Number of Samples Analyzed	Total Number of Samples Detected	Detection Frequency (%)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (ug/L)	Preliminary Soil VI Screening Level [1] (mg/kg)	Maximum Detected Concentration Exceeds Preliminary Soil VI Screening Level?	Soil Concentration and Associated Sample Depth for Sample Locations with Preliminary Soil VI Screening Level Exceedance
TPH-D	35	5	14%	66	790	10,000	No	--
TPH-G	39	14	36%	11	4,200	30	**Yes**	1,100 mg/kg at 4-15 feet bgs in B-1, 4,200 mg/kg at 15-17 feet bgs in SB101, 91 mg/kg at 2-4 feet bgs in SB102, 88 mg/kg at 4-6 feet bgs in SB103, 170 mg/kg at 14-16 feet bgs in SB104, 465 mg/kg at 14-16 feet bgs in SB105, 2,000 mg/kg at 4-6 feet bgs in SB106, 110 mg/kg at 14-16 feet bgs in SB106, 540 mg/kg at 13-15 feet bgs in SB109, 3,200 mg/kg at 12-14 feet bgs in MW6, 63 mg/kg at 20-22 feet bgs in MW6, and 670 mg/kg at 26-28 feet bgs in MW7
1,2,4-Trimethylbenzene	23	8	35%	0.030	95	No Value	No	--
1,3,5-Trimethylbenzene	23	6	26%	0.069	24	No Value	No	--
Benzene	39	1	3%	0.087	0.087	0.027	**Yes**	0.087 mg/kg at 4-6 feet bgs in SB106
Chloroform	23	3	13%	0.023	0.78	0.073	**Yes**	0.78 mg/kg at 12-14 feet bgs in SB107
Cumene	23	4	17%	0.076	1.3	No Value	No	--
Ethylbenzene	39	9	23%	0.031	24	5.9	**Yes**	24 mg/kg at 15-17 feet bgs in SB101 and 6.6 mg/kg at 4-6 feet bgs in SB106
Methyene chloride	23	1	4%	0.029	0.029	0.021	**Yes**	0.029 mg/kg at 1-3 feet bgs in SB107
n-Butylbenzene	23	5	22%	0.078	4.2	No Value	No	--
n-Propylbenzene	23	5	22%	0.082	7.8	No Value	No	--
p-Isopropyltoluene	23	5	22%	0.040	0.77	No Value	No	--
sec-Butylbenzene	23	6	26%	0.024	3.1	No Value	No	--
Styrene	23	1	4%	0.11	0.11	2.2	No	--
tert-Butylbenzene	23	3	13%	0.023	0.58	No Value	No	--
Tetrachloroethene	23	1	4%	0.10	0.10	0.050	**Yes**	0.10 mg/kg at 1-3 feet bgs in SB107
Toluene	39	2	5%	0.44	3.3	4.5	No	--
Xylenes, Total	39	9	23%	0.13	63	14	**Yes**	63 mg/kg at 4-6 feet bgs in SB106
Naphthalenes, Total	39	14	36%	0.041	105	4.5	**Yes**	105 mg/kg at 15-17 feet bgs in SB101, 22 mg/kg at 14-16 feet bgs in SB105, 55 mg/kg at 4-6 feet bgs in SB106, and 27 mg/kg at 12-14 feet bgs in MW6

Notes:

--: no sample locations exceed the preliminary VI SL; No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2021a)

Results are shown as two significant figures in standard notation, except numbers greater than 100 are rounded to a whole number.

[1] The soil-to-groundwater SLs were used to evaluate the soil-to-vapor pathway for VOCs and TPH-G per WAC 173-340-740(3)(b)(iii)(C) and WAC 173-340-745(5)(b)(iii)(C). A value of 10,000 mg/kg was used to evaluate the soil-to-vapor pathway for TPH-D per WAC 173-340-740(3)(b)(iii)(C)(II) and WAC 173-340-745(5)(b)(iii)(C)(II). These preliminary SLs were used for conservative screening purposes to identify potential VI issues.

Table 6: Preliminary Vapor Intrusion Screening of Groundwater Results

Volatile Constituent Detected in Groundwater	Total Number of Samples Analyzed	Total Number of Samples Detected	Detection Frequency (%)	Minimum Detected Concentration (ug/L)	Maximum Detected Concentration (ug/L)	Preliminary Groundwater VI Screening Level [(1)] (ug/L)	Maximum Detected Concentration Exceeds Preliminary Groundwater VI Screening Level?	Maximum Groundwater Concentration and Associated Sample Depth for Sample Locations with Preliminary Groundwater VI Screening Level Exceedance
TPH-D	8	1	13%	441	441	500	No	--
TPH-G	8	4	50%	110	20,000	800	**Yes**	2,800 ug/L at ≥ 16.5 feet bgs in SB101, 20,000 ug/L at ≥ 21 feet bgs in MW6, and 2,700 ug/L at ≥ 21 feet bgs in MW7
1,2,4-Trimethylbenzene	8	3	38%	3.9	650	240	**Yes**	650 ug/L at ≥ 21 feet bgs in MW6
1,3,5-Trimethylbenzene	8	3	38%	2.8	115	170	No	--
Benzene	8	3	38%	2.8	18	2.4	**Yes**	2.8 ug/L at ≥ 16.5 feet bgs in SB101, 18 ug/L at ≥ 21 feet bgs in MW6 and 10 ug/L at ≥ 21 feet bgs in MW7
Cumene	8	3	38%	1.4	99	910	No	--
Ethylbenzene	8	3	38%	1.7	985	2,800	No	--
n-Butylbenzene	8	3	38%	1.1	17	No Value	No	--
n-Propylbenzene	8	3	38%	2.9	210	2,300	No	--
p-Isopropyltoluene	8	3	38%	1.2	4.6	No Value	No	--
sec-Butylbenzene	8	2	25%	6.3	11	No Value	No	--
tert-Butylbenzene	8	1	13%	87	87	No Value	No	--
Toluene	8	3	38%	2.7	11	15,000	No	--
Total Xylenes	8	3	38%	2.5	1,750	320	**Yes**	1,750 at ≥ 21 feet bgs in MW6
Naphthalenes, Total	8	3	38%	1.5	349	8.9	**Yes**	349 ug/L at ≥ 21 feet bgs in MW6 and 12 ug/L at ≥ 21 feet bgs in MW7

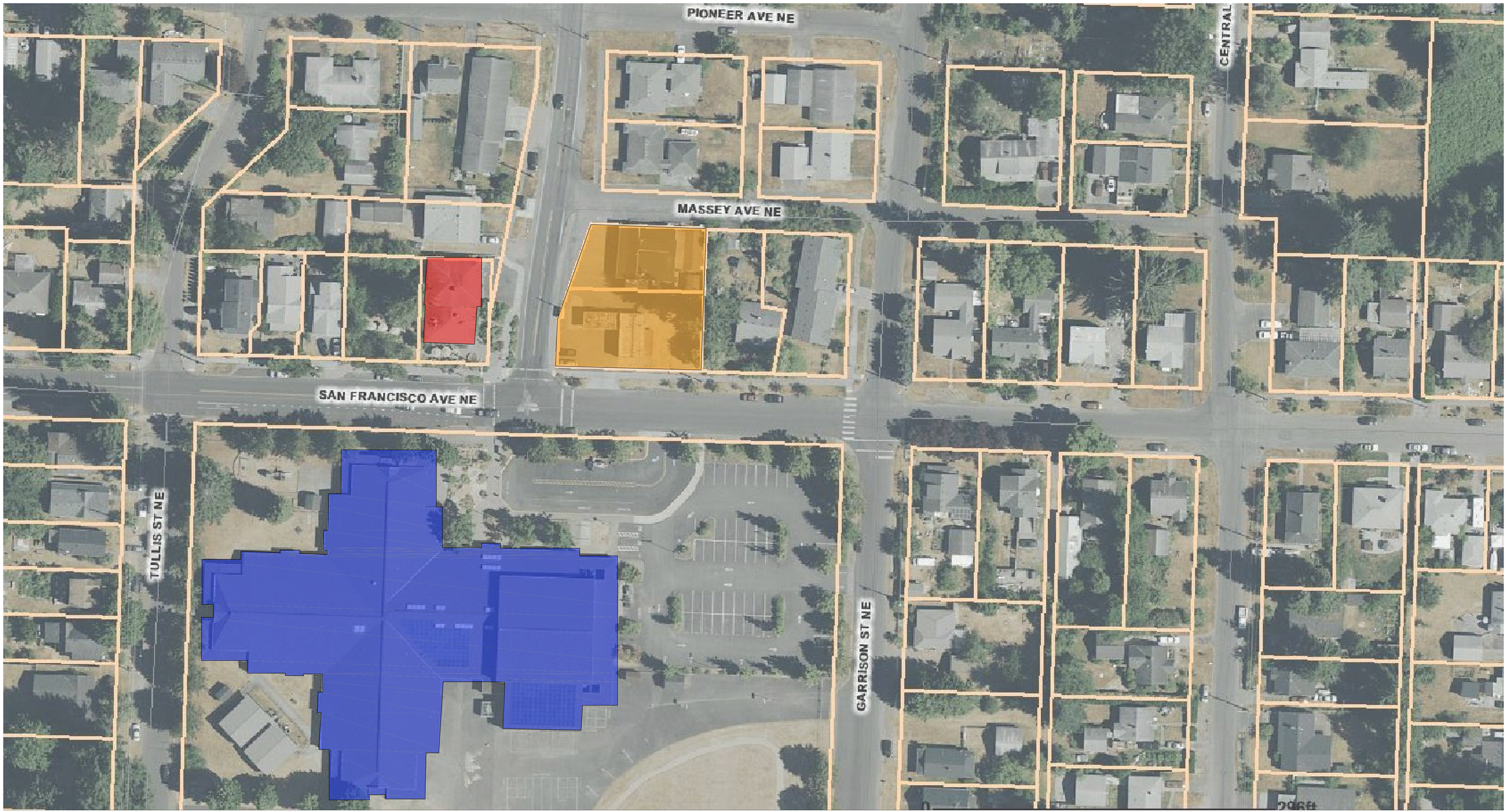
Notes:

--: no sample locations exceed the preliminary VI SL; No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2021a)

Results are shown as two significant figures in standard notation, except numbers greater than 100 are rounded to a whole number.

[(1)] The preliminary groundwater VI screening levels are the groundwater VI screening levels for an unrestricted land use scenario (see Appendix E). These preliminary SLs were used for conservative screening purposes to identify potential VI issues.

Appendix A



CONTEXT MAP

0' 25' 50' 100' 200'

ROOSEVELT ELEMENTARY

SAN FRANCISCO STREET BAKERY

POTENTIAL NEW NEIGHBORHOOD MIXED-USE (RETAIL & APARTMENTS) DEVELOPMENT

OPTION B: PRO FORMA - FIRST FLOOR

SAN FRANCISCO STREET MARKETPLACE

OLYMPIA, WASHINGTON

CONCEPT DESIGN
SEPTEMBER 18, 2017

TAS
THOMAS
architecture studios

FLOOR 1 - RETAIL

0 5 15 30

OPTION A: CODE BASED: FIRST FLOOR

SAN FRANCISCO STREET MARKETPLACE

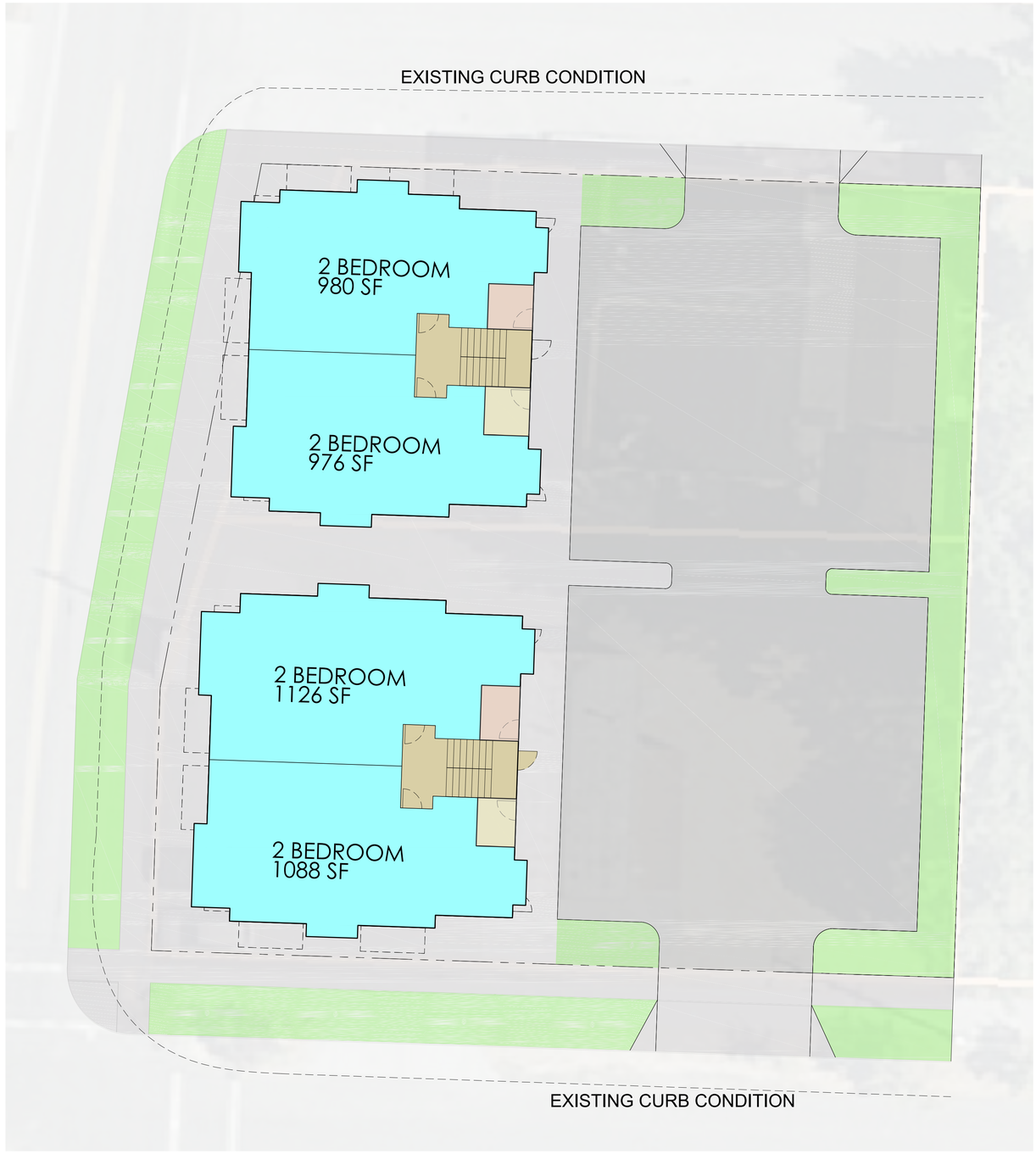
OLYMPIA, WASHINGTON

CONCEPT DESIGN
SEPTEMBER 18, 2017

TAS
THOMAS
architecture studios

FLOOR 2 - RESIDENTIAL

0 5 15 30



FLOOR 3 - RESIDENTIAL

0 5 15 30

OPTION A: CODE BASED - SECOND AND THIRD FLOOR

SAN FRANCISCO STREET MARKETPLACE

OLYMPIA, WASHINGTON

CONCEPT DESIGN
SEPTEMBER 18, 2017

TAS
THOMAS
architecture studios

FLOOR 1 - RETAIL

0 5 15 30

OPTION B: PRO FORMA - FIRST FLOOR

SAN FRANCISCO STREET MARKETPLACE

OLYMPIA, WASHINGTON

CONCEPT DESIGN
SEPTEMBER 18, 2017

TAS
THOMAS
architecture studios

FLOOR 2 - RESIDENTIAL

0 5 15 30

FLOOR 3 - RESIDENTIAL

0 5 15 30

OPTION B: PRO FORMA BASED - SECOND AND THIRD FLOOR

SAN FRANCISCO STREET MARKETPLACE

OLYMPIA, WASHINGTON

CONCEPT DESIGN
SEPTEMBER 18, 2017

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Appendix B

Jack's Auto

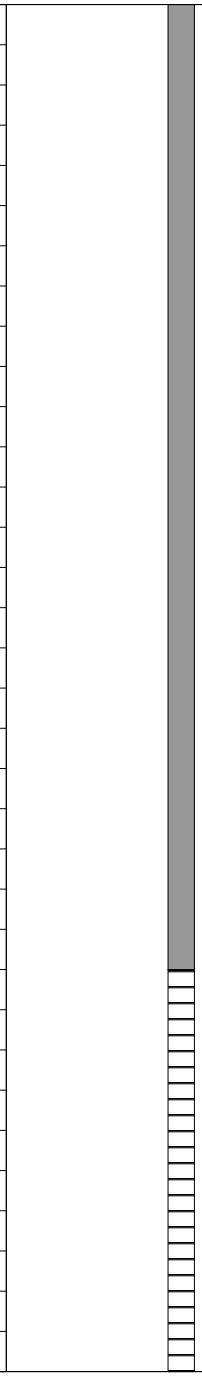
Olympia, WA

PIONEER TECHNOLOGIES CORPORATION

BORING LOCATION: SB-101	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	**Log of Soil Boring No. SB-101**
DRILLING EQUIPMENT: Geoprobe	DEPTH TO WATER (ft.): 16.5 / TOTAL DEPTH (ft.): 17
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 12-17 / BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
1				0.0		
2						Soil boring completed in backfill area of 1990 excavation
3				4.4		
4	S-SB-101-4-6-062121					
5				0.0		
6					FILL - Fine to Coarse SILTY SAND, some gravel, trace plastic, gray, moist	
7				0.0		
8						Soil characteristic of glacial till
9				0.0		
10						
11				0.0		
12						
13				0.0		No staining noted in soil column
14					SILT, some sand, gray, moist	
15	S-SB-101-15-17-062121			32.4		Hydrocarbon odor at 15.5-17'
16						
17				566.1		Refusal at 17'

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Temporary well purged dry after 20 mL of groundwater removed and took approximately 10 minutes to recharge each time (with similar purge volumes thereafter).

Jack's Auto

Olympia, WA

BORING LOCATION: SB-102	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

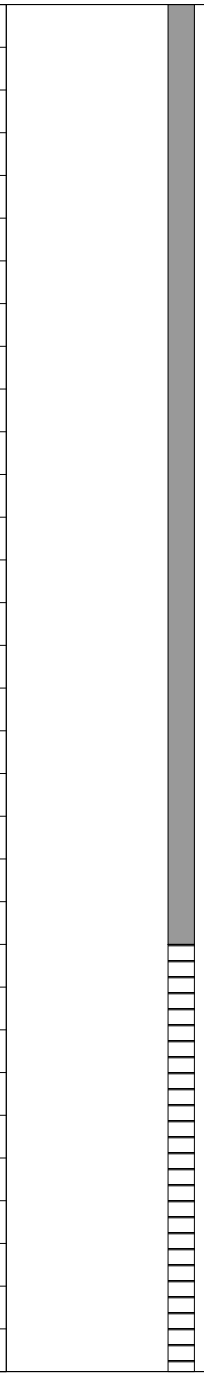
PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-102

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 16
SCREEN INTERVAL: 11-16	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
					Portland Cement Concrete	
1				0.0		
2	S-SB-102-2-4-062121				FILL - Fine to Coarse SILTY SAND, some gravel, gray, moist	Soil boring completed in backfill area of 1990 excavation
3				13.1		
4						
5				2.8		
6					SANDY SILT, some gravel, gray, moist	
7				0.4		
8	S-SB-102-8-10-062121					Soil characteristic of glacial till
9				0.6		
10						
11				0.3	Fine to Coarse SILTY SAND with gravel, gray, moist	
12						No odors or staining noted in soil column
13				0.0		3 inch seam of concrete at 13.5'
14	S-SB-102-14-16-062121				SILT, gray, moist	
15				0.0		
16				0.1	Fine to Coarse SILTY SAND with gravel, gray, moist	Refusal at 16'

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Temporary well placed in bottom of borehole to see if seepage occurred. The well remained dry after four hours, at which time it was removed.

Jack's Auto

Olympia, WA

BORING LOCATION: SB-103	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

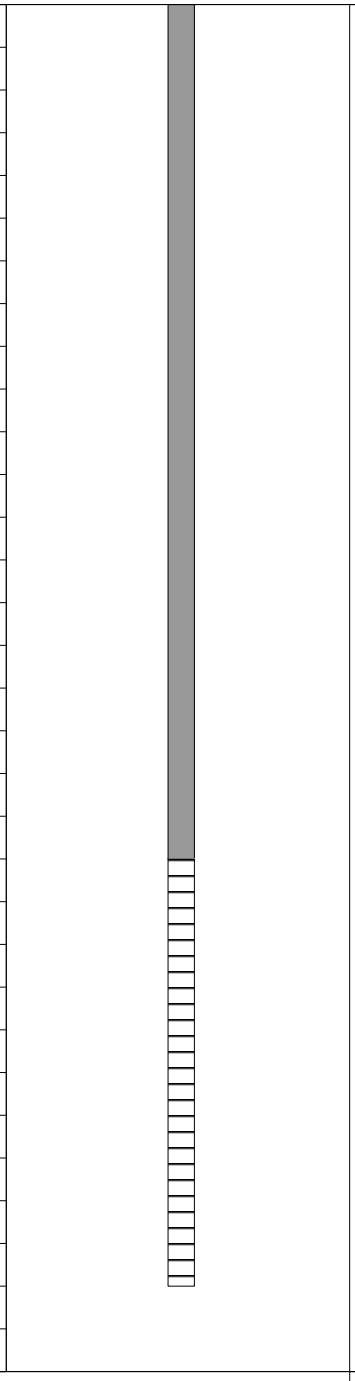
PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-103

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 16
SCREEN INTERVAL: 10-15	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
1				0.0		Soil characteristic of glacial till
2						
3				35.5		
4	S-SB-103-4-6-062121				FILL - Fine to Coarse SILTY SAND with gravel, trace plastic, gray, moist	Hydrocarbon odor 3-6'
5				55.4		
6						
7				22.8		
8						Soil boring completed in backfill area of 1990 excavation
9				0.0	SANDY SILT, some clay, some gravel, brownish-gray, moist	
10						
11				0.0		
12						No staining noted in soil column
13				0.0	Fine to Coarse SILTY SAND with gravel, gray, moist	
14	S-SB-103-14-16-062121					
15				0.0		Refusal at 16'
16						

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Temporary well placed in bottom of borehole to see if seepage occurred. The well remained dry after four hours, at which time it was removed.

Jack's Auto

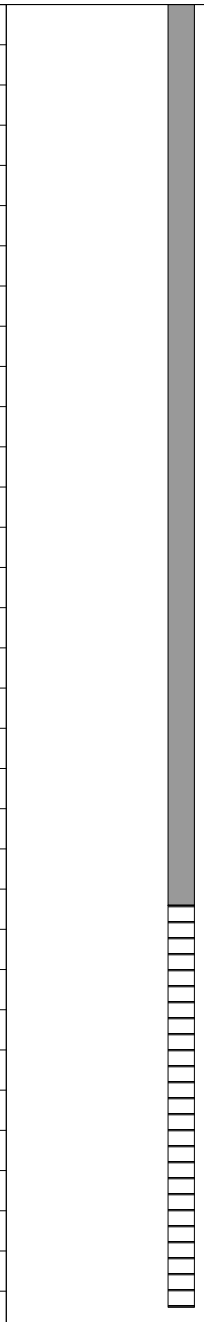
Olympia, WA

PIONEER TECHNOLOGIES CORPORATION

BORING LOCATION: SB-104	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	**Log of Soil Boring No. SB-104**
DRILLING EQUIPMENT: Geoprobe	DEPTH TO WATER (ft.): -- / TOTAL DEPTH (ft.): 16.2
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 11.2-16.2 / BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
1				0.0	FILL- CLAYEY SAND, brown, moist	
2						
3				0.0		
4						
5				0.0	Fine to Coarse SILTY SAND, some gravel, gray, moist	
6						Soil characteristic of glacial till
7				0.0		
8	S-SB-104-8-10-062121					
9				0.0		
10						
11				0.0	SANDY SILT, some gravel, some clay, gray, moist	
12						
13				0.0		
14					Fine to Coarse SILTY SAND with gravel, gray, moist	Sand seam with higher moisture content from 14-14.2'
15	S-SB-104-14-16-062121			180.2		
16				1.8		Refusal at 16'
17						

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Temporary well placed in bottom of borehole to see if seepage occurred. The well remained dry after four hours, at which time it was removed.

Jack's Auto

Olympia, WA

BORING LOCATION: SB-105	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

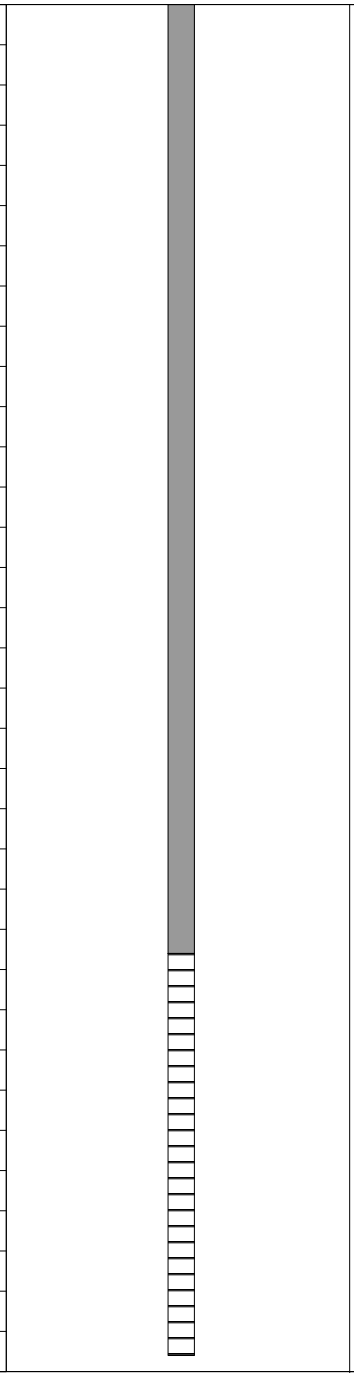
PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-105

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 16.8
SCREEN INTERVAL: 11.8-16.8	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
1				0.0		
2					FILL - Fine to Coarse SAND with clay, dark brown, moist	
3				0.0		
4						
5				0.0	SILT with sand, gray-brown, some gravel, moist	Soil characteristic of glacial till
6						
7				0.0		
8						
9	S-SB-105-8-10-062121			0.0	Fine to Coarse SAND with silt, gray-tan, moist	
10						
11				0.0		No staining noted in soil column
12						
13				0.0	SANDY SILT, some gravel, some clay, gray, moist	Hydrocarbon odor 12-16'
14	S-SB-105-14-16-062121			60.2		
15				386.0		
16				328.0	Fine to Coarse SILTY SAND with gravel, gray, moist	Refusal at 17'
17				3.6		

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Temporary well placed in bottom of borehole to see if seepage occurred. The well remained dry after four hours, at which time it was removed.

Jack's Auto

Olympia, WA

BORING LOCATION: SB-106	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-106

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 16
SCREEN INTERVAL: --	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					Portland Cement Concrete	
1	S-SB-106-1-3-062121			0.0	FILL - CLAYEY SAND, some gravel, brown, moist	Soil characteristic of glacial till
2						
3				0.0		No staining noted in soil column
4	S-SB-106-4-6-062121					
5				276.1		
6						
7				150.4		
8						
9				102.5	Fine to Coarse SILTY SAND, some gravel, gray, moist	Hydrocarbon odor 4-16'
10						
11				117.2		
12						
13				154.0		
14	S-SB-106-14-16-062121					
15				22.5		
16				178.2		Refusal at 16'

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Jack's Auto

Olympia, WA

BORING LOCATION: SB-107	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-107

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 14.5
SCREEN INTERVAL: --	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					Portland Cement Concrete	
					Aggregate Base	
1	S-SB-107-1-3-062121			0.0		
2						
3				0.0		
4						
5				0.0		Soil characteristic of glacial till
6						
7				0.0	SILTY SAND with gravel, gray and brown, moist	
8						
9				0.0		
10						
11				0.0		No odors or staining noted in soil column
12	S-SB-107-12-14-062121					
13				0.0		
14						Refusal at 14.5'
15				0.0		

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
0
1
2
3
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7
8
9
10
11
12
13
14
15

Jack's Auto

Olympia, WA

BORING LOCATION: SB-108	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

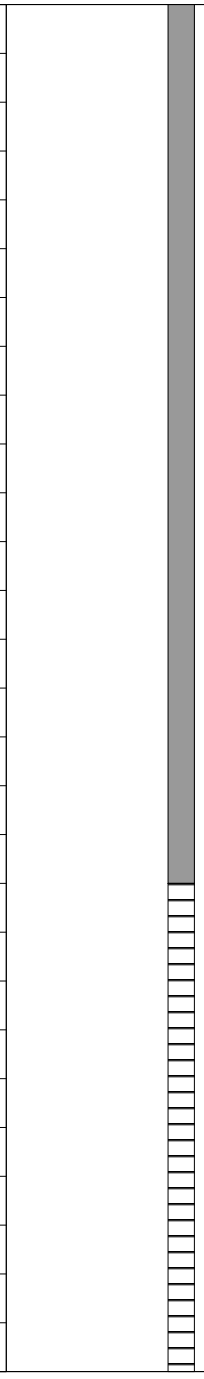
PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-108

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 14
SCREEN INTERVAL: 9-14	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0						
1				0.0	TOPSOIL	
2						
3				0.2		
4						
5				0.0		
6	S-SB-108-6-8-062121					No odors or staining noted in the soil column
7				0.0		
8					Fine to Coarse SILTY SAND, some gravel, gray, moist	
9				0.0		
10						
11				0.0		
12						
13	S-SB-108-13-14-062121			0.0		Refusal at 14'
14				0.0		

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Temporary well placed in bottom of borehole to see if seepage occurred. The well remained dry after four hours, at which time it was removed.

Jack's Auto

Olympia, WA

BORING LOCATION: SB-109	DATE STARTED: 06/21/21
DRILLING CONTRACTOR: ESN	
DRILLING METHOD: Direct Push	
DRILLING EQUIPMENT: Geoprobe	
LOGGED BY: Joel Hecker/Avery Rosenbalm	

PIONEER TECHNOLOGIES CORPORATION

Log of Soil Boring No. SB-109

DEPTH TO WATER (ft.): --	TOTAL DEPTH (ft.): 15
SCREEN INTERVAL: --	BOREHOLE BACKFILL: Bentonite

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0–1				0.0	TOPSOIL	
1–13				0.0 0.0 0.0 0.0 0.0 0.0	Fine to Coarse SILTY SAND with gravel, gray, moist	Soil characteristic of glacial till No staining noted in soil column
13–15	S-SB-109-13-15-062121			0.0 0.4	SANDY SILT with gravel, gray, moist	Slight hydrocarbon odor 13-15' Refusal at 15'

TEMPORARY WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Jack's Auto

Olympia, WA

BORING LOCATION: SB201	DATE STARTED: 7/13/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of SB201**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 17 / TOTAL DEPTH (ft.): 25
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: - / BOREHOLE BACKFILL: Bentonite

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
0–1	SO-SB201-1-2-0713			0.0	TOPSOIL	No staining or odors noted in soil column	
1–2					FILL - CLAYEY SAND with gravel and cobbles, brown, moist		
2–3				0.0			
3–4							
4–5				0.0			
5–6							
6–7	SO-SB201-6-8-0713			1.5			
7–8							
8–9				0.0			
9–10							
10–11				0.0			
11–12							
12–13				0.0			
13–14					Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist-to-wet at ~17'		
14–15				0.0			
15–16							
16–17	SO-SB201-16-18-0713			0.0			
17–18							
18–19				0.0			
19–20							
20–21				0.0			
21–22							
22–23				0.0			
23–24							
24–25				0.0			
25–26							

Jack's Auto

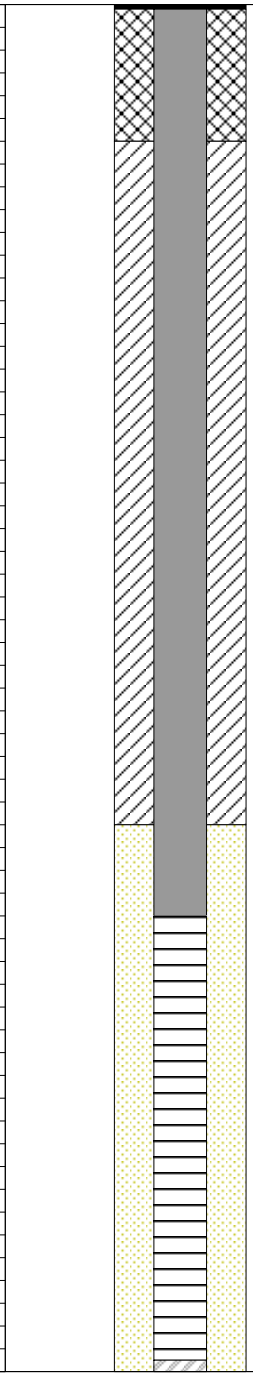
Olympia, WA

BORING LOCATION: MW1	DATE STARTED: 7/9/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW1**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 20.2 / TOTAL DEPTH (ft.): 30
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 20-30 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
1				0.0	FILL - Fine to Coarse CLAYEY SAND, trace root fibers, brown, moist	
2						
3				0.0		
4					Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist	
5				0.0		
6						
7				0.0	SANDY SILT, some gravel and cobbles, gray, moist	
8						
9				0.0	Fine to Coarse SILTY SAND and GRAVEL, trace cobbles, gray, moist	
10					SANDY SILT, some gravel and cobbles, gray, moist	
11				0.0		
12					Fine to Coarse SILTY SAND with gravel, gray, moist	
13	SO-MW1-14-15-0713			0.0		
14						
15				0.0	SILT with gravel and sand, gray, moist	
16						
17				0.0		No staining or odors noted in soil column
18						
19				0.2		
20						
21	SO-MW1-21-23-0713			0.0		
22						
23				1.3	Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist-to-wet at ~23'	
24						
25				1.0		
26						
27				0.0		
28						
29				0.0		
30						

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

Ecology Well Tag ID: BNN268

Jack's Auto

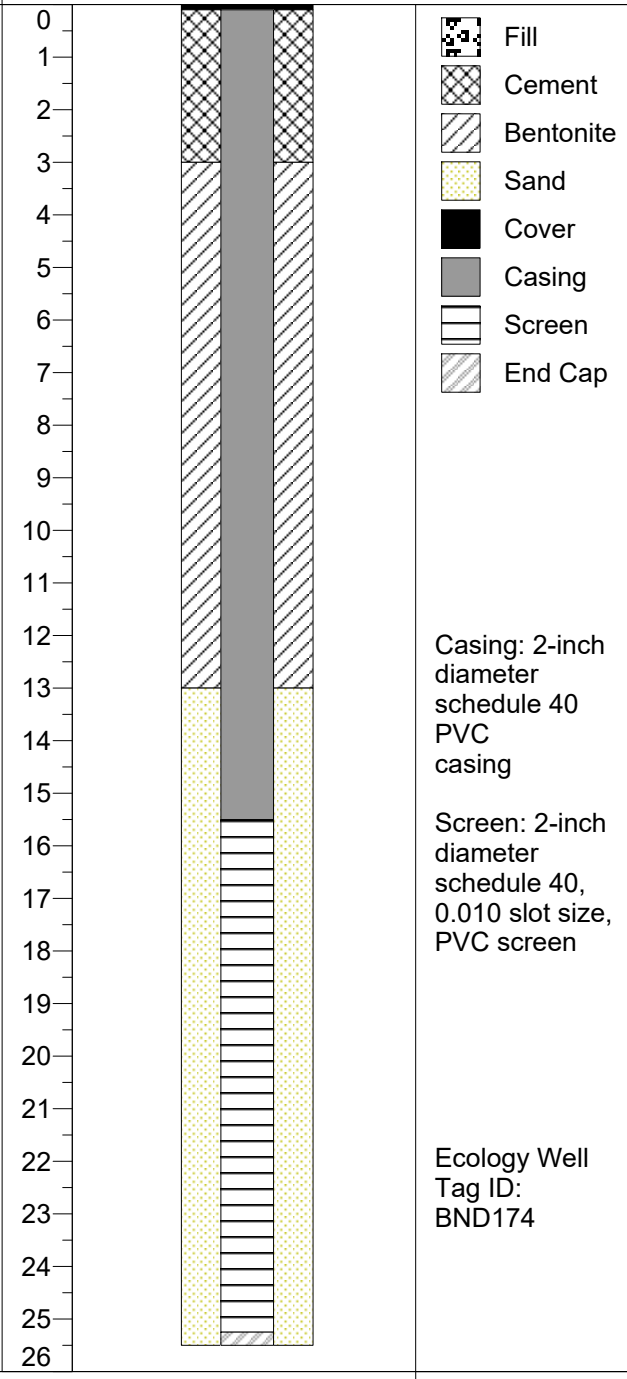
Olympia, WA

BORING LOCATION: MW2	DATE STARTED: 7/13/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW2**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 19 / TOTAL DEPTH (ft.): 25.5
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 15.5-25.5 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0–1	SO-MW2-1-3-0713			0.0	TOPSOIL	
1–3				0.9		
3–10				0.0		
10–20				0.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist-to-wet	No staining or odors noted in soil column
17–19	SO-MW2-17-19-0713			0.0		
20–25				0.0	Fine to Coarse SILTY GRAVEL with sand and cobbles, gray, wet	
25–26				0.0		

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

Ecology Well Tag ID: BND174

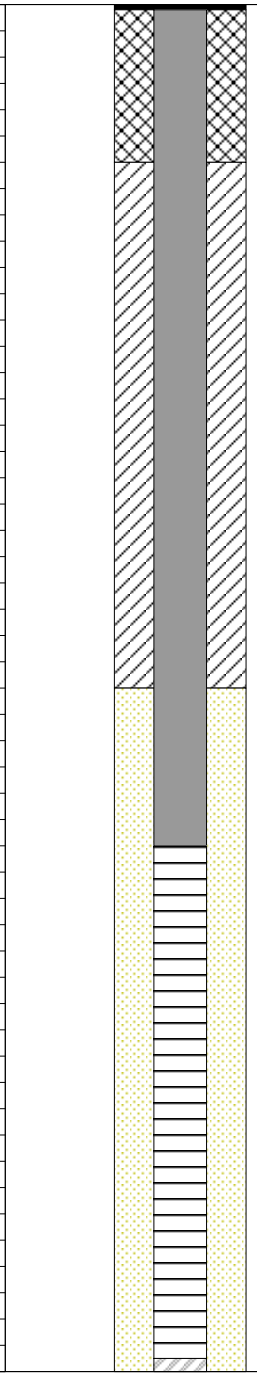
Jack's Auto
Olympia, WA

BORING LOCATION: MW3	DATE STARTED: 7/12/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW3**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 21.2 / TOTAL DEPTH (ft.): 26
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 16-26 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0–1				0.0	ASPHALT FILL - CLAYEY SAND, brown, moist	
1–3	SO-MW3-1-3-0713			0.0		
3–8				0.0		
8–16				0.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist	No staining or odors noted in soil column
16–19	SO-MW3-17-19-0713			0.0		
19–26				0.0	Fine to Coarse SILTY GRAVEL with sand and cobbles, gray, moist-to-wet	

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



- Fill
- Cement
- Bentonite
- Sand
- Cover
- Casing
- Screen
- End Cap

Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

Ecology Well Tag ID: BNN290

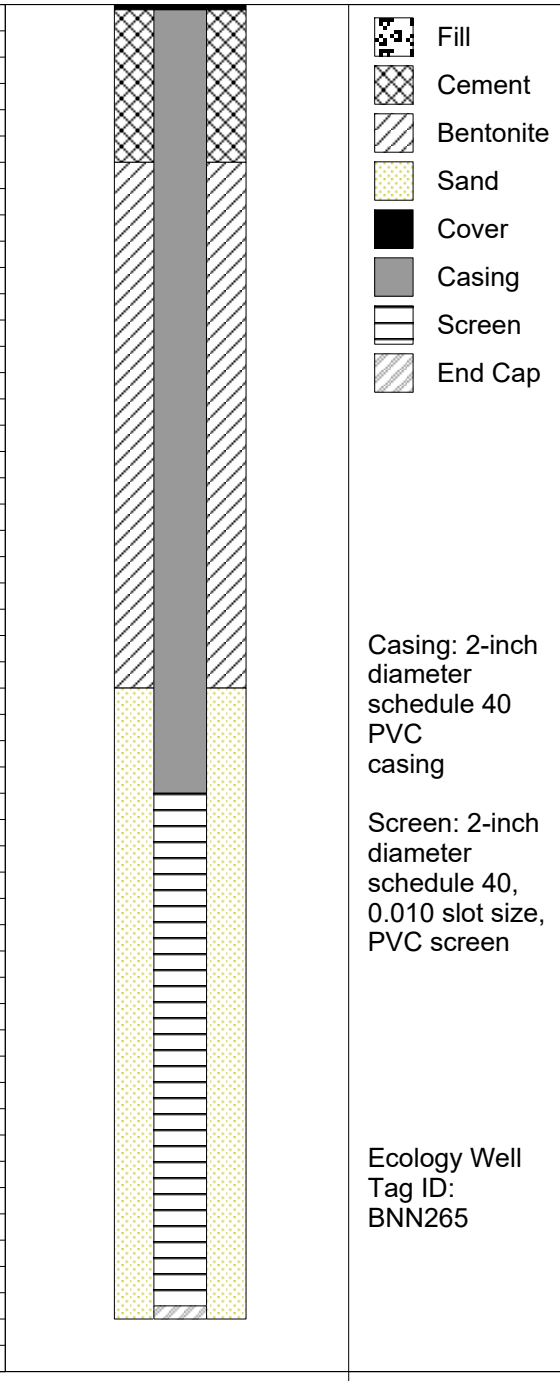
Jack's Auto

Olympia, WA

BORING LOCATION: MW4	DATE STARTED: 7/8/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW4**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 17.5 / TOTAL DEPTH (ft.): 25
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 15-25 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0–1				0.0	ASPHALT FILL - Fine to Coarse SAND, brown, moist	
1–7				0.0	Fine to Coarse SILTY SAND with gravel and cobbles, moist, gray	
7–8				0.8	SANDY SILT with gravel and cobbles, moist, gray	
8–10				0.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray. moist-to-wet SANDY SILT with gravel and cobbles, moist, gray	
10–15	SO-MW4-15-17-0713			0.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray. moist-to-wet at ~14'	No staining or odors noted in soil column
15–20				0.0		
20–21				0.0	GRAVELLY SILT, tan, wet	
21–25				0.0	SILT with gravel, gray-brown, wet, cohesive	
25–26				0.0		



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

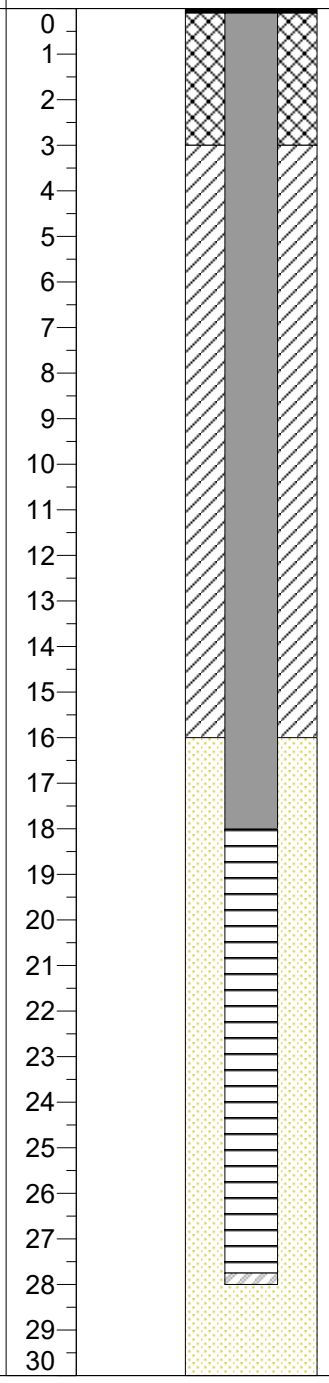
Ecology Well Tag ID: BNN265

Jack's Auto
Olympia, WA

BORING LOCATION: MW5	DATE STARTED: 7/8/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW5**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 18.3 / TOTAL DEPTH (ft.): 30
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 18-28 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0–1				0.0	ASPHALT	
1–2				0.0	FILL - Fine to Coarse SAND, brown, moist	
2–10				0.0		
10–22				0.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist-to-wet at ~19 '	
22–25				0.0	GRAVELLY SILT, tan, wet	
25–30	SO-MW5-18-20-0713			0.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray, wet	No staining or odors noted in soil column



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

- Fill
- Cement
- Bentonite
- Sand
- Cover
- Casing
- Screen
- End Cap

Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

Ecology Well Tag ID: BNN266

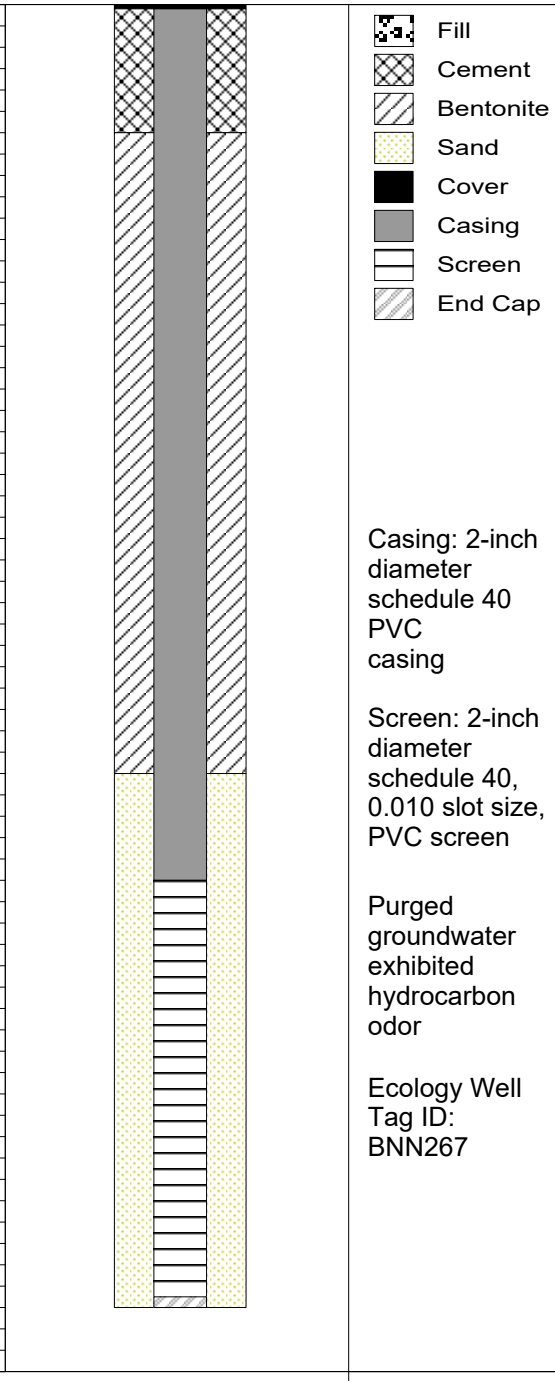
Jack's Auto

Olympia, WA

BORING LOCATION: MW6	DATE STARTED: 7/8/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW6**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 21 / TOTAL DEPTH (ft.): 30.5
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 20.5-30.5 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0				0.0	PORTLAND CEMENT CONCRETE	
1					AGGREGATE BASE	
2					FILL - Fine to Coarse SAND, brown, moist; gravel lens at ~2'	
3				0.0		
4						
5				0.0		
6						
7				0.0		
8						
9				0.0		
10						No staining noted in soil column
11				85.1		
12	SO-MW6-12-14-0713					
13				2889.0	Fine to Coarse SILTY SAND with gravel and cobbles, gray, moist-to-wet	
14						
15				1240.0		Strong hydrocarbon odor at 12-25'
16						
17				2046.0		
18						
19				29.4		
20						
21	SO-MW6-20-22-0713			45.1		
22						
23				43.0		
24						
25				146.0		Slight hydrocarbon odor at 25-27'
26						
27				329.0	Fine to Coarse SILTY GRAVEL, some sand, gray, wet	
28						
29				7.9		
30				2.0		
31						
32						



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

Purged groundwater exhibited hydrocarbon odor

Ecology Well Tag ID: BNN267

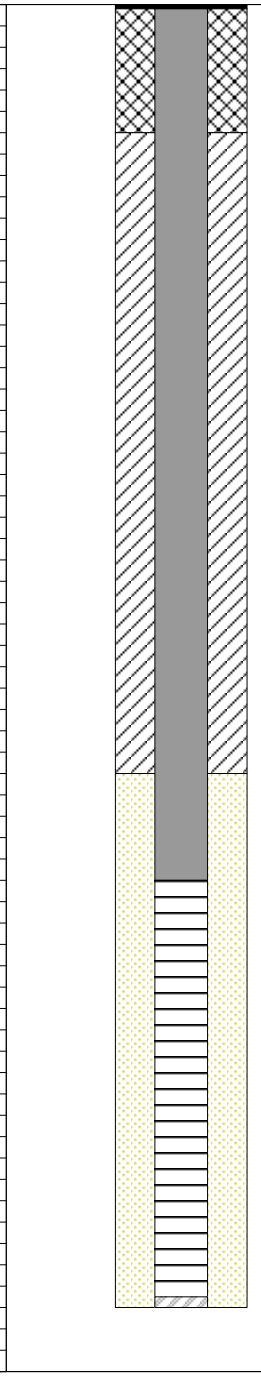
Jack's Auto

Olympia, WA

BORING LOCATION: MW7	DATE STARTED: 7/9/21
DRILLING CONTRACTOR: Holt Services Inc.	
DRILLING METHOD: Sonic	**Log of MW7**
DRILLING EQUIPMENT: Mini-Sonic Rig	DEPTH TO WATER (ft.): 21 / TOTAL DEPTH (ft.): 30.5
LOGGED BY: Joel Hecker/Avery Rosenbalm	SCREEN INTERVAL: 20.5-30.5 / BOREHOLE BACKFILL: See Well Construction

PIONEER TECHNOLOGIES CORPORATION

DEPTH (feet)	SAMPLES: Sample No.	Sample	Litho.	PID Reading	DESCRIPTION	BORING REMARKS
0					ASPHALT	
1				0.0	AGGREGATE BASE	
2					FILL - Fine to Coarse CLAYEY SAND with gravel and cobbles, brown, moist	
3				0.0		
4					Fine to Coarse SILTY SAND, some gravel and cobbles, brown, moist	
5				0.0		
6					SANDY SILT, some cobbles and gravel, gray, moist	
7	SO-MW7-7-9-0713			0.0		
8						
9				0.0		
10					Fine to Coarse SILTY SAND with gravel and cobbles, brown, moist	
11				0.0		
12						
13				0.0		
14						No staining noted in soil column
15				0.0	SANDY SILT, some cobbles and gravel, gray, moist	
16						
17				0.0		
18						
19	SO-MW7-19-21-0713			2.9	Fine to Coarse SILTY SAND and GRAVEL with cobbles, brown, moist-to-wet	
20						
21				0.0		
22						Hydrocarbon odor at 25-30'
23				0.0		
24						
25				65.0		
26					SILTY GRAVEL with sand and cobbles, gray, wet	
27	SO-MW7-26-28-0713			309.1		
28						
29				141.2		
30				12.1		
31						
32						



Fill
Cement
Bentonite
Sand
Cover
Casing
Screen
End Cap

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Casing: 2-inch diameter schedule 40 PVC casing

Screen: 2-inch diameter schedule 40, 0.010 slot size, PVC screen

Purged groundwater exhibited hydrocarbon odor

Ecology Well Tag ID: BNN269

Appendix C

Sampling and Analysis Plan Rev 1

1400 – 1408 Bethel Street NE
Olympia, Washington

Prepared for:

City of Olympia
PO Box 1967
Olympia, Washington 98507

Prepared using the City of Olympia's United Stated Brownfield Assessment Grant Funds,
Cooperative Agreement # BF01J66201

Prepared by:

PIONEER TECHNOLOGIES CORPORATION

5205 Corporate Center Ct. SE, Suite A
Olympia, Washington 98503
Phone: 360.570.1700
Fax: 360.570.1777
www.uspioneer.com

June 2021

Sampling and Analysis Plan Approval

The Sampling and Analysis Plan for 1400 – 1408 Bethel Street NE has been approved by the following Project Team members:

Name and Role	Signature and Date
Susan Morales USEPA Project Manager	SUSAN MORALES Digitally signed by SUSAN MORALES Date: 2021.06.09 17:31:32 -07'00'
Donald M. Brown USEPA Brownfields QA Reviewer	Don Matheny Digitally signed by Matheny, Don Date: 2021.06.10 06:32:59 -07'00'
Mike Reid City of Olympia Grantee Project Manager	Mike Reid 5/14/2021
Joel Hecker, LG PIONEER Project Manager	5/13/2021
Angela Noyan PIONEER QA Manager	For Angela Noyan 5/14/2021

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Figure 2 Previous and Proposed Sampling Locations

Tables

Table 1 Summary of Historical Soil Analytical Results
Table 2 Proposed Sampling Design

List of Acronyms

Acronym	Explanation
AEG	Associated Environmental Group LLC
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
City	City of Olympia
EAG	Ecology Assessment Group LLC
Ecology	Washington Department of Ecology
EPH	Extractable Petroleum Hydrocarbons
ESA	Environmental Site Assessment
GPR	Ground Penetrating Radar
mg/kg	Milligrams per Kilogram
MTCA	Model Toxics Control Act
NAPL	Non-Aqueous Phase Liquid
NTU	Nephelometric Turbidity Units
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PIONEER	PIONEER Technologies Corporation
Property	1400-1408 Bethel Drive NE, Olympia, Washington
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Target Reporting Limit
SAP	Sampling and Analysis Plan
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbon
TPH-G	TPH in the gasoline range
TPH-D	TPH in the diesel range
TPH-HO	TPH in the heavy oil range
USEPA	United States Environmental Protection Agency
ug/L	Micrograms per Liter
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VPH	Volatile Petroleum Hydrocarbons
WAC	Washington Administrative Code

SECTION 1: INTRODUCTION

PIONEER Technologies Corporation's (PIONEER's) project team prepared this Sampling and Analysis Plan (SAP) as a requirement of the United States Environmental Protection Agency (USEPA) brownfields grant program prior to using assessment grant funds for environmental assessment. The City of Olympia (City) intends to use its hazardous substances and petroleum assessment grant (BF01J66201) funds to conduct an environmental site assessment (ESA) of the property located at 1400 and 1408 Bethel Street NE, in Olympia, Thurston County, Washington (the Property). The general location of the Property is shown on Figure 1. The Property was determined to be eligible for the use of grant funds by the Washington Department of Ecology (Ecology) on May 10, 2021 and by the USEPA on May 12, 2021. The Quality Assurance Project Plan (QAPP) was submitted to USEPA and was approved on March 16, 2020, with subsequent addendums.

The objective of the proposed ESA is to evaluate the Property's current environmental conditions for the purpose of supporting environmental due diligence and liability management for a future prospective purchase and subsequent redevelopment of the Property. Descriptions of the Property history and current environmental conditions, strategies and procedures for soil and groundwater sampling, chemical analyses of collected soil and groundwater samples, data evaluation and reporting, and the estimated project schedule are presented in the following sections.

SECTION 2: BACKGROUND INFORMATION

Summaries of the Property history, current Property conditions, and a summary of environmental concerns identified during a review of the Property's history are presented in the following subsections. The planned subsurface assessment to further evaluate the environmental concerns is also summarized in this section.

2.1 Property History

The northern parcel of the Property (1408 Bethel Street NE) was developed with a convenience store identified as Briggs Grocery (1958 - mid-1970s), Don's E-Z Stop (mid-1970s - 2018), and Convenience Corner (2018 – current).

The southern parcel of the Property (1400 Bethel Street NE) was developed with a grocery store prior to 1934 (White Newton Grocery). By 1946, a service station (Horner's Service and Grocery) was in operation. The service station changed ownership multiple times and was identified as Bob's Richfield Service Station (1958), Jim's Signal Service Station (1963), Steve's Enco Service Station (1968), and Humphrey's Exxon Service Station (1973).[1] By 1978, the southern parcel was identified as Henderson's Twenty-Four Hour Towing & Repair and by 1987, the service station and auto building was vacant. Six underground storage tanks (USTs) were present to the southwest of the building at that time (see Figure 1) and at least one hoist was present within the building based on Thurston County Auditor records. Additionally, according to the Thurston County Auditor, the existing service station building and associated canopy was constructed in 1957.

Prior to their first identified use, both parcels were likely used for residential and/or agricultural use based on surrounding land uses.

2.2 Previous Environmental Investigations

In 1990, Ecology Assessment Group LLC (EAG) removed the six USTs associated with the former service station (see Figure 1). The USTs included four gasoline USTs, one fuel oil UST, and one waste oil UST (that historically contained gasoline). EAG collected composite soil samples from directly beneath each UST at the time of removal (see Table 1).[2] Soil samples were analyzed for total petroleum hydrocarbons (TPH) and a subset of volatile organic compounds (VOCs) consisting of benzene, toluene, ethylbenzene, and xylenes (BTEX). EAG reported that the 'heaviest' contamination was reported under UST 1 and that UST 3 was corroded and had a hole in the bottom (see Figure 2). Visual indications of contamination were only reported in the fill areas (likely associated with overflows) and the bottom of UST 1. As a result of the TPH contamination, additional excavation occurred. Samples were taken during over-excavation work, but sample locations and specific analytical data are unavailable. Reportedly, the soil

[1] City directories are presented in five year intervals, so specific ownership between the dates mentioned is unknown.
[2] The samples collected from directly beneath the USTs (and shown on Table 1) were later over-excavated and are no longer in place.

beneath UST 1 was excavated to 17.5 feet below ground surface (bgs) and the TPH concentration at the excavation floor was 330 milligrams per kilogram (mg/kg). The soil beneath UST 4 was excavated to 19.5 feet bgs and the TPH concentration at the excavation floor was 173 mg/kg. The soil beneath the fuel oil UST (UST 6) was also excavated and a soil sample was collected from the excavation floor; the TPH concentration from the floor of the fuel oil UST excavation was 2.0 mg/kg. In total, approximately 163 cubic yards of contaminated soil were removed from the UST excavations and stockpiled on-site. Clean overburden material was stockpiled separately. EAG reported that constraints such as low-hanging electric lines, sidewalks, nearby streets, and the type of excavator limited the excavation from extending further vertically or laterally (EAG 1990 and 1991a).

Dewatering was required to advance the excavation deeper than 15 feet bgs. Approximately 5,000 gallons of water was pumped out of the excavation and disposed of off-site. Two groundwater samples were collected from the open excavation and analyzed for BTEX. Elevated concentrations of benzene (79 micrograms per liter [ug/L]), toluene (1,200 ug/L), ethylbenzene (2,100 ug/L), and xylenes (5,100 ug/L) were reported in the first sample. The second sample collected one week later still contained elevated, but lower, concentrations of BTEX: benzene (10 ug/L, toluene (320 ug/L), ethylbenzene (less than 1.0 ug/L), and xylenes (4,500 ug/L) (EAG 1991a).

EAG remediated the contaminated soil stockpile using vapor extraction methodologies and heat (i.e. blowing heated air through pipes within the stockpile). Analytical data was unavailable, but multiple samples were reportedly collected from the stockpile after treatment. The portions of the stockpile containing the highest TPH concentrations pre-remediation reportedly contained less than 1.0 mg/kg of TPH post-remediation. Clean gravel was placed in the open excavation from the floor until above the groundwater level (14 feet bgs), followed by clean stockpiled overburden material. The remediated soil was used to fill the excavation to grade. It is unclear if any soil was hauled off-site for disposal. After compaction, the excavation was paved with asphalt (EAG 1991b).

In 2012, Associated Environmental Group, LLC (AEG) completed a limited Phase II ESA of the former service station parcel. AEG advanced four soil borings and collected soil samples around the former dispenser island and service station building (see Figure 2). AEG did not encounter groundwater to the maximum explored depth of their borings (17 feet bgs). Each soil sample was analyzed for VOCs and TPH in the gasoline range (TPH-G). AEG documented elevated photoionization detector (PID) readings and strong petroleum odors from four to 15 feet bgs at location B-1, southeast of the former UST locations (see Figure 2). TPH-G was detected in soil at B-1 at concentrations exceeding Model Toxics Control Act (MTCA) Method A/B screening levels for unrestricted land use (see Table 1). VOCs were also detected in soil at B-1 but did not exceed MTCA Method A/B screening levels. Boring locations B-2 and B-3 were located on the southern and northern ends of the former dispenser island, respectively, and location B-4 was located directly north of the service station building. Soil samples collected from B-2, B-3, and B-4 did not exceed MTCA Method A/B screening levels (see Table 1); no elevated PID readings were recorded from these boring either (AEG 2012).

Ecology completed a Site Hazard Assessment in 2013. Ecology reported that previous investigations have confirmed the presence of TPH in subsurface soil at the Property and that although groundwater impacts have not been confirmed, the extent of contamination has not been fully delineated (Ecology 2013).

2.3 Current Conditions

As of the date of publication of this SAP, the Property consisted of a convenience store, a vacant former service station building, paved parking areas, and grass-covered land. The Property was located in a mixed-use commercial and residential area northeast of downtown Olympia. The current Property features are shown on Figure 1.

2.4 Environmental Conditions

The following environmental concerns associated with the Property were identified during a review of the Property history:

- The remaining soil and groundwater contamination associated with the former USTs.
- The potential for additional undiscovered and/or unreported contamination associated with former USTs.
- The potential for additional undiscovered and/or unreported contamination associated with former hoist(s) and/or potential oil-water separator(s) in the service station building.
- The potential for additional contamination associated with a possible fuel oil UST on the northern parcel or septic systems on either parcel.
- The lack of analytical data from the remediated soil.

2.5 Future Use of the Property

The anticipated future use of the Property will be used for mixed commercial and residential use.

2.6 Geologic Setting

The subsurface of the Property consists of alternating layers of silt and fine to coarse sand and gravel to depths of at least 17 feet bgs (AEG 2012). Groundwater has been observed at depths of approximately 14 feet bgs (EAG 1991a). However, during AEG's 2012 Phase II ESA, they did not encounter groundwater in the uppermost 17 feet of soil (AEG 2012).

The subsurface materials are consistent with the characteristics of glacial till. It is likely that groundwater slowly percolates through the till and although the AEG soil borings appeared dry at the time of drilling, with time, groundwater would have filled the open pore space. At this time, the direction of groundwater flow is unknown.

2.7 Susceptible Areas

According to the United States Fish and Wildlife National Wetland Inventory maps, the Property is not located in a wetland or flood designated area. According to the Ecology well search database, the closest water supply well is located on Lindell Road NE, approximately 6,000 feet to the east of the Property.

Mission Creek Nature Park is located approximately 900 feet to the east of the Property. The closest school, Roosevelt Elementary School, is located on the south-adjoining site.

2.8 Conceptual Site Model

A simplified conceptual site model showing the possible pathways from sources through media and exposure scenarios to potential receptors is shown below.

Source of Concern	Primary Pathway	Secondary Pathway	Primary Receptors	Secondary Receptors	Primary Samples	Secondary Samples
Historic On-Site Operations	Direct Contact with Soil	Direct Contact with Groundwater	Future Occupants	Construction and Maintenance Workers	Soil Samples	Groundwater Samples

Note that no water supply wells are located within one mile of the Property and that the known contaminated portions of the Property are currently paved with asphalt or covered by concrete building pads. No occupants are currently present on the southern service station parcel.

2.9 Planned Site Assessment

The assessment activities described in this SAP are designed to evaluate the environmental conditions of the Property to support the following:

- Evaluate if contamination associated with the identified environmental concerns remains on the Property.
- If contamination is present, evaluate whether current environmental conditions warrant further investigation and/or remediation.

These Property assessment goals will be achieved through the following:

- Conducting limited subsurface activities to assess potential environmental impacts from historical use of the Property, as identified during the review of the Property history.
- If contamination is discovered, determine if regulated constituents are present at concentrations greater than MTCA Method A/B screening levels for unrestricted land use.
- Generate sufficient data to determine if the future residential use could require remediation of soil and groundwater to meet risk-based and regulatory goals.

This Phase II ESA can include spatial and temporal boundaries. The spatial limit for this investigation consists of the Property boundary and surrounding right-of-ways. Temporal limits are the seasons covered by the investigation and can account for variations based on seasonal weather changes. For the objectives of this Phase II ESA, temporal variation will not be assessed.

SECTION 3: SAMPLING PLAN

The sampling plan for the assessment activities is presented in this section. The sampling plan includes the following: 1) a summary of the planned soil and groundwater sampling locations, 2) rationales for those locations, and 3) descriptions of procedures and methods for field sampling. A summary of the soil and groundwater samples to be collected for this assessment is presented in Table 2 while sampling locations are shown on Figure 2. The work is planned in two phases, with the first phase advancing soil borings with temporary monitoring well screens in the potential source areas and the second phase installing permanent monitoring wells around the perimeter of the Property. Monitoring wells will be installed based on the results of the first phase of the project and locations may vary slightly from those shown on Figure 2.

3.1 Summary of Sampling Locations

During the first phase of the investigation, PIONEER will advance 8 soil borings, including 5 with temporary monitoring wells, and will collect soil and groundwater samples at the locations shown on Figure 2. During the second phase of the investigation, PIONEER will install up to seven monitoring wells and will collect soil and groundwater samples at the locations shown on Figure 2. The locations and number of sampling locations may change based on field conditions and the results of the first phase of the investigation. Soil samples will be collected from each boring for visual classification, field screening, and potential laboratory analyses. PIONEER selected the sample locations to evaluate the environmental concerns associated with the Property and potential due care concerns related to the current and future planned uses of the Property. Specific sampling objectives and their respective sampling locations are discussed in the following paragraphs.

Soil borings SB-101 through SB-105 will be advanced in and around the previously excavated area to characterize remediated backfill and soil beyond the vertical and horizontal extents of the excavation (see Figure 2). Each of the five borings will be advanced to a depth of 25 feet bgs. SB-103 through SB-105 will be converted to temporary monitoring wells. The temporary monitoring wells will assess potential groundwater impact from historical UST releases. Soil boring SB-105 will also further characterize and confirm the impacts identified by AEG in 2012 at their soil boring B-1 (see Figure 2).

Soil borings SB-106 and SB-107 will be advanced in the former service station building to characterize subsurface soil (see Figure 2). Each of the two borings will be advanced to a depth of 20 feet bgs or 5 feet below the first encountered groundwater, whichever is shallower. SB-106 will be converted to temporary monitoring well to assess potential groundwater impact from historical service station operations. These boring locations will be adjusted based on the presence of hoists or oil-water separators, if encountered.

Soil boring SB-108 will be advanced adjacent to the former fuel oil UST to characterize subsurface soil (see Figure 2). The boring will be advanced to a depth of 25 feet bgs or 5 feet below the first

encountered groundwater, whichever is shallower, and will be converted to temporary monitoring well to assess potential groundwater impact from the former USTs and/or historical auto repair operations.

Soil borings MW-1 through MW-7 will be installed along the perimeter of the southern parcel to assess potential migration of groundwater impact from historical on-site releases. Groundwater flow direction on the Property is unknown at this time. Each of the seven borings will be advanced to a depth of 25 feet or six to eight feet beyond the depth of first groundwater encountered, whichever is shallower, and will be converted to permanent monitoring wells. Soil samples will only be retained from the soil borings if field evidence of contamination is present.

3.2 Premobilization Coordination

Prior to beginning field work, the following will occur:

- Subcontracting with GPRS, drillers, and laboratories
- Completing required Health and Safety procedures for PIONEER and subcontractors
- Completing Public Utility Locate (i.e., 811)
- Obtain access agreement with Property owner
- Obtain sampling equipment and supplies

3.3 Sampling Procedures and Methods

Geophysical survey procedures, soil and groundwater sampling, quality control (QC) sampling, and waste management procedures and methods are summarized in this subsection. Sampling activities will be conducted in accordance with the QAPP and QAPP Addendums for the City, approved by USEPA, with subsequent updates as necessary (PIONEER 2020 and 2021).

3.3.1 Geophysical Survey

GPRS will conduct a geophysical survey prior to any drilling and sampling activities. The objectives of the survey are to (1) determine whether or not current fuel oil USTs are present or former USTs were present on the northern parcel, (2) determine whether any current or former septic systems were present on either parcel, (3) obtain information regarding the historical excavation boundaries, and (4) assess potential utilities near proposed drilling locations. GPRS will utilize ground penetrating radar and electromagnetic conductivity tools to conduct the survey.

3.3.2 Soil and Temporary Monitoring Well Sampling

PIONEER's field representative will collect soil and groundwater samples during sampling activities according to the methods described in SOP 1, Soil and Groundwater Sampling Using Direct-Push Methods, included in the QAPP. Details of sampling activities are described as follows:

- PIONEER's field representative will collect continuous soil samples from each boring, visually characterize them in the field, and note physical indicators of environmental contamination.
- PIONEER's field representative will field-screen the soil samples using a portable PID to identify the potential presence of VOCs.
- PIONEER's field representative will collect soil samples for chemical analyses in accordance with the sampling design presented in Table 2.

- PIONEER's field representative will use the following criteria to determine soil sample intervals for chemical analyses in soil borings. Where the PID results identify the potential presence of VOCs in a given boring, the interval with the highest reading will be selected for analyses. When there are no detectable PID results in a given boring, the following procedure and criteria will be used to determine the sample interval, in order of presentation:
  - If an interval has a specific odor that other intervals do not have, that interval will be selected for analysis.
  - If an interval has discoloration that does not appear to be the color of native soil, while other intervals appear to be the color of native soil, that interval will be selected for analysis.
  - In the absence of all indicators listed above within a given boring, the depths listed in Table 2 will be selected for analysis and will generally be in the soil-water interface zone.
- For borings along the perimeter of the southern parcel (MW-1 through MW-7), PIONEER's field representative will only collect a soil sample for analysis if field evidence of contamination is observed.
- PIONEER's field representative will install and sample temporary, one-inch diameter, polyvinyl chloride (PVC) well assemblies fitted with five-foot long, pre-packed well screens in the open boreholes of SB-103 through SB-106 and SB-108 after soil samples are collected.
- PIONEER's field representative will collect the groundwater samples for chemical analyses from the temporary wells using a peristaltic pump at low-flow sampling rates, or a bailer. The sampling procedures will be consistent with those outlined in the QAPP.

The sample containers will be logged on the chain of custody, packaged for transportation, and transported to the laboratory for analysis.

3.3.3 *Permanent Monitoring Well Installation and Development*

A licensed Washington driller will install MW-1 through MW-7 in accordance with Washington Administrative Code (WAC) 173-160 Part II using a direct-push, hollow-stem auger, or similar drill rig. The borings will be advanced approximately six to eight feet below where groundwater is first encountered, with a maximum expected depth of 25 feet bgs. The monitoring wells will consist of thread-coupled, flush-joint, two-inch diameter PVC casing, five to 10 feet of 10-slot PVC screen, and a sand filter pack extending at least one-foot above the top of the screen. The screens will be placed at or near the bottom of the borehole so the screened interval straddles the depth at which groundwater in that groundwater-bearing unit was encountered, while taking into account potential seasonal fluctuations. Each monitoring well will be sealed in accordance with WAC 173-160-450. In general, this sealing entails installing a bentonite plug above the top of the filter pack, filling the borehole annulus from the bentonite plug to near the land surface with bentonite or cement, and then installing a concrete surface seal. Flush-mount surface completions are planned. PIONEER field personnel will log borehole lithology and record monitoring well construction details.

Each monitoring well will be developed. Development will be conducted by over-pumping the monitoring well with a surge block and check valve (i.e., foot pump) or submersible pump until the turbidity in the development water is less than 10 nephelometric turbidity units (NTU). If it is clearly not

practical to continue development to reach the 10 NTU goal, then a development goal of 50 NTU will be used instead. A calibrated field turbidity meter will be used to measure the turbidity. If the monitoring wells purge dry during development due to low hydraulic conductivity rates, each monitoring well be purged dry a minimum of five times.

3.3.4 Surveying

A licensed surveyor will determine the vertical and horizontal location of the reference point (notch or mark, or north side of the top of PVC casing if no notch or mark) for all seven monitoring wells. The vertical elevation will be surveyed to an accuracy of 0.01-foot with the North American Vertical Datum of 1988. The horizontal accuracy will be approximately one foot.

3.3.5 Groundwater Sampling

Prior to sampling the monitoring wells, PIONEER will measure the static water level and any measurable thickness of non-aqueous phase liquid (NAPL) in all on-site monitoring wells (i.e., MW-1 through MW-7) using an electronic interface probe. The depth-to-water and any NAPL thickness will be recorded to the nearest 0.01 foot from a consistent reference point (e.g., mark on the top of the monitoring well casing). The following low-flow purging standard operating procedures will be used to purge water from each monitoring well prior to sampling. A peristaltic pump, equipped with dedicated polyethylene tubing, will be used to purge water from the monitoring wells. The tubing intake will be positioned approximately two feet below the top of the monitoring well screen or two feet below the water level, whichever is lower. However, depending on the amount of drawdown during purging, the pump intake may need to be adjusted to a deeper interval. A variable-frequency drive controller on the pump will be used to limit the purging flow rate to less than one liter per minute. During purging, relative water levels will be monitored with an interface probe or electronic water level indicator, and water quality parameters (i.e., pH, specific conductivity, turbidity, dissolved oxygen, temperature, and oxidation/reduction potential) will be measured with a calibrated water quality meter to verify stabilization. In the event that water quality parameters do not stabilize, purging will be considered complete after 30 minutes of continuous purging. Groundwater samples will be collected immediately following purging without turning off the pumping system. If a monitoring well is pumped dry before the sample can be collected, a groundwater sample will be collected as soon as groundwater in the monitoring well recharges.

3.3.6 Quality Assurance and Quality Control

PIONEER's field representative will minimize the potential for cross-contamination by using new, disposable, nitrile sampling gloves for collection of each sample; using new polyethylene and/or silicone sample tubing for collection of each groundwater sample; using new terracore or T-handle samplers for the collection of each soil sample (if soil samples are collected); and calibrating field instruments in accordance with manufacturer's instructions.

PIONEER's field representative will collect field QC samples as described in SOP 6, Field Quality Control Samples, included in the project QAPP and as summarized in Table 2. The sample handling and custody

requirements, laboratory analytical methods, target reporting limits (RLs), and reporting protocols will be consistent with those outlined in the project QAPP.

3.3.7 Waste Management

PIONEER will manage investigation derived wastes as described in SOP 12, Investigative Derived Wastes, included in the project QAPP. The following types of investigation-derived waste will be generated during sampling activities and will be handled as follows:

- Cuttings from soil borings and monitoring wells will be placed in sealed and labeled drums.
- Development water, purge water, and decontamination water will be placed in sealed and labeled drums.
- Personal protective equipment (e.g., nitrile gloves) and other disposable sampling equipment will be disposed of as solid waste in the standard municipal solid waste stream.

All drummed investigation-derived waste will be characterized and then removed by a licensed waste transporter for off-Site treatment and/or disposal at a facility permitted to accept the waste.

SECTION 4: ANALYSIS PLAN

The target constituents for the soil and groundwater samples were selected based on the project goals, previously detected constituents, and the historical use of the Property. The specific constituents for each sampling location are presented in Table 2. The target constituents for the assessment will include VOCs, TPH-G, TPH in the diesel range (TPH-D), TPH in the heavy oil range (TPH-HO), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), lead, and total organic carbon (TOC). Samples may also be analyzed for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH). Laboratory analyses and field screening will be performed as described in the project QAPP. Samples will be submitted to Libby Environmental in Olympia, Washington for shipment to a subcontracted laboratory, per the QAPP, or analyzed using the following referenced methods:

- VOCs - USEPA Method 8260B
- TPH-G, TPH-D, and TPH-HO - Ecology Method NWTPH-Gx and Dx
- PAHs - USEPA Method 8270LVI
- PCBs – USEPA Method 8082
- Lead – USEPA Method 7010
- TOC – USEPA Method 9060
- VPH – Ecology Method NWVPH
- EPH – Ecology Method NWEPH

Laboratory testing, analysis method target RLs, quality assurance/QC procedures, and reporting protocols used or performed by the laboratories will be consistent with those described in the project QAPP and the needs of the project. Laboratory analytical results will be compared to MTCA Method A/B Cleanup Levels for Unrestricted Land Use for initial screening purposes.

SECTION 5: DATA EVALUATION AND REPORTING

Data collected during this Property assessment will be evaluated as described in Section 4.0 – Data Verification/Validation and Usability of the project QAPP (PIONEER 2020). Following data review, PIONEER will prepare a Phase II ESA report summarizing the results. The report will include details of the activities performed, procedures followed, chemical analyses results, and recommendations. The reports will include a sampling location diagram, tabulated analytical results, soil boring logs, a copy of the laboratory analytical report for all samples collected, and a copy of the chain-of-custody records.

SECTION 6: ESTIMATED SCHEDULE

The environmental activities described in this Work Plan are to be implemented according to the schedule presented below.

- Advancement of SB-101 through SB-108: Early June 2021
- Evaluation of analytical results from SB-101 through SB-108: Late June 2021
- Installation and development of MW-1 through MW-7: July 2021
- Gauging and sampling event of MW-1 through MW-7: July 2021
- Final data evaluation and development of Phase II ESA Report: August and September 2021

This schedule assumes USEPA approval of the SAP within two weeks of submittal.

SECTION 7: REFERENCES

AEG. 2012. Limited Phase II ESA – Subsurface Investigation. Former Jack's Auto Repair. 1400 Bethel Street NE, Olympia, Washington. October.

EAG. 1990. Contamination Clean-Up Preliminary Report. Jake's Auto Repair. 1400 N. Bethel, Olympia, Washington. October.

EAG. 1991a. Contamination Site Assessment Report (Addendum Report #1). Jack's Auto Repair. 1400 N. Bethel Street, Olympia, Washington. March.

EAG. 1991b. On Site Soil Remediation (Final Report). 1400 Bethel Street, Olympia, Washington. April.

Ecology. 2013. Site Hazard Assessment Worksheet 1. Summary Score Sheet. Jack's Auto Repair. 1400 Bethel Street NE, Olympia, Washington. December.

PIONEER. 2020. Quality Assurance Project Plan for the City of Olympia's Brownfield Assessment Grant. March.

PIONEER. 2021. Generic QAPP Addendum for EPH/VPH. Olympia, Washington USEPA Brownfield Assessment Grant. January.

Figures

Legend

- Parcel Boundary
- Property Boundary
- Approximate Extent of Historical Excavation
- Dispenser Island (above-grade structures removed)

Removed USTs

- Fuel Oil
- Gasoline
- Waste Oil

Notes:
-Locations of all features are approximate.

0 10 20 30
Feet

PIONEER TECHNOLOGIES CORPORATION

Current and Historical Property Features
1400 – 1408 Bethel Street NE
Olympia, Washington

Figure 1

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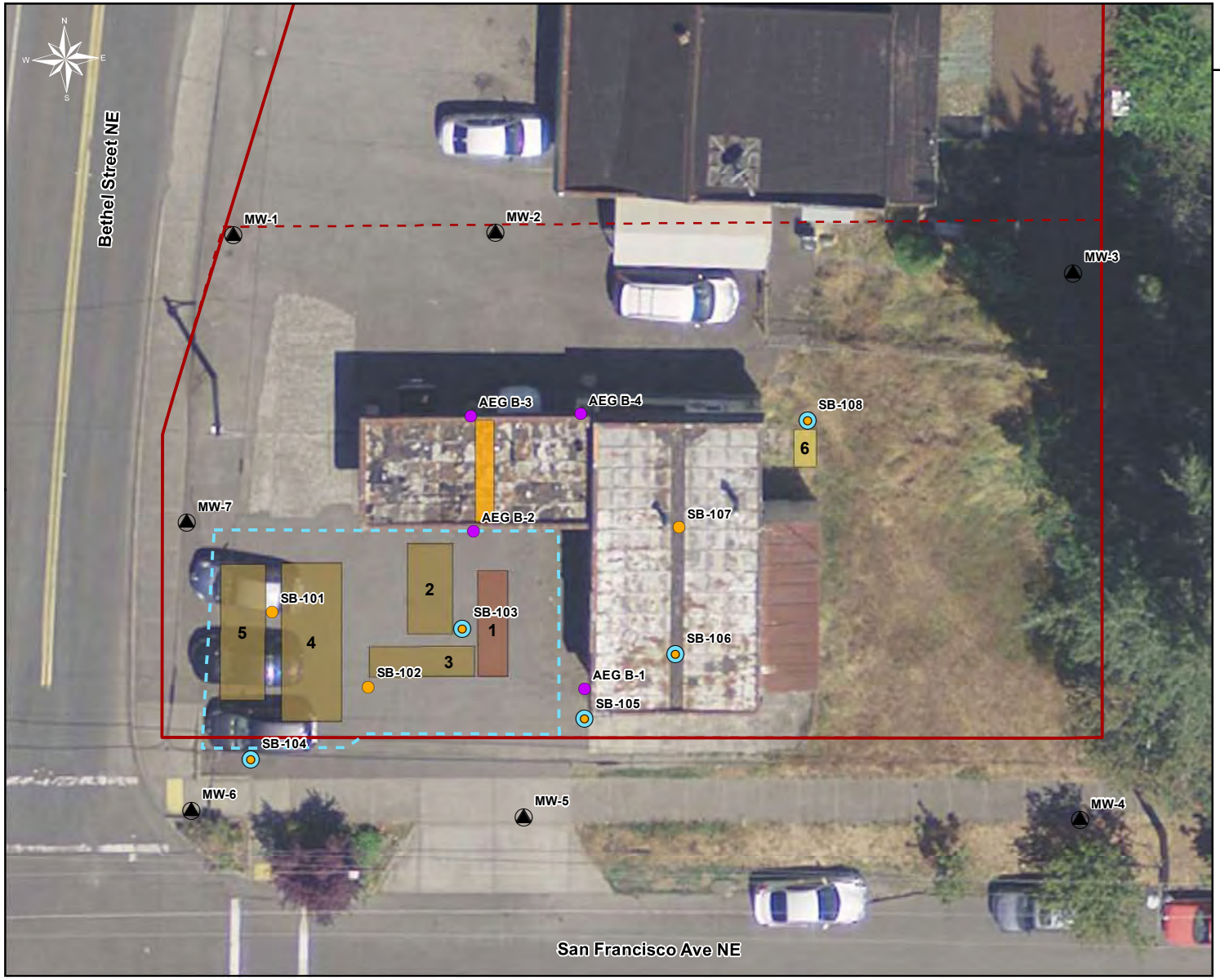

Legend

Historical Borings (AEG 2012)

Proposed Samples

- Soil Boring
- Soil Boring with Temporary Well
- Monitoring Well

Other Property Features

- Approximate Extent of Historical Excavation
- Dispenser Island (above-grade structures removed)
- Parcel Boundary
- Property Boundary

Removed USTs

- Fuel Oil
- Gasoline
- Waste Oil

Notes:
-Location of all features are approximate.

0 10 20 30 Feet

PIONEER TECHNOLOGIES CORPORATION

Previous and Proposed Sampling Locations
1400 – 1408 Bethel Street NE
Olympia, Washington

Figure 2

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Tables

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Table 1: Summary of Historical Soil Analytical Results

Constituent	Sample Location, Depth Interval (Feet bgs), and Sample Date										Soil Screening Levels[1]		
	UST 1 (Fuel Oil)	UST 2 (Waste Oil)	UST 3 (Gasoline)	UST 4 (Gasoline)	UST 5 (Gasoline)	UST 6 (Gasoline)	B-1	B-2	B-3	B-4	Soil Direct Contact Screening Level for an Unrestricted Land Use Scenario (mg/kg)	Soil Direct Contact Screening Level for a Commercial/Industrial Land Use Scenario (mg/kg)	Soil-to-Groundwater Screening Level (mg/kg)
	8	10	8	11	9	5	4-15	1-4	4-6	3-9			
	9/26/1990	9/26/1990	9/26/1990	9/26/1990	9/26/1990	9/26/1990	8/9/2012	8/9/2012	8/9/2012	8/9/2012			
Total Petroleum Hydrocarbons (mg/kg)													
Total Petroleum Hydrocarbons (non-specific)	**1,763**	**117**	**84**	**192**	**152**	**362**	-- --	--	--	--	No Value	No Value	No Value
Diesel Range Organics (TPH-D)	--	--	--	--	--	--	--	--	--	--	3,000	39,000	2,000
Gasoline (TPH-G)	-- --	--	--	--	--	--	**1,100**	**20**	10 U	**11**	4,700	150,000	30
Heavy Fuel Oil (TPH-HO)	-- --	--	--	--	--	--	-- --	--	--	--	3,000	39,000	2,000
VOCs (mg/kg)													
Benzene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	--	0.02 U	0.02 U	0.02 U	0.02 U	18	2,400	0.027
Toluene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	--	0.05 U	0.05 U	0.05 U	0.05 U	6,400	280,000	4.5
Ethylbenzene	**0.013**	0.01 U	0.01 U	0.01 U	0.01 U	--	**1.4**	0.05 U	0.05 U	0.05 U	8,000	350,000	5.9
Xylenes	**0.20**	0.01 U	0.01 U	0.01 U	0.01 U	--	**3.0**	0.15 U	0.15 U	0.15 U	16,000	700,000	14
1,2,4-Trimethylbenzene	-- --	--	--	--	--	--	**9.1**	0.05 U	0.05 U	0.05 U	800	35,000	No Value
1,3,5-Trimethylbenzene	-- --	--	--	--	--	--	**3.6**	0.05 U	0.05 U	0.05 U	800	35,000	No Value
Cumene	-- --	--	--	--	--	--	**0.34**	0.05 U	0.05 U	0.05 U	8,000	350,000	No Value
Naphthalene	-- --	--	--	--	--	--	**2.1**	0.10 U	0.10 U	0.10 U	1,600	70,000	4.5
n-Propylbenzene	-- --	--	--	--	--	--	**1.7**	0.10 U	0.10 U	0.10 U	8,000	350,000	No Value
p-Isopropyltoluene	-- --	--	--	--	--	--	**0.54**	0.05 U	0.05 U	0.05 U	No Value	No Value	No Value
Remaining VOCs	-- --	--	--	--	--	--	<RL	<RL	<RL	<RL	Varies	Varies	Varies

Notes:

UST samples 1 through 6 were composite samples collected from directly beneath the USTs during removal. The sampled material was removed and is no longer in place.

-- --: constituent not analyzed, <RL: constituent not detected at the reporting limt, feet bgs: feet below ground surface, mg/kg: milligrams per kilogram, No Value: a screening level cannot be calculated because no values exist in CLARC (Ecology 2020), U: constituent not detected at shown reporting limit

Bold compounds were detected at the shown concentration.

Highlighted concentrations exceed than the soil-to-groundwater screening level.

[1] Screening Levels were calculated in accordance with WAC 173-340-740, WAC 173-340-745, and WAC 173-340-747.

Table 2: Proposed Sampling Design

Mobilization Event	Boring ID	Boring Location Note[1]	Estimated Boring Depth (in feet bgs)	Media	Potential Sample Interval (in feet bgs)	Sample Purpose	Contingent Sample?	Constituents							
								VOCs	MTCA Short-List VOCs[2]	TPH-G (w/o SGC)[3]	(w/o SGC)[3]	PAHs	PCBs	Lead[4]	TOC[5]
Phase 1	SB101	Western portion of former UST area	25	Soil	0-10	Characterize remediated backfill material returned to excavation in 1990	No		1	1	1			1	
					20-22	Characterize potential impacts beyond previously excavated extent	No		1	1	1			1	
	SB102	South-central portion of former UST area	25	Soil	0-10	Characterize remediated backfill material returned to excavation in 1990	No		1	1	1			1	
					18-20	Characterize potential impacts beyond previously excavated extent	No		1	1	1			1	
	SB103	Eastern portion of former UST area, near highest reported TPH concentrations and evidence of UST release (UST 1)	25	Soil	0-10	Characterize remediated backfill material returned to excavation in 1990	No	1		1	1	1	1	1	
					14-16	Characterize potential impacts beyond previously excavated extent	No	1		1	1	1	1	1	
				GW	15-25	Characterize potential groundwater impacts from historical soil releases from USTs or on-site automotive repair operations	No	1		1	1	1	1	1	
	SB104	South of excavation	25	Soil	6-10	Characterize potential impacts in soil beyond previously excavated extent at base of former USTs	No		1	1	1			1	
					14-16	Characterize potential impacts in soil (field evidence of impact or smear zone) south of previously excavated extent	No		1	1	1			1	
				GW	15-25	Characterize potential groundwater impacts from historical soil releases from USTs or on-site automotive repair operations	No		1	1	1			1	
	SB105	Near AEG B-1, near highest known TPH impact	25	Soil	6-10	Confirm impacts from former USTs and auto repair operations	No	1		1	1	1	1	1	
					14-16	Characterize deeper soil impacts (field evidence of impact or smear zone) from former auto repair operations	No	1		1	1	1	1	1	
				GW	15-25	Characterize potential groundwater impacts from historical soil releases from former automotive repair operations	No	1		1	1	1	1	1	
	SB106	Interior of former auto repair building	20	Soil	0-2	Characterize near surface impacts from former auto repair operations	No	1		1	1	1	1	1	
					14-16	Characterize deeper soil impacts (field evidence of impact or smear zone) from former auto repair operations	No	1		1	1	1	1	1	
				GW	15-20	Characterize potential groundwater impacts from historical soil releases from former automotive repair operations	No	1		1	1	1	1	1	
	SB107	Interior of former auto repair building	20	Soil	0-2	Characterize near surface impacts from former auto repair operations.	No	1		1	1	1	1	1	
					14-16	Characterize deeper soil impacts (field evidence of impact or smear zone) from former auto repair operations	No	1		1	1	1	1	1	
	SB108	Former fuel oil UST location	25	Soil	6-8	Characterize potential remaining impact in soil from fuel oil UST	No	1		1	1	1	1	1	
				GW	15-25	Characterize potential groundwater impacts from historical soil releases from USTs or on-site automotive repair operations	No	1		1	1	1	1	1	
Phase 2	MW1	Northwest corner of parcel	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
	MW2	North of former dispenser island	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
	MW3	Northeast corner of parcel	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
	MW4	Southeast corner of parcel	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
	MW5	Southern ege of parcel	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
	MW6	Southwestern corner of parcel	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
	MW7	Western edge of parcel	25	Soil	TBD	Characterize potential soil impact from former on-site operations, if field evidence of impact is present.	Yes	1		1	1	1	1	1	
				GW	15-25	Characterize potential migration of impacted groundwater from former on-site operations to Property boundary.	No	1		1	1	1	1	1	
Field QC Samples[5]				Soil	Soil	Field duplicate	No	1		1	1	1	1	1	
				GW	GW	Field duplicate	No	1		1	1	1	1	1	
				GW	GW	VOC trip blank	No	2							
							Sample Count	31	7	36	36	29	29	36	2

Table Notes:

bgs: below ground surface, VOCs: volatile organic compounds, TPH-D, G, and HO: total petroleum hydrocarbons in the gasoline, diesel, and heavy oil range, SGC: silica gel cleanup, PAHs: Polynuclear Aromatic Hydrocarbons, PCBs: polychlorinated biphenyls, TBD: sample interval to be determined, TOC: total organic carbon, GW: groundwater, QC: quality control.

[1] Boring locations will be adjusted as necessary in the field based on overhead power lines, underground utilities, etc.

[2] MTCA short-list VOCs are those listed in Table 830-1 and include benzene, toluene, ethylbenzene, xylenes, 1,2-dibromoethane, 1,2-dichloroethane, methyl-tert-butyl ether, and naphthalene, which are commonly associated with gasoline releases.

[3] Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) will also be collected for each sample to potentially run on the most contaminated samples (if TPH contamination is encountered). This may be used to develop site-specific Method B TPH Cleanup Levels for Unrestricted land Use.

[4] All groundwater samples for metals analyses will be field filtered with a 0.45-micron filter.

[6] All soil samples will be held for possible TOC analyses. Two lithologically representative samples that do not have detections of organic compounds will be analyzed for TOC.

[6] Frequency expectations for field QC samples will be one sample per 20 samples per matrix (except VOC trip blanks will be one sample per cooler). No soil or aqueous equipment blank is needed as each sample will be collected with clean dedicated equipment (e.g. cleaned dedicated tubing and disposable t-handles).

Analysis of TPH-D/HO, PAHs, and PCBs will be contingent at these locations based on results from source area borings (SB-101 through SB-107)

Appendix D

Data Quality Review

Initial RI Report
Former Jacks Auto Site
1400 Bethel Street NE
Olympia, Washington

1. Precision

Precision was assessed via the relative percent difference (RPD) for field duplicates and matrix spike (MS)/matrix spike duplicate (MSD) and laboratory control spike/laboratory control spike duplicate pairs.[1]

The RPDs for the soil and groundwater field duplicates are presented in Table 1 and 2, respectively. The RPD of the results from analyses of target constituents in the field duplicate soil samples were within the project precision limits of 50%, with the exception of TPH-G, lead, several VOCs and several PAHs in one or more duplicate samples (see Table 1). The RPD exceedances were largely a result of constituents being detected in only one of the two duplicate samples, which indicates heterogeneity in the sample matrix. Although the RPD indicates a lack of agreement between samples for several constituents, in all situations where RPDs exceeded the project precision limits, the duplicate samples had constituent concentrations that were either both less than applicable screening levels (SLs) or both greater than applicable SLs. Therefore, this lack of agreement does not affect the use of the data or the conclusions.

The RPDs of the results from analyses of target constituents in the field duplicate groundwater samples were within the project precision limits of 35%, with the exception of ethylbenzene in the duplicate samples collected from SB101 (see Table 2). Although the RPD indicates a lack of agreement between samples for ethylbenzene at SB101, concentrations in both the duplicate samples had constituent concentrations that were both less than applicable SLs. Therefore, this lack of agreement does not affect the use of the data or the conclusions.

MS/MSD and LCS/LCD RPD results were evaluated to determine the reproducibility (precision) of the analytical method. Reproducibility values were compared to control limits established and updated by the laboratory based on its historical operation. The analytical reports in Appendix D present all reported MS/MSD and LCS/LCSD RPD values. With the exception of hexachloro-1,3-butadiene, naphthalene, 1,2,3-trichlorobenzene, and tetrachloroethene (PCE) in soil and hexachloro-1,3-butadiene, cis -1,2-dichloroethene, n-butylbenzene, sec-butylbenzene, 1,3,5-trimethylbenzene, and cumene in groundwater, the MS/MSD RPD were within the acceptable ranges.[2] Only naphthalene and PCE were detected in soil samples and n-butylbenzene, sec-butylbenzene, 1,3,5-trimethylbenzene, and cumene were detected in groundwater samples. The MS/MSD RPDs outside of the acceptable range were likely a result of heterogeneity in the sample matrix. The methods were identified by the laboratory to be in control (e.g. acceptable range of precision) based on the LCS/LCSD results. With the exception of the PAHs indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene in groundwater, the LCS/LSD RPDs were within the acceptable ranges, none of which were detected in Site groundwater samples. Thus, further data qualification beyond what was reported by the laboratories was not necessary.

[1] The approved Quality Assurance Project Plan (QAPP) (PIONEER 2020) specified expectations for field duplicate RPDs (50% for soil duplicates and 35% for groundwater duplicates).
[2] MS/MSD and LCS/LCSD RPDs were evaluated based on control limits in the laboratory reports (rather than RPDs included in the QAPP).

2. Accuracy

Accuracy was assessed by analysis of trip blanks and laboratory method blanks as well continuing calibration verification (CCV) and recoveries in LCS/LCSDs, MS/MSDs, and surrogates.[3,] Full laboratory QC information is provided in the analytical reports included in Appendix D.

No VOCs were measured at concentrations greater than laboratory RLs in the VOC trip blanks. Method blanks were performed for each constituent and analyzed daily to assess the effect of the laboratory environment on the analytical results. No constituents were detected in the analyzed method blanks.

CCVs were evaluated to determine whether the instrument was within acceptable calibration throughout the period in which samples were analyzed (i.e., to verify that the initial calibration was applicable during the sample analyses). The CCV results were within acceptable control limits.

The LCS/LCSD is a sample matrix, free from constituents, spiked with verified known amounts of constituents or a material containing known and verified amounts of constituents. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The LCS and LCSD percent recovery results were within acceptable control limits.

The MS and MSD percent recovery results were evaluated to determine whether or not the sample matrix was interfering with the laboratory analyses. MS and MSD recoveries were compared to control limits established and updated by the laboratory based on its historical operation. Notes on the MS and MSD recoveries reported by the laboratories are provided below:

- The MS and/or MSD recoveries for 1-methylnaphthalene, 2-methylnaphthalene, naphthalene and n-propylbenzene in soil associated with SB105 (14-16') exceeded the acceptable recovery ranges, indicating a potentially high bias. Total naphthalenes (the sum of 1-methylnaphthalene, 2-methylnaphthalene, naphthalene) at this location was over four times greater than the most restrictive SL at this location and n-propylbenzene did not exceed SLs even with the potential high bias; therefore, these QC results did not negatively affect sample results.
- The MS and/or MSD recoveries for 1,2-dichloropropane, PCE, 1,1,2,2-tetrachloroethane, n-propylbenzene, 1,2,3-trichloropropane, 2-chlorotoluene, 1,3,5-trimethylbenzene, 4-chlorotoluene, tert-butylbenzene, 1,2,4-trimethylbenzene, sec-butylbenzene, isopropyltoluene, n-butylbenzene, and naphthalene in soil associated with SB109 (13-15') exceeded the acceptable recovery ranges, indicating a potentially high bias. The aforementioned constituents were either not detected or did not exceed the most restrictive soil SL at this location even with the potential high bias; therefore, these QC results did not negatively affect sample results.
- The MS and MSD recoveries for TOC in soil associated with MW2 (1-3') and MW5 (18-20') were less than the acceptable recovery range, indicating potentially low biases. No SL is available for TOC; therefore, this QC result did not negatively affect sample results.
- The MS and/or MSD recoveries for trichlorofluoromethane (CFC-11) in soil associated with SB109 (13-15') were less than the acceptable recovery ranges, indicating a potentially low bias. CFC-11 was not detected in any soil samples sitewide; therefore, this QC result did not negatively affect sample results.

[3] The approved QAPP (PIONEER 2020) did not specify expectations for recoveries with blank spikes, matrix spikes, and surrogates; therefore, recoveries were evaluated based on control limits in the laboratory reports.

- The MS and/or MSD recoveries for trans-1,3-dichloropropene, PCE, dibromochloromethane, 1,1,1,2-tetrachloroethane, 1,2-dibromo-3-chloropropane, 1,2,3-trichlorobenzene, naphthalene, hexachloro-1,3-butadiene, 1-methylnaphthalene and 2-methylnaphthalene in soil associated with SB105 (14-16') were less than the acceptable recovery ranges, indicating a potentially low bias. 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene are summed for total naphthalenes, which was over four times greater than the most restrictive SL. The remaining aforementioned constituents were either not detected or did not exceed the most restrictive soil SL at this location. Even with the potentially low bias, the laboratory RL for these constitunts is significantly less than the most restrictive soil SL. Therefore, these QC results did not negatively affect sample results.
- The MS and/or MSD recoveries for methylene chloride, 1,1,2-trichloroethane, styrene, sec-gutylbenzene, isopropyltoluene, n-butylbenzene in groundwater associated with SB101 exceeded the acceptable recovery ranges, indicating a potentially high bias. Additionally, ethylbenzene, total xylenes, cumene, n-propylbenzene, 2-chlorotoluene, 1,2,4-trimethylbenzene, and naphthalene contained high concentrations that made the spike amount insufficient for meaningful MS/MSD recovery date (per the laboratory). None of these constituents exceeded SLs at this location even with the potential high bias; therefore, these QC results did not negatively affect sample results.
- The MS and/or MSD recoveries for chloroethane, benzene, toluene, 1,1,2-trichloroethane, isopropyltoluene, 2-chlorotoluene, and aliphatic hydrocarbons (C10-C12) in groundwater associated with MW6 exceeded the acceptable recovery ranges, indicating a potentially high bias. None of these constituents exceeded SLs even with the potential high bias, with the exception of benzene, which was more than three times the SL; therefore, these QC results did not negatively affect sample results.
- The MS and MSD recoveries for CFC-11, 1,1-dichloroethane, 2,2-dichloropropane, and hexachloro-1,3-butadiene in groundwater associated with SB101 were below the acceptable recovery range, indicating a potentially low bias. The aforementioned constituents were not detected in groundwater anywhere on the Site; therefore, these QC results are unlikely to have negatively affected sample results.
- The MS and MSD recoveries for dichlorodifluoromethane (CFC-12), ethylbenzene, total xylenes, naphthalene, n-butylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-propylbenzene, cis -1,2-dichloroethene, cumene, and several carbon ranges of VPH analysis in groundwater associated with MW6 were below the acceptable recovery range, indicating a potentially low bias. CFC-12 and cis -1,2-dichloroethene were not detected in groundwater anywhere on the Site. Ethylbenzene, total xylenes, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene exceeded SLs even with the potentially low bias. N-buytlbenzene, cumene, and n-propylbenzene were significantly below the SLs and VPH ranges do not have SLs; therefore, these QC results did not negatively affect sample results.

Each sample analyzed for organic constituents contained surrogate spike compounds. The surrogate recovery percentage is used to determine if the analytical instruments are operating within acceptable control limits. Surrogate recoveries were compared to control limits established and updated by the laboratory based on its historical operation. Surrogate recoveries were within acceptable control limits, with the exception of bromofluorobenzene associated with VPH at soil sample SB101 (15-17'). VPH soil values were not used to evaluate data since no site-specific soil SLs were generated.

3. Representativeness

Representativeness was assessed by evaluating the sample collection, handling, preservation, and analysis procedures. All samples were collected, handled, preserved, and analyzed in accordance with the Sampling and Analysis Plan (SAP, PIONEER 2021)/QAPP (PIONEER 2020), which was designed to obtain representative samples. The reported temperature range of the samples was acceptable (less than 6 degrees Celsius). All samples were hand-delivered on ice to the lab on the same day of collection. The lab subcontracted out multiple analyses. In those instances where analyses were subcontracted, samples were delivered on ice via express mail to the laboratory on the day following collection. Since the samples were collected in the summer, delivered on ice, and delivered promptly to the laboratories, no additional data qualification is necessary. In addition, all samples were extracted and analyzed within appropriate holding times listed in the QAPP, the exception of total organic carbon (TOC) and volatile petroleum hydrocarbons (VPH), which were analyzed with the intent of developing site-specific SLs. VPH was used to develop a site-specific groundwater SL for TPH-G (see Appendix E). TOC values were not used since site-specific soil SLs were not generated.

4. Comparability

Comparability was assessed by comparing current sample collection and analysis procedures with historical procedures. The samples were collected and analyzed with standard procedures and are comparable with historical Property data as qualified by the laboratories.

5. Sensitivity

Sensitivity was assessed by comparing actual reporting limits (RLs) to applicable SLs for all analyzed constituents. Analytical methods and laboratories were selected to achieve low target reporting limits. Almost all of the actual RLs were less than the corresponding SLs for unrestricted land use. The actual RLs were reasonably sensitive for these few constituents with a RL exceeding the most stringent SL. In some cases, required dilutions were performed on several samples due to constituent concentrations or matrix interferences. Furthermore, SLs are required to be adjusted up to RLs per Model Toxics Control Act regulations. Therefore, the actual RLs were considered appropriate for the purposes of this investigation.

6. Completeness

Completeness was assessed by calculating the percentage of useable results to all results. A total of 5,107 analyses were completed. All of the analyte results are useable as qualified. Thus, the completeness of the analytical data is 100 percent.

7. Conclusions

This data is deemed acceptable for use as presented by the laboratory. No corrective action or additional data qualification is necessary.

References

PIONEER. 2020. Quality Assurance Project Plan for the City of Olympia's Brownfield Assessment Grant. March.

PIONEER. 2021. Sampling and Analysis Plan Rev 1. 1400-1408 Bethel Street NE. Olympia, Washington. June.

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
TPH-D	SB101 (4-6')	50 U	66	27.6%
TPH-HO		250 U	310	21.4%
TPH-D	SB102 (2-4')	50 U	50 U	0.0%
TPH-G		41	140	109.4%
TPH-HO		250 U	250 U	0.0%
1,2-Dichloroethane		0.03 U	0.03 U	0.0%
Benzene		0.02 U	0.02 U	0.0%
Ethylbenzene		0.05 U	0.05 U	0.0%
Ethylene dibromide		0.005 U	0.005 U	0.0%
Methyl t-butyl ether		0.05 U	0.05 U	0.0%
Toluene		0.10 U	0.10 U	0.0%
Xylenes, Total		0.22	0.19	14.6%
1-Methylnaphthalene		0.40 U	0.40 U	0.0%
2-Methylnaphthalene		0.40 U	0.40 U	0.0%
Naphthalene		0.15 U	0.23	42.1%
Naphthalenes, Total		0.95 U	0.63	40.5%
Lead		23	5.0 U	128.6%
PCB-aroclor 1016	SB103 (4-6')	0.10 U	0.10 U	0.0%
PCB-aroclor 1221		0.10 U	0.10 U	0.0%
PCB-aroclor 1232		0.10 U	0.10 U	0.0%
PCB-aroclor 1242		0.10 U	0.10 U	0.0%
PCB-aroclor 1248		0.10 U	0.10 U	0.0%
PCB-aroclor 1254		0.10 U	0.10 U	0.0%
PCB-aroclor 1260		0.10 U	0.10 U	0.0%
Total PCBs		0.10 U	0.10 U	0.0%
TPH-D	SB105 (14-16')	170	190	11.1%
TPH-G		690	240	96.8%
TPH-HO		1,500	2,100	33.3%
1,1,1,2-Tetrachloroethane		1.0 U	0.03 U	0.0%
1,1,1-Trichloroethane		0.40 U	0.02 U	0.0%
1,1,2,2-Tetrachloroethane		0.80 U	0.04 U	0.0%
1,1,2-Trichloroethane		0.60 U	0.03 U	0.0%
1,1-Dichloroethane		0.60 U	0.03 U	0.0%
1,1-Dichloroethene		1.0 U	0.05 U	0.0%
1,1-Dichloropropene		0.40 U	0.02 U	0.0%
1,2,3-Trichlorobenzene		2.0 U	0.10 U	0.0%
1,2,3-Trichloropropane		0.80 U	0.03 U	0.0%
1,2,4-Trichlorobenzene		1.0 U	0.05 U	0.0%
1,2,4-Trimethylbenzene		13	14	7.4%
1,2-Dibromo-3-Chloropropane		1.0 U	0.05 U	0.0%
1,2-Dichlorobenzene		1.0 U	0.03 U	0.0%
1,2-Dichloroethane		0.60 U	0.03 U	0.0%
1,2-Dichloropropane		0.40 U	0.02 U	0.0%
1,3,5-Trimethylbenzene		0.77	0.87	12.2%
1,3-Dichlorobenzene		0.60 U	0.03 U	0.0%
1,3-Dichloropropane		1.0 U	0.05 U	0.0%
1,4-Dichlorobenzene		0.60 U	0.03 U	0.0%
2,2-Dichloropropane		1.0 U	0.05 U	0.0%
2-Chlorotoluene		0.60 U	0.03 U	0.0%
4-Chlorotoluene		0.60 U	0.03 U	0.0%

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
Benzene	SB105 (14-16')	0.40 U	0.02 U	0.0%
Bromobenzene		0.60 U	0.03 U	0.0%
Bromoform		0.60 U	0.03 U	0.0%
Bromomethane		1.8 U	0.09 U	0.0%
Carbon Tetrachloride		0.60 U	0.03 U	0.0%
CFC-11		1.0 U	0.05 U	0.0%
CFC-12		1.2 U	0.06 U	0.0%
Chlorobenzene		0.40 U	0.02 U	0.0%
Chlorodibromomethane		0.60 U	0.03 U	0.0%
Chloroethane		1.2 U	0.06 U	0.0%
Chloroform		0.40 U	0.02 U	0.0%
Chloromethane		1.2 U	0.06 U	0.0%
Cis-1,2-Dichloroethene		0.40 U	0.02 U	0.0%
Cis-1,3-Dichloropropene		0.40 U	0.02 U	0.0%
Cumene		1.0 U	0.20	133.3%
Dibromomethane		0.80 U	0.04 U	0.0%
Dichlorobromomethane		0.40 U	0.02 U	0.0%
Ethylbenzene		0.18	0.20	10.5%
Ethylene dibromide		0.10 U	0.005 U	0.0%
Hexachlorobutadiene		2.0 U	0.10 U	0.0%
Methylene chloride		0.40 U	0.02 U	0.0%
Methyl t-butyl ether		1.0 U	0.05 U	0.0%
n-Butylbenzene		1.4	1.1	24.0%
n-Propylbenzene		1.7	1.6	6.1%
p-Isopropyltoluene		0.60 U	0.28	72.7%
sec-Butylbenzene		0.60 U	0.33	58.1%
Styrene		0.40 U	0.02 U	0.0%
tert-Butylbenzene		0.60 U	0.023 j	185.2%
Tetrachloroethene		0.40 U	0.02 U	0.0%
Toluene		2.0 U	0.10 U	0.0%
Xylenes, Total		0.76	0.89	15.8%
Trans-1,2-Dichloroethene		0.40 U	0.02 U	0.0%
Trans-1,3-Dichloropropene		0.60 U	0.03 U	0.0%
Trichloroethene		0.40 U	0.02 U	0.0%
Vinyl Chloride		0.40 U	0.02 U	0.0%
Acenaphthene		0.082	0.0201 U	121.1%
Acenaphthylene		0.14	0.0201 U	149.1%
Anthracene		0.11	0.0403 U	92.0%
Benzo(ghi)perylene		0.12	0.0201 U	143.4%
Fluoranthene		0.29	0.0403 U	150.4%
Fluorene		0.28	0.038	151.5%
1-Methylnaphthalene		8.3	1.1	155.0%
2-Methylnaphthalene		19	2.3	156.1%
Naphthalene		10.0	2.6	117.5%
Naphthalenes, Total		37	6.0	144.6%
Phenanthrene		0.77	0.11	149.4%
Pyrene		0.60	0.084	150.7%
Benz[a]anthracene		0.14	0.0201 U	149.5%
Benzo(a)pyrene		0.087	0.0201 U	124.9%
Benzo(b)fluoranthene		0.0187 U	0.0201 U	0.0%
Benzo(k)fluoranthene		0.0187 U	0.0201 U	0.0%

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
Chrysene	SB105 (14-16')	0.18	0.0403 U	128.1%
Dibenzo(a,h)anthracene		0.0373 U	0.0403 U	0.0%
Indeno(1,2,3-cd)pyrene		0.0373 U	0.0403 U	0.0%
Total cPAHs TEF		0.10	0.011 U	161.3%
PCB-aroclor 1016		0.11	0.18	48.3%
PCB-aroclor 1221		0.10 U	0.10 U	0.0%
PCB-aroclor 1232		0.10 U	0.10 U	0.0%
PCB-aroclor 1242		0.10 U	0.10 U	0.0%
PCB-aroclor 1248		0.10 U	0.10 U	0.0%
PCB-aroclor 1254		0.10 U	0.10 U	0.0%
PCB-aroclor 1260		0.10 U	0.10 U	0.0%
Total PCBs		0.16	0.23	35.9%
Lead		8.9	8.8	1.1%
TPH-D	SB106 (1-3')	50 U	50 U	0.0%
TPH-HO		2,800	1,800	43.5%
TPH-D	SB106 (14-16')	50 U	50 U	0.0%
TPH-G		110	110	0.0%
TPH-HO		320	250 U	24.6%
1,1,1,2-Tetrachloroethane		0.03 U	0.03 U	0.0%
1,1,1-Trichloroethane		0.02 U	0.02 U	0.0%
1,1,2,2-Tetrachloroethane		0.04 U	0.04 U	0.0%
1,1,2-Trichloroethane		0.03 U	0.03 U	0.0%
1,1-Dichloroethane		0.03 U	0.03 U	0.0%
1,1-Dichloroethene		0.05 U	0.05 U	0.0%
1,1-Dichloropropene		0.02 U	0.02 U	0.0%
1,2,3-Trichlorobenzene		0.10 U	0.10 U	0.0%
1,2,3-Trichloropropane		0.03 U	0.03 U	0.0%
1,2,4-Trichlorobenzene		0.05 U	0.05 U	0.0%
1,2,4-Trimethylbenzene		3.9	3.6	8.0%
1,2-Dibromo-3-Chloropropane		0.05 U	0.05 U	0.0%
1,2-Dichlorobenzene		0.03 U	0.03 U	0.0%
1,2-Dichloroethane		0.03 U	0.03 U	0.0%
1,2-Dichloropropane		0.02 U	0.02 U	0.0%
1,3,5-Trimethylbenzene		0.13	0.036	113.3%
1,3-Dichlorobenzene		0.03 U	0.03 U	0.0%
1,3-Dichloropropane		0.05 U	0.05 U	0.0%
1,4-Dichlorobenzene		0.03 U	0.03 U	0.0%
2,2-Dichloropropane		0.05 U	0.05 U	0.0%
2-Chlorotoluene		0.03 U	0.03 U	0.0%
4-Chlorotoluene		0.03 U	0.03 U	0.0%
Benzene		0.02 U	0.02 U	0.0%
Bromobenzene		0.03 U	0.03 U	0.0%
Bromoform		0.03 U	0.03 U	0.0%
Bromomethane		0.09 U	0.09 U	0.0%
Carbon Tetrachloride		0.03 U	0.03 U	0.0%
CFC-11		0.05 U	0.05 U	0.0%
CFC-12		0.06 U	0.06 U	0.0%
Chlorobenzene		0.02 U	0.02 U	0.0%
Chlorodibromomethane		0.03 U	0.03 U	0.0%
Chloroethane		0.06 U	0.06 U	0.0%
Chloroform		0.02 U	0.02 U	0.0%

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
Chloromethane	SB106 (14-16')	0.06 U	0.06 U	0.0%
Cis-1,2-Dichloroethene		0.02 U	0.02 U	0.0%
Cis-1,3-Dichloropropene		0.02 U	0.02 U	0.0%
Cumene		0.077	0.074	4.0%
Dibromomethane		0.04 U	0.04 U	0.0%
Dichlorobromomethane		0.02 U	0.02 U	0.0%
Ethylbenzene		0.13	0.10	26.1%
Ethylene dibromide		0.005 U	0.005 U	0.0%
Hexachlorobutadiene		0.10 U	0.10 U	0.0%
Methylene chloride		0.02 U	0.02 U	0.0%
Methyl t-butyl ether		0.05 U	0.05 U	0.0%
n-Butylbenzene		0.30	0.31	3.3%
n-Propylbenzene		0.51	0.49	4.0%
p-Isopropyltoluene		0.060	0.055	8.7%
sec-Butylbenzene		3.2	3.0	6.5%
Styrene		0.02 U	0.02 U	0.0%
tert-Butylbenzene		0.60	0.55	8.7%
Tetrachloroethene		0.02 U	0.02 U	0.0%
Toluene		0.10 U	0.10 U	0.0%
Xylenes, Total		0.56	0.26	73.2%
Trans-1,2-Dichloroethene		0.02 U	0.02 U	0.0%
Trans-1,3-Dichloropropene		0.03 U	0.03 U	0.0%
Trichloroethene		0.02 U	0.02 U	0.0%
Vinyl Chloride		0.02 U	0.02 U	0.0%
Naphthalene		1.2	1.3	8.0%
PCB-aroclor 1016		0.10 U	0.10 U	0.0%
PCB-aroclor 1221		0.10 U	0.10 U	0.0%
PCB-aroclor 1232		0.10 U	0.10 U	0.0%
PCB-aroclor 1242		0.10 U	0.10 U	0.0%
PCB-aroclor 1248		0.10 U	0.10 U	0.0%
PCB-aroclor 1254		0.10 U	0.10 U	0.0%
PCB-aroclor 1260		0.10 U	0.10 U	0.0%
Total PCBs		0.10 U	0.10 U	0.0%
Lead		12	5.0 U	82.4%
TPH-D	MW3 (1-3')	50 U	50 U	0.0%
TPH-G		10 U	10 U	0.0%
TPH-HO		420	300	33.3%
1,1,1,2-Tetrachloroethane		0.03 U	0.03 U	0.0%
1,1,1-Trichloroethane		0.02 U	0.02 U	0.0%
1,1,2,2-Tetrachloroethane		0.04 U	0.04 U	0.0%
1,1,2-Trichloroethane		0.03 U	0.03 U	0.0%
1,1-Dichloroethane		0.03 U	0.03 U	0.0%
1,1-Dichloroethene		0.05 U	0.05 U	0.0%
1,1-Dichloropropene		0.02 U	0.02 U	0.0%
1,2,3-Trichlorobenzene		0.10 U	0.10 U	0.0%
1,2,3-Trichloropropane		0.03 U	0.03 U	0.0%
1,2,4-Trichlorobenzene		0.05 U	0.05 U	0.0%
1,2,4-Trimethylbenzene		0.03 U	0.03 U	0.0%
1,2-Dibromo-3-Chloropropane		0.05 U	0.05 U	0.0%
1,2-Dichlorobenzene		0.03 U	0.03 U	0.0%
1,2-Dichloroethane		0.03 U	0.03 U	0.0%

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
1,2-Dichloropropane	MW3 (1-3')	0.02 U	0.02 U	0.0%
1,3,5-Trimethylbenzene		0.03 U	0.03 U	0.0%
1,3-Dichlorobenzene		0.03 U	0.03 U	0.0%
1,3-Dichloropropane		0.05 U	0.05 U	0.0%
1,4-Dichlorobenzene		0.03 U	0.03 U	0.0%
2,2-Dichloropropane		0.05 U	0.05 U	0.0%
2-Chlorotoluene		0.03 U	0.03 U	0.0%
4-Chlorotoluene		0.03 U	0.03 U	0.0%
Benzene		0.02 U	0.02 U	0.0%
Bromobenzene		0.03 U	0.03 U	0.0%
Bromoform		0.03 U	0.03 U	0.0%
Bromomethane		0.09 U	0.09 U	0.0%
Carbon Tetrachloride		0.03 U	0.03 U	0.0%
CFC-11		0.05 U	0.05 U	0.0%
CFC-12		0.06 U	0.06 U	0.0%
Chlorobenzene		0.02 U	0.02 U	0.0%
Chlorodibromomethane		0.03 U	0.03 U	0.0%
Chloroethane		0.06 U	0.06 U	0.0%
Chloroform		0.02 U	0.02 U	0.0%
Chloromethane		0.06 U	0.06 U	0.0%
Cis-1,2-Dichloroethene		0.02 U	0.02 U	0.0%
Cis-1,3-Dichloropropene		0.02 U	0.02 U	0.0%
Cumene		0.05 U	0.05 U	0.0%
Dibromomethane		0.04 U	0.04 U	0.0%
Dichlorobromomethane		0.02 U	0.02 U	0.0%
Ethylbenzene		0.05 U	0.05 U	0.0%
Ethylene dibromide		0.005 U	0.005 U	0.0%
Hexachlorobutadiene		0.10 U	0.10 U	0.0%
Methylene chloride		0.02 U	0.02 U	0.0%
Methyl t-butyl ether		0.05 U	0.05 U	0.0%
n-Butylbenzene		0.05 U	0.05 U	0.0%
n-Propylbenzene		0.05 U	0.05 U	0.0%
p-Isopropyltoluene		0.03 U	0.03 U	0.0%
sec-Butylbenzene		0.03 U	0.03 U	0.0%
Styrene		0.02 U	0.02 U	0.0%
tert-Butylbenzene		0.03 U	0.03 U	0.0%
Tetrachloroethene		0.02 U	0.02 U	0.0%
Toluene		0.10 U	0.10 U	0.0%
Xylenes, Total		0.15 U	0.15 U	0.0%
Trans-1,2-Dichloroethene		0.02 U	0.02 U	0.0%
Trans-1,3-Dichloropropene		0.03 U	0.03 U	0.0%
Trichloroethene		0.02 U	0.02 U	0.0%
Vinyl Chloride		0.02 U	0.02 U	0.0%
Acenaphthene		0.0202 U	0.0225 U	0.0%
Acenaphthylene		0.0202 U	0.0225 U	0.0%
Anthracene		0.0403 U	0.045 U	0.0%
Benzo(ghi)perylene		0.040	0.0225 U	55.5%
Fluoranthene		0.0403 U	0.045 U	0.0%
Fluorene		0.0202 U	0.0225 U	0.0%
1-Methylnaphthalene		0.0202 U	0.0225 U	0.0%
2-Methylnaphthalene		0.0202 U	0.0225 U	0.0%

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
Naphthalene	MW3 (1-3')	0.0202 U	0.0225 U	0.0%
Naphthalenes, Total		0.061 U	0.068 U	0.0%
Phenanthrene		0.0403 U	0.045 U	0.0%
Pyrene		0.0403 U	0.045 U	0.0%
Benz[a]anthracene		0.0202 U	0.023	13.0%
Benzo(a)pyrene		0.021	0.0225 U	6.4%
Benzo(b)fluoranthene		0.0202 U	0.0225 U	0.0%
Benzo(k)fluoranthene		0.0202 U	0.0225 U	0.0%
Chrysene		0.0403 U	0.045 U	0.0%
Dibenzo(a,h)anthracene		0.0403 U	0.045 U	0.0%
Indeno(1,2,3-cd)pyrene		0.0403 U	0.045 U	0.0%
Total cPAHs TEF		0.022	0.014	47.3%
PCB-aroclor 1016		0.10 U	0.10 U	0.0%
PCB-aroclor 1221		0.10 U	0.10 U	0.0%
PCB-aroclor 1232		0.10 U	0.10 U	0.0%
PCB-aroclor 1242		0.10 U	0.10 U	0.0%
PCB-aroclor 1248		0.10 U	0.10 U	0.0%
PCB-aroclor 1254		0.10 U	0.10 U	0.0%
PCB-aroclor 1260		0.10 U	0.10 U	0.0%
Total PCBs		0.10 U	0.10 U	0.0%
Lead		42	43	2.4%
TPH-D	MW6 (12-14')	440	440	0.0%
TPH-G		3,200	3,200	0.0%
TPH-HO		250 U	250 U	0.0%
C10-C12 Aliphatics		216	182	17.1%
C10-C12 Aromatics		336	408	19.4%
C12-C13 Aromatics		184	226	20.5%
C5-C6 Aliphatics		1.2 U	1.2 U	0.0%
C6-C8 Aliphatics		16	14	11.9%
C8-C10 Aliphatics		99	80	20.6%
C8-C10 Aromatics		136	149	9.1%
1,2-Dichloroethane		0.03 U	0.03 U	0.0%
Benzene		0.02 U	0.02 U	0.0%
Ethylbenzene		0.61	0.61	0.0%
Ethylene dibromide		0.005 U	0.005 U	0.0%
Methyl t-butyl ether		0.05 U	0.05 U	0.0%
Toluene		0.44	0.44	0.0%
Xylenes, Total		1.9	1.9	0.0%
1-Methylnaphthalene		6.7	6.7	0.0%
2-Methylnaphthalene		15	15	0.0%
Naphthalene		5.6	5.6	0.0%
Naphthalenes, Total		27	27	0.0%
Lead		5.0 U	5.0 U	0.0%
TPH-D	MW7 (19-21')	50 U	50 U	0.0%
TPH-G		10 U	10 U	0.0%
TPH-HO		250 U	250 U	0.0%
1,2-Dichloroethane		0.03 U	0.03 U	0.0%
Benzene		0.02 U	0.02 U	0.0%
Ethylbenzene		0.05 U	0.05 U	0.0%
Ethylene dibromide		0.005 U	0.005 U	0.0%
Methyl t-butyl ether		0.05 U	0.05 U	0.0%

Table 1: Relative Percent Difference of Soil Sample Field Duplicates

Consituent	Sample Location and Depth Interval (in feet bgs)	Primary Concentration (mg/kg)	Field Duplicate Concentration (mg/kg)	Relative Percent Difference
Toluene	MW7 (19-21')	0.10 U	0.10 U	0.0%
Xylenes, Total		0.15 U	0.15 U	0.0%
1-Methylnaphthalene		0.40 U	0.40 U	0.0%
2-Methylnaphthalene		0.40 U	0.40 U	0.0%
Naphthalene		0.15 U	0.15 U	0.0%
Naphthalenes, Total		0.95 U	0.95 U	0.0%
Lead		5.0 U	5.0 U	0.0%

Notes:

bgs: below ground surface, mg/kg: milligrams per kilogram.

RPD exceeds allowable limit (50%) listed in the QAPP (PIONEER 2020).

Non-detect values (U) are assumed to equal the full reporting limit for the RPD calculation.

RPD was set equal to 0.0% if both samples were non-detect for the specific constituent even if the non-detect value differed.

Table 2: Relative Percent Difference of Groundwater Sample Field Duplicates

Consituent	Sample Location	Primary Concentration (ug/L)	Field Duplicate Concentration (ug/L)	Relative Percent Difference
TPH-D	SB101-GW	422	460	8.6%
TPH-G		2,700	2,900	7.1%
TPH-HO		400 U	400 U	0.0%
1,1,1,2-Tetrachloroethane		1.0 U	1.0 U	0.0%
1,1,1-Trichloroethane		1.0 U	1.0 U	0.0%
1,1,2,2-Tetrachloroethane		1.0 U	1.0 U	0.0%
1,1,2-Trichloroethane		1.0 U	1.0 U	0.0%
1,1-Dichloroethane		1.0 U	1.0 U	0.0%
1,1-Dichloroethene		0.5 U	0.5 U	0.0%
1,1-Dichloropropene		1.0 U	1.0 U	0.0%
1,2,3-Trichlorobenzene		5.0 U	5.0 U	0.0%
1,2,3-Trichloropropane		1.0 U	1.0 U	0.0%
1,2,4-Trichlorobenzene		2.0 U	2.0 U	0.0%
1,2,4-Trimethylbenzene		24	24	0.0%
1,2-Dibromo-3-Chloropropane		1.0 U	1.0 U	0.0%
1,2-Dichlorobenzene		1.0 U	1.0 U	0.0%
1,2-Dichloroethane		1.0 U	1.0 U	0.0%
1,2-Dichloropropane		1.0 U	1.0 U	0.0%
1,3,5-Trimethylbenzene		3.8	3.8	0.0%
1,3-Dichlorobenzene		1.0 U	1.0 U	0.0%
1,3-Dichloropropane		1.0 U	1.0 U	0.0%
1,4-Dichlorobenzene		1.0 U	1.0 U	0.0%
2,2-Dichloropropane		2.0 U	2.0 U	0.0%
2-Chlorotoluene		1.0 U	1.0 U	0.0%
4-Chlorotoluene		1.0 U	1.0 U	0.0%
Benzene		2.8	2.8	0.0%
Bromobenzene		1.0 U	1.0 U	0.0%
Bromoform		1.0 U	1.0 U	0.0%
Bromomethane		2.0 U	2.0 U	0.0%
Carbon Tetrachloride		1.0 U	1.0 U	0.0%
CFC-11		2.0 U	2.0 U	0.0%
CFC-12		2.0 U	2.0 U	0.0%
Chlorobenzene		1.0 U	1.0 U	0.0%
Chlorodibromomethane		1.0 U	1.0 U	0.0%
Chloroethane		2.0 U	2.0 U	0.0%
Chloroform		1.0 U	1.0 U	0.0%
Chloromethane		2.0 U	2.0 U	0.0%
Cis-1,2-Dichloroethene		1.0 U	1.0 U	0.0%
Cis-1,3-Dichloropropene		1.0 U	1.0 U	0.0%
Cumene		44	44	0.0%
Dibromomethane		1.0 U	1.0 U	0.0%
Dichlorobromomethane		1.0 U	1.0 U	0.0%
Ethylbenzene		160	290	57.8%
Ethylene dibromide		0.01 U	0.01 U	0.0%
Hexachlorobutadiene		5.0 U	5.0 U	0.0%
Methylene chloride		1.0 U	1.0 U	0.0%
Methyl t-butyl ether		5.0 U	5.0 U	0.0%
n-Butylbenzene		12	13	8.0%
n-Propylbenzene		120	120	0.0%
p-Isopropyltoluene		2.7	2.9	7.1%
sec-Butylbenzene		6.2	6.4	3.2%
Styrene		1.0 U	1.0 U	0.0%

Table 2: Relative Percent Difference of Groundwater Sample Field Duplicates

Consituent	Sample Location	Primary Concentration (ug/L)	Field Duplicate Concentration (ug/L)	Relative Percent Difference
tert-Butylbenzene	SB101-GW	1.0 U	1.0 U	0.0%
Tetrachloroethene		1.0 U	1.0 U	0.0%
Toluene		3.0	3.1	3.3%
Total Xylenes		29	28	3.5%
Trans-1,2-Dichloroethene		1.0 U	1.0 U	0.0%
Trans-1,3-Dichloropropene		1.0 U	1.0 U	0.0%
Trichloroethene		0.4 U	0.4 U	0.0%
Vinyl Chloride		0.2 U	0.2 U	0.0%
TPH-D	MW6	200 U	200 U	0.0%
TPH-G		21,000	19,000	10.0%
TPH-HO		400 U	400 U	0.0%
1,1,1,2-Tetrachloroethane		1.0 U	1.0 U	0.0%
1,1,1-Trichloroethane		1.0 U	1.0 U	0.0%
1,1,2,2-Tetrachloroethane		1.0 U	1.0 U	0.0%
1,1,2-Trichloroethane		1.0 U	1.0 U	0.0%
1,1-Dichloroethane		1.0 U	1.0 U	0.0%
1,1-Dichloroethene		0.5 U	0.5 U	0.0%
1,1-Dichloropropene		1.0 U	1.0 U	0.0%
1,2,3-Trichlorobenzene		5.0 U	5.0 U	0.0%
1,2,3-Trichloropropane		1.0 U	1.0 U	0.0%
1,2,4-Trichlorobenzene		2.0 U	2.0 U	0.0%
1,2,4-Trimethylbenzene		670	630	6.2%
1,2-Dibromo-3-Chloropropane		1.0 U	1.0 U	0.0%
1,2-Dichlorobenzene		1.0 U	1.0 U	0.0%
1,2-Dichloroethane		1.0 U	1.0 U	0.0%
1,2-Dichloropropane		1.0 U	1.0 U	0.0%
1,3,5-Trimethylbenzene		120	110	8.7%
1,3-Dichlorobenzene		1.0 U	1.0 U	0.0%
1,3-Dichloropropane		1.0 U	1.0 U	0.0%
1,4-Dichlorobenzene		1.0 U	1.0 U	0.0%
2,2-Dichloropropane		2.0 U	2.0 U	0.0%
2-Chlorotoluene		1.0 U	1.0 U	0.0%
4-Chlorotoluene		1.0 U	1.0 U	0.0%
Benzene		18	18	0.0%
Bromobenzene		1.0 U	1.0 U	0.0%
Bromoform		1.0 U	1.0 U	0.0%
Bromomethane		2.0 U	2.0 U	0.0%
Carbon Tetrachloride		1.0 U	1.0 U	0.0%
CFC-11		2.0 U	2.0 U	0.0%
CFC-12		2.0 U	2.0 U	0.0%
Chlorobenzene		1.0 U	1.0 U	0.0%
Chlorodibromomethane		1.0 U	1.0 U	0.0%
Chloroethane		2.0 U	2.0 U	0.0%
Chloroform		1.0 U	1.0 U	0.0%
Chloromethane		2.0 U	2.0 U	0.0%
Cis-1,2-Dichloroethene		1.0 U	1.0 U	0.0%
Cis-1,3-Dichloropropene		1.0 U	1.0 U	0.0%
Cumene		98	100	2.0%
Dibromomethane		1.0 U	1.0 U	0.0%
Dichlorobromomethane		1.0 U	1.0 U	0.0%
Ethylbenzene		1,000	970	3.0%
Ethylene dibromide		0.01 U	0.01 U	0.0%

Table 2: Relative Percent Difference of Groundwater Sample Field Duplicates

Consituent	Sample Location	Primary Concentration (ug/L)	Field Duplicate Concentration (ug/L)	Relative Percent Difference
Hexachlorobutadiene	MW6	5.0 U	5.0 U	0.0%
Methylene chloride		1.0 U	1.0 U	0.0%
Methyl t-butyl ether		5.0 U	5.0 U	0.0%
n-Butylbenzene		17	17	0.0%
n-Propylbenzene		220	200	9.5%
p-Isopropyltoluene		4.5	4.7	4.3%
sec-Butylbenzene		11	11	0.0%
Styrene		1.0 U	1.0 U	0.0%
tert-Butylbenzene		90	83	8.1%
Tetrachloroethene		1.0 U	1.0 U	0.0%
Toluene		11	11	0.0%
Total Xylenes		1,800	1,700	5.7%
Trans-1,2-Dichloroethene		1.0 U	1.0 U	0.0%
Trans-1,3-Dichloropropene		1.0 U	1.0 U	0.0%
Trichloroethene		0.4 U	0.4 U	0.0%
Vinyl Chloride		0.2 U	0.2 U	0.0%
Acenaphthene		0.58	0.55	4.6%
Acenaphthylene		0.24	0.21	11.7%
Anthracene		0.0983 U	0.106 U	0.0%
Benzo(ghi)perylene		0.0983 U	0.106 U	0.0%
Fluoranthene		0.0983 U	0.106 U	0.0%
Fluorene		1.2	1.2	6.7%
1-Methylnaphthalene		59	52	11.9%
2-Methylnaphthalene		104	93	10.8%
Naphthalene		200	190	5.1%
Naphthalenes, Total		363	336	7.8%
Phenanthrene		1.7	1.7	3.5%
Pyrene		0.0983 U	0.106 U	0.0%
Benz[a]anthracene		0.0983 U	0.106 U	0.0%
Benzo(a)pyrene		0.0983 U	0.106 U	0.0%
Benzo(b)fluoranthene		0.0983 U	0.106 U	0.0%
Benzo(k)fluoranthene		0.0983 U	0.106 U	0.0%
Chrysene		0.0983 U	0.106 U	0.0%
Dibenzo(a,h)anthracene		0.0983 U	0.106 U	0.0%
Indeno(1,2,3-cd)pyrene		0.0983 U	0.106 U	0.0%
Total cPAHs TEF		0.054 U	0.059 U	0.0%
PCB-aroclor 1016		0.02 U	0.02 U	0.0%
PCB-aroclor 1221		0.02 U	0.02 U	0.0%
PCB-aroclor 1232		0.02 U	0.02 U	0.0%
PCB-aroclor 1242		0.02 U	0.02 U	0.0%
PCB-aroclor 1248		0.02 U	0.02 U	0.0%
PCB-aroclor 1254		0.02 U	0.02 U	0.0%
PCB-aroclor 1260		0.02 U	0.02 U	0.0%
Total PCBs		0.04 U	0.04 U	0.0%
Lead		5.0 U	5.0 U	0.0%

Notes:

ug/L: micrograms per liter.

RPD exceeds allowable limit (35%) listed in the QAPP (PIONEER 2020).

Non-detect values (U) are assumed to equal the full reporting limit for the RPD calculation.

RPD was set equal to 0.0% if both samples were non-detect for the specific constituent even if the non-detect value differed.

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

August 2, 2021

Joel Hecker
Pioneer Technologies Corporation
5205 Corporate Center Ct SE, Suite C
Lacey, WA 98503

Dear Mr. Hecker:

Please find enclosed the analytical data report for the Jacks Auto (JA) Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Date: 6/21/21 Page: 1 of 2

Client: Pioneer Technologies Corp
Address: 5205 Corporate Ctr Ct SE
City: Local State: WA Zip: 98503
Phone: 360-828-3739 Fax:
Client Project # Jacks Auto (JA)

Project Manager: Joel Hecker
Project Name: Jacks Auto (JA)
Location: 1400 Bethel Street City, State: Oly, WA
Collector: JH/AR Date of Collection: 6/21/21
Email: Heckerj@pioneer.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	~~cPAH 8270~~ EPH	PAH 8270	Semi Vol. 8270	MTCA 5 w/ List VOCs (8021)	Lead	VPH	Field Notes
1 SO-SB101-4-6-0621	4-6	0930	G	mult			X			X							X	X		6-22-21
2 SO-SB101-15-17-0621	15-17	0940	G				X			X							X	X	⊗	— = cancelled
3 SO-SB102-2-4-0621	2-4	1015					X			X							X	X		analysis
4 SO-SB102-8-10-0621	8-10	1025					X			X							X	X		⊗ = Added analysis
5 SO-SB102-14-16-0621	14-16	1040					X			X							X	X		per Joel via email
6 SO-SB103-4-6-0621	4-6	0745			X		X			X	X			X				X		6-30-21 Added per
7 SO-SB103-14-16-0621	14-16	0750			X		X			X	X			X				X		Joel via email. STD
8 SO-SB104-8-10-0621	8-10	0820					X			X							X	X		
9 SO-SB104-14-16-0621	14-16	0830					X			X							X	X		
10 SO-SB105-8-10-0621	8-10	0840			X		X			X	X			X				X		
11 SO-SB105-14-16-0621	14-16	0850			X		X			X	X			X				X		
12 SO-SB105-14-16-0621-01	14-16	0850			~~X~~		~~X~~			~~X~~	~~X~~			X				~~X~~		*Run internal duplicate on SO-SB105-14-16-0621
13 SO-SB106-1-3-0621	1-3	1300			⊗		⊗			⊗	⊗			⊗				⊗		~~HOLD~~
14 SO-SB106-4-6-0621	4-6	1310			X		X			X	X		⊗	X				X		
15 SO-SB106-14-16-0621	14-16	1320			X		X			X	X			X				X		
16 SO-SB107-1-3-0621	1-3	1200			X		X			X	X			X				X		
17 SO-SB107-12-14-0621	12-14	1215	↓	↓	X		X			X	X			X				X		

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	6/21/21 1602	[signature]	6.21.21 1602
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

	Y	N
Good Condition?		
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks: Hold all for EPH/VPH pending results

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 6/21 Page: 2 of 2

Client: Pioneer Technologies
Project Manager: Joel Hecker
Address:
Project Name: Jacks Auto (JH)
City: State: Zip:
Location: 1400 Bethel City, State:
Phone: Fax:
Collector: JH/AR Date of Collection:
Client Project # Jacks Auto (JA)
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	~~6 PAH 8270~~ EPH	PAH 8270	Semi Vol 8270	MTCA Short list VOCs (8301)	Lead	VPH	Field Notes
1	SO-SB108-6-8-0621	6-8	0910	G	Multiple	X		X			X	X				X			X		
2	SO-SB108-13-14-0621	13-14	0915	↓	↓	X		X			X	X				X			X		
3	SO-SB109-13-15-0621	13-15	1345	↓	↓	X		X			X	[illegible]							X		
4	GW-SB101-0621	—	1500	↓	↓	X		X			X	JH 6/21/21							~~X~~		on GW-SB101- also run
5	TB-0621	—	—	—	VOAs	X															*TPH-Dx or lead, whichever has enough volume. If lead, please lab filter
6																					
7																					
8																					
9																					6-22-21
10																					Removed Pb per
11																					Joel via email.
12																					
13																					
14																					
15																					
16																					
17																					

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	6/21/21 1602	[signature]	6.21.21 1602
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	SO-SB103-4-6-0621	SO-SB103-14-16-0621	SO-SB105-8-10-0621	SO-SB105-14-16-0621	SO-SB105-14-16-0621 Dup
Date Sampled	Reporting	N/A	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/23/2021	6/25/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	<1.2	nd
Chloromethane	0.06	nd	nd	nd	nd	<1.2	nd
Vinyl chloride	0.02	nd	nd	nd	nd	<0.4	nd
Bromomethane	0.09	nd	nd	nd	nd	<1.8	nd
Chloroethane	0.06	nd	nd	nd	nd	<1.2	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	<1	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	<1	nd
Methylene chloride	0.02	nd	nd	nd	nd	<0.4	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	<1	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd	nd	<0.4	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	<0.6	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	<1	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd	nd	<0.4	nd
Chloroform	0.02	nd	0.023	nd	nd	<0.4	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	<0.4	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	<0.6	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	<0.4	nd
Benzene	0.02	nd	nd	nd	nd	<0.4	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	<0.6	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	<0.4	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	<0.4	nd
Dibromomethane	0.04	nd	nd	nd	nd	<0.8	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	<0.4	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	<0.4	nd
Toluene	0.10	nd	nd	nd	nd	<2	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	<0.6	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	<0.6	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	<0.4	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	<1	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	<0.6	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	<0.1	nd
Chlorobenzene	0.02	nd	nd	nd	nd	<0.4	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	<1	nd
Ethylbenzene	0.03	nd	nd	nd	nd	0.18	0.20
Total Xylenes	0.15	nd	nd	nd	nd	0.76	0.89
Styrene	0.02	nd	nd	nd	nd	<0.4	nd

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	SO-SB103-4-6-0621	SO-SB103-14-16-0621	SO-SB105-8-10-0621	SO-SB105-14-16-0621	SO-SB105-14-16-0621 Dup
Date Sampled	Reporting	N/A	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/23/2021	6/25/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd	nd	<0.6	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	<1	0.20
1,2,3-Trichloropropane	0.04	nd	nd	nd	nd	<0.8	nd
Bromobenzene	0.03	nd	nd	nd	nd	<0.6	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	<1	nd
n-Propylbenzene	0.03	nd	nd	nd	nd	1.7	1.6
2-Chlorotoluene	0.03	nd	nd	nd	nd	<0.6	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	<.6	nd
1,3,5-Trimethylbenzene	0.03	nd	0.39	nd	nd	0.77	0.87
tert-Butylbenzene	0.03	nd	nd	nd	nd	<0.6	0.023 J
1,2,4-Trimethylbenzene	0.03	nd	0.43	nd	0.030	13	14 E
sec-Butylbenzene	0.03	nd	0.042	nd	0.024 J	<0.6	0.33
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	<0.6	nd
p-Isopropyltoluene	0.03	nd	0.040	nd	nd	<0.6	0.28
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	<0.6	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd	<1	nd
n-Butylbenzene	0.03	nd	0.078	nd	nd	1.4	1.1
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	<1	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	<1	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	<2	nd
Naphthalene	0.10	nd	0.11	nd	nd	10	2.6
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	<2	nd
Surrogate Recovery							
Dibromofluoromethane		78	82	78	82	80	78
1,2-Dichloroethane-d4		81	90	82	75	88	87
Toluene-d8		94	97	94	76	100	106
4-Bromofluorobenzene		92	94	91	88	91	95

"nd" Indicates not detected at listed detection limit.
"<" PQL elevated due to dilution.
"E" Reported value is above the calibration range and is an estimate.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB106-1-3-0621	SO-SB106-4-6-0621	SO-SB106-14-16-0621	SO-SB106-14-16-0621 Dup	SO-SB107-1-3-0621	SO-SB107-12-14-0621
Date Sampled	Reporting	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	0.029	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	0.78
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	0.087	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	3.3	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	0.10	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	6.6	0.13	0.10	nd	nd
Total Xylenes	0.15	nd	63	0.56	0.26	nd	nd
Styrene	0.02	nd	0.11	nd	nd	nd	nd

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB106-1-3-0621	SO-SB106-4-6-0621	SO-SB106-14-16-0621	SO-SB106-14-16-0621 Dup	SO-SB107-1-3-0621	SO-SB107-12-14-0621
Date Sampled	Reporting	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	1.3	0.077	0.074	nd	nd
1,2,3-Trichloropropane	0.04	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.03	nd	7.8	0.51	0.49	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	24	0.13	0.036	nd	nd
tert-Butylbenzene	0.03	nd	nd	0.60	0.55	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	95	3.9	3.6	0.10	nd
sec-Butylbenzene	0.03	nd	1.5	3.2	3.0	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
p-Isopropyltoluene	0.03	nd	0.77	0.060	0.055	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.03	nd	4.2	0.30	0.31	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalene	0.10	nd	30	1.2	1.3	0.076 J	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		103	87	72	79	76	88
1,2-Dichloroethane-d4		86	79	78	75	79	95
Toluene-d8		93	108	100	83	97	94
4-Bromofluorobenzene		92	115	96	97	94	87

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB108-6-8-0621	SO-SB108-13-14-0621	SO-SB109-13-15-0621
Date Sampled Date Analyzed	Reporting Limits (mg/kg)	6/21/2021 6/23/2021 (mg/kg)	6/21/2021 6/23/2021 (mg/kg)	6/21/2021 6/25/2021 (mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd
Chloromethane	0.06	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd
Bromomethane	0.09	nd	nd	nd
Chloroethane	0.06	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd
Chloroform	0.02	0.024	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd
Benzene	0.02	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd
Toluene	0.10	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd
Ethylbenzene	0.03	0.031	nd	nd
Total Xylenes	0.15	0.13 J	nd	nd
Styrene	0.02	nd	nd	nd

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB108-6-8-0621	SO-SB108-13-14-0621	SO-SB109-13-15-0621
Date Sampled	Reporting	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/23/2021	6/23/2021	6/25/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd
1,2,3-Trichloropropane	0.04	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd
n-Propylbenzene	0.03	nd	nd	0.082
2-Chlorotoluene	0.03	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	0.069
tert-Butylbenzene	0.03	nd	nd	0.023 J
1,2,4-Trimethylbenzene	0.03	nd	nd	0.059
sec-Butylbenzene	0.03	nd	nd	0.36
1,3-Dichlorobenzene	0.03	nd	nd	nd
p-Isopropyltoluene	0.03	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd
n-Butylbenzene	0.03	nd	nd	0.56
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd
Naphthalene	0.10	nd	nd	0.60
1,2,3-Trichlorobenzene	0.10	nd	nd	nd
Surrogate Recovery				
Dibromofluoromethane		82	85	80
1,2-Dichloroethane-d4		87	97	87
Toluene-d8		93	91	106
4-Bromofluorobenzene		94	95	110

"nd" Indicates not detected at listed detection limit.
“J” Result is less than the PQL but greater than the MDL. Reported value is approximate.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	GW-SB101-0621	GW-SB101-0621 Dup	TB-0621
Date Sampled	Reporting	N/A	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/22/2021	6/22/2021	6/22/2021	6/22/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd
Vinyl chloride	0.2	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd
1,1-Dichloroethene	0.5	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd
Benzene	1.0	nd	2.8	2.8	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd
Trichloroethene (TCE)	0.4	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd
Toluene	2.0	nd	3.0	3.1	nd
Trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd
Ethylbenzene	1.0	nd	160	290 E	nd
Total Xylenes	2.0	nd	29	28	nd
Styrene	1.0	nd	nd	nd	nd

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	GW-SB101-0621	GW-SB101-0621 Dup	TB-0621
Date Sampled	Reporting	N/A	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	Limits	6/22/2021	6/22/2021	6/22/2021	6/22/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	nd	nd	nd
Isopropylbenzene	4.0	nd	44	44	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd
n-Propylbenzene	1.0	nd	120	120	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	3.8	3.8	nd
tert-Butylbenzene	1.0	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	24	24	nd
sec-Butylbenzene	1.0	nd	6.2	6.4	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd
p-Isopropyltoluene	1.0	nd	2.7	2.9	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd
n-Butylbenzene	1.0	nd	12	13	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd
Naphthalene	5.0	nd	100	100	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd
Surrogate Recovery					
Dibromofluoromethane		131	124	123	133
1,2-Dichloroethane-d4		127	126	120	123
Toluene-d8		97	98	97	97
4-Bromofluorobenzene		87	94	97	87

"nd" Indicates not detected at listed detection limit.
"E" Reported result is an estimate because it exceeds the calibration range.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	SO-SB101-4-6-0621	SO-SB101-15-17-0621	SO-SB102-2-4-0621	SO-SB102-2-4-0621 Dup	SO-SB102-8-10-0621
Date Sampled		N/A	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed	PQL (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)
Benzene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	24	nd	nd	nd
Total Xylenes	0.15	nd	nd	1.3	0.22	0.19	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Naphthalene	0.15	nd	nd	16	nd	0.23	nd
1-Methylnaphthalene	0.40	nd	nd	29	nd	nd	nd
2-Methylnaphthalene	0.40	nd	nd	60	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		79	82	75	79	78	79
1,2-Dichloroethane-d4		88	91	83	93	92	88
Toluene-d8		93	94	102	102	106	95
4-Bromofluorobenzene		87	89	94	91	96	91

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
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Libby Project # L210621-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB102-14-16-0621	SO-SB104-8-10-0621	SO-SB104-14-16-0621
Date Sampled		6/21/2021	6/21/2021	6/21/2021
Date Analyzed	PQL (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)	6/22/2021 (mg/kg)
Benzene	0.02	nd	nd	nd
Toluene	0.10	nd	nd	nd
Ethylbenzene	0.05	nd	nd	0.20
Total Xylenes	0.15	nd	nd	0.15
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd
Naphthalene	0.15	nd	nd	0.28
1-Methylnaphthalene	0.40	nd	nd	0.54
2-Methylnaphthalene	0.40	nd	nd	1.1
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd
Surrogate Recovery				
Dibromofluoromethane		79	80	73
1,2-Dichloroethane-d4		90	93	85
Toluene-d8		93	94	104
4-Bromofluorobenzene		88	91	97

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	6/22/2021	93	nd
Method Blank	6/23/2021	94	nd
Method Blank	6/25/2021	91	nd
Method Blank	6/26/2021	91	nd
SO-SB101-4-6-0621	6/22/2021	94	nd
SO-SB101-15-17-0621	6/22/2021	102	4200 *
SO-SB102-2-4-0621	6/22/2021	102	41 *
SO-SB102-2-4-0621 Dup	6/22/2021	105	140 *
SO-SB102-8-10-0621	6/22/2021	95	nd
SO-SB102-14-16-0621	6/22/2021	93	nd
SO-SB103-4-6-0621	6/25/2021	102	88 *
SO-SB103-14-16-0621	6/23/2021	94	nd
SO-SB104-8-10-0621	6/22/2021	94	nd
SO-SB104-14-16-0621	6/22/2021	102	170 *
SO-SB105-8-10-0621	6/23/2021	76	nd
SO-SB105-14-16-0621	6/23/2021	100	690 *
SO-SB105-14-16-0621 Dup	6/23/2021	106	240 E *
SO-SB106-1-3-0621	6/23/2021	93	nd
SO-SB106-4-6-0621	6/23/2021	102	2000 *
SO-SB106-14-16-0621	6/23/2021	100	110 *
SO-SB106-14-16-0621 Dup	6/23/2021	83	110 *
SO-SB107-1-3-0621	6/23/2021	97	nd
SO-SB107-12-14-0621	6/25/2021	94	nd
SO-SB108-6-8-0621	6/25/2021	94	nd
SO-SB108-13-14-0621	6/25/2021	91	nd
SO-SB109-13-15-0621	6/26/2021	94	540 *
Practical Quantitation Limit			10

"nd" Indicates not detected at the listed detection limits.
"*" Chromatographic pattern does not match associated product. Reported concentration should be considered an estimate.
"E" Reported result is an estimate because it exceeds the calibration range.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Gasoline by NWTPH-Gx in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/L)
Method Blank	6/22/2021	97	nd
GW-SB101-0621	6/22/2021	98	2700 *
GW-SB101-0621 Dup	6/22/2021	97	2900 *
Practical Quantitation Limit			100

"nd" Indicates not detected at the listed detection limits.
"*" Chromatographic pattern does not match associated product. Reported concentration should be considered an estimate.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Diesel & Oil by NWTPH-Dx/Dx Extended in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	6/22/2021	110%	nd	nd
Method Blank	6/23/2021	113%	nd	nd
Method Blank	6/25/2021	126%	nd	nd
SO-SB101-4-6-0621	6/22/2021	108%	nd	nd
SO-SB101-4-6-0621 Dup	6/22/2021	103%	66	310
SO-SB101-15-17-0621	6/22/2021	125%	nd	nd
SO-SB102-2-4-0621	6/22/2021	97%	nd	nd
SO-SB102-8-10-0621	6/22/2021	123%	nd	nd
SO-SB102-14-16-0621	6/22/2021	103%	nd	nd
SO-SB103-4-6-0621	6/22/2021	120%	90	nd
SO-SB103-14-16-0621	6/22/2021	131%	nd	nd
SO-SB104-8-10-0621	6/22/2021	104%	nd	nd
SO-SB104-14-16-0621	6/22/2021	100%	nd	nd
SO-SB105-8-10-0621	6/22/2021	101%	nd	nd
SO-SB105-14-16-0621	6/22/2021	105%	170 *	1500
SO-SB105-14-16-0621 Dup	6/22/2021	102%	190 *	2100
SO-SB106-1-3-0621	6/25/2021	115%	nd	2800
SO-SB106-1-3-0621 Dup	6/25/2021	129%	nd	1800
SO-SB106-4-6-0621	6/22/2021	102%	790 *	13000
SO-SB106-14-16-0621	6/22/2021	131%	nd	320
SO-SB107-1-3-0621	6/22/2021	128%	nd	8400
SO-SB107-12-14-0621	6/23/2021	104%	nd	280
SO-SB108-6-8-0621	6/23/2021	98%	nd	300
SO-SB108-13-14-0621	6/23/2021	102%	nd	nd
SO-SB109-13-15-0621	6/23/2021	100%	nd	400
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.
"*" Chromatographic pattern does not match associated product. Reported concentration should be considered an estimate.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Jodie Childress

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Diesel & Oil by NWTPH-Dx/Dx Extended in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (µg/L)	Oil (µg/L)
Method Blank	6/24/2021	84%	nd	nd
GW-SB101-0621	6/24/2021	87%	422	nd
GW-SB101-0621 Dup	6/24/2021	90%	460	nd
Practical Quantitation Limit			200	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Randy Kraus

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	Method Blank	SO-SB103-4-6-0621	SO-SB103-4-6-0621 Dup	SO-SB103-14-16-0621	SO-SB105-8-10-0621	SO-SB105-14-16-0621
Date Sampled		N/A	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed		6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	nd	nd	nd	nd	nd	0.11
Aroclor 1221	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1260	0.1	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
TCMX		100	101	130	132	96	103
DCBP		87	88	128	119	90	89

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	SO-SB105-14-16-0621 Dup	SO-SB106-1-3-0621	SO-SB106-4-6-0621	SO-SB106-14-16-0621	SO-SB107-1-3-0621	SO-SB107-12-14-0621
Date Sampled		6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021
Date Analyzed		6/23/2021	6/25/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	0.18	nd	0.83	nd	nd	nd
Aroclor 1221	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.1	nd	nd	nd	nd	nd	nd
Aroclor 1260	0.1	nd	0.16	nd	nd	nd	nd
Surrogate Recovery							
TCMX		98	113	124	93	132	132
DCBP		85	95	128	86	127	125

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	SO-SB108-6-8-0621	SO-SB108-13-14-0621	Method Blank
Date Sampled		6/21/2021	6/21/2021	N/A
Date Analyzed		6/23/2021	6/23/2021	6/25/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	nd	nd	nd
Aroclor 1221	0.1	nd	nd	nd
Aroclor 1232	0.1	nd	nd	nd
Aroclor 1242	0.1	nd	nd	nd
Aroclor 1248	0.1	nd	nd	nd
Aroclor 1254	0.1	nd	nd	nd
Aroclor 1260	0.1	nd	nd	nd
Surrogate Recovery				
TCMX		132	97	117
DCBP		119	82	114

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	6/23/2021	nd
SO-SB101-4-6-0621	6/23/2021	4.3 J
SO-SB101-15-17-0621	6/23/2021	2.0 J
SO-SB102-2-4-0621	6/23/2021	23
SO-SB102-8-10-0621	6/23/2021	1.4 J
SO-SB102-14-16-0621	6/23/2021	5.0
SO-SB103-4-6-0621	6/23/2021	2.6 J
SO-SB103-14-16-0621	6/23/2021	1.6 J
SO-SB104-8-10-0621	6/23/2021	1.8 J
SO-SB104-14-16-0621	6/23/2021	1.1 J
SO-SB105-8-10-0621	6/23/2021	46
SO-SB105-14-16-0621	6/23/2021	8.9
SO-SB105-14-16-0621 Dup	6/23/2021	8.8
SO-SB106-1-3-0621	6/23/2021	21
SO-SB106-4-6-0621	6/23/2021	2.4 J
SO-SB106-14-16-0621	6/23/2021	12
SO-SB107-1-3-0621	6/23/2021	1.4 J
SO-SB107-12-14-0621	6/23/2021	1.6 J
SO-SB108-6-8-0621	6/23/2021	1.1 J
SO-SB108-13-14-0621	6/23/2021	1.7 J
SO-SB109-13-15-0621	6/23/2021	1.6 J
Practical Quantitation Limit		5.0

“J” Result is less than the PQL but greater than the MDL. Reported value is approximate.
"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
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Libby Project # L210621-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Soil

Matrix Spike Sample Identification: SO-SB105-14-16-0621								
Date Analyzed: 6/23/2021								
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.202	0.211	81	84	4.4	65-135	
Chloromethane	0.25	0.276	0.280	110	112	1.4	65-135	
Vinyl chloride	0.25	0.290	0.290	116	116	0.0	65-135	
Bromomethane	0.25	0.287	0.250	115	100	13.8	65-135	
Chloroethane	0.25	0.168	0.167	67	67	0.6	65-135	
Trichlorofluoromethane	0.25	0.217	0.180	87	72	18.6	65-135	
1,1-Dichloroethene	0.25	0.237	0.246	95	98	3.7	65-135	
Methylene chloride	0.25	0.219	0.247	88	99	12.0	65-135	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.237	0.243	95	97	2.5	65-135	
trans -1,2-Dichloroethene	0.25	0.228	0.245	91	98	7.2	65-135	
1,1-Dichloroethane	0.25	0.210	0.217	84	87	3.3	65-135	
2,2-Dichloropropane	0.25	0.222	0.195	89	78	12.9	65-135	
cis -1,2-Dichloroethene	0.25	0.237	0.228	95	91	3.9	65-135	
Chloroform	0.25	0.206	0.211	82	84	2.4	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.170	0.173	68	69	1.7	65-135	
Carbon tetrachloride	0.25	0.165	0.172	66	69	4.2	65-135	
1,1-Dichloropropene	0.25	0.239	0.248	96	99	3.7	65-135	
Benzene	0.25	0.239	0.249	96	100	4.1	65-135	
1,2-Dichloroethane (EDC)	0.25	0.196	0.195	78	78	0.5	65-135	
Trichloroethene (TCE)	0.25	0.205	0.219	82	88	6.6	65-135	
1,2-Dichloropropane	0.25	0.314	0.329	126	132	4.7	65-135	
Dibromomethane	0.25	0.198	0.198	79	79	0.0	65-135	
Bromodichloromethane	0.25	0.174	0.176	70	70	1.1	65-135	
cis-1,3-Dichloropropene	0.25	0.263	0.249	105	100	5.5	65-135	
Toluene	0.25	0.197	0.206	79	82	4.5	65-135	
Trans-1,3-Dichloropropene	0.25	0.150	0.160	60	64	6.5	65-135	S
1,1,2-Trichloroethane	0.25	0.266	0.225	106	90	16.7	65-135	
Tetrachloroethene (PCE)	0.25	0.142	0.160	57	64	11.9	65-135	S
1,3-Dichloropropane	0.25	0.229	0.235	92	94	2.6	65-135	
Dibromochloromethane	0.25	0.139	0.151	56	60	8.3	65-135	S
1,2-Dibromoethane (EDB)	0.25	0.204	0.193	82	77	5.5	65-135	
Chlorobenzene	0.25	0.184	0.195	74	78	5.8	65-135	
Ethylbenzene	0.25	0.193	0.189	77	76	2.1	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.133	0.144	53	58	7.9	65-135	S
Total Xylenes	0.75	0.621	0.586	83	78	5.8	65-135	
Styrene	0.25	0.218	0.219	87	88	0.5	65-135	

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Soil

Matrix Spike Sample Identification: SO-SB105-14-16-0621

Date Analyzed: 6/23/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.121	0.105	48	42	14.2	65-135	S
Isopropylbenzene	0.25	0.207	0.192	83	77	7.5	65-135	
1,1,2,2-Tetrachloroethane	0.25	0.338	0.328	135	131	3.0	65-135	
Bromobenzene	0.25	0.222	0.235	89	94	5.7	65-135	
n-Propylbenzene	0.25	0.392	0.310	157	124	23.4	65-135	S
1,2,3-Trichloropropane	0.25	0.257	0.232	103	93	10.2	65-135	
2-Chlorotoluene	0.25	0.289	0.287	116	115	0.7	65-135	
1,3,5-Trimethylbenzene	0.25	0.303	0.266	121	106	13.0	65-135	
4-Chlorotoluene	0.25	0.276	0.276	110	110	0.0	65-135	
tert-Butylbenzene	0.25	0.251	0.247	100	99	1.6	65-135	
1,2,4-Trimethylbenzene	0.25	0.27	0.27	106	108	1.5	65-135	
sec-Butylbenzene	0.25	0.288	0.281	115	112	2.5	65-135	
Isopropyltoluene	0.25	0.259	0.254	104	102	1.9	65-135	
1,3-Dichlorobenzene	0.25	0.222	0.243	89	97	9.0	65-135	
1,4-Dichlorobenzene	0.25	0.223	0.240	89	96	7.3	65-135	
n-Butylbenzene	0.25	0.28	0.289	111	116	3.9	65-135	
1,2-Dichlorobenzene	0.25	0.241	0.240	96	96	0.4	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.135	0.160	54	64	16.9	65-135	S
1,2,4-Trichlorolbenzene	0.25	0.178	0.227	71	91	24.2	65-135	
Hexachloro-1,3-butadiene	0.25	0.149	0.213	60	85	35.4	65-135	S,R
Naphthalene	0.25	0.451	0.302	180	121	39.6	65-135	S,R
1,2,3-Trichlorobenzene	0.25	0.162	0.260	65	104	46.4	65-135	S,R

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	81	81	65-135
1,2-Dichloroethane-d4	88	92	65-135
Toluene-d8	99	96	65-135
4-Bromofluorobenzene	89	93	65-135

ACCEPTABLE RPD IS 35%
"R" High relative percent difference observed.
"S" Spike recovery outside accepted recovery limits.

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Laboratory Control Sample

Date Analyzed: 6/23/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.202	81	80-120	
Chloromethane	0.25	0.213	85	80-120	
Vinyl chloride	0.25	0.237	95	80-120	
Bromomethane	0.25	0.225	90	80-120	
Chloroethane	0.25	0.300	120	80-120	
Trichlorofluoromethane	0.25	0.246	98	80-120	
1,1-Dichloroethene	0.25	0.238	95	80-120	
Methylene chloride	0.25	0.274	110	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.285	114	80-120	
trans -1,2-Dichloroethene	0.25	0.225	90	80-120	
1,1-Dichloroethane	0.25	0.295	118	80-120	
2,2-Dichloropropane	0.25	0.259	104	80-120	
cis -1,2-Dichloroethene	0.25	0.261	104	80-120	
Chloroform	0.25	0.288	115	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.225	90	80-120	
Carbon tetrachloride	0.25	0.210	84	80-120	
1,1-Dichloropropene	0.25	0.276	110	80-120	
Benzene	0.25	0.298	119	80-120	
1,2-Dichloroethane (EDC)	0.25	0.242	97	80-120	
Trichloroethene (TCE)	0.25	0.277	111	80-120	
1,2-Dichloropropane	0.25	0.277	111	80-120	
Dibromomethane	0.25	0.251	100	80-120	
Bromodichloromethane	0.25	0.256	102	80-120	
cis-1,3-Dichloropropene	0.25	0.289	116	80-120	
Toluene	0.25	0.263	105	80-120	
Trans-1,3-Dichloropropene	0.25	0.226	90	80-120	
1,1,2-Trichloroethane	0.25	0.299	120	80-120	
Tetrachloroethene (PCE)	0.25	0.191	76	80-120	
1,3-Dichloropropane	0.25	0.298	119	80-120	
Dibromochloromethane	0.25	0.221	88	80-120	
1,2-Dibromoethane (EDB)	0.25	0.239	96	80-120	
Chlorobenzene	0.25	0.255	102	80-120	
Ethylbenzene	0.25	0.252	101	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.221	88	80-120	
Total Xylenes	0.75	0.82	109	80-120	
Styrene	0.25	0.30	120	80-120	

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Laboratory Control Sample

Date Analyzed: 6/23/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.208	83	80-120	
Isopropylbenzene	0.25	0.283	113	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.300	120	80-120	
Bromobenzene	0.25	0.272	109	80-120	
n-Propylbenzene	0.25	0.304	122	80-120	
1,2,3-Trichloropropane	0.25	0.268	107	80-120	
2-Chlorotoluene	0.25	0.292	117	80-120	
1,3,5-Trimethylbenzene	0.25	0.298	119	80-120	
4-Chlorotoluene	0.25	0.299	120	80-120	
tert-Butylbenzene	0.25	0.296	118	80-120	
1,2,4-Trimethylbenzene	0.25	0.293	117	80-120	
sec-Butylbenzene	0.25	0.294	118	80-120	
Isopropyltoluene	0.25	0.277	111	80-120	
1,3-Dichlorobenzene	0.25	0.285	114	80-120	
1,4-Dichlorobenzene	0.25	0.281	112	80-120	
n-Butylbenzene	0.25	0.295	118	80-120	
1,2-Dichlorobenzene	0.25	0.279	112	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.236	94	80-120	
1,2,4-Trichlorolbenzene	0.25	0.265	106	80-120	
Hexachloro-1,3-butadiene	0.25	0.289	116	80-120	
Naphthalene	0.25	0.260	104	80-120	
1,2,3-Trichlorobenzene	0.25	0.290	116	80-120	

Surrogate Recovery			
Dibromofluoromethane	98	65-135	
1,2-Dichloroethane-d4	100	65-135	
Toluene-d8	123	65-135	
4-Bromofluorobenzene	114	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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CCV 6-23-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.50	0.40	81	80-120	
Chloromethane	0.50	0.42	83	80-120	
Vinyl chloride	0.50	0.44	87	80-120	
Bromomethane	0.50	0.41	83	80-120	
Chloroethane	0.50	0.45	90	80-120	
Trichlorofluoromethane	0.50	0.43	87	80-120	
1,1-Dichloroethene	0.50	0.42	85	80-120	
Methylene chloride	0.50	0.48	96	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.50	0.55	110	80-120	
trans -1,2-Dichloroethene	0.50	0.40	81	80-120	
1,1-Dichloroethane	0.50	0.54	108	80-120	
2,2-Dichloropropane	0.50	0.49	99	80-120	
cis -1,2-Dichloroethene	0.50	0.47	95	80-120	
Chloroform	0.50	0.52	104	80-120	
1,1,1-Trichloroethane (TCA)	0.50	0.42	83	80-120	
Carbon tetrachloride	0.50	0.45	90	80-120	
1,1-Dichloropropene	0.50	0.50	99	80-120	
Benzene	0.50	0.56	112	80-120	
1,2-Dichloroethane (EDC)	0.50	0.43	85	80-120	
Trichloroethene (TCE)	0.50	0.49	98	80-120	
1,2-Dichloropropane	0.50	0.59	118	80-120	
Dibromomethane	0.50	0.45	90	80-120	
Bromodichloromethane	0.50	0.49	98	80-120	
cis-1,3-Dichloropropene	0.50	0.59	117	80-120	
Toluene	0.50	0.50	100	80-120	
Trans-1,3-Dichloropropene	0.50	0.49	98	80-120	
1,1,2-Trichloroethane	0.50	0.59	119	80-120	
Tetrachloroethene (PCE)	0.50	0.41	82	80-120	
1,3-Dichloropropane	0.50	0.59	118	80-120	
Dibromochloromethane	0.50	0.46	92	80-120	
1,2-Dibromoethane (EDB)	0.50	0.512	102	80-120	
Chlorobenzene	0.50	0.53	105	80-120	
Ethylbenzene	0.50	0.54	108	80-120	
1,1,1,2-Tetrachloroethane	0.50	0.46	92	80-120	
Total Xylenes	1.50	1.78	119	80-120	
Styrene	0.50	0.58	117	80-120	

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

CCV 6-23-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Bromoform	0.50	0.40	80	80-120	
Isopropylbenzene	0.50	0.57	114	80-120	
1,1,2,2-Tetrachloroethane	0.50	0.59	119	80-120	
Bromobenzene	0.50	0.49	98	80-120	
n-Propylbenzene	0.50	0.59	119	80-120	
1,2,3-Trichloropropane	0.50	0.47	94	80-120	
2-Chlorotoluene	0.50	0.56	113	80-120	
1,3,5-Trimethylbenzene	0.50	0.60	120	80-120	
4-Chlorotoluene	0.50	0.58	117	80-120	
tert-Butylbenzene	0.50	0.59	119	80-120	
1,2,4-Trimethylbenzene	0.50	0.60	120	80-120	
sec-Butylbenzene	0.50	0.57	114	80-120	
Isopropyltoluene	0.50	0.56	112	80-120	
1,3-Dichlorobenzene	0.50	0.52	104	80-120	
1,4-Dichlorobenzene	0.50	0.50	101	80-120	
n-Butylbenzene	0.50	0.58	116	80-120	
1,2-Dichlorobenzene	0.50	0.52	103	80-120	
1,2-Dibromo-3-Chloropropane	0.50	0.40	81	80-120	
1,2,4-Trichlorolbenzene	0.50	0.48	96	80-120	
Hexachloro-1,3-butadiene	0.50	0.53	105	80-120	
Naphthalene	0.50	0.48	95	80-120	
1,2,3-Trichlorobenzene	0.50	0.51	103	80-120	

Surrogate Recovery					
Dibromofluoromethane			99	65-135	
1,2-Dichloroethane-d4			100	65-135	
Toluene-d8			126	65-135	
4-Bromofluorobenzene			129	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
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Libby Project # L210621-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Soil

Matrix Spike Sample Identification: SO-SB109-13-15-0621

Date Analyzed: 6/25/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.24	0.22	96	87	9.6	65-135	
Chloromethane	0.25	0.29	0.26	115	104	9.7	65-135	
Vinyl chloride	0.25	0.18	0.26	72	103	35.7	65-135	
Bromomethane	0.25	0.23	0.22	92	87	6.0	65-135	
Chloroethane	0.25	0.17	0.176	68	70	2.9	65-135	
Trichlorofluoromethane	0.25	0.03	0.030	13	12	5.6	65-135	S
1,1-Dichloroethene	0.25	0.25	0.23	98	93	5.4	65-135	
Methylene chloride	0.25	0.22	0.29	89	116	26.2	65-135	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.28	0.27	111	106	4.1	65-135	
trans -1,2-Dichloroethene	0.25	0.24	0.23	95	93	2.1	65-135	
1,1-Dichloroethane	0.25	0.25	0.24	100	94	6.1	65-135	
2,2-Dichloropropane	0.25	0.23	0.21	90	83	8.5	65-135	
cis -1,2-Dichloroethene	0.25	0.26	0.25	105	99	5.8	65-135	
Chloroform	0.25	0.27	0.28	108	112	3.6	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.21	0.20	85	81	4.5	65-135	
Carbon tetrachloride	0.25	0.19	0.19	78	75	3.2	65-135	
1,1-Dichloropropene	0.25	0.32	0.30	127	119	6.6	65-135	
Benzene	0.25	0.32	0.31	128	124	3.6	65-135	
1,2-Dichloroethane (EDC)	0.25	0.24	0.23	95	92	4.0	65-135	
Trichloroethene (TCE)	0.25	0.28	0.27	112	106	5.1	65-135	
1,2-Dichloropropane	0.25	0.34	0.40	134	159	17.2	65-135	S
Dibromomethane	0.25	0.25	0.24	101	96	6.0	65-135	
Bromodichloromethane	0.25	0.23	0.21	93	84	9.9	65-135	
cis-1,3-Dichloropropene	0.25	0.29	0.33	114	133	15.4	65-135	
Toluene	0.25	0.27	0.25	108	102	6.1	65-135	
Trans-1,3-Dichloropropene	0.25	0.23	0.22	90	86	4.9	65-135	
1,1,2-Trichloroethane	0.25	0.30	0.29	121	115	5.2	65-135	
Tetrachloroethene (PCE)	0.25	0.39	0.20	158	79	67.0	65-135	S,R
1,3-Dichloropropane	0.25	0.32	0.30	127	119	6.4	65-135	
Dibromochloromethane	0.25	0.20	0.18	80	72	10.5	65-135	
1,2-Dibromoethane (EDB)	0.25	0.25	0.25	102	99	2.5	65-135	
Chlorobenzene	0.25	0.26	0.25	103	98	4.5	65-135	
Ethylbenzene	0.25	0.26	0.25	104	99	5.1	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.19	0.18	76	73	4.3	65-135	
Total Xylenes	0.75	0.85	0.80	114	107	6.0	65-135	
Styrene	0.25	0.32	0.30	128	118	8.3	65-135	

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JACKS AUTO (JA) PROJECT
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Olympia, Washington
Libby Project # L210621-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Soil

Matrix Spike Sample Identification: SO-SB109-13-15-0621

Date Analyzed: 6/25/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.16	0.16	65	65	1.2	65-135	
Isopropylbenzene	0.25	0.29	0.27	117	110	6.3	65-135	
1,1,2,2-Tetrachloroethane	0.25	0.43	0.38	172	154	11.2	65-135	S
Bromobenzene	0.25	0.30	0.28	119	113	4.4	65-135	
n-Propylbenzene	0.25	0.40	0.37	159	148	7.3	65-135	S
1,2,3-Trichloropropane	0.25	0.34	0.33	135	132	1.7	65-135	S
2-Chlorotoluene	0.25	0.36	0.34	144	136	5.6	65-135	S
1,3,5-Trimethylbenzene	0.25	0.36	0.32	142	129	9.4	65-135	S
4-Chlorotoluene	0.25	0.38	0.35	154	140	8.9	65-135	S
tert-Butylbenzene	0.25	0.36	0.32	144	129	11.0	65-135	S
1,2,4-Trimethylbenzene	0.25	0.35	0.33	139	131	5.7	65-135	S
sec-Butylbenzene	0.25	0.39	0.34	158	138	13.7	65-135	S
Isopropyltoluene	0.25	0.36	0.32	144	127	12.0	65-135	S
1,3-Dichlorobenzene	0.25	0.30	0.29	122	115	5.8	65-135	
1,4-Dichlorobenzene	0.25	0.30	0.28	120	113	6.6	65-135	
n-Butylbenzene	0.25	0.39	0.33	157	132	17.5	65-135	S
1,2-Dichlorobenzene	0.25	0.31	0.29	126	117	6.9	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.22	0.22	88	86	2.4	65-135	
1,2,4-Trichlorolbenzene	0.25	0.31	0.27	126	107	16.1	65-135	
Hexachloro-1,3-butadiene	0.25	0.31	0.24	124	96	25.4	65-135	
Naphthalene	0.25	0.36	0.37	144	148	2.4	65-135	S
1,2,3-Trichlorobenzene	0.25	0.32	0.30	128	119	7.7	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	80	79	65-135
1,2-Dichloroethane-d4	82	82	65-135
Toluene-d8	86	97	65-135
4-Bromofluorobenzene	98	97	65-135

ACCEPTABLE RPD IS 35%
"R" High relative percent difference observed.
"S" Spike recovery outside accepted recovery limits.

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
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Libby Project # L210621-2

Laboratory Control Sample

Date Analyzed: 6/25/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.20	81	80-120	
Chloromethane	0.25	0.25	100	80-120	
Vinyl chloride	0.25	0.24	95	80-120	
Bromomethane	0.25	0.30	119	80-120	
Chloroethane	0.25	0.23	90	80-120	
Trichlorofluoromethane	0.25	0.25	100	80-120	
1,1-Dichloroethene	0.25	0.26	105	80-120	
Methylene chloride	0.25	0.24	95	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.30	119	80-120	
trans -1,2-Dichloroethene	0.25	0.26	105	80-120	
1,1-Dichloroethane	0.25	0.25	101	80-120	
2,2-Dichloropropane	0.25	0.25	99	80-120	
cis -1,2-Dichloroethene	0.25	0.26	105	80-120	
Chloroform	0.25	0.27	108	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.21	82	80-120	
Carbon tetrachloride	0.25	0.21	83	80-120	
1,1-Dichloropropene	0.25	0.26	105	80-120	
Benzene	0.25	0.26	102	80-120	
1,2-Dichloroethane (EDC)	0.25	0.21	85	80-120	
Trichloroethene (TCE)	0.25	0.22	89	80-120	
1,2-Dichloropropane	0.25	0.28	111	80-120	
Dibromomethane	0.25	0.23	92	80-120	
Bromodichloromethane	0.25	0.20	82	80-120	
cis-1,3-Dichloropropene	0.25	0.29	114	80-120	
Toluene	0.25	0.21	83	80-120	
Trans-1,3-Dichloropropene	0.25	0.26	104	80-120	
1,1,2-Trichloroethane	0.25	0.28	112	80-120	
Tetrachloroethene (PCE)	0.25	0.20	82	80-120	
1,3-Dichloropropane	0.25	0.31	123	80-120	
Dibromochloromethane	0.25	0.23	93	80-120	
1,2-Dibromoethane (EDB)	0.25	0.298	119	80-120	
Chlorobenzene	0.25	0.26	106	80-120	
Ethylbenzene	0.25	0.25	99	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.21	85	80-120	
Total Xylenes	0.75	0.75	101	80-120	
Styrene	0.25	0.30	119	80-120	

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

Laboratory Control Sample

Date Analyzed: 6/25/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.23	91	80-120	
Isopropylbenzene	0.25	0.25	99	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.29	114	80-120	
Bromobenzene	0.25	0.28	114	80-120	
n-Propylbenzene	0.25	0.27	109	80-120	
1,2,3-Trichloropropane	0.25	0.28	111	80-120	
2-Chlorotoluene	0.25	0.28	112	80-120	
1,3,5-Trimethylbenzene	0.25	0.28	111	80-120	
4-Chlorotoluene	0.25	0.28	111	80-120	
tert-Butylbenzene	0.25	0.28	114	80-120	
1,2,4-Trimethylbenzene	0.25	0.30	119	80-120	
sec-Butylbenzene	0.25	0.29	114	80-120	
Isopropyltoluene	0.25	0.28	111	80-120	
1,3-Dichlorobenzene	0.25	0.30	119	80-120	
1,4-Dichlorobenzene	0.25	0.29	115	80-120	
n-Butylbenzene	0.25	0.27	108	80-120	
1,2-Dichlorobenzene	0.25	0.30	119	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.27	106	80-120	
1,2,4-Trichlorolbenzene	0.25	0.29	114	80-120	
Hexachloro-1,3-butadiene	0.25	0.30	118	80-120	
Naphthalene	0.25	0.27	107	80-120	
1,2,3-Trichlorobenzene	0.25	0.28	114	80-120	

Surrogate Recovery			
Dibromofluoromethane	72	65-135	
1,2-Dichloroethane-d4	77	65-135	
Toluene-d8	75	65-135	
4-Bromofluorobenzene	98	65-135	

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

CCV 6-25-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.50	0.44	87	80-120	
Chloromethane	0.50	0.57	113	80-120	
Vinyl chloride	0.50	0.52	104	80-120	
Bromomethane	0.50	0.52	104	80-120	
Chloroethane	0.50	0.43	86	80-120	
Trichlorofluoromethane	0.50	0.53	105	80-120	
1,1-Dichloroethene	0.50	0.55	109	80-120	
Methylene chloride	0.50	0.55	110	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.50	0.60	120	80-120	
trans -1,2-Dichloroethene	0.50	0.54	108	80-120	
1,1-Dichloroethane	0.50	0.53	105	80-120	
2,2-Dichloropropane	0.50	0.58	116	80-120	
cis -1,2-Dichloroethene	0.50	0.53	107	80-120	
Chloroform	0.50	0.55	111	80-120	
1,1,1-Trichloroethane (TCA)	0.50	0.41	81	80-120	
Carbon tetrachloride	0.50	0.40	81	80-120	
1,1-Dichloropropene	0.50	0.57	114	80-120	
Benzene	0.50	0.56	113	80-120	
1,2-Dichloroethane (EDC)	0.50	0.47	94	80-120	
Trichloroethene (TCE)	0.50	0.48	96	80-120	
1,2-Dichloropropane	0.50	0.57	115	80-120	
Dibromomethane	0.50	0.48	97	80-120	
Bromodichloromethane	0.50	0.45	91	80-120	
cis-1,3-Dichloropropene	0.50	0.54	109	80-120	
Toluene	0.50	0.45	91	80-120	
Trans-1,3-Dichloropropene	0.50	0.69	137	80-120	
1,1,2-Trichloroethane	0.50	0.78	156	80-120	
Tetrachloroethene (PCE)	0.50	0.49	97	80-120	
1,3-Dichloropropane	0.50	0.54	107	80-120	
Dibromochloromethane	0.50	0.60	119	80-120	
1,2-Dibromoethane (EDB)	0.50	0.538	108	80-120	
Chlorobenzene	0.50	0.60	120	80-120	
Ethylbenzene	0.50	0.54	108	80-120	
1,1,1,2-Tetrachloroethane	0.50	0.53	106	80-120	
Total Xylenes	1.50	1.68	112	80-120	
Styrene	0.50	0.60	119	80-120	

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

CCV 6-25-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Bromoform	0.50	0.51	103	80-120	
Isopropylbenzene	0.50	0.60	120	80-120	
1,1,2,2-Tetrachloroethane	0.50	0.58	116	80-120	
Bromobenzene	0.50	0.51	101	80-120	
n-Propylbenzene	0.50	0.53	106	80-120	
1,2,3-Trichloropropane	0.50	0.53	105	80-120	
2-Chlorotoluene	0.50	0.59	117	80-120	
1,3,5-Trimethylbenzene	0.50	0.58	117	80-120	
4-Chlorotoluene	0.50	0.56	111	80-120	
tert-Butylbenzene	0.50	0.59	119	80-120	
1,2,4-Trimethylbenzene	0.50	0.58	115	80-120	
sec-Butylbenzene	0.50	0.55	109	80-120	
Isopropyltoluene	0.50	0.59	118	80-120	
1,3-Dichlorobenzene	0.50	0.52	103	80-120	
1,4-Dichlorobenzene	0.50	0.52	104	80-120	
n-Butylbenzene	0.50	0.57	115	80-120	
1,2-Dichlorobenzene	0.50	0.52	104	80-120	
1,2-Dibromo-3-Chloropropane	0.50	0.50	100	80-120	
1,2,4-Trichlorolbenzene	0.50	0.53	107	80-120	
Hexachloro-1,3-butadiene	0.50	0.51	102	80-120	
Naphthalene	0.50	0.60	120	80-120	
1,2,3-Trichlorobenzene	0.50	0.60	120	80-120	

Surrogate Recovery			
Dibromofluoromethane	86	65-135	
1,2-Dichloroethane-d4	96	65-135	
Toluene-d8	96	65-135	
4-Bromofluorobenzene	135	65-135	

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Water

Matrix Spike Sample Identification: GW-SB101-0621								
Date Analyzed: 6/22/2021								
	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	5.0	4.3	4.1	86	82	4.8	65-135	
Chloromethane	5.0	4.7	4.6	94	92	2.2	65-135	
Vinyl chloride	5.0	4.0	3.4	80	68	16.2	65-135	
Bromomethane	5.0	3.8	3.4	76	68	11.1	65-135	
Chloroethane	5.0	5.1	3.8	102	76	29.2	65-135	
Trichlorofluoromethane	5.0	3.0	3.1	60	62	3.6	65-135	S
1,1-Dichloroethene	5.0	5.4	5.0	108	100	7.7	65-135	
Methylene chloride	5.0	8.5	7.8	170	156	8.6	65-135	S
Methyl *tert*- Butyl Ether (MTBE)	5.0	4.8	4.6	96	92	4.3	65-135	
trans -1,2-Dichloroethene	5.0	4.8	4.8	96	96	0.0	65-135	
1,1-Dichloroethane	5.0	3.2	3.0	64	60	6.5	65-135	S
2,2-Dichloropropane	5.0	4.0	3.0	80	60	28.6	65-135	S
cis -1,2-Dichloroethene	5.0	4.5	4.2	90	84	6.9	65-135	
Chloroform	5.0	6.1	4.9	122	98	21.8	65-135	
1,1,1-Trichloroethane (TCA)	5.0	4.7	4.6	94	92	2.2	65-135	
Carbon tetrachloride	5.0	2.7	3.3	54	66	20.0	65-135	
1,1-Dichloropropene	5.0	5.0	4.7	100	94	6.2	65-135	
Benzene	5.0	4.6	4.4	92	88	4.4	65-135	
1,2-Dichloroethane (EDC)	5.0	4.8	4.9	96	98	2.1	65-135	
Trichloroethene (TCE)	5.0	4.3	4.2	86	84	2.4	65-135	
1,2-Dichloropropane	5.0	5.5	5.3	110	106	3.7	65-135	
Dibromomethane	5.0	5.6	5.2	112	104	7.4	65-135	
Bromodichloromethane	5.0	4.2	4.2	84	84	0.0	65-135	
cis-1,3-Dichloropropene	5.0	4.3	4.1	86	82	4.8	65-135	
Toluene	5.0	4.5	4.2	90	84	6.9	65-135	
Trans-1,3-Dichloropropene	5.0	4.6	4.5	92	90	2.2	65-135	
1,1,2-Trichloroethane	5.0	12.8	14.4	256	289	11.8	65-135	S
Tetrachloroethene (PCE)	5.0	4.5	4.7	90	94	4.3	65-135	
1,3-Dichloropropane	5.0	5.1	5.1	102	102	0.0	65-135	
Dibromochloromethane	5.0	4.5	4.5	90	90	0.0	65-135	
1,2-Dibromoethane (EDB)	5.0	4.8	4.8	96	96	0.0	65-135	
Chlorobenzene	5.0	4.9	4.7	98	94	4.2	65-135	
Ethylbenzene	5.0	85.9	84.6	1718	1692	1.5	65-135	A
1,1,1,2-Tetrachloroethane	5.0	4.9	4.8	98	96	2.1	65-135	
Total Xylenes	15.0	34.0	31.9	227	213	6.4	65-135	A
Styrene	5.0	6.9	6.6	137	132	4.0	65-135	S

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Water

Matrix Spike Sample Identification: GW-SB101-0621

Date Analyzed: 6/22/2021

	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	5.0	4.2	4.5	84	90	6.9	65-135	
Isopropylbenzene	5.0	30.1	28.6	602	572	5.1	65-135	A
1,1,2,2-Tetrachloroethane	5.0	4.2	4.2	84	84	0.0	65-135	
Bromobenzene	5.0	4.5	4.5	90	90	0.0	65-135	
n-Propylbenzene	5.0	46.5	41.9	930	838	10.4	65-135	A
1,2,3-Trichloropropane	5.0	5.2	5.4	104	108	3.8	65-135	
2-Chlorotoluene	5.0	69.1	63.0	1382	1260	9.2	65-135	S
1,3,5-Trimethylbenzene	5.0	6.7	6.2	134	124	7.8	65-135	
4-Chlorotoluene	5.0	4.2	4.0	84	80	4.9	65-135	
tert-Butylbenzene	5.0	3.8	3.7	76	74	2.7	65-135	
1,2,4-Trimethylbenzene	5.0	24.3	22.0	486	440	9.9	65-135	A
sec-Butylbenzene	5.0	8.2	7.9	165	158	4.3	65-135	S
Isopropyltoluene	5.0	7.9	7.6	158	151	4.4	65-135	S
1,3-Dichlorobenzene	5.0	4.4	4.2	88	84	4.8	65-135	
1,4-Dichlorobenzene	5.0	4.2	4.1	84	83	1.7	65-135	
n-Butylbenzene	5.0	12.5	12.5	250	251	0.3	65-135	S
1,2-Dichlorobenzene	5.0	4.4	4.4	88	87	1.0	65-135	
1,2-Dibromo-3-Chloropropane	5.0	6.2	6.6	124	132	6.2	65-135	
1,2,4-Trichlorolbenzene	5.0	4.5	4.3	90	87	4.0	65-135	
Hexachloro-1,3-butadiene	5.0	1.2	2.2	24	44	58.3	65-135	S,R
Naphthalene	5.0	63.6	68.6	1272	1372	7.6	65-135	A
1,2,3-Trichlorobenzene	5.0	4.3	4.5	86	89	3.7	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	67	61 S	65-135
1,2-Dichloroethane-d4	103	98	65-135
Toluene-d8	94	94	65-135
4-Bromofluorobenzene	105	109	65-135

"S" Spike compound recovery is outside acceptance limits. A duplicate analysis was performed with similar results indicating possible matrix interference.
"R" High relative percent difference observed.
"A" Due to high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Melissa Harrington

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Laboratory Control Sample

Date Analyzed: 6/22/2021

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	5.3	106	80-120	
Chloromethane	5.0	5.8	116	80-120	
Vinyl chloride	5.0	4.6	92	80-120	
Bromomethane	5.0	5.0	100	80-120	
Chloroethane	5.0	5.5	110	80-120	
Trichlorofluoromethane	5.0	4.3	86	80-120	
1,1-Dichloroethene	5.0	5.1	102	80-120	
Methylene chloride	5.0	5.1	102	80-120	
Methyl *tert*- Butyl Ether (MTBE)	5.0	4.9	98	80-120	
trans -1,2-Dichloroethene	5.0	4.6	92	80-120	
1,1-Dichloroethane	5.0	4.6	92	80-120	
2,2-Dichloropropane	5.0	5.3	106	80-120	
cis -1,2-Dichloroethene	5.0	6.0	120	80-120	
Chloroform	5.0	5.4	108	80-120	
1,1,1-Trichloroethane (TCA)	5.0	5.2	104	80-120	
Carbon tetrachloride	5.0	4.2	84	80-120	
1,1-Dichloropropene	5.0	6.0	120	80-120	
Benzene	5.0	5.7	114	80-120	
1,2-Dichloroethane (EDC)	5.0	4.7	94	80-120	
Trichloroethene (TCE)	5.0	4.7	94	80-120	
1,2-Dichloropropane	5.0	5.3	106	80-120	
Dibromomethane	5.0	5.6	112	80-120	
Bromodichloromethane	5.0	5.1	102	80-120	
cis-1,3-Dichloropropene	5.0	4.9	98	80-120	
Toluene	5.0	5.3	106	80-120	
Trans-1,3-Dichloropropene	5.0	5.2	104	80-120	
1,1,2-Trichloroethane	5.0	5.3	106	80-120	
Tetrachloroethene (PCE)	5.0	5.8	116	80-120	
1,3-Dichloropropane	5.0	5.4	108	80-120	
Dibromochloromethane	5.0	5.0	100	80-120	
1,2-Dibromoethane (EDB)	5.0	4.9	98	80-120	
Chlorobenzene	5.0	5.5	110	80-120	
Ethylbenzene	5.0	5.6	112	80-120	
1,1,1,2-Tetrachloroethane	5.0	5.4	108	80-120	
Total Xylenes	15.0	16.9	113	80-120	
Styrene	5.0	5.8	116	80-120	

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JACKS AUTO (JA) PROJECT
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Libby Project # L210621-2

Laboratory Control Sample

Date Analyzed: 6/22/2021

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	4.3	86	80-120	
Isopropylbenzene	5.0	5.5	110	80-120	
1,1,2,2-Tetrachloroethane	5.0	4.7	94	80-120	
Bromobenzene	5.0	5.2	104	80-120	
n-Propylbenzene	5.0	5.0	100	80-120	
1,2,3-Trichloropropane	5.0	4.8	96	80-120	
2-Chlorotoluene	5.0	5.0	100	80-120	
1,3,5-Trimethylbenzene	5.0	5.1	102	80-120	
4-Chlorotoluene	5.0	5.1	102	80-120	
tert-Butylbenzene	5.0	5.0	100	80-120	
1,2,4-Trimethylbenzene	5.0	5.2	104	80-120	
sec-Butylbenzene	5.0	5.0	100	80-120	
Isopropyltoluene	5.0	5.2	104	80-120	
1,3-Dichlorobenzene	5.0	5.2	104	80-120	
1,4-Dichlorobenzene	5.0	5.2	104	80-120	
n-Butylbenzene	5.0	5.4	108	80-120	
1,2-Dichlorobenzene	5.0	5.2	104	80-120	
1,2-Dibromo-3-Chloropropane	5.0	5.9	118	80-120	
1,2,4-Trichlorolbenzene	5.0	5.9	118	80-120	
Hexachloro-1,3-butadiene	5.0	5.4	108	80-120	
Naphthalene	5.0	6.0	120	80-120	
1,2,3-Trichlorobenzene	5.0	6.0	120	80-120	

Surrogate Recovery			
Dibromofluoromethane	73	65-135	
1,2-Dichloroethane-d4	96	65-135	
Toluene-d8	100	65-135	
4-Bromofluorobenzene	106	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
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CCV 6-22-2021

	Spiked Conc. (µg/L)	CCV Response (µg/L)	CCV Recovery (%)	CCV Recovery Limits (%)
Dichlorodifluoromethane	10.0	9.9	99	80-120
Chloromethane	10.0	10.9	109	80-120
SIM Vinyl chloride	10.0	9.6	96	80-120
Vinyl chloride	10.0	10.5	105	80-120
Bromomethane	10.0	10.3	103	80-120
Chloroethane	10.0	11.1	111	80-120
Trichlorofluoromethane	10.0	11.7	117	80-120
1,1-Dichloroethene	10.0	11.8	118	80-120
Methylene chloride	10.0	11.3	113	80-120
Methyl *tert*- Butyl Ether (MTBE)	10.0	11.9	119	80-120
trans -1,2-Dichloroethene	10.0	11.8	118	80-120
1,1-Dichloroethane	10.0	11.8	118	80-120
2,2-Dichloropropane	10.0	12.0	120	80-120
cis -1,2-Dichloroethene	10.0	11.2	112	80-120
Chloroform	10.0	11.9	119	80-120
1,1,1-Trichloroethane (TCA)	10.0	11.7	117	80-120
Carbon tetrachloride	10.0	11.7	117	80-120
1,1-Dichloropropene	10.0	10.3	103	80-120
Benzene	10.0	9.3	93	80-120
1,2-Dichloroethane (EDC)	10.0	10.7	107	80-120
SIM Trichloroethene (TCE)	10.0	8.0	80	80-120
Trichloroethene (TCE)	10.0	9.1	91	80-120
1,2-Dichloropropane	10.0	9.5	95	80-120
Dibromomethane	10.0	10.0	100	80-120
Bromodichloromethane	10.0	10.2	102	80-120
cis-1,3-Dichloropropene	10.0	8.5	85	80-120
Toluene	10.0	8.4	84	80-120
Trans-1,3-Dichloropropene	10.0	10.0	100	80-120
1,1,2-Trichloroethane	10.0	11.1	111	80-120
Tetrachloroethene (PCE)	10.0	9.3	93	80-120
1,3-Dichloropropane	10.0	10.8	108	80-120
Dibromochloromethane	10.0	10.2	102	80-120
SIM 1,2-Dibromoethane (EDB)	10.0	9.4	94	80-120
1,2-Dibromoethane (EDB)	10.0	10.4	104	80-120
Chlorobenzene	10.0	10.1	101	80-120
Ethylbenzene	10.0	9.5	95	80-120
1,1,1,2-Tetrachloroethane	10.0	11.1	111	80-120
Total Xylenes	30.0	29.3	98	80-120
Styrene	10.0	10.1	101	80-120

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Pioneer Technologies Corporation
Olympia, Washington
Libby Project # L210621-2

CCV 6-22-2021

	Spiked Conc. (µg/L)	CCV Response (µg/L)	CCV Recovery (%)	CCV Recovery Limits (%)	
Bromoform	10.0	8.3	83	80-120	
Isopropylbenzene	10.0	9.1	91	80-120	
1,1,2,2-Tetrachloroethane	10.0	11.4	114	80-120	
Bromobenzene	10.0	11.1	111	80-120	
n-Propylbenzene	10.0	10.8	108	80-120	
1,2,3-Trichloropropane	10.0	11.7	117	80-120	
2-Chlorotoluene	10.0	11.1	111	80-120	
1,3,5-Trimethylbenzene	10.0	10.8	108	80-120	
4-Chlorotoluene	10.0	10.4	104	80-120	
tert-Butylbenzene	10.0	10.3	103	80-120	
1,2,4-Trimethylbenzene	10.0	10.5	105	80-120	
sec-Butylbenzene	10.0	10.1	101	80-120	
Isopropyltoluene	10.0	9.9	99	80-120	
1,3-Dichlorobenzene	10.0	11.2	112	80-120	
1,4-Dichlorobenzene	10.0	11.4	114	80-120	
n-Butylbenzene	10.0	9.8	98	80-120	
1,2-Dichlorobenzene	10.0	10.8	108	80-120	
1,2-Dibromo-3-Chloropropane	10.0	11.4	114	80-120	
1,2,4-Trichlorolbenzene	10.0	8.2	82	80-120	
Hexachloro-1,3-butadiene	10.0	6.9	69	80-120	L
Naphthalene	10.0	8.0	80	80-120	
1,2,3-Trichlorobenzene	10.0	8.9	89	80-120	

Surrogate Recovery			
Dibromofluoromethane	115	65-135	
1,2-Dichloroethane-d4	107	65-135	
Toluene-d8	85	65-135	
4-Bromofluorobenzene	98	65-135	

"L" The CCV for Hexachloro-1,3-butadiene recovered outside acceptance criteria, low biased.
The LCS and closing CCV recoveries were recovered within acceptance limits.

ANALYSES PERFORMED BY: Melissa Harrington

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QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: SO-SB102-8-10-0621

Date Analyzed: 6/22/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Benzene	0.25	0.22	0.26	88	104	16.7	65-135	
Toluene	0.25	0.19	0.22	76	88	14.6	65-135	
Ethylbenzene	0.25	0.18	0.21	72	84	15.4	65-135	
Total Xylenes	0.75	0.58	0.67	77	89	14.4	65-135	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.26	0.30	104	120	14.3	65-135	
1,2-Dichloroethane (EDC)	0.25	0.19	0.22	76	88	14.6	65-135	
1,2-Dibromoethane (EDB)	0.25	0.210	0.238	84	95	12.5	65-135	
Naphthalene	0.25	0.24	0.24	96	96	0.0	65-135	
1-Methylnaphthalene	0.25	0.31	0.23	124	92	29.6	65-135	
2-Methylnaphthalene	0.25	0.31	0.23	124	92	29.6	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	78	80	65-135
1,2-Dichloroethane-d4	90	92	65-135
Toluene-d8	95	94	65-135
4-Bromofluorobenzene	98	95	65-135

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
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Olympia, Washington
Libby Project # L210621-2

Laboratory Control Sample

Date Analyzed: 6/22/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	0.25	0.25	100	80-120	
Toluene	0.25	0.22	88	80-120	
Ethylbenzene	0.25	0.22	88	80-120	
Total Xylenes	0.75	0.67	89	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.28	112	80-120	
1,2-Dichloroethane (EDC)	0.25	0.21	84	80-120	
1,2-Dibromoethane (EDB)	0.25	0.23	92	80-120	
Naphthalene	0.25	0.24	96	80-120	
1-Methylnaphthalene	0.25	0.25	100	80-120	
2-Methylnaphthalene	0.25	0.22	88	80-120	
Surrogate Recovery					
Dibromofluoromethane			80	65-135	
1,2-Dichloroethane-d4			87	65-135	
Toluene-d8			97	65-135	
4-Bromofluorobenzene			96	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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CCV 6-22-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Benzene	0.50	0.55	109	80-120	
Toluene	0.50	0.48	96	80-120	
Ethylbenzene	0.50	0.49	98	80-120	
Total Xylenes	1.50	1.61	107	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.50	0.58	116	80-120	
1,2-Dichloroethane (EDC)	0.50	0.44	88	80-120	
1,2-Dibromoethane (EDB)	0.50	0.51	102	80-120	
Naphthalene	0.50	0.42	84	80-120	
1-Methylnaphthalene	0.50	0.49	98	80-120	
2-Methylnaphthalene	0.50	0.48	96	80-120	
Surrogate Recovery					
Dibromofluoromethane			100	65-135	
1,2-Dichloroethane-d4			104	65-135	
Toluene-d8			122	65-135	
4-Bromofluorobenzene			122	65-135	

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QA/QC Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	Gasoline (% Recovery)	CCV Recovery Limits (%)
25 ppm LCS	6/22/2021	23	91%	70-130%
25 ppm LCSD	6/22/2021	21	86%	70-130%
RPD			6%	30%
Practical Quantitation Limit		10		

CCV Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)
50 ppm CCV	6/22/2021	49.9	100%	80-120%
Practical Quantitation Limit		10		

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QA/QC Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	Gasoline (% Recovery)	CCV Recovery Limits (%)
25 ppm LCS	6/23/2021	24	96%	70-130%
25 ppm LCSD	6/23/2021	25	101%	70-130%
RPD			4%	30%
Practical Quantitation Limit		10		

CCV Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)
50 ppm CCV	6/23/2021	54.5	109%	80-120%
Practical Quantitation Limit		10		

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QA/QC Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	Gasoline (% Recovery)	CCV Recovery Limits (%)
25 ppm LCS	6/25/2021	21	86%	70-130%
25 ppm LCSD	6/25/2021	22	90%	70-130%
RPD			5%	30%
Practical Quantitation Limit		10		

CCV Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)
50 ppm CCV	6/25/2021	45.9	92%	80-120%
Practical Quantitation Limit		10		

ANALYSES PERFORMED BY: Kodey Eley

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QA/QC Gasoline by NWTPH-Gx in Water

Sample Number	Date Analyzed	Gasoline (µg/L)	Gasoline (% Recovery)	CCV Recovery Limits (%)
500 ppb LCS	6/22/2021	574	115%	70-130%
500 ppb LCSD	6/22/2021	554	111%	70-130%
RPD				30%
Practical Quantitation Limit		100		

CCV Gasoline by NWTPH-Gx in Water

Sample Number	Date Analyzed	Gasoline (µg/L)	CCV Recovery (%)	CCV Recovery Limits (%)
500 ppb CCV	6/22/2021	408	82%	80-120%
Practical Quantitation Limit		100		

ANALYSES PERFORMED BY: Melissa Harrington

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QA/QC Diesel by NWTPH-Dx in Soil

Sample Number	Date Analyzed	Diesel (mg/kg)	Diesel (% Recovery)	CCV Recovery Limits (%)
100 ppm LCS 062221	6/22/2021	117	117%	70-130%
RPD				30%
100 ppm LCS 062321	6/23/2021	119	119%	70-130%
RPD				30%
100 ppm LCS 062321	6/25/2021	111	111%	70-130%
RPD				30%
Practical Quantitation Limit		50		

CCV Diesel by NWTPH-Dx in Soil

Sample Number	Date Analyzed	Diesel (mg/kg)	CCV (%)	CCV Recovery Limits (%)
CCV Shiva FID 1 500 ppm	6/22/2021	517	103%	85-115%
CCV Shiva FID 2 500 ppm	6/22/2021	507	101%	85-115%
CCV Shiva FID 3 500 ppm	6/22/2021	561	112%	85-115%
CCV Shiva FID 1 500 ppm	6/23/2021	520	104%	85-115%
CCV Shiva FID 2 500 ppm	6/23/2021	528	106%	85-115%
CCV Stella FID 2 500 ppm	6/25/2021	552	110%	85-115%
CCV Stella FID 3 500 ppm	6/25/2021	528	106%	85-115%
Practical Quantitation Limit		50		

ANALYSES PERFORMED BY: Jodie Childress

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QA/QC Diesel by NWTPH-Dx in Water

Sample Number	Date Analyzed	Diesel (µg/L)	Diesel (% Recovery)	CCV Recovery Limits (%)
400 ppb LCS 060520	6/24/2021	455	91%	70-130%
400 ppb LCSD 060520	6/24/2021	445	89%	70-130%
RPD			2%	30%
Practical Quantitation Limit		50		

CCV Diesel by NWTPH-Dx in Water

Sample Number	Date Analyzed	Diesel (µg/L)	CCV (%)	CCV Recovery Limits (%)
CCV Kilvan FID 1 500 ppm	6/24/2021	489	98%	85-115%
Practical Quantitation Limit		50		

ANALYSES PERFORMED BY: Randy Kraus

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JACKS AUTO (JA) PROJECT
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Olympia, Washington
Libby Project # L210621-2

QAQC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	LCS 062321	LCSD 062321	RPD	SO-SB103-4-6-0621	SO-SB103-4-6-0621	RPD
	(%)	(%)	(%)	(%)	(%)	(%)
Aroclor 1016	100%	107%	7%	98%	97%	1%
Aroclor 1260	102%	105%	3%	97%	102%	5%
Surrogate Recovery						
TCMX	76	95		90	135	
DCBP	76	90		90	118	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

QAQC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	Spike Concentration	LCS 062321	LCSD 062321	RPD	SO-SB103-4-6-0621	SO-SB103-4-6-0621	RPD
	(mg/kg)	(mg/kg)	(mg/kg)	(%)	(mg/kg)	(mg/kg)	(%)
Aroclor 1016	0.10	0.100	0.107	7%	0.098	0.097	1%
Aroclor 1260	0.10	0.102	0.105	3%	0.097	0.102	5%
Surrogate Recovery							
TCMX		76	95		90	135	
DCBP		76	90		90	118	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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JACKS AUTO (JA) PROJECT
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CCV PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	Date Analyzed	CCV Concentration (mg/kg)	CCV Recovery (mg/kg)	CCV Recovery (%)	CCV Recovery (%)
Pollux ECD1					
Aroclor 1016	6/23/2021	0.50	0.46	92%	80-120%
Aroclor 1260	6/23/2021	0.50	0.53	106%	80-120%
Pollux ECD2					
Aroclor 1016	6/23/2021	0.50	0.52	104%	80-120%
Aroclor 1260	6/23/2021	0.50	0.53	106%	80-120%

ANALYSES PERFORMED BY: Paul Burke

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QAQC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	LCS 062521	LCSD 062521	RPD	SO-SB10105-14-16 MS	SO-SB10105-14-16	RPD
	(%)	(%)	(%)	(%)	(%)	(%)
Aroclor 1016	103%	100%	3%	119%	96%	21%
Aroclor 1260	96%	100%	4%	4%	110%	4%
Surrogate Recovery						
TCMX	83	90		92	96	
DCBP	99	87		90	83	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

QAQC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	Spike Concentration	LCS 062321	LCSD 062321	RPD	SO-SB103-4-6-0621 MS	SO-SB103-4-6-0621 MSD	RPD
	(mg/kg)	(mg/kg)	(mg/kg)	(%)	(mg/kg)	(mg/kg)	(%)
Aroclor 1016	0.10	0.103	0.100	3%	0.119	0.096	21%
Aroclor 1260	0.10	0.096	0.100	4%	0.106	0.110	4%
Surrogate Recovery							
TCMX		83	90		92	96	
DCBP		99	87		90	83	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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CCV PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	Date Analyzed	CCV Concentration (mg/kg)	CCV Recovery (mg/kg)	CCV Recovery (%)	CCV Recovery (%)
Pollux ECD1					
Aroclor 1016	6/25/2021	0.50	0.49	98%	80-120%
Aroclor 1260	6/25/2021	0.50	0.48	95%	80-120%
Pollux ECD2					
Aroclor 1016	6/25/2021	0.50	0.45	90%	80-120%
Aroclor 1260	6/25/2021	0.50	0.51	101%	80-120%

ANALYSES PERFORMED BY: Paul Burke

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QA/QC Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (% Recovery)
LCS 062321	6/23/2021	98%
SO-SB105-14-16-0621 MS	6/23/2021	76%
SO-SB105-14-16-0621 MSD	6/23/2021	83%
RPD	6/23/2021	9%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

QA/QC Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Spike Concentration		1.0
LCS 062321	6/23/2021	0.98
Spike Concentration		1.0
SO-SB105-14-16-0621 MS	6/23/2021	0.76
SO-SB105-14-16-0621 MSD	6/23/2021	0.83
RPD	6/23/2021	9%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
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Libby Project # L210621-2

CCV Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Spike Concentration		2.5
CCV 6/23/2021	6/23/2021	2.71
CCV Recovery %		108%
CCB		nd

CCV Recovery Limits %: 90-110%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corporation
Libby Project # L210621-2
Date Received 6/21/2021
Time Received 4:02 PM

Received By RJK

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	0.0 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	6.0 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☑ Yes	☐ No	☐ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies?	☐ Yes	☐ No	☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. _____

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info@fremontanalytical.com

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Jacks Auto
Work Order Number: 2106420

July 15, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 20 sample(s) on 6/23/2021 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Volatile Petroleum Hydrocarbons by NWVPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *07/23/2021*

CLIENT: Libby Environmental
Project: Jacks Auto
Work Order: 2106420

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2106420-001	SO-SB101-4-6-0621	06/21/2021 9:30 AM	06/23/2021 9:28 AM
2106420-002	SO-SB101-15-17-0621	06/21/2021 9:40 AM	06/23/2021 9:28 AM
2106420-003	SO-SB102-2-4-0621	06/21/2021 10:15 AM	06/23/2021 9:28 AM
2106420-004	SO-SB102-8-10-0621	06/21/2021 10:25 AM	06/23/2021 9:28 AM
2106420-005	SO-SB102-14-16-0621	06/21/2021 10:40 AM	06/23/2021 9:28 AM
2106420-006	SO-SB103-4-6-0621	06/21/2021 7:45 AM	06/23/2021 9:28 AM
2106420-007	SO-SB103-14-16-0621	06/21/2021 7:50 AM	06/23/2021 9:28 AM
2106420-008	SO-SB104-8-10-0621	06/21/2021 8:00 AM	06/23/2021 9:28 AM
2106420-009	SO-SB104-14-16-0621	06/21/2021 8:10 AM	06/23/2021 9:28 AM
2106420-010	SO-SB105-8-10-0621	06/21/2021 8:40 AM	06/23/2021 9:28 AM
2106420-011	SO-SB105-14-16-0621	06/21/2021 8:50 AM	06/23/2021 9:28 AM
2106420-012	SO-SB105-14-16-0621-01	06/21/2021 8:50 AM	06/23/2021 9:28 AM
2106420-013	SO-SB106-1-3-0621	06/21/2021 1:00 PM	06/23/2021 9:28 AM
2106420-014	SO-SB106-4-6-0621	06/21/2021 1:10 PM	06/23/2021 9:28 AM
2106420-015	SO-SB106-14-16-0621	06/21/2021 1:20 PM	06/23/2021 9:28 AM
2106420-016	SO-SB107-1-3-0621	06/21/2021 12:00 PM	06/23/2021 9:28 AM
2106420-017	SO-SB107-12-14-0621	06/21/2021 12:15 PM	06/23/2021 9:28 AM
2106420-018	SO-SB108-6-8-0621	06/21/2021 9:10 AM	06/23/2021 9:28 AM
2106420-019	SO-SB108-13-14-0621	06/21/2021 9:15 AM	06/23/2021 9:28 AM
2106420-020	SO-SB109-13-15-0621	06/21/2021 1:45 PM	06/23/2021 9:28 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Revision v2

Case Narrative

WO#: **2106420**
Date: **7/15/2021**

CLIENT: Libby Environmental
Project: Jacks Auto

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

7/15/2021: Revision 1 includes additional analysis requested by client.
7/23/2021: Revision 2 includes level 2B data package.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2106420**
Date Reported: **7/15/2021**

Client: Libby Environmental
Collection Date: 6/21/2021 9:40:00 AM
Project: Jacks Auto
Lab ID: 2106420-002
Matrix: Soil
Client Sample ID: **SO-SB101-15-17-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 32919		Analyst: CR
Aliphatic Hydrocarbon (C5-C6)	50.6	3.65	DH	mg/Kg-dry	4	7/8/2021 12:02:12 AM
Aliphatic Hydrocarbon (C6-C8)	66.8	10.9	DH	mg/Kg-dry	20	7/13/2021 7:34:44 PM
Aliphatic Hydrocarbon (C8-C10)	95.9	3.65	DH	mg/Kg-dry	4	7/8/2021 12:02:12 AM
Aliphatic Hydrocarbon (C10-C12)	239	3.65	DH	mg/Kg-dry	20	7/13/2021 7:34:44 PM
Aromatic Hydrocarbon (C8-C10)	182	4.38	DH	mg/Kg-dry	4	7/8/2021 12:02:12 AM
Aromatic Hydrocarbon (C10-C12)	418	3.65	DEH	mg/Kg-dry	20	7/13/2021 7:34:44 PM
Aromatic Hydrocarbon (C12-C13)	358	3.65	DH	mg/Kg-dry	20	7/13/2021 7:34:44 PM
Surr: 1,4-Difluorobenzene	102	65 - 140	DH	%Rec	4	7/8/2021 12:02:12 AM
Surr: Bromofluorobenzene	163	65 - 140	DSH	%Rec	4	7/8/2021 12:02:12 AM

NOTES:
S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.
E - Estimated value. The amount exceeds the linear working range of the instrument.
Diluted due to matrix.

Sample Moisture (Percent Moisture)				Batch ID: R68334		Analyst: OK
Percent Moisture	7.94	0.500		wt%	1	7/2/2021 8:51:49 AM

Client: Libby Environmental
Collection Date: 6/21/2021 7:45:00 AM
Project: Jacks Auto
Lab ID: 2106420-006
Matrix: Soil
Client Sample ID: **SO-SB103-4-6-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	182	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
2-Methylnaphthalene	691	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
1-Methylnaphthalene	432	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Acenaphthylene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Acenaphthene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Fluorene	34.3	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Phenanthrene	62.3	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Anthracene	ND	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Fluoranthene	ND	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Pyrene	ND	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Benz(a)anthracene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Chrysene	ND	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Benzo(b)fluoranthene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Benzo(k)fluoranthene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Benzo(a)pyrene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Indeno(1,2,3-cd)pyrene	ND	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Dibenz(a,h)anthracene	ND	39.7		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Benzo(g,h,i)perylene	ND	19.9		µg/Kg-dry	1	6/24/2021 11:15:03 PM
Surr: 2-Fluorobiphenyl	126	19 - 135		%Rec	1	6/24/2021 11:15:03 PM
Surr: Terphenyl-d14 (surr)	140	42.9 - 156		%Rec	1	6/24/2021 11:15:03 PM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	6.72	0.500		wt%	1	6/25/2021 11:32:33 AM

Analytical Report

Work Order: **2106420**
Date Reported: **7/15/2021**

Client: Libby Environmental
Collection Date: 6/21/2021 7:50:00 AM
Project: Jacks Auto
Lab ID: 2106420-007
Matrix: Soil
Client Sample ID: **SO-SB103-14-16-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
2-Methylnaphthalene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
1-Methylnaphthalene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Acenaphthylene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Acenaphthene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Fluorene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Phenanthrene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Anthracene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Fluoranthene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Pyrene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Benz(a)anthracene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Chrysene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Benzo(b)fluoranthene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Benzo(k)fluoranthene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Benzo(a)pyrene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Indeno(1,2,3-cd)pyrene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Dibenz(a,h)anthracene	ND	38.6		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Benzo(g,h,i)perylene	ND	19.3		µg/Kg-dry	1	6/24/2021 11:36:44 PM
Surr: 2-Fluorobiphenyl	124	19 - 135		%Rec	1	6/24/2021 11:36:44 PM
Surr: Terphenyl-d14 (surr)	135	42.9 - 156		%Rec	1	6/24/2021 11:36:44 PM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	3.93	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 8:40:00 AM
Project: Jacks Auto
Lab ID: 2106420-010
Matrix: Soil
Client Sample ID: **SO-SB105-8-10-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
2-Methylnaphthalene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
1-Methylnaphthalene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Acenaphthylene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Acenaphthene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Fluorene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Phenanthrene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Anthracene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Fluoranthene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Pyrene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Benz(a)anthracene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Chrysene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Benzo(b)fluoranthene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Benzo(k)fluoranthene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Benzo(a)pyrene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Indeno(1,2,3-cd)pyrene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Dibenz(a,h)anthracene	ND	37.7		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Benzo(g,h,i)perylene	ND	18.9		µg/Kg-dry	1	6/24/2021 11:58:30 PM
Surr: 2-Fluorobiphenyl	112	19 - 135		%Rec	1	6/24/2021 11:58:30 PM
Surr: Terphenyl-d14 (surr)	123	42.9 - 156		%Rec	1	6/24/2021 11:58:30 PM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	7.78	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 8:50:00 AM
Project: Jacks Auto
Lab ID: 2106420-011
Matrix: Soil
Client Sample ID: **SO-SB105-14-16-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	8,050	187	D	µg/Kg-dry	10	6/25/2021 11:07:44 AM
2-Methylnaphthalene	18,900	187	D	µg/Kg-dry	10	6/25/2021 11:07:44 AM
1-Methylnaphthalene	8,290	187	D	µg/Kg-dry	10	6/25/2021 11:07:44 AM
Acenaphthylene	138	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Acenaphthene	81.8	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Fluorene	277	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Phenanthrene	767	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Anthracene	109	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Fluoranthene	285	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Pyrene	597	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Benz(a)anthracene	139	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Chrysene	184	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Benzo(b)fluoranthene	ND	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Benzo(k)fluoranthene	ND	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Benzo(a)pyrene	86.9	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Indeno(1,2,3-cd)pyrene	ND	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Dibenz(a,h)anthracene	ND	37.3		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Benzo(g,h,i)perylene	122	18.7		µg/Kg-dry	1	6/25/2021 12:20:14 AM
Surr: 2-Fluorobiphenyl	133	19 - 135		%Rec	1	6/25/2021 12:20:14 AM
Surr: Terphenyl-d14 (surr)	142	42.9 - 156		%Rec	1	6/25/2021 12:20:14 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	5.80	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 8:50:00 AM
Project: Jacks Auto
Lab ID: 2106420-012
Matrix: Soil
Client Sample ID: **SO-SB105-14-16-0621-01**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	885	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
2-Methylnaphthalene	2,330	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
1-Methylnaphthalene	1,050	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Acenaphthylene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Acenaphthene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Fluorene	38.2	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Phenanthrene	111	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Anthracene	ND	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Fluoranthene	ND	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Pyrene	83.9	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Benz(a)anthracene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Chrysene	ND	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Benzo(b)fluoranthene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Benzo(k)fluoranthene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Benzo(a)pyrene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Indeno(1,2,3-cd)pyrene	ND	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Dibenz(a,h)anthracene	ND	40.3		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Benzo(g,h,i)perylene	ND	20.1		µg/Kg-dry	1	6/25/2021 1:25:21 AM
Surr: 2-Fluorobiphenyl	120	19 - 135		%Rec	1	6/25/2021 1:25:21 AM
Surr: Terphenyl-d14 (surr)	129	42.9 - 156		%Rec	1	6/25/2021 1:25:21 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	8.37	0.500		wt%	1	6/25/2021 11:32:33 AM

Analytical Report

Work Order: **2106420**
Date Reported: **7/15/2021**

Client: Libby Environmental
Collection Date: 6/21/2021 1:00:00 PM
Project: Jacks Auto
Lab ID: 2106420-013
Matrix: Soil
Client Sample ID: **SO-SB106-1-3-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
2-Methylnaphthalene	21.5	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
1-Methylnaphthalene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Acenaphthylene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Acenaphthene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Fluorene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Phenanthrene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Anthracene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Fluoranthene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Pyrene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Benz(a)anthracene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Chrysene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Benzo(b)fluoranthene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Benzo(k)fluoranthene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Benzo(a)pyrene	ND	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Indeno(1,2,3-cd)pyrene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Dibenz(a,h)anthracene	ND	37.9		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Benzo(g,h,i)perylene	86.2	19.0		µg/Kg-dry	1	6/25/2021 1:47:03 AM
Surr: 2-Fluorobiphenyl	115	19 - 135		%Rec	1	6/25/2021 1:47:03 AM
Surr: Terphenyl-d14 (surr)	125	42.9 - 156		%Rec	1	6/25/2021 1:47:03 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	6.12	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 1:10:00 PM
Project: Jacks Auto
Lab ID: 2106420-014
Matrix: Soil
Client Sample ID: **SO-SB106-4-6-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 32886		Analyst: MM
Aliphatic Hydrocarbon (C8-C10)	57.0	20.7		mg/Kg-dry	1	7/14/2021 4:23:43 AM
Aliphatic Hydrocarbon (C10-C12)	62.5	10.3		mg/Kg-dry	1	7/14/2021 4:23:43 AM
Aliphatic Hydrocarbon (C12-C16)	52.0	10.3		mg/Kg-dry	1	7/14/2021 4:23:43 AM
Aliphatic Hydrocarbon (C16-C21)	317	10.3		mg/Kg-dry	1	7/14/2021 4:23:43 AM
Aliphatic Hydrocarbon (C21-C34)	4,750	103	D	mg/Kg-dry	10	7/14/2021 4:01:20 PM
Aromatic Hydrocarbon (C8-C10)	41.6	20.7		mg/Kg-dry	1	7/13/2021 8:24:22 PM
Aromatic Hydrocarbon (C10-C12)	66.8	10.3		mg/Kg-dry	1	7/13/2021 8:24:22 PM
Aromatic Hydrocarbon (C12-C16)	53.8	10.3		mg/Kg-dry	1	7/13/2021 8:24:22 PM
Aromatic Hydrocarbon (C16-C21)	66.7	10.3		mg/Kg-dry	1	7/13/2021 8:24:22 PM
Aromatic Hydrocarbon (C21-C34)	929	10.3		mg/Kg-dry	1	7/13/2021 8:24:22 PM
Surr: 1-Chlorooctadecane	133	60 - 140		%Rec	1	7/14/2021 4:23:43 AM
Surr: o-Terphenyl	97.9	60 - 140		%Rec	1	7/13/2021 8:24:22 PM

NOTES:
Diluted due to matrix.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	9,310	206	D	µg/Kg-dry	10	6/25/2021 11:29:21 AM
2-Methylnaphthalene	17,300	206	D	µg/Kg-dry	10	6/25/2021 11:29:21 AM
1-Methylnaphthalene	7,360	206	D	µg/Kg-dry	10	6/25/2021 11:29:21 AM
Acenaphthylene	190	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Acenaphthene	ND	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Fluorene	241	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Phenanthrene	820	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Anthracene	109	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Fluoranthene	289	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Pyrene	593	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Benz(a)anthracene	136	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Chrysene	178	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Benzo(b)fluoranthene	ND	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Benzo(k)fluoranthene	ND	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Benzo(a)pyrene	83.6	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Indeno(1,2,3-cd)pyrene	ND	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Dibenz(a,h)anthracene	ND	41.2		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Benzo(g,h,i)perylene	114	20.6		µg/Kg-dry	1	6/25/2021 2:08:53 AM
Surr: 2-Fluorobiphenyl	131	19 - 135		%Rec	1	6/25/2021 2:08:53 AM
Surr: Terphenyl-d14 (surr)	142	42.9 - 156		%Rec	1	6/25/2021 2:08:53 AM

Analytical Report

Work Order: **2106420**
Date Reported: **7/15/2021**

Client: Libby Environmental
Collection Date: 6/21/2021 1:10:00 PM
Project: Jacks Auto
Lab ID: 2106420-014
Matrix: Soil
Client Sample ID: **SO-SB106-4-6-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	5.27	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 1:20:00 PM
Project: Jacks Auto
Lab ID: 2106420-015
Matrix: Soil
Client Sample ID: **SO-SB106-14-16-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	331	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
2-Methylnaphthalene	826	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
1-Methylnaphthalene	463	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Acenaphthylene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Acenaphthene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Fluorene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Phenanthrene	64.0	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Anthracene	ND	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Fluoranthene	ND	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Pyrene	42.5	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Benz(a)anthracene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Chrysene	ND	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Benzo(b)fluoranthene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Benzo(k)fluoranthene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Benzo(a)pyrene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Indeno(1,2,3-cd)pyrene	ND	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Dibenz(a,h)anthracene	ND	39.3		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Benzo(g,h,i)perylene	ND	19.7		µg/Kg-dry	1	6/25/2021 2:30:38 AM
Surr: 2-Fluorobiphenyl	102	19 - 135		%Rec	1	6/25/2021 2:30:38 AM
Surr: Terphenyl-d14 (surr)	110	42.9 - 156		%Rec	1	6/25/2021 2:30:38 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	4.85	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 12:00:00 PM
Project: Jacks Auto
Lab ID: 2106420-016
Matrix: Soil
Client Sample ID: **SO-SB107-1-3-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
2-Methylnaphthalene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
1-Methylnaphthalene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Acenaphthylene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Acenaphthene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Fluorene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Phenanthrene	ND	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Anthracene	ND	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Fluoranthene	ND	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Pyrene	ND	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Benz(a)anthracene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Chrysene	42.9	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Benzo(b)fluoranthene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Benzo(k)fluoranthene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Benzo(a)pyrene	ND	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Indeno(1,2,3-cd)pyrene	ND	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Dibenz(a,h)anthracene	ND	36.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Benzo(g,h,i)perylene	155	18.0		µg/Kg-dry	1	6/25/2021 2:52:23 AM
Surr: 2-Fluorobiphenyl	111	19 - 135		%Rec	1	6/25/2021 2:52:23 AM
Surr: Terphenyl-d14 (surr)	119	42.9 - 156		%Rec	1	6/25/2021 2:52:23 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	6.05	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 12:15:00 PM
Project: Jacks Auto
Lab ID: 2106420-017
Matrix: Soil
Client Sample ID: **SO-SB107-12-14-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
2-Methylnaphthalene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
1-Methylnaphthalene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Acenaphthylene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Acenaphthene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Fluorene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Phenanthrene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Anthracene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Fluoranthene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Pyrene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Benz(a)anthracene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Chrysene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Benzo(b)fluoranthene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Benzo(k)fluoranthene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Benzo(a)pyrene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Indeno(1,2,3-cd)pyrene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Dibenz(a,h)anthracene	ND	41.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Benzo(g,h,i)perylene	ND	20.9		µg/Kg-dry	1	6/25/2021 3:14:11 AM
Surr: 2-Fluorobiphenyl	122	19 - 135		%Rec	1	6/25/2021 3:14:11 AM
Surr: Terphenyl-d14 (surr)	132	42.9 - 156		%Rec	1	6/25/2021 3:14:11 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	7.05	0.500		wt%	1	6/25/2021 11:32:33 AM

Analytical Report

Work Order: **2106420**
Date Reported: **7/15/2021**

Client: Libby Environmental
Collection Date: 6/21/2021 9:10:00 AM
Project: Jacks Auto
Lab ID: 2106420-018
Matrix: Soil
Client Sample ID: **SO-SB108-6-8-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
2-Methylnaphthalene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
1-Methylnaphthalene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Acenaphthylene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Acenaphthene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Fluorene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Phenanthrene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Anthracene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Fluoranthene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Pyrene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Benz(a)anthracene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Chrysene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Benzo(b)fluoranthene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Benzo(k)fluoranthene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Benzo(a)pyrene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Indeno(1,2,3-cd)pyrene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Dibenz(a,h)anthracene	ND	38.7		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Benzo(g,h,i)perylene	ND	19.4		µg/Kg-dry	1	6/25/2021 3:35:53 AM
Surr: 2-Fluorobiphenyl	121	19 - 135		%Rec	1	6/25/2021 3:35:53 AM
Surr: Terphenyl-d14 (surr)	135	42.9 - 156		%Rec	1	6/25/2021 3:35:53 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	6.98	0.500		wt%	1	6/25/2021 11:32:33 AM

Client: Libby Environmental
Collection Date: 6/21/2021 9:15:00 AM
Project: Jacks Auto
Lab ID: 2106420-019
Matrix: Soil
Client Sample ID: **SO-SB108-13-14-0621**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 32779		Analyst: SB
Naphthalene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
2-Methylnaphthalene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
1-Methylnaphthalene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Acenaphthylene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Acenaphthene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Fluorene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Phenanthrene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Anthracene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Fluoranthene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Pyrene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Benz(a)anthracene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Chrysene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Benzo(b)fluoranthene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Benzo(k)fluoranthene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Benzo(a)pyrene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Indeno(1,2,3-cd)pyrene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Dibenz(a,h)anthracene	ND	43.5		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Benzo(g,h,i)perylene	ND	21.8		µg/Kg-dry	1	6/25/2021 3:57:36 AM
Surr: 2-Fluorobiphenyl	119	19 - 135		%Rec	1	6/25/2021 3:57:36 AM
Surr: Terphenyl-d14 (surr)	134	42.9 - 156		%Rec	1	6/25/2021 3:57:36 AM
Sample Moisture (Percent Moisture)				Batch ID: R68218		Analyst: RL
Percent Moisture	11.2	0.500		wt%	1	6/25/2021 11:32:33 AM

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ICB ARO**	SampType: **ICB**			Units: **mg/Kg**		Prep Date: **3/6/2021**		RunNo: **65710**	
Client ID: **ICB**	Batch ID: **32886**					Analysis Date: **3/6/2021**		SeqNo: **1390609**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: o-Terphenyl	38.3		40.00		95.7	60	140				

Sample ID: **ICB ALI**	SampType: **ICB**			Units: **mg/Kg**		Prep Date: **3/6/2021**		RunNo: **65710**	
Client ID: **ICB**	Batch ID: **32886**					Analysis Date: **3/6/2021**		SeqNo: **1390610**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	38.9		40.00		97.3	60	140				

Sample ID: **ICV ARO**	SampType: **ICV**			Units: **mg/Kg**		Prep Date: **3/6/2021**		RunNo: **65710**	
Client ID: **ICV**	Batch ID: **32886**					Analysis Date: **3/6/2021**		SeqNo: **1390611**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	191	20.0	200.0	0	95.3	80	120				
Aromatic Hydrocarbon (C10-C12)	95.0	10.0	100.0	0	95.0	80	120				
Aromatic Hydrocarbon (C12-C16)	94.7	10.0	100.0	0	94.7	80	120				
Aromatic Hydrocarbon (C16-C21)	94.7	10.0	100.0	0	94.7	80	120				
Aromatic Hydrocarbon (C21-C34)	96.8	10.0	100.0	0	96.8	80	120				
Surr: o-Terphenyl	38.8		40.00		97.0	60	140				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ICV ALI**	SampType: **ICV**			Units: **mg/Kg**		Prep Date: **3/6/2021**		RunNo: **65710**	
Client ID: **ICV**	Batch ID: **32886**					Analysis Date: **3/6/2021**		SeqNo: **1390612**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	194	20.0	200.0	0	96.9	80	120			
Aliphatic Hydrocarbon (C10-C12)	97.0	10.0	100.0	0	97.0	80	120			
Aliphatic Hydrocarbon (C12-C16)	96.7	10.0	100.0	0	96.7	80	120			
Aliphatic Hydrocarbon (C16-C21)	96.8	10.0	100.0	0	96.8	80	120			
Aliphatic Hydrocarbon (C21-C34)	102	10.0	100.0	0	102	80	120			
Surr: 1-Chlorooctadecane	39.9		40.00		99.7	60	140			

Sample ID: **ARO-CCV-32886A**	SampType: **CCV**			Units: **mg/Kg**		Prep Date: **7/13/2021**		RunNo: **68581**	
Client ID: **CCV**	Batch ID: **32886**					Analysis Date: **7/13/2021**		SeqNo: **1385973**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	176	20.0	200.0	0	87.9	80	120			
Aromatic Hydrocarbon (C10-C12)	87.4	10.0	100.0	0	87.4	80	120			
Aromatic Hydrocarbon (C12-C16)	88.0	10.0	100.0	0	88.0	80	120			
Aromatic Hydrocarbon (C16-C21)	88.4	10.0	100.0	0	88.4	80	120			
Aromatic Hydrocarbon (C21-C34)	88.1	10.0	100.0	0	88.1	80	120			
Surr: o-Terphenyl	41.4		40.00		104	60	140			

Sample ID: **MB-32886**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **7/2/2021**		RunNo: **68581**	
Client ID: **MBLKS**	Batch ID: **32886**					Analysis Date: **7/13/2021**		SeqNo: **1385982**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0								
Aromatic Hydrocarbon (C10-C12)	ND	10.0								
Aromatic Hydrocarbon (C12-C16)	ND	10.0								
Aromatic Hydrocarbon (C16-C21)	ND	10.0								
Aromatic Hydrocarbon (C21-C34)	ND	10.0								
Surr: o-Terphenyl	87.5		100.0		87.5	60	140			

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCS-32886**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **7/2/2021**		RunNo: **68581**			
Client ID: **LCSS**	Batch ID: **32886**					Analysis Date: **7/13/2021**		SeqNo: **1385983**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	129	20.0	250.0	0	51.6	16.9	130				
Aromatic Hydrocarbon (C10-C12)	93.0	10.0	125.0	0	74.4	70	130				
Aromatic Hydrocarbon (C12-C16)	95.0	10.0	125.0	0	76.0	70	130				
Aromatic Hydrocarbon (C16-C21)	105	10.0	125.0	0	83.9	70	130				
Aromatic Hydrocarbon (C21-C34)	133	10.0	125.0	0	106	70	130				
Surr: o-Terphenyl	92.7		100.0		92.7	60	140				

Sample ID: **2106420-014AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **7/2/2021**		RunNo: **68581**			
Client ID: **SO-SB106-4-6-0621**	Batch ID: **32886**					Analysis Date: **7/13/2021**		SeqNo: **1385986**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	160	19.8	247.1	41.57	47.8	11.8	130				
Aromatic Hydrocarbon (C10-C12)	162	9.88	123.6	66.84	76.8	70	130				
Aromatic Hydrocarbon (C12-C16)	157	9.88	123.6	53.81	83.5	70	130				
Aromatic Hydrocarbon (C16-C21)	168	9.88	123.6	66.67	82.2	70	130				
Aromatic Hydrocarbon (C21-C34)	1,050	9.88	123.6	929.3	100	70	130				
Surr: o-Terphenyl	88.9		98.84		89.9	60	140				

Sample ID: **2106420-014AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **7/2/2021**		RunNo: **68581**			
Client ID: **SO-SB106-4-6-0621**	Batch ID: **32886**					Analysis Date: **7/13/2021**		SeqNo: **1385987**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	160	21.1	263.4	41.57	44.8	11.8	130	159.7	0.115	30	
Aromatic Hydrocarbon (C10-C12)	160	10.5	131.7	66.84	70.9	70	130	161.7	0.921	30	
Aromatic Hydrocarbon (C12-C16)	156	10.5	131.7	53.81	77.9	70	130	156.9	0.314	30	
Aromatic Hydrocarbon (C16-C21)	164	10.5	131.7	66.67	74.2	70	130	168.2	2.29	30	
Aromatic Hydrocarbon (C21-C34)	1,060	10.5	131.7	929.3	95.8	70	130	1,053	0.252	30	
Surr: o-Terphenyl	90.4		105.4		85.8	60	140		0		

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-32886B** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/14/2021** RunNo: **68581**
Client ID: **CCV** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385981**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	178	20.0	200.0	0	89.1	80	120				
Aromatic Hydrocarbon (C10-C12)	88.0	10.0	100.0	0	88.0	80	120				
Aromatic Hydrocarbon (C12-C16)	89.4	10.0	100.0	0	89.4	80	120				
Aromatic Hydrocarbon (C16-C21)	89.6	10.0	100.0	0	89.6	80	120				
Aromatic Hydrocarbon (C21-C34)	91.1	10.0	100.0	0	91.1	80	120				
Surr: o-Terphenyl	42.2		40.00		105	60	140				

Sample ID: **ALI-CCV-32886A** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/14/2021** RunNo: **68580**
Client ID: **CCV** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385828**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	202	20.0	200.0	0	101	80	120				
Aliphatic Hydrocarbon (C10-C12)	98.1	10.0	100.0	0	98.1	80	120				
Aliphatic Hydrocarbon (C12-C16)	98.0	10.0	100.0	0	98.0	80	120				
Aliphatic Hydrocarbon (C16-C21)	97.9	10.0	100.0	0	97.9	80	120				
Aliphatic Hydrocarbon (C21-C34)	109	10.0	100.0	0	109	80	120				
Surr: 1-Chlorooctadecane	44.0		40.00		110	60	140				

Sample ID: **MB-32886** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/2/2021** RunNo: **68580**
Client ID: **MBLKS** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385850**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	103		100.0		103	60	140				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCS-32886** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/2/2021** RunNo: **68580**
Client ID: **LCSS** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385851**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	140	20.0	250.0	0	56.1	15.7	130				
Aliphatic Hydrocarbon (C10-C12)	97.6	10.0	125.0	0	78.1	70	130				
Aliphatic Hydrocarbon (C12-C16)	131	10.0	125.0	0	104	70	130				
Aliphatic Hydrocarbon (C16-C21)	138	10.0	125.0	0	111	70	130				
Aliphatic Hydrocarbon (C21-C34)	154	10.0	125.0	0	124	70	130				
Surr: 1-Chlorooctadecane	114		100.0		114	60	140				

Sample ID: **2106420-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/2/2021** RunNo: **68580**
Client ID: **SO-SB106-4-6-0621** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385832**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	193	19.8	247.1	57.03	55.2	10.3	130				
Aliphatic Hydrocarbon (C10-C12)	188	9.88	123.6	62.47	102	70	130				
Aliphatic Hydrocarbon (C12-C16)	200	9.88	123.6	51.99	120	70	130				
Aliphatic Hydrocarbon (C16-C21)	445	9.88	123.6	317.0	103	70	130				
Aliphatic Hydrocarbon (C21-C34)	7,140	9.88	123.6	6,912	182	70	130				S
Surr: 1-Chlorooctadecane	135		98.84		136	60	140				

NOTES:
S - Analyte concentration was too high for accurate spike recovery.

Sample ID: **2106420-014AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/2/2021** RunNo: **68580**
Client ID: **SO-SB106-4-6-0621** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385833**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	225	21.1	263.4	57.03	63.6	10.3	130	193.5	14.9	30	
Aliphatic Hydrocarbon (C10-C12)	205	10.5	131.7	62.47	109	70	130	188.1	8.81	30	
Aliphatic Hydrocarbon (C12-C16)	217	10.5	131.7	51.99	125	70	130	199.9	8.19	30	
Aliphatic Hydrocarbon (C16-C21)	457	10.5	131.7	317.0	107	70	130	444.8	2.80	30	
Aliphatic Hydrocarbon (C21-C34)	6,750	10.5	131.7	6,912	-126	70	130	7,137	5.62	30	S
Surr: 1-Chlorooctadecane	145		105.4		138	60	140		0		

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2106420-014AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/2/2021** RunNo: **68580**
Client ID: **SO-SB106-4-6-0621** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385833**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Analyte concentration was too high for accurate spike recovery.

Sample ID: **ALI-CCV-32886B** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/14/2021** RunNo: **68580**
Client ID: **CCV** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385836**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	204	20.0	200.0	0	102	80	120				
Aliphatic Hydrocarbon (C10-C12)	99.3	10.0	100.0	0	99.3	80	120				
Aliphatic Hydrocarbon (C12-C16)	98.9	10.0	100.0	0	98.9	80	120				
Aliphatic Hydrocarbon (C16-C21)	99.3	10.0	100.0	0	99.3	80	120				
Aliphatic Hydrocarbon (C21-C34)	112	10.0	100.0	0	112	80	120				
Surr: 1-Chlorooctadecane	44.0		40.00		110	60	140				

Sample ID: **ALI-CCV-32886C** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/14/2021** RunNo: **68580**
Client ID: **CCV** Batch ID: **32886** Analysis Date: **7/14/2021** SeqNo: **1385840**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	210	20.0	200.0	0	105	80	120				
Aliphatic Hydrocarbon (C10-C12)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C12-C16)	103	10.0	100.0	0	103	80	120				
Aliphatic Hydrocarbon (C16-C21)	103	10.0	100.0	0	103	80	120				
Aliphatic Hydrocarbon (C21-C34)	94.3	10.0	100.0	0	94.3	80	120				
Surr: 1-Chlorooctadecane	46.5		40.00		116	60	140				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICB** SampType: **ICB** Units: **µg/L** Prep Date: **6/23/2021** RunNo: **68173**
Client ID: **ICB** Batch ID: **32779** Analysis Date: **6/23/2021** SeqNo: **1376116**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthylene	ND	20.0									
Acenaphthene	ND	20.0									
Fluorene	ND	20.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2-Fluorobiphenyl	563		500.0		113	50.4	142				
Surr: Terphenyl-d14 (surr)	599		500.0		120	48.8	157				

Sample ID: **PAH ICV** SampType: **ICV** Units: **µg/L** Prep Date: **6/23/2021** RunNo: **68173**
Client ID: **ICV** Batch ID: **32779** Analysis Date: **6/23/2021** SeqNo: **1376117**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,150	20.0	1,000	0	115	70	130				
2-Methylnaphthalene	1,150	20.0	1,000	0	115	70	130				
1-Methylnaphthalene	1,160	20.0	1,000	0	116	70	130				
Acenaphthylene	1,150	20.0	1,000	0	115	70	130				
Acenaphthene	1,090	20.0	1,000	0	109	70	130				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICV** SampType: **ICV** Units: **µg/L** Prep Date: **6/23/2021** RunNo: **68173**
Client ID: **ICV** Batch ID: **32779** Analysis Date: **6/23/2021** SeqNo: **1376117**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	1,140	20.0	1,000	0	114	70	130				
Phenanthrene	1,150	40.0	1,000	0	115	70	130				
Anthracene	1,140	40.0	1,000	0	114	70	130				
Fluoranthene	1,150	40.0	1,000	0	115	70	130				
Pyrene	1,160	40.0	1,000	0	116	70	130				
Benz(a)anthracene	1,120	20.0	1,000	0	112	70	130				
Chrysene	1,160	40.0	1,000	0	116	70	130				
Benzo(b)fluoranthene	1,040	20.0	1,000	0	104	70	130				
Benzo(k)fluoranthene	1,110	20.0	1,000	0	111	70	130				
Benzo(a)pyrene	1,190	20.0	1,000	0	119	70	130				
Indeno(1,2,3-cd)pyrene	1,130	40.0	1,000	0	113	70	130				
Dibenz(a,h)anthracene	1,150	40.0	1,000	0	115	70	130				
Benzo(g,h,i)perylene	1,150	20.0	1,000	0	115	70	130				
Surr: 2-Fluorobiphenyl	573		500.0		115	69.5	150				
Surr: Terphenyl-d14 (surr)	602		500.0		120	71.6	145				

Sample ID: **CCV-32779** SampType: **CCV** Units: **µg/L** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **CCV** Batch ID: **32779** Analysis Date: **6/24/2021** SeqNo: **1377299**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	992	20.0	1,000	0	99.2	80	120				
2-Methylnaphthalene	1,020	20.0	1,000	0	102	80	120				
1-Methylnaphthalene	1,010	20.0	1,000	0	101	80	120				
Acenaphthylene	1,000	20.0	1,000	0	100	80	120				
Acenaphthene	1,010	20.0	1,000	0	101	80	120				
Fluorene	1,020	20.0	1,000	0	102	80	120				
Phenanthrene	984	40.0	1,000	0	98.4	80	120				
Anthracene	973	40.0	1,000	0	97.3	80	120				
Fluoranthene	1,000	40.0	1,000	0	100	80	120				
Pyrene	1,000	40.0	1,000	0	100	80	120				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-32779** SampType: **CCV** Units: **µg/L** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **CCV** Batch ID: **32779** Analysis Date: **6/24/2021** SeqNo: **1377299**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	1,010	20.0	1,000	0	101	80	120				
Chrysene	989	40.0	1,000	0	98.9	80	120				
Benzo(b)fluoranthene	995	20.0	1,000	0	99.5	80	120				
Benzo(k)fluoranthene	838	20.0	1,000	0	83.8	80	120				
Benzo(a)pyrene	975	20.0	1,000	0	97.5	80	120				
Indeno(1,2,3-cd)pyrene	999	40.0	1,000	0	99.9	80	120				
Dibenz(a,h)anthracene	1,000	40.0	1,000	0	100	80	120				
Benzo(g,h,i)perylene	984	20.0	1,000	0	98.4	80	120				
Surr: 2-Fluorobiphenyl	495		500.0		99.0	69.5	150				
Surr: Terphenyl-d14 (surr)	508		500.0		102	71.6	145				

Sample ID: **MB-32779** SampType: **MBLK** Units: **µg/Kg** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **MBLKS** Batch ID: **32779** Analysis Date: **6/24/2021** SeqNo: **1377300**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthylene	ND	20.0									
Acenaphthene	ND	20.0									
Fluorene	ND	20.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-32779** SampType: **MBLK** Units: **µg/Kg** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **MBLKS** Batch ID: **32779** Analysis Date: **6/24/2021** SeqNo: **1377300**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2-Fluorobiphenyl	1,270		1,000		127	19	135				
Surr: Terphenyl-d14 (surr)	1,400		1,000		140	42.9	156				

Sample ID: **LCS-32779** SampType: **LCS** Units: **µg/Kg** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **LCSS** Batch ID: **32779** Analysis Date: **6/24/2021** SeqNo: **1377301**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,780	20.0	2,000	0	89.0	62.7	127				
2-Methylnaphthalene	1,830	20.0	2,000	0	91.7	62.7	132				
1-Methylnaphthalene	1,790	20.0	2,000	0	89.3	61.4	131				
Acenaphthylene	1,700	20.0	2,000	0	85.0	62	132				
Acenaphthene	1,740	20.0	2,000	0	86.9	59.2	132				
Fluorene	1,800	20.0	2,000	0	89.9	59.1	136				
Phenanthrene	1,810	40.0	2,000	0	90.7	54.1	139				
Anthracene	1,800	40.0	2,000	0	90.0	55.5	136				
Fluoranthene	1,870	40.0	2,000	0	93.3	52.8	149				
Pyrene	1,870	40.0	2,000	0	93.4	53.6	146				
Benz(a)anthracene	1,840	20.0	2,000	0	91.9	49.7	153				
Chrysene	1,820	40.0	2,000	0	91.0	52.6	147				
Benzo(b)fluoranthene	1,620	20.0	2,000	0	80.8	50.6	151				
Benzo(k)fluoranthene	1,910	20.0	2,000	0	95.5	47.1	155				
Benzo(a)pyrene	1,980	20.0	2,000	0	99.1	48.3	169				
Indeno(1,2,3-cd)pyrene	1,800	40.0	2,000	0	90.2	52.3	145				
Dibenz(a,h)anthracene	1,840	40.0	2,000	0	91.9	53	144				
Benzo(g,h,i)perylene	1,790	20.0	2,000	0	89.7	49.7	144				
Surr: 2-Fluorobiphenyl	1,210		1,000		121	19	135				
Surr: Terphenyl-d14 (surr)	1,360		1,000		136	42.9	156				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-32779** SampType: **LCS** Units: **µg/Kg** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **LCSS** Batch ID: **32779** Analysis Date: **6/24/2021** SeqNo: **1377301**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2106420-011AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **SO-SB105-14-16-0621** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377306**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	8,860	18.1	1,815	8,195	36.5	26.5	126				E
2-Methylnaphthalene	17,600	18.1	1,815	18,350	-39.5	40.5	117				SE
1-Methylnaphthalene	9,330	18.1	1,815	8,664	36.7	37	118				SE
Acenaphthylene	1,810	18.1	1,815	137.8	91.9	34.6	121				
Acenaphthene	1,730	18.1	1,815	81.82	90.7	36.9	114				
Fluorene	1,960	18.1	1,815	277.4	92.8	36.5	120				
Phenanthrene	2,440	36.3	1,815	767.3	92.0	29.2	124				
Anthracene	1,740	36.3	1,815	108.7	90.2	32.9	127				
Fluoranthene	1,900	36.3	1,815	285.0	88.9	33.2	130				
Pyrene	2,190	36.3	1,815	597.5	87.6	32	128				
Benz(a)anthracene	1,760	18.1	1,815	138.7	89.3	33	134				
Chrysene	1,850	36.3	1,815	184.0	92.0	33.1	123				
Benzo(b)fluoranthene	1,700	18.1	1,815	0	93.7	36.3	126				
Benzo(k)fluoranthene	1,840	18.1	1,815	0	101	33.2	131				
Benzo(a)pyrene	1,990	18.1	1,815	86.86	105	36.2	148				
Indeno(1,2,3-cd)pyrene	1,610	36.3	1,815	24.71	87.6	32.8	124				
Dibenz(a,h)anthracene	1,640	36.3	1,815	0	90.2	31.4	126				
Benzo(g,h,i)perylene	1,670	18.1	1,815	122.3	85.5	25.3	122				
Surr: 2-Fluorobiphenyl	1,200		907.3		132	19	135				
Surr: Terphenyl-d14 (surr)	1,250		907.3		137	42.9	156				

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2106420-011AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **6/24/2021** RunNo: **68216**
Client ID: **SO-SB105-14-16-0621** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377307**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	8,340	18.6	1,859	8,195	7.94	26.5	126	8,858	5.99	30	SE
2-Methylnaphthalene	16,500	18.6	1,859	18,350	-98.1	40.5	117	17,630	6.47	30	SE
1-Methylnaphthalene	8,730	18.6	1,859	8,664	3.73	37	118	9,330	6.61	30	SE
Acenaphthylene	1,790	18.6	1,859	137.8	88.9	34.6	121	1,805	0.799	30	
Acenaphthene	1,710	18.6	1,859	81.82	87.3	36.9	114	1,728	1.30	30	
Fluorene	1,930	18.6	1,859	277.4	88.7	36.5	120	1,961	1.82	30	
Phenanthrene	2,220	37.2	1,859	767.3	78.0	29.2	124	2,437	9.39	30	
Anthracene	1,650	37.2	1,859	108.7	82.9	32.9	127	1,745	5.54	30	
Fluoranthene	1,880	37.2	1,859	285.0	86.0	33.2	130	1,898	0.713	30	
Pyrene	2,160	37.2	1,859	597.5	84.0	32	128	2,187	1.32	30	
Benz(a)anthracene	1,760	18.6	1,859	138.7	87.2	33	134	1,760	0.0442	30	
Chrysene	1,830	37.2	1,859	184.0	88.4	33.1	123	1,853	1.37	30	
Benzo(b)fluoranthene	1,660	18.6	1,859	0	89.4	36.3	126	1,700	2.32	30	
Benzo(k)fluoranthene	1,900	18.6	1,859	0	102	33.2	131	1,840	2.96	30	
Benzo(a)pyrene	2,010	18.6	1,859	86.86	103	36.2	148	1,993	0.725	30	
Indeno(1,2,3-cd)pyrene	1,630	37.2	1,859	24.71	86.5	32.8	124	1,614	1.16	30	
Dibenz(a,h)anthracene	1,650	37.2	1,859	0	88.8	31.4	126	1,636	0.868	30	
Benzo(g,h,i)perylene	1,690	18.6	1,859	122.3	84.4	25.3	122	1,673	1.06	30	
Surr: 2-Fluorobiphenyl	1,210		929.5		131	19	135		0		
Surr: Terphenyl-d14 (surr)	1,270		929.5		137	42.9	156		0		

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **QCS-32779** SampType: **QCS** Units: **µg/L** Prep Date: **6/25/2021** RunNo: **68216**
Client ID: **BATCH** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377319**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	996	20.0	1,000	0	99.6	50	150				
2-Methylnaphthalene	1,020	20.0	1,000	0	102	50	150				
1-Methylnaphthalene	1,020	20.0	1,000	0	102	50	150				
Acenaphthylene	1,020	20.0	1,000	0	102	50	150				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **QCS-32779** SampType: **QCS** Units: **µg/L** Prep Date: **6/25/2021** RunNo: **68216**
Client ID: **BATCH** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377319**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	1,010	20.0	1,000	0	101	50	150				
Fluorene	1,020	20.0	1,000	0	102	50	150				
Phenanthrene	969	40.0	1,000	0	96.9	50	150				
Anthracene	972	40.0	1,000	0	97.2	50	150				
Fluoranthene	1,000	40.0	1,000	0	100	50	150				
Pyrene	1,000	40.0	1,000	0	100	50	150				
Benz(a)anthracene	1,020	20.0	1,000	0	102	50	150				
Chrysene	992	40.0	1,000	0	99.2	50	150				
Benzo(b)fluoranthene	1,020	20.0	1,000	0	102	50	150				
Benzo(k)fluoranthene	815	20.0	1,000	0	81.5	50	150				
Benzo(a)pyrene	983	20.0	1,000	0	98.3	50	150				
Indeno(1,2,3-cd)pyrene	982	40.0	1,000	0	98.2	50	150				
Dibenz(a,h)anthracene	992	40.0	1,000	0	99.2	50	150				
Benzo(g,h,i)perylene	956	20.0	1,000	0	95.6	50	150				
Surr: 2-Fluorobiphenyl	501		500.0		100	50	150				
Surr: Terphenyl-d14 (surr)	511		500.0		102	50	150				

Sample ID: **CCV-32779** SampType: **CCV** Units: **µg/L** Prep Date: **6/25/2021** RunNo: **68216**
Client ID: **CCV** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377491**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	880	20.0	1,000	0	88.0	80	120				
2-Methylnaphthalene	908	20.0	1,000	0	90.8	80	120				
1-Methylnaphthalene	898	20.0	1,000	0	89.8	80	120				
Acenaphthylene	897	20.0	1,000	0	89.7	80	120				
Acenaphthene	882	20.0	1,000	0	88.2	80	120				
Fluorene	893	20.0	1,000	0	89.3	80	120				
Phenanthrene	866	40.0	1,000	0	86.6	80	120				
Anthracene	863	40.0	1,000	0	86.3	80	120				
Fluoranthene	891	40.0	1,000	0	89.1	80	120				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-32779** SampType: **CCV** Units: **µg/L** Prep Date: **6/25/2021** RunNo: **68216**
Client ID: **CCV** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377491**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	891	40.0	1,000	0	89.1	80	120				
Benz(a)anthracene	896	20.0	1,000	0	89.6	80	120				
Chrysene	869	40.0	1,000	0	86.9	80	120				
Benzo(b)fluoranthene	892	20.0	1,000	0	89.2	80	120				
Benzo(k)fluoranthene	868	20.0	1,000	0	86.8	80	120				
Benzo(a)pyrene	845	20.0	1,000	0	84.5	80	120				
Indeno(1,2,3-cd)pyrene	884	40.0	1,000	0	88.4	80	120				
Dibenz(a,h)anthracene	887	40.0	1,000	0	88.7	80	120				
Benzo(g,h,i)perylene	880	20.0	1,000	0	88.0	80	120				
Surr: 2-Fluorobiphenyl	445		500.0		89.1	69.5	150				
Surr: Terphenyl-d14 (surr)	454		500.0		90.7	71.6	145				

Sample ID: **QCS-32779** SampType: **QCS** Units: **µg/L** Prep Date: **6/25/2021** RunNo: **68216**
Client ID: **BATCH** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377494**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	888	20.0	1,000	0	88.8	50	150				
2-Methylnaphthalene	905	20.0	1,000	0	90.5	50	150				
1-Methylnaphthalene	897	20.0	1,000	0	89.7	50	150				
Acenaphthylene	909	20.0	1,000	0	90.9	50	150				
Acenaphthene	892	20.0	1,000	0	89.2	50	150				
Fluorene	898	20.0	1,000	0	89.8	50	150				
Phenanthrene	858	40.0	1,000	0	85.8	50	150				
Anthracene	867	40.0	1,000	0	86.7	50	150				
Fluoranthene	889	40.0	1,000	0	88.9	50	150				
Pyrene	888	40.0	1,000	0	88.8	50	150				
Benz(a)anthracene	891	20.0	1,000	0	89.1	50	150				
Chrysene	867	40.0	1,000	0	86.7	50	150				
Benzo(b)fluoranthene	833	20.0	1,000	0	83.3	50	150				
Benzo(k)fluoranthene	780	20.0	1,000	0	78.0	50	150				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **QCS-32779** SampType: **QCS** Units: **µg/L** Prep Date: **6/25/2021** RunNo: **68216**
Client ID: **BATCH** Batch ID: **32779** Analysis Date: **6/25/2021** SeqNo: **1377494**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	879	20.0	1,000	0	87.9	50	150				
Indeno(1,2,3-cd)pyrene	888	40.0	1,000	0	88.8	50	150				
Dibenz(a,h)anthracene	892	40.0	1,000	0	89.2	50	150				
Benzo(g,h,i)perylene	878	20.0	1,000	0	87.8	50	150				
Surr: 2-Fluorobiphenyl	446		500.0		89.2	50	150				
Surr: Terphenyl-d14 (surr)	452		500.0		90.4	50	150				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **ICB**	SampType: **ICB**	Units: **mg/Kg**	Prep Date: **7/7/2021**	RunNo: **68551**
Client ID: **ICB**	Batch ID: **32919**		Analysis Date: **7/7/2021**	SeqNo: **1388287**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	6.81	0.500		0	0						
Surr: 1,4-Difluorobenzene	45.0		50.00		90.1	65	140				
Surr: Bromofluorobenzene	50.5		50.00		101	65	140				

Sample ID: **ICV**	SampType: **ICV**	Units: **mg/Kg**	Prep Date: **7/7/2021**	RunNo: **68551**
Client ID: **ICV**	Batch ID: **32919**		Analysis Date: **7/7/2021**	SeqNo: **1388288**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	451	2.50	600.0	0	75.1	70	130				
Aliphatic Hydrocarbon (C6-C8)	200	1.50	200.0	0	100	70	130				
Aliphatic Hydrocarbon (C8-C10)	175	2.50	200.0	0	87.4	70	130				
Aliphatic Hydrocarbon (C10-C12)	199	0.500	200.0	0	99.3	70	130				
Aromatic Hydrocarbon (C8-C10)	799	3.00	800.0	0	99.8	70	130				
Aromatic Hydrocarbon (C10-C12)	186	0.500	200.0	0	93.2	70	130				
Aromatic Hydrocarbon (C12-C13)	200	0.500	200.0	0	99.9	70	130				
Surr: 1,4-Difluorobenzene	51.7		50.00		103	65	140				
Surr: Bromofluorobenzene	50.8		50.00		102	65	140				

Sample ID: **CCV-32919A**	SampType: **CCV**	Units: **mg/Kg**	Prep Date: **7/7/2021**	RunNo: **68551**
Client ID: **CCV**	Batch ID: **32919**		Analysis Date: **7/7/2021**	SeqNo: **1385879**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	577	2.50	600.0	0	96.1	80	120				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **CCV-32919A**	SampType: **CCV**			Units: **mg/Kg**		Prep Date: **7/7/2021**		RunNo: **68551**			
Client ID: **CCV**	Batch ID: **32919**					Analysis Date: **7/7/2021**		SeqNo: **1385879**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C6-C8)	207	1.50	200.0	0	103	80	120				
Aliphatic Hydrocarbon (C8-C10)	191	2.50	200.0	0	95.5	80	120				
Aliphatic Hydrocarbon (C10-C12)	190	0.500	200.0	0	94.8	80	120				
Aromatic Hydrocarbon (C8-C10)	855	3.00	800.0	0	107	80	120				
Aromatic Hydrocarbon (C10-C12)	226	0.500	200.0	0	113	80	120				
Aromatic Hydrocarbon (C12-C13)	238	0.500	200.0	0	119	80	120				
Surr: 1,4-Difluorobenzene	53.7		50.00		107	65	140				
Surr: Bromofluorobenzene	54.3		50.00		109	65	140				

Sample ID: **LCS-32919**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **7/7/2021**		RunNo: **68551**			
Client ID: **LCSS**	Batch ID: **32919**					Analysis Date: **7/7/2021**		SeqNo: **1385883**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	31.7	2.50	30.00	0	106	70	130				
Aliphatic Hydrocarbon (C6-C8)	9.40	1.50	10.00	0	94.0	70	130				
Aliphatic Hydrocarbon (C8-C10)	8.85	2.50	10.00	0	88.5	70	130				
Aliphatic Hydrocarbon (C10-C12)	9.73	0.500	10.00	0	97.3	70	130				
Aromatic Hydrocarbon (C8-C10)	42.8	3.00	40.00	0	107	70	130				
Aromatic Hydrocarbon (C10-C12)	11.5	0.500	10.00	0	115	70	130				
Aromatic Hydrocarbon (C12-C13)	11.3	0.500	10.00	0	113	70	130				
Surr: 1,4-Difluorobenzene	2.70		2.500		108	65	140				
Surr: Bromofluorobenzene	2.55		2.500		102	65	140				

Sample ID: **MB-32919**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **7/7/2021**		RunNo: **68551**			
Client ID: **MBLKS**	Batch ID: **32919**					Analysis Date: **7/7/2021**		SeqNo: **1385884**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **MB-32919** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/7/2021** RunNo: **68551**
Client ID: **MBLKS** Batch ID: **32919** Analysis Date: **7/7/2021** SeqNo: **1385884**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	0.500		0	0						
Surr: 1,4-Difluorobenzene	2.27		2.500		90.8	65	140				
Surr: Bromofluorobenzene	2.60		2.500		104	65	140				

Sample ID: **2106420-002BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/7/2021** RunNo: **68551**
Client ID: **SO-SB101-15-17-0621** Batch ID: **32919** Analysis Date: **7/8/2021** SeqNo: **1385878**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	59.0	3.65		0	0			50.64	15.3	25	DH
Aliphatic Hydrocarbon (C6-C8)	356	2.19		0	0			329.1	7.79	25	DEH
Aliphatic Hydrocarbon (C8-C10)	102	3.65		0	0			95.93	5.89	25	DH
Aliphatic Hydrocarbon (C10-C12)	173	0.730		0	0			194.4	11.7	25	DEH
Aromatic Hydrocarbon (C8-C10)	182	4.38		0	0			182.0	0.0785	25	DH
Aromatic Hydrocarbon (C10-C12)	442	0.730		0	0			424.3	4.07	25	DEH
Aromatic Hydrocarbon (C12-C13)	392	0.730		0	0			361.0	8.25	25	DEH
Surr: 1,4-Difluorobenzene	3.68		3.648		101	65	140		0		DH
Surr: Bromofluorobenzene	6.34		3.648		174	65	140		0		DSH

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.
E - Estimated value. The amount exceeds the linear working range of the instrument.
Diluted due to matrix.

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2107067-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/7/2021** RunNo: **68551**
Client ID: **BATCH** Batch ID: **32919** Analysis Date: **7/8/2021** SeqNo: **1385875**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	295	22.9	275.2	31.22	95.8	70	130				DH
Aliphatic Hydrocarbon (C6-C8)	491	13.8	91.73	390.7	110	70	130				DH
Aliphatic Hydrocarbon (C8-C10)	333	22.9	91.73	224.6	119	70	130				DH
Aliphatic Hydrocarbon (C10-C12)	350	4.59	91.73	293.8	61.0	70	130				DSH
Aromatic Hydrocarbon (C8-C10)	684	27.5	366.9	315.9	100	70	130				DH
Aromatic Hydrocarbon (C10-C12)	603	4.59	91.73	546.1	62.3	70	130				DSH
Aromatic Hydrocarbon (C12-C13)	505	4.59	91.73	606.3	-110	70	130				DSH
Surr: 1,4-Difluorobenzene	29.7		22.93		129	65	140				DH
Surr: Bromofluorobenzene	25.3		22.93		110	65	140				DH

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **CCV-32919B** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/8/2021** RunNo: **68551**
Client ID: **CCV** Batch ID: **32919** Analysis Date: **7/8/2021** SeqNo: **1385882**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	536	2.50	600.0	0	89.3	80	120				
Aliphatic Hydrocarbon (C6-C8)	200	1.50	200.0	0	100	80	120				
Aliphatic Hydrocarbon (C8-C10)	200	2.50	200.0	0	99.8	80	120				
Aliphatic Hydrocarbon (C10-C12)	217	0.500	200.0	0	108	80	120				
Aromatic Hydrocarbon (C8-C10)	813	3.00	800.0	0	102	80	120				
Aromatic Hydrocarbon (C10-C12)	207	0.500	200.0	0	104	80	120				
Aromatic Hydrocarbon (C12-C13)	210	0.500	200.0	0	105	80	120				
Surr: 1,4-Difluorobenzene	56.6		50.00		113	65	140				
Surr: Bromofluorobenzene	54.7		50.00		109	65	140				

Work Order: 2106420
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **CCV-32919C** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/13/2021** RunNo: **68551**
Client ID: **CCV** Batch ID: **32919** Analysis Date: **7/13/2021** SeqNo: **1385880**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	650	2.50	600.0	0	108	80	120				
Aliphatic Hydrocarbon (C6-C8)	217	1.50	200.0	0	108	80	120				
Aliphatic Hydrocarbon (C8-C10)	224	2.50	200.0	0	112	80	120				
Aliphatic Hydrocarbon (C10-C12)	200	0.500	200.0	0	99.9	80	120				
Aromatic Hydrocarbon (C8-C10)	736	3.00	800.0	0	92.0	80	120				
Aromatic Hydrocarbon (C10-C12)	211	0.500	200.0	0	106	80	120				
Aromatic Hydrocarbon (C12-C13)	206	0.500	200.0	0	103	80	120				
Surr: 1,4-Difluorobenzene	46.9		50.00		93.9	65	140				
Surr: Bromofluorobenzene	47.2		50.00		94.5	65	140				

Sample ID: **CCV-32919D** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/13/2021** RunNo: **68551**
Client ID: **CCV** Batch ID: **32919** Analysis Date: **7/13/2021** SeqNo: **1385881**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	571	2.50	600.0	0	95.2	80	120				
Aliphatic Hydrocarbon (C6-C8)	202	1.50	200.0	0	101	80	120				
Aliphatic Hydrocarbon (C8-C10)	202	2.50	200.0	0	101	80	120				
Aliphatic Hydrocarbon (C10-C12)	201	0.500	200.0	0	100	80	120				
Aromatic Hydrocarbon (C8-C10)	660	3.00	800.0	0	82.5	80	120				
Aromatic Hydrocarbon (C10-C12)	191	0.500	200.0	0	95.6	80	120				
Aromatic Hydrocarbon (C12-C13)	203	0.500	200.0	0	102	80	120				
Surr: 1,4-Difluorobenzene	42.2		50.00		84.4	65	140				
Surr: Bromofluorobenzene	43.4		50.00		86.8	65	140				

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2106420**
Logged by:	**Gabrielle Coeuille**	Date Received:	**6/23/2021 9:28:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☐	Not Present	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No ☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	1.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

2106428

Date: 6/22/2021 Page: 1 of 2

Client: Libby Environmental, Inc.

Project Manager: Kodey Eley

Address: See above

Project Name: Jacks Auto

City: State: Zip:

Location: City, State:

Phone: Fax:

Collector: JH/AR Date of Collection: 6/21/2021

Client Project # L210621-2

Email: Libbyenv@gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals			Field Notes
1 SO-SB101-4-6-0621	4-6	09:30	SOIL	Jar/VOA's															
2 SO-SB101-15-17-0621	15-17	09:40	SOIL	Jar/VOA's															
3 SO-SB102-2-4-0621	2-4	10:15	SOIL	Jar/VOA's															
4 SO-SB102-8-10-0621	2-8	10:25	SOIL	Jar/VOA's															
5 SO-SB102-14-16-0621	14-16	10:40	SOIL	Jar/VOA's															
6 SO-SB103-4-6-0621	4-6	07:45	SOIL	Jar/VOA's							X								
7 SO-SB103-14-16-0621	14-16	07:50	SOIL	Jar/VOA's							X								
8 SO-SB104-8-10-0621	8-10	08:00	SOIL	Jar/VOA's															
9 SO-SB104-14-16-0621	14-16	08:10	SOIL	Jar/VOA's															
10 SO-SB105-8-10-0621	8-10	08:40	SOIL	Jar/VOA's							X								
11 SO-SB105-14-16-0621	14-16	08:50	SOIL	Jar/VOA's							X								
12 SO-SB105-14-16-0621-01	14-16	08:50	SOIL	Jar/VOA's							X								
13 SO-SB106-1-3-0621	1-3	13:00	SOIL	Jar/VOA's							X								
14 SO-SB106-4-6-0621	4-6	13:10	SOIL	Jar/VOA's							X								
15 SO-SB106-14-16-0621	14-16	13:20	SOIL	Jar/VOA's							X								
16 SO-SB107-1-3-0621	1-3	12:00	SOIL	Jar/VOA's							X								
17 SO-SB107-12-14-0621	12-14	12:15	SOIL	Jar/VOA's							X								

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	6/22/21 1630	[signature]	
Relinquished by:	Date / Time	Received by:	Date / Time
[signature]		[signature]	6/23/21 0928
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
Run Duplicate and Matrix spikes on sample "SO-SB-105-14-16-0621"
Standard TAT
Hold all for potential EPH/VPH
L 2b EDD - VOA is preserved with 4 ml MeOH

TAT 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

210420

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Date: 6/22/2021 Page: 2 of 2

Client: Libby Environmental, Inc.

Project Manager: Kodey Eley

Address: See above

Project Name: Jacks Auto

City: State: Zip:

Location: City, State:

Phone: Fax:

Collector: JH/AR Date of Collection: 6/21/2021

Client Project # L210621-2

Email: Libbyenv@gmail.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	cPAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals			Field Notes
1	SO-SB108-6-8-0621	6-8	09:10	SOIL	Jar/VOA's							X								
2	SO-SB108-13-14-0621	13-14	09:15	SOIL	Jar/VOA's							X								
3	SO-SB109-13-15-0621	13-15	13:45	SOIL	Jar/VOA's															
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
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15																				
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17																				

Relinquished by	Date / Time	Received by	Date / Time
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Relinquished by	Date / Time	Received by	Date / Time
UPS		[signature]	6/23/21 0928
Relinquished by	Date / Time	Received by	Date / Time

Sample Receipt

Good Condition?	Y	N
~~Cooler Temp~~		°C
Sample Temp		°C
Total Number of Containers		

Remarks:
Run Duplicate and Matrix spikes on sample "SO-SB-105-14-16-0621"
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L 2b EDD - VOA's preserved with 4 mL MeOH

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Olympia, WA 98506
Ph: 360-352-2110
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Chain of Custody Record

www.LibbyEnvironmental.com

2106428

Date: 6/22/2021 Page: 1 of 2

Client: Libby Environmental, Inc.
Address: See above
City: State: Zip:
Phone: Fax:
Client Project # L210621-2

Project Manager: Kodey Eley
Project Name: Jacks Auto
Location: City, State:
Collector: JH/AR Date of Collection: 6/21/2021
Email: Libbyenv@gmail.com

Edits per KE 6/30/21- gac

Page 42 of 43

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Ox	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	EPH	VPH	Field Notes
1	SO-SB101-4-6-0621	4-6	09:30	SOIL	Jar/VOA's															
2	SO-SB101-15-17-0621	15-17	09:40	SOIL	Jar/VOA's														X	
3	SO-SB102-2-4-0621	2-4	10:15	SOIL	Jar/VOA's															
4	SO-SB102-8-10-0621	2-8	10:25	SOIL	Jar/VOA's															
5	SO-SB102-14-16-0621	14-16	10:40	SOIL	Jar/VOA's															
6	SO-SB103-4-6-0621	4-6	07:45	SOIL	Jar/VOA's							X								
7	SO-SB103-14-16-0621	14-16	07:50	SOIL	Jar/VOA's							X								
8	SO-SB104-8-10-0621	8-10	08:00	SOIL	Jar/VOA's															
9	SO-SB104-14-16-0621	14-16	08:10	SOIL	Jar/VOA's															
10	SO-SB105-8-10-0621	8-10	08:40	SOIL	Jar/VOA's							X								
11	SO-SB105-14-16-0621	14-16	08:50	SOIL	Jar/VOA's							X								
12	SO-SB105-14-16-0621-01	14-16	08:50	SOIL	Jar/VOA's							X								
13	SO-SB106-1-3-0621	1-3	13:00	SOIL	Jar/VOA's							X								
14	SO-SB106-4-6-0621	4-6	13:10	SOIL	Jar/VOA's							X						X		
15	SO-SB106-14-16-0621	14-16	13:20	SOIL	Jar/VOA's							X								
16	SO-SB107-1-3-0621	1-3	12:00	SOIL	Jar/VOA's							X								
17	SO-SB107-12-14-0621	12-14	12:15	SOIL	Jar/VOA's							X								

Relinquished by	Date / Time	Received by	Date / Time
[signature]	6/22/21 1630	[signature]	
[signature]		[signature]	6/23/21 0928

Sample Receipt

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Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
Run Duplicate and Matrix spikes on sample "SO-SB-105-14-16-0621"
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210420

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Client: Libby Environmental, Inc.
Address: See above
City: State: Zip:
Phone: Fax:
Client Project # L210621-2

Date: 6/22/2021 Page: 2 of 2
Project Manager: Kodey Eley
Project Name: Jacks Auto
Location: City, State:
Collector: JH/AR Date of Collection: 6/21/2021
Email: Libbyenv@gmail.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	cPAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals			Field Notes
1	SO-SB108-6-8-0621	6-8	09:10	SOIL	Jar/VOA's								X							
2	SO-SB108-13-14-0621	13-14	09:15	SOIL	Jar/VOA's								X							
3	SO-SB109-13-15-0621	13-15	13:45	SOIL	Jar/VOA's															
4																				
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~~Cooler Temp~~		°C
Sample Temp		°C
Total Number of Containers		

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Run Duplicate and Matrix spikes on sample "SO-SB-105-14-16-0621"
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TAT 24HR 48HR 5-DAY

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Distribution: White - Lab, Yellow - File, Pink - Originator

DATA SET for Review -- Deliverable Requirements

Extractable Petroleum Hydrocarbons by NWEPH

Fremont Analytical Work Order No. 2106420

Libby Environmental

Project Name: Jacks Auto

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information

Injection Log

Data Directory: D:\GC-28\Data\2021\210305FRONT\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 030506.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
No data found			0.000	N/A
2) 030505.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
No data found			0.000	N/A
3) 030502.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO		150	1.000	05 Mar 2021 01:12 pm
4) 030504.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO		150	1.000	05 Mar 2021 02:05 pm
5) 030509.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO		150	1.000	05 Mar 2021 03:08 pm
6) 030511.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO		150	1.000	05 Mar 2021 04:01 pm
7) 030513.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO		150	1.000	05 Mar 2021 04:54 pm
8) 030515.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
10 PPM ARO		51	1.000	05 Mar 2021 05:47 pm
9) 030517.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
10 PPM ALI		41	1.000	05 Mar 2021 06:40 pm
10) 030519.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
20 PPM ARO		52	1.000	05 Mar 2021 07:32 pm
11) 030521.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
20 PPM ALI		42	1.000	05 Mar 2021 08:25 pm
12) 030523.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
50 PPM ARO		53	1.000	05 Mar 2021 09:18 pm
13) 030525.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
50 PPM ALI		43	1.000	05 Mar 2021 10:10 pm
14) 030527.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
100 PPM ARO		54	1.000	05 Mar 2021 11:03 pm
15) 030529.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
100 PPM ALI		44	1.000	05 Mar 2021 11:55 pm
16) 030531.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
200 PPM ARO		55	1.000	06 Mar 2021 12:48 am
17) 030533.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
200 PPM ALI		45	1.000	06 Mar 2021 01:41 am
18) 030535.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
500 PPM ARO		56	1.000	06 Mar 2021 02:33 am
19) 030537.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
500 PPM ALI		46	1.000	06 Mar 2021 03:25 am
20) 030539.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
1000 PPM ARO		57	1.000	06 Mar 2021 04:18 am
21) 030541.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
1000 PPM ALI		47	1.000	06 Mar 2021 05:10 am

22) 030543.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
2000 PPM ARO		58	1.000	06 Mar 2021	06:03 am
23) 030545.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
2000 PPM ALI		48	1.000	06 Mar 2021	06:55 am
24) 030547.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	06 Mar 2021	07:48 am
25) 030549.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	06 Mar 2021	08:40 am
26) 030551.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
ICB ARO		59	1.000	06 Mar 2021	09:33 am
27) 030553.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
ICB ALI		49	1.000	06 Mar 2021	10:25 am
28) 030555.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
ICV ARO		60	1.000	06 Mar 2021	11:18 am
29) 030557.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
ICV ALI		50	1.000	06 Mar 2021	12:10 pm
30) 030559.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	06 Mar 2021	01:03 pm
31) 030558.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		149	1.000	06 Mar 2021	01:03 pm

Injection Log

Data Directory: D:\GC-28\Data\2021\210713FRONT\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	062114.D	DX_210323.M			
MDL-DX			15	1.000	21 Jun 2021 04:36 pm
2)	062116.D	DX_210323.M			
MDL-RRO			16	1.000	21 Jun 2021 04:48 pm
3)	071302.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO			150	1.000	13 Jul 2021 03:57 pm
4)	071304.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
CO			150	1.000	13 Jul 2021 04:50 pm
5)	071306.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
ARO-CCV-32886A			1	1.000	13 Jul 2021 05:44 pm
6)	071308.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
MB-32886			11	1.000	13 Jul 2021 06:37 pm
7)	071310.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
LCS-32886			12	1.000	13 Jul 2021 07:31 pm
8)	071312.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2106420-014A			13	1.000	13 Jul 2021 08:24 pm
9)	071314.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2106420-014AMS			14	1.000	13 Jul 2021 09:17 pm
10)	071316.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2106420-014AMSD			15	1.000	13 Jul 2021 10:11 pm
11)	071318.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2107067-001A			16	1.000	13 Jul 2021 11:04 pm
12)	071320.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2107067-002A			17	1.000	13 Jul 2021 11:57 pm
13)	071322.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
ARO-CCV-32886B			1	1.000	14 Jul 2021 12:50 am
14)	071324.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
ALI-CCV-32886A			3	1.000	14 Jul 2021 01:43 am
15)	071326.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
MB-32886			21	1.000	14 Jul 2021 02:37 am
16)	071328.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
LCS-32886			22	1.000	14 Jul 2021 03:30 am
17)	071330.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2106420-014A			23	1.000	14 Jul 2021 04:23 am
18)	071332.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2106420-014AMS			24	1.000	14 Jul 2021 05:16 am
19)	071334.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2106420-014AMSD			25	1.000	14 Jul 2021 06:09 am
20)	071336.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2107067-001A			26	1.000	14 Jul 2021 07:02 am
21)	071338.D	EPH_201123_1uL_decreasingRamp250maxHold20.M			
2107067-002A			27	1.000	14 Jul 2021 07:55 am

7/23/21

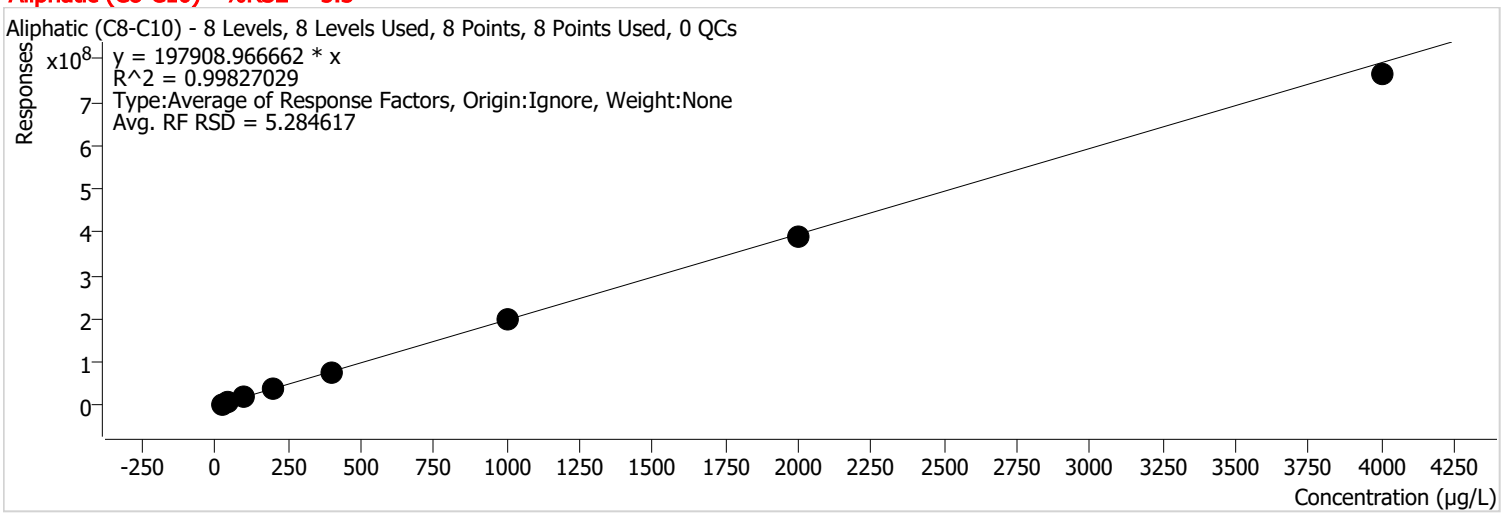
22) 071340.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
~~ARO~~ CCV-32886B		3	1.000	14 Jul 2021	08:48 am
ALI					
23) 071342.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	09:42 am
24) 071344.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	10:35 am
25) 071346.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	11:28 am
26) 071348.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	12:21 pm
27) 071350.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	01:15 pm
28) 071349.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		149	1.000	14 Jul 2021	01:15 pm
29) 071354.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	02:14 pm
30) 071356.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	03:08 pm
31) 071358.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
2106420-014A 10X		23	1.000	14 Jul 2021	04:01 pm
32) 071360.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	04:54 pm
33) 071362.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
2107067-001A		26	1.000	14 Jul 2021	05:47 pm
34) 071364.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
2107067-002A		27	1.000	14 Jul 2021	06:41 pm
35) 071366.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
ALI-CCV-32886C		3	1.000	14 Jul 2021	07:34 pm
36) 071368.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	08:27 pm
37) 071370.D	EPH_201123_1uL_decreasingRamp250maxHold20.M				
CO		150	1.000	14 Jul 2021	09:20 pm

Calibration

Calibration Report

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:53 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

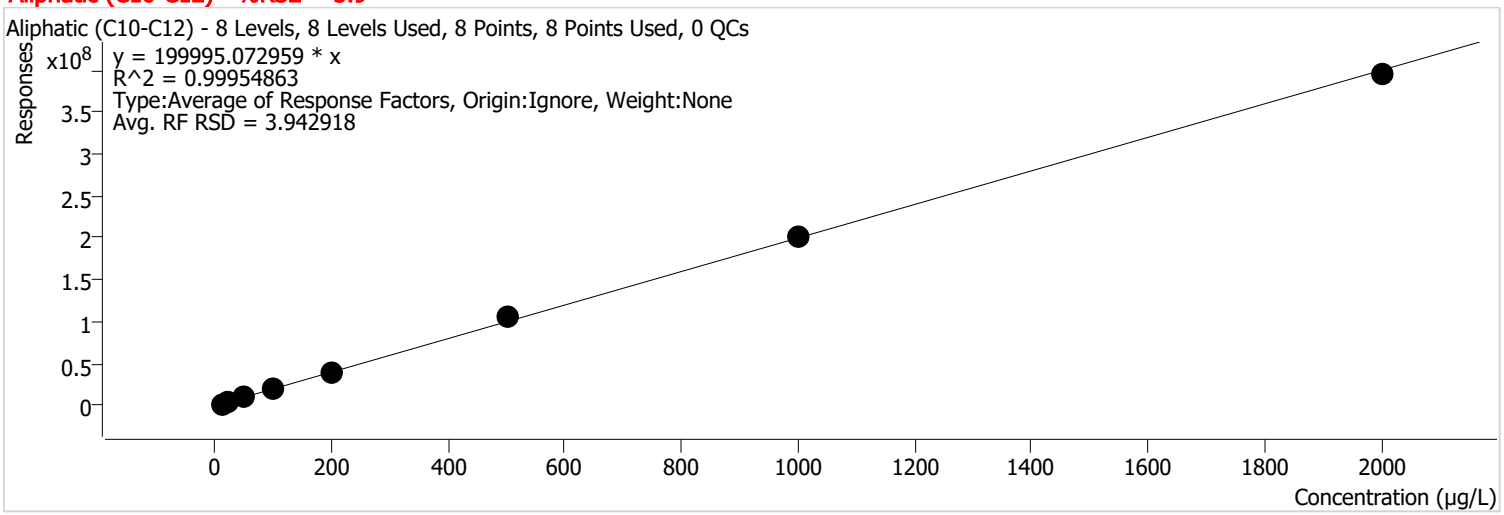
Aliphatic (C8-C10) %RSE = 5.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	4412267	20.0000	220613.3279	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	8107817	40.0000	202695.4338	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	19707699	100.0000	197076.9905	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	38006464	200.0000	190032.3211	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	75277688	400.0000	188194.2206	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	199980560	1000.0000	199980.5596	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	387456074	2000.0000	193728.0371	
D:\GC-28\Data\2021\210305FRONT\030545.D	Calibration	8	x	763803371	4000.0000	190950.8426	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:54 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

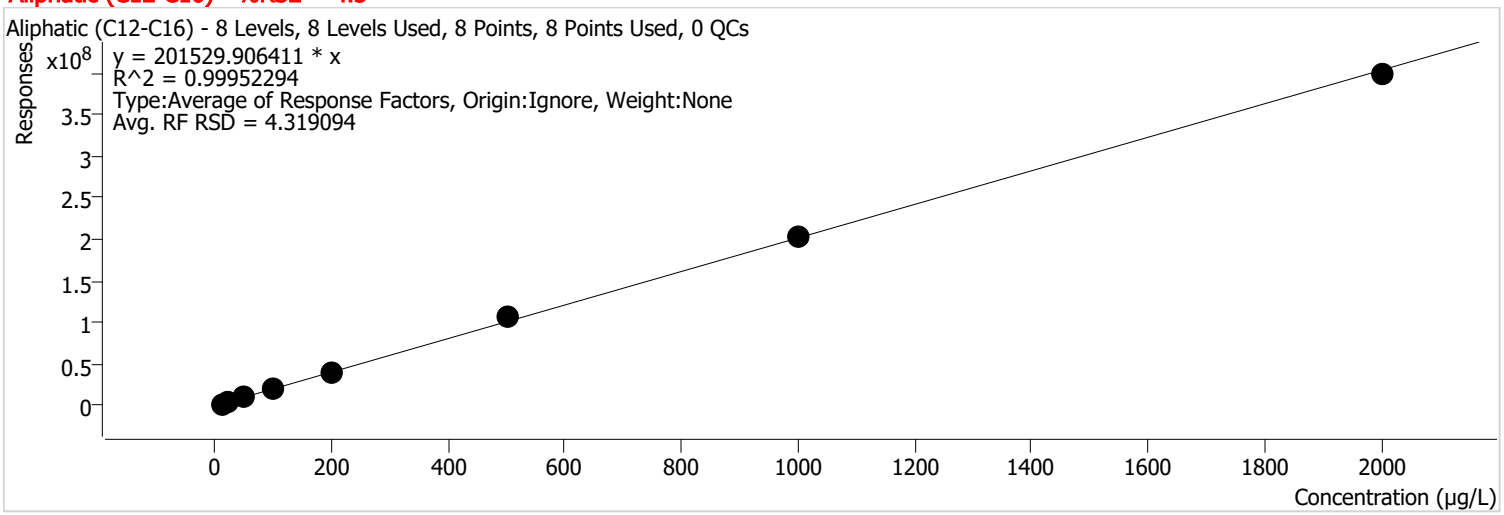
Aliphatic (C10-C12) %RSE = 3.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	2127259	10.0000	212725.8513	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	3980542	20.0000	199027.1159	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	9882277	50.0000	197645.5323	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	19265884	100.0000	192658.8407	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	38028335	200.0000	190141.6773	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	105208606	500.0000	210417.2114	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	200036465	1000.0000	200036.4651	
D:\GC-28\Data\2021\210305FRONT\030545.D	Calibration	8	x	394615780	2000.0000	197307.8898	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:54 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

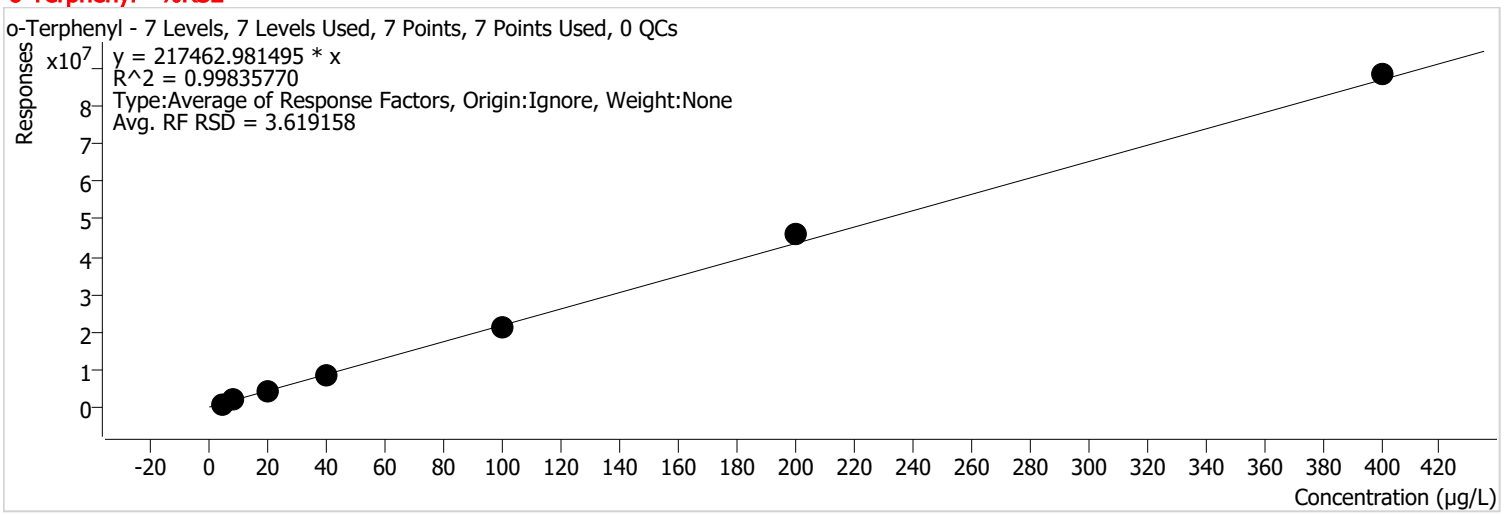
Aliphatic (C12-C16) %RSE = 4.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	2162396	10.0000	216239.6014	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	4012231	20.0000	200611.5428	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	9926670	50.0000	198533.3926	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	19353112	100.0000	193531.1179	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	38145127	200.0000	190725.6374	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	106145216	500.0000	212290.4330	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	201543517	1000.0000	201543.5173	
D:\GC-28\Data\2021\210305FRONT\030545.D	Calibration	8	x	397528018	2000.0000	198764.0089	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:54 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

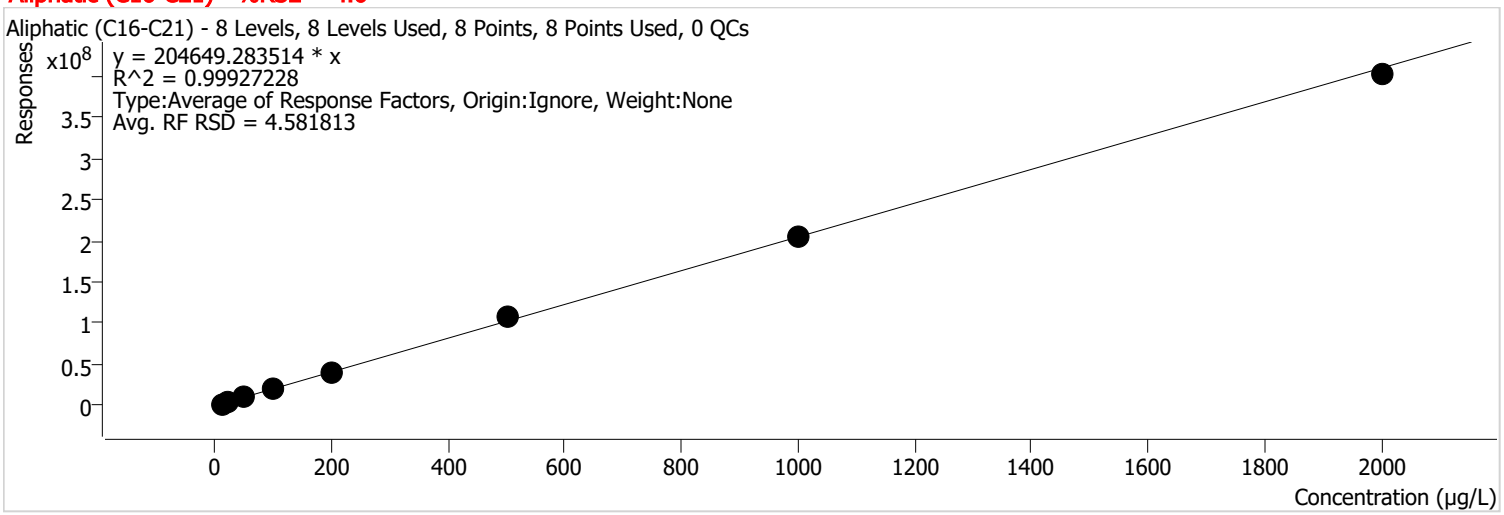
o-Terphenyl %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	882501	4.0000	220625.2739	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	1727563	8.0000	215945.3608	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	4174605	20.0000	208730.2747	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	8644237	40.0000	216105.9205	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	20863967	100.0000	208639.6750	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	46261529	200.0000	231307.6447	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	88354688	400.0000	220886.7210	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:54 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Aliphatic (C16-C21) %RSE = 4.6

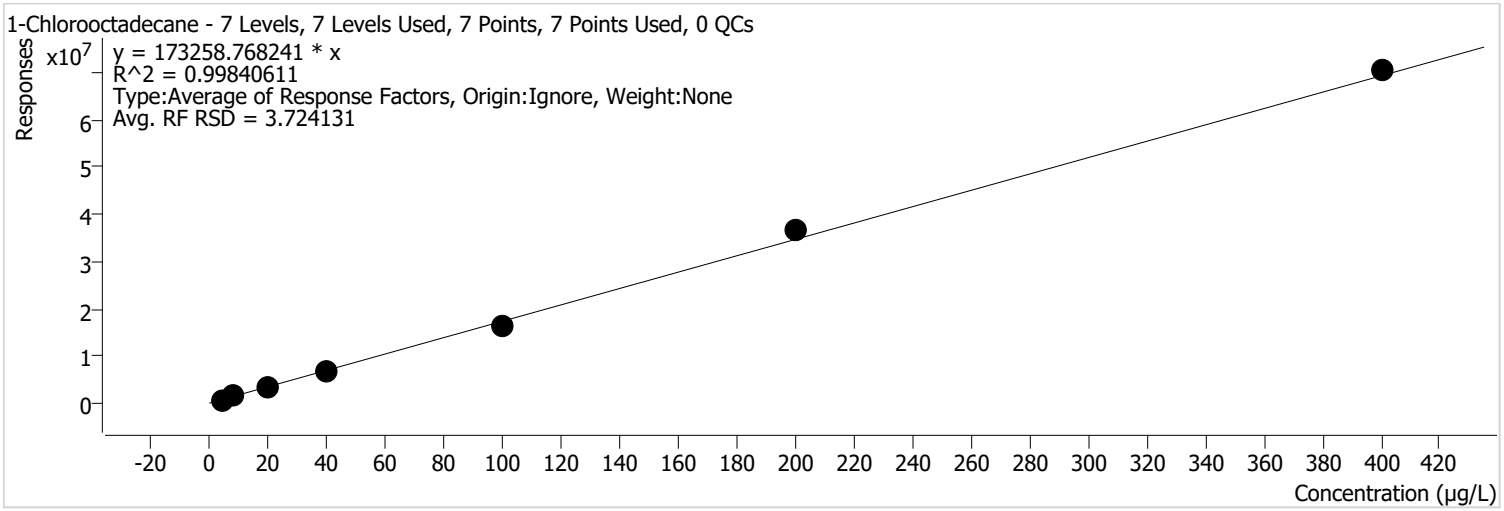


Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	2213072	10.0000	221307.2156	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	4073117	20.0000	203655.8509	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	10067516	50.0000	201350.3246	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	19640454	100.0000	196404.5396	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	38715523	200.0000	193577.6174	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	107782078	500.0000	215564.1570	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	204734318	1000.0000	204734.3179	
D:\GC-28\Data\2021\210305FRONT\030545.D	Calibration	8	x	401200490	2000.0000	200600.2452	

Calibration Report

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:54 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

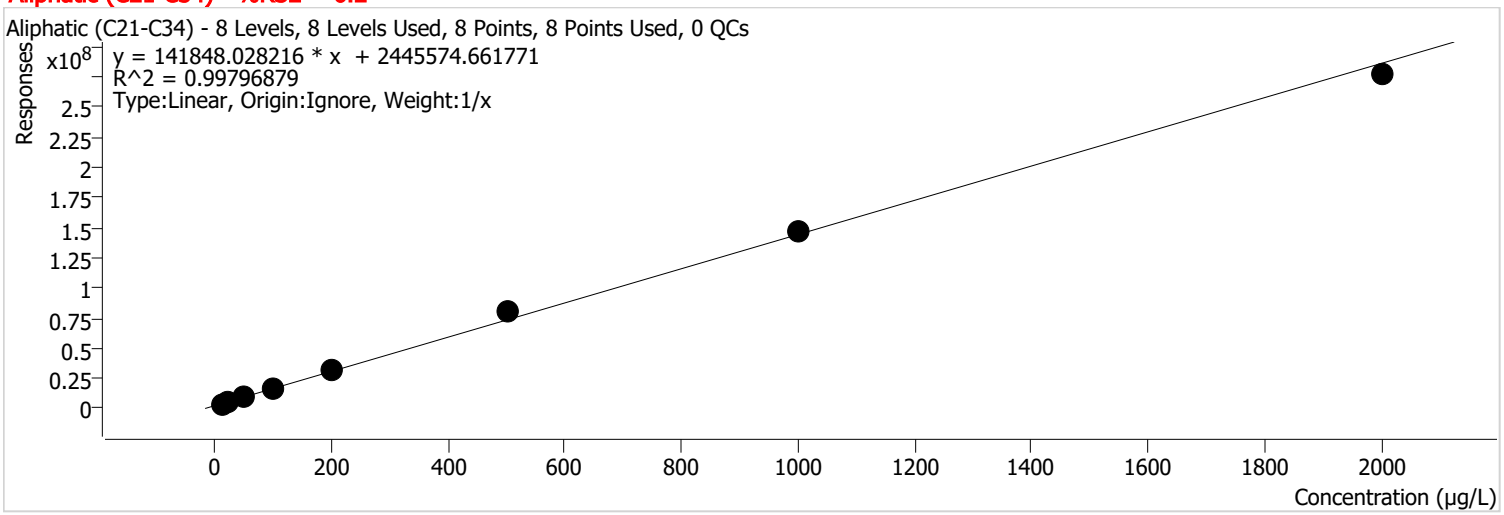
1-Chlorooctadecane %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	708726	4.0000	177181.5624	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	1377316	8.0000	172164.4908	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	3319553	20.0000	165977.6613	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	6857445	40.0000	171436.1324	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	16604307	100.0000	166043.0710	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	36823142	200.0000	184115.7076	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	70357101	400.0000	175892.7522	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ALI CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:52 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:52:54 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:52 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Aliphatic (C21-C34) %RSE = 6.2

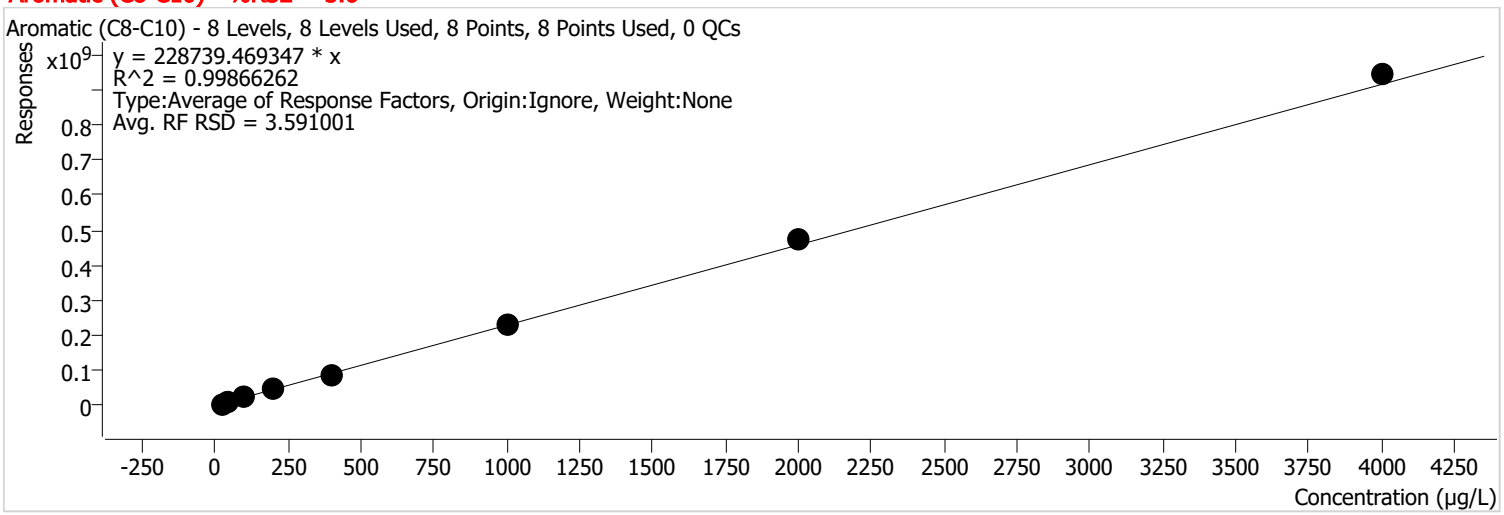


Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030517.D	Calibration	1	x	3896457	10.0000	389645.6887	
D:\GC-28\Data\2021\210305FRONT\030521.D	Calibration	2	x	4971050	20.0000	248552.4991	
D:\GC-28\Data\2021\210305FRONT\030525.D	Calibration	3	x	9571668	50.0000	191433.3572	
D:\GC-28\Data\2021\210305FRONT\030529.D	Calibration	4	x	16477411	100.0000	164774.1059	
D:\GC-28\Data\2021\210305FRONT\030533.D	Calibration	5	x	31193629	200.0000	155968.1458	
D:\GC-28\Data\2021\210305FRONT\030537.D	Calibration	6	x	79919853	500.0000	159839.7068	
D:\GC-28\Data\2021\210305FRONT\030541.D	Calibration	7	x	147218213	1000.0000	147218.2129	
D:\GC-28\Data\2021\210305FRONT\030545.D	Calibration	8	x	276686666	2000.0000	138343.3330	

Calibration Report

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:28 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

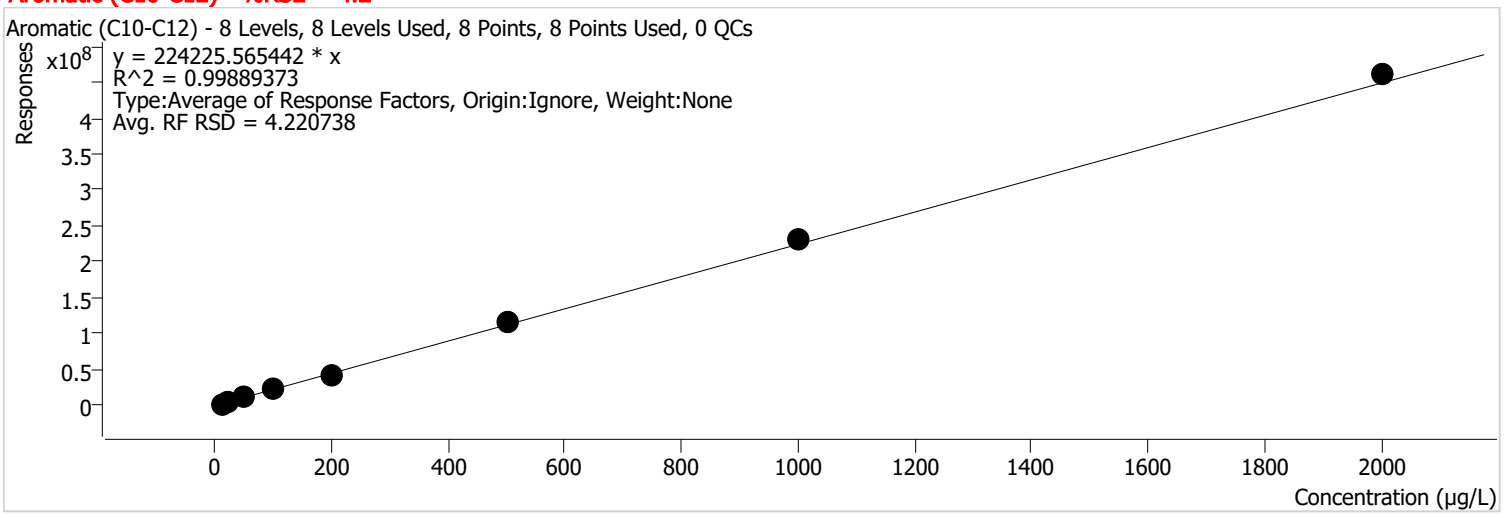
Aromatic (C8-C10) %RSE = 3.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	4810881	20.0000	240544.0695	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	8810197	40.0000	220254.9365	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	22432623	100.0000	224326.2293	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	44222041	200.0000	221110.2027	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	88141818	400.0000	220354.5456	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	231264591	1000.0000	231264.5913	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	472796488	2000.0000	236398.2439	
D:\GC-28\Data\2021\210305FRONT\030543.D	Calibration	8	x	942651743	4000.0000	235662.9358	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:29 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

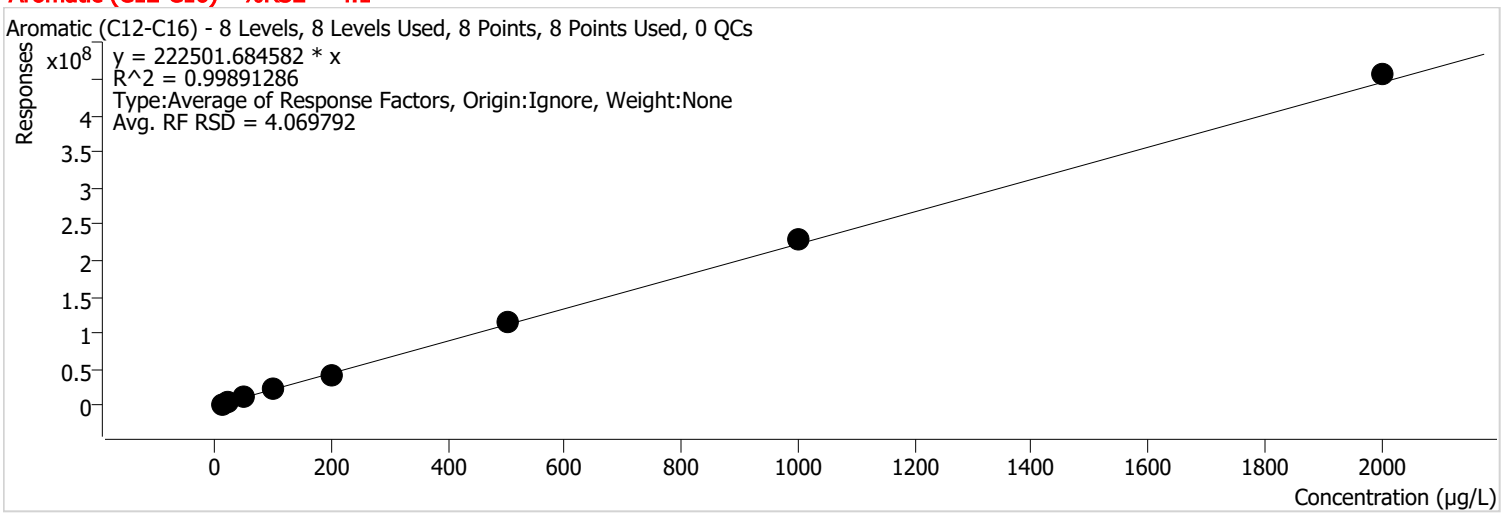
Aromatic (C10-C12) %RSE = 4.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	2392724	10.0000	239272.4348	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	4294814	20.0000	214740.6793	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	10947167	50.0000	218943.3491	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	21611127	100.0000	216111.2714	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	42805828	200.0000	214029.1407	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	114433554	500.0000	228867.1077	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	231843210	1000.0000	231843.2100	
D:\GC-28\Data\2021\210305FRONT\030543.D	Calibration	8	x	459994661	2000.0000	229997.3305	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:29 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

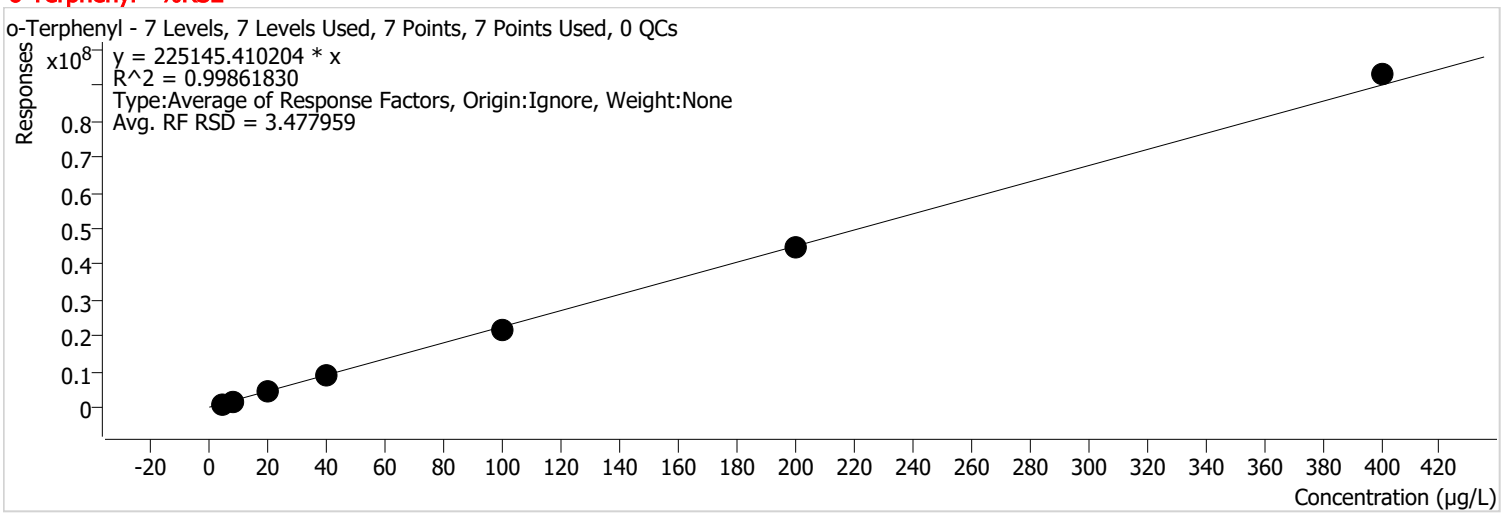
Aromatic (C12-C16) %RSE = 4.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	2353572	10.0000	235357.2191	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	4287899	20.0000	214394.9309	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	10823493	50.0000	216469.8524	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	21441338	100.0000	214413.3776	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	42420723	200.0000	212103.6152	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	114517804	500.0000	229035.6086	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	230304151	1000.0000	230304.1508	
D:\GC-28\Data\2021\210305FRONT\030543.D	Calibration	8	x	455869444	2000.0000	227934.7221	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:29 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

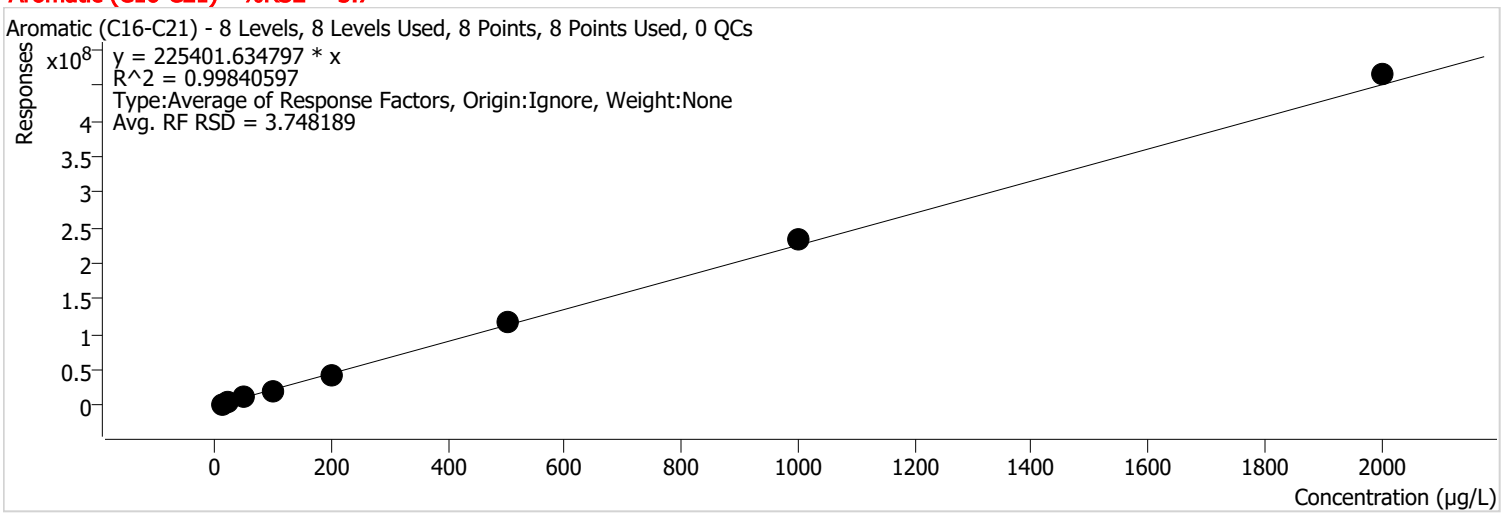
o-Terphenyl %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	954819	4.0000	238704.7269	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	1803594	8.0000	225449.2772	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	4346948	20.0000	217347.3954	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	8883511	40.0000	222087.7676	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	21799740	100.0000	217997.4022	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	44402692	200.0000	222013.4591	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	92967137	400.0000	232417.8431	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:29 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

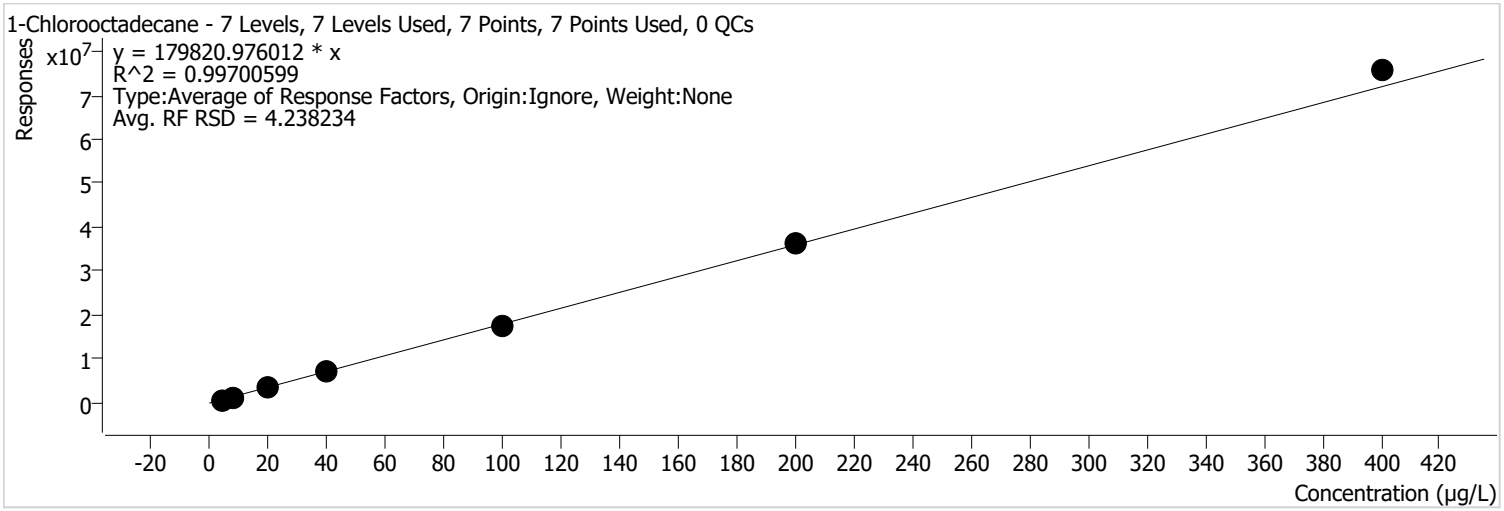
Aromatic (C16-C21) %RSE = 3.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	2327897	10.0000	232789.7128	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	4390016	20.0000	219500.7984	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	11051474	50.0000	221029.4852	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	21595486	100.0000	215954.8579	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	42889376	200.0000	214446.8813	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	116488001	500.0000	232976.0014	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	233987192	1000.0000	233987.1922	
D:\GC-28\Data\2021\210305FRONT\030543.D	Calibration	8	x	465056299	2000.0000	232528.1493	

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:29 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

1-Chlorooctadecane %RSE =

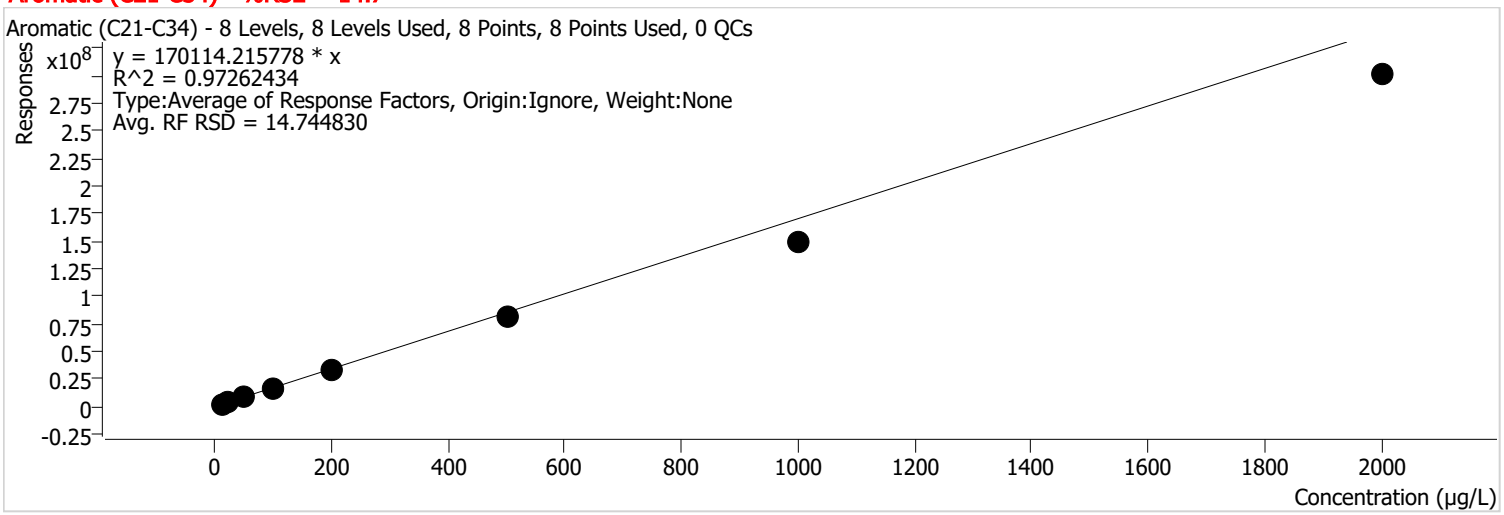


Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	755218	4.0000	188804.5546	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	1362026	8.0000	170253.2895	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	3415780	20.0000	170788.9987	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	7254357	40.0000	181358.9189	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	17722510	100.0000	177225.0966	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	36275211	200.0000	181376.0534	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	75575968	400.0000	188939.9205	

Calibration Report

Batch Path	D:\GC-28\Data\2021\210305FRONT\QuantResults\ARO CAL FRONT.batch.bin		
Analysis Time	3/8/2021 11:44 AM	**Analyst Name**	FA\GC28
Report Time	3/8/2021 11:47:29 AM	**Reporter Name**	FA\GC28
Last Calib Update	3/8/2021 11:43 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Aromatic (C21-C34) %RSE = 14.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
D:\GC-28\Data\2021\210305FRONT\030515.D	Calibration	1	x	2267444	10.0000	226744.4349	
D:\GC-28\Data\2021\210305FRONT\030519.D	Calibration	2	x	3611758	20.0000	180587.9170	
D:\GC-28\Data\2021\210305FRONT\030523.D	Calibration	3	x	8473577	50.0000	169471.5397	
D:\GC-28\Data\2021\210305FRONT\030527.D	Calibration	4	x	16051459	100.0000	160514.5934	
D:\GC-28\Data\2021\210305FRONT\030531.D	Calibration	5	x	32581959	200.0000	162909.7945	
D:\GC-28\Data\2021\210305FRONT\030535.D	Calibration	6	x	81225689	500.0000	162451.3782	
D:\GC-28\Data\2021\210305FRONT\030539.D	Calibration	7	x	148002518	1000.0000	148002.5182	
D:\GC-28\Data\2021\210305FRONT\030543.D	Calibration	8	x	300463100	2000.0000	150231.5502	

EPH Calibration

Aliphatic

Aromatic

Date: 3/5/21

5,000 ppm (CAL): 24363

5,000 ppm (CAL): 24135

Analyst: ISAAC H.

10,000 ppm (SS): 24134

10,000 ppm (SS): 24364

Surrogate: 24804

Hexane: 5666

MeCl2: 5702

Spike Type	Spike Conc. (ppm)	Surr Conc. (ppm)	Spike (uL)	Surr (uL)	Remove (uL)	Final Vol. (uL)	Comments
Aliphatic	10	4	2	1	3	1000	
	20	8	4	2	6	1000	
	50	20	10	5	15	1000	
	100	40	20	10	30	1000	
	200	100	40	25	65	1000	
	500	200	10	5	15	100*	*Use insert
	1000	400	20	10	30	100*	*Use insert
	2000	800	40	20	60	100*	*Use insert
	ICB	40	-	10	10	1000	
	ICV (100)	40	20 ~~10~~ (SS) *	10	20	1000	
Aromatic	10	4	2	1	3	1000	
	20	8	4	2	6	1000	
	50	20	10	5	15	1000	
	100	40	20	10	30	1000	
	200	100	40	25	65	1000	
	500	200	10	5	15	100*	*Use insert
	1000	400	20	10	30	100*	*Use insert
	2000	800	40	20	60	100*	*Use insert
	ICB	40	-	10	10	1000	
	ICV (100)	40	20 ~~10~~ (SS) *	10	20	1000	

* 3/5/21

Signature and Date: 3/5/21

Signature: EM

700 Building Calibration Template - EPH v1.0

Official Approval: 11/11/2019

DATA SET for Review -- Deliverable Requirements

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Fremont Analytical Work Order No. 2106420

Libby Environmental

Project Name: Jacks Auto

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information
- Tune Information

Injection Log

Data Directory: C:\GC-14\Data\2021\062321\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	062101.D	PAH-SIM.M			
CO			2	1.000	21 Jun 2021 08:15 am
2)	062102.D	SEMI9.M			
TUNE			1	1.000	21 Jun 2021 08:36 am
3)	062103.D	PAH-SIM.M			
CCV-			2	1.000	21 Jun 2021 08:59 am
4)	062234.D	PAH-SIM.M			
QCS-32715			2	1.000	23 Jun 2021 12:47 am
5)	062301.D	PAH-SIM.M			
CO			2	1.000	23 Jun 2021 10:58 am
6)	062302.D	SEMI9.M			
TUNE			1	1.000	23 Jun 2021 11:19 am
7)	062303.D	PAH-SIM.M			
CCV-			2	1.000	23 Jun 2021 11:42 am
8)	062304.D	PAH-SIM.M			
CO			2	1.000	23 Jun 2021 01:17 pm
9)	062305.D	PAH-SIM.M			
PAH 10			12	1.000	23 Jun 2021 01:39 pm
10)	062306.D	PAH-SIM.M			
PAH 20			13	1.000	23 Jun 2021 02:00 pm
11)	062307.D	PAH-SIM.M			
PAH 40			14	1.000	23 Jun 2021 02:22 pm
12)	062308.D	PAH-SIM.M			
PAH 100			15	1.000	23 Jun 2021 02:44 pm
13)	062309.D	PAH-SIM.M			
PAH 200			16	1.000	23 Jun 2021 03:06 pm
14)	062310.D	PAH-SIM.M			
PAH 500			17	1.000	23 Jun 2021 03:27 pm
15)	062311.D	PAH-SIM.M			
PAH 750			18	1.000	23 Jun 2021 03:49 pm
16)	062312.D	PAH-SIM.M			
PAH 1000			19	1.000	23 Jun 2021 04:11 pm
17)	062313.D	PAH-SIM.M			
PAH 2000			20	1.000	23 Jun 2021 04:33 pm
18)	062314.D	PAH-SIM.M			
PAH 5000			21	1.000	23 Jun 2021 04:55 pm
19)	062315.D	PAH-SIM.M			
PAH ICB			22	1.000	23 Jun 2021 05:16 pm
20)	062316.D	PAH-SIM.M			
PAH ICV			23	1.000	23 Jun 2021 05:42 pm
21)	062317.D	PAH-LOWLEVEL.M			
CO			11	1.000	23 Jun 2021 06:04 pm

22) 062318.D	PAH-LOWLEVEL.M				
PAH LL 2		11	1.000	23 Jun 2021	06:26 pm
23) 062319.D	PAH-LOWLEVEL.M				
PAH LL 10		12	1.000	23 Jun 2021	06:47 pm
24) 062320.D	PAH-LOWLEVEL.M				
PAH LL 20		13	1.000	23 Jun 2021	07:09 pm
25) 062321.D	PAH-LOWLEVEL.M				
PAH LL 40		14	1.000	23 Jun 2021	07:31 pm
26) 062322.D	PAH-LOWLEVEL.M				
PAH LL 100		15	1.000	23 Jun 2021	07:53 pm
27) 062323.D	PAH-LOWLEVEL.M				
PAH LL 200		16	1.000	23 Jun 2021	08:14 pm
28) 062324.D	PAH-LOWLEVEL.M				
PAH LL 500		17	1.000	23 Jun 2021	08:36 pm
29) 062325.D	PAH-LOWLEVEL.M				
PAH LL 750		18	1.000	23 Jun 2021	08:58 pm
30) 062326.D	PAH-LOWLEVEL.M				
PAH LL1000		19	1.000	23 Jun 2021	09:19 pm
31) 062327.D	PAH-LOWLEVEL.M				
PAH LL 2000		20	1.000	23 Jun 2021	09:41 pm
32) 062328.D	PAH-LOWLEVEL.M				
PAH LL 5000		21	1.000	23 Jun 2021	10:03 pm
33) 062329.D	PAH-LOWLEVEL.M				
PAH LL ICV		23	1.000	23 Jun 2021	10:24 pm
34) 062330.D	PAH-LOWLEVEL.M				
PAH LL ICB		22	1.000	23 Jun 2021	10:46 pm
35) 062331.D	SEMI9.M				
TUNE		1	1.000	23 Jun 2021	11:07 pm
36) 062332.D	PAH-SIM.M				
CCV-32767		2	1.000	23 Jun 2021	11:30 pm
37) 062333.D	PAH-SIM.M				
MB-32767		31	1.000	23 Jun 2021	11:52 pm
38) 062334.D	PAH-SIM.M				
LCS-32767		32	1.000	24 Jun 2021	12:13 am

Injection Log

Data Directory: C:\GC-14\Data\2021\062421\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	062401.D	PAH-SIM.M			
co			2	1.000	24 Jun 2021 07:57 am
2)	062402.D	SEMI9.M			
TUNE			1	1.000	24 Jun 2021 08:18 am
3)	062403.D	PAH-SIM.M			
CCV-32767			2	1.000	24 Jun 2021 08:41 am
4)	062404.D	PAH-SIM.M			
CCV-NEW			2	1.000	24 Jun 2021 09:07 am
5)	062405.D	PAH-SIM.M			
MB-32767			31	1.000	24 Jun 2021 09:28 am
6)	062406.D	PAH-SIM.M			
LCS-32767			32	1.000	24 Jun 2021 09:50 am
7)	062407.D	PAH-SIM.M			
2106395-001A			33	1.000	24 Jun 2021 10:12 am
8)	062408.D	PAH-SIM.M			
2106395-002A			34	1.000	24 Jun 2021 10:33 am
9)	062409.D	PAH-SIM.M			
2106396-001A			35	1.000	24 Jun 2021 10:55 am
10)	062410.D	PAH-SIM.M			
2106397-001A			36	1.000	24 Jun 2021 11:17 am
11)	062411.D	PAH-SIM.M			
2106398-001A			37	1.000	24 Jun 2021 11:38 am
12)	062412.D	PAH-SIM.M			
2106433-002A			38	1.000	24 Jun 2021 12:00 pm
13)	062413.D	PAH-SIM.M			
2106433-002AMS			39	1.000	24 Jun 2021 12:22 pm
14)	062414.D	PAH-SIM.M			
2106433-002AMSD			40	1.000	24 Jun 2021 12:43 pm
15)	062415.D	PAH-SIM.M			
QCS-32767			2	1.000	24 Jun 2021 01:05 pm
16)	062416.D	PAH-SIM.M			
CCV-32760			2	1.000	24 Jun 2021 01:47 pm
17)	062417.D	PAH-SIM.M			
MB-32760			41	1.000	24 Jun 2021 02:09 pm
18)	062418.D	PAH-SIM.M			
LCSD-32760			42	1.000	24 Jun 2021 02:31 pm
19)	062419.D	PAH-SIM.M			
LCS-32760			43	1.000	24 Jun 2021 02:52 pm
20)	062420.D	PAH-SIM.M			
2106437-001C			47	1.000	24 Jun 2021 03:14 pm
21)	062421.D	PAH-SIM.M			
2106425-001E			48	1.000	24 Jun 2021 03:36 pm

22) 062422.D PAH-SIM.M
2106349-001C 44 1.000 24 Jun 2021 03:58 pm
---
23) 062423.D PAH-SIM.M
2106349-001CMS 45 1.000 24 Jun 2021 04:19 pm
---
24) 062424.D PAH-SIM.M
2106353-001B 46 1.000 24 Jun 2021 04:41 pm
---
25) 062425.D PAH-SIM.M
QCS-32760 2 1.000 24 Jun 2021 05:03 pm
---
26) 062426.D PAH-LOWLEVEL.M
CCV-LL-32710 2 1.000 24 Jun 2021 05:25 pm
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27) 062427.D PAH-LOWLEVEL.M
MB-32710 81 1.000 24 Jun 2021 05:46 pm
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28) 062428.D PAH-LOWLEVEL.M
LCS-32710 82 1.000 24 Jun 2021 06:08 pm
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29) 062429.D PAH-LOWLEVEL.M
LCSD-32710 83 1.000 24 Jun 2021 06:30 pm
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30) 062430.D PAH-LOWLEVEL.M
2106238-002A 84 1.000 24 Jun 2021 06:52 pm
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31) 062431.D PAH-LOWLEVEL.M
2106238-002AMS 85 1.000 24 Jun 2021 07:14 pm
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32) 062432.D PAH-LOWLEVEL.M
2106238-006A 86 1.000 24 Jun 2021 07:36 pm
---
33) 062433.D PAH-LOWLEVEL.M
MB-32766 51 1.000 24 Jun 2021 07:58 pm
---
34) 062434.D PAH-LOWLEVEL.M
LCS-32766 52 1.000 24 Jun 2021 08:20 pm
---
35) 062435.D PAH-LOWLEVEL.M
LCSD-32766 53 1.000 24 Jun 2021 08:41 pm
---
36) 062436.D PAH-LOWLEVEL.M
2106341-001C 54 1.000 24 Jun 2021 09:03 pm
---
37) 062437.D PAH-LOWLEVEL.M
QCS-LL-32710 2 1.000 24 Jun 2021 09:25 pm
---
38) 062438.D SEMI9.M
TUNE 1 1.000 24 Jun 2021 09:47 pm
---
39) 062439.D PAH-SIM.M
CCV- 2 1.000 24 Jun 2021 10:09 pm
---
40) 062440.D PAH-SIM.M
MB-32779 61 1.000 24 Jun 2021 10:31 pm
---
41) 062441.D PAH-SIM.M
LCS-32779 62 1.000 24 Jun 2021 10:53 pm
---
42) 062442.D PAH-SIM.M
2106420-006A 63 1.000 24 Jun 2021 11:15 pm
---
43) 062443.D PAH-SIM.M
2106420-007A 64 1.000 24 Jun 2021 11:36 pm
---
44) 062444.D PAH-SIM.M
2106420-010A 65 1.000 24 Jun 2021 11:58 pm
---
45) 062445.D PAH-SIM.M

2106420-011A 66 1.000 25 Jun 2021 12:20 am

46) 062446.D PAH-SIM.M
2106420-011AMS 67 1.000 25 Jun 2021 12:41 am

47) 062447.D PAH-SIM.M
2106420-011AMSD 68 1.000 25 Jun 2021 01:03 am

48) 062448.D PAH-SIM.M
2106420-012A 69 1.000 25 Jun 2021 01:25 am

49) 062449.D PAH-SIM.M
2106420-013A 70 1.000 25 Jun 2021 01:47 am

50) 062450.D PAH-SIM.M
2106420-014A 71 1.000 25 Jun 2021 02:08 am

51) 062451.D PAH-SIM.M
2106420-015A 72 1.000 25 Jun 2021 02:30 am

52) 062452.D PAH-SIM.M
2106420-016A 73 1.000 25 Jun 2021 02:52 am

53) 062453.D PAH-SIM.M
2106420-017A 74 1.000 25 Jun 2021 03:14 am

54) 062454.D PAH-SIM.M
2106420-018A 75 1.000 25 Jun 2021 03:35 am

55) 062455.D PAH-SIM.M
2106420-019A 76 1.000 25 Jun 2021 03:57 am

56) 062456.D PAH-SIM.M
2106439-001A 77 1.000 25 Jun 2021 04:19 am

57) 062457.D PAH-SIM.M
2106439-002A 78 1.000 25 Jun 2021 04:41 am

58) 062458.D PAH-SIM.M
2106440-001A 79 1.000 25 Jun 2021 05:02 am

59) 062459.D PAH-SIM.M
QCS 2 1.000 25 Jun 2021 05:24 am

60) 062501.D PAH-SIM.M
CO 2 1.000 25 Jun 2021 09:39 am

61) 062502.D SEMI9.M
TUNE 1 1.000 25 Jun 2021 10:01 am

62) 062503.D PAH-SIM.M
CCV- 2 1.000 25 Jun 2021 10:24 am

63) 062504.D PAH-SIM.M
2106420-011A 10X 91 1.000 25 Jun 2021 11:07 am

64) 062505.D PAH-SIM.M
2106420-014A 10X 92 1.000 25 Jun 2021 11:29 am

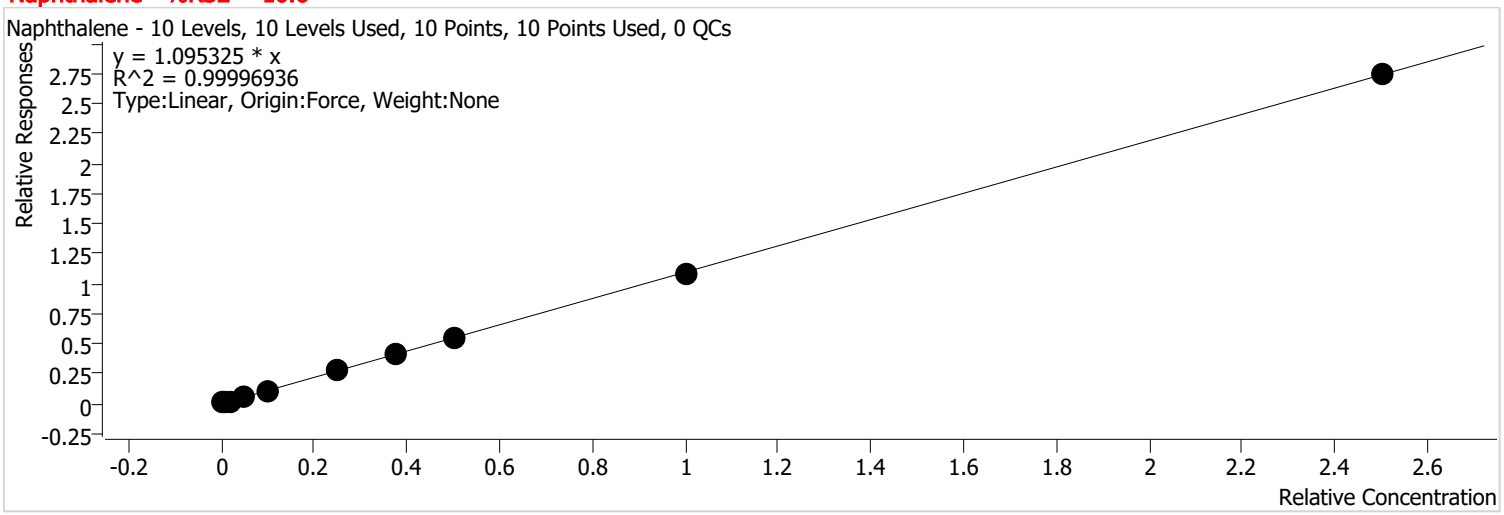
65) 062506.D PAH-SIM.M
QCS 2 1.000 25 Jun 2021 11:51 am

Calibration

Calibration Report

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:38 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

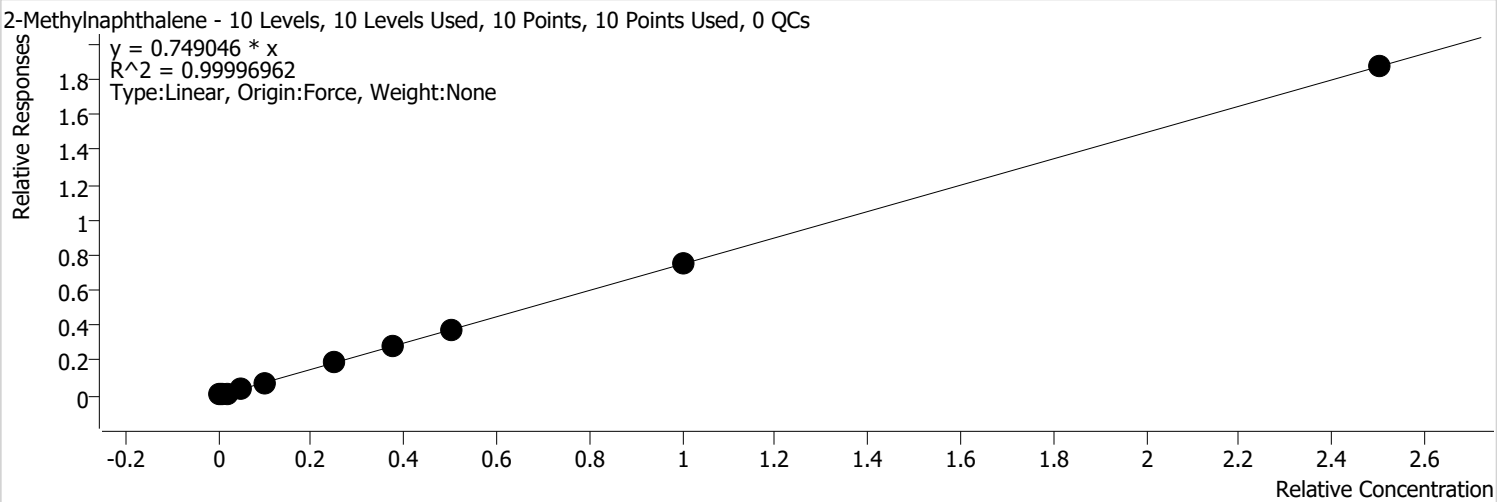
Naphthalene %RSE = 10.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	821	10.0000	1.3822	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1502	20.0000	1.2152	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	2927	40.0000	1.1630	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	7110	100.0000	1.1449	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	14316	200.0000	1.1371	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	35479	500.0000	1.1402	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	52166	750.0000	1.0831	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	68389	1000.0000	1.0968	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	138671	2000.0000	1.0907	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	365480	5000.0000	1.0957	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

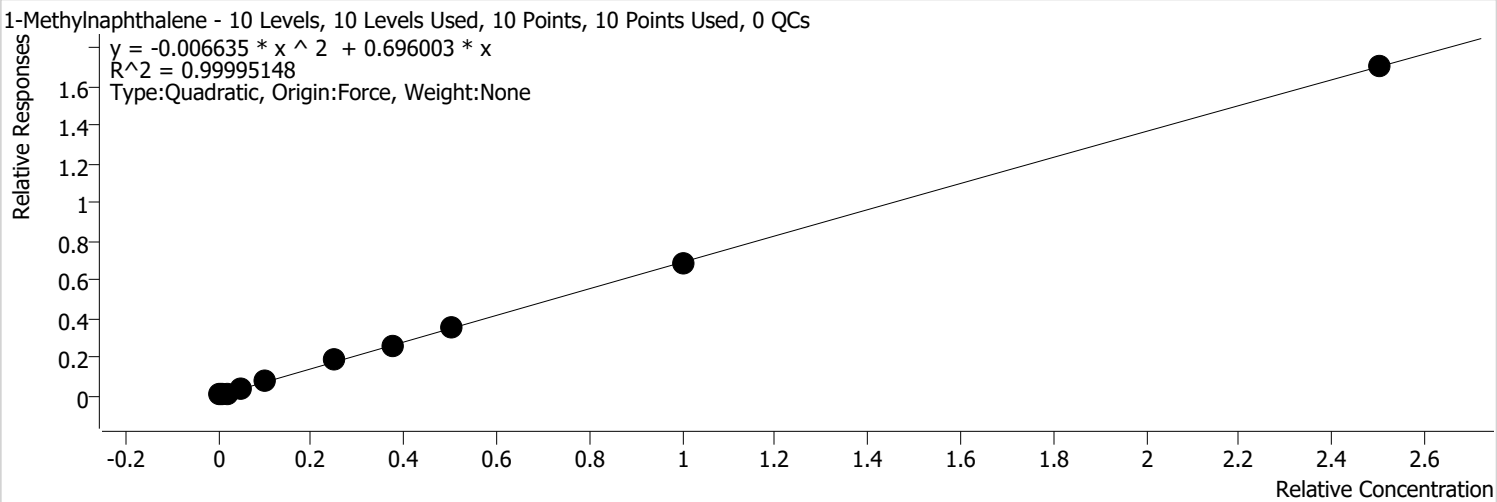
2-Methylnaphthalene %RSE = 5.5



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	511	10.0000	0.8603	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	938	20.0000	0.7592	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	1862	40.0000	0.7397	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	4681	100.0000	0.7537	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	9599	200.0000	0.7624	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	23974	500.0000	0.7705	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	35520	750.0000	0.7375	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	47485	1000.0000	0.7615	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	95005	2000.0000	0.7473	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	249778	5000.0000	0.7489	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

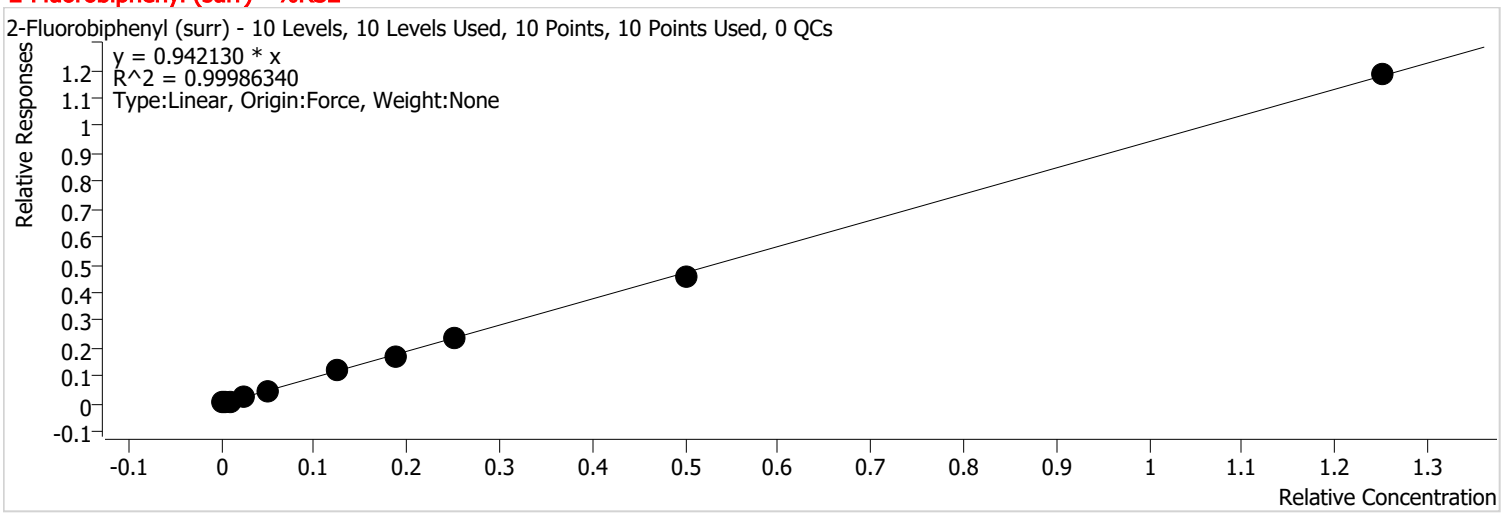
1-Methylnaphthalene %RSE = 9.4



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	506	10.0000	0.8513	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	924	20.0000	0.7473	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	1827	40.0000	0.7260	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	4478	100.0000	0.7211	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	9095	200.0000	0.7224	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	22624	500.0000	0.7271	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	33228	750.0000	0.6899	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	43642	1000.0000	0.6999	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	86965	2000.0000	0.6840	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	226705	5000.0000	0.6797	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

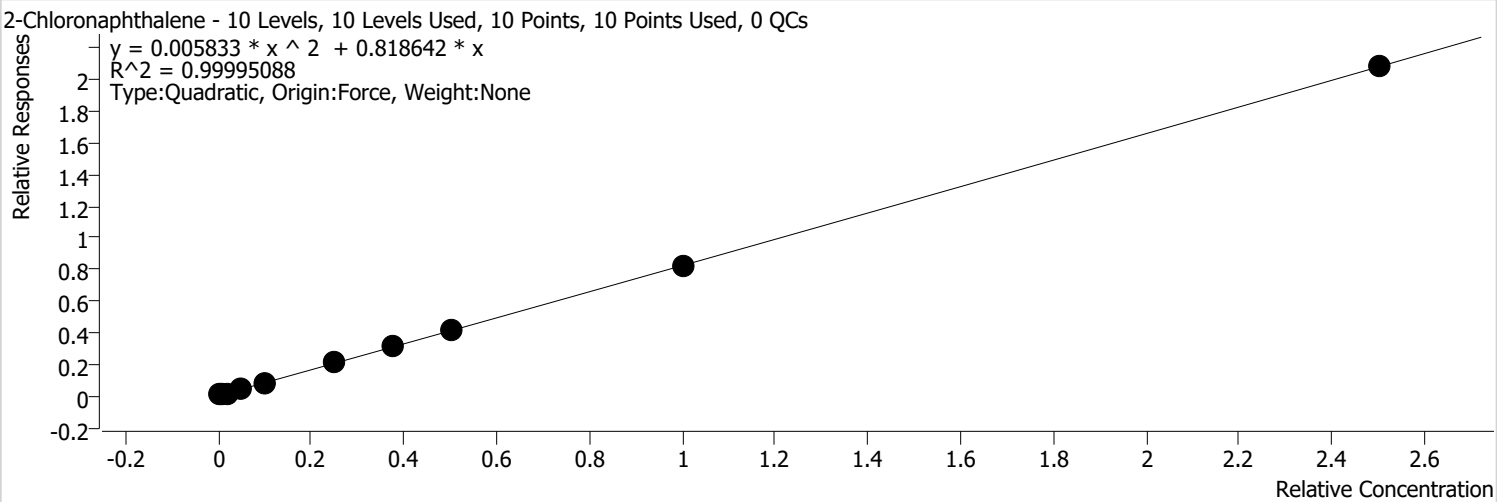
2-Fluorobiphenyl (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	357	5.0000	1.2027	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	652	10.0000	1.0555	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	1253	20.0000	0.9956	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	2982	50.0000	0.9605	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	6057	100.0000	0.9622	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	15073	250.0000	0.9688	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	22259	375.0000	0.9243	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	29014	500.0000	0.9306	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	58568	1000.0000	0.9213	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	157769	2500.0000	0.9460	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

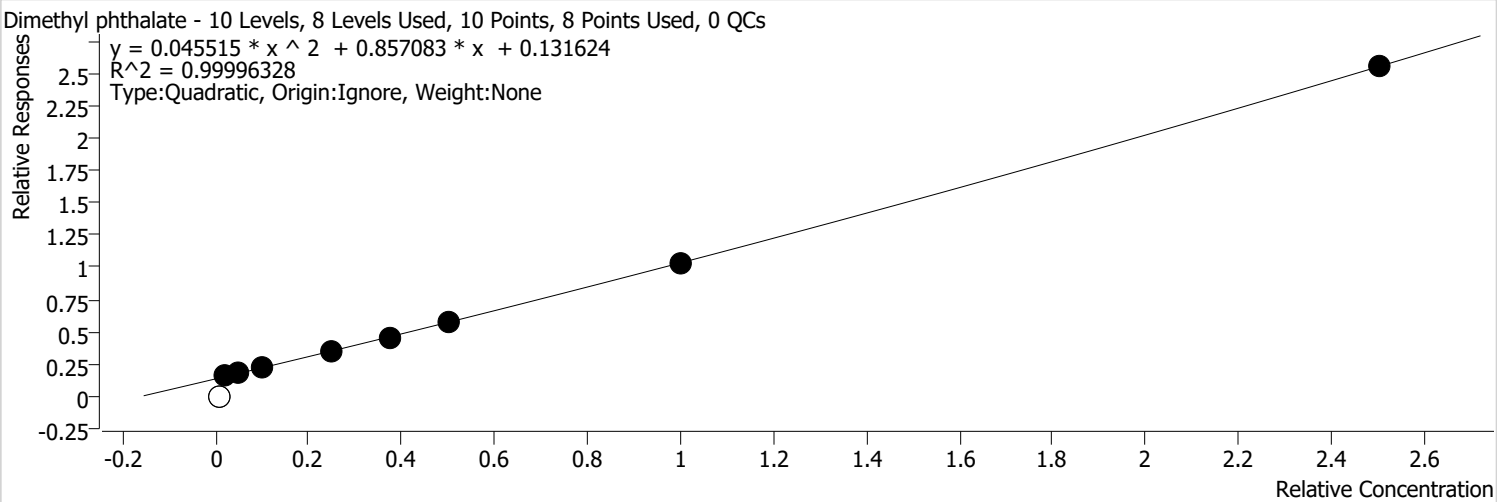
2-Chloronaphthalene %RSE = 8.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	574	10.0000	0.9667	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1095	20.0000	0.8863	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	2133	40.0000	0.8473	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	5285	100.0000	0.8511	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	10791	200.0000	0.8571	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	26772	500.0000	0.8603	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	39435	750.0000	0.8188	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	51728	1000.0000	0.8296	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	103952	2000.0000	0.8177	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	278033	5000.0000	0.8336	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Dimethyl phthalate %RSE = 13.6

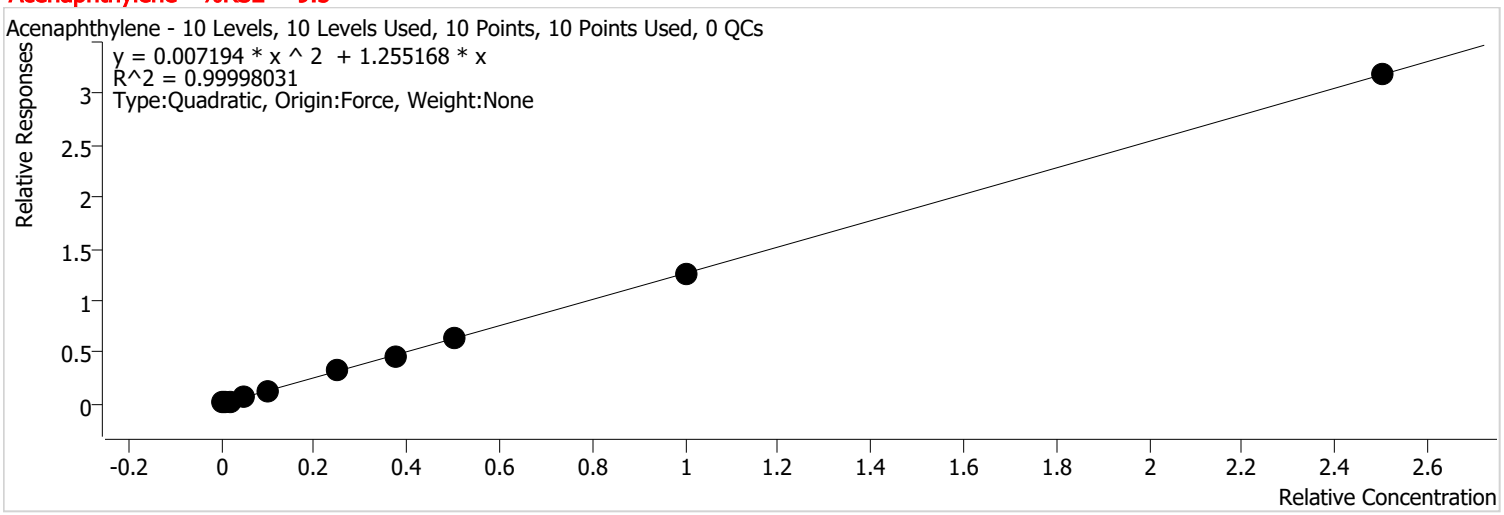


Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1		0	10.0000	0.0000	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2		0	20.0000	0.0000	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	19361	40.0000	7.6923	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	21765	100.0000	3.5049	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	26772	200.0000	2.1265	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	44143	500.0000	1.4186	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	58070	750.0000	1.2057	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	70900	1000.0000	1.1371	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	132028	2000.0000	1.0385	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	341334	5000.0000	1.0233	

Calibration Report

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

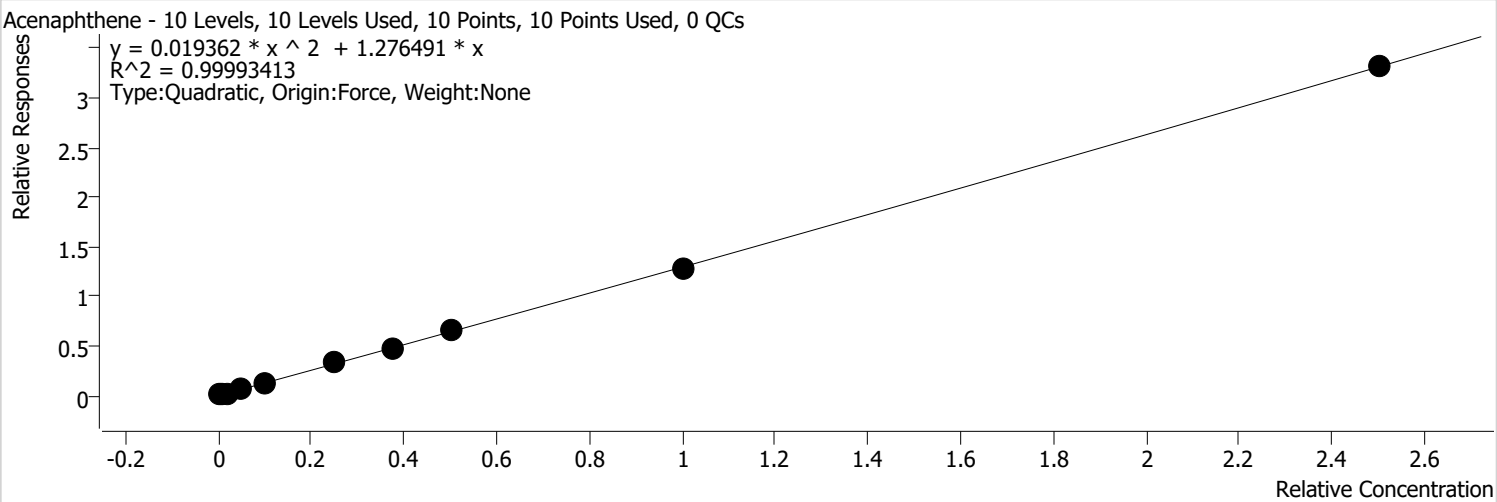
Acenaphthylene %RSE = 9.5



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	923	10.0000	1.5536	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1636	20.0000	1.3236	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3308	40.0000	1.3145	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	7803	100.0000	1.2565	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	16162	200.0000	1.2837	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	40430	500.0000	1.2993	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	60050	750.0000	1.2468	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	78898	1000.0000	1.2653	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	159922	2000.0000	1.2579	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	424734	5000.0000	1.2734	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

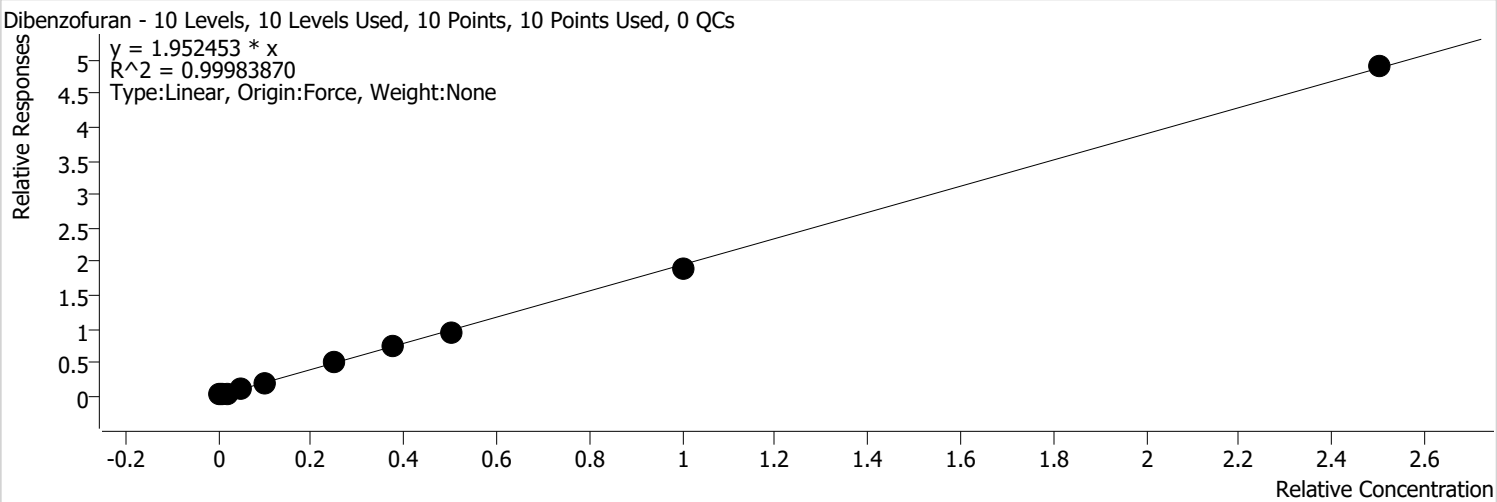
Acenaphthene %RSE = 13.5



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	610	10.0000	1.6623	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1104	20.0000	1.4365	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	2192	40.0000	1.4037	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	5206	100.0000	1.3587	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	10484	200.0000	1.3536	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	25735	500.0000	1.3391	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	37991	750.0000	1.2870	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	50388	1000.0000	1.3069	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	99848	2000.0000	1.2812	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	270819	5000.0000	1.3256	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

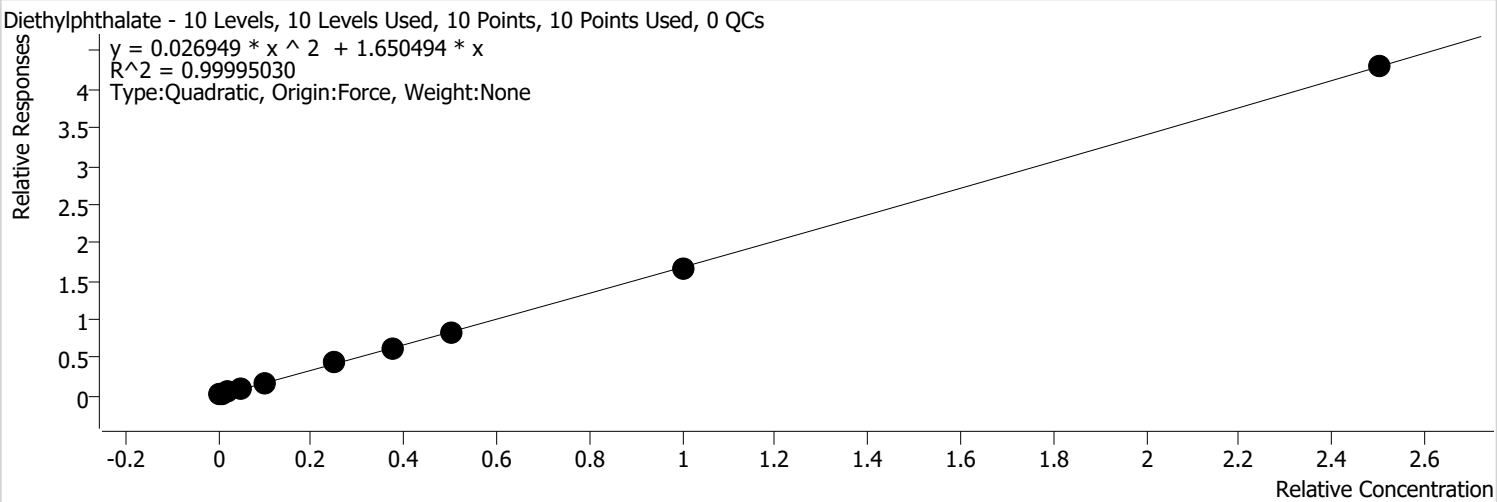
Dibenzofuran %RSE = 9.5



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	899	10.0000	2.4522	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1603	20.0000	2.0851	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3105	40.0000	1.9884	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	7613	100.0000	1.9867	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	15199	200.0000	1.9624	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	38501	500.0000	2.0033	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	57165	750.0000	1.9366	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	73957	1000.0000	1.9182	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	148395	2000.0000	1.9042	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	400708	5000.0000	1.9614	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

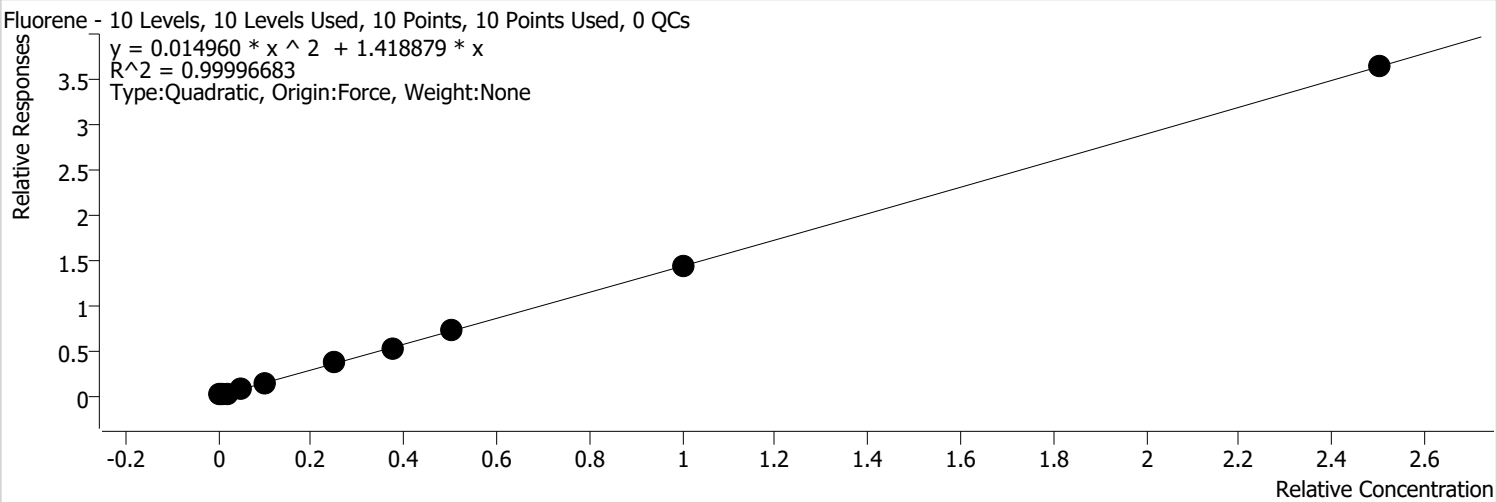
Diethylphthalate %RSE = 51.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1338	10.0000	3.6467	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1963	20.0000	2.5538	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3204	40.0000	2.0519	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	6902	100.0000	1.8011	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	13315	200.0000	1.7191	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	33269	500.0000	1.7311	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	49024	750.0000	1.6608	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	64242	1000.0000	1.6663	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	129957	2000.0000	1.6676	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	351071	5000.0000	1.7184	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

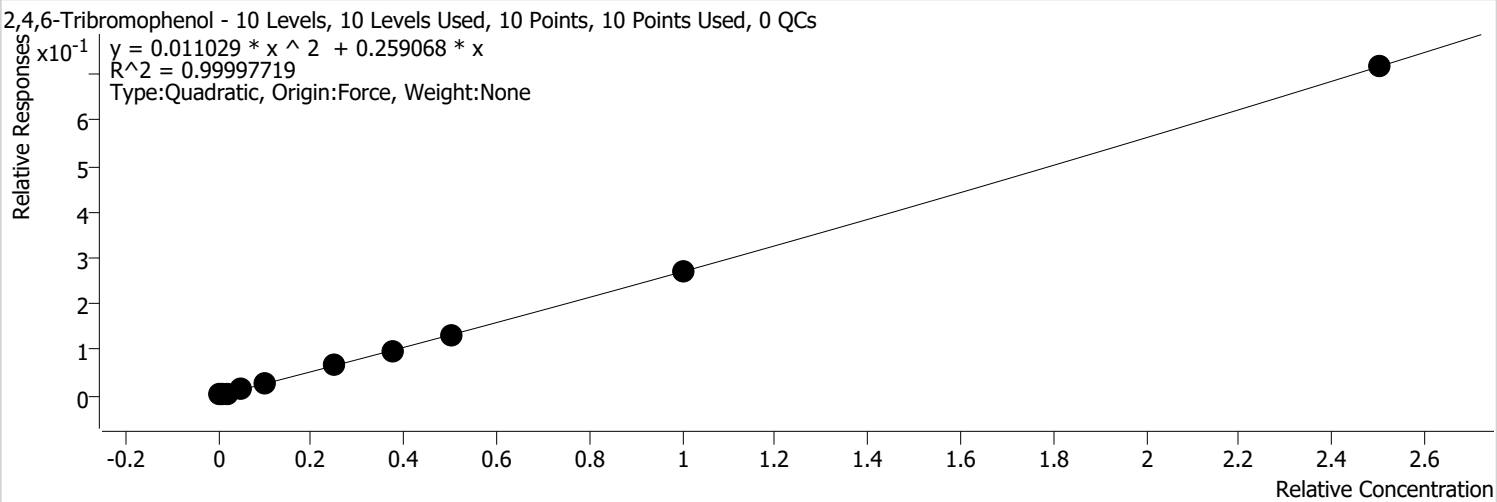
Fluorene %RSE = 11.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	666	10.0000	1.8147	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1215	20.0000	1.5806	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	2339	40.0000	1.4982	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	5642	100.0000	1.4725	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	11262	200.0000	1.4540	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	28588	500.0000	1.4875	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	42067	750.0000	1.4251	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	55204	1000.0000	1.4318	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	111050	2000.0000	1.4250	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	297612	5000.0000	1.4567	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

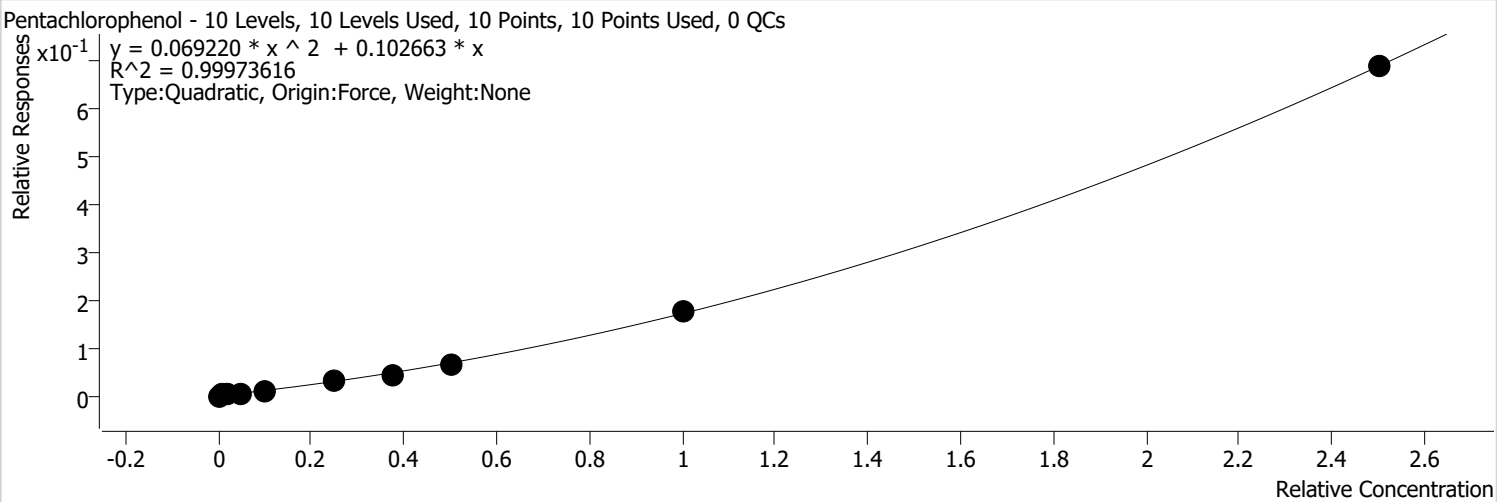
2,4,6-Tribromophenol %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	109	10.0000	0.2966	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	208	20.0000	0.2704	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	400	40.0000	0.2560	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	988	100.0000	0.2578	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	2040	200.0000	0.2633	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	5234	500.0000	0.2724	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	7824	750.0000	0.2651	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	10218	1000.0000	0.2650	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	20929	2000.0000	0.2686	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	58577	5000.0000	0.2867	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Pentachlorophenol %RSE = 9.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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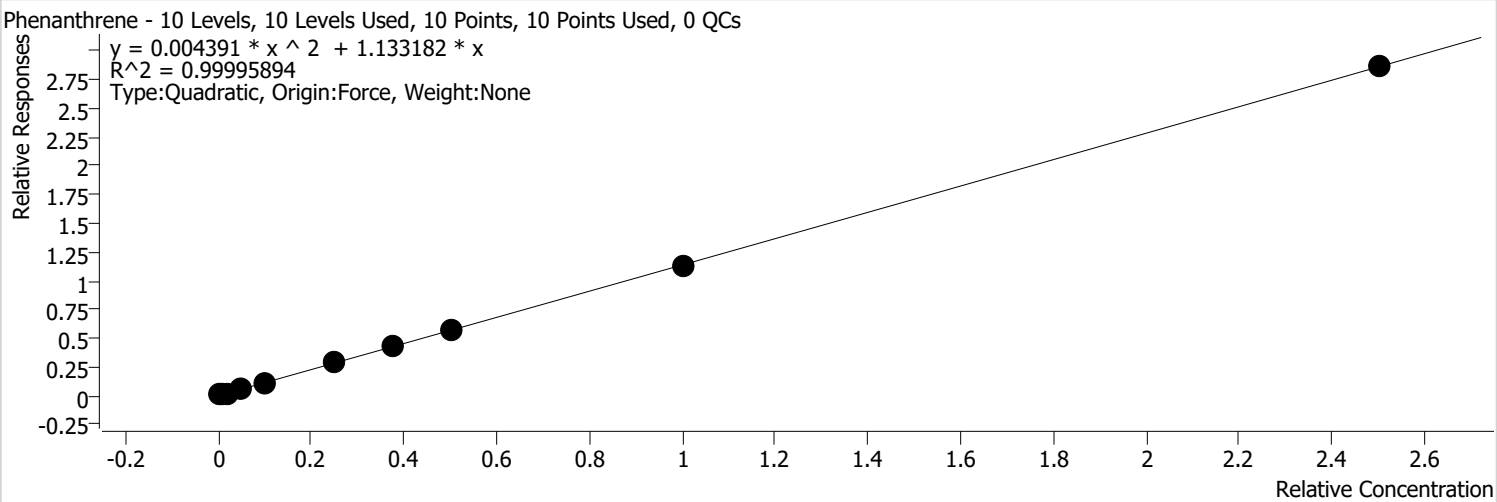
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	159	40.0000	0.1017	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	348	100.0000	0.0908	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	778	200.0000	0.1004	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	2289	500.0000	0.1191	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	3196	750.0000	0.1083	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	5071	1000.0000	0.1315	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	13884	2000.0000	0.1782	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	56270	5000.0000	0.2754	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

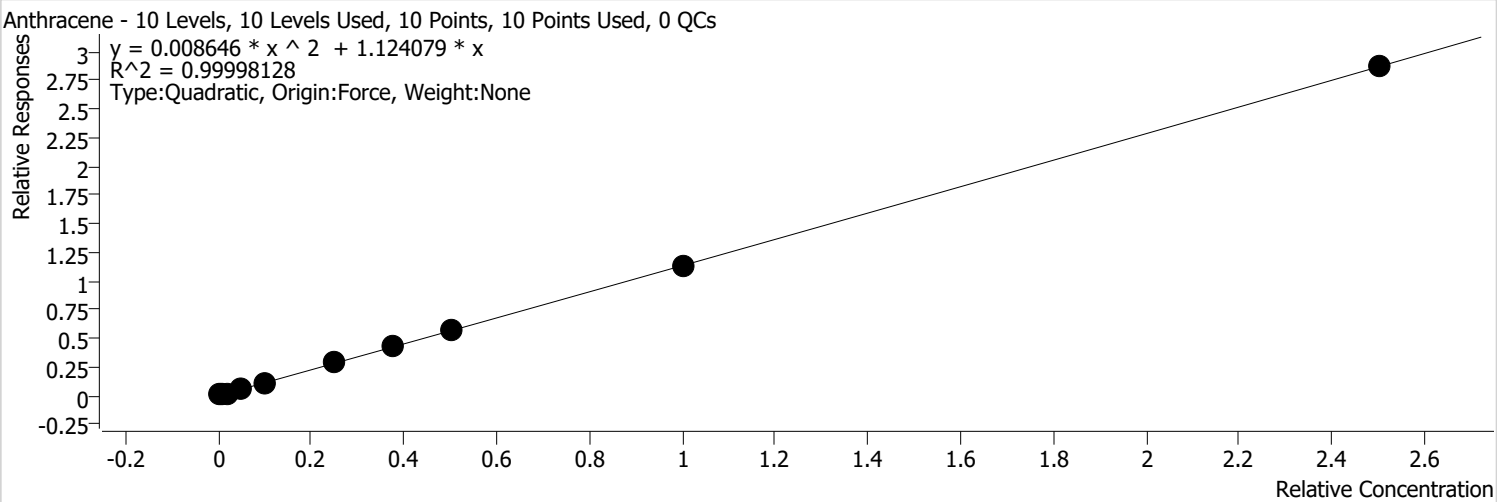
Phenanthrene %RSE = 24.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1304	10.0000	1.7945	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2141	20.0000	1.4115	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3984	40.0000	1.3129	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	9185	100.0000	1.2049	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	18116	200.0000	1.1897	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	45076	500.0000	1.1831	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	66211	750.0000	1.1355	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	88085	1000.0000	1.1399	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	175179	2000.0000	1.1300	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	474187	5000.0000	1.1446	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

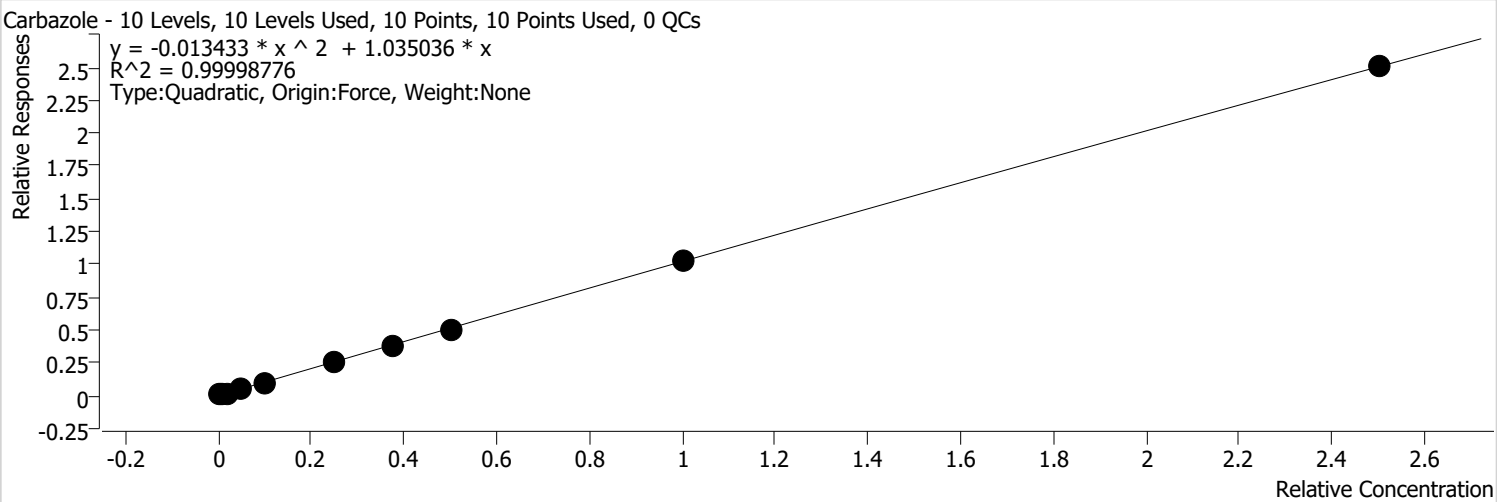
Anthracene %RSE = 10.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1038	10.0000	1.4283	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1814	20.0000	1.1956	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3625	40.0000	1.1946	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	8721	100.0000	1.1439	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	17468	200.0000	1.1472	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	44303	500.0000	1.1628	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	66304	750.0000	1.1371	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	86837	1000.0000	1.1238	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	174934	2000.0000	1.1284	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	474760	5000.0000	1.1459	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

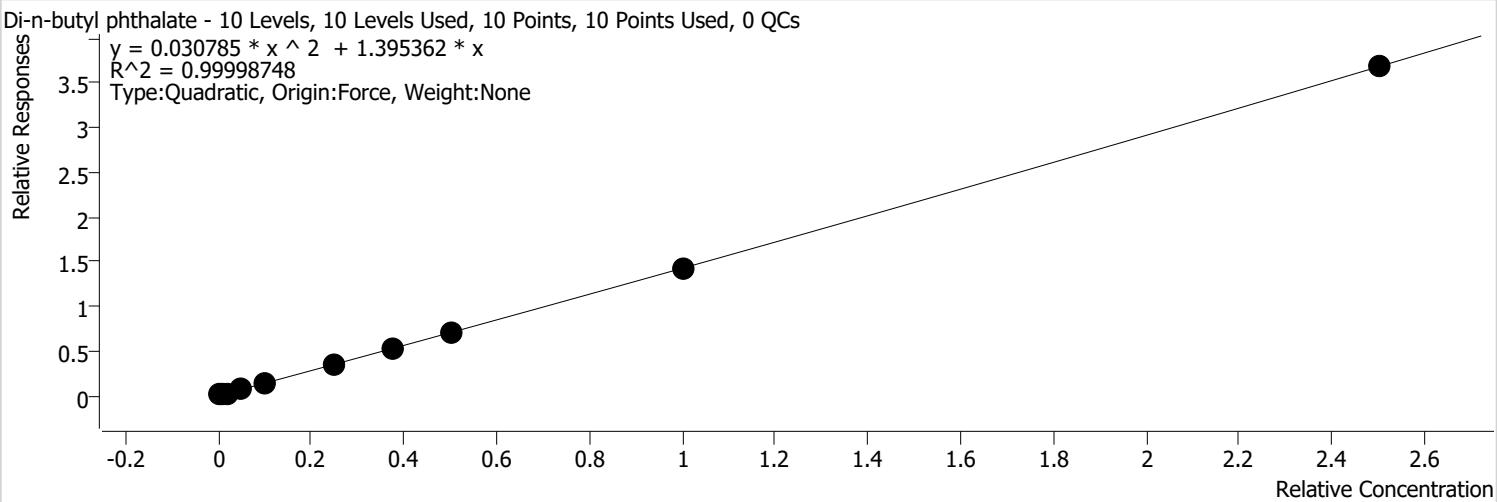
Carbazole %RSE = 10.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	961	10.0000	1.3233	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1613	20.0000	1.0634	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3172	40.0000	1.0451	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	7762	100.0000	1.0182	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	15661	200.0000	1.0285	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	40337	500.0000	1.0587	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	60175	750.0000	1.0320	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	78822	1000.0000	1.0201	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	158372	2000.0000	1.0216	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	414915	5000.0000	1.0015	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

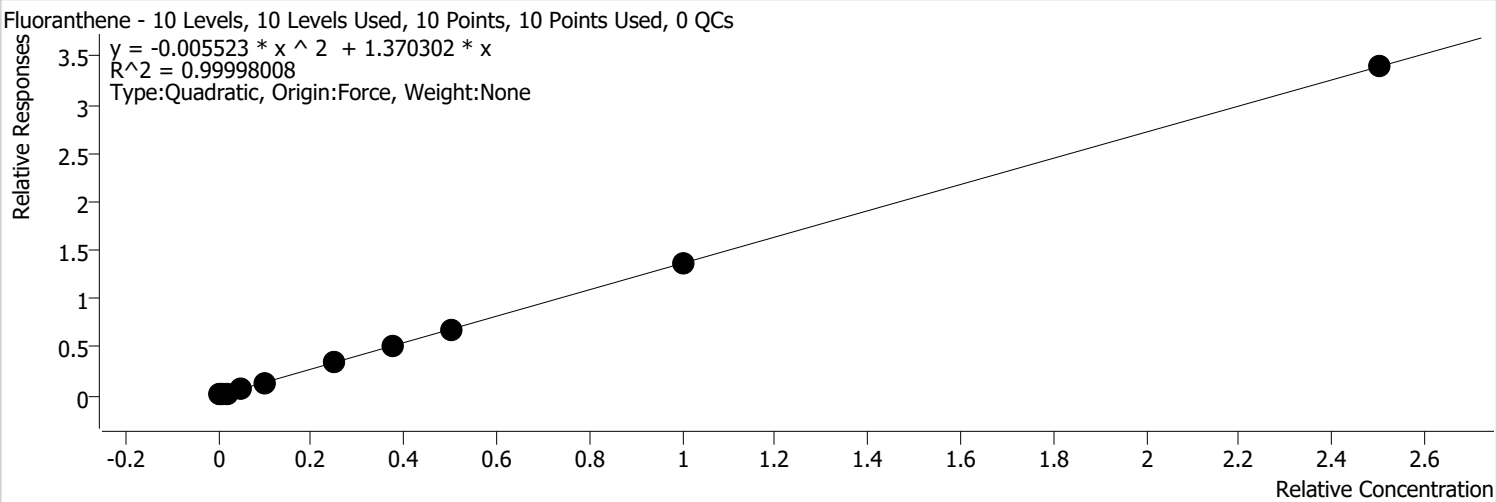
Di-n-butyl phthalate %RSE = 26.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1674	10.0000	2.3039	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2591	20.0000	1.7079	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4646	40.0000	1.5309	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	10755	100.0000	1.4108	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	21377	200.0000	1.4039	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	54826	500.0000	1.4390	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	81769	750.0000	1.4024	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	108260	1000.0000	1.4010	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	221169	2000.0000	1.4266	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	609993	5000.0000	1.4724	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

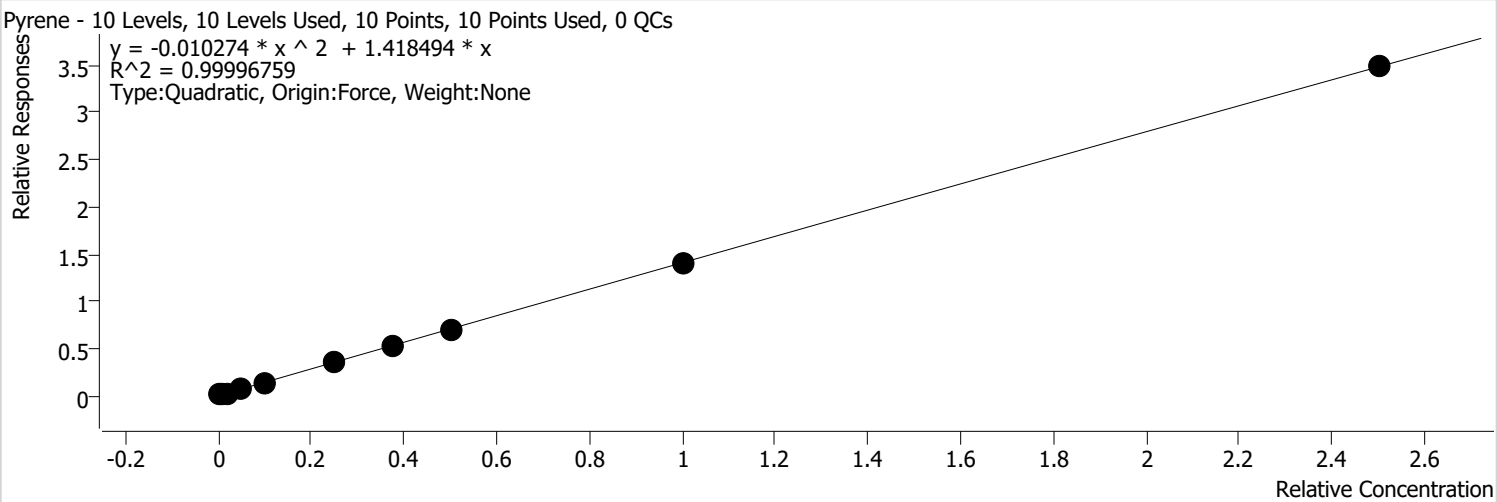
Fluoranthene %RSE = 15.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1388	10.0000	1.9110	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2334	20.0000	1.5384	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4387	40.0000	1.4456	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	10487	100.0000	1.3756	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	21172	200.0000	1.3904	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	54017	500.0000	1.4178	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	80111	750.0000	1.3739	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	105128	1000.0000	1.3605	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	210992	2000.0000	1.3610	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	562089	5000.0000	1.3567	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

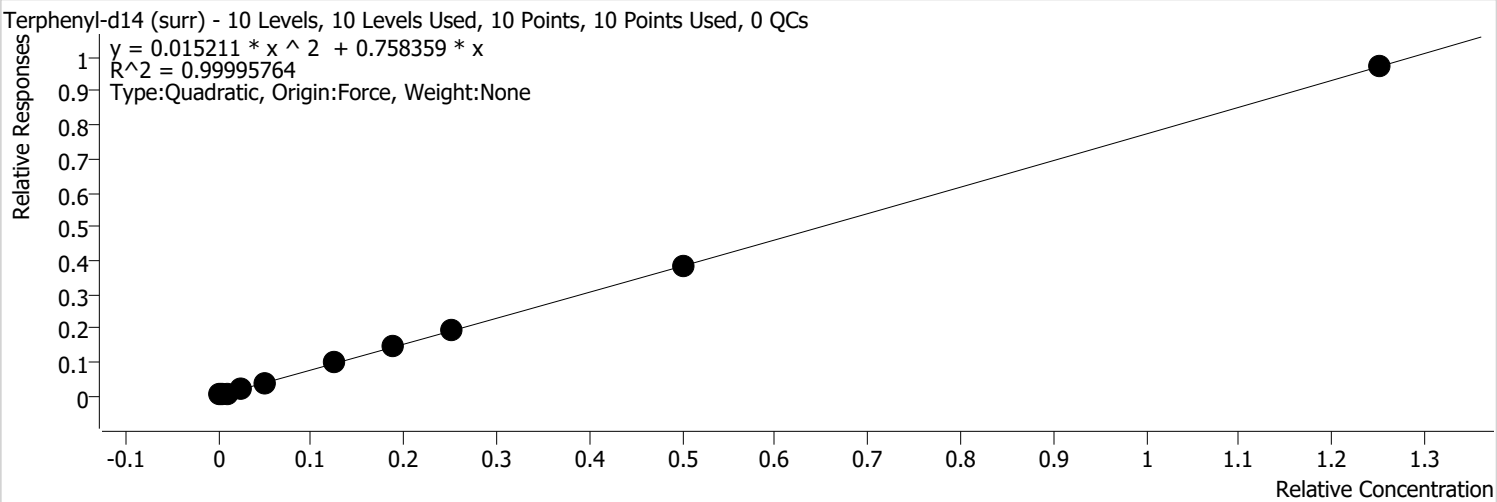
Pyrene %RSE = 21.0



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1567	10.0000	2.1573	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2493	20.0000	1.6435	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4701	40.0000	1.5490	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	11085	100.0000	1.4540	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	22212	200.0000	1.4587	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	56122	500.0000	1.4730	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	83274	750.0000	1.4282	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	108902	1000.0000	1.4093	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	217130	2000.0000	1.4006	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	577211	5000.0000	1.3932	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

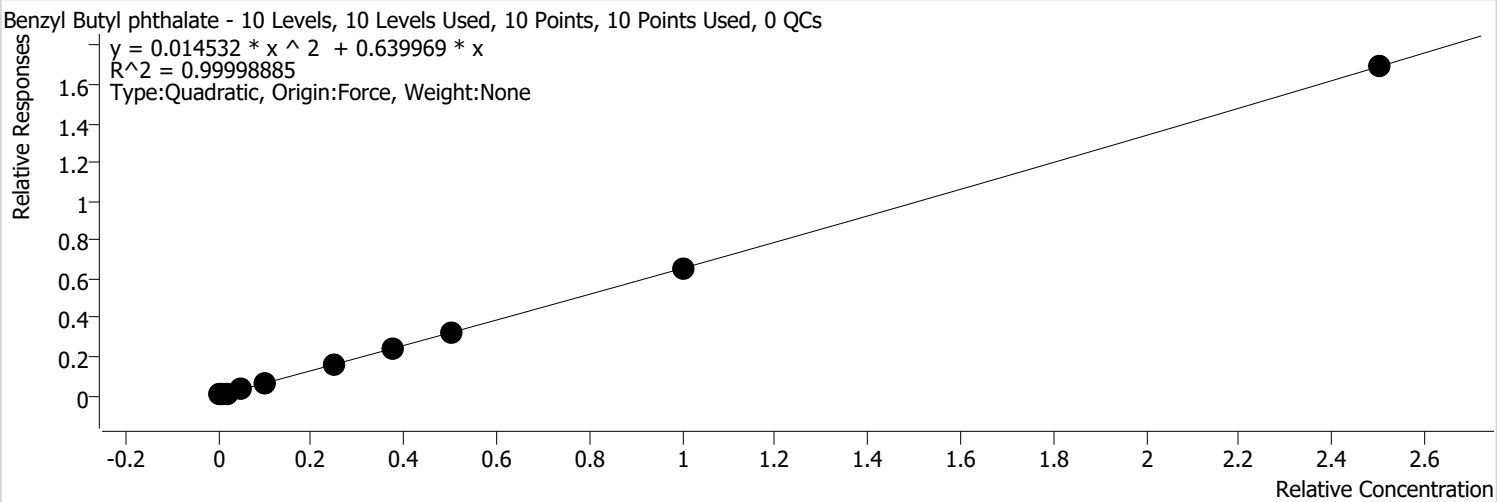
Terphenyl-d14 (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	381	5.0000	1.0490	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	641	10.0000	0.8449	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	1221	20.0000	0.8050	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	2943	50.0000	0.7722	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	5953	100.0000	0.7819	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	15185	250.0000	0.7971	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	22431	375.0000	0.7694	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	29472	500.0000	0.7628	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	58927	1000.0000	0.7602	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	161094	2500.0000	0.7777	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Benzyl Butyl phthalate %RSE = 12.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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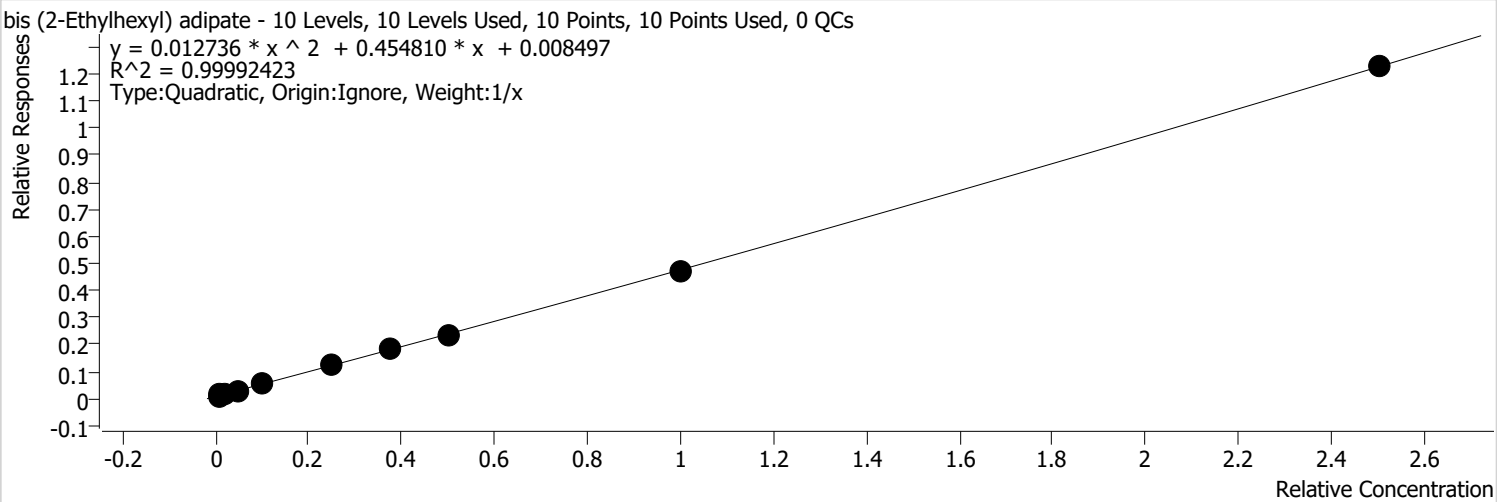
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1051	20.0000	0.6926	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	1930	40.0000	0.6361	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	4844	100.0000	0.6354	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	9639	200.0000	0.6330	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	25151	500.0000	0.6601	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	37817	750.0000	0.6486	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	49608	1000.0000	0.6420	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	101424	2000.0000	0.6542	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	280203	5000.0000	0.6763	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

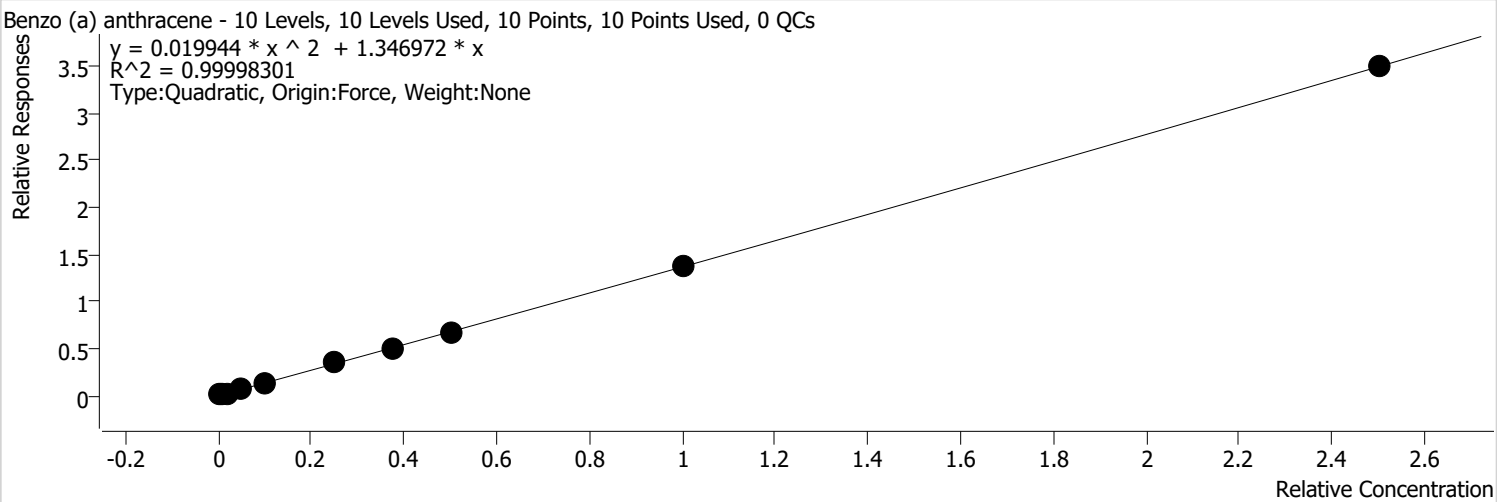
bis (2-Ethylhexyl) adipate %RSE = 3.0



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1583	10.0000	2.1793	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1978	20.0000	1.3040	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	2646	40.0000	0.8718	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	4644	100.0000	0.6092	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	8059	200.0000	0.5293	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	19246	500.0000	0.5051	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	28191	750.0000	0.4835	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	36843	1000.0000	0.4768	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	73586	2000.0000	0.4747	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	203086	5000.0000	0.4902	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

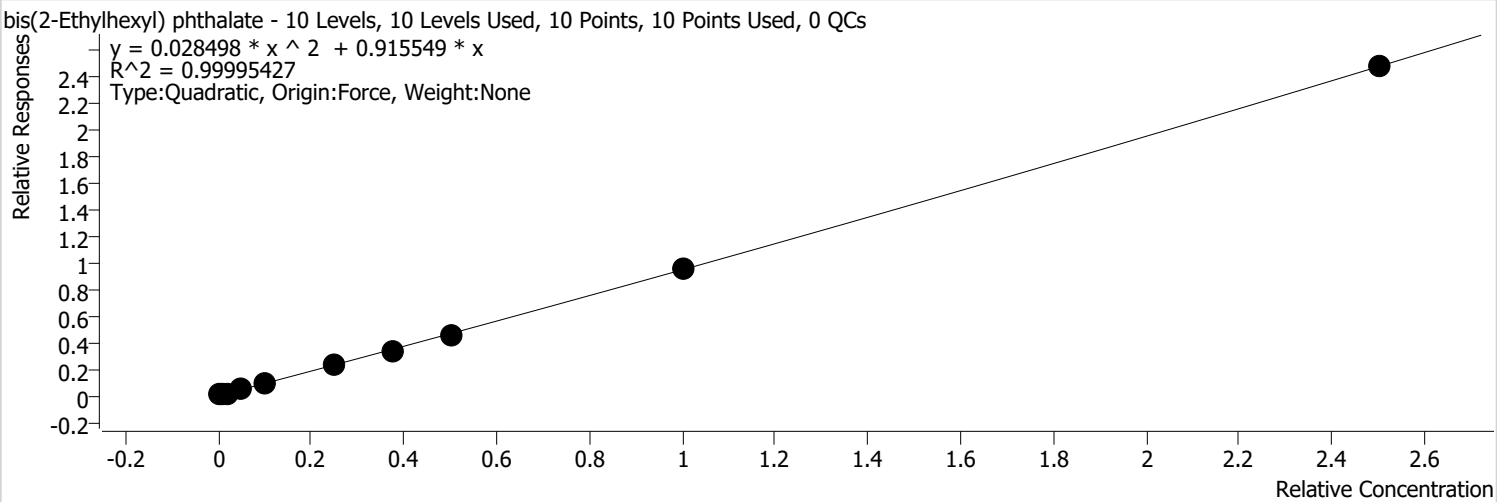
Benzo (a) anthracene %RSE = 27.5



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1634	10.0000	2.2492	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2583	20.0000	1.7027	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4515	40.0000	1.4878	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	10452	100.0000	1.3710	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	20820	200.0000	1.3673	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	52745	500.0000	1.3844	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	78721	750.0000	1.3501	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	103669	1000.0000	1.3416	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	212282	2000.0000	1.3693	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	578685	5000.0000	1.3968	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

bis(2-Ethylhexyl) phthalate %RSE = 14.5



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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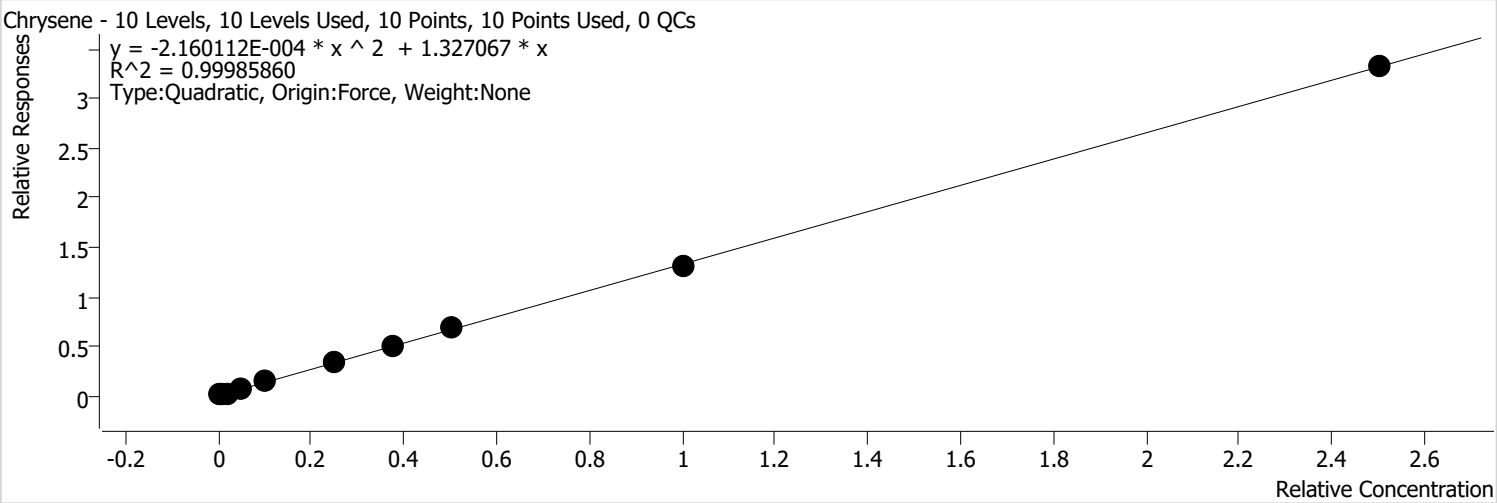
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1457	20.0000	0.9803	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	2671	40.0000	0.9015	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	6520	100.0000	0.8876	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	13144	200.0000	0.8876	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	35097	500.0000	0.9270	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	52701	750.0000	0.8970	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	69621	1000.0000	0.9207	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	142865	2000.0000	0.9531	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	391920	5000.0000	0.9864	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

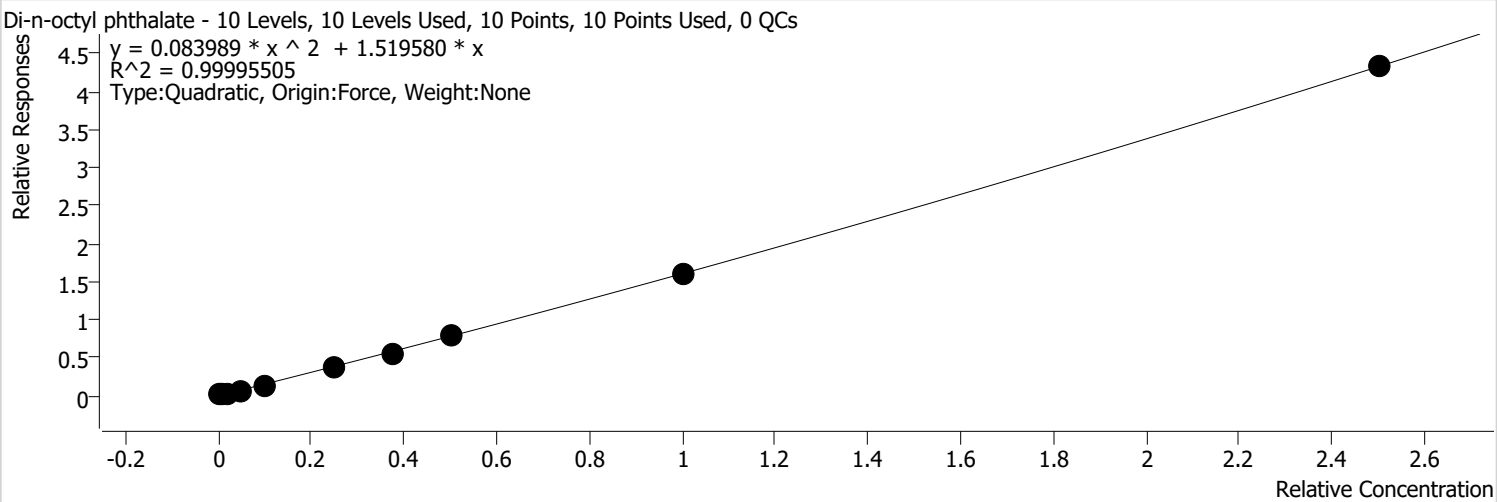
Chrysene %RSE = 19.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1370	10.0000	1.9413	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2290	20.0000	1.5411	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4436	40.0000	1.4972	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	10604	100.0000	1.4435	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	21072	200.0000	1.4229	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	53358	500.0000	1.4094	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	78021	750.0000	1.3279	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	102924	1000.0000	1.3612	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	195670	2000.0000	1.3054	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	527470	5000.0000	1.3275	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

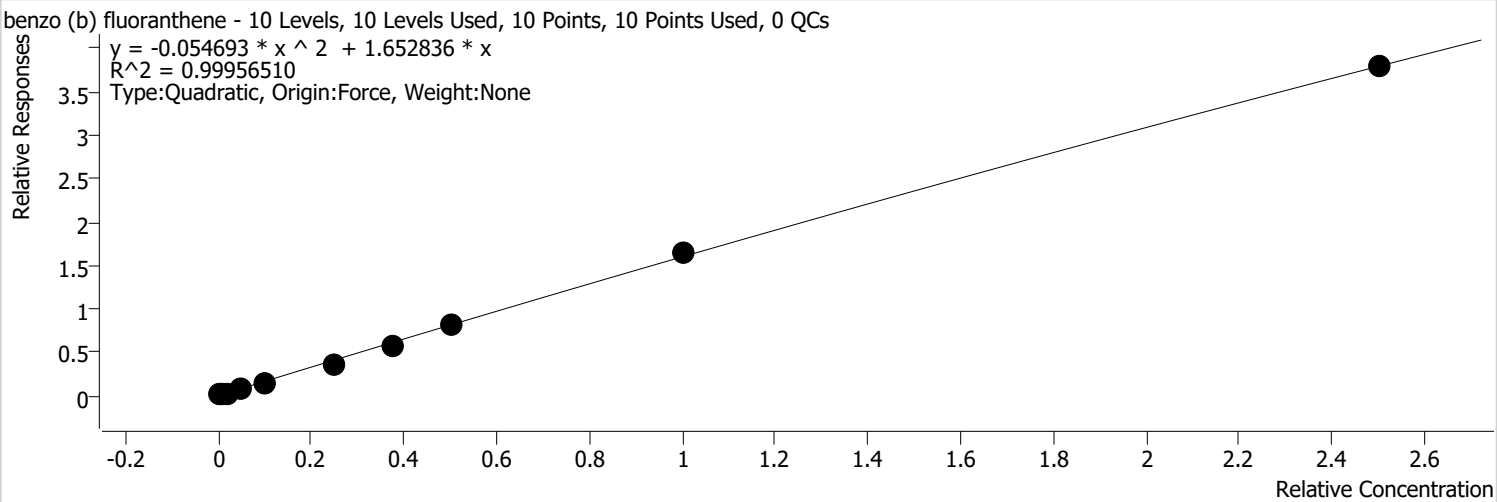
Di-n-octyl phthalate %RSE = 12.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1415	10.0000	2.0052	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2269	20.0000	1.5271	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4220	40.0000	1.4241	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	10438	100.0000	1.4209	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	21419	200.0000	1.4463	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	58328	500.0000	1.5406	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	87921	750.0000	1.4964	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	117787	1000.0000	1.5578	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	242459	2000.0000	1.6175	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	686936	5000.0000	1.7289	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

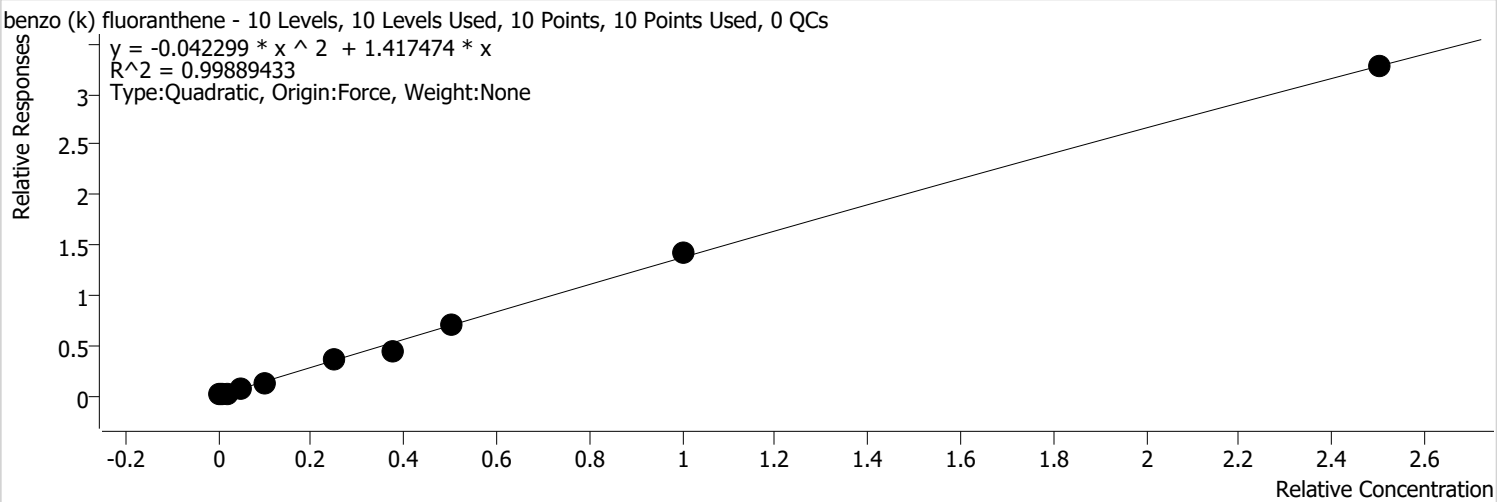
benzo (b) fluoranthene %RSE = 11.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1409	10.0000	1.9965	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2301	20.0000	1.5485	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4613	40.0000	1.5569	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	11084	100.0000	1.5089	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	21846	200.0000	1.4752	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	54263	500.0000	1.4333	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	91253	750.0000	1.5531	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	122654	1000.0000	1.6221	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	245495	2000.0000	1.6378	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	601590	5000.0000	1.5141	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

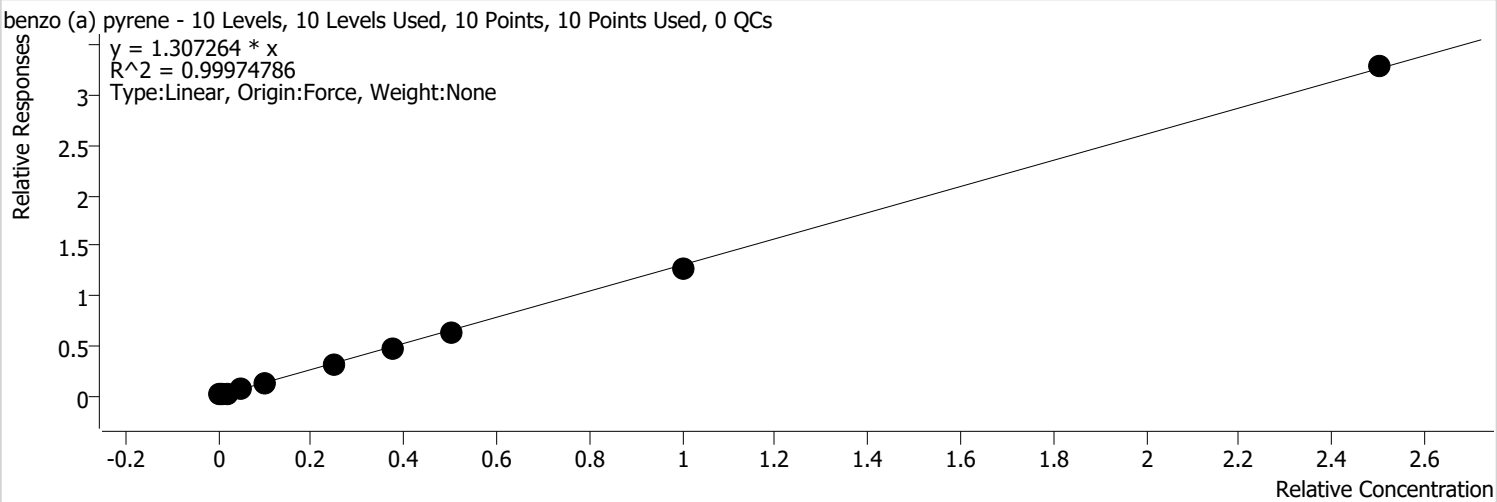
benzo (k) fluoranthene %RSE = 12.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1255	10.0000	1.7781	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2196	20.0000	1.4776	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3820	40.0000	1.2891	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	9724	100.0000	1.3237	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	19795	200.0000	1.3367	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	53635	500.0000	1.4167	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	68067	750.0000	1.1585	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	106796	1000.0000	1.4124	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	212704	2000.0000	1.4190	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	520347	5000.0000	1.3096	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

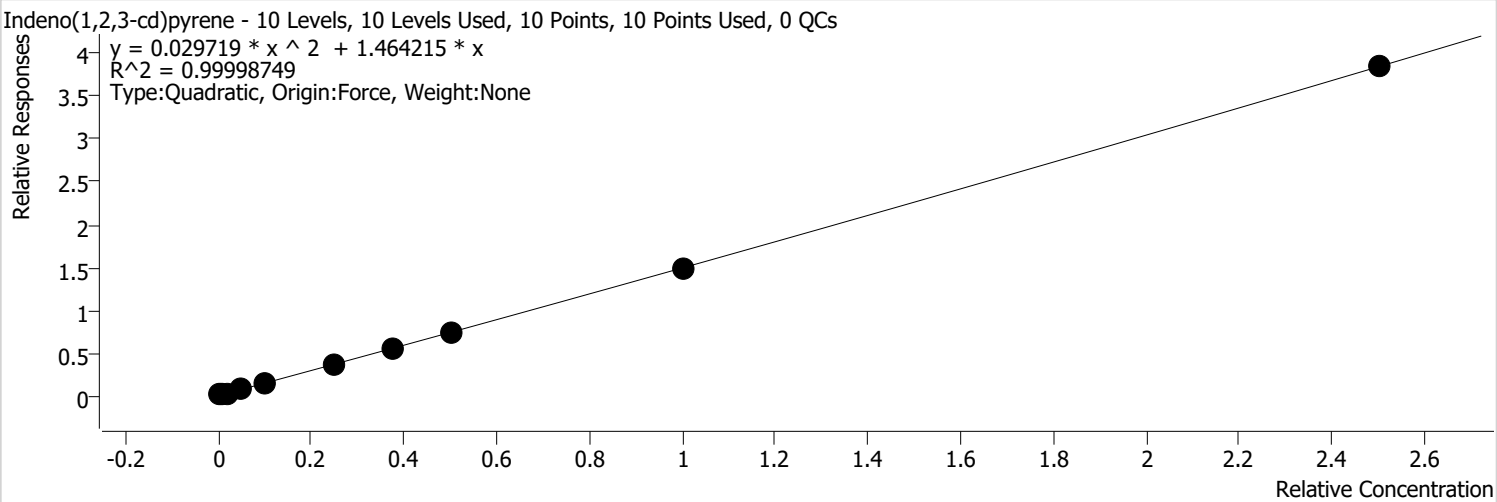
benzo (a) pyrene %RSE = 8.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1122	10.0000	1.5901	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1931	20.0000	1.2996	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3671	40.0000	1.2390	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	8949	100.0000	1.2182	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	18341	200.0000	1.2385	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	47655	500.0000	1.2587	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	72377	750.0000	1.2318	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	96752	1000.0000	1.2796	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	191831	2000.0000	1.2797	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	522531	5000.0000	1.3151	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

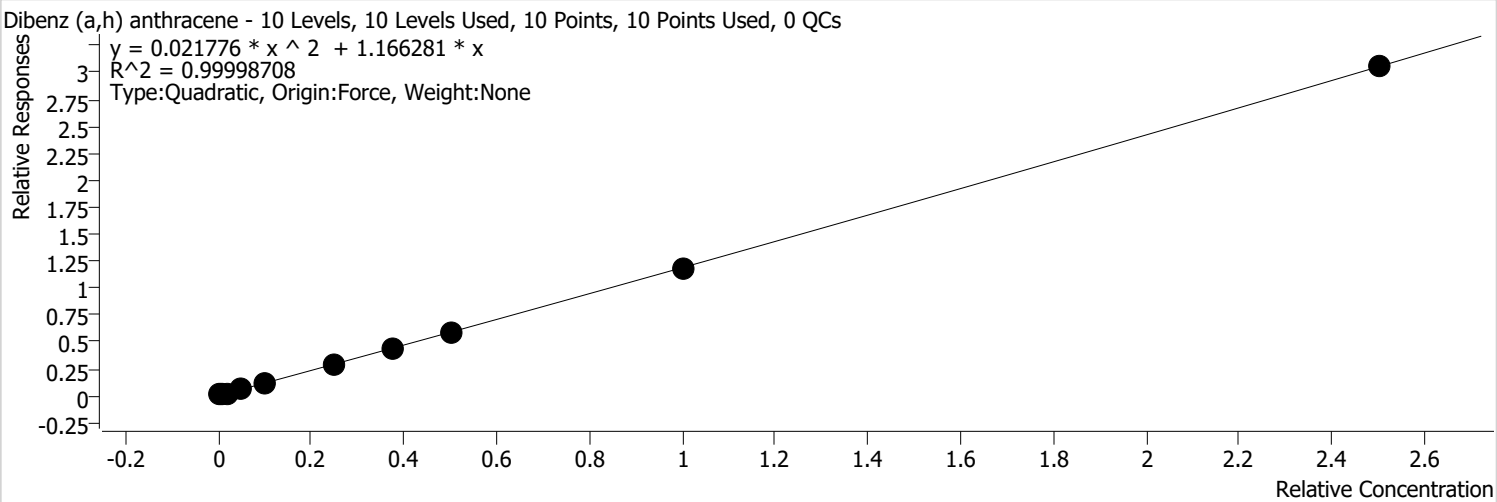
Indeno(1,2,3-cd)pyrene %RSE = 10.4



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1401	10.0000	1.8578	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2432	20.0000	1.5401	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4650	40.0000	1.4720	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	11240	100.0000	1.4380	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	23031	200.0000	1.4669	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	59682	500.0000	1.5025	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	88682	750.0000	1.4517	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	116906	1000.0000	1.4749	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	236618	2000.0000	1.4972	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	638097	5000.0000	1.5384	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

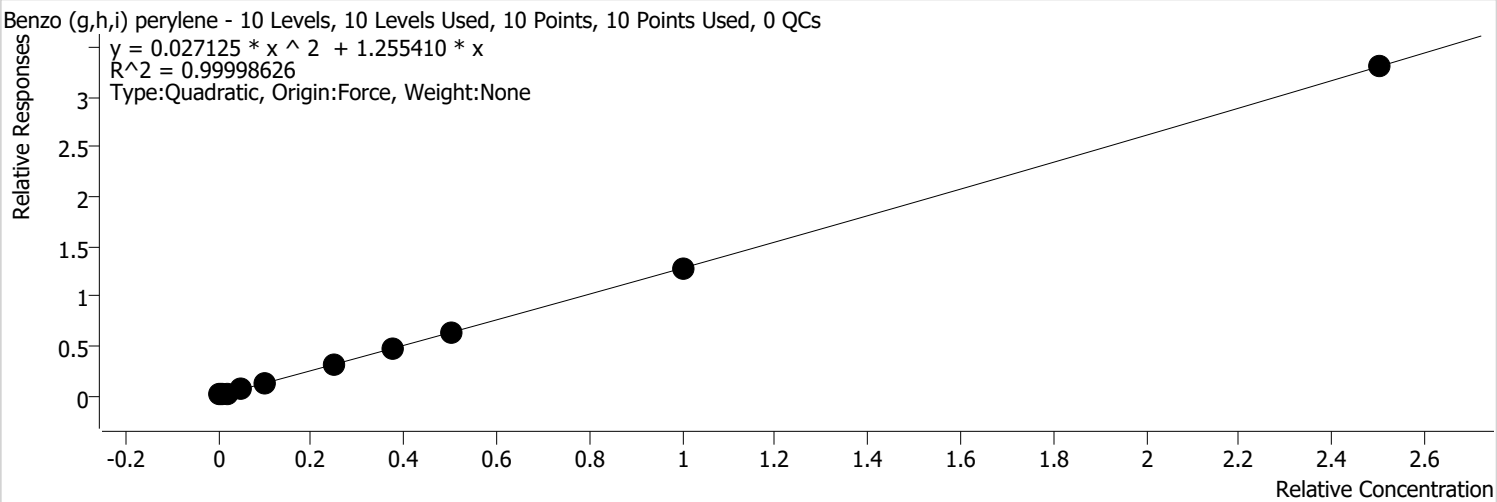
Dibenz (a,h) anthracene %RSE = 7.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1062	10.0000	1.4076	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	1878	20.0000	1.1889	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	3703	40.0000	1.1721	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	8951	100.0000	1.1451	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	18324	200.0000	1.1671	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	47523	500.0000	1.1964	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	70555	750.0000	1.1550	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	93062	1000.0000	1.1741	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	188183	2000.0000	1.1907	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	506291	5000.0000	1.2206	

Batch Path	C:\GC-14\Data\2021\062321\QuantResults\PAH CAL.batch.bin		
Analysis Time	6/24/2021 8:57 AM	**Analyst Name**	FA\gc14
Report Time	6/24/2021 8:59:40 AM	**Reporter Name**	FA\gc14
Last Calib Update	6/24/2021 8:49 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Benzo (g,h,i) perylene %RSE = 13.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\062321\062305.D	Calibration	1	x	1275	10.0000	1.6898	
C:\GC-14\Data\2021\062321\062306.D	Calibration	2	x	2184	20.0000	1.3826	
C:\GC-14\Data\2021\062321\062307.D	Calibration	3	x	4155	40.0000	1.3151	
C:\GC-14\Data\2021\062321\062308.D	Calibration	4	x	9948	100.0000	1.2728	
C:\GC-14\Data\2021\062321\062309.D	Calibration	5	x	19922	200.0000	1.2689	
C:\GC-14\Data\2021\062321\062310.D	Calibration	6	x	51325	500.0000	1.2921	
C:\GC-14\Data\2021\062321\062311.D	Calibration	7	x	76037	750.0000	1.2447	
C:\GC-14\Data\2021\062321\062312.D	Calibration	8	x	100468	1000.0000	1.2675	
C:\GC-14\Data\2021\062321\062313.D	Calibration	9	x	202930	2000.0000	1.2841	
C:\GC-14\Data\2021\062321\062314.D	Calibration	10	x	548833	5000.0000	1.3232	

Semivolatile Calibration

Date: 06/01/21

Analyst: Sam Berman

MeCl2: 5845

Cal		ICV	
8270 Megamix:	24373	8270 Megamix:	24490
2,4-DNP:	24498	2,4-DNP:	23305
Benzoic Acid:	25025	Benzoic Acid:	24501

8270 Surrogate: 25191

IS 25411

Spike Conc. (ppb)	BN/Acid Surr Conc. (ppb)	2° Spike (uL)	B/N Surr (uL)	Internal Standard (uL)	Remove (uL)	Final Vol. (mL)	Comments (8270 MM SS / 2,4DNP SS / BA SS)
10	10/5	1	--	10	11	1	
20	20/10	2	--	10	12	1	
40	40/20	4	--	10	14	1	
100	100/50	10	--	10	20	1	
200	200/100	20	--	10	30	1	
500	500/250	~~40~~ 50	--	10	60	1	
750	750/375	75	--	10	85	1	
1000	1000/500	100	--	10	110	1	
2000	2000/1000	200	--	10	210	1	
5000	5000/2500	500	--	10	510	1	
ICB	1000/500		~~1~~ 5	10	11	1	
ICV (1000 ppb)	1000/500	~~100~~ (2° SS)	-- 5	10	~~110~~ 190	1	1 1 1

	Mega Mix (uL)	2,4-DNP (uL)	Benzoic Acid (uL)	8270 Surr (uL)	Final Volume (mL)
2° Intermediate (cal)	100	100	100	100	10
2° Intermediate (SS)	50	50	50	50	5

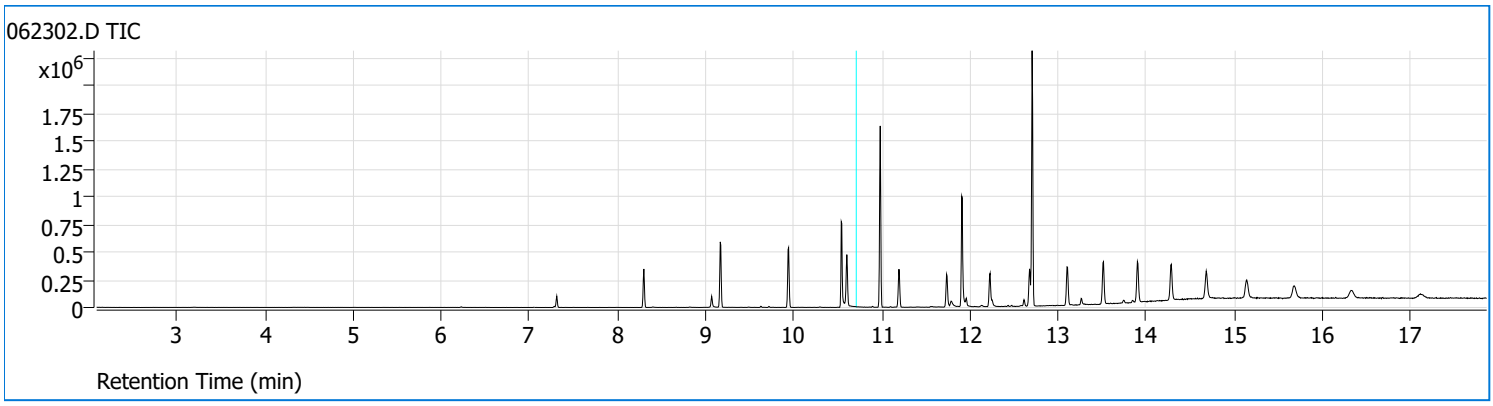
Signature and Date: 06/01/21

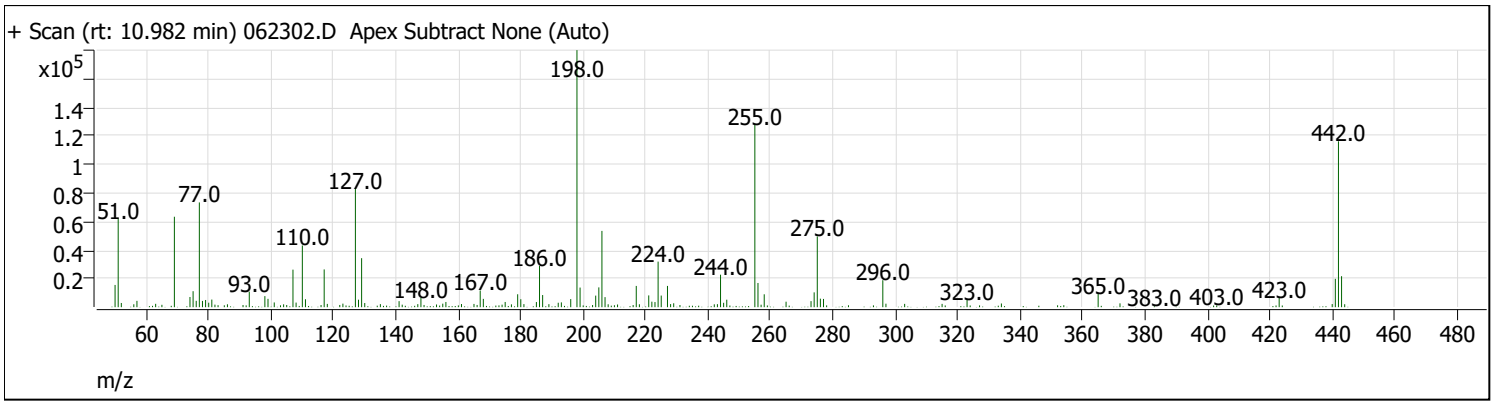
Signature: EM

Tunes

Tune Evaluation Report

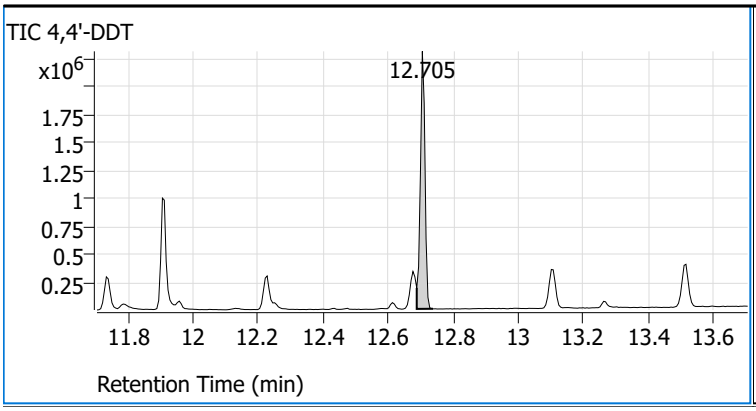
Data Path:	C:\GC-14\Data\2021\062321\062302.D
Acq on:	6/23/2021 11:19:56 AM
Operator:	FA\gc14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

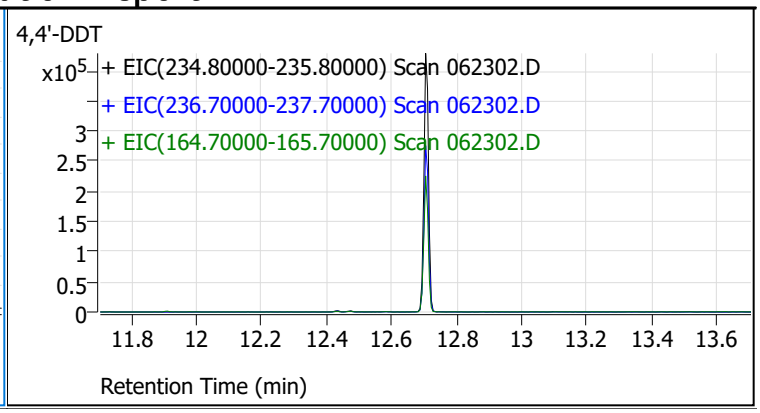


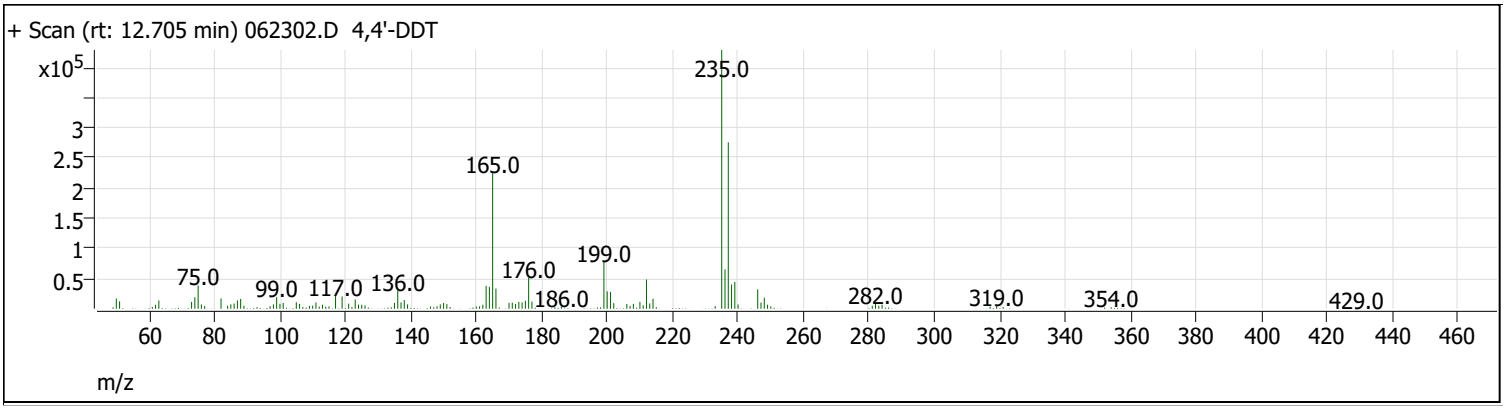


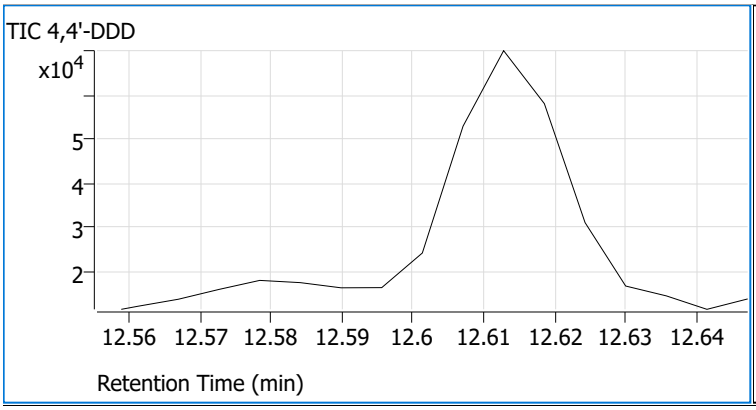
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.5	962	Pass
70	69	0	2	0.3	203	Pass
197	198	0	2	0.0	0	Pass
198	198	100	100	100.0	180288	Pass
199	198	5	9	7.6	13767	Pass
365	198	1	100	5.1	9278	Pass
441	443	1E-10	150	91.5	19904	Pass
442	442	100	100	100.0	116360	Pass
443	442	15	24	18.7	21752	Pass
69	69	100	100	100.0	63432	Pass

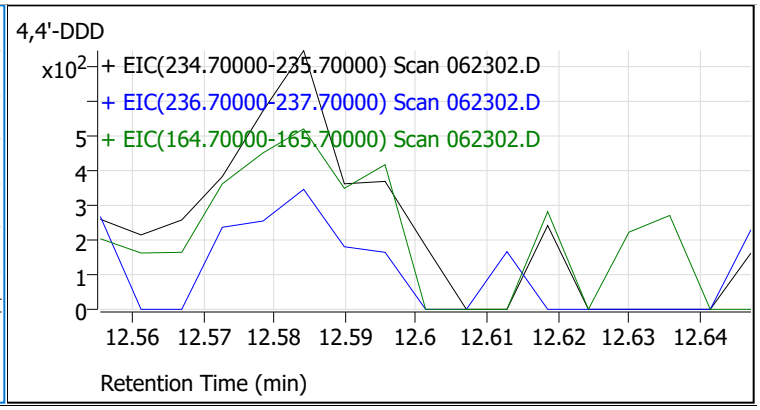
Tune Evaluation Report

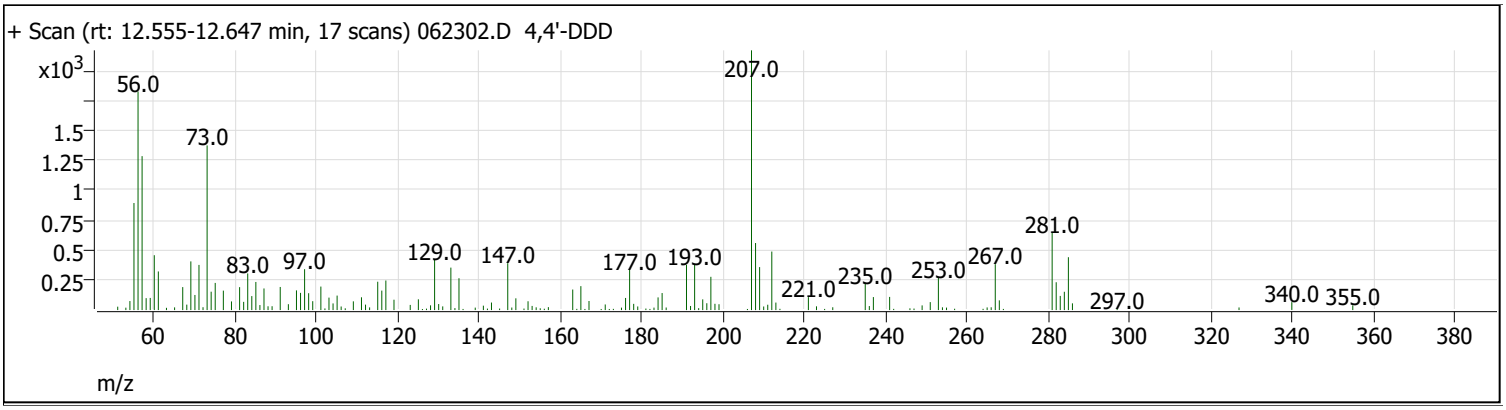






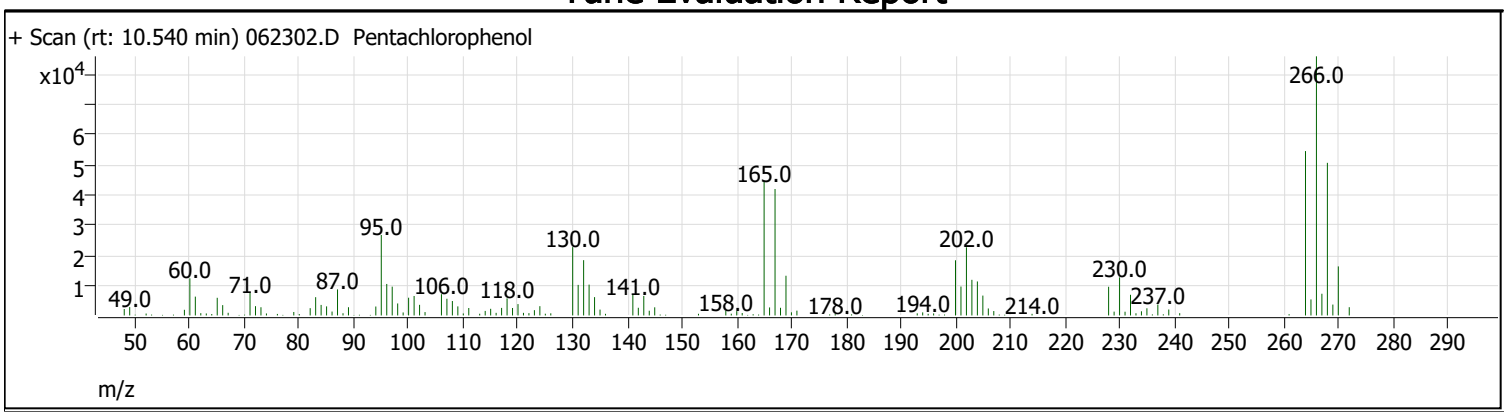


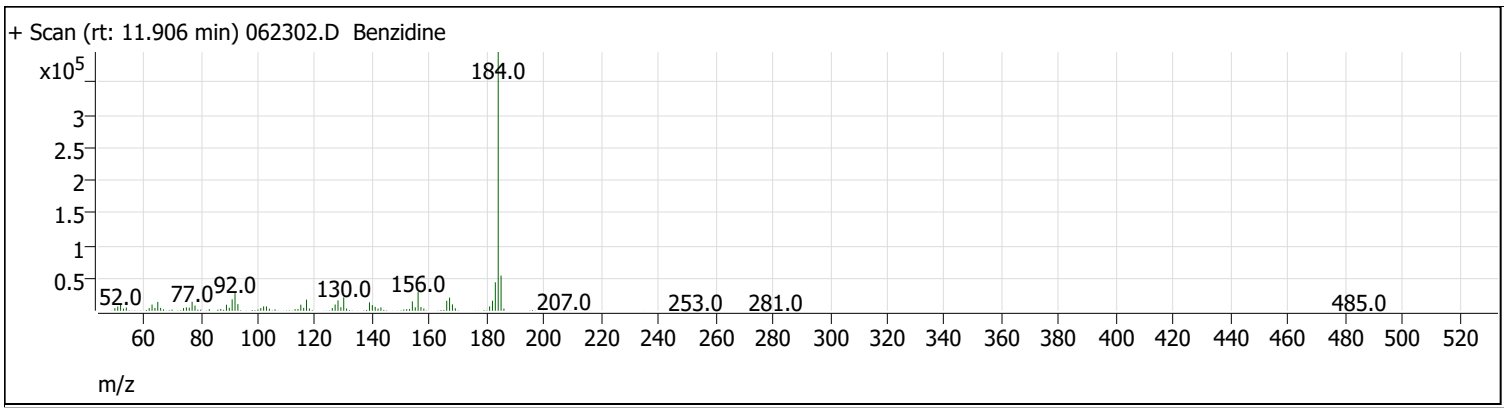




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.705	12.705	2269151	0.0	Pass
4,4'-DDD	12.600	0.000	0		

Tune Evaluation Report

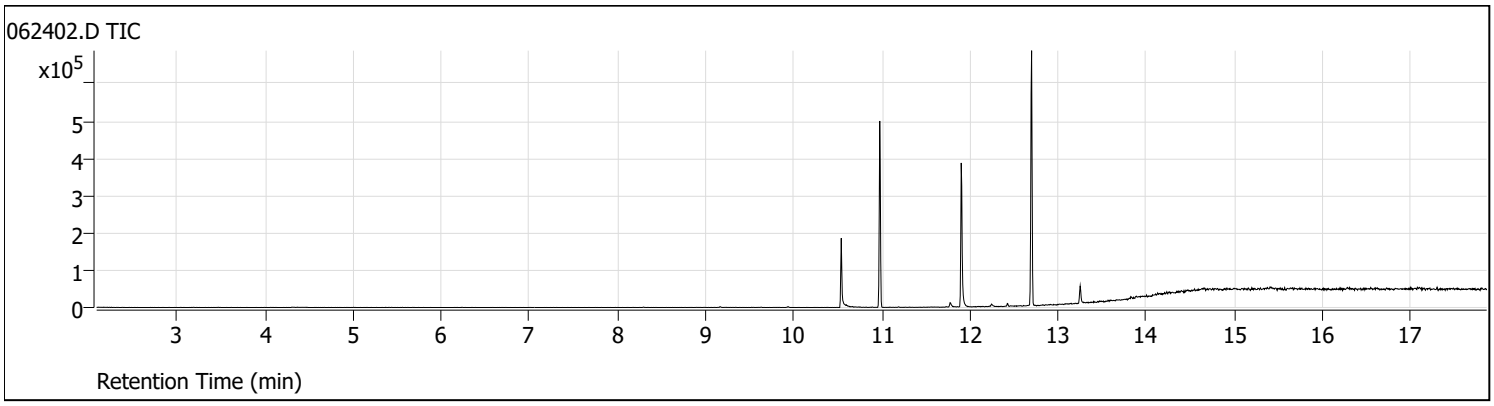


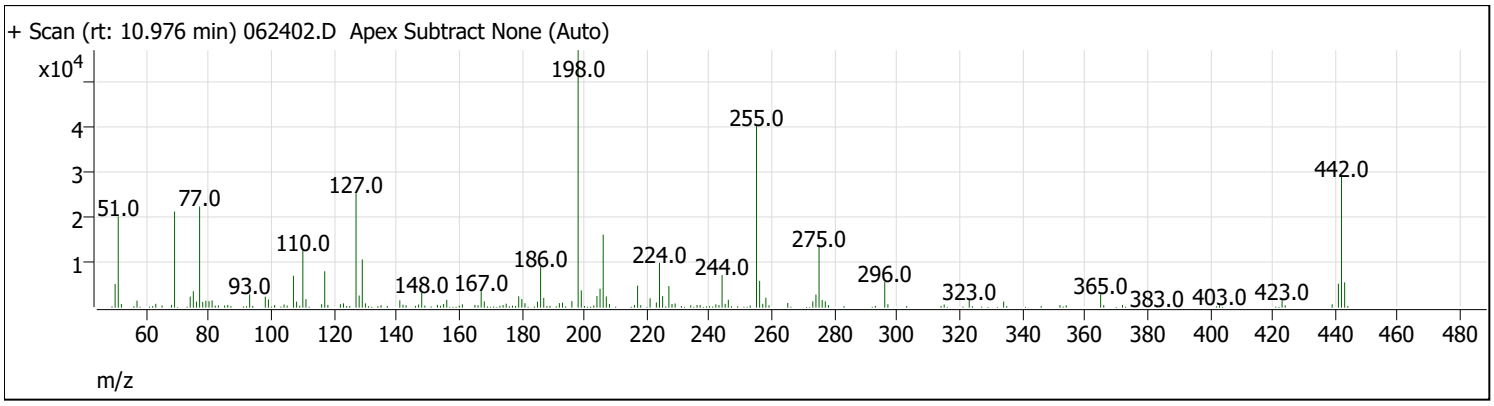


Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.540	10.540	2.0	0.6	Pass
Benzidine	11.906	11.906	2.0	0.6	Pass

Tune Evaluation Report

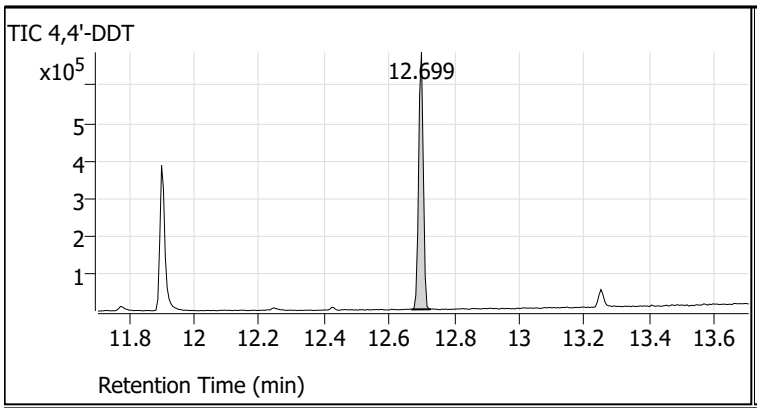
Data Path:	C:\GC-14\Data\2021\062421\062402.D
Acq on:	6/24/2021 8:18:52 AM
Operator:	FA\gc14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

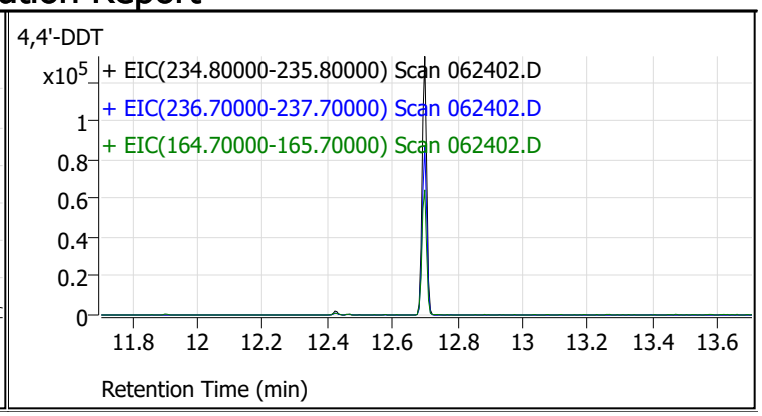


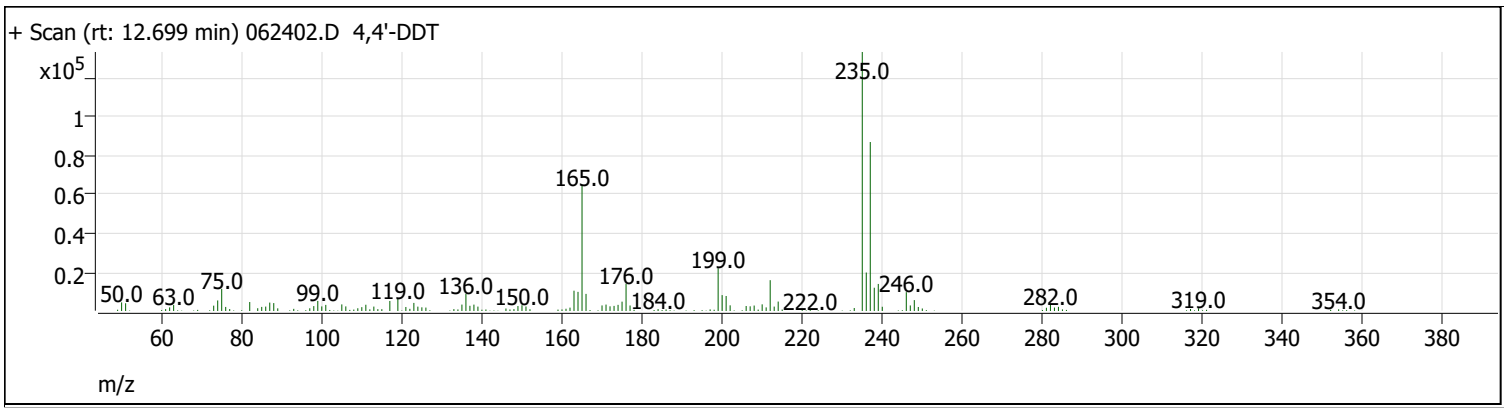


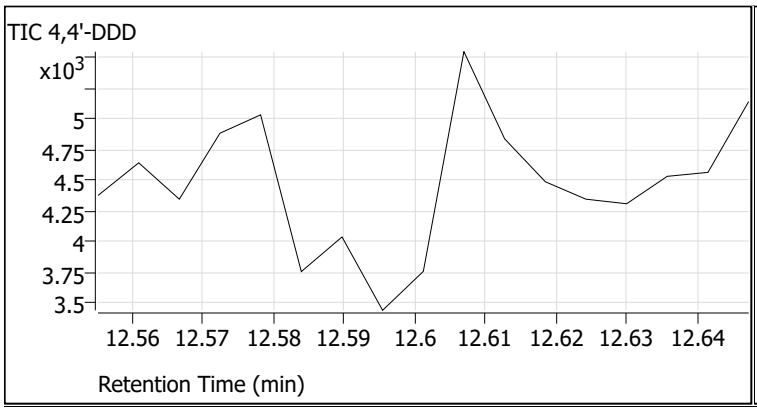
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	2.9	624	Fail
70	69	0	2	0.7	158	Pass
197	198	0	2	0.0	0	Pass
198	198	100	100	100.0	57368	Pass
199	198	5	9	6.7	3834	Pass
365	198	1	100	5.2	2974	Pass
441	443	1E-10	150	94.9	5344	Pass
442	442	100	100	100.0	29192	Pass
443	442	15	24	19.3	5633	Pass
69	69	100	100	100.0	21424	Pass

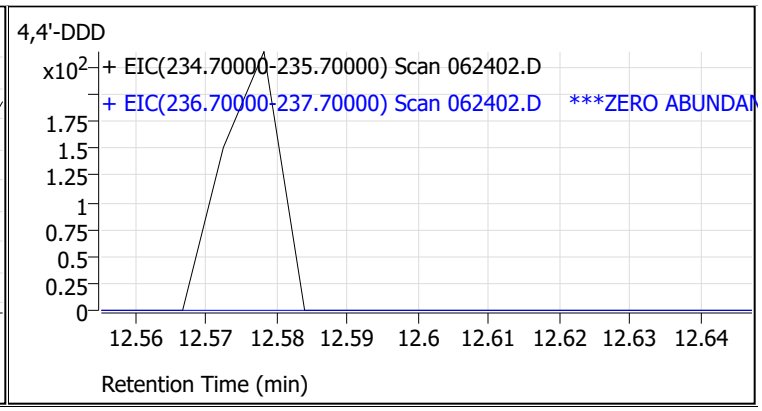
Tune Evaluation Report

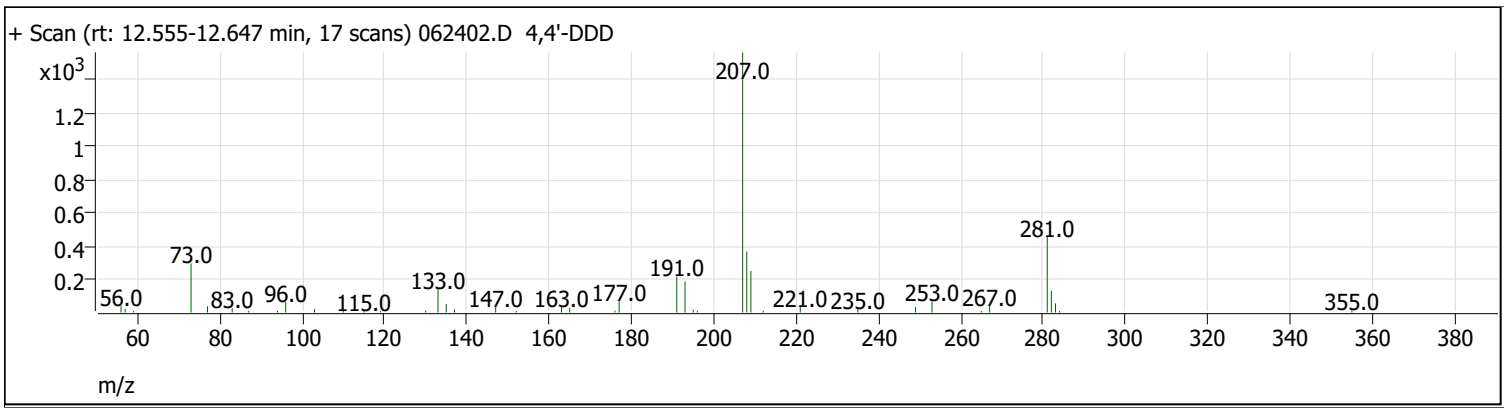






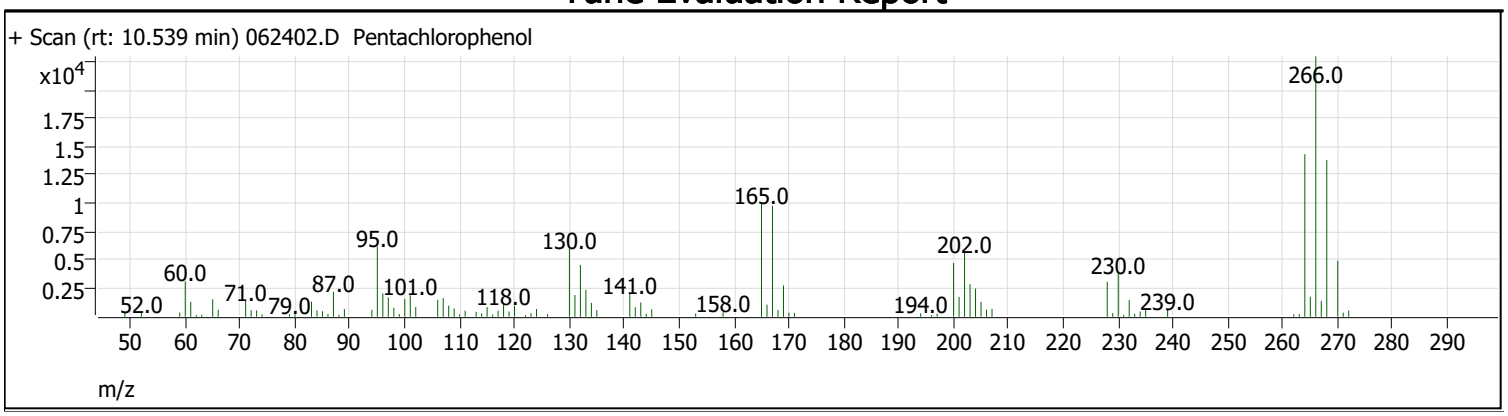


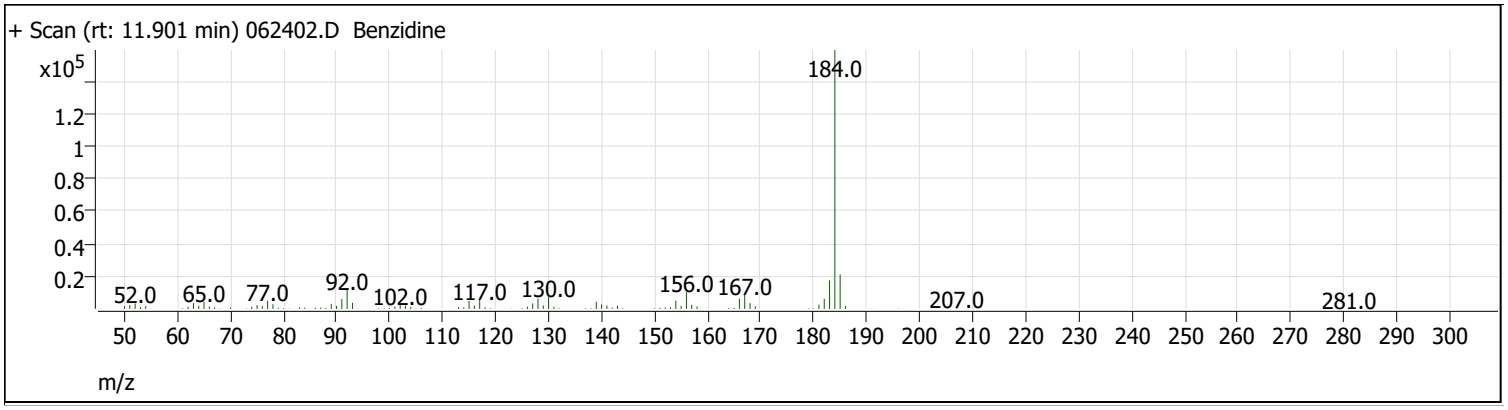




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.705	12.699	678390	0.0	Pass
4,4'-DDD	12.600	0.000	0		

Tune Evaluation Report





Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.540	10.539	1.5	5.5	Pass
Benzidine	11.906	11.901	1.9	4.8	Pass

DATA SET for Review -- Deliverable Requirements

Volatile Petroleum Hydrocarbons by NWVPH

Fremont Analytical Work Order No. 2106420

Libby Environmental

Project Name: Jacks Auto

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information

Injection Log

Data Directory: C:\GC-2\DATA\070721\2021-07-07\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
CLEANOUT		1	1.000	07-Jul-2021, 14:18:32
2) 001F0201.D				
VPH CAL1 25251		1	1.000	07-Jul-2021, 14:57:00
3) 001F0301.D				
VPH CAL2		1	1.000	07-Jul-2021, 15:35:51
4) 001F0401.D				
VPH CAL3		1	1.000	07-Jul-2021, 16:15:09
5) 001F0501.D				
VPH CAL4		1	1.000	07-Jul-2021, 16:54:16
6) 001F0601.D				
VPH CAL5		1	1.000	07-Jul-2021, 17:33:21
7) 001F0701.D				
VPH CAL6		1	1.000	07-Jul-2021, 18:12:07
8) 001F0801.D				
VPH CAL7		1	1.000	07-Jul-2021, 18:50:54
9) 001F0901.D				
CLENOUT		1	1.000	07-Jul-2021, 19:29:41
10) 001F1001.D				
ICB		1	1.000	07-Jul-2021, 20:08:25
11) 001F1101.D				
ICV		1	1.000	07-Jul-2021, 20:47:19
12) 001F1201.D				
CCV A VPH		1	1.000	07-Jul-2021, 21:26:15
13) 001F1301.D				
LCS VPH SOIL		1	1.000	07-Jul-2021, 22:05:13
14) 001F1401.D				
CLEANOUT		1	1.000	07-Jul-2021, 22:44:08
15) 001F1501.D				
MB-32919		1	1.000	07-Jul-2021, 23:23:01
16) 001F1601.D				
2106420-002B4X		1	1.000	08-Jul-2021, 00:02:12
17) 001F1701.D				
6420-002BDUP4X		1	1.000	08-Jul-2021, 00:41:05
18) 001F1801.D				
2107067-001B10X		1	1.000	08-Jul-2021, 01:19:55
19) 001F1901.D				
2107067-002B10X		1	1.000	08-Jul-2021, 01:58:41
20) 001F2001.D				
2107067-001BMS10X		1	1.000	08-Jul-2021, 02:37:32
21) 001F2101.D				
CLEANOUT		1	1.000	08-Jul-2021, 03:16:22

22) 001F2201.D
CLEANOUT 1 1.000 08-Jul-2021, 03:55:13
---
23) 001F2301.D
CCV-32919B 1 1.000 08-Jul-2021, 04:34:07

Injection Log

Data Directory: C:\GC-2\DATA\071321\2021-07-13\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
CLEANOUT		1	1.000	13-Jul-2021, 16:19:11
2) 001F0201.D				
CLEANOUT		1	1.000	13-Jul-2021, 16:58:11
3) 001F0301.D				
CCV VPH		1	1.000	13-Jul-2021, 17:37:18
4) 001F0401.D				
2107067-002B10X		1	1.000	13-Jul-2021, 18:16:33
5) 001F0501.D				
2107067-001B10X		1	1.000	13-Jul-2021, 18:55:38
6) 001F0601.D				
2106420-002B20X		1	1.000	13-Jul-2021, 19:34:44
7) 001F0701.D				
CLEANOUT		1	1.000	13-Jul-2021, 20:13:39
8) 001F0801.D				
CCV VPH 2		1	1.000	13-Jul-2021, 20:52:45

Calibration

Response Factor Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH070721.M
Title : BTEX
Last Update : Mon Jul 12 09:32:32 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0201.D 2 =001F0301.D 3 =001F0401.D
4 =001F0501.D 5 =001F0601.D 6 =001F0701.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	S	1,4-Difluorob...	0.760	0.824	0.817	0.935	0.952	0.997	0.909	E5	12.39
2)	S	Bromofluorobe...	1.945	2.057	2.010	2.120	2.158	2.131	2.067	E5	3.63
3)	t	MTBE	5.942	7.783	7.197	7.405	7.662	6.835	7.038	E4	9.54
4)	t	Benzene	1.738	2.115	1.880	2.020	1.895	1.816	1.895	E5	6.93
5)	t	Toluene	1.756	2.097	1.858	2.006	1.855	1.807	1.883	E5	6.52
6)	t	Ethylbenzene	1.694	2.018	1.760	1.907	1.716	1.697	1.778	E5	7.51
7)	t	m&p xylenes	2.013	2.375	2.070	2.231	1.991	1.935	2.064	E5	8.91
8)	t	o xylene	1.750	2.046	1.812	1.934	1.761	1.714	1.809	E5	7.60
9)	t	1,2,3-Trimeth...	1.457	1.656	1.524	1.627	1.495	1.456	1.513	E5	6.52
10)	t	Naphthalene	7.299	7.117	6.844	6.797	7.334	6.387	6.863	E4	6.15
11)	T	PID C8-C10	5.065	4.109	2.942	2.854	2.462	2.340	3.141	E5	33.70
12)	T	PID C10-C12	1.971	1.203	1.123	0.991	0.963	0.782	1.113	E5	37.06
13)	T	PID C12-C13	1.408	0.579	0.418	0.320	0.310	0.188	0.483	E5	89.43
14)	T	SUB C6-C8	3.935	3.308	2.393	2.338	2.066	1.933	2.554	E5	30.31
15)	T	SUB C8-C10	6.018	4.830	3.339	3.215	2.731	2.599	3.596	E5	37.11
16)	T	SUB C10-C12	2.720	2.241	1.885	1.922	1.678	1.624	1.940	E5	21.64

Signal #2 Calibration Files
1 =001F0201.D 2 =001F0301.D 3 =001F0401.D
4 =001F0501.D 5 =001F0601.D 6 =001F0701.D

		Compound	1	2	3	4	5	6	Avg		%RSD
18)		Signal 2 #2							0.000		-1.00
19)	t	MTBE 2	3.124	3.406	2.377	2.458	2.481	2.248	2.609	E3	17.94
20)	t	HEXANE	4.193	4.580	3.765	4.505	3.709	4.141	4.147	E3	7.98
21)	T	FID C5-C6	7.773	6.545	4.102	4.500	3.792	3.469	4.800	E3	35.24
22)	T	FID C6-C8	1.724	1.336	0.732	0.655	0.547	0.482	0.853	E4	56.77
23)	T	FID C8-C10	1.698	1.200	0.911	0.826	0.686	0.643	0.942	E4	41.23
24)	T	FID C10-C12	1.520	0.950	0.540	0.524	0.384	0.329	0.649	E4	68.07

(#) = Out of Range ### Number of calibration levels exceeded format ###

QVPH070721.M Wed Jul 14 13:01:19 2021

Calibration Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH070721.M
Title : BTEX
Last Update : Mon Jul 12 09:32:32 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0201 2 =001F0301 3 =001F0401 4 =001F0501 5 =001F0601
6 =001F0701 7 =001F0801

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
1)	S	1,4-Difluorobenzene	Avg	-----	9.0875 e4	-----	0.1239
2)	S	Bromofluorobenzene	Avg	-----	2.0674 e5	-----	0.0363
3)	t	MTBE	Lin	8.5935 e5	6.4375 e4	-----	0.9982
4)	t	Benzene	Lin	2.7012 e5	1.8227 e5	-----	0.9989
5)	t	Toluene	Lin	2.5272 e5	1.8152 e5	-----	0.9991
6)	t	Ethylbenzene	Lin	1.1295 e6	1.6508 e5	-----	0.9997
7)	t	m&p xylenes	Lin	1.3235 e6	1.8860 e5	-----	0.9971
8)	t	o xylene	Lin	4.6804 e5	1.6834 e5	-----	0.9981
9)	t	1,2,3-Trimethylbe...	Lin	3.5269 e5	1.4184 e5	-----	0.9978
10)	t	Naphthalene	Lin	6.3018 e5	6.2328 e4	-----	0.9990
11)	T	PID C8-C10	Lin	1.9223 e7	2.1838 e5	-----	0.9994
12)	T	PID C10-C12	Lin	2.1346 e6	7.3826 e4	-----	0.9981
13)	T	PID C12-C13	Lin	1.6871 e6	1.4580 e4	-----	0.9773
14)	T	SUB C6-C8	Lin	6.2716 e6	1.8739 e5	-----	0.9998
15)	T	SUB C8-C10	Lin	1.7795 e7	2.4009 e5	-----	0.9993
16)	T	SUB C10-C12	Lin	2.7790 e6	1.5002 e5	-----	0.9987

Signal #2

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
18)		Signal 2 #2	Lin	-----	-----	-----	0.0000
19)	t	MTBE 2	Lin	1.4948 e4	2.2079 e3	-----	0.9975
20)	t	HEXANE	Lin	1.7792 e3	4.0989 e3	-----	0.9978
21)	T	FID C5-C6	Lin	2.0218 e5	3.3521 e3	-----	0.9995
22)	T	FID C6-C8	Lin	4.1433 e5	4.7531 e3	-----	0.9991
23)	T	FID C8-C10	Lin	5.7446 e5	6.1526 e3	-----	0.9998
24)	T	FID C10-C12	Lin	3.3409 e5	2.8537 e3	-----	0.9977

QVPH070721.M Wed Jul 14 13:01:33 2021

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 7/9/21 Page: 1 of 1

Client: Pioneer Technologies Corp
Address: 5205 Corporate Cnte Ct. SE
City: Oly State: WA Zip: 98503
Phone: 360-828-3739 Fax:
Client Project # Jacks Auto (JA)

Project Manager: Joel Hecker
Project Name: Jacks Auto (JA)
Location: 1400 Bethel City, State: Olympia WA
Collector: JH Date of Collection: ~~7/8~~ 7/9
Email: Heckerj@uspioneer.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	MTCA VOCs	Pb	VPH	Field Notes
1	SO-MW1-14-15-0709	14-15	1010	G	mult			X			X							X	X		7-19-21 VPH ADDED
2	SO-MW1-21-23-0709	21-23	1000	↓	↓			X			X							X	X		PER JOEL VIA EMAIL.
3	SO-MW4-15-17-0708	15-17	0953					X			X					X		X	X		STD TAT.
4	SO-MW5-18-20-0708	18-20	1316					X			X							X	X		
5	SO-MW6-12-14-0708	12-14	1550					X			X							X	X	⊗	Hold For VPH
6	SO-MW6-20-22-0708	20-22	1641					X			X							X	X		
7	SO-MW7-7-9-0709	7-9	1330					X			X							X	X		
8	SO-MW7-19-21-0709	19-21	1350					X			X							X	X		Run internal Dup on this sample
9	SO-MW7-26-28-0709	26-28	1400					X			X							X	X		Hold For EPH/VPH
10	TB-070921	—	—		VOAs													⊗			
11																					
12																					
13																					
14																					
15																					
16																					
17																					

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	07/09/21 19:50	[signature]	7.9.21 14:55
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks: Added per Joel via email 7/12/21

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	SO-MW1-14-15-0709	SO-MW1-21-23-0709	SO-MW4-15-17-0708	SO-MW5-18-20-0708	SO-MW6-12-14-0708
Date Sampled		N/A	7/9/2021	7/9/2021	7/8/2021	7/8/2021	7/8/2021
Date Analyzed	PQL (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)
Benzene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	0.44
Ethylbenzene	0.05	nd	nd	nd	nd	nd	0.61
Total Xylenes	0.15	nd	nd	nd	nd	nd	1.9
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Naphthalene	0.15	nd	nd	nd	nd	nd	5.6
1-Methylnaphthalene	0.40	nd	nd	nd	nd	nd	6.7
2-Methylnaphthalene	0.40	nd	nd	nd	nd	nd	15
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		120	117	118	132	118	122
1,2-Dichloroethane-d4		118	119	123	115	112	99
Toluene-d8		90	96	97	95	95	85
4-Bromofluorobenzene		97	98	97	103	106	105

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

3322 South Bay Road NE
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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-MW6-20-22-0708	SO-MW7-7-9-0709	SO-MW7-19-21-0709	SO-MW7-19-21-0709 Dup	SO-MW7-26-28-0709
Date Sampled		7/8/2021	7/9/2021	7/9/2021	7/9/2021	7/9/2021
Date Analyzed	PQL (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)	7/18/2021 (mg/kg)
Benzene	0.02	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd
Ethylbenzene	0.05	0.11	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd
Naphthalene	0.15	0.38	nd	nd	nd	0.28
1-Methylnaphthalene	0.40	0.21	nd	nd	nd	0.52
2-Methylnaphthalene	0.40	0.50	nd	nd	nd	1.30
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd
Surrogate Recovery						
Dibromofluoromethane		138 S	134	134	127	101
1,2-Dichloroethane-d4		113	111	117	120	84
Toluene-d8		109	95	91	92	104
4-Bromofluorobenzene		109	106	103	102	13

"nd" Indicates not detected at listed detection limit.
"S" Spike compound recovery is outside acceptance limits.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	TB-070921	TB-070921 Dup
Date Sampled		N/A	7/8/2021	7/8/2021
Date Analyzed	PQL (µg/L)	7/12/2021 (µg/L)	7/12/2021 (µg/L)	7/12/2021 (µg/L)
Benzene	1.0	nd	nd	nd
Toluene	1.0	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd
Total Xylenes	2.0	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd
Naphthalene	5.0	nd	nd	nd
1-Methylnaphthalene	5.0	nd	nd	nd
2-Methylnaphthalene	5.0	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd	nd
Surrogate Recovery				
Dibromofluoromethane		124	126	125
1,2-Dichloroethane-d4		128	129	130
Toluene-d8		93	97	94
4-Bromofluorobenzene		80	83	83

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
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Olympia, Washington
Libby Project # L210709-4

Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	7/18/2021	90%	nd
SO-MW1-14-15-0709	7/18/2021	96%	nd
SO-MW1-21-23-0709	7/18/2021	97%	nd
SO-MW4-15-17-0708	7/18/2021	95%	nd
SO-MW5-18-20-0708	7/18/2021	95%	nd
SO-MW6-12-14-0708	7/18/2021	85%	3200
SO-MW6-20-22-0708	7/18/2021	109%	63
SO-MW7-7-9-0709	7/18/2021	95%	nd
SO-MW7-19-21-0709	7/18/2021	91%	nd
SO-MW7-19-21-0709 Dup	7/18/2021	92%	nd
SO-MW7-26-28-0709	7/18/2021	104%	670
Practical Quantitation Limit			10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

Diesel & Oil by NWTPH-Dx/Dx Extended in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	7/12/2021	107	nd	nd
SO-MW1-14-15-0709	7/12/2021	108	nd	nd
SO-MW1-21-23-0709	7/12/2021	132	nd	nd
SO-MW4-15-17-0708	7/12/2021	111	nd	nd
SO-MW5-18-20-0708	7/12/2021	131	nd	nd
SO-MW6-12-14-0708	7/12/2021	123	440	nd
SO-MW6-20-22-0708	7/12/2021	132	nd	nd
SO-MW7-7-9-0709	7/12/2021	108	nd	nd
SO-MW7-19-21-0709	7/12/2021	111	nd	nd
SO-MW7-19-21-0709 Dup	7/12/2021	106	nd	nd
SO-MW7-26-28-0709	7/12/2021	131	nd	nd
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Jodie Childress

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JACKS AUTO (JA) PROJECT
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Olympia, Washington
Libby Project # L210709-4

Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	7/14/2021	nd
SO-MW1-14-15-0709	7/14/2021	nd
SO-MW1-21-23-0709	7/14/2021	nd
SO-MW4-15-17-0708	7/14/2021	nd
SO-MW5-18-20-0708	7/14/2021	nd
SO-MW6-12-14-0708	7/14/2021	nd
SO-MW6-20-22-0708	7/14/2021	nd
SO-MW7-7-9-0709	7/14/2021	nd
SO-MW7-19-21-0709	7/14/2021	nd
SO-MW7-19-21-0709 Dup	7/14/2021	nd
SO-MW7-26-28-0709	7/14/2021	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: SO-MW7-19-21-0709

Date Analyzed: 7/18/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Benzene	0.25	0.25	0.27	100	107	7.4	65-135	
Toluene	0.25	0.24	0.24	94	94	0.0	65-135	
Ethylbenzene	0.25	0.23	0.252	94	101	7.4	65-135	
Total Xylenes	0.75	0.74	0.74	99	98	0.4	65-135	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.30	0.31	120	125	3.9	65-135	
1,2-Dichloroethane (EDC)	0.25	0.27	0.29	108	118	8.9	65-135	
1,2-Dibromoethane (EDB)	0.25	0.28	0.27	114	110	3.6	65-135	
Naphthalene	0.25	0.26	0.28	105	112	6.3	65-135	
1-Methylnaphthalene	0.25	0.22	0.24	86	94	8.9	65-135	
2-Methylnaphthalene	0.25	0.22	0.23	89	92	3.5	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	116	102	65-135
1,2-Dichloroethane-d4	94	100	65-135
Toluene-d8	73	79	65-135
4-Bromofluorobenzene	111	114	65-135

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

Laboratory Control Sample

Date Analyzed: 7/18/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	0.25	0.28	111	80-120	
Toluene	0.25	0.26	103	80-120	
Ethylbenzene	0.25	0.26	104	80-120	
Total Xylenes	0.75	0.80	107	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.27	110	80-120	
1,2-Dichloroethane (EDC)	0.25	0.29	116	80-120	
1,2-Dibromoethane (EDB)	0.25	0.29	116	80-120	
Naphthalene	0.25	0.29	114	80-120	
1-Methylnaphthalene	0.25	0.30	118	80-120	
2-Methylnaphthalene	0.25	0.29	114	80-120	
Surrogate Recovery					
Dibromofluoromethane			89	65-135	
1,2-Dichloroethane-d4			85	65-135	
Toluene-d8			76	65-135	
4-Bromofluorobenzene			109	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

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CCV 7-18-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Benzene	0.50	0.56	113	80-120	
Toluene	0.50	0.55	110	80-120	
Ethylbenzene	0.50	0.55	111	80-120	
Total Xylenes	1.50	1.68	112	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.50	0.53	106	80-120	
1,2-Dichloroethane (EDC)	0.50	0.58	116	80-120	
1,2-Dibromoethane (EDB)	0.50	0.55	110	80-120	
Naphthalene	0.50	0.52	105	80-120	
1-Methylnaphthalene	0.50	0.58	115	80-120	
2-Methylnaphthalene	0.50	0.52	105	80-120	
Surrogate Recovery					
Dibromofluoromethane			100	65-135	
1,2-Dichloroethane-d4			93	65-135	
Toluene-d8			91	65-135	
4-Bromofluorobenzene			109	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO (JA) PROJECT
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Libby Project # L210709-4

QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: TB-070921

Date Analyzed: 7/12/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Benzene	5.0	4.9	4.9	98	98	0.0	65-135	
Toluene	5.0	4.1	4.1	82	82	0.0	65-135	
Ethylbenzene	5.0	3.8	3.8	76	76	0.0	65-135	
Total Xylenes	15.0	11.0	11.6	73	77	5.3	65-135	
Methyl *tert*- Butyl Ether (MTBE)	5.0	6.4	6.3	128	126	1.6	65-135	
1,2-Dichloroethane (EDC)	5.0	5.6	5.6	112	112	0.0	65-135	
1,2-Dibromoethane (EDB)	5.0	3.9	4.0	78	80	2.5	65-135	
Naphthalene	5.0	2.4	2.9	48	58	18.9	65-135	S
1-Methylnaphthalene	5.0	1.9	2.4	38	48	23.3	65-135	S
2-Methylnaphthalene	5.0	1.9	1.8	38	36	5.4	65-135	S

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	129	124	65-135
1,2-Dichloroethane-d4	125	126	65-135
Toluene-d8	94	96	65-135
4-Bromofluorobenzene	92	96	65-135

ACCEPTABLE RPD IS 35%
"S" Spike compound recovery is outside acceptance limits.

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

Laboratory Control Sample

Date Analyzed: 7/12/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	5.0	4.5	90	80-120	
Toluene	5.0	4.3	86	80-120	
Ethylbenzene	5.0	4.9	98	80-120	
Total Xylenes	15.0	15.4	103	80-120	
Methyl *tert*- Butyl Ether (MTBE)	5.0	5.9	118	80-120	
1,2-Dichloroethane (EDC)	5.0	4.7	94	80-120	
1,2-Dibromoethane (EDB)	5.0	4.5	90	80-120	
Naphthalene	5.0	4.6	92	80-120	
1-Methylnaphthalene	5.0	4.5	90	80-120	
2-Methylnaphthalene	5.0	4.0	80	80-120	
Surrogate Recovery					
Dibromofluoromethane			112	65-135	
1,2-Dichloroethane-d4			111	65-135	
Toluene-d8			81	65-135	
4-Bromofluorobenzene			104	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210709-4

CCV 7-12-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Benzene	10.0	8.9	89	80-120	
Toluene	10.0	8.9	89	80-120	
Ethylbenzene	10.0	9.7	97	80-120	
Total Xylenes	30.0	32.7	109	80-120	
Methyl *tert*- Butyl Ether (MTBE)	10.0	11.9	119	80-120	
1,2-Dichloroethane (EDC)	10.0	9.8	98	80-120	
1,2-Dibromoethane (EDB)	10.0	8.7	87	80-120	
Naphthalene	10.0	10.0	100	80-120	
1-Methylnaphthalene	10.0	8.4	84	80-120	
2-Methylnaphthalene	10.0	8.3	83	80-120	
Surrogate Recovery					
Dibromofluoromethane			101	65-135	
1,2-Dichloroethane-d4			101	65-135	
Toluene-d8			78	65-135	
4-Bromofluorobenzene			93	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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JACKS AUTO (JA) PROJECT
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QA/QC Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	Gasoline (% Recovery)	CCV Recovery Limits (%)
25 ppm LCS	7/18/2021	21	84%	70-130%
25 ppm LCSD	7/18/2021	29	114%	70-130%
RPD			30%	30%
Practical Quantitation Limit		10		

CCV Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)
50 ppm CCV	7/18/2021	50.2	104%	80-120%
Practical Quantitation Limit		10		

ANALYSES PERFORMED BY: Sherry Chilcutt

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QA/QC Diesel by NWTPH-Dx in Soil

Sample Number	Date Analyzed	Diesel (mg/kg)	Diesel (% Recovery)	CCV Recovery Limits (%)
100 ppm LCS 060420	7/12/2021	99	99%	70-130%
100 ppm LCSD 060420	7/12/2021	96	96%	70-130%
RPD			3%	30%
Practical Quantitation Limit		50		

CCV Diesel by NWTPH-Dx in Soil

Sample Number	Date Analyzed	Diesel (mg/kg)	CCV (%)	CCV Recovery Limits (%)
CCV Shiva FID 1 500 ppm	7/12/2021	568	114%	85-115%
CCV Shiva FID 2 500 ppm	7/12/2021	505	101%	85-115%
CCV Shiva FID 3 500 ppm	7/12/2021	568	114%	85-115%
Practical Quantitation Limit		50		

ANALYSES PERFORMED BY: Jodie Childress

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JACKS AUTO (JA) PROJECT
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QA/QC Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (% Recovery)
LCS 071421	7/14/2021	114%
SO-MW7-19-21-0709 MS	7/14/2021	109%
SO-MW7-19-21-0709 MSD	7/14/2021	117%
RPD	7/14/2021	7%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

QA/QC Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Spike Concentration		1.0
LCS 071421	7/14/2021	1.1
Spike Concentration		1.0
SO-MW7-19-21-0709 MS	7/14/2021	1.09
SO-MW7-19-21-0709 MSD	7/14/2021	1.17
RPD	7/14/2021	7%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Kodey Eley

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Libby Project # L210709-4

CCV Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Spike Concentration		2.5
CCV 7/14/2021	7/14/2021	2.68
CCV Recovery %		107%
CCB		nd

CCV Recovery Limits %: 90-110%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Libby Project # L210709-4
Date Received 7/9/2021
Time Received 2:50 PM

Received By RJK

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	-1.3 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	1.7 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☐ Yes	☐ No	☑ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies? ☐ Yes ☐ No ☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. _____

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info@fremontanalytical.com

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Jacks Auto (JA)
Work Order Number: 2107181

July 27, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 3 sample(s) on 7/13/2021 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Volatile Petroleum Hydrocarbons by NWVPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *08/02/2021*

CLIENT: Libby Environmental
Project: Jacks Auto (JA)
Work Order: 2107181

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2107181-001	SO-MW4-15-17-0708	07/08/2021 9:53 AM	07/13/2021 9:43 AM
2107181-002	SO-MW6-12-14-0708	07/08/2021 3:50 PM	07/13/2021 9:43 AM
2107181-003	SO-MW7-26-28-0709	07/09/2021 2:00 PM	07/13/2021 9:43 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Revision v2

Case Narrative

WO#: **2107181**
Date: **7/27/2021**

CLIENT: Libby Environmental
Project: Jacks Auto (JA)

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

7/30/2021: Revision 2 includes level 2B data package.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: Libby Environmental
Collection Date: 7/8/2021 9:53:00 AM
Project: Jacks Auto (JA)
Lab ID: 2107181-001
Matrix: Soil
Client Sample ID: SO-MW4-15-17-0708

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33012		Analyst: SB
Naphthalene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
2-Methylnaphthalene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
1-Methylnaphthalene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Acenaphthylene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Acenaphthene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Fluorene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Phenanthrene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Anthracene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Fluoranthene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Pyrene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Benz(a)anthracene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Chrysene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Benzo(b)fluoranthene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Benzo(k)fluoranthene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Benzo(a)pyrene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Indeno(1,2,3-cd)pyrene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Dibenz(a,h)anthracene	ND	41.1		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Benzo(g,h,i)perylene	ND	20.6		µg/Kg-dry	1	7/16/2021 6:42:42 AM
Surr: 2-Fluorobiphenyl	65.5	19 - 135		%Rec	1	7/16/2021 6:42:42 AM
Surr: Terphenyl-d14 (surr)	72.1	42.9 - 156		%Rec	1	7/16/2021 6:42:42 AM
Sample Moisture (Percent Moisture)				Batch ID: R68604		Analyst: cb
Percent Moisture	7.36	0.500		wt%	1	7/16/2021 10:01:11 AM

Client: Libby Environmental
Collection Date: 7/8/2021 3:50:00 PM
Project: Jacks Auto (JA)
Lab ID: 2107181-002
Matrix: Soil
Client Sample ID: SO-MW6-12-14-0708

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 33092		Analyst: CR
Aliphatic Hydrocarbon (C5-C6)	ND	1.20	Q	mg/Kg-dry	1	7/22/2021 11:10:13 PM
Aliphatic Hydrocarbon (C5-C6)	ND	1.20	H	mg/Kg-dry	1	7/24/2021 6:27:38 AM
Aliphatic Hydrocarbon (C6-C8)	14.2	0.718	H	mg/Kg-dry	1	7/24/2021 6:27:38 AM
Aliphatic Hydrocarbon (C6-C8)	16.0	0.718	Q	mg/Kg-dry	1	7/22/2021 11:10:13 PM
Aliphatic Hydrocarbon (C8-C10)	98.9	12.0	D	mg/Kg-dry	10	7/22/2021 9:52:49 PM
Aliphatic Hydrocarbon (C8-C10)	80.4	12.0	DH	mg/Kg-dry	10	7/24/2021 5:49:05 AM
Aliphatic Hydrocarbon (C10-C12)	216	2.39	DQ	mg/Kg-dry	10	7/22/2021 9:52:49 PM
Aliphatic Hydrocarbon (C10-C12)	182	2.39	DH	mg/Kg-dry	10	7/24/2021 5:49:05 AM
Aromatic Hydrocarbon (C8-C10)	136	14.4	DQ	mg/Kg-dry	10	7/22/2021 9:52:49 PM
Aromatic Hydrocarbon (C8-C10)	149	14.4	DH	mg/Kg-dry	10	7/24/2021 5:49:05 AM
Aromatic Hydrocarbon (C10-C12)	336	2.39	DEQ	mg/Kg-dry	10	7/22/2021 9:52:49 PM
Aromatic Hydrocarbon (C10-C12)	408	2.39	DEH	mg/Kg-dry	10	7/24/2021 5:49:05 AM
Aromatic Hydrocarbon (C12-C13)	184	2.39	DQ	mg/Kg-dry	10	7/22/2021 9:52:49 PM
Aromatic Hydrocarbon (C12-C13)	226	2.39	DH	mg/Kg-dry	10	7/24/2021 5:49:05 AM
Surr: 1,4-Difluorobenzene	80.2	65 - 140	D	%Rec	10	7/22/2021 9:52:49 PM
Surr: 1,4-Difluorobenzene	85.3	65 - 140	DH	%Rec	10	7/24/2021 5:49:05 AM
Surr: Bromofluorobenzene	107	65 - 140	D	%Rec	10	7/22/2021 9:52:49 PM
Surr: Bromofluorobenzene	120	65 - 140	DH	%Rec	10	7/24/2021 5:49:05 AM

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria
E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample Moisture (Percent Moisture)				Batch ID: R68789		Analyst: OK
Percent Moisture	4.58	0.500		wt%	1	7/26/2021 8:07:02 AM

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CAL MIDPOINT** SampType: **CCV** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68636**
Client ID: **CCV** Batch ID: **33012** Analysis Date: **7/15/2021** SeqNo: **1387443**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	982	20.0	1,000	0	98.2	80	120				
2-Methylnaphthalene	993	20.0	1,000	0	99.3	80	120				
1-Methylnaphthalene	976	20.0	1,000	0	97.6	80	120				
Acenaphthylene	975	20.0	1,000	0	97.5	80	120				
Acenaphthene	969	20.0	1,000	0	96.9	80	120				
Fluorene	977	20.0	1,000	0	97.7	80	120				
Phenanthrene	980	40.0	1,000	0	98.0	80	120				
Anthracene	975	40.0	1,000	0	97.5	80	120				
Fluoranthene	974	40.0	1,000	0	97.4	80	120				
Pyrene	974	40.0	1,000	0	97.4	80	120				
Benz(a)anthracene	970	20.0	1,000	0	97.0	80	120				
Chrysene	982	40.0	1,000	0	98.2	80	120				
Benzo(b)fluoranthene	984	20.0	1,000	0	98.4	80	120				
Benzo(k)fluoranthene	883	20.0	1,000	0	88.3	80	120				
Benzo(a)pyrene	958	20.0	1,000	0	95.8	80	120				
Indeno(1,2,3-cd)pyrene	974	40.0	1,000	0	97.4	80	120				
Dibenz(a,h)anthracene	976	40.0	1,000	0	97.6	80	120				
Benzo(g,h,i)perylene	978	20.0	1,000	0	97.8	80	120				
Surr: 2-Fluorobiphenyl	489		500.0		97.7	69.5	150				
Surr: Terphenyl-d14 (surr)	488		500.0		97.5	71.6	145				

Sample ID: **PAH ICB** SampType: **ICB** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICB** Batch ID: **33012** Analysis Date: **7/15/2021** SeqNo: **1386897**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
2-Chloronaphthalene	ND	20.0									
Acenaphthene	ND	20.0									

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICB** SampType: **ICB** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICB** Batch ID: **33012** Analysis Date: **7/15/2021** SeqNo: **1386897**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethyl phthalate	ND	50.0									
Acenaphthylene	ND	20.0									
Dibenzofuran	ND	40.0									
Fluorene	ND	20.0									
Diethyl phthalate	ND	20.0									
Pentachlorophenol	ND	80.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Carbazole	ND	20.0									
Di-n-butyl phthalate	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Butylbenzylphthalate	ND	20.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Bis(2-ethylhexyl) phthalate	ND	20.0									
Di-n-octyl phthalate	ND	20.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2,4,6-Tribromophenol	1,080		1,000		108	14	136				
Surr: 2-Fluorobiphenyl	570		500.0		114	50.4	142				
Surr: Terphenyl-d14 (surr)	572		500.0		114	48.8	157				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICV** SampType: **ICV** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICV** Batch ID: **33012** Analysis Date: **7/15/2021** SeqNo: **1386898**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,150	20.0	1,000	0	115	70	130				
2-Methylnaphthalene	1,170	20.0	1,000	0	117	70	130				
1-Methylnaphthalene	1,150	20.0	1,000	0	115	70	130				
2-Chloronaphthalene	1,150	20.0	1,000	0	115	70	130				
Acenaphthene	1,080	20.0	1,000	0	108	70	130				
Dimethyl phthalate	1,160	50.0	1,000	0	116	70	130				
Acenaphthylene	1,150	20.0	1,000	0	115	70	130				
Dibenzofuran	1,150	40.0	1,000	0	115	70	130				
Fluorene	1,140	20.0	1,000	0	114	70	130				
Diethyl phthalate	1,140	20.0	1,000	0	114	70	130				
Pentachlorophenol	1,080	80.0	1,000	0	108	70	130				
Phenanthrene	1,130	40.0	1,000	0	113	70	130				
Anthracene	1,110	40.0	1,000	0	111	70	130				
Carbazole	1,150	20.0	1,000	0	115	70	130				
Di-n-butyl phthalate	1,150	40.0	1,000	0	115	70	130				
Fluoranthene	1,150	40.0	1,000	0	115	70	130				
Pyrene	1,160	40.0	1,000	0	116	70	130				
Butylbenzylphthalate	1,160	20.0	1,000	0	116	70	130				
Benz(a)anthracene	1,130	20.0	1,000	0	113	70	130				
Chrysene	1,160	40.0	1,000	0	116	70	130				
Bis(2-ethylhexyl) phthalate	1,150	20.0	1,000	0	115	70	130				
Di-n-octyl phthalate	1,150	20.0	1,000	0	115	70	130				
Benzo(b)fluoranthene	1,130	20.0	1,000	0	113	70	130				
Benzo(k)fluoranthene	1,150	20.0	1,000	0	115	70	130				
Benzo(a)pyrene	1,190	20.0	1,000	0	119	70	130				
Indeno(1,2,3-cd)pyrene	1,140	40.0	1,000	0	114	70	130				
Dibenz(a,h)anthracene	1,160	40.0	1,000	0	116	70	130				
Benzo(g,h,i)perylene	1,160	20.0	1,000	0	116	70	130				
Surr: 2,4,6-Tribromophenol	1,050		1,000		105	67.8	127				
Surr: 2-Fluorobiphenyl	532		500.0		106	60.9	160				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICV** SampType: **ICV** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICV** Batch ID: **33012** Analysis Date: **7/15/2021** SeqNo: **1386898**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Terphenyl-d14 (surr)	533		500.0		107	62.2	159				

Sample ID: **CCV-33012** SampType: **CCV** Units: **µg/L** Prep Date: **7/16/2021** RunNo: **68636**
Client ID: **CCV** Batch ID: **33012** Analysis Date: **7/16/2021** SeqNo: **1387422**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	881	20.0	1,000	0	88.1	80	120				
2-Methylnaphthalene	900	20.0	1,000	0	90.0	80	120				
1-Methylnaphthalene	877	20.0	1,000	0	87.7	80	120				
Acenaphthylene	881	20.0	1,000	0	88.1	80	120				
Acenaphthene	867	20.0	1,000	0	86.7	80	120				
Fluorene	871	20.0	1,000	0	87.1	80	120				
Phenanthrene	859	40.0	1,000	0	85.9	80	120				
Anthracene	847	40.0	1,000	0	84.7	80	120				
Fluoranthene	868	40.0	1,000	0	86.8	80	120				
Pyrene	875	40.0	1,000	0	87.5	80	120				
Benz(a)anthracene	868	20.0	1,000	0	86.8	80	120				
Chrysene	872	40.0	1,000	0	87.2	80	120				
Benzo(b)fluoranthene	870	20.0	1,000	0	87.0	80	120				
Benzo(k)fluoranthene	801	20.0	1,000	0	80.1	80	120				
Benzo(a)pyrene	837	20.0	1,000	0	83.7	80	120				
Indeno(1,2,3-cd)pyrene	877	40.0	1,000	0	87.7	80	120				
Dibenz(a,h)anthracene	881	40.0	1,000	0	88.1	80	120				
Benzo(g,h,i)perylene	885	20.0	1,000	0	88.5	80	120				
Surr: 2-Fluorobiphenyl	444		500.0		88.7	69.5	150				
Surr: Terphenyl-d14 (surr)	430		500.0		86.1	71.6	145				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-33012**	SampType: **MBLK**	Units: **µg/Kg**	Prep Date: **7/15/2021**	RunNo: **68636**
Client ID: **MBLKS**	Batch ID: **33012**		Analysis Date: **7/16/2021**	SeqNo: **1387423**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthylene	ND	20.0									
Acenaphthene	ND	20.0									
Fluorene	ND	20.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2-Fluorobiphenyl	743		1,000		74.3	19	135				
Surr: Terphenyl-d14 (surr)	926		1,000		92.6	42.9	156				

Sample ID: **LCS-33012**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **7/15/2021**	RunNo: **68636**
Client ID: **LCSS**	Batch ID: **33012**		Analysis Date: **7/16/2021**	SeqNo: **1387424**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,120	20.0	2,000	0	106	62.7	127				
2-Methylnaphthalene	2,170	20.0	2,000	0	108	62.7	132				
1-Methylnaphthalene	2,110	20.0	2,000	0	105	61.4	131				
Acenaphthylene	2,090	20.0	2,000	0	105	62	132				
Acenaphthene	1,990	20.0	2,000	0	99.3	59.2	132				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-33012** SampType: **LCS** Units: **µg/Kg** Prep Date: **7/15/2021** RunNo: **68636**
Client ID: **LCSS** Batch ID: **33012** Analysis Date: **7/16/2021** SeqNo: **1387424**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	2,080	20.0	2,000	0	104	59.1	136				
Phenanthrene	2,080	40.0	2,000	0	104	54.1	139				
Anthracene	2,080	40.0	2,000	0	104	55.5	136				
Fluoranthene	2,100	40.0	2,000	0	105	52.8	149				
Pyrene	2,110	40.0	2,000	0	105	53.6	146				
Benz(a)anthracene	2,060	20.0	2,000	0	103	49.7	153				
Chrysene	2,130	40.0	2,000	0	107	52.6	147				
Benzo(b)fluoranthene	1,960	20.0	2,000	0	98.0	50.6	151				
Benzo(k)fluoranthene	2,280	20.0	2,000	0	114	47.1	155				
Benzo(a)pyrene	2,280	20.0	2,000	0	114	48.3	169				
Indeno(1,2,3-cd)pyrene	2,080	40.0	2,000	0	104	52.3	145				
Dibenz(a,h)anthracene	2,100	40.0	2,000	0	105	53	144				
Benzo(g,h,i)perylene	2,090	20.0	2,000	0	105	49.7	144				
Surr: 2-Fluorobiphenyl	864		1,000		86.4	19	135				
Surr: Terphenyl-d14 (surr)	983		1,000		98.3	42.9	156				

Sample ID: **2107170-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **7/15/2021** RunNo: **68636**
Client ID: **BATCH** Batch ID: **33012** Analysis Date: **7/16/2021** SeqNo: **1387426**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,490	19.6	1,960	0	76.0	26.5	126				
2-Methylnaphthalene	1,550	19.6	1,960	0	78.9	40.5	117				
1-Methylnaphthalene	1,500	19.6	1,960	0	76.3	37	118				
Acenaphthylene	1,490	19.6	1,960	0	75.9	34.6	121				
Acenaphthene	1,420	19.6	1,960	0	72.2	36.9	114				
Fluorene	1,490	19.6	1,960	0	75.8	36.5	120				
Phenanthrene	1,470	39.2	1,960	0	75.2	29.2	124				
Anthracene	1,460	39.2	1,960	0	74.3	32.9	127				
Fluoranthene	1,500	39.2	1,960	0	76.6	33.2	130				
Pyrene	1,510	39.2	1,960	0	76.9	32	128				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2107170-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **7/15/2021** RunNo: **68636**
Client ID: **BATCH** Batch ID: **33012** Analysis Date: **7/16/2021** SeqNo: **1387426**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	1,450	19.6	1,960	0	74.2	33	134				
Chrysene	1,500	39.2	1,960	0	76.6	33.1	123				
Benzo(b)fluoranthene	1,430	19.6	1,960	0	72.8	36.3	126				
Benzo(k)fluoranthene	1,550	19.6	1,960	0	79.0	33.2	131				
Benzo(a)pyrene	1,580	19.6	1,960	0	80.7	36.2	148				
Indeno(1,2,3-cd)pyrene	1,490	39.2	1,960	0	75.9	32.8	124				
Dibenz(a,h)anthracene	1,510	39.2	1,960	0	76.8	31.4	126				
Benzo(g,h,i)perylene	1,500	19.6	1,960	0	76.3	25.3	122				
Surr: 2-Fluorobiphenyl	669		980.2		68.3	19	135				
Surr: Terphenyl-d14 (surr)	702		980.2		71.6	42.9	156				

Sample ID: **2107170-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **7/15/2021** RunNo: **68636**
Client ID: **BATCH** Batch ID: **33012** Analysis Date: **7/16/2021** SeqNo: **1387427**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,370	18.5	1,849	0	74.0	26.5	126	1,489	8.48	30	
2-Methylnaphthalene	1,410	18.5	1,849	0	76.0	40.5	117	1,547	9.59	30	
1-Methylnaphthalene	1,360	18.5	1,849	0	73.6	37	118	1,495	9.35	30	
Acenaphthylene	1,360	18.5	1,849	0	73.4	34.6	121	1,488	9.17	30	
Acenaphthene	1,300	18.5	1,849	0	70.2	36.9	114	1,416	8.61	30	
Fluorene	1,360	18.5	1,849	0	73.5	36.5	120	1,487	8.89	30	
Phenanthrene	1,330	37.0	1,849	0	72.2	29.2	124	1,475	9.94	30	
Anthracene	1,320	37.0	1,849	0	71.2	32.9	127	1,456	9.99	30	
Fluoranthene	1,360	37.0	1,849	0	73.4	33.2	130	1,503	10.1	30	
Pyrene	1,370	37.0	1,849	0	74.1	32	128	1,507	9.48	30	
Benz(a)anthracene	1,330	18.5	1,849	0	71.7	33	134	1,455	9.19	30	
Chrysene	1,360	37.0	1,849	0	73.5	33.1	123	1,501	9.91	30	
Benzo(b)fluoranthene	1,430	18.5	1,849	0	77.5	36.3	126	1,428	0.370	30	
Benzo(k)fluoranthene	1,550	18.5	1,849	0	83.8	33.2	131	1,549	0.00941	30	
Benzo(a)pyrene	1,430	18.5	1,849	0	77.3	36.2	148	1,581	10.0	30	

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2107170-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **7/15/2021** RunNo: **68636**
Client ID: **BATCH** Batch ID: **33012** Analysis Date: **7/16/2021** SeqNo: **1387427**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	1,330	37.0	1,849	0	71.9	32.8	124	1,488	11.3	30	
Dibenz(a,h)anthracene	1,350	37.0	1,849	0	72.8	31.4	126	1,506	11.2	30	
Benzo(g,h,i)perylene	1,340	18.5	1,849	0	72.3	25.3	122	1,496	11.1	30	
Surr: 2-Fluorobiphenyl	588		924.6		63.6	19	135		0		
Surr: Terphenyl-d14 (surr)	633		924.6		68.5	42.9	156		0		

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **ICB**	SampType: **ICB**	Units: **mg/Kg**	Prep Date: **7/7/2021**	RunNo: **68819**
Client ID: **ICB**	Batch ID: **33092**		Analysis Date: **7/7/2021**	SeqNo: **1394886**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	6.81	0.500		0	0						
Surr: 1,4-Difluorobenzene	45.0		50.00		90.1	65	140				
Surr: Bromofluorobenzene	50.5		50.00		101	65	140				

Sample ID: **ICV**	SampType: **ICV**	Units: **mg/Kg**	Prep Date: **7/7/2021**	RunNo: **68819**
Client ID: **ICV**	Batch ID: **33092**		Analysis Date: **7/7/2021**	SeqNo: **1394887**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	451	2.50	600.0	0	75.1	70	130				
Aliphatic Hydrocarbon (C6-C8)	200	1.50	200.0	0	100	70	130				
Aliphatic Hydrocarbon (C8-C10)	175	2.50	200.0	0	87.4	70	130				
Aliphatic Hydrocarbon (C10-C12)	199	0.500	200.0	0	99.3	70	130				
Aromatic Hydrocarbon (C8-C10)	799	3.00	800.0	0	99.8	70	130				
Aromatic Hydrocarbon (C10-C12)	186	0.500	200.0	0	93.2	70	130				
Aromatic Hydrocarbon (C12-C13)	200	0.500	200.0	0	99.9	70	130				
Surr: 1,4-Difluorobenzene	51.7		50.00		103	65	140				
Surr: Bromofluorobenzene	50.8		50.00		102	65	140				

Sample ID: **CCV-33092A**	SampType: **CCV**	Units: **mg/Kg**	Prep Date: **7/22/2021**	RunNo: **68819**
Client ID: **CCV**	Batch ID: **33092**		Analysis Date: **7/22/2021**	SeqNo: **1391856**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	579	2.50	600.0	0	96.5	80	120				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **CCV-33092A**	SampType: **CCV**	Units: **mg/Kg**	Prep Date: **7/22/2021**	RunNo: **68819**
Client ID: **CCV**	Batch ID: **33092**		Analysis Date: **7/22/2021**	SeqNo: **1391856**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C6-C8)	208	1.50	200.0	0	104	80	120				
Aliphatic Hydrocarbon (C8-C10)	237	2.50	200.0	0	118	80	120				
Aliphatic Hydrocarbon (C10-C12)	199	0.500	200.0	0	99.3	80	120				
Aromatic Hydrocarbon (C8-C10)	648	3.00	800.0	0	81.1	80	120				
Aromatic Hydrocarbon (C10-C12)	153	0.500	200.0	0	76.7	80	120				S
Aromatic Hydrocarbon (C12-C13)	132	0.500	200.0	0	65.9	80	120				S
Surr: 1,4-Difluorobenzene	46.0		50.00		92.0	65	140				
Surr: Bromofluorobenzene	45.7		50.00		91.4	65	140				

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Sample ID: **LCS-33092**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/22/2021**	RunNo: **68819**
Client ID: **LCSS**	Batch ID: **33092**		Analysis Date: **7/22/2021**	SeqNo: **1391858**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	31.8	2.50	30.00	0	106	70	130				
Aliphatic Hydrocarbon (C6-C8)	10.3	1.50	10.00	0	103	70	130				
Aliphatic Hydrocarbon (C8-C10)	13.3	2.50	10.00	0	133	70	130				S
Aliphatic Hydrocarbon (C10-C12)	12.8	0.500	10.00	0	128	70	130				
Aromatic Hydrocarbon (C8-C10)	34.2	3.00	40.00	0	85.4	70	130				
Aromatic Hydrocarbon (C10-C12)	9.52	0.500	10.00	0	95.2	70	130				
Aromatic Hydrocarbon (C12-C13)	8.70	0.500	10.00	0	87.0	70	130				
Surr: 1,4-Difluorobenzene	2.21		2.500		88.5	65	140				
Surr: Bromofluorobenzene	2.19		2.500		87.5	65	140				

NOTES:
S - Outlying spike recovery observed (high bias). Detections will be qualified with a Q.

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **MB-33092** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/22/2021** RunNo: **68819**
Client ID: **MBLKS** Batch ID: **33092** Analysis Date: **7/22/2021** SeqNo: **1391859**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						Q
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						Q
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						Q
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						Q
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						Q
Aromatic Hydrocarbon (C12-C13)	ND	0.500		0	0						Q
Surr: 1,4-Difluorobenzene	1.87		2.500		75.0	65	140				
Surr: Bromofluorobenzene	2.12		2.500		84.7	65	140				

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample ID: **2107179-002BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/22/2021** RunNo: **68819**
Client ID: **BATCH** Batch ID: **33092** Analysis Date: **7/22/2021** SeqNo: **1391851**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	3.23		0	0			0		25	Q
Aliphatic Hydrocarbon (C6-C8)	ND	1.94		0	0			0		25	Q
Aliphatic Hydrocarbon (C8-C10)	ND	3.23		0	0			0		25	
Aliphatic Hydrocarbon (C10-C12)	ND	0.646		0	0			0		25	Q
Aromatic Hydrocarbon (C8-C10)	ND	3.87		0	0			0		25	Q
Aromatic Hydrocarbon (C10-C12)	ND	0.646		0	0			0		25	Q
Aromatic Hydrocarbon (C12-C13)	ND	0.646		0	0			0		25	Q
Surr: 1,4-Difluorobenzene	2.41		3.229		74.6	65	140		0		
Surr: Bromofluorobenzene	2.76		3.229		85.5	65	140		0		

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2107216-003BMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/22/2021**	RunNo: **68819**
Client ID: **BATCH**	Batch ID: **33092**		Analysis Date: **7/22/2021**	SeqNo: **1391855**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	29.4	3.11	37.34	0	78.8	70	130				
Aliphatic Hydrocarbon (C6-C8)	8.91	1.87	12.45	0	71.6	70	130				
Aliphatic Hydrocarbon (C8-C10)	12.0	3.11	12.45	0	96.4	70	130				
Aliphatic Hydrocarbon (C10-C12)	11.3	0.622	12.45	0	90.4	70	130				
Aromatic Hydrocarbon (C8-C10)	39.8	3.73	49.79	0	80.0	70	130				
Aromatic Hydrocarbon (C10-C12)	11.8	0.622	12.45	0	95.2	70	130				
Aromatic Hydrocarbon (C12-C13)	11.9	0.622	12.45	0	95.5	70	130				
Surr: 1,4-Difluorobenzene	2.82		3.112		90.8	65	140				
Surr: Bromofluorobenzene	2.82		3.112		90.5	65	140				

Sample ID: **CCV-33092B**	SampType: **CCV**	Units: **mg/Kg**	Prep Date: **7/23/2021**	RunNo: **68819**
Client ID: **CCV**	Batch ID: **33092**		Analysis Date: **7/23/2021**	SeqNo: **1391857**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	463	2.50	600.0	0	77.2	80	120				S
Aliphatic Hydrocarbon (C6-C8)	137	1.50	200.0	0	68.4	80	120				S
Aliphatic Hydrocarbon (C8-C10)	195	2.50	200.0	0	97.7	80	120				
Aliphatic Hydrocarbon (C10-C12)	136	0.500	200.0	0	67.8	80	120				S
Aromatic Hydrocarbon (C8-C10)	623	3.00	800.0	0	77.8	80	120				S
Aromatic Hydrocarbon (C10-C12)	170	0.500	200.0	0	84.9	80	120				
Aromatic Hydrocarbon (C12-C13)	166	0.500	200.0	0	83.0	80	120				
Surr: 1,4-Difluorobenzene	45.4		50.00		90.8	65	140				
Surr: Bromofluorobenzene	45.1		50.00		90.2	65	140				

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **ICB**	SampType: **ICB**	Units: **mg/Kg**	Prep Date: **7/23/2021**	RunNo: **68805**
Client ID: **ICB**	Batch ID: **33092**		Analysis Date: **7/23/2021**	SeqNo: **1394900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	4.74	0.500		0	0						
Surr: 1,4-Difluorobenzene	43.1		50.00		86.2	65	140				
Surr: Bromofluorobenzene	49.5		50.00		99.0	65	140				

Sample ID: **ICV VPH 25080**	SampType: **ICV**	Units: **mg/Kg**	Prep Date: **7/23/2021**	RunNo: **68805**
Client ID: **ICV**	Batch ID: **33092**		Analysis Date: **7/23/2021**	SeqNo: **1394901**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	536	2.50	600.0	0	89.3	70	130				
Aliphatic Hydrocarbon (C6-C8)	191	1.50	200.0	0	95.6	70	130				
Aliphatic Hydrocarbon (C8-C10)	183	2.50	200.0	0	91.7	70	130				
Aliphatic Hydrocarbon (C10-C12)	204	0.500	200.0	0	102	70	130				
Aromatic Hydrocarbon (C8-C10)	866	3.00	800.0	0	108	70	130				
Aromatic Hydrocarbon (C10-C12)	204	0.500	200.0	0	102	70	130				
Aromatic Hydrocarbon (C12-C13)	208	0.500	200.0	0	104	70	130				
Surr: 1,4-Difluorobenzene	52.5		50.00		105	65	140				
Surr: Bromofluorobenzene	52.1		50.00		104	65	140				

Sample ID: **CCV-33092A**	SampType: **CCV**	Units: **mg/Kg**	Prep Date: **7/23/2021**	RunNo: **68805**
Client ID: **CCV**	Batch ID: **33092**		Analysis Date: **7/23/2021**	SeqNo: **1391517**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	593	2.50	600.0	0	98.8	80	120				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **CCV-33092A**	SampType: **CCV**			Units: **mg/Kg**		Prep Date: **7/23/2021**		RunNo: **68805**			
Client ID: **CCV**	Batch ID: **33092**					Analysis Date: **7/23/2021**		SeqNo: **1391517**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C6-C8)	210	1.50	200.0	0	105	80	120				
Aliphatic Hydrocarbon (C8-C10)	196	2.50	200.0	0	98.2	80	120				
Aliphatic Hydrocarbon (C10-C12)	202	0.500	200.0	0	101	80	120				
Aromatic Hydrocarbon (C8-C10)	850	3.00	800.0	0	106	80	120				
Aromatic Hydrocarbon (C10-C12)	212	0.500	200.0	0	106	80	120				
Aromatic Hydrocarbon (C12-C13)	210	0.500	200.0	0	105	80	120				
Surr: 1,4-Difluorobenzene	51.6		50.00		103	65	140				
Surr: Bromofluorobenzene	52.5		50.00		105	65	140				

Sample ID: **LCS-33092**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **7/22/2021**		RunNo: **68805**			
Client ID: **LCSS**	Batch ID: **33092**					Analysis Date: **7/24/2021**		SeqNo: **1391519**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	29.3	2.50	30.00	0	97.6	70	130				
Aliphatic Hydrocarbon (C6-C8)	9.91	1.50	10.00	0	99.1	70	130				
Aliphatic Hydrocarbon (C8-C10)	9.69	2.50	10.00	0	96.9	70	130				
Aliphatic Hydrocarbon (C10-C12)	10.1	0.500	10.00	0	101	70	130				
Aromatic Hydrocarbon (C8-C10)	40.5	3.00	40.00	0	101	70	130				
Aromatic Hydrocarbon (C10-C12)	10.9	0.500	10.00	0	109	70	130				
Aromatic Hydrocarbon (C12-C13)	10.3	0.500	10.00	0	103	70	130				
Surr: 1,4-Difluorobenzene	2.45		2.500		97.9	65	140				
Surr: Bromofluorobenzene	2.46		2.500		98.2	65	140				

Sample ID: **MB-33092**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **7/22/2021**		RunNo: **68805**			
Client ID: **MBLKS**	Batch ID: **33092**					Analysis Date: **7/24/2021**		SeqNo: **1391520**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **MB-33092** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/22/2021** RunNo: **68805**
Client ID: **MBLKS** Batch ID: **33092** Analysis Date: **7/24/2021** SeqNo: **1391520**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	0.500		0	0						
Surr: 1,4-Difluorobenzene	2.10		2.500		83.9	65	140				
Surr: Bromofluorobenzene	2.36		2.500		94.4	65	140				

Sample ID: **2107179-002BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/22/2021** RunNo: **68805**
Client ID: **BATCH** Batch ID: **33092** Analysis Date: **7/24/2021** SeqNo: **1391512**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	3.23		0	0			0		25	
Aliphatic Hydrocarbon (C6-C8)	ND	1.94		0	0			0		25	
Aliphatic Hydrocarbon (C8-C10)	ND	3.23		0	0			0		25	
Aliphatic Hydrocarbon (C10-C12)	ND	0.646		0	0			0		25	
Aromatic Hydrocarbon (C8-C10)	ND	3.87		0	0			0		25	
Aromatic Hydrocarbon (C10-C12)	ND	0.646		0	0			0		25	
Aromatic Hydrocarbon (C12-C13)	ND	0.646		0	0			0		25	
Surr: 1,4-Difluorobenzene	2.59		3.229		80.3	65	140		0		
Surr: Bromofluorobenzene	3.10		3.229		95.9	65	140		0		

Sample ID: **2107216-003BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/22/2021** RunNo: **68805**
Client ID: **BATCH** Batch ID: **33092** Analysis Date: **7/24/2021** SeqNo: **1391515**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	35.7	3.11	37.34	0	95.5	70	130				
Aliphatic Hydrocarbon (C6-C8)	13.0	1.87	12.45	0	105	70	130				
Aliphatic Hydrocarbon (C8-C10)	12.2	3.11	12.45	0	97.9	70	130				

Work Order: 2107181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2107216-003BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/22/2021** RunNo: **68805**
Client ID: **BATCH** Batch ID: **33092** Analysis Date: **7/24/2021** SeqNo: **1391515**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	12.1	0.622	12.45	0	97.2	70	130				
Aromatic Hydrocarbon (C8-C10)	55.2	3.73	49.79	0	111	70	130				
Aromatic Hydrocarbon (C10-C12)	27.5	0.622	12.45	0	221	70	130				S
Aromatic Hydrocarbon (C12-C13)	39.0	0.622	12.45	0	313	70	130				S
Surr: 1,4-Difluorobenzene	3.12		3.112		100	65	140				
Surr: Bromofluorobenzene	3.23		3.112		104	65	140				

NOTES:
S - Outlying spike recovery observed (high bias).

Sample ID: **CCV-33092B** SampType: **CCV** Units: **mg/Kg** Prep Date: **7/24/2021** RunNo: **68805**
Client ID: **CCV** Batch ID: **33092** Analysis Date: **7/24/2021** SeqNo: **1391518**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	526	2.50	600.0	0	87.7	80	120				
Aliphatic Hydrocarbon (C6-C8)	210	1.50	200.0	0	105	80	120				
Aliphatic Hydrocarbon (C8-C10)	203	2.50	200.0	0	101	80	120				
Aliphatic Hydrocarbon (C10-C12)	201	0.500	200.0	0	101	80	120				
Aromatic Hydrocarbon (C8-C10)	764	3.00	800.0	0	95.5	80	120				
Aromatic Hydrocarbon (C10-C12)	193	0.500	200.0	0	96.3	80	120				
Aromatic Hydrocarbon (C12-C13)	197	0.500	200.0	0	98.4	80	120				
Surr: 1,4-Difluorobenzene	50.5		50.00		101	65	140				
Surr: Bromofluorobenzene	50.9		50.00		102	65	140				

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2107181**
Logged by:	**Matt Langston**	Date Received:	**7/13/2021 9:43:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☐	Not Present	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No ☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.2

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

2197181

Date: 7-12-21 Page: 1 of 1

Client: Libby Environmental, Inc
Address: See Above
City: State: Zip:
Phone: Fax:
Client Project # L210709-4

Project Manager: Kelsey Eley
Project Name: Jacks Auto (JA)
Location: City, State: Olympia, WA
Collector: JH Date of Collection: 7/8 - 7/9
Email: libbyenv@gmail.com

Page 24 of 25

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270			Field Notes
1 SO-MW4-15-17-0708	15-17	0953	Soil	Jar										X					
2 SO-MW6-12-14-0708	12-14	1550	"	2x VOAs															Hold for VPH
3 SO-MW7-26-28-0709	26-28	1400	"	1x VOAs															Hold for EPH/VPH
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	7/12/21 1630	[signature]	
[signature]		[signature]	7/13 9:46

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks: 1 2b EDD
Run Duplicate + Matrix Spikes on "SO-MW4-15-17-0708"
Standard TAT

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Page 24 of 81

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

2107181

Date: 7-12-21 Page: 1 of 1

Client: Libby Environmental, Inc
Address: See Above
City: State: Zip:
Phone: Fax:
Client Project # L210709-4

Project Manager: Kelsey Eley
Project Name: Jacks Auto (JA)
Location: City, State: Olympia, WA
Collector: JH Date of Collection: 7/8 - 7/9
Email: libbyenv@gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	VPH	Field Notes
1 SO-MW4-15-17-0708	15-17	0953	Soil	Jar										X				
2 SO-MW6-12-14-0708	12-14	1550		2x VOAs													X	Hold for VPH
3 SO-MW7-26-28-0709	26-28	1400		1x VOAs														Hold for EPH/VPH
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		Add analysis per KI 7/19/21- gac
16																		
17																		

Relinquished by: [signature] Date / Time: 7/12/21 1630
Received by: [signature] Date / Time:

Relinquished by: [signature] Date / Time:
Received by: Justine Manty Date / Time: 7/13 9:46

Relinquished by: Date / Time:
Received by: Date / Time:

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks: 1 2b EDD
Run Duplicate + Matrix Spikes on "SO-MW4-15-17-0708"
Standard TAT

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

DATA SET for Review -- Deliverable Requirements

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Fremont Analytical Work Order No. 2107181

Libby Environmental

Project Name: Jacks Auto (JA)

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information
- Tune Information

Injection Log

Data Directory: C:\GC-14\Data\2021\071521\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	071501.D	PAH-SIM.M			
CO			2	1.000	15 Jul 2021 08:06 am
2)	071502.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 08:27 am
3)	071503.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 08:50 am
4)	071504.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 09:12 am
5)	071505.D	PAH-SIM.M			
CO			2	1.000	15 Jul 2021 10:48 am
6)	071506.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 11:09 am
7)	071507.D	PAH-SIM.M			
CO			2	1.000	15 Jul 2021 11:31 am
8)	071508.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 11:53 am
9)	071509.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 01:34 pm
10)	071510.D	PAH-SIM.M			
PAH 10			12	1.000	15 Jul 2021 02:02 pm
11)	071511.D	PAH-SIM.M			
PAH 20			13	1.000	15 Jul 2021 02:24 pm
12)	071512.D	PAH-SIM.M			
PAH 40			14	1.000	15 Jul 2021 02:46 pm
13)	071513.D	PAH-SIM.M			
PAH 100			15	1.000	15 Jul 2021 03:10 pm
14)	071514.D	PAH-SIM.M			
PAH 200			16	1.000	15 Jul 2021 03:32 pm
15)	071515.D	PAH-SIM.M			
PAH 500			17	1.000	15 Jul 2021 03:54 pm
16)	071516.D	PAH-SIM.M			
PAH 750			18	1.000	15 Jul 2021 04:15 pm
17)	071517.D	PAH-SIM.M			
PAH 1000			19	1.000	15 Jul 2021 04:37 pm
18)	071518.D	PAH-SIM.M			
PAH 2000			20	1.000	15 Jul 2021 04:59 pm
19)	071519.D	PAH-SIM.M			
PAH 5000			21	1.000	15 Jul 2021 05:21 pm
20)	071520.D	PAH-SIM.M			
PAH ICB			22	1.000	15 Jul 2021 05:43 pm
21)	071521.D	PAH-SIM.M			
PAH ICV			23	1.000	15 Jul 2021 06:04 pm

22) 071522.D PAH-LOWLEVEL.M
CO 22 1.000 15 Jul 2021 06:26 pm

23) 071523.D PAH-LOWLEVEL.M
PAH LL 2 11 1.000 15 Jul 2021 06:48 pm

24) 071524.D PAH-LOWLEVEL.M
PAH LL 10 12 1.000 15 Jul 2021 07:10 pm

25) 071525.D PAH-LOWLEVEL.M
PAH LL 20 13 1.000 15 Jul 2021 07:32 pm

26) 071526.D PAH-LOWLEVEL.M
PAH LL 40 14 1.000 15 Jul 2021 07:53 pm

27) 071527.D PAH-LOWLEVEL.M
PAH LL 100 15 1.000 15 Jul 2021 08:15 pm

28) 071528.D PAH-LOWLEVEL.M
PAH LL 200 16 1.000 15 Jul 2021 08:37 pm

29) 071529.D PAH-LOWLEVEL.M
PAH LL 500 17 1.000 15 Jul 2021 08:58 pm

30) 071530.D PAH-LOWLEVEL.M
PAH LL 750 18 1.000 15 Jul 2021 09:20 pm

31) 071531.D PAH-LOWLEVEL.M
PAH LL 1000 19 1.000 15 Jul 2021 09:41 pm

32) 071532.D PAH-LOWLEVEL.M
PAH LL 2000 20 1.000 15 Jul 2021 10:03 pm

33) 071533.D PAH-LOWLEVEL.M
PAH LL 5000 21 1.000 15 Jul 2021 10:25 pm

34) 071534.D PAH-LOWLEVEL.M
PAH LL ICB 22 1.000 15 Jul 2021 10:46 pm

35) 071535.D PAH-LOWLEVEL.M
PAH LL ICV 23 1.000 15 Jul 2021 11:08 pm

36) 071536.D PAH-LOWLEVEL.M
CCV-LL-32998 2 1.000 15 Jul 2021 11:30 pm

37) 071537.D PAH-LOWLEVEL.M
MB-32998 31 1.000 15 Jul 2021 11:51 pm

38) 071538.D PAH-LOWLEVEL.M
LCS-32998 32 1.000 16 Jul 2021 12:13 am

39) 071539.D PAH-LOWLEVEL.M
LCSD-32998 33 1.000 16 Jul 2021 12:35 am

40) 071540.D PAH-LOWLEVEL.M
2107110-001C 34 1.000 16 Jul 2021 12:56 am

41) 071541.D PAH-LOWLEVEL.M
QCS-LL-32998 2 1.000 16 Jul 2021 01:18 am

42) 071542.D SEMI9.M
TUNE 1 1.000 16 Jul 2021 01:39 am

43) 071543.D PAH-SIM.M
CCV-33012 2 1.000 16 Jul 2021 02:02 am

44) 071544.D PAH-SIM.M
MB-33012 41 1.000 16 Jul 2021 02:24 am

45) 071545.D PAH-SIM.M

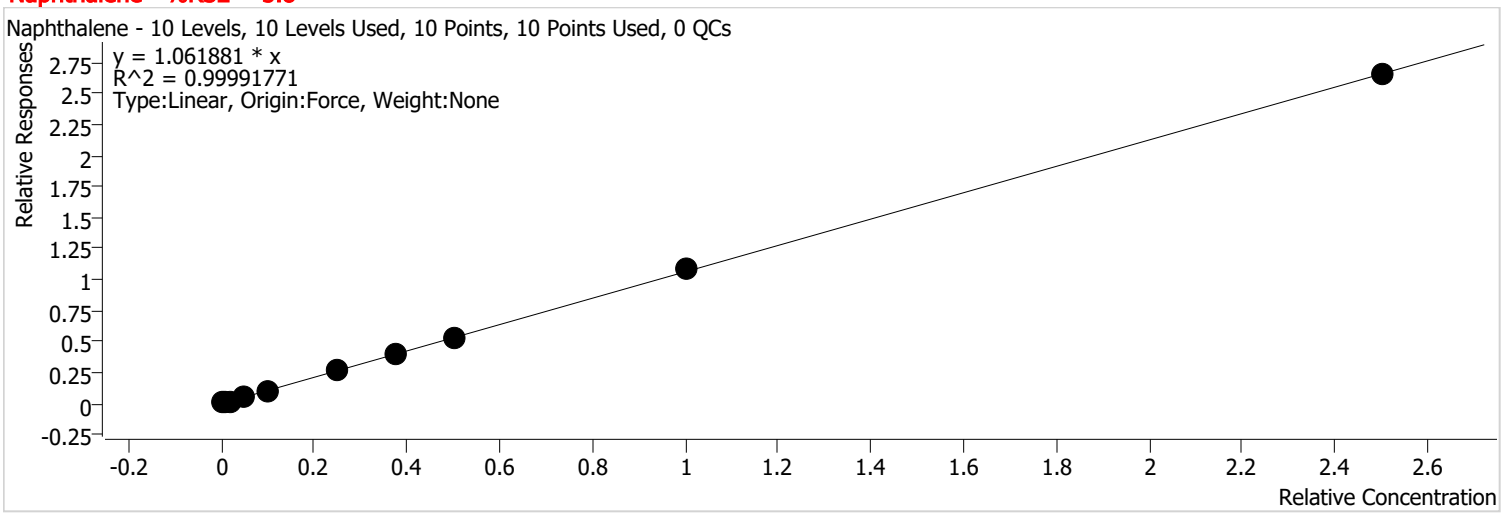
LCS-33012		42	1.000	16 Jul 2021	02:45 am
46) 071546.D	PAH-SIM.M				
2107170-001A		43	1.000	16 Jul 2021	03:07 am
47) 071547.D	PAH-SIM.M				
2107170-001AMS		44	1.000	16 Jul 2021	03:28 am
48) 071548.D	PAH-SIM.M				
2107170-001AMSD		45	1.000	16 Jul 2021	03:50 am
49) 071549.D	PAH-SIM.M				
2107170-006A		46	1.000	16 Jul 2021	04:11 am
50) 071550.D	PAH-SIM.M				
2107170-011A		47	1.000	16 Jul 2021	04:33 am
51) 071551.D	PAH-SIM.M				
2107170-015A		48	1.000	16 Jul 2021	04:54 am
52) 071552.D	PAH-SIM.M				
2107170-019A		49	1.000	16 Jul 2021	05:16 am
53) 071553.D	PAH-SIM.M				
2107179-001A		50	1.000	16 Jul 2021	05:37 am
54) 071554.D	PAH-SIM.M				
2107179-002A		51	1.000	16 Jul 2021	05:59 am
55) 071555.D	PAH-SIM.M				
2107179-003A		52	1.000	16 Jul 2021	06:21 am
56) 071556.D	PAH-SIM.M				
2107181-001A		53	1.000	16 Jul 2021	06:42 am
57) 071557.D	PAH-SIM.M				
2107197-001A		54	1.000	16 Jul 2021	07:04 am
58) 071558.D	PAH-SIM.M				
2107197-006A		55	1.000	16 Jul 2021	07:25 am
59) 071559.D	PAH-SIM.M				
2107197-009A		56	1.000	16 Jul 2021	07:47 am
60) 071560.D	PAH-SIM.M				
2107197-013A		57	1.000	16 Jul 2021	08:08 am
61) 071561.D	PAH-SIM.M				
2107197-017A		58	1.000	16 Jul 2021	08:30 am
62) 071562.D	PAH-SIM.M				
2107197-022A		59	1.000	16 Jul 2021	08:52 am
63) 071563.D	PAH-SIM.M				
QCS-33012		2	1.000	16 Jul 2021	09:13 am

Calibration

Calibration Report

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:29 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Naphthalene %RSE = 3.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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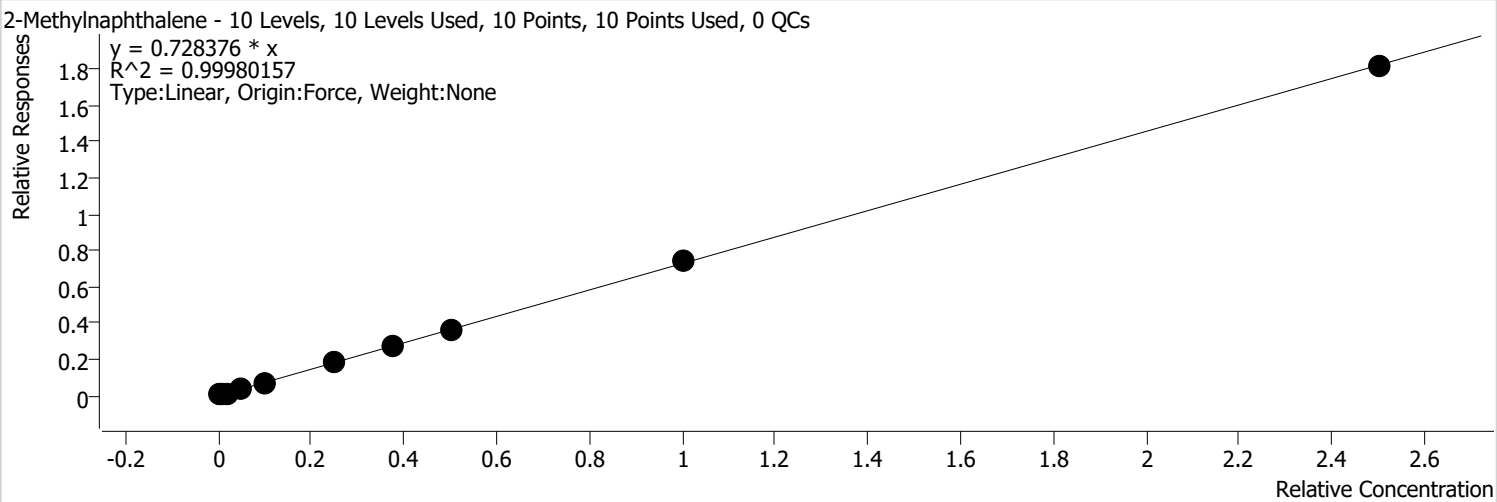
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1429	20.0000	1.1327	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2683	40.0000	1.0862	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6742	100.0000	1.0730	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	13446	200.0000	1.0512	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	33735	500.0000	1.0747	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	51219	750.0000	1.0745	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	66217	1000.0000	1.0430	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	135178	2000.0000	1.0802	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	326728	5000.0000	1.0593	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

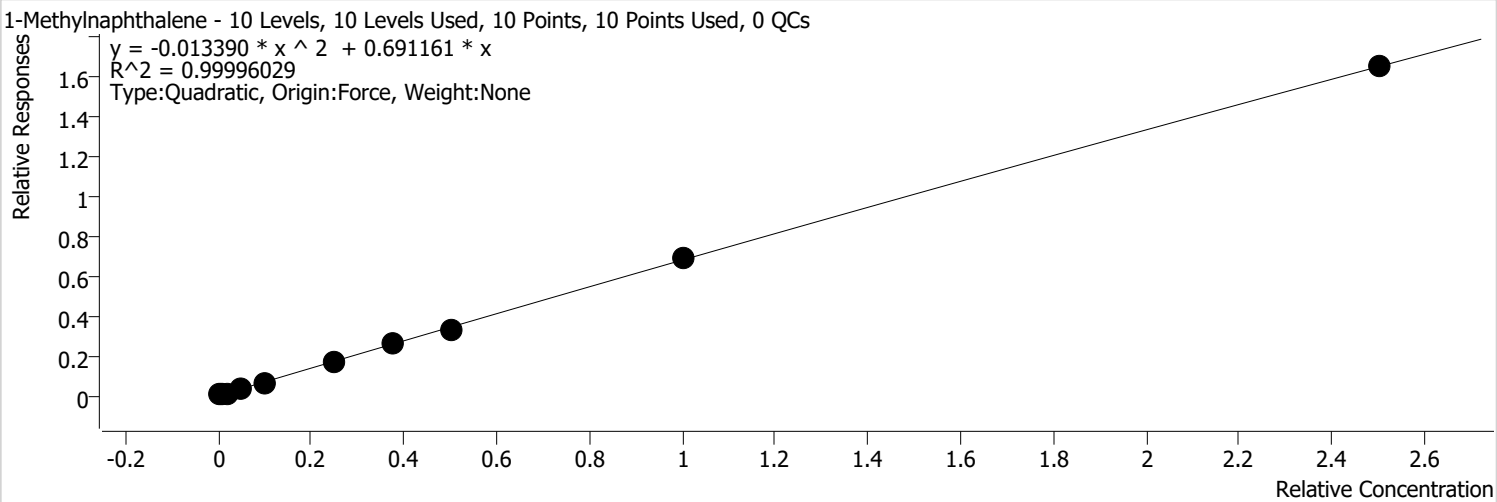
2-Methylnaphthalene %RSE = 2.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	451	10.0000	0.7135	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	900	20.0000	0.7133	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1753	40.0000	0.7097	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4428	100.0000	0.7047	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	8908	200.0000	0.6964	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	22889	500.0000	0.7292	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	35732	750.0000	0.7496	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	45898	1000.0000	0.7229	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	93687	2000.0000	0.7486	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	223594	5000.0000	0.7249	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

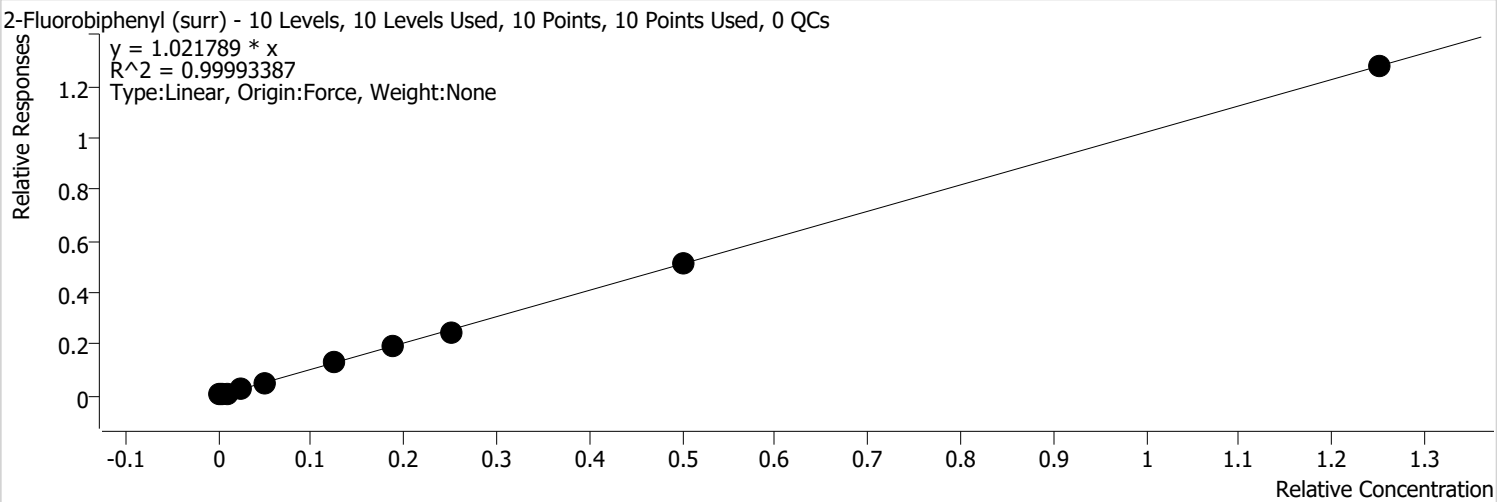
1-Methylnaphthalene %RSE = 1.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	449	10.0000	0.7102	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	868	20.0000	0.6879	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1689	40.0000	0.6837	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4264	100.0000	0.6786	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	8614	200.0000	0.6734	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	21745	500.0000	0.6927	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	32876	750.0000	0.6897	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	42425	1000.0000	0.6682	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	85389	2000.0000	0.6823	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	202798	5000.0000	0.6575	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

2-Fluorobiphenyl (surr) %RSE =

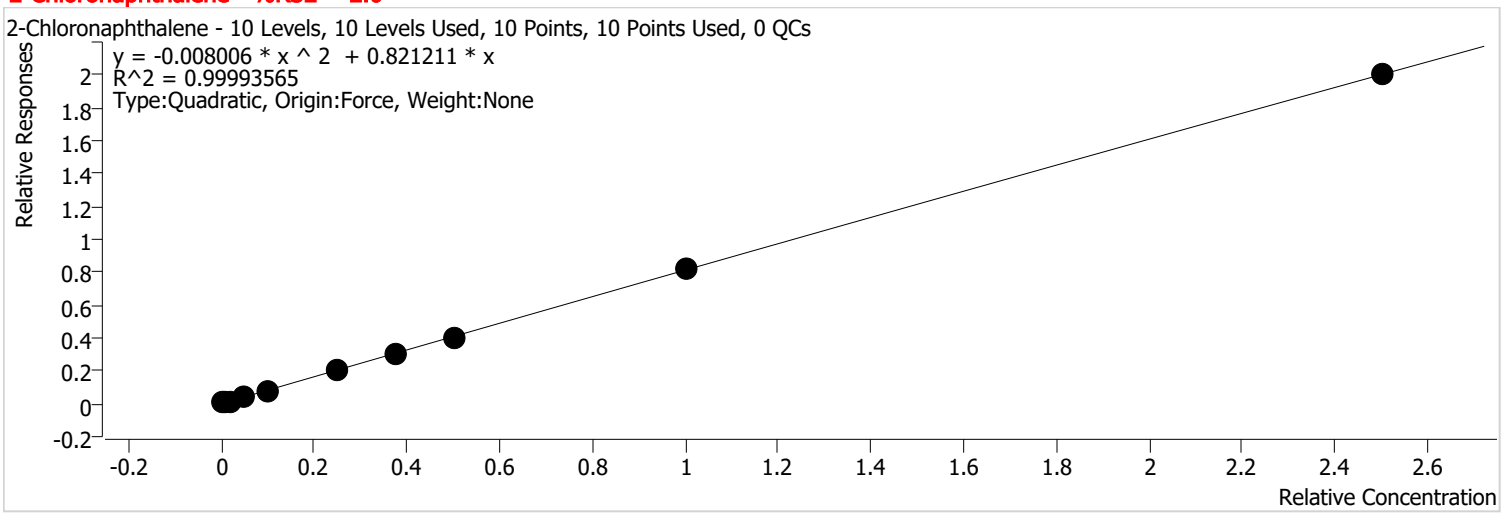


Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	333	5.0000	1.0537	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	640	10.0000	1.0142	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1244	20.0000	1.0076	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3186	50.0000	1.0140	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	6495	100.0000	1.0156	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	16188	250.0000	1.0314	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	24605	375.0000	1.0323	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	31695	500.0000	0.9984	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	64815	1000.0000	1.0359	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	157325	2500.0000	1.0202	

Calibration Report

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

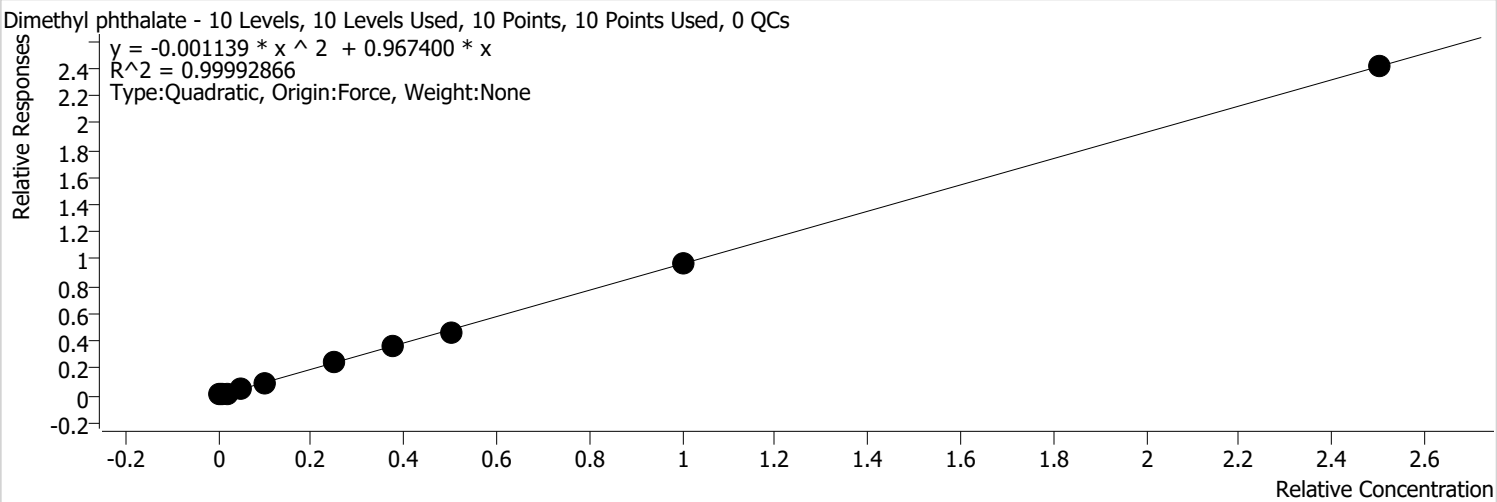
2-Chloronaphthalene %RSE = 2.0



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	515	10.0000	0.8158	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1037	20.0000	0.8219	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2004	40.0000	0.8113	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5000	100.0000	0.7957	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	10241	200.0000	0.8006	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	25730	500.0000	0.8197	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	38803	750.0000	0.8140	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	50409	1000.0000	0.7940	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	102888	2000.0000	0.8222	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	247002	5000.0000	0.8008	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

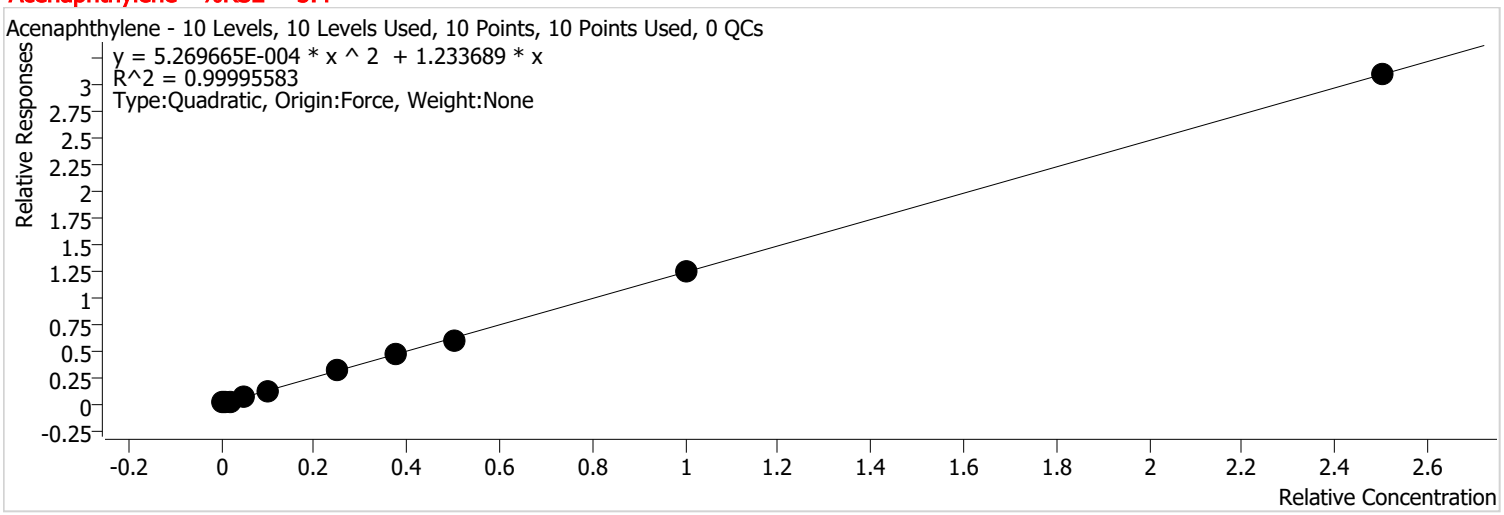
Dimethyl phthalate %RSE = 39.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1228	10.0000	1.9436	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1530	20.0000	1.2128	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2653	40.0000	1.0740	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6299	100.0000	1.0025	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	12230	200.0000	0.9562	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	30218	500.0000	0.9627	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	45613	750.0000	0.9569	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	59690	1000.0000	0.9402	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	122322	2000.0000	0.9775	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	297358	5000.0000	0.9641	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

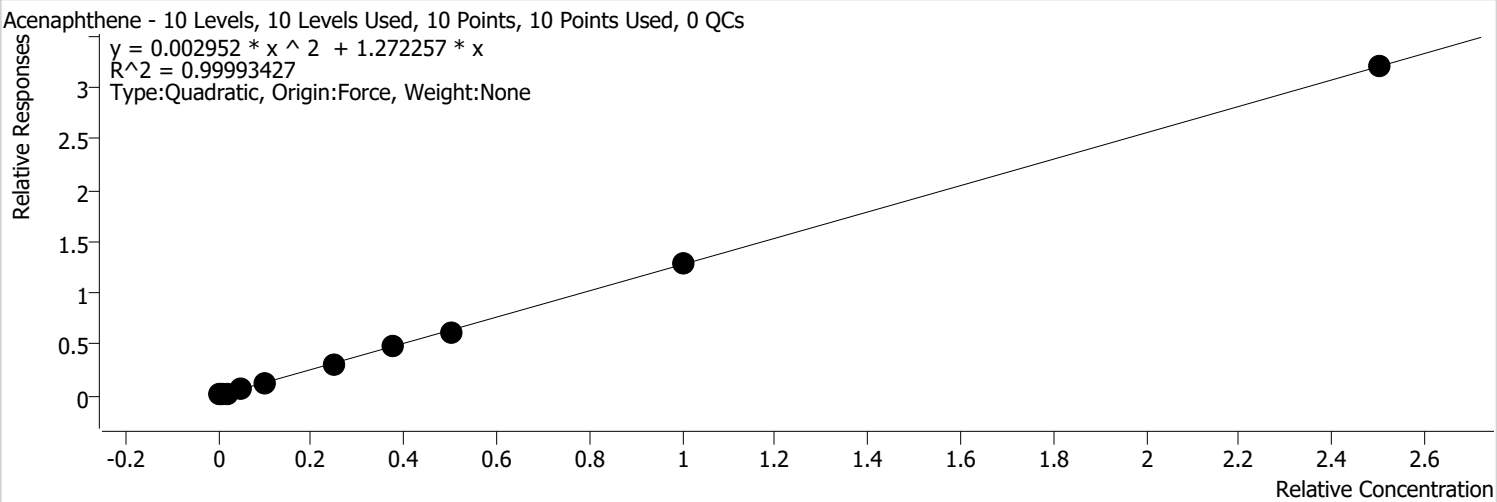
Acenaphthylene %RSE = 3.4



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	834	10.0000	1.3206	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1613	20.0000	1.2788	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3024	40.0000	1.2244	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7573	100.0000	1.2052	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	15430	200.0000	1.2063	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	38420	500.0000	1.2240	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	59022	750.0000	1.2382	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	76417	1000.0000	1.2036	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	155796	2000.0000	1.2449	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	380782	5000.0000	1.2346	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

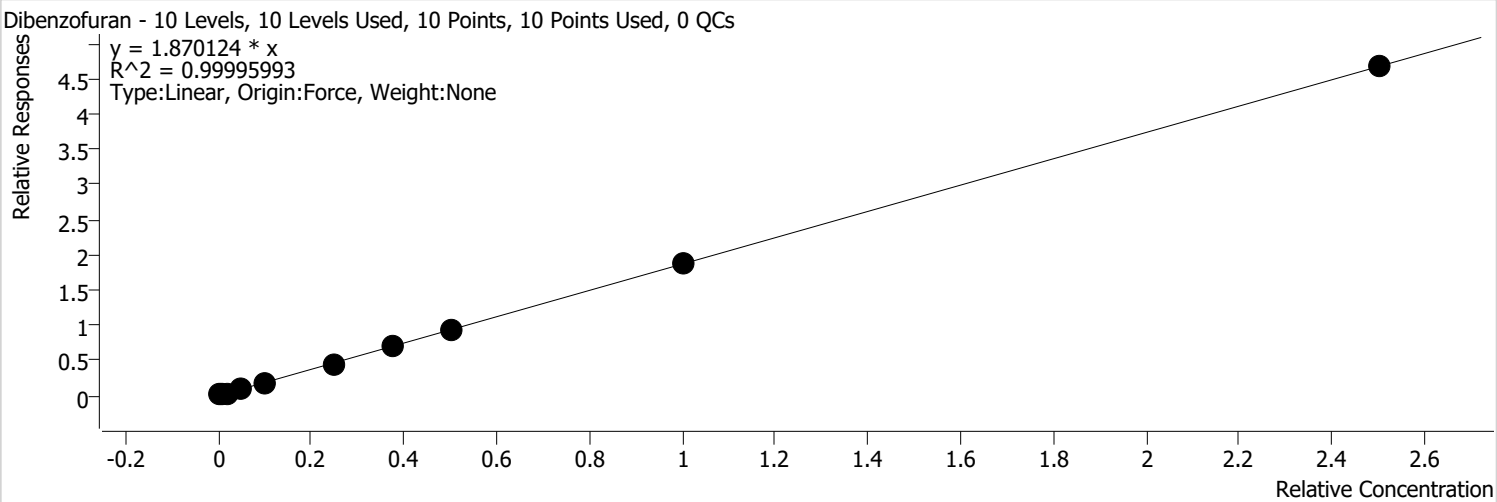
Acenaphthene %RSE = 5.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	560	10.0000	1.4257	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1053	20.0000	1.3388	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2013	40.0000	1.3067	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5016	100.0000	1.2724	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	10055	200.0000	1.2558	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	24819	500.0000	1.2595	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	38101	750.0000	1.2876	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	48823	1000.0000	1.2340	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	100463	2000.0000	1.2871	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	242833	5000.0000	1.2792	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

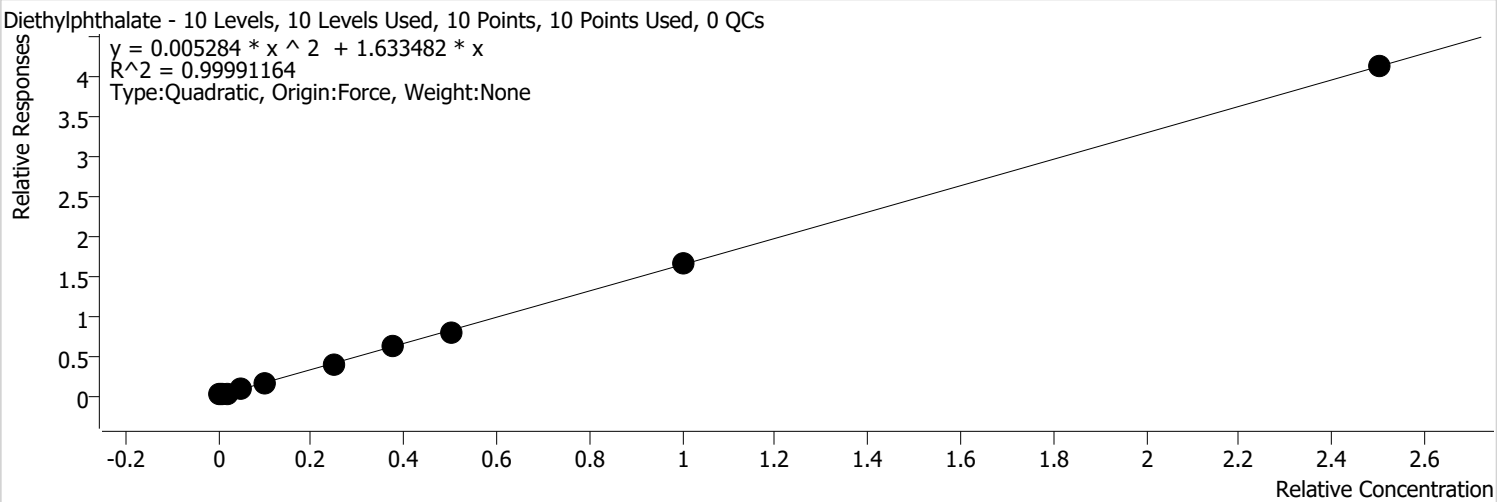
Dibenzofuran %RSE = 2.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	780	10.0000	1.9861	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1488	20.0000	1.8910	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2877	40.0000	1.8676	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7211	100.0000	1.8293	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	14588	200.0000	1.8219	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	36154	500.0000	1.8348	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	55337	750.0000	1.8701	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	72588	1000.0000	1.8347	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	147389	2000.0000	1.8883	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	354822	5000.0000	1.8691	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

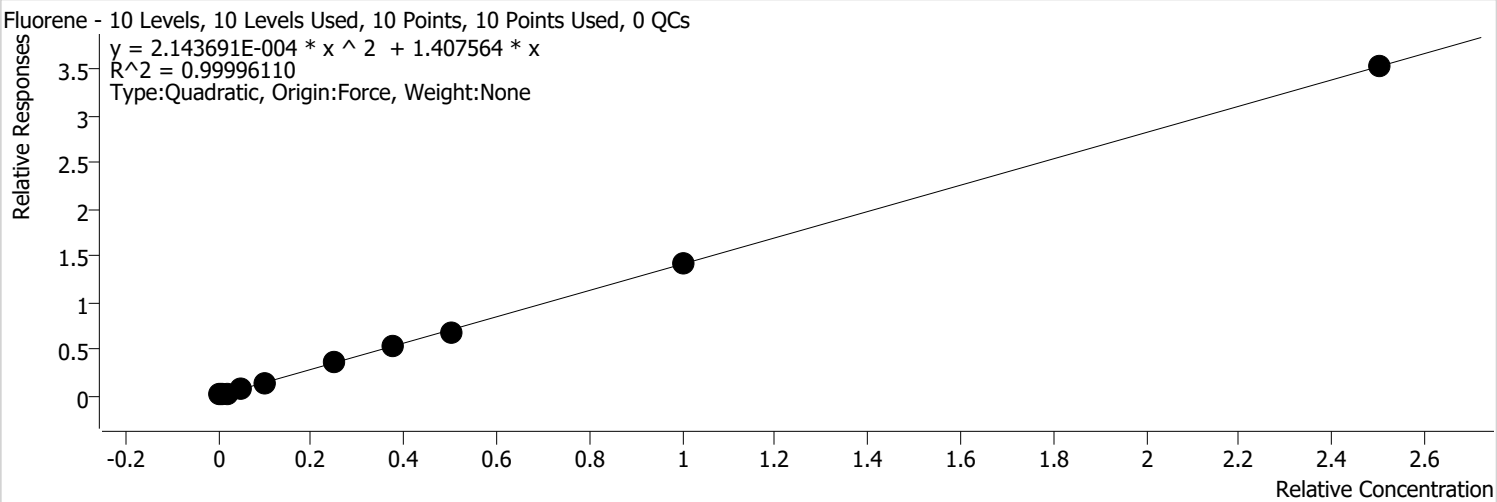
Diethylphthalate %RSE = 5.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	720	10.0000	1.8339	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1337	20.0000	1.6999	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2456	40.0000	1.5945	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6216	100.0000	1.5769	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	12547	200.0000	1.5670	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	31537	500.0000	1.6004	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	48176	750.0000	1.6281	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	62739	1000.0000	1.5857	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	129690	2000.0000	1.6616	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	312416	5000.0000	1.6457	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

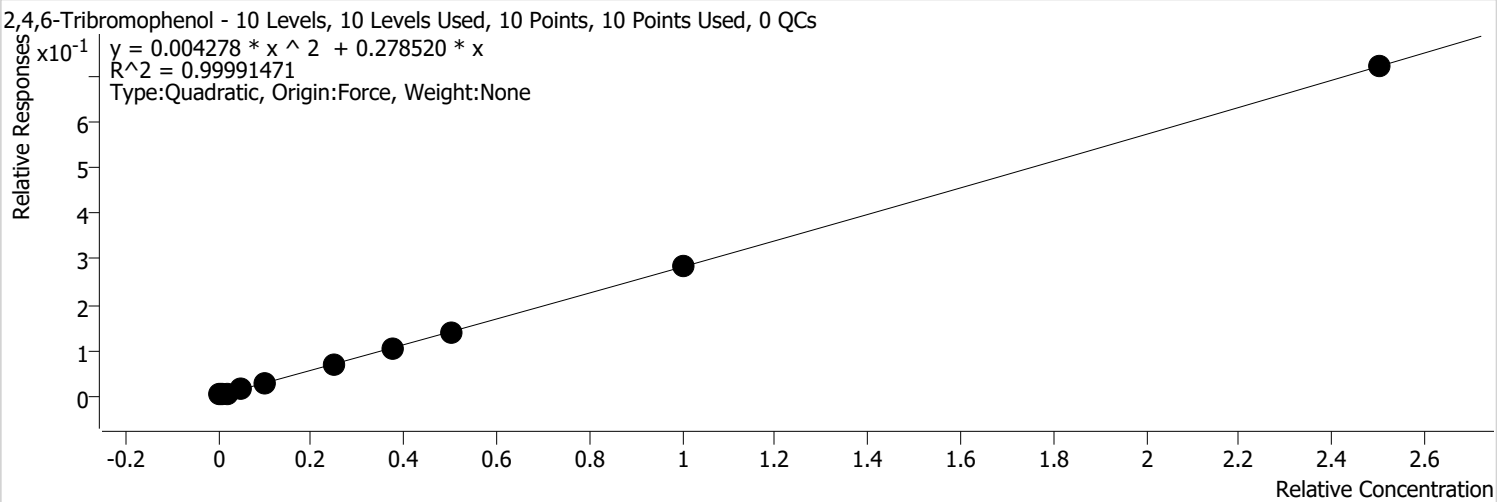
Fluorene %RSE = 3.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	594	10.0000	1.5131	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1123	20.0000	1.4274	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2162	40.0000	1.4032	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5415	100.0000	1.3737	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	11001	200.0000	1.3739	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	27589	500.0000	1.4001	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	41635	750.0000	1.4070	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	54439	1000.0000	1.3759	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	110824	2000.0000	1.4199	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	267215	5000.0000	1.4076	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

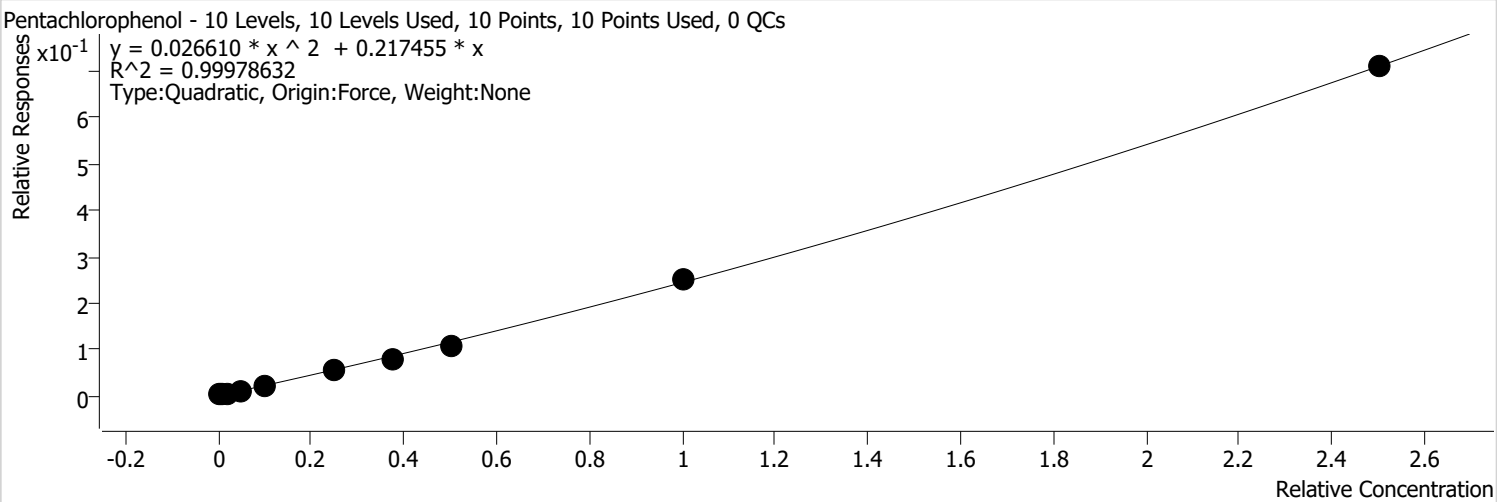
2,4,6-Tribromophenol %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	117	10.0000	0.2982	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	222	20.0000	0.2821	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	417	40.0000	0.2705	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	1043	100.0000	0.2645	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	2128	200.0000	0.2658	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	5354	500.0000	0.2717	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	8211	750.0000	0.2775	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	10802	1000.0000	0.2730	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	22392	2000.0000	0.2869	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	54870	5000.0000	0.2890	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

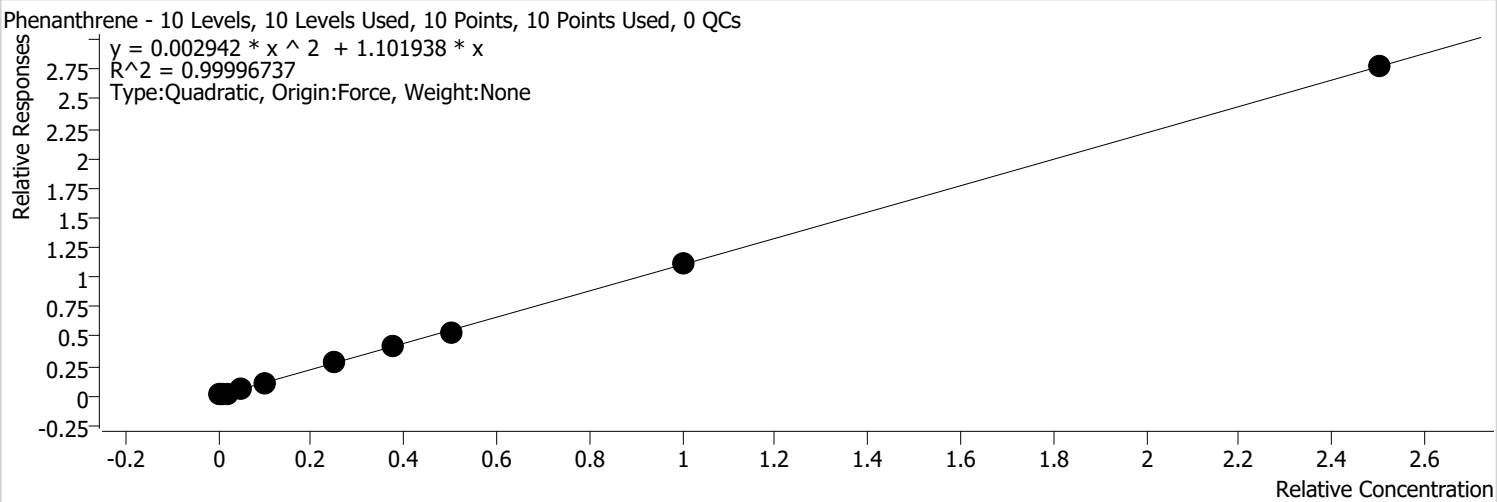
Pentachlorophenol %RSE = 10.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	93	10.0000	0.2365	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	152	20.0000	0.1932	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	272	40.0000	0.1767	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	753	100.0000	0.1911	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	1693	200.0000	0.2114	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	4515	500.0000	0.2291	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	6402	750.0000	0.2164	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	8665	1000.0000	0.2190	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	19514	2000.0000	0.2500	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	53862	5000.0000	0.2837	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Phenanthrene %RSE = 9.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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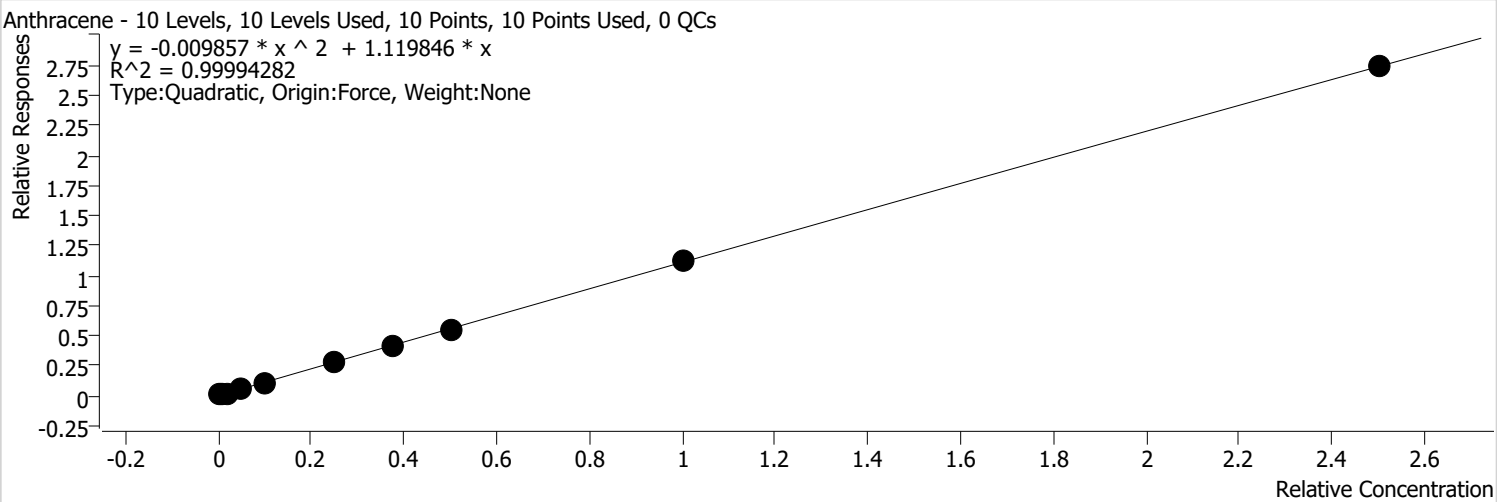
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1907	20.0000	1.2501	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3485	40.0000	1.1648	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8699	100.0000	1.1544	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17436	200.0000	1.1082	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	42582	500.0000	1.1251	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	65343	750.0000	1.1222	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	84647	1000.0000	1.0815	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	172407	2000.0000	1.1059	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	418705	5000.0000	1.1093	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

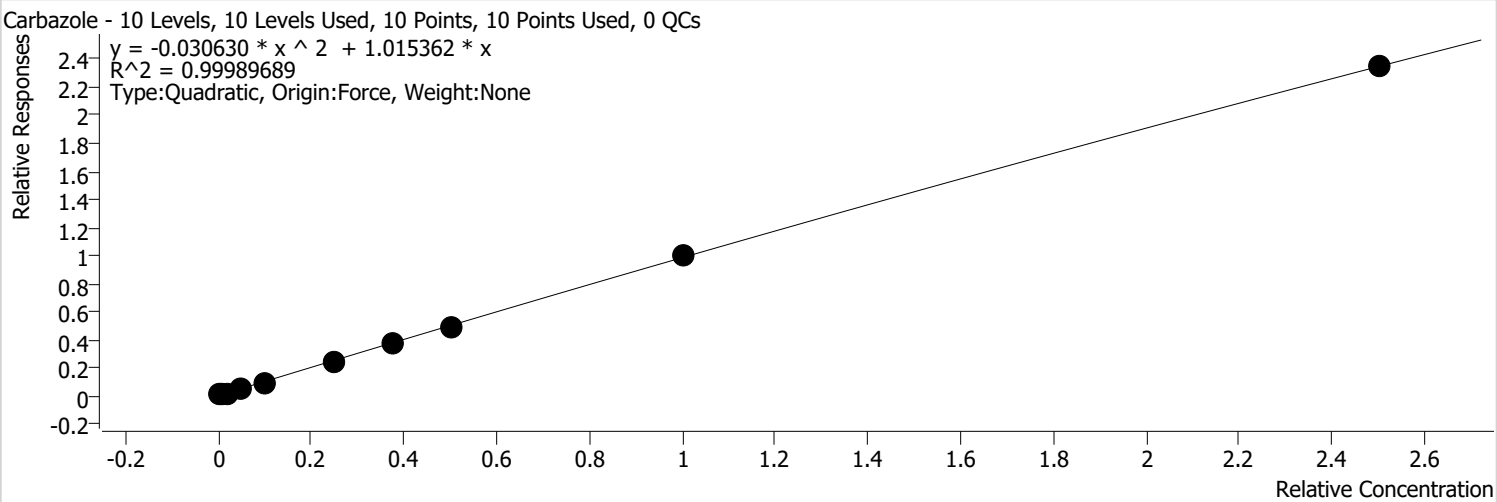
Anthracene %RSE = 3.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	904	10.0000	1.1786	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1776	20.0000	1.1641	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3267	40.0000	1.0919	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8285	100.0000	1.0994	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17075	200.0000	1.0852	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	42089	500.0000	1.1121	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	64473	750.0000	1.1072	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	85079	1000.0000	1.0870	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	174950	2000.0000	1.1222	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	413183	5000.0000	1.0947	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

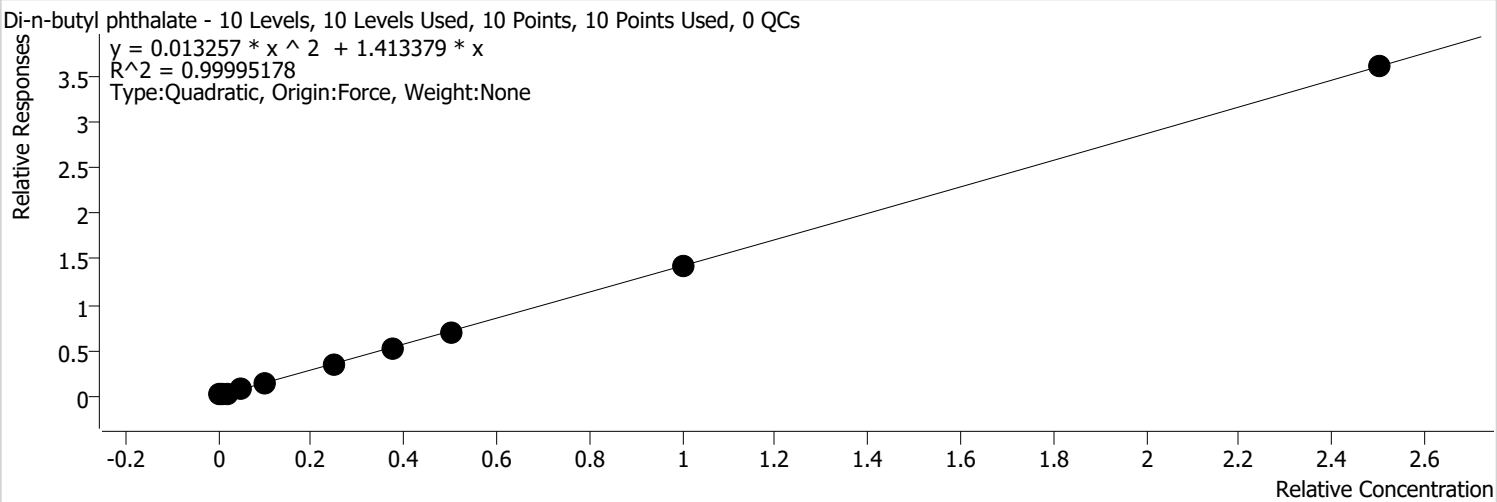
Carbazole %RSE = 3.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	778	10.0000	1.0149	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1563	20.0000	1.0247	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2881	40.0000	0.9630	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7387	100.0000	0.9804	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	15196	200.0000	0.9658	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	37646	500.0000	0.9946	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	57723	750.0000	0.9913	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	75941	1000.0000	0.9702	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	155790	2000.0000	0.9993	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	354101	5000.0000	0.9382	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

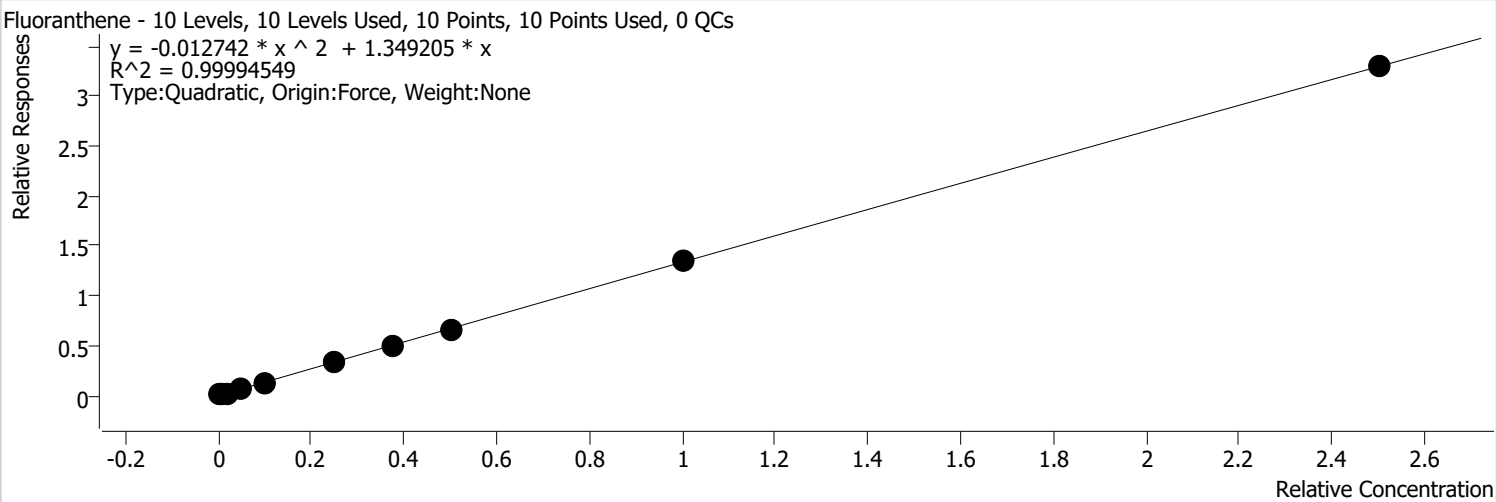
Di-n-butyl phthalate %RSE = 12.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1399	10.0000	1.8243	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2446	20.0000	1.6033	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4277	40.0000	1.4296	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10598	100.0000	1.4065	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	21721	200.0000	1.3805	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	53598	500.0000	1.4161	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	82496	750.0000	1.4168	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	108231	1000.0000	1.3828	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	224483	2000.0000	1.4399	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	545777	5000.0000	1.4460	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

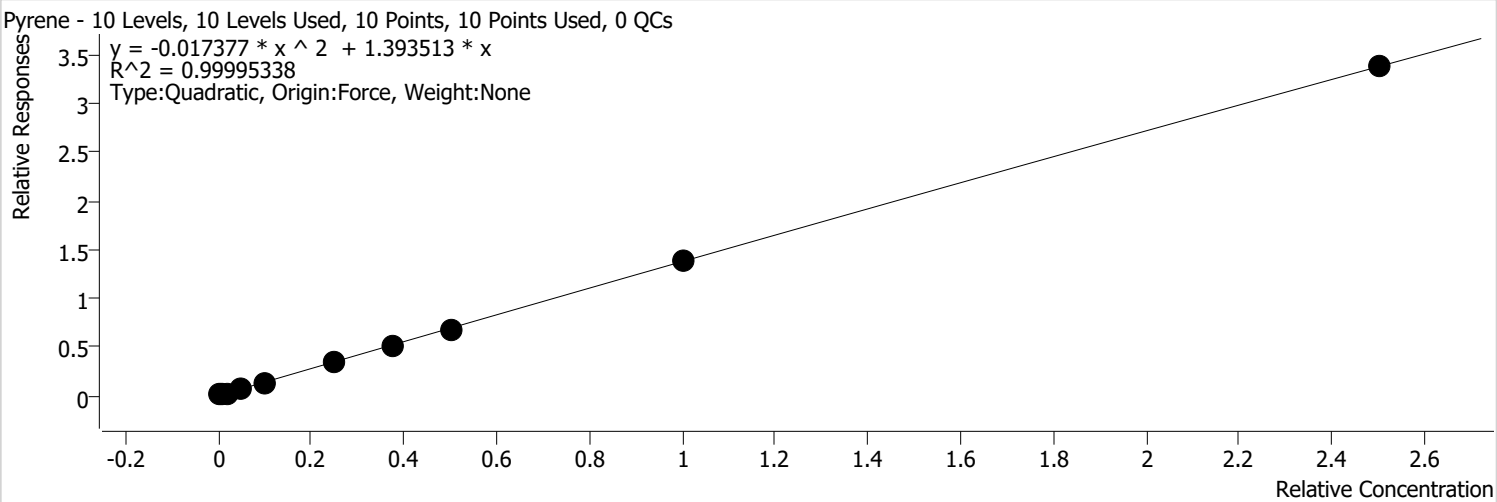
Fluoranthene %RSE = 3.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1128	10.0000	1.4709	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2116	20.0000	1.3869	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4003	40.0000	1.3378	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10114	100.0000	1.3422	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20596	200.0000	1.3090	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51033	500.0000	1.3484	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	77790	750.0000	1.3359	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	102399	1000.0000	1.3083	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	210478	2000.0000	1.3501	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	497013	5000.0000	1.3168	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

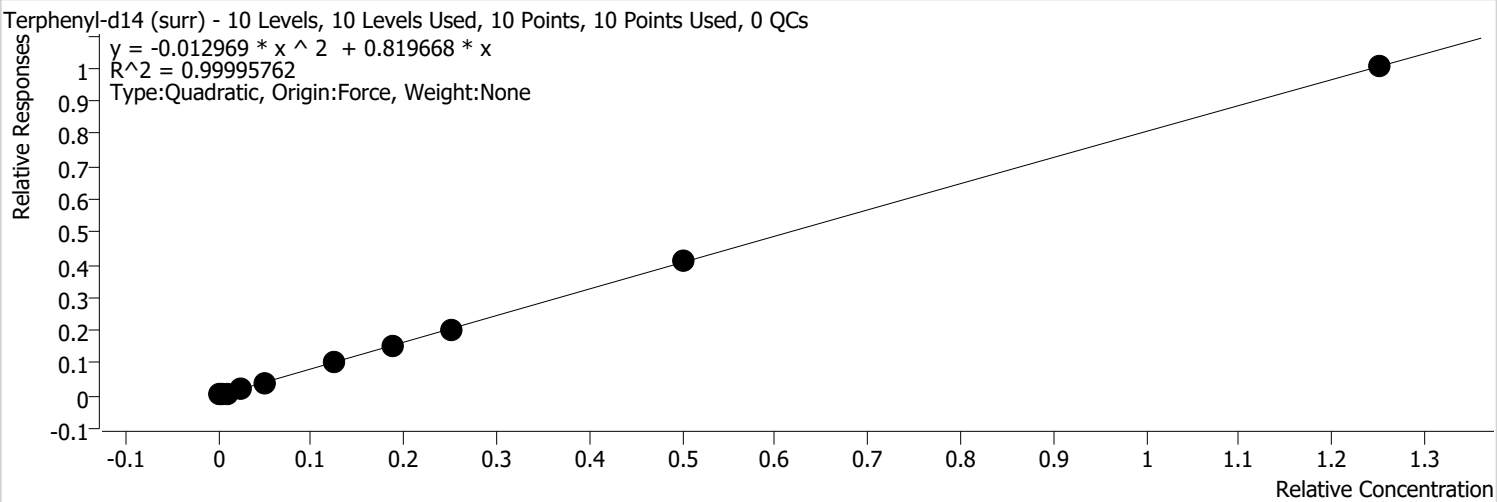
Pyrene %RSE = 7.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1248	10.0000	1.6273	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2291	20.0000	1.5015	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4243	40.0000	1.4182	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10651	100.0000	1.4135	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	21473	200.0000	1.3648	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	53029	500.0000	1.4011	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	80683	750.0000	1.3856	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	105624	1000.0000	1.3495	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	216290	2000.0000	1.3874	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	509411	5000.0000	1.3496	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

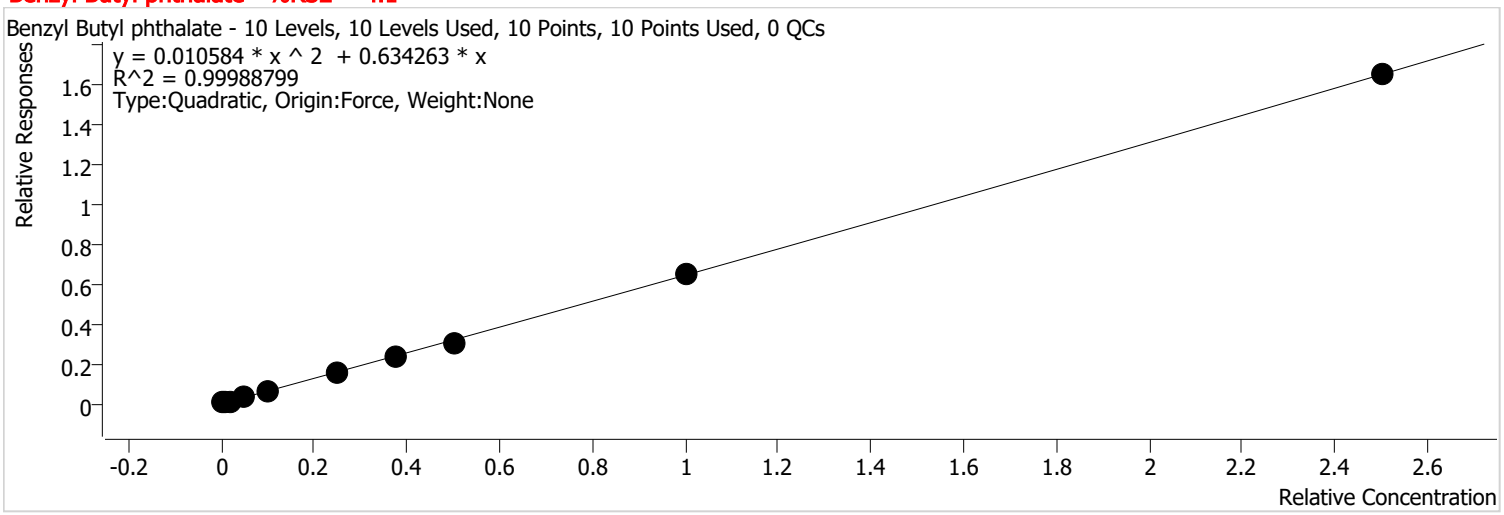
Terphenyl-d14 (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	356	5.0000	0.9282	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	661	10.0000	0.8661	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1282	20.0000	0.8571	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3119	50.0000	0.8277	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	6358	100.0000	0.8082	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	15496	250.0000	0.8189	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	23830	375.0000	0.8185	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	31159	500.0000	0.7962	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	63895	1000.0000	0.8197	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	151581	2500.0000	0.8032	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

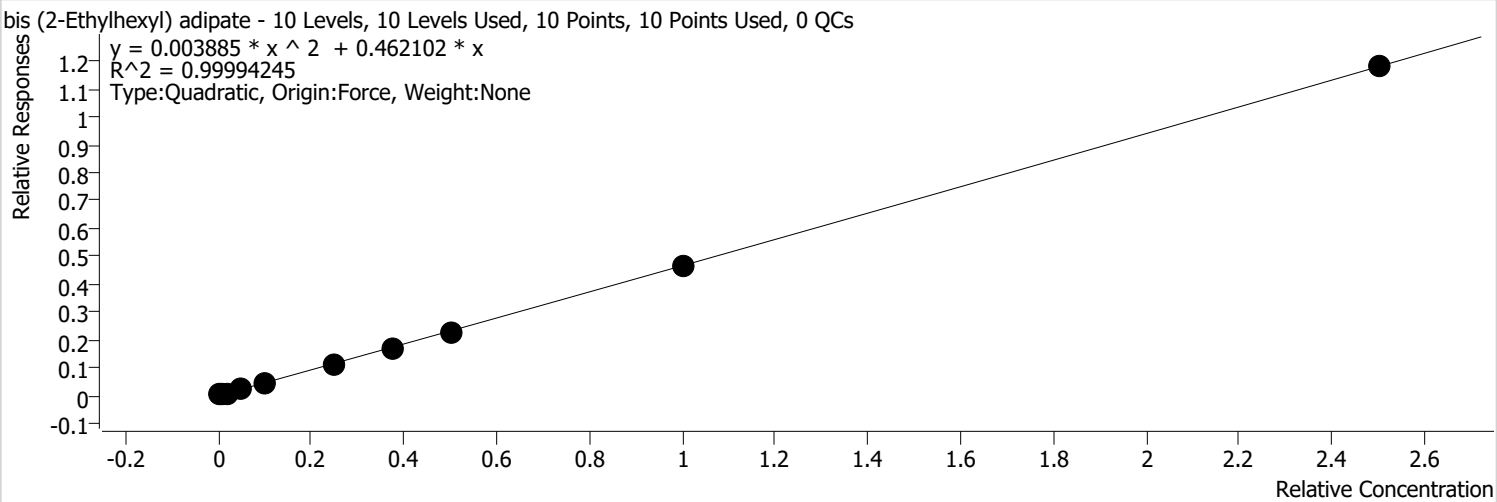
Benzyl Butyl phthalate %RSE = 4.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	508	10.0000	0.6618	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	945	20.0000	0.6196	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1798	40.0000	0.6008	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4542	100.0000	0.6028	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	9526	200.0000	0.6055	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	23773	500.0000	0.6281	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	36576	750.0000	0.6281	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	48360	1000.0000	0.6179	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	102198	2000.0000	0.6555	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	249211	5000.0000	0.6603	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

bis (2-Ethylhexyl) adipate %RSE = 64.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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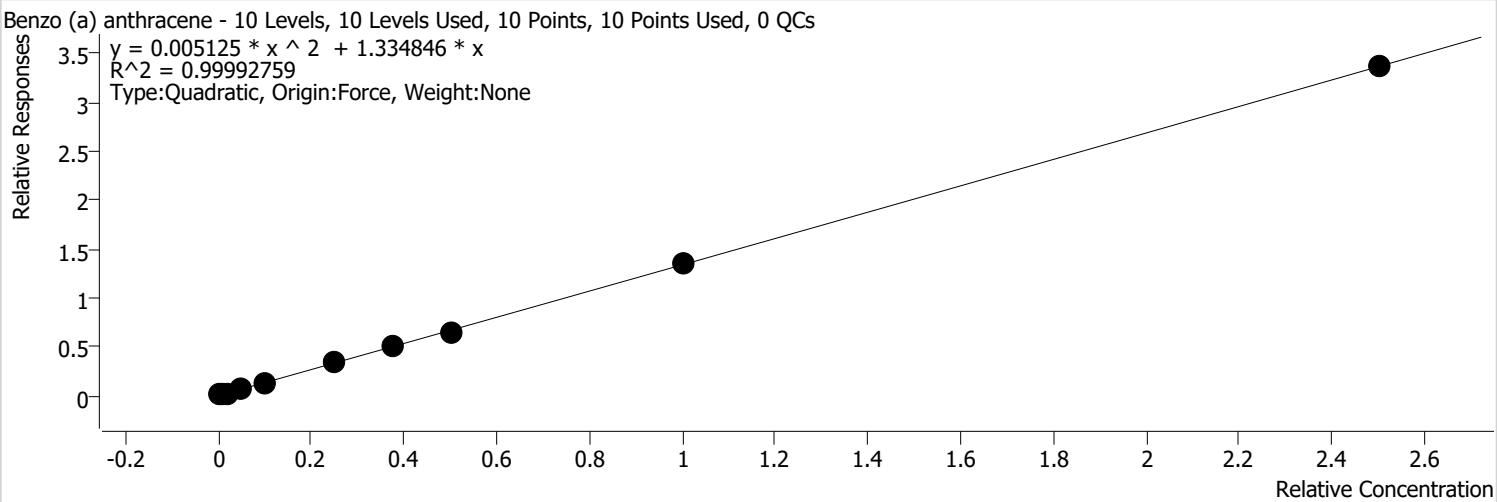
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	992	20.0000	0.6505	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1622	40.0000	0.5421	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3696	100.0000	0.4905	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	7190	200.0000	0.4570	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	17603	500.0000	0.4651	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	26822	750.0000	0.4606	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	35469	1000.0000	0.4532	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	73251	2000.0000	0.4699	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	178026	5000.0000	0.4717	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

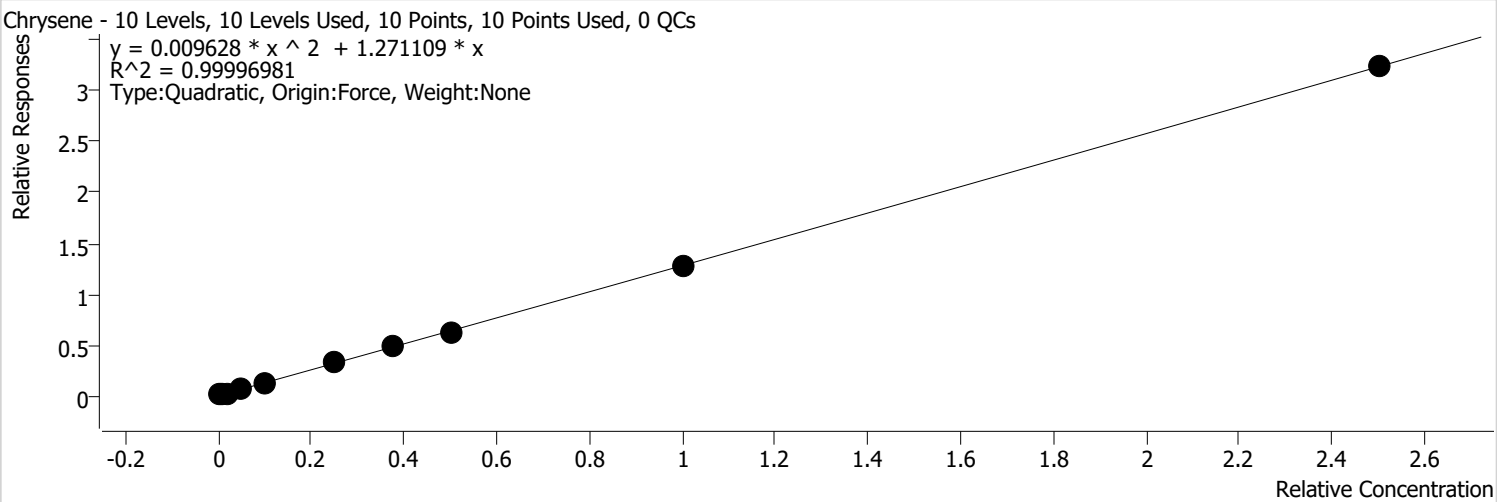
Benzo (a) anthracene %RSE = 20.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1514	10.0000	1.9739	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2518	20.0000	1.6504	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4497	40.0000	1.5030	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10324	100.0000	1.3701	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20676	200.0000	1.3141	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51017	500.0000	1.3479	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	77124	750.0000	1.3245	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	101487	1000.0000	1.2966	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	211228	2000.0000	1.3549	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	508441	5000.0000	1.3471	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

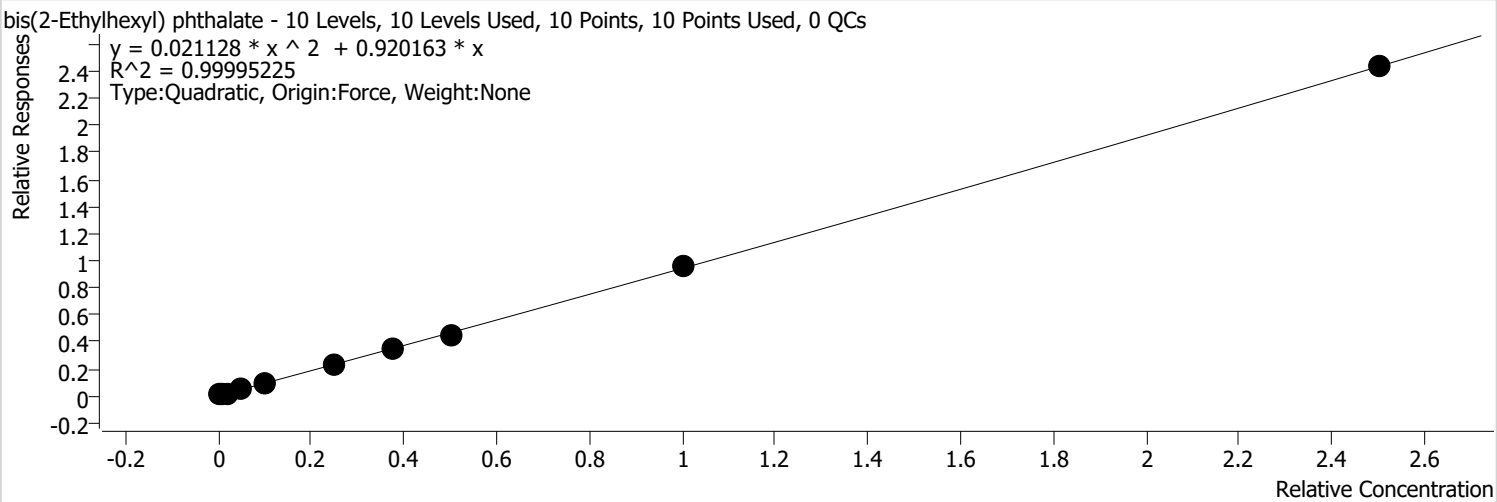
Chrysene %RSE = 7.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1086	10.0000	1.4487	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2102	20.0000	1.3856	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3860	40.0000	1.3233	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10111	100.0000	1.3458	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20705	200.0000	1.3183	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	48427	500.0000	1.2839	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	73999	750.0000	1.3005	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	97203	1000.0000	1.2527	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	198350	2000.0000	1.2813	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	468037	5000.0000	1.2952	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

bis(2-Ethylhexyl) phthalate %RSE = 10.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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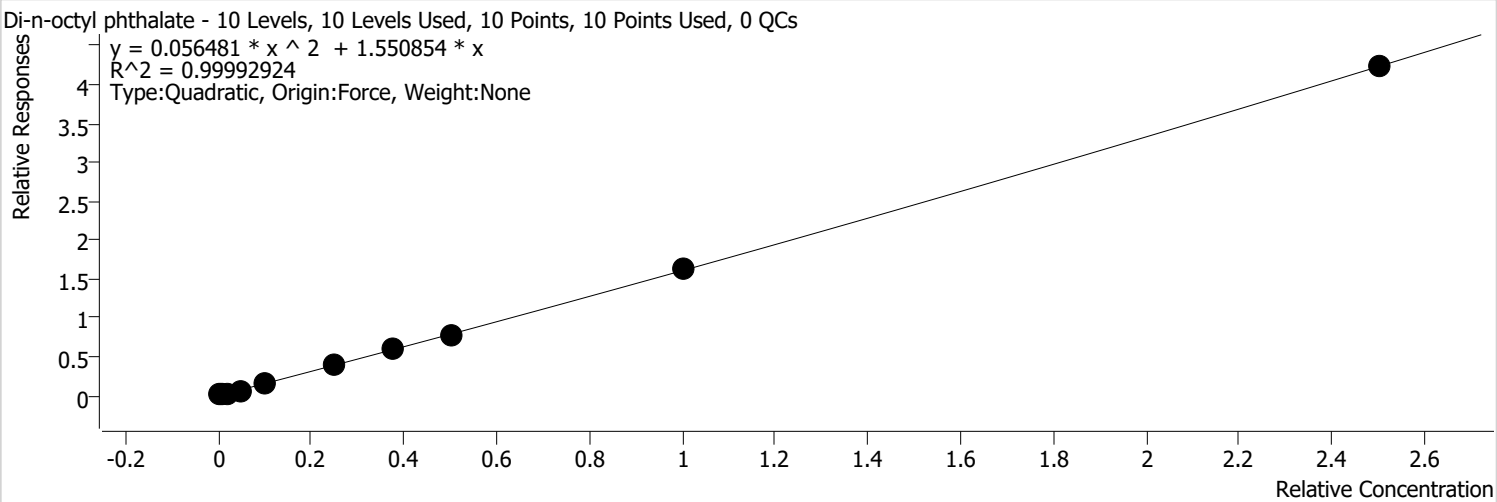
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1492	20.0000	0.9832	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2655	40.0000	0.9101	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6605	100.0000	0.8792	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	13638	200.0000	0.8683	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	34543	500.0000	0.9158	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	52939	750.0000	0.9304	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	70498	1000.0000	0.9086	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	147091	2000.0000	0.9501	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	351453	5000.0000	0.9726	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

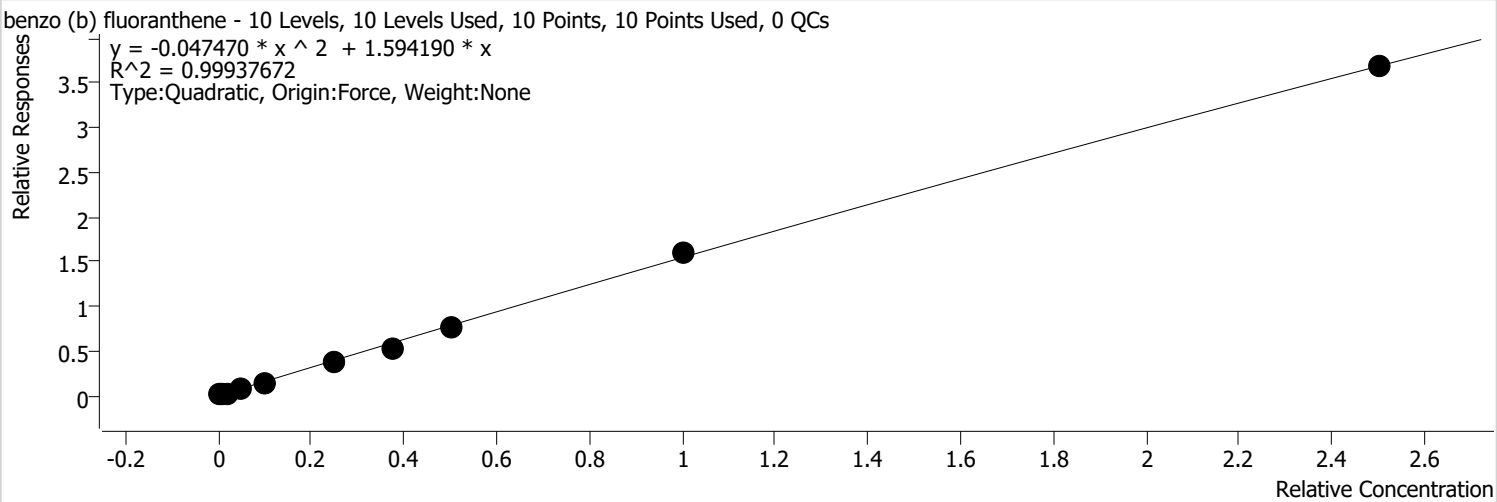
Di-n-octyl phthalate %RSE = 5.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1159	10.0000	1.5460	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2234	20.0000	1.4725	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4215	40.0000	1.4451	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10767	100.0000	1.4332	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	22830	200.0000	1.4536	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	58108	500.0000	1.5405	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	89433	750.0000	1.5717	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	119003	1000.0000	1.5337	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	251881	2000.0000	1.6270	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	611119	5000.0000	1.6912	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

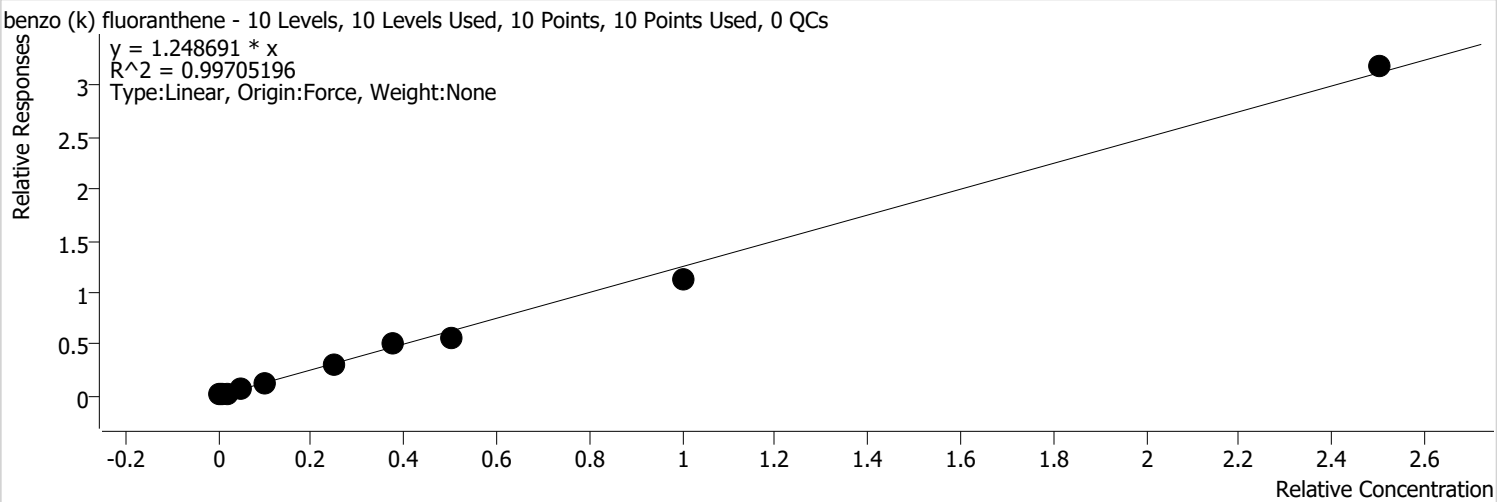
benzo (b) fluoranthene %RSE = 6.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1187	10.0000	1.5835	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2379	20.0000	1.5682	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4560	40.0000	1.5633	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10985	100.0000	1.4622	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	23684	200.0000	1.5080	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	56084	500.0000	1.4869	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	80251	750.0000	1.4103	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	119983	1000.0000	1.5463	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	247484	2000.0000	1.5986	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	532292	5000.0000	1.4730	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

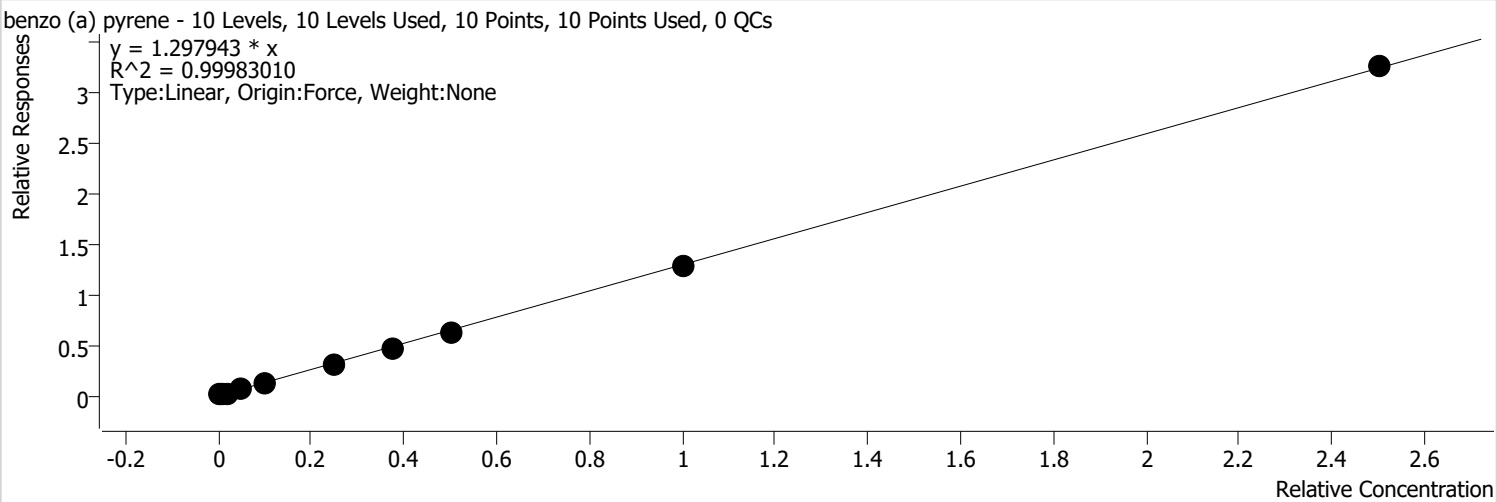
benzo (k) fluoranthene %RSE = 7.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	934	10.0000	1.2463	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1815	20.0000	1.1965	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3447	40.0000	1.1817	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	9279	100.0000	1.2351	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17738	200.0000	1.1294	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	46840	500.0000	1.2418	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	75778	750.0000	1.3317	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	85524	1000.0000	1.1022	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	174191	2000.0000	1.1252	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	459899	5000.0000	1.2727	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

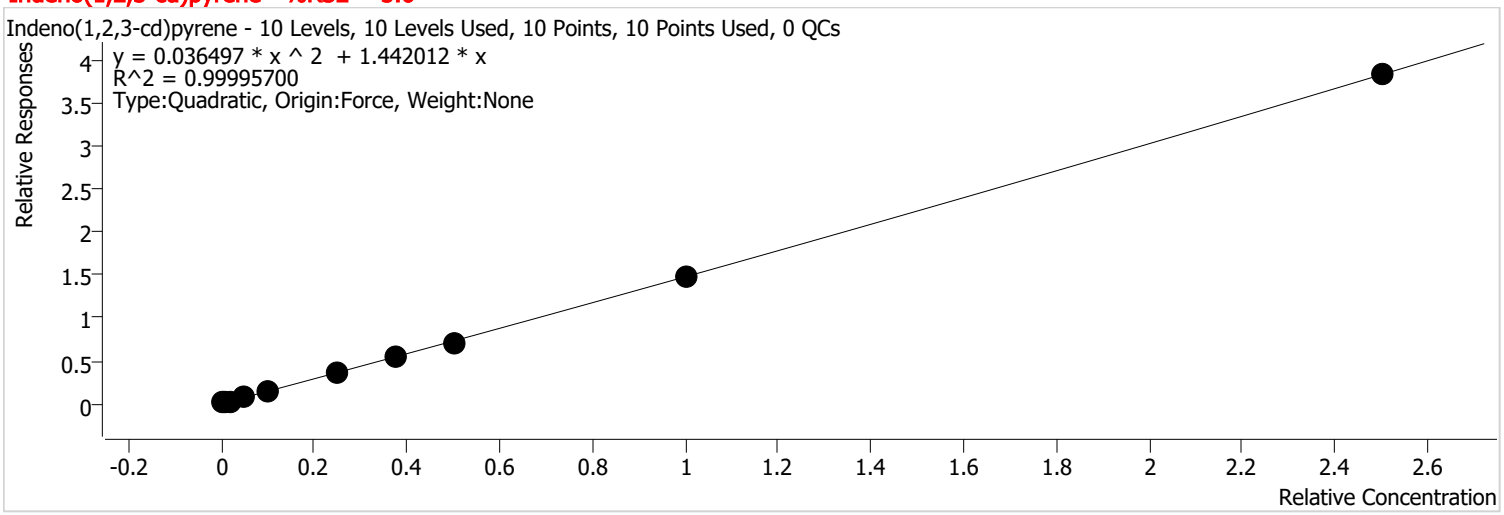
benzo (a) pyrene %RSE = 5.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1022	10.0000	1.3634	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1869	20.0000	1.2320	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3522	40.0000	1.2073	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8958	100.0000	1.1923	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	18603	200.0000	1.1845	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	48133	500.0000	1.2761	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	71451	750.0000	1.2557	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	96469	1000.0000	1.2433	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	198908	2000.0000	1.2849	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	471069	5000.0000	1.3036	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

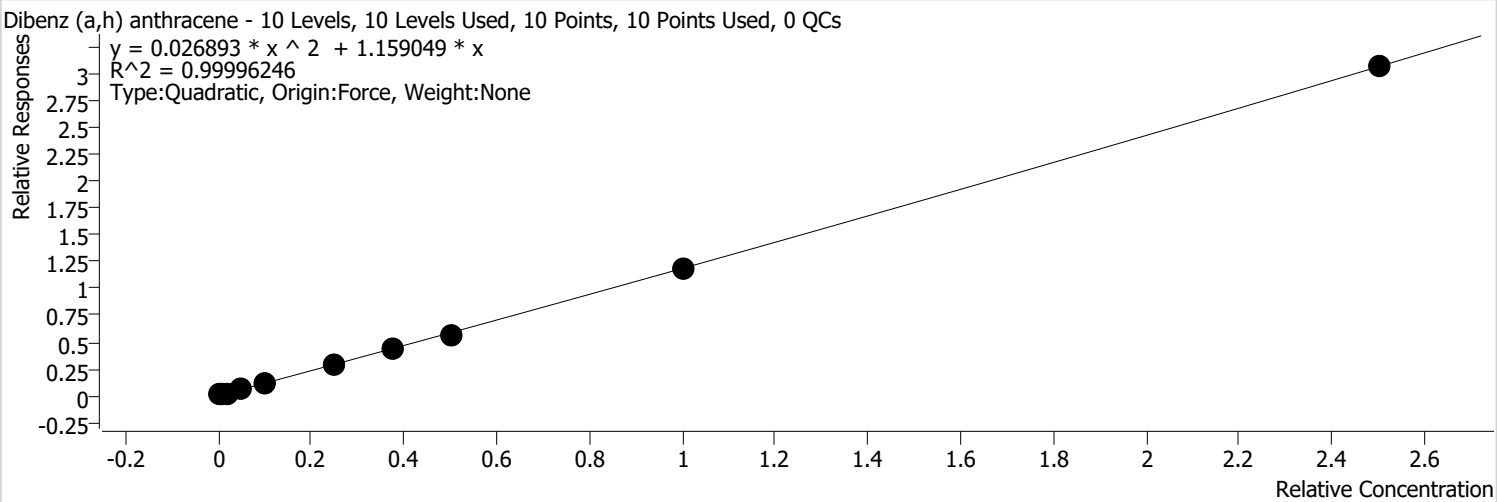
Indeno(1,2,3-cd)pyrene %RSE = 3.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1250	10.0000	1.5472	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2416	20.0000	1.4804	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4465	40.0000	1.4153	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	11489	100.0000	1.4268	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	23459	200.0000	1.3901	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	59058	500.0000	1.4590	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	89820	750.0000	1.4782	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	117368	1000.0000	1.4221	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	242324	2000.0000	1.4870	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	577768	5000.0000	1.5329	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

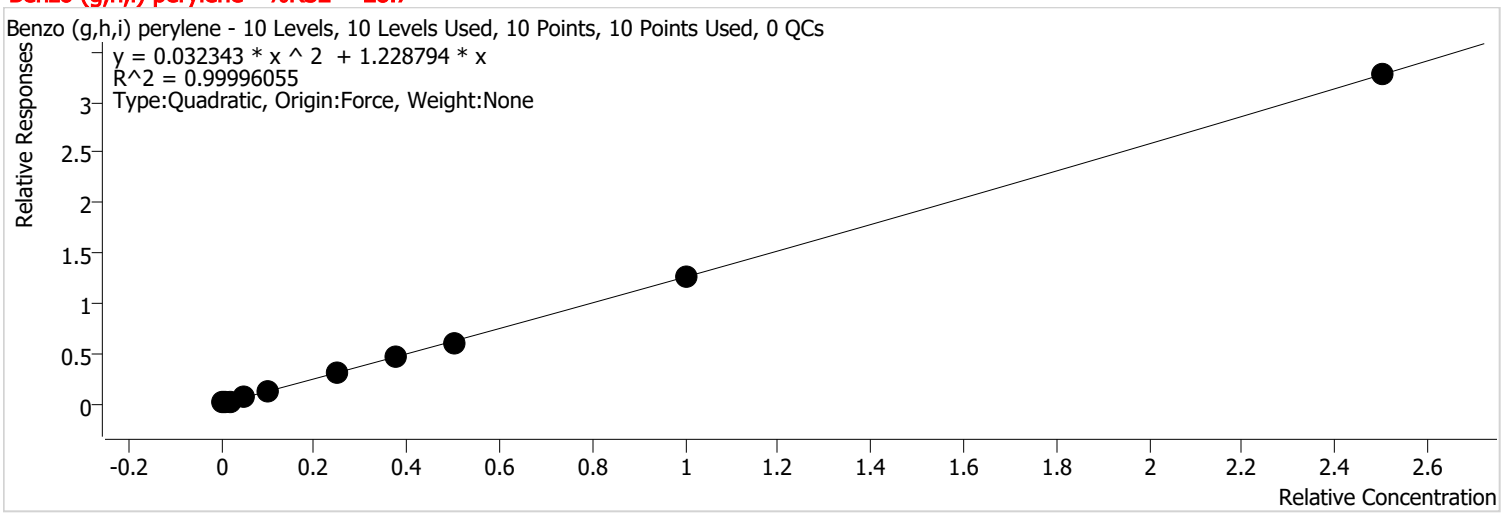
Dibenz (a,h) anthracene %RSE = 3.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1015	10.0000	1.2559	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1937	20.0000	1.1866	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3675	40.0000	1.1651	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	9200	100.0000	1.1425	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	18973	200.0000	1.1242	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	47474	500.0000	1.1728	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	71987	750.0000	1.1847	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	94385	1000.0000	1.1436	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	194328	2000.0000	1.1925	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	462097	5000.0000	1.2260	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Benzo (g,h,i) perylene %RSE = 28.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1662	10.0000	2.0571	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2631	20.0000	1.6121	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4430	40.0000	1.4045	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10433	100.0000	1.2956	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20818	200.0000	1.2336	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51046	500.0000	1.2611	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	76849	750.0000	1.2647	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	100479	1000.0000	1.2174	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	205789	2000.0000	1.2628	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	493615	5000.0000	1.3097	

Semivolatile Calibration

Date: 07/14/21

Analyst: Sam Beerman

MeCl2: 5919

Cal		ICV	
8270 Megamix:	24373	8270 Megamix:	24490
2,4-DNP:	24498	2,4-DNP:	~3305
Benzoic Acid:	23362	Benzoic Acid:	24501

8270 Surrogate: 25511 IS 25636

Spike Conc. (ppb) 2	BN/Acid Surr Conc. (ppb) 2 1	2° Spike (uL) 0.2	B/N Surr (uL)	Internal Standard (uL) 10.	Remove (uL) 10.2	Final Vol. (mL)	Comments (uL) 8270 MM (SS) (uL) HBr SS (uL) Benzoic Acid
10	10/5	1	--	10	11	1	
20	20/10	2	--	10	12	1	
40	40/20	4	--	10	14	1	
100	100/50	10	--	10	20	1	
200	200/100	20	--	10	30	1	
500	500/250	~~40~~ 50	--	10	60	1	
750	750/375	75	88 7/14/21	10	85	1	
1000	1000/500	100	--	10	110	1	
2000	2000/1000	200	--	10	210	1	
5000	5000/2500	500	-- 88 7/14/21	10	510	1	
ICB	1000/500		~~1~~ 5	10	~~11~~ 15	1	
ICV (1000 ppb)	1000/500	~~100 (2° SS)~~	-- 5	10	~~110~~ 15	1	1 1 1

	Mega Mix (uL)	2,4-DNP (uL)	Benzoic Acid (uL)	8270 Surr (uL)	Final Volume (mL)
2° Intermediate (cal)	100	100	100	100	10
2° Intermediate (SS)	50	50	50	50	5

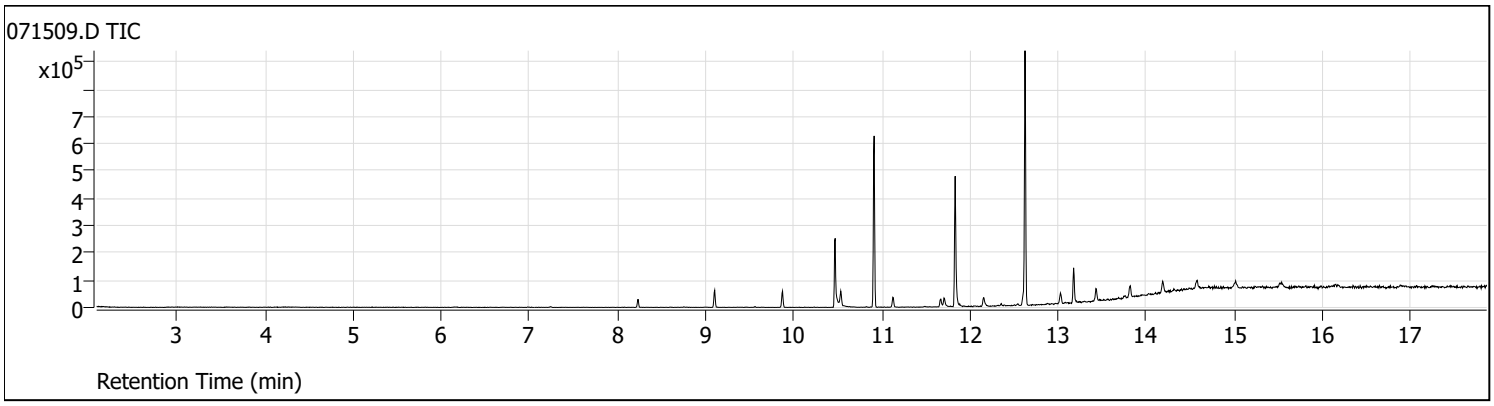
Signature and Date: 07/14/21

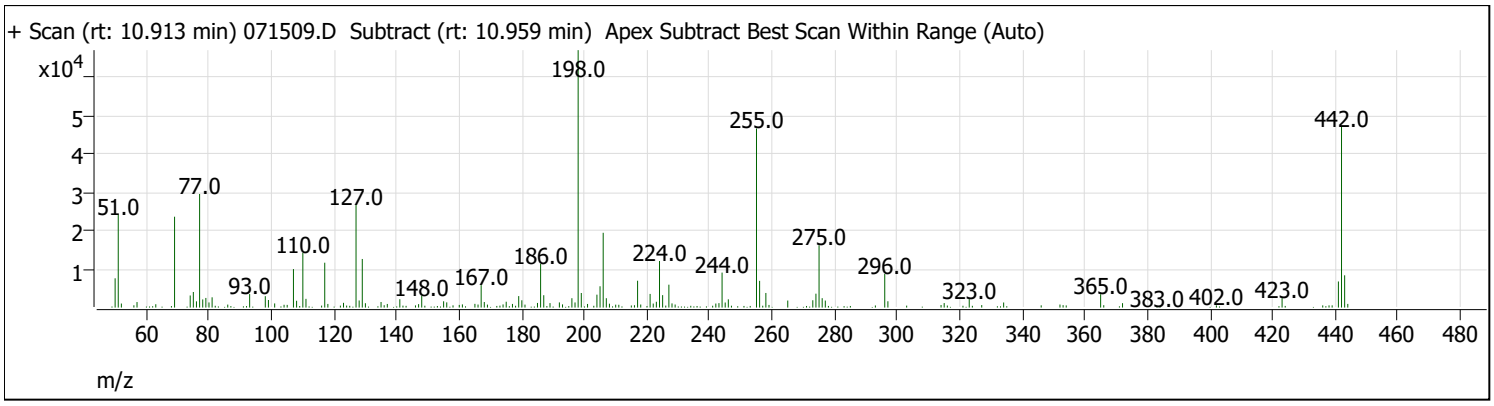
Signature: EM

Tunes

Tune Evaluation Report

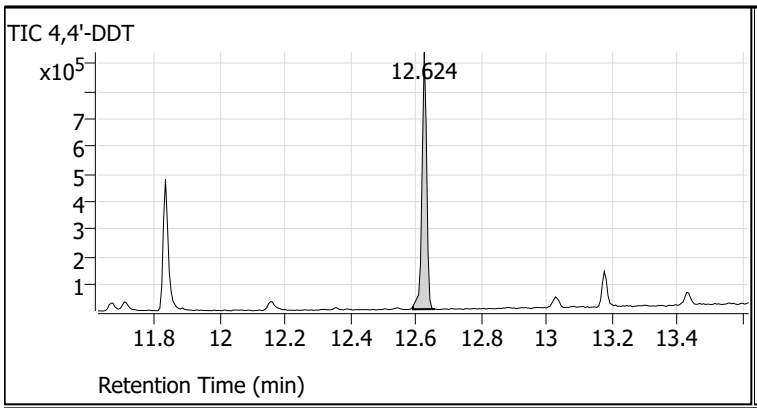
Data Path:	C:\GC-14\Data\2021\071521\071509.D
Acq on:	7/15/2021 1:34:10 PM
Operator:	FA\gc14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

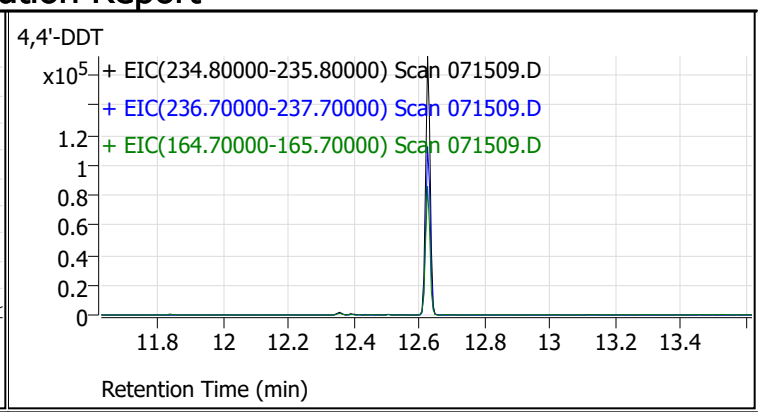


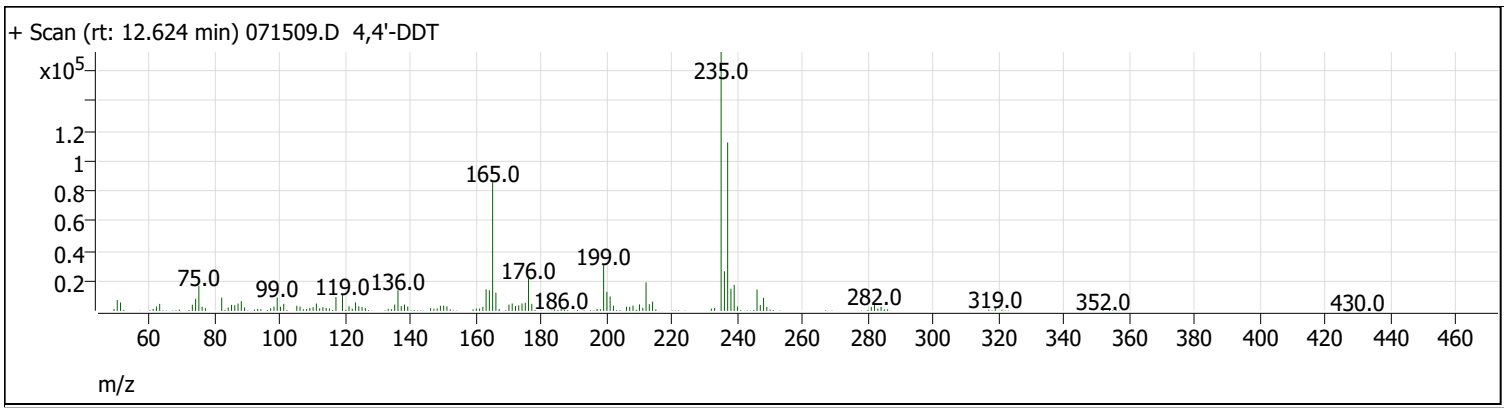


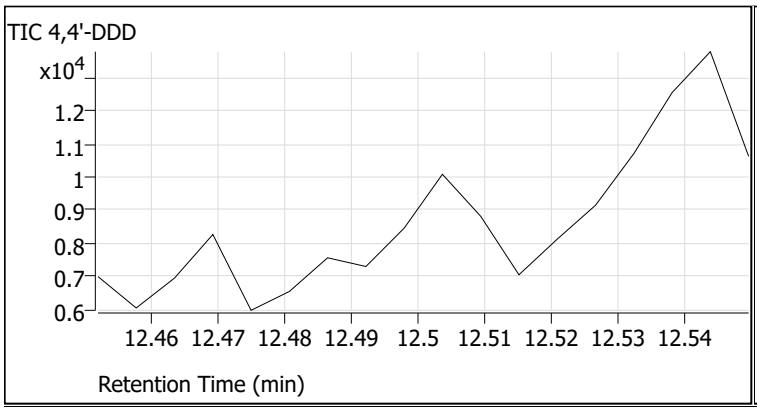
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.6	387	Pass
70	69	0	2	0.0	0	Pass
197	198	0	2	2.0	1329	Pass
198	198	100	100	100.0	66872	Pass
199	198	5	9	5.7	3783	Pass
365	198	1	100	5.2	3464	Pass
441	443	1E-10	150	80.8	6773	Pass
442	442	100	100	100.0	46896	Pass
443	442	15	24	17.9	8378	Pass
69	69	100	100	100.0	23600	Pass

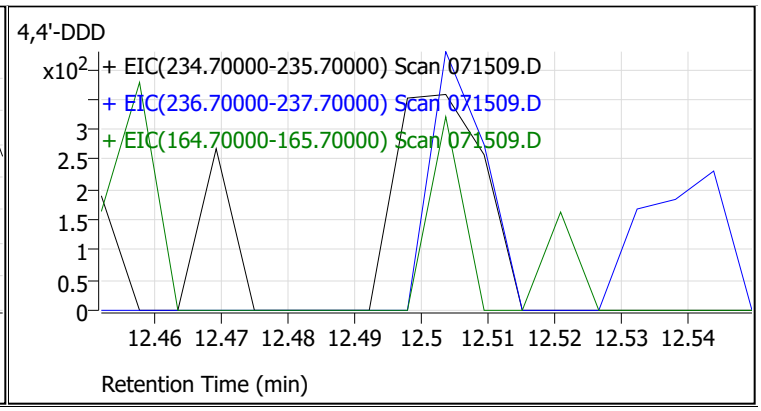
Tune Evaluation Report

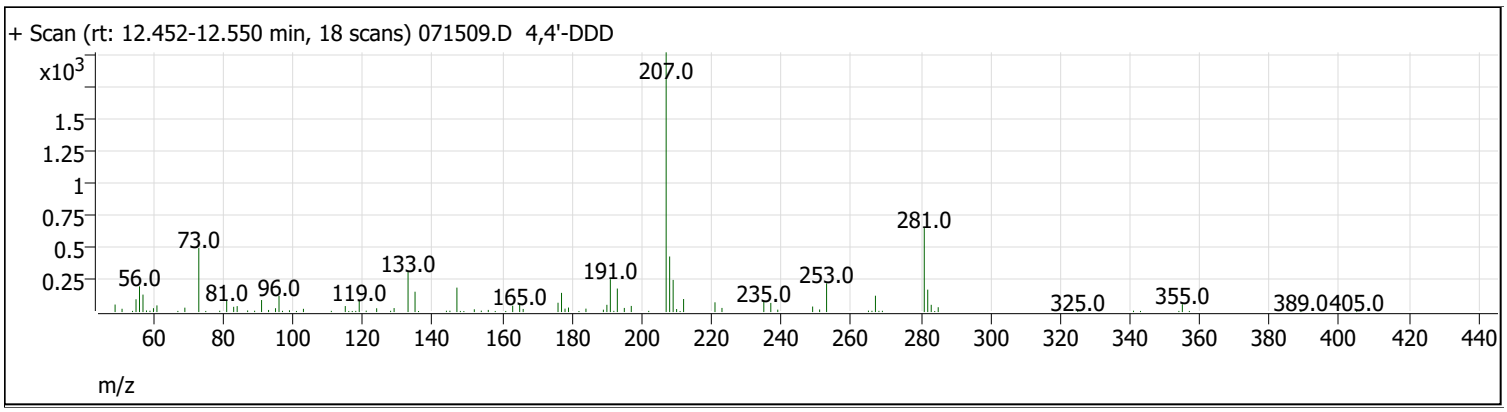






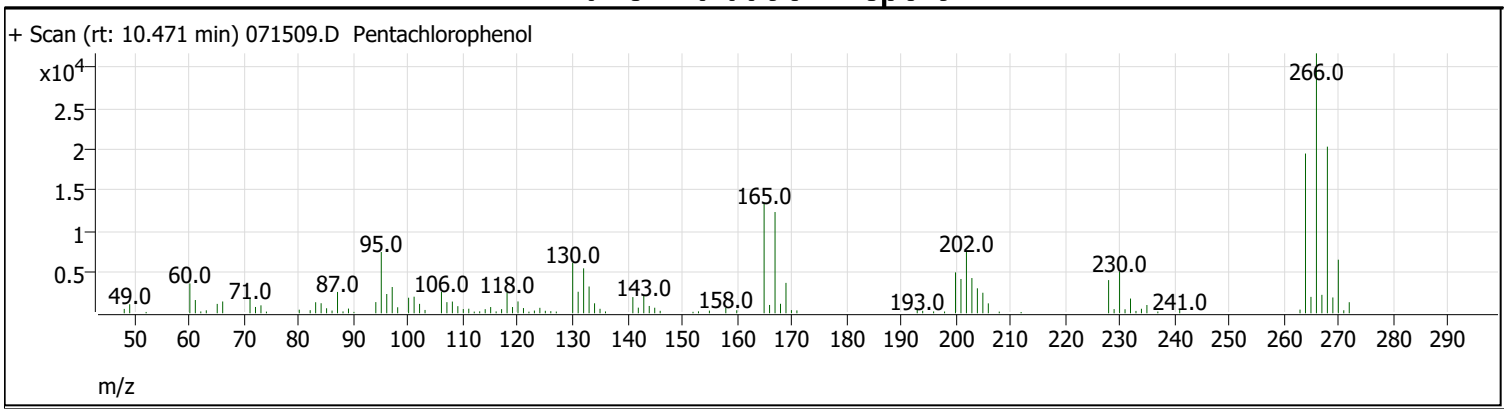


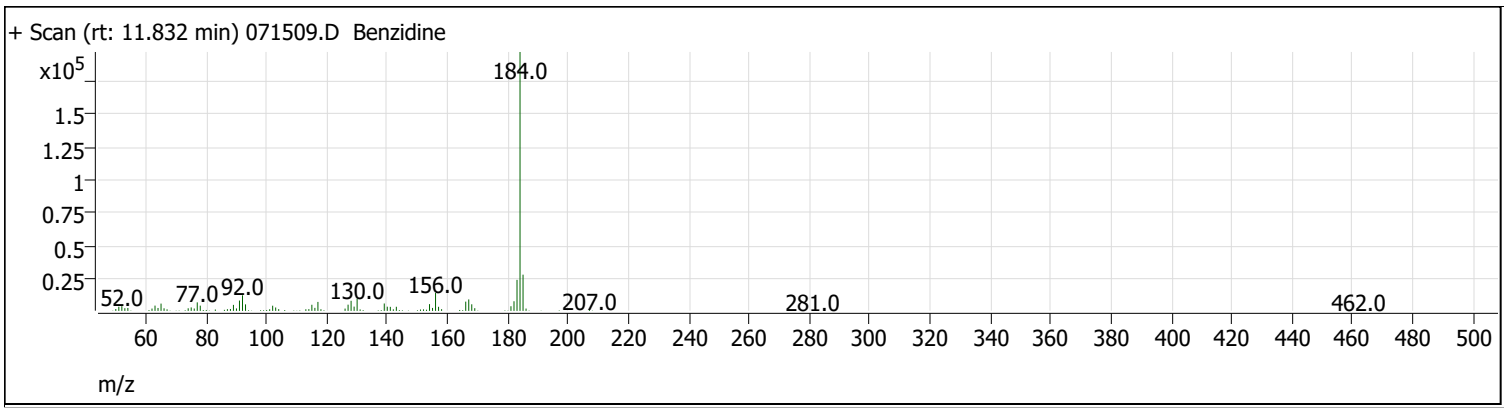




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.620	12.624	931975	0.0	Pass
4,4'-DDD	12.500	0.000	0		

Tune Evaluation Report

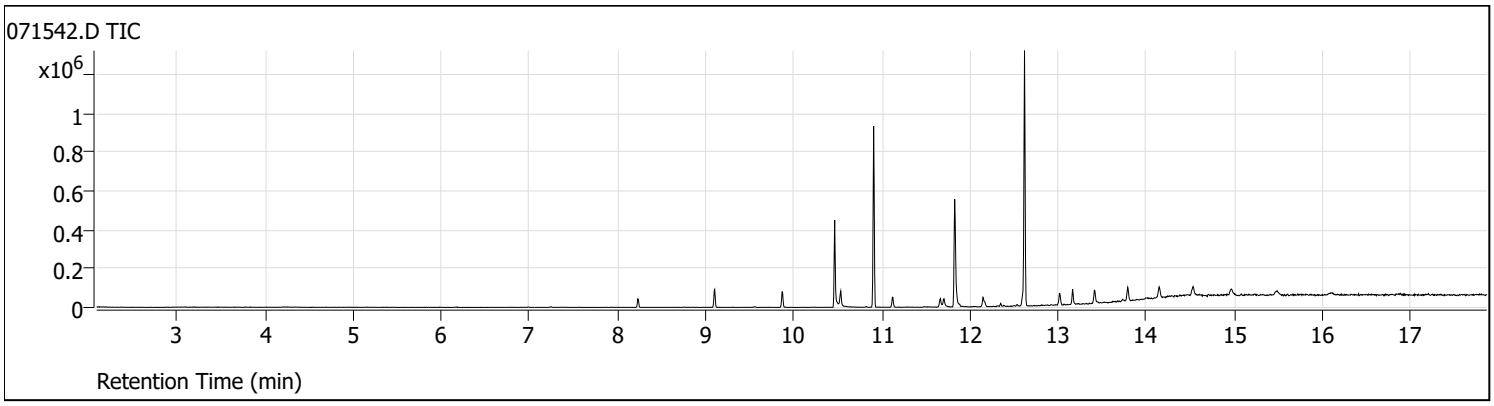


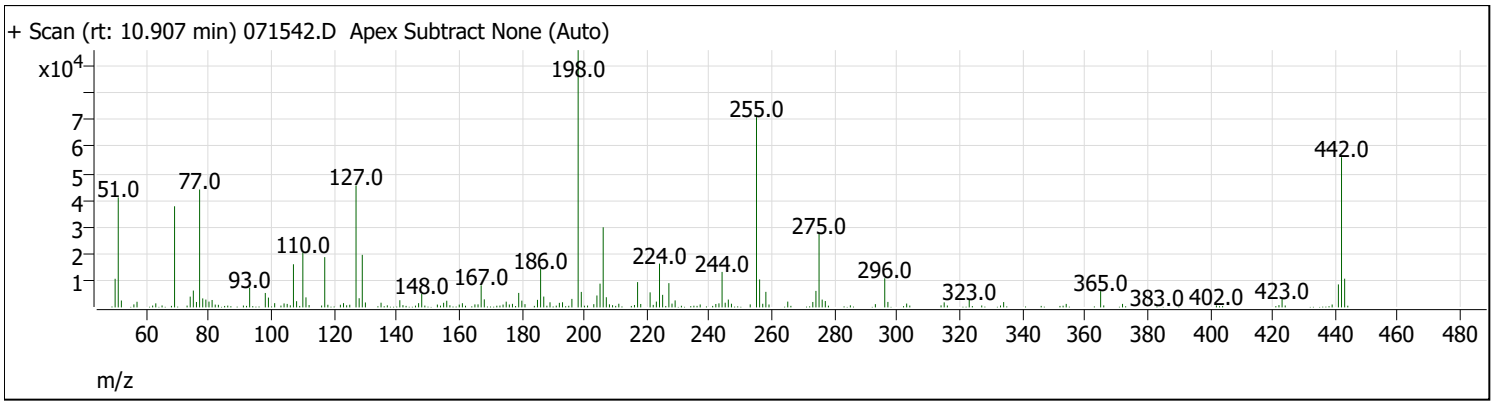


Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.470	10.471	1.6	2.9	Pass
Benzidine	11.832	11.832	1.5	2.7	Pass

Tune Evaluation Report

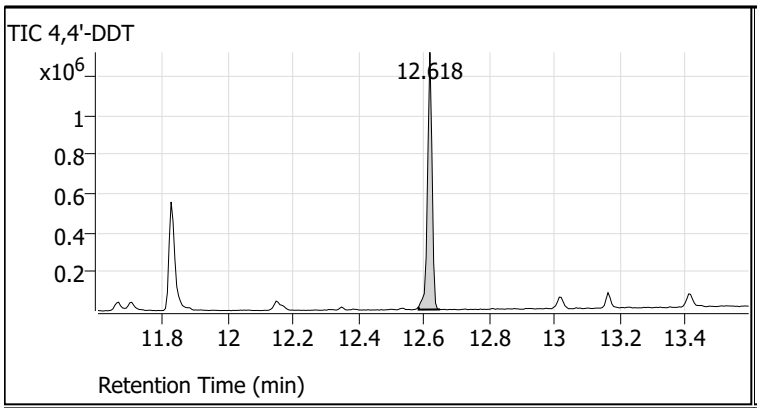
Data Path:	C:\GC-14\Data\2021\071521\071542.D
Acq on:	7/16/2021 1:39:58 AM
Operator:	FA\gc14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

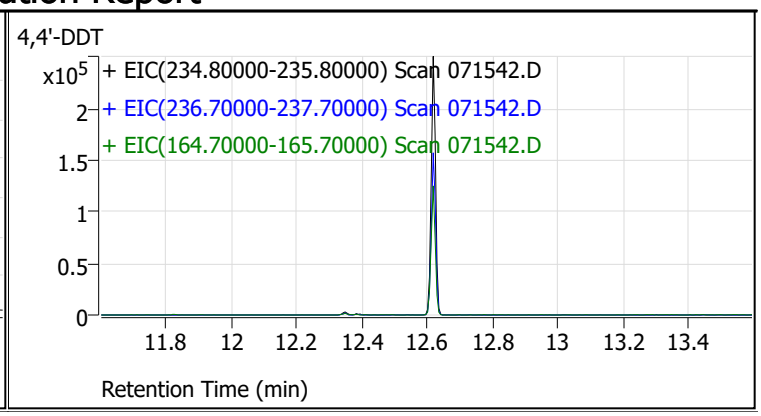


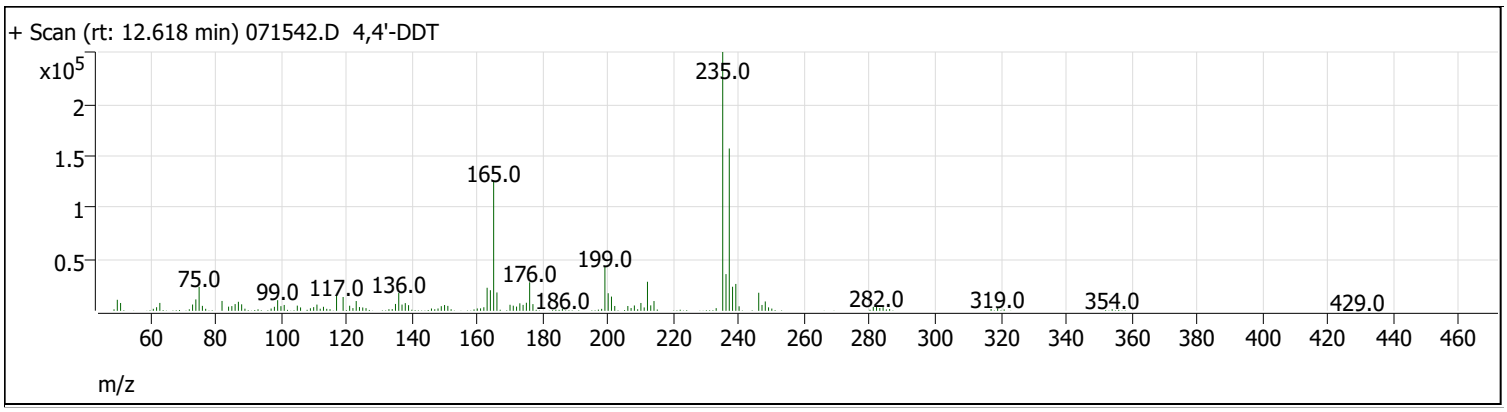


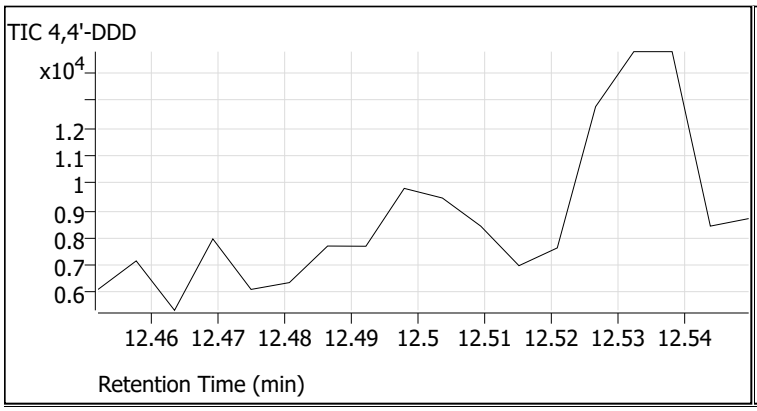
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.5	570	Pass
70	69	0	2	0.8	286	Pass
197	198	0	2	0.0	0	Pass
198	198	100	100	100.0	96008	Pass
199	198	5	9	6.0	5782	Pass
365	198	1	100	6.3	6064	Pass
441	443	1E-10	150	80.0	8577	Pass
442	442	100	100	100.0	56032	Pass
443	442	15	24	19.1	10721	Pass
69	69	100	100	100.0	37736	Pass

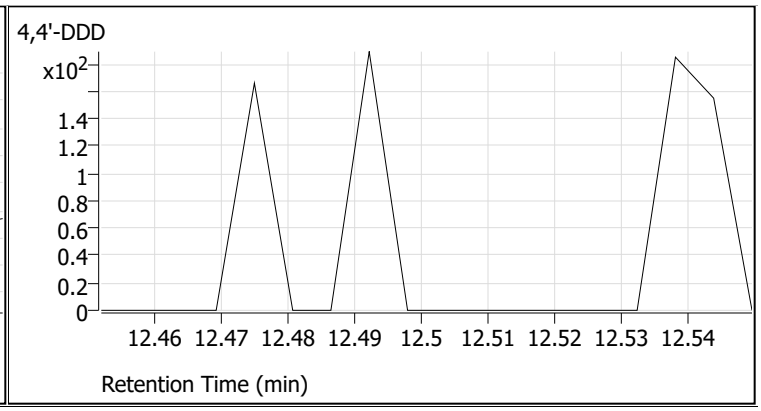
Tune Evaluation Report

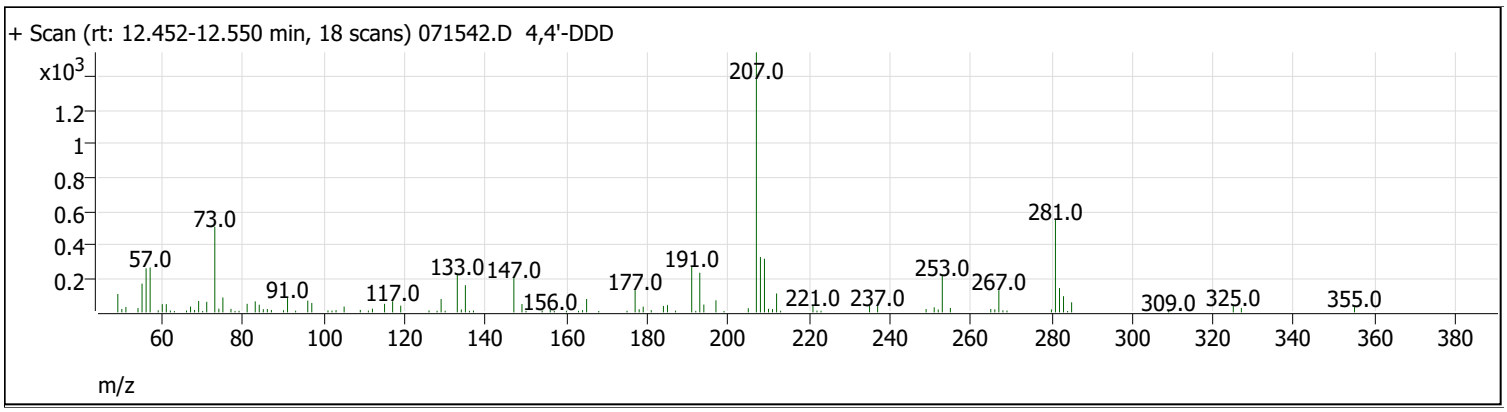






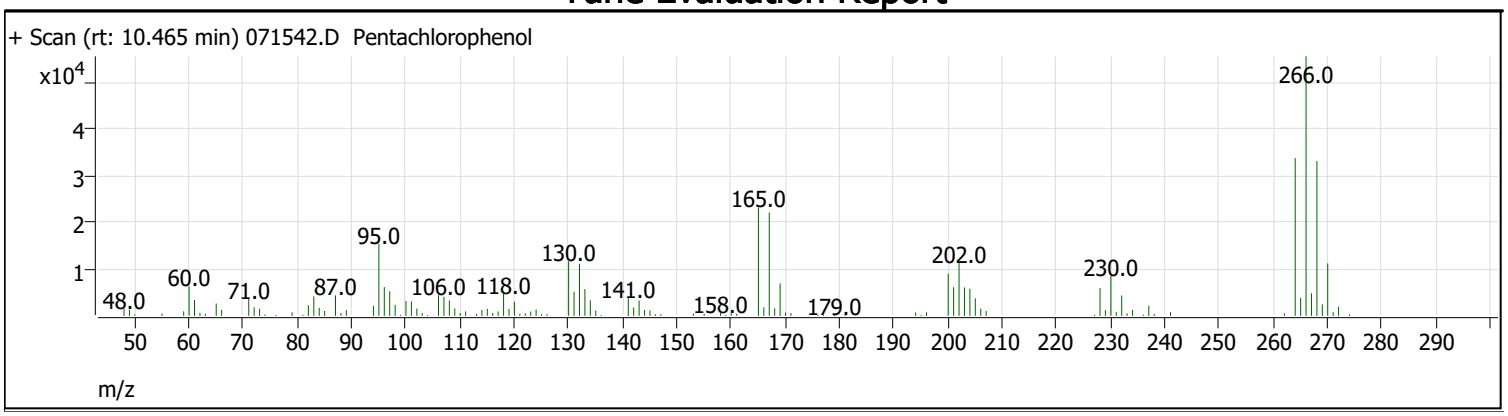


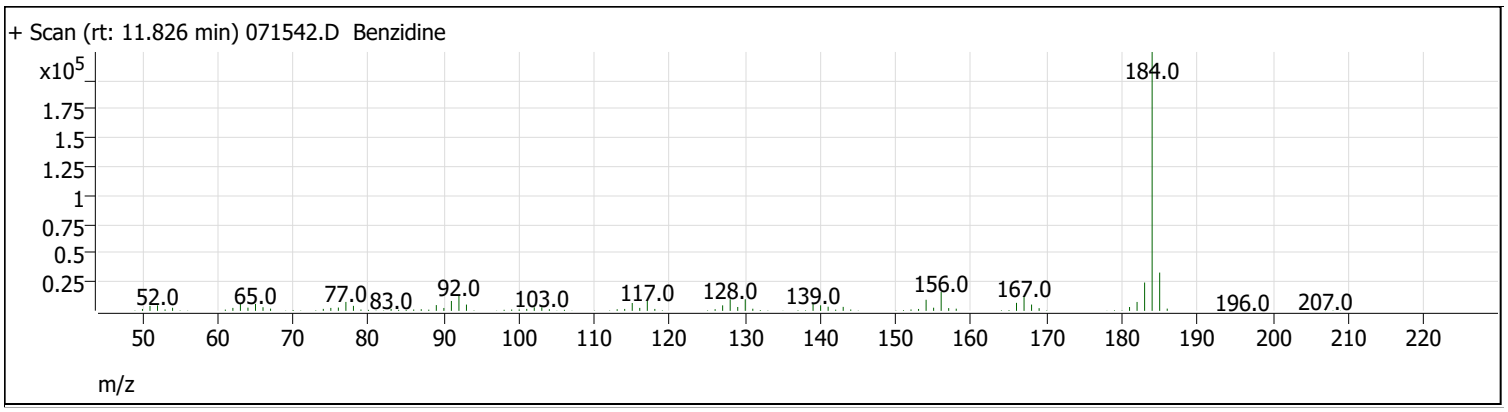




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.600	12.618	1281551	0.0	Pass
4,4'-DDD	12.500	0.000	0		

Tune Evaluation Report





Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.540	10.465	1.4	50.2	Pass
Benzidine	11.906	11.826	1.9	37.2	Pass

DATA SET for Review -- Deliverable Requirements

Volatile Petroleum Hydrocarbons by NWVPH

Fremont Analytical Work Order No. 2107181

Libby Environmental

Project Name: Jacks Auto (JA)

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information

Injection Log

Data Directory: C:\GC-2\DATA\071521\2021-07-15\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
CLEANOUT		1	1.000	15-Jul-2021, 17:07:40
2) 001F0201.D				
CLEANOUT		1	1.000	15-Jul-2021, 17:46:24
3) 001F0301.D				
CLEANOUT		1	1.000	15-Jul-2021, 18:25:09
4) 001F0401.D				
CLEANOUT		1	1.000	15-Jul-2021, 19:03:42
5) 001F0501.D				
VPH CAL1 25215		1	1.000	15-Jul-2021, 19:42:20
6) 001F0601.D				
VPH CAL2		1	1.000	15-Jul-2021, 20:20:53
7) 001F0701.D				
VPH CAL3		1	1.000	15-Jul-2021, 20:59:35
8) 001F0801.D				
VPH CAL4		1	1.000	15-Jul-2021, 21:38:24
9) 001F0901.D				
VPH CAL5		1	1.000	15-Jul-2021, 22:17:05
10) 001F1001.D				
VPH CAL6		1	1.000	15-Jul-2021, 22:55:55
11) 001F1101.D				
VPH CAL7		1	1.000	15-Jul-2021, 23:34:47
12) 001F1201.D				
CLEANOUT		1	1.000	16-Jul-2021, 00:13:51
13) 001F1301.D				
ICB		1	1.000	16-Jul-2021, 00:52:46
14) 001F1401.D				
ICV VPH		1	1.000	16-Jul-2021, 01:31:36
15) 001F1501.D				
CCV-32019A		1	1.000	16-Jul-2021, 02:10:23
16) 001F1601.D				
LCS-32019		1	1.000	16-Jul-2021, 02:49:02
17) 001F1701.D				
CLEANOUT		1	1.000	16-Jul-2021, 03:27:42
18) 001F1801.D				
MB-32019		1	1.000	16-Jul-2021, 04:06:24
19) 001F1901.D				
2106468-003B		1	1.000	16-Jul-2021, 04:45:10
20) 001F2001.D				
2106468-004B		1	1.000	16-Jul-2021, 05:23:54
21) 001F2101.D				
2106468-004BDUP		1	1.000	16-Jul-2021, 06:02:38

22) 001F2201.D
2106468-002B 1 1.000 16-Jul-2021, 06:41:29
---
23) 001F2301.D
2106468-001B 1 1.000 16-Jul-2021, 07:20:22
---
24) 001F2401.D
2106468-005B 1 1.000 16-Jul-2021, 07:59:06
---
25) 001F2501.D
2106468-005BMS 1 1.000 16-Jul-2021, 08:37:47
---
26) 001F2601.D
CLEANOUT 1 1.000 16-Jul-2021, 09:16:32
---
27) 001F2701.D
CCV-33019B 1 1.000 16-Jul-2021, 09:55:24
---
28) 001F2801.D
CCV-32019B 1 1.000 16-Jul-2021, 10:34:15

Injection Log

Data Directory: C:\GC-2\DATA\072221\2021-07-22\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
CLEANOUTINVIAL		1	1.000	22-Jul-2021, 14:07:32
2) 001F0201.D				
CLEANOUTINVIAL		1	1.000	22-Jul-2021, 14:46:32
3) 001F0301.D				
CCV-33092A		1	1.000	22-Jul-2021, 15:25:11
4) 001F0401.D				
LCS-33092		1	1.000	22-Jul-2021, 16:03:57
5) 001F0501.D				
CLEANOUT		1	1.000	22-Jul-2021, 16:42:44
6) 001F0601.D				
MB-33092		1	1.000	22-Jul-2021, 17:21:32
7) 001F0701.D				
2107149-052AMDL2		1	1.000	22-Jul-2021, 18:00:21
8) 001F0801.D				
2107179-001B		1	1.000	22-Jul-2021, 18:39:12
9) 001F0901.D				
2107179-002B		1	1.000	22-Jul-2021, 19:18:04
10) 001F1001.D				
2107179-002BDUP		1	1.000	22-Jul-2021, 19:56:55
11) 001F1101.D				
2107216-003B		1	1.000	22-Jul-2021, 20:35:34
12) 001F1201.D				
2107216-004B		1	1.000	22-Jul-2021, 21:14:04
13) 001F1301.D				
2107181-001B10X		1	1.000	22-Jul-2021, 21:52:49
14) 001F1401.D				
2107216-003BMS		1	1.000	22-Jul-2021, 22:31:31
15) 001F1501.D				
2107181-001B		1	1.000	22-Jul-2021, 23:10:13
16) 001F1601.D				
CLEANOUT		1	1.000	22-Jul-2021, 23:48:57
17) 001F1701.D				
CLEANOUT		1	1.000	23-Jul-2021, 00:27:48
18) 001F1801.D				
CCV-33092B		1	1.000	23-Jul-2021, 01:06:44

Injection Log

Data Directory: C:\GC-2\DATA\072321\2021-07-23\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
CLEANOUTINVIAL		1	1.000	23-Jul-2021, 15:36:43
2) 001F0201.D				
CLEANOUTINVIAL		1	1.000	23-Jul-2021, 16:15:27
3) 001F0301.D				
VPH CAL1		1	1.000	23-Jul-2021, 16:54:30
4) 001F0401.D				
VPH CAL2		1	1.000	23-Jul-2021, 17:33:14
5) 001F0501.D				
VPH CAL3		1	1.000	23-Jul-2021, 18:12:06
6) 001F0601.D				
VPH CAL4		1	1.000	23-Jul-2021, 18:50:50
7) 001F0701.D				
VPH CAL5		1	1.000	23-Jul-2021, 19:29:36
8) 001F0801.D				
VPH CAL6		1	1.000	23-Jul-2021, 20:08:18
9) 001F0901.D				
VPH CAL7		1	1.000	23-Jul-2021, 20:47:06
10) 001F1001.D				
CLEANOUT		1	1.000	23-Jul-2021, 21:26:02
11) 001F1101.D				
ICB		1	1.000	23-Jul-2021, 22:04:54
12) 001F1201.D				
ICV VPH 25080		1	1.000	23-Jul-2021, 22:43:33
13) 001F1301.D				
CCV-33092A		1	1.000	23-Jul-2021, 23:22:11
14) 001F1401.D				
LCS-33092		1	1.000	24-Jul-2021, 00:00:54
15) 001F1501.D				
CLEANOUT		1	1.000	24-Jul-2021, 00:39:35
16) 001F1601.D				
MB-33092		1	1.000	24-Jul-2021, 01:18:14
17) 001F1701.D				
MDL2 SOIL VPH		1	1.000	24-Jul-2021, 01:56:53
18) 001F1801.D				
2107179-001B		1	1.000	24-Jul-2021, 02:35:43
19) 001F1901.D				
2107179-002B		1	1.000	24-Jul-2021, 03:14:22
20) 001F2001.D				
2107179-002BDUP		1	1.000	24-Jul-2021, 03:53:19
21) 001F2101.D				
2107216-003B		1	1.000	24-Jul-2021, 04:31:56

22) 001F2201.D
2107216-004B 1 1.000 24-Jul-2021, 05:10:31

23) 001F2301.D
2107181-001B10X 1 1.000 24-Jul-2021, 05:49:05

24) 001F2401.D
21017181-001B 1 1.000 24-Jul-2021, 06:27:38

25) 001F2501.D
2107216-003BMS 1 1.000 24-Jul-2021, 07:06:16

26) 001F2601.D
CLEANOUIT 1 1.000 24-Jul-2021, 07:45:02

27) 001F2701.D
CLEANOUT 1 1.000 24-Jul-2021, 08:23:44

28) 001F2801.D
CCV-33092B 1 1.000 24-Jul-2021, 09:02:30

Calibration

Response Factor Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH071521.M
Title : BTEX
Last Update : Fri Jul 16 12:09:08 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0501.D 2 =001F0601.D 3 =001F0701.D
4 =001F0801.D 5 =001F0901.D 6 =001F1001.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	S	1,4-Difluorob...	0.694	0.747	0.774	0.853	0.896	0.871	0.837	E5	13.19
2)	S	Bromofluorobe...	1.611	1.682	1.681	1.794	1.799	1.796	1.739	E5	4.60
3)	t	MTBE	5.320	5.717	5.760	6.686	6.478	6.044	5.967	E4	7.95
4)	t	Benzene	1.656	1.765	1.649	1.723	1.618	1.524	1.644	E5	5.03
5)	t	Toluene	1.702	1.769	1.651	1.708	1.593	1.538	1.646	E5	5.17
6)	t	Ethylbenzene	1.661	1.703	1.580	1.605	1.480	1.450	1.559	E5	6.80
7)	t	m&p xylenes	1.928	1.990	1.846	1.865	1.713	1.647	1.797	E5	8.33
8)	t	o xylene	1.648	1.709	1.591	1.622	1.510	1.465	1.568	E5	6.45
9)	t	1,2,3-Trimeth...	1.349	1.390	1.313	1.354	1.293	1.255	1.312	E5	4.35
10)	t	Naphthalene	4.877	5.785	5.600	6.653	6.404	6.399	5.990	E4	10.25
11)	T	PID C8-C10	4.707	3.418	2.559	2.384	2.121	1.988	2.729	E5	36.93
12)	T	PID C10-C12	1.422	1.295	0.818	0.838	0.821	0.741	0.949	E5	30.12
13)	T	PID C12-C13	8.849	6.297	4.249	3.005	2.404	2.072	4.098	E4	63.68
14)	T	SUB C6-C8	3.659	2.849	2.131	1.994	1.769	1.632	2.241	E5	33.53
15)	T	SUB C8-C10	5.490	4.057	2.931	2.690	2.353	2.198	3.119	E5	39.60
16)	T	SUB C10-C12	2.464	1.913	1.602	1.532	1.443	1.380	1.666	E5	24.08

Signal #2 Calibration Files
1 =001F0501.D 2 =001F0601.D 3 =001F0701.D
4 =001F0801.D 5 =001F0901.D 6 =001F1001.D

		Compound	1	2	3	4	5	6	Avg		%RSD
18)		Signal 2 #2							0.000		-1.00
19)	t	MTBE 2	3.103	2.949	2.307	2.716	2.560	2.405	2.632	E3	11.53
20)	t	HEXANE	4.623	4.808	4.113	4.155	3.880	3.922	4.267	E3	8.21
21)	T	FID C5-C6	7.944	7.056	4.095	3.773	3.707	3.303	4.771	E3	39.78
22)	T	FID C6-C8	1.811	1.147	0.780	0.650	0.576	0.480	0.853	E4	56.12
23)	T	FID C8-C10	1.827	1.183	0.855	0.762	0.671	0.645	0.946	E4	45.50
24)	T	FID C10-C12	1.707	0.890	0.495	0.489	0.348	0.314	0.651	E4	77.87

(#) = Out of Range ### Number of calibration levels exceeded format ###

QVPH071521.M Mon Jul 19 10:11:43 2021

Calibration Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH071521.M
Title : BTEX
Last Update : Fri Jul 16 12:09:08 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0501 2 =001F0601 3 =001F0701 4 =001F0801 5 =001F0901
6 =001F1001 7 =001F1101

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
1)	S	1,4-Difluorobenzene	Avg	-----	8.3712 e4	-----	0.1319
2)	S	Bromofluorobenzene	Avg	-----	1.7394 e5	-----	0.0460
3)	t	MTBE	Lin	4.9921 e5	5.7746 e4	-----	0.9989
4)	t	Benzene	Lin	2.8729 e5	1.5670 e5	-----	0.9991
5)	t	Toluene	Lin	3.1973 e5	1.5604 e5	-----	0.9994
6)	t	Ethylbenzene	Lin	8.7855 e5	1.4277 e5	-----	0.9999
7)	t	m&p xylenes	Lin	1.3139 e6	1.6202 e5	-----	0.9983
8)	t	o xylene	Lin	4.3153 e5	1.4525 e5	-----	0.9991
9)	t	1,2,3-Trimethylbe...	Lin	2.4792 e5	1.2455 e5	-----	0.9994
10)	t	Naphthalene	Lin	9.4286 e4	6.2434 e4	-----	0.9997
11)	T	PID C8-C10	Lin	1.4986 e7	1.8965 e5	-----	0.9998
12)	T	PID C10-C12	Lin	1.2900 e6	7.0074 e4	-----	0.9993
13)	T	PID C12-C13	Lin	1.1553 e6	1.7238 e4	-----	0.9967
14)	T	SUB C6-C8	Lin	4.9952 e6	1.6222 e5	-----	0.9997
15)	T	SUB C8-C10	Lin	1.4162 e7	2.0788 e5	-----	0.9998
16)	T	SUB C10-C12	Lin	1.7864 e6	1.3176 e5	-----	0.9997

Signal #2

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
18)		Signal 2 #2	Lin	-----	-----	-----	0.0000
19)	t	MTBE 2	Lin	8.5525 e3	2.4025 e3	-----	0.9986
20)	t	HEXANE	Lin	3.5708 e3	4.1708 e3	-----	0.9967
21)	T	FID C5-C6	Lin	1.1152 e5	3.4309 e3	-----	0.9985
22)	T	FID C6-C8	Lin	3.4093 e5	5.0261 e3	-----	0.9968
23)	T	FID C8-C10	Lin	2.8593 e5	6.6289 e3	-----	0.9988
24)	T	FID C10-C12	Lin	2.4977 e5	2.9845 e3	-----	0.9988

QVPH071521.M Mon Jul 19 10:11:55 2021

Response Factor Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH072321.M
Title : BTEX
Last Update : Mon Jul 26 09:48:30 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0301.D 2 =001F0401.D 3 =001F0501.D
4 =001F0601.D 5 =001F0701.D 6 =001F0801.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	S	1,4-Difluorob...	6.861	6.981	6.989	7.089	7.473	8.340	7.458	E4	9.07
2)	S	Bromofluorobe...	1.532	1.560	1.534	1.507	1.542	1.481	1.512	E5	2.96
3)	t	MTBE	6.277	7.015	5.932	5.675	5.377	4.954	5.687	E4	14.42
4)	t	Benzene	1.673	1.810	1.553	1.507	1.419	1.350	1.518	E5	11.77
5)	t	Toluene	1.675	1.806	1.561	1.508	1.424	1.362	1.520	E5	11.67
6)	t	Ethylbenzene	1.621	1.740	1.496	1.441	1.345	1.274	1.442	E5	13.66
7)	t	m&p xylenes	1.890	2.036	1.749	1.679	1.555	1.444	1.664	E5	15.36
8)	t	o xylene	1.622	1.752	1.517	1.457	1.362	1.275	1.450	E5	13.90
9)	t	1,2,3-Trimeth...	1.363	1.486	1.286	1.233	1.145	1.068	1.220	E5	14.59
10)	t	Naphthalene	6.738	7.277	5.987	5.572	5.304	4.857	5.747	E4	17.35
11)	T	PID C8-C10	4.411	3.481	2.459	2.146	1.923	1.735	2.531	E5	41.22
12)	T	PID C10-C12	1.564	1.395	0.942	0.771	0.684	0.593	0.926	E5	43.58
13)	T	PID C12-C13	1.314	0.748	0.384	0.265	0.192	0.155	0.455	E5	95.47
14)	T	SUB C6-C8	3.589	2.826	1.989	1.742	1.570	1.446	2.077	E5	39.85
15)	T	SUB C8-C10	5.172	3.967	2.769	2.416	2.136	1.925	2.873	E5	43.71
16)	T	SUB C10-C12	2.396	2.201	1.620	1.468	1.300	1.187	1.602	E5	32.10

Signal #2 Calibration Files
1 =001F0301.D 2 =001F0401.D 3 =001F0501.D
4 =001F0601.D 5 =001F0701.D 6 =001F0801.D

		Compound	1	2	3	4	5	6	Avg		%RSD
18)		Signal 2 #2							0.000		-1.00
19)	t	MTBE 2	4.338	3.719	2.862	2.677	2.559	2.310	2.949	E3	26.80
20)	t	HEXANE	5.863	5.492	4.554	4.557	4.146	3.961	4.641	E3	16.37
21)	T	FID C5-C6	7.228	6.375	4.652	4.266	3.647	3.263	4.656	E3	33.86
22)	T	FID C6-C8	1.806	1.394	0.886	0.710	0.579	0.525	0.915	E4	54.66
23)	T	FID C8-C10	1.715	1.348	0.980	0.852	0.725	0.681	0.992	E4	40.34
24)	T	FID C10-C12	1.530	1.036	0.691	0.491	0.426	0.346	0.687	E4	65.36

(#) = Out of Range ### Number of calibration levels exceeded format ###

QVPH072321.M Mon Jul 26 10:52:39 2021

Calibration Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH072321.M
Title : BTEX
Last Update : Mon Jul 26 09:48:30 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0301 2 =001F0401 3 =001F0501 4 =001F0601 5 =001F0701
6 =001F0801 7 =001F0901

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
1)	S	1,4-Difluorobenzene	Avg	-----	7.4578 e4	-----	0.0907
2)	S	Bromofluorobenzene	Avg	-----	1.5120 e5	-----	0.0296
3)	t	MTBE	Lin	9.0293 e5	4.5557 e4	-----	0.9982
4)	t	Benzene	Lin	6.9432 e5	1.3311 e5	-----	0.9985
5)	t	Toluene	Lin	7.0486 e5	1.3306 e5	-----	0.9982
6)	t	Ethylbenzene	Lin	2.1326 e6	1.1708 e5	-----	0.9983
7)	t	m&p xylenes	Lin	2.2243 e6	1.3656 e5	-----	0.9933
8)	t	o xylene	Lin	8.6602 e5	1.2178 e5	-----	0.9951
9)	t	1,2,3-Trimethylbe...	Lin	7.7576 e5	1.0121 e5	-----	0.9937
10)	t	Naphthalene	Lin	9.4078 e5	4.4651 e4	-----	0.9983
11)	T	PID C8-C10	Lin	2.1681 e7	1.5353 e5	-----	0.9977
12)	T	PID C10-C12	Lin	2.2571 e6	5.1826 e4	-----	0.9972
13)	T	PID C12-C13	Lin	1.4105 e6	1.1604 e4	-----	0.9958
14)	T	SUB C6-C8	Lin	6.8334 e6	1.3520 e5	-----	0.9996
15)	T	SUB C8-C10	Lin	1.8980 e7	1.6932 e5	-----	0.9975
16)	T	SUB C10-C12	Lin	3.6599 e6	1.0284 e5	-----	0.9958

Signal #2

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
18)		Signal 2 #2	Lin	-----	-----	-----	0.0000
19)	t	MTBE 2	Lin	2.6839 e4	2.2286 e3	-----	0.9974
20)	t	HEXANE	Lin	2.6395 e4	3.9323 e3	-----	0.9991
21)	T	FID C5-C6	Lin	2.4394 e5	3.0924 e3	-----	0.9995
22)	T	FID C6-C8	Lin	5.5501 e5	4.8599 e3	-----	0.9997
23)	T	FID C8-C10	Lin	7.0668 e5	6.2830 e3	-----	0.9994
24)	T	FID C10-C12	Lin	4.1532 e5	2.7877 e3	-----	0.9935

QVPH072321.M Mon Jul 26 10:54:09 2021

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Chain of Custody Record

www.LibbyEnvironmental.com

Date: 7/13/21 Page: 1 of 1

Client: Pioneer Technology Corp.
Address: 5205 Corporate Center Ct. SE
City: Lacey State: WA Zip:
Phone: 360-828-3739 Fax:
Client Project # JACKS AUTO

Project Manager: Joel Hecht
Project Name: Jacks Auto
Location: 1400 Bethel St. City, State: Oly WA
Collector: SH/AR Date of Collection: 7/12-13
Email: Hechtj@uspioneer.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	MTCA VOCs	Pb	Field Notes
1 SO-MW2-1-3-0713	1-3	1100	G	mult.	X		X			X					X			X	
2 SO-MW2-17-19-0713	17-19	1130			X		X			X					X			X	
3 SO-MW3-1-3-0712	1-3	1430			X		X			X	X				X			X	Run internal dup on this sample
4 SO-MW3-1-3-0712-61	1-3	1430													X				• Submit to Fremont for Dup PAH analysis
5 SO-MW3-17-19-0712	17-19	1445			X		X			X	X				X			X	
6 SO-SB201-1-2-0713	1-2	0811			X		X			X	X				X			X	
7 SO-SB201-6-8-0713	6-8	0906			X		X			X	X				X			X	
8 SO-SB201-16-18-0713	16-18	0910			X		X			X	X				X			X	
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
Jewh	7/13/21 1344	[signature]	7-13-21 1344
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	SO-MW2-1-3-0713	SO-MW2-17-19-0713	SO-MW3-1-3-0712	SO-MW3-1-3-0712 Dup	SO-MW3-17-19-0712
Date Sampled	Reporting	N/A	7/13/2021	7/13/2021	7/12/2021	7/12/2021	7/12/2021
Date Analyzed	Limits	7/17/2021	7/17/2021	7/17/2021	7/17/2021	7/17/2021	7/17/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	SO-MW2-1-3-0713	SO-MW2-17-19-0713	SO-MW3-1-3-0712	SO-MW3-1-3-0712 Dup	SO-MW3-17-19-0712
Date Sampled	Reporting	N/A	7/13/2021	7/13/2021	7/12/2021	7/12/2021	7/12/2021
Date Analyzed	Limits	7/17/2021	7/17/2021	7/17/2021	7/17/2021	7/17/2021	7/17/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.04	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.03	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
p-Isopropyltoluene	0.03	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalene	0.10	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		97	96	95	95	95	121
1,2-Dichloroethane-d4		108	101	102	102	104	131
Toluene-d8		105	102	109	118	111	72
4-Bromofluorobenzene		83	90	90	80	85	77

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB201-1-2-0713	SO-SB201-6-8-0713	SO-SB201-16-18-0713
Date Sampled	Reporting	7/13/2021	7/13/2021	7/13/2021
Date Analyzed	Limits	7/17/2021	7/17/2021	7/17/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd
Chloromethane	0.06	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd
Bromomethane	0.09	nd	nd	nd
Chloroethane	0.06	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd
Chloroform	0.02	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd
Benzene	0.02	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd
Toluene	0.10	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd
Styrene	0.02	nd	nd	nd

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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		SO-SB201-1-2-0713	SO-SB201-6-8-0713	SO-SB201-16-18-0713
Date Sampled	Reporting	7/13/2021	7/13/2021	7/13/2021
Date Analyzed	Limits	7/17/2021	7/17/2021	7/17/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd
1,2,3-Trichloropropane	0.04	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd
n-Propylbenzene	0.03	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd
p-Isopropyltoluene	0.03	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd
n-Butylbenzene	0.03	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd
Naphthalene	0.10	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd
Surrogate Recovery				
Dibromofluoromethane		106	104	125
1,2-Dichloroethane-d4		120	116	30
Toluene-d8		66	69	67
4-Bromofluorobenzene		79	78	83

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO PROJECT
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Olympia, Washington
Libby Project # L210713-2

Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	7/17/2021	105%	nd
SO-MW2-1-3-0713	7/17/2021	102%	nd
SO-MW2-17-19-0713	7/17/2021	109%	nd
SO-MW3-1-3-0712	7/17/2021	118%	nd
SO-MW3-1-3-0712 Dup	7/17/2021	111%	nd
SO-MW3-17-19-0712	7/17/2021	72%	nd
SO-SB201-1-2-0713	7/17/2021	66%	nd
SO-SB201-6-8-0713	7/17/2021	69%	nd
SO-SB201-16-18-0713	7/17/2021	97%	nd
Practical Quantitation Limit			10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO PROJECT
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Olympia, Washington
Libby Project # L210713-2

Diesel & Oil by NWTPH-Dx/Dx Extended in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	7/14/2021	91%	nd	nd
SO-MW2-1-3-0713	7/14/2021	111%	nd	nd
SO-MW2-17-19-0713	7/14/2021	113%	nd	nd
SO-MW3-1-3-0712	7/14/2021	90%	nd	420
SO-MW3-1-3-0712 Dup	7/14/2021	93%	nd	300
SO-MW3-17-19-0712	7/14/2021	89%	nd	nd
SO-SB201-1-2-0713	7/14/2021	96%	nd	nd
SO-SB201-6-8-0713	7/14/2021	117%	nd	nd
SO-SB201-16-18-0713	7/14/2021	119%	nd	nd
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Jodie Childress

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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	Method Blank	LCS	LCSD	SO-MW3-1-3-0712	SO-MW3-1-3-0712 Dup	SO-MW3-17-19-0712
Date Sampled		N/A	N/A	N/A	7/12/2021	7/12/2021	7/12/2021
Date Analyzed		7/16/2021	7/16/2021	7/16/2021	7/16/2021	7/16/2021	7/16/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	nd	104%	110%	nd	nd	nd
Aroclor 1221	0.1	nd			nd	nd	nd
Aroclor 1232	0.1	nd			nd	nd	nd
Aroclor 1242	0.1	nd			nd	nd	nd
Aroclor 1248	0.1	nd			nd	nd	nd
Aroclor 1254	0.1	nd			nd	nd	nd
Aroclor 1260	0.1	nd	116%	98%	nd	nd	nd
Surrogate Recovery							
TCMX		89	93	134	127	99	132
DCBP		116	107	113	123	107	128

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	SO-SB201-1-2-0713	SO-SB201-6-8-0713	SO-SB201-16-18-0713	SO-MW3-1-3-0713 MS	SO-MW3-1-3-0713 MSD
Date Sampled		7/13/2021	7/13/2021	7/13/2021	7/13/2021	7/13/2021
Date Analyzed		7/16/2021	7/16/2021	7/16/2021	7/16/2021	7/16/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	nd	nd	nd	105%	107%
Aroclor 1221	0.1	nd	nd	nd		
Aroclor 1232	0.1	nd	nd	nd		
Aroclor 1242	0.1	nd	nd	nd		
Aroclor 1248	0.1	nd	nd	nd		
Aroclor 1254	0.1	nd	nd	nd		
Aroclor 1260	0.1	nd	nd	nd	109%	112%
Surrogate Recovery						
TCMX		101	98	130	128	133
DCBP		125	127	133	125	124

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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Olympia, Washington
Libby Project # L210713-2

Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	7/16/2021	nd
SO-MW2-1-3-0713	7/16/2021	37
SO-MW2-17-19-0713	7/16/2021	nd
SO-MW3-1-3-0712	7/16/2021	42
SO-MW3-1-3-0712 Dup	7/16/2021	43
SO-MW3-17-19-0712	7/16/2021	nd
SO-SB201-1-2-0713	7/16/2021	nd
SO-SB201-6-8-0713	7/16/2021	nd
SO-SB201-16-18-0713	7/16/2021	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Kodey Eley

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Libby Project # L210713-2

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Soil

Matrix Spike Sample Identification: SO-MW3-1-3-0712

Date Analyzed: 7/17/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.18	0.20	72	80	11.1	65-135	
Chloromethane	0.25	0.16	0.18	64	72	11.8	65-135	S
Vinyl chloride	0.25	0.18	0.20	73	78	7.4	65-135	
Bromomethane	0.25	0.19	0.21	74	86	14.0	65-135	
Chloroethane	0.25	0.18	0.211	72	84	16.4	65-135	
Trichlorofluoromethane	0.25	0.05	0.055	20	22	11.5	65-135	S
1,1-Dichloroethene	0.25	0.23	0.21	90	84	6.9	65-135	
Methylene chloride	0.25	0.22	0.23	86	94	8.0	65-135	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.23	0.26	90	104	14.0	65-135	
trans -1,2-Dichloroethene	0.25	0.19	0.26	77	106	31.1	65-135	
1,1-Dichloroethane	0.25	0.23	0.26	94	105	11.7	65-135	
2,2-Dichloropropane	0.25	0.24	0.26	96	105	9.1	65-135	
cis -1,2-Dichloroethene	0.25	0.23	0.27	92	107	15.3	65-135	
Chloroform	0.25	0.23	0.27	91	109	18.4	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.24	0.26	94	104	10.1	65-135	
Carbon tetrachloride	0.25	0.24	0.26	95	104	8.9	65-135	
1,1-Dichloropropene	0.25	0.19	0.23	76	92	18.5	65-135	
Benzene	0.25	0.21	0.25	84	100	18.3	65-135	
1,2-Dichloroethane (EDC)	0.25	0.24	0.27	96	109	13.3	65-135	
Trichloroethene (TCE)	0.25	0.25	0.20	101	81	22.4	65-135	
1,2-Dichloropropane	0.25	0.27	0.27	108	106	1.9	65-135	
Dibromomethane	0.25	0.26	0.25	105	98	7.1	65-135	
Bromodichloromethane	0.25	0.24	0.26	95	104	8.5	65-135	
cis-1,3-Dichloropropene	0.25	0.11	0.20	45	80	55.1	65-135	R, S
Toluene	0.25	0.14	0.17	54	66	19.3	65-135	S
Trans-1,3-Dichloropropene	0.25	0.18	0.19	71	74	5.0	65-135	
1,1,2-Trichloroethane	0.25	0.30	0.31	119	125	4.6	65-135	
Tetrachloroethene (PCE)	0.25	0.17	0.16	67	65	2.4	65-135	
1,3-Dichloropropane	0.25	0.22	0.22	90	88	1.3	65-135	
Dibromochloromethane	0.25	0.25	0.26	102	104	2.7	65-135	
1,2-Dibromoethane (EDB)	0.25	0.24	0.26	96	103	7.3	65-135	
Chlorobenzene	0.25	0.22	0.22	88	90	2.3	65-135	
Ethylbenzene	0.25	0.18	0.17	72	69	4.0	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.28	0.34	113	135	17.8	65-135	
Total Xylenes	0.75	0.46	0.43	61	57	6.3	65-135	S
Styrene	0.25	0.15	0.13	60	52	14.3	65-135	S

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QA/QC Data - Volatile Organic Compounds by EPA 8260D in Soil

Matrix Spike Sample Identification: SO-MW3-1-3-0712

Date Analyzed: 7/17/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.23	0.29	93	118	23.6	65-135	
Isopropylbenzene	0.25	0.16	0.14	65	56	15.9	65-135	S
1,1,2,2-Tetrachloroethane	0.25	0.34	0.31	137	123	10.8	65-135	S
Bromobenzene	0.25	0.25	0.18	99	71	33.4	65-135	
n-Propylbenzene	0.25	0.25	0.12	98	46	72.2	65-135	R, S
1,2,3-Trichloropropane	0.25	0.33	0.29	132	114	14.3	65-135	
2-Chlorotoluene	0.25	0.21	0.16	82	64	25.8	65-135	S
1,3,5-Trimethylbenzene	0.25	0.19	0.13	76	52	37.7	65-135	R, S
4-Chlorotoluene	0.25	0.22	0.15	90	61	38.3	65-135	R, S
tert-Butylbenzene	0.25	0.19	0.13	74	52	34.9	65-135	R, S
1,2,4-Trimethylbenzene	0.25	0.19	0.14	78	54	35.2	65-135	R, S
sec-Butylbenzene	0.25	0.23	0.15	90	58	43.0	65-135	R, S
Isopropyltoluene	0.25	0.18	0.12	71	49	36.5	65-135	R, S
1,3-Dichlorobenzene	0.25	0.24	0.19	97	77	23.4	65-135	
1,4-Dichlorobenzene	0.25	0.24	0.21	96	82	15.3	65-135	
n-Butylbenzene	0.25	0.23	0.15	92	60	41.1	65-135	R, S
1,2-Dichlorobenzene	0.25	0.28	0.19	111	75	39.1	65-135	R
1,2-Dibromo-3-Chloropropane	0.25	0.31	0.26	124	105	17.1	65-135	
1,2,4-Trichlorolbenzene	0.25	0.23	0.17	93	70	29.0	65-135	
Hexachloro-1,3-butadiene	0.25	0.26	0.21	105	86	20.5	65-135	
Naphthalene	0.25	0.20	0.16	78	64	20.8	65-135	S
1,2,3-Trichlorobenzene	0.25	0.27	0.22	106	88	18.1	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	107	98	65-135
1,2-Dichloroethane-d4	112	107	65-135
Toluene-d8	68	116	65-135
4-Bromofluorobenzene	106	79	65-135

ACCEPTABLE RPD IS 35%
"R" High relative percent difference observed.
"S" Spike recovery outside accepted recovery limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

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Libby Project # L210713-2

Laboratory Control Sample

Date Analyzed: 7/17/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.22	86	80-120	
Chloromethane	0.25	0.20	81	80-120	
Vinyl chloride	0.25	0.22	88	80-120	
Bromomethane	0.25	0.22	87	80-120	
Chloroethane	0.25	0.20	80	80-120	
Trichlorofluoromethane	0.25	0.22	87	80-120	
1,1-Dichloroethene	0.25	0.22	88	80-120	
Methylene chloride	0.25	0.24	98	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.26	103	80-120	
trans -1,2-Dichloroethene	0.25	0.22	88	80-120	
1,1-Dichloroethane	0.25	0.27	109	80-120	
2,2-Dichloropropane	0.25	0.28	110	80-120	
cis -1,2-Dichloroethene	0.25	0.23	92	80-120	
Chloroform	0.25	0.25	101	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.25	102	80-120	
Carbon tetrachloride	0.25	0.25	101	80-120	
1,1-Dichloropropene	0.25	0.21	85	80-120	
Benzene	0.25	0.23	91	80-120	
1,2-Dichloroethane (EDC)	0.25	0.26	104	80-120	
Trichloroethene (TCE)	0.25	0.26	104	80-120	
1,2-Dichloropropane	0.25	0.28	113	80-120	
Dibromomethane	0.25	0.29	118	80-120	
Bromodichloromethane	0.25	0.25	101	80-120	
cis-1,3-Dichloropropene	0.25	0.22	87	80-120	
Toluene	0.25	0.20	81	80-120	
Trans-1,3-Dichloropropene	0.25	0.24	95	80-120	
1,1,2-Trichloroethane	0.25	0.27	108	80-120	
Tetrachloroethene (PCE)	0.25	0.22	90	80-120	
1,3-Dichloropropane	0.25	0.27	107	80-120	
Dibromochloromethane	0.25	0.30	120	80-120	
1,2-Dibromoethane (EDB)	0.25	0.30	120	80-120	
Chlorobenzene	0.25	0.24	98	80-120	
Ethylbenzene	0.25	0.20	80	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.20	80	80-120	
Total Xylenes	0.75	0.72	96	80-120	
Styrene	0.25	0.20	80	80-120	

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Laboratory Control Sample

Date Analyzed: 7/17/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.30	120	80-120	
Isopropylbenzene	0.25	0.30	119	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.24	96	80-120	
Bromobenzene	0.25	0.22	89	80-120	
n-Propylbenzene	0.25	0.21	84	80-120	
1,2,3-Trichloropropane	0.25	0.24	96	80-120	
2-Chlorotoluene	0.25	0.21	86	80-120	
1,3,5-Trimethylbenzene	0.25	0.21	85	80-120	
4-Chlorotoluene	0.25	0.21	84	80-120	
tert-Butylbenzene	0.25	0.25	100	80-120	
1,2,4-Trimethylbenzene	0.25	0.21	82	80-120	
sec-Butylbenzene	0.25	0.22	89	80-120	
Isopropyltoluene	0.25	0.21	84	80-120	
1,3-Dichlorobenzene	0.25	0.26	102	80-120	
1,4-Dichlorobenzene	0.25	0.26	105	80-120	
n-Butylbenzene	0.25	0.20	82	80-120	
1,2-Dichlorobenzene	0.25	0.24	94	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.27	110	80-120	
1,2,4-Trichlorolbenzene	0.25	0.24	97	80-120	
Hexachloro-1,3-butadiene	0.25	0.29	118	80-120	
Naphthalene	0.25	0.22	88	80-120	
1,2,3-Trichlorobenzene	0.25	0.28	110	80-120	

Surrogate Recovery			
Dibromofluoromethane	106	65-135	
1,2-Dichloroethane-d4	119	65-135	
Toluene-d8	69	65-135	
4-Bromofluorobenzene	99	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

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CCV 7-17-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.50	0.42	84	80-120	
Chloromethane	0.50	0.42	83	80-120	
Vinyl chloride	0.50	0.42	84	80-120	
Bromomethane	0.50	0.41	82	80-120	
Chloroethane	0.50	0.40	80	80-120	
Trichlorofluoromethane	0.50	0.41	83	80-120	
1,1-Dichloroethene	0.50	0.44	87	80-120	
Methylene chloride	0.50	0.47	93	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.50	0.45	90	80-120	
trans -1,2-Dichloroethene	0.50	0.42	85	80-120	
1,1-Dichloroethane	0.50	0.56	111	80-120	
2,2-Dichloropropane	0.50	0.53	105	80-120	
cis -1,2-Dichloroethene	0.50	0.46	92	80-120	
Chloroform	0.50	0.50	99	80-120	
1,1,1-Trichloroethane (TCA)	0.50	0.49	98	80-120	
Carbon tetrachloride	0.50	0.49	97	80-120	
1,1-Dichloropropene	0.50	0.42	84	80-120	
Benzene	0.50	0.45	89	80-120	
1,2-Dichloroethane (EDC)	0.50	0.47	95	80-120	
Trichloroethene (TCE)	0.50	0.50	99	80-120	
1,2-Dichloropropane	0.50	0.56	113	80-120	
Dibromomethane	0.50	0.54	108	80-120	
Bromodichloromethane	0.50	0.54	108	80-120	
cis-1,3-Dichloropropene	0.50	0.54	109	80-120	
Toluene	0.50	0.47	94	80-120	
Trans-1,3-Dichloropropene	0.50	0.50	100	80-120	
1,1,2-Trichloroethane	0.50	0.58	116	80-120	
Tetrachloroethene (PCE)	0.50	0.59	117	80-120	
1,3-Dichloropropane	0.50	0.52	103	80-120	
Dibromochloromethane	0.50	0.60	119	80-120	
1,2-Dibromoethane (EDB)	0.50	0.595	119	80-120	
Chlorobenzene	0.50	0.52	105	80-120	
Ethylbenzene	0.50	0.46	92	80-120	
1,1,1,2-Tetrachloroethane	0.50	0.58	117	80-120	
Total Xylenes	1.50	1.37	91	80-120	
Styrene	0.50	0.47	95	80-120	

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CCV 7-17-2021

	Spiked Conc. (mg/kg)	CCV Response (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)	Data Flag
Bromoform	0.50	0.40	80	80-120	
Isopropylbenzene	0.50	0.46	92	80-120	
1,1,2,2-Tetrachloroethane	0.50	0.59	119	80-120	
Bromobenzene	0.50	0.41	82	80-120	
n-Propylbenzene	0.50	0.46	92	80-120	
1,2,3-Trichloropropane	0.50	0.54	108	80-120	
2-Chlorotoluene	0.50	0.43	86	80-120	
1,3,5-Trimethylbenzene	0.50	0.45	89	80-120	
4-Chlorotoluene	0.50	0.43	87	80-120	
tert-Butylbenzene	0.50	0.52	105	80-120	
1,2,4-Trimethylbenzene	0.50	0.46	91	80-120	
sec-Butylbenzene	0.50	0.52	105	80-120	
Isopropyltoluene	0.50	0.43	86	80-120	
1,3-Dichlorobenzene	0.50	0.55	110	80-120	
1,4-Dichlorobenzene	0.50	0.54	109	80-120	
n-Butylbenzene	0.50	0.51	102	80-120	
1,2-Dichlorobenzene	0.50	0.48	96	80-120	
1,2-Dibromo-3-Chloropropane	0.50	0.55	110	80-120	
1,2,4-Trichlorolbenzene	0.50	0.47	94	80-120	
Hexachloro-1,3-butadiene	0.50	0.56	112	80-120	
Naphthalene	0.50	0.48	95	80-120	
1,2,3-Trichlorobenzene	0.50	0.54	108	80-120	

Surrogate Recovery					
Dibromofluoromethane			95	65-135	
1,2-Dichloroethane-d4			104	65-135	
Toluene-d8			115	65-135	
4-Bromofluorobenzene			111	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

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QA/QC Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	Gasoline (% Recovery)	CCV Recovery Limits (%)
25 ppm LCS	7/17/2021	27.3	109%	70-130%
25 ppm LCSD	7/17/2021	24.2	97%	70-130%
RPD			12%	30%
Practical Quantitation Limit		10		

CCV Gasoline by NWTPH-Gx in Soil

Sample Number	Date Analyzed	Gasoline (mg/kg)	CCV Recovery (%)	CCV Recovery Limits (%)
50 ppm CCV	7/17/2021	43.9	88%	80-120%
Practical Quantitation Limit		10		

ANALYSES PERFORMED BY: Sherry Chilcutt

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QA/QC Diesel by NWTPH-Dx in Soil

Sample Number	Date Analyzed	Diesel (mg/kg)	Diesel (% Recovery)	CCV Recovery Limits (%)
100 ppm LCS 071420	7/14/2021	96	96%	70-130%
100 ppm LCSD 071420	7/14/2021	114	114%	70-130%
RPD			17%	30%
Practical Quantitation Limit		50		

CCV Diesel by NWTPH-Dx in Soil

Sample Number	Date Analyzed	Diesel (mg/kg)	CCV (%)	CCV Recovery Limits (%)
CCV Shiva FID 1 500 ppm	7/14/2021	537	107%	85-115%
CCV Shiva FID 2 500 ppm	7/14/2021	524	105%	85-115%
CCV Shiva FID 3 500 ppm	7/14/2021	571	114%	85-115%
Practical Quantitation Limit		50		

ANALYSES PERFORMED BY: Jodie Childress

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QAQC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	LCS 071621	LCSD 071621	RPD	SO-MW3-1-3-0713 MS	SO-MW3-1-3-0713 MSD	RPD
	(%)	(%)	(%)	(%)	(%)	(%)
Aroclor 1016	104%	110%	6%	105%	107%	2%
Aroclor 1260	116%	98%	17%	109%	112%	3%
Surrogate Recovery						
TCMX	93	134		128	133	
DCBP	107	113		125	124	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

QAQC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	Spike Concentration	LCS 071621	LCSD 071621	RPD	SO-MW3-1-3-0713 MS	SO-MW3-1-3-0713 MSD	RPD
	(mg/kg)	(mg/kg)	(mg/kg)	(%)	(mg/kg)	(mg/kg)	(%)
Aroclor 1016	0.10	0.104	0.110	6%	0.105	0.107	2%
Aroclor 1260	0.10	0.116	0.098	17%	0.109	0.112	3%
Surrogate Recovery							
TCMX		93	134		128	133	
DCBP		107	113		125	124	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

CCV PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Soil

Sample Description	Date Analyzed	CCV Concentration (mg/kg)	CCV Recovery (mg/kg)	CCV Recovery (%)	CCV Recovery (%)
Pollux ECD1					
Aroclor 1016	6/23/2021	0.50	0.50	100%	80-120%
Aroclor 1260	6/23/2021	0.50	0.52	106%	80-120%
Pollux ECD2					
Aroclor 1016	6/23/2021	0.50	0.44	88%	80-120%
Aroclor 1260	6/23/2021	0.50	0.51	101%	80-120%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

QA/QC Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (% Recovery)
LCS 071621	7/16/2021	115%
SO-MW3-1-3-0712 MS	7/16/2021	int
SO-MW3-1-3-0712 MSD	7/16/2021	int
RPD	7/16/2021	N/A
Post Spike (PS)	7/16/2021	121%
Post Spike Dup (PSD)	7/16/2021	116%
RPD	7/16/2021	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Kodey Eley

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

QA/QC Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Spike Concentration		1.0
LCS 071621	7/16/2021	1.2
Spike Concentration		1.0
SO-MW3-1-3-0712 MS	7/16/2021	int
SO-MW3-1-3-0712 MSD	7/16/2021	int
RPD		N/A
SO-MW3-1-3-0712 PS	7/16/2021	1.21
SO-MW3-1-3-0712 PSD	7/16/2021	1.16
RPD		4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Kodey Eley

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Olympia, WA 98506
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JACKS AUTO PROJECT
Pioneer Technologies Corp.
Olympia, Washington
Libby Project # L210713-2

CCV Total Lead by EPA Method 7010 Series in Soil

Sample Number	Date Analyzed	Lead (mg/kg)
Spike Concentration		2.5
CCV 7/16/2021	7/16/2021	2.6
CCV Recovery %		106%
CCB		nd

CCV Recovery Limits %: 90-110%

ANALYSES PERFORMED BY: Kodey Eley

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO PROJECT
Pioneer Technologies Corp.
Libby Project # L210713-2
Date Received 7/13/2021
Time Received 1:44 PM

Received By KLI

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	5.9 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	6.9 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☑ Yes	☐ No	☐ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies? ☐ Yes ☐ No ☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. VOAs pre-preserved with 4mL methanol

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Jacks Auto
Work Order Number: 2107217

July 22, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 7 sample(s) on 7/14/2021 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *07/29/2021*

CLIENT: Libby Environmental
Project: Jacks Auto
Work Order: 2107217

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2107217-001	SO-MW2-1-3-0713	07/13/2021 11:00 AM	07/14/2021 1:30 PM
2107217-002	SO-MW2-17-19-0713	07/13/2021 11:30 AM	07/14/2021 1:30 PM
2107217-003	SO-MW3-1-3-0712	07/12/2021 2:30 PM	07/14/2021 1:30 PM
2107217-004	SO-MW3-1719-0712	07/12/2021 2:45 PM	07/14/2021 1:30 PM
2107217-005	SO-SB201-1-2-0713	07/13/2021 8:11 AM	07/14/2021 1:30 PM
2107217-006	SO-SB201-6-8-0713	07/13/2021 9:06 AM	07/14/2021 1:30 PM
2107217-007	SO-SB201-16-18-0713	07/13/2021 9:10 AM	07/14/2021 1:30 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Revision v1

Case Narrative

WO#: **2107217**
Date: **7/22/2021**

CLIENT: Libby Environmental
Project: Jacks Auto

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

7/29: Revision 1 includes level 2B data package.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2107217**
Date Reported: **7/22/2021**

Client: Libby Environmental
Collection Date: 7/13/2021 11:00:00 AM
Project: Jacks Auto
Lab ID: 2107217-001
Matrix: Soil
Client Sample ID: SO-MW2-1-3-0713

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
2-Methylnaphthalene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
1-Methylnaphthalene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Acenaphthylene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Acenaphthene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Fluorene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Phenanthrene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Anthracene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Fluoranthene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Pyrene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Benz(a)anthracene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Chrysene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Benzo(b)fluoranthene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Benzo(k)fluoranthene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Benzo(a)pyrene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Indeno(1,2,3-cd)pyrene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Dibenz(a,h)anthracene	ND	39.7		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Benzo(g,h,i)perylene	ND	19.8		µg/Kg-dry	1	7/22/2021 11:14:12 AM
Surr: 2-Fluorobiphenyl	78.4	27.9 - 129		%Rec	1	7/22/2021 11:14:12 AM
Surr: Terphenyl-d14 (surr)	81.7	39.1 - 145		%Rec	1	7/22/2021 11:14:12 AM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	5.99	0.500		wt%	1	7/20/2021 9:39:20 AM

Client: Libby Environmental
Collection Date: 7/13/2021 11:30:00 AM
Project: Jacks Auto
Lab ID: 2107217-002
Matrix: Soil
Client Sample ID: SO-MW2-17-19-0713

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
2-Methylnaphthalene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
1-Methylnaphthalene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Acenaphthylene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Acenaphthene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Fluorene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Phenanthrene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Anthracene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Fluoranthene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Pyrene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Benz(a)anthracene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Chrysene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Benzo(b)fluoranthene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Benzo(k)fluoranthene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Benzo(a)pyrene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Indeno(1,2,3-cd)pyrene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Dibenz(a,h)anthracene	ND	40.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Benzo(g,h,i)perylene	ND	20.1		µg/Kg-dry	1	7/22/2021 12:19:10 PM
Surr: 2-Fluorobiphenyl	82.6	27.9 - 129		%Rec	1	7/22/2021 12:19:10 PM
Surr: Terphenyl-d14 (surr)	89.6	39.1 - 145		%Rec	1	7/22/2021 12:19:10 PM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	5.38	0.500		wt%	1	7/20/2021 9:39:20 AM

Client: Libby Environmental
Collection Date: 7/12/2021 2:30:00 PM
Project: Jacks Auto
Lab ID: 2107217-003
Matrix: Soil
Client Sample ID: SO-MW3-1-3-0712

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
2-Methylnaphthalene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
1-Methylnaphthalene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Acenaphthylene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Acenaphthene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Fluorene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Phenanthrene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Anthracene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Fluoranthene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Pyrene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Benz(a)anthracene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Chrysene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Benzo(b)fluoranthene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Benzo(k)fluoranthene	ND	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Benzo(a)pyrene	21.1	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Indeno(1,2,3-cd)pyrene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Dibenz(a,h)anthracene	ND	40.3		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Benzo(g,h,i)perylene	39.8	20.2		µg/Kg-dry	1	7/22/2021 2:07:37 PM
Surr: 2-Fluorobiphenyl	86.2	27.9 - 129		%Rec	1	7/22/2021 2:07:37 PM
Surr: Terphenyl-d14 (surr)	90.8	39.1 - 145		%Rec	1	7/22/2021 2:07:37 PM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	11.6	0.500		wt%	1	7/20/2021 9:39:20 AM

Client: Libby Environmental
Collection Date: 7/12/2021 2:45:00 PM
Project: Jacks Auto
Lab ID: 2107217-004
Matrix: Soil
Client Sample ID: SO-MW3-1719-0712

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
2-Methylnaphthalene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
1-Methylnaphthalene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Acenaphthylene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Acenaphthene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Fluorene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Phenanthrene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Anthracene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Fluoranthene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Pyrene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Benz(a)anthracene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Chrysene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Benzo(b)fluoranthene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Benzo(k)fluoranthene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Benzo(a)pyrene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Indeno(1,2,3-cd)pyrene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Dibenz(a,h)anthracene	ND	39.2		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Benzo(g,h,i)perylene	ND	19.6		µg/Kg-dry	1	7/22/2021 12:40:51 PM
Surr: 2-Fluorobiphenyl	78.3	27.9 - 129		%Rec	1	7/22/2021 12:40:51 PM
Surr: Terphenyl-d14 (surr)	84.5	39.1 - 145		%Rec	1	7/22/2021 12:40:51 PM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	6.34	0.500		wt%	1	7/20/2021 9:39:20 AM

Client: Libby Environmental
Collection Date: 7/13/2021 8:11:00 AM
Project: Jacks Auto
Lab ID: 2107217-005
Matrix: Soil
Client Sample ID: SO-SB201-1-2-0713

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
2-Methylnaphthalene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
1-Methylnaphthalene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Acenaphthylene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Acenaphthene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Fluorene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Phenanthrene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Anthracene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Fluoranthene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Pyrene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Benz(a)anthracene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Chrysene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Benzo(b)fluoranthene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Benzo(k)fluoranthene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Benzo(a)pyrene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Indeno(1,2,3-cd)pyrene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Dibenz(a,h)anthracene	ND	39.7		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Benzo(g,h,i)perylene	ND	19.8		µg/Kg-dry	1	7/22/2021 1:02:33 PM
Surr: 2-Fluorobiphenyl	83.4	27.9 - 129		%Rec	1	7/22/2021 1:02:33 PM
Surr: Terphenyl-d14 (surr)	91.8	39.1 - 145		%Rec	1	7/22/2021 1:02:33 PM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	7.37	0.500		wt%	1	7/20/2021 9:39:20 AM

Client: Libby Environmental
Collection Date: 7/13/2021 9:06:00 AM
Project: Jacks Auto
Lab ID: 2107217-006
Matrix: Soil
Client Sample ID: SO-SB201-6-8-0713

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
2-Methylnaphthalene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
1-Methylnaphthalene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Acenaphthylene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Acenaphthene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Fluorene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Phenanthrene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Anthracene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Fluoranthene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Pyrene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Benz(a)anthracene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Chrysene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Benzo(b)fluoranthene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Benzo(k)fluoranthene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Benzo(a)pyrene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Indeno(1,2,3-cd)pyrene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Dibenz(a,h)anthracene	ND	40.6		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Benzo(g,h,i)perylene	ND	20.3		µg/Kg-dry	1	7/22/2021 1:24:16 PM
Surr: 2-Fluorobiphenyl	81.6	27.9 - 129		%Rec	1	7/22/2021 1:24:16 PM
Surr: Terphenyl-d14 (surr)	87.3	39.1 - 145		%Rec	1	7/22/2021 1:24:16 PM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	4.44	0.500		wt%	1	7/20/2021 9:39:20 AM

Analytical Report

Work Order: **2107217**
Date Reported: **7/22/2021**

Client: Libby Environmental
Collection Date: 7/13/2021 9:10:00 AM
Project: Jacks Auto
Lab ID: 2107217-007
Matrix: Soil
Client Sample ID: SO-SB201-16-18-0713

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33027		Analyst: SB
Naphthalene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
2-Methylnaphthalene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
1-Methylnaphthalene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Acenaphthylene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Acenaphthene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Fluorene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Phenanthrene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Anthracene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Fluoranthene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Pyrene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Benz(a)anthracene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Chrysene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Benzo(b)fluoranthene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Benzo(k)fluoranthene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Benzo(a)pyrene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Indeno(1,2,3-cd)pyrene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Dibenz(a,h)anthracene	ND	41.6		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Benzo(g,h,i)perylene	ND	20.8		µg/Kg-dry	1	7/22/2021 1:46:00 PM
Surr: 2-Fluorobiphenyl	81.5	27.9 - 129		%Rec	1	7/22/2021 1:46:00 PM
Surr: Terphenyl-d14 (surr)	85.9	39.1 - 145		%Rec	1	7/22/2021 1:46:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R68674		Analyst: ALB
Percent Moisture	9.56	0.500		wt%	1	7/20/2021 9:39:20 AM

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICB** SampType: **ICB** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICB** Batch ID: **33027** Analysis Date: **7/15/2021** SeqNo: **1386897**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
2-Chloronaphthalene	ND	20.0									
Acenaphthene	ND	20.0									
Dimethyl phthalate	ND	50.0									
Acenaphthylene	ND	20.0									
Dibenzofuran	ND	40.0									
Fluorene	ND	20.0									
Diethyl phthalate	ND	20.0									
Pentachlorophenol	ND	80.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Carbazole	ND	20.0									
Di-n-butyl phthalate	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Butylbenzylphthalate	ND	20.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Bis(2-ethylhexyl) phthalate	ND	20.0									
Di-n-octyl phthalate	ND	20.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2,4,6-Tribromophenol	1,080		1,000		108	14	136				
Surr: 2-Fluorobiphenyl	570		500.0		114	50.4	142				

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICB**	SampType: **ICB**	Units: **µg/L**	Prep Date: **7/15/2021**	RunNo: **68621**
Client ID: **ICB**	Batch ID: **33027**		Analysis Date: **7/15/2021**	SeqNo: **1386897**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Terphenyl-d14 (surr)	572		500.0		114	48.8	157				

Sample ID: **PAH ICV**	SampType: **ICV**	Units: **µg/L**	Prep Date: **7/15/2021**	RunNo: **68621**
Client ID: **ICV**	Batch ID: **33027**		Analysis Date: **7/15/2021**	SeqNo: **1386898**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,150	20.0	1,000	0	115	70	130				
2-Methylnaphthalene	1,170	20.0	1,000	0	117	70	130				
1-Methylnaphthalene	1,150	20.0	1,000	0	115	70	130				
2-Chloronaphthalene	1,150	20.0	1,000	0	115	70	130				
Acenaphthene	1,080	20.0	1,000	0	108	70	130				
Dimethyl phthalate	1,160	50.0	1,000	0	116	70	130				
Acenaphthylene	1,150	20.0	1,000	0	115	70	130				
Dibenzofuran	1,150	40.0	1,000	0	115	70	130				
Fluorene	1,140	20.0	1,000	0	114	70	130				
Diethyl phthalate	1,140	20.0	1,000	0	114	70	130				
Pentachlorophenol	1,080	80.0	1,000	0	108	70	130				
Phenanthrene	1,130	40.0	1,000	0	113	70	130				
Anthracene	1,110	40.0	1,000	0	111	70	130				
Carbazole	1,150	20.0	1,000	0	115	70	130				
Di-n-butyl phthalate	1,150	40.0	1,000	0	115	70	130				
Fluoranthene	1,150	40.0	1,000	0	115	70	130				
Pyrene	1,160	40.0	1,000	0	116	70	130				
Butylbenzylphthalate	1,160	20.0	1,000	0	116	70	130				
Benz(a)anthracene	1,130	20.0	1,000	0	113	70	130				
Chrysene	1,160	40.0	1,000	0	116	70	130				
Bis(2-ethylhexyl) phthalate	1,150	20.0	1,000	0	115	70	130				
Di-n-octyl phthalate	1,150	20.0	1,000	0	115	70	130				
Benzo(b)fluoranthene	1,130	20.0	1,000	0	113	70	130				
Benzo(k)fluoranthene	1,150	20.0	1,000	0	115	70	130				

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICV** SampType: **ICV** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICV** Batch ID: **33027** Analysis Date: **7/15/2021** SeqNo: **1386898**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	1,190	20.0	1,000	0	119	70	130				
Indeno(1,2,3-cd)pyrene	1,140	40.0	1,000	0	114	70	130				
Dibenz(a,h)anthracene	1,160	40.0	1,000	0	116	70	130				
Benzo(g,h,i)perylene	1,160	20.0	1,000	0	116	70	130				
Surr: 2,4,6-Tribromophenol	1,050		1,000		105	67.8	127				
Surr: 2-Fluorobiphenyl	532		500.0		106	60.9	160				
Surr: Terphenyl-d14 (surr)	533		500.0		107	62.2	159				

Sample ID: **CCV-33027** SampType: **CCV** Units: **µg/L** Prep Date: **7/22/2021** RunNo: **68751**
Client ID: **CCV** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390189**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	879	20.0	1,000	0	87.9	80	120				
2-Methylnaphthalene	884	20.0	1,000	0	88.4	80	120				
1-Methylnaphthalene	883	20.0	1,000	0	88.3	80	120				
Acenaphthylene	894	20.0	1,000	0	89.4	80	120				
Acenaphthene	855	20.0	1,000	0	85.5	80	120				
Fluorene	858	20.0	1,000	0	85.8	80	120				
Phenanthrene	831	40.0	1,000	0	83.1	80	120				
Anthracene	817	40.0	1,000	0	81.7	80	120				
Fluoranthene	855	40.0	1,000	0	85.5	80	120				
Pyrene	857	40.0	1,000	0	85.7	80	120				
Benz(a)anthracene	860	20.0	1,000	0	86.0	80	120				
Chrysene	855	40.0	1,000	0	85.5	80	120				
Benzo(b)fluoranthene	905	20.0	1,000	0	90.5	80	120				
Benzo(k)fluoranthene	887	20.0	1,000	0	88.7	80	120				
Benzo(a)pyrene	817	20.0	1,000	0	81.7	80	120				
Indeno(1,2,3-cd)pyrene	835	40.0	1,000	0	83.5	80	120				
Dibenz(a,h)anthracene	842	40.0	1,000	0	84.2	80	120				
Benzo(g,h,i)perylene	821	20.0	1,000	0	82.1	80	120				

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-33027** SampType: **CCV** Units: **µg/L** Prep Date: **7/22/2021** RunNo: **68751**
Client ID: **CCV** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390189**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	447		500.0		89.4	69.5	150				
Surr: Terphenyl-d14 (surr)	428		500.0		85.5	71.6	145				

Sample ID: **MB-33027** SampType: **MBLK** Units: **µg/Kg** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **MBLKS** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390190**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthylene	ND	20.0									
Acenaphthene	ND	20.0									
Fluorene	ND	20.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2-Fluorobiphenyl	898		1,000		89.8	27.9	129				
Surr: Terphenyl-d14 (surr)	944		1,000		94.4	39.1	145				

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-33027** SampType: **LCS** Units: **µg/Kg** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **LCSS** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390191**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,030	20.0	2,000	0	102	65.8	102				
2-Methylnaphthalene	2,110	20.0	2,000	0	106	65.5	105				S
1-Methylnaphthalene	2,020	20.0	2,000	0	101	66.6	106				
Acenaphthylene	2,050	20.0	2,000	0	103	60.6	107				
Acenaphthene	1,890	20.0	2,000	0	94.3	64.3	102				
Fluorene	2,000	20.0	2,000	0	100	67.8	106				
Phenanthrene	1,980	40.0	2,000	0	98.8	65.1	108				
Anthracene	1,980	40.0	2,000	0	98.8	65.7	107				
Fluoranthene	2,060	40.0	2,000	0	103	66.4	111				
Pyrene	2,070	40.0	2,000	0	103	62.6	110				
Benz(a)anthracene	2,020	20.0	2,000	0	101	68.1	109				
Chrysene	2,020	40.0	2,000	0	101	61.5	109				
Benzo(b)fluoranthene	2,000	20.0	2,000	0	100	62.9	116				
Benzo(k)fluoranthene	2,080	20.0	2,000	0	104	62.2	112				
Benzo(a)pyrene	2,210	20.0	2,000	0	110	69.2	123				
Indeno(1,2,3-cd)pyrene	2,000	40.0	2,000	0	100	68.9	109				
Dibenz(a,h)anthracene	2,040	40.0	2,000	0	102	68.6	113				
Benzo(g,h,i)perylene	1,980	20.0	2,000	0	99.1	60.9	105				
Surr: 2-Fluorobiphenyl	927		1,000		92.7	27.9	129				
Surr: Terphenyl-d14 (surr)	960		1,000		96.0	39.1	145				

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID: **LCSD-33027** SampType: **LCSD** Units: **µg/Kg** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **LCSS02** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390192**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,810	20.0	2,000	0	90.7	65.8	102	2,035	11.4	30	
2-Methylnaphthalene	1,850	20.0	2,000	0	92.4	65.5	105	2,111	13.4	30	
1-Methylnaphthalene	1,810	20.0	2,000	0	90.5	66.6	106	2,025	11.1	30	
Acenaphthylene	1,820	20.0	2,000	0	91.0	60.6	107	2,053	12.1	30	

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCSD-33027** SampType: **LCSD** Units: **µg/Kg** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **LCSS02** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390192**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	1,690	20.0	2,000	0	84.7	64.3	102	1,886	10.7	30	
Fluorene	1,790	20.0	2,000	0	89.7	67.8	106	2,003	11.0	30	
Phenanthrene	1,790	40.0	2,000	0	89.4	65.1	108	1,975	9.93	30	
Anthracene	1,770	40.0	2,000	0	88.4	65.7	107	1,976	11.1	30	
Fluoranthene	1,820	40.0	2,000	0	91.2	66.4	111	2,062	12.2	30	
Pyrene	1,830	40.0	2,000	0	91.6	62.6	110	2,066	12.0	30	
Benz(a)anthracene	1,800	20.0	2,000	0	89.8	68.1	109	2,018	11.7	30	
Chrysene	1,830	40.0	2,000	0	91.7	61.5	109	2,024	9.83	30	
Benzo(b)fluoranthene	1,930	20.0	2,000	0	96.6	62.9	116	2,005	3.68	30	
Benzo(k)fluoranthene	1,660	20.0	2,000	0	83.0	62.2	112	2,081	22.5	30	
Benzo(a)pyrene	1,960	20.0	2,000	0	97.8	69.2	123	2,206	12.0	30	
Indeno(1,2,3-cd)pyrene	1,770	40.0	2,000	0	88.4	68.9	109	2,004	12.5	30	
Dibenz(a,h)anthracene	1,800	40.0	2,000	0	90.1	68.6	113	2,036	12.2	30	
Benzo(g,h,i)perylene	1,750	20.0	2,000	0	87.6	60.9	105	1,983	12.4	30	
Surr: 2-Fluorobiphenyl	865		1,000		86.5	27.9	129		0		
Surr: Terphenyl-d14 (surr)	909		1,000		90.9	39.1	145		0		

Sample ID: **2107217-003ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **SO-MW3-1-3-0712** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390203**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	22.5						0		30	
2-Methylnaphthalene	ND	22.5						0		30	
1-Methylnaphthalene	ND	22.5						0		30	
Acenaphthylene	ND	22.5						0		30	
Acenaphthene	ND	22.5						0		30	
Fluorene	ND	22.5						0		30	
Phenanthrene	ND	45.0						0		30	
Anthracene	ND	45.0						0		30	
Fluoranthene	ND	45.0						0		30	

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2107217-003ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **SO-MW3-1-3-0712** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390203**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	ND	45.0						0		30	
Benz(a)anthracene	23.0	22.5						16.42	33.3	30	
Chrysene	ND	45.0						0		30	
Benzo(b)fluoranthene	ND	22.5						0		30	
Benzo(k)fluoranthene	ND	22.5						0		30	
Benzo(a)pyrene	24.0	22.5						21.10	12.7	30	
Indeno(1,2,3-cd)pyrene	ND	45.0						0		30	
Dibenz(a,h)anthracene	ND	45.0						0		30	
Benzo(g,h,i)perylene	41.2	22.5						39.79	3.58	30	
Surr: 2-Fluorobiphenyl	883		1,126		78.5	27.9	129		0		
Surr: Terphenyl-d14 (surr)	919		1,126		81.7	39.1	145		0		

Sample ID: **CCV-33027** SampType: **CCV** Units: **µg/L** Prep Date: **7/22/2021** RunNo: **68751**
Client ID: **CCV** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390634**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	873	20.0	1,000	0	87.3	80	120				
2-Methylnaphthalene	905	20.0	1,000	0	90.5	80	120				
1-Methylnaphthalene	882	20.0	1,000	0	88.2	80	120				
Acenaphthylene	899	20.0	1,000	0	89.9	80	120				
Acenaphthene	850	20.0	1,000	0	85.0	80	120				
Fluorene	863	20.0	1,000	0	86.3	80	120				
Phenanthrene	847	40.0	1,000	0	84.7	80	120				
Anthracene	825	40.0	1,000	0	82.5	80	120				
Fluoranthene	860	40.0	1,000	0	86.0	80	120				
Pyrene	865	40.0	1,000	0	86.5	80	120				
Benz(a)anthracene	867	20.0	1,000	0	86.7	80	120				
Chrysene	859	40.0	1,000	0	85.9	80	120				
Benzo(b)fluoranthene	849	20.0	1,000	0	84.9	80	120				
Benzo(k)fluoranthene	960	20.0	1,000	0	96.0	80	120				

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-33027** SampType: **CCV** Units: **µg/L** Prep Date: **7/22/2021** RunNo: **68751**
Client ID: **CCV** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390634**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	828	20.0	1,000	0	82.8	80	120				
Indeno(1,2,3-cd)pyrene	825	40.0	1,000	0	82.5	80	120				
Dibenz(a,h)anthracene	830	40.0	1,000	0	83.0	80	120				
Benzo(g,h,i)perylene	801	20.0	1,000	0	80.1	80	120				
Surr: 2-Fluorobiphenyl	448		500.0		89.5	69.5	150				
Surr: Terphenyl-d14 (surr)	431		500.0		86.1	71.6	145				

Sample ID: **2107248-013AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **7/16/2021** RunNo: **68751**
Client ID: **BATCH** Batch ID: **33027** Analysis Date: **7/22/2021** SeqNo: **1390644**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,580	25.0	2,503	146.4	57.3	35.2	107				
2-Methylnaphthalene	1,640	25.0	2,503	233.7	56.3	43.9	106				
1-Methylnaphthalene	1,570	25.0	2,503	181.1	55.7	46.4	105				
Acenaphthylene	1,500	25.0	2,503	0	59.8	42.7	104				
Acenaphthene	1,430	25.0	2,503	15.28	56.4	43.7	102				
Fluorene	1,550	25.0	2,503	41.04	60.2	46.8	106				
Phenanthrene	2,070	50.1	2,503	216.9	73.9	43.8	109				
Anthracene	1,550	50.1	2,503	36.24	60.6	45.2	107				
Fluoranthene	2,130	50.1	2,503	239.0	75.5	44.9	111				
Pyrene	2,210	50.1	2,503	277.6	77.4	41.8	109				
Benz(a)anthracene	1,770	25.0	2,503	169.4	63.8	45	110				
Chrysene	1,840	50.1	2,503	243.9	63.7	42.4	106				
Benzo(b)fluoranthene	1,620	25.0	2,503	200.7	56.7	43.7	108				
Benzo(k)fluoranthene	1,400	25.0	2,503	154.5	49.6	39.5	113				
Benzo(a)pyrene	1,540	25.0	2,503	170.9	54.5	44.1	122				
Indeno(1,2,3-cd)pyrene	1,170	50.1	2,503	107.4	42.3	40.2	109				
Dibenz(a,h)anthracene	1,150	50.1	2,503	51.72	44.0	31.4	126				
Benzo(g,h,i)perylene	1,070	25.0	2,503	117.3	38.0	28.8	108				
Surr: 2-Fluorobiphenyl	711		1,251		56.8	27.9	129				

Work Order: 2107217
CLIENT: Libby Environmental
Project: Jacks Auto

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2107248-013AMS**	SampType: **MS**	Units: **µg/Kg-dry**	Prep Date: **7/16/2021**	RunNo: **68751**
Client ID: **BATCH**	Batch ID: **33027**		Analysis Date: **7/22/2021**	SeqNo: **1390644**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Terphenyl-d14 (surr)	763		1,251		60.9	39.1	145				

Sample ID: **2107248-013AMSD**	SampType: **MSD**	Units: **µg/Kg-dry**	Prep Date: **7/16/2021**	RunNo: **68751**
Client ID: **BATCH**	Batch ID: **33027**		Analysis Date: **7/22/2021**	SeqNo: **1390645**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,470	25.3	2,532	146.4	52.2	35.2	107	1,582	7.40	30	
2-Methylnaphthalene	1,530	25.3	2,532	233.7	51.4	43.9	106	1,644	6.89	30	
1-Methylnaphthalene	1,470	25.3	2,532	181.1	51.1	46.4	105	1,574	6.59	30	
Acenaphthylene	1,390	25.3	2,532	0	55.1	42.7	104	1,496	7.02	30	
Acenaphthene	1,310	25.3	2,532	15.28	51.2	43.7	102	1,427	8.53	30	
Fluorene	1,400	25.3	2,532	41.04	53.8	46.8	106	1,548	9.84	30	
Phenanthrene	1,530	50.6	2,532	216.9	51.8	43.8	109	2,066	29.9	30	
Anthracene	1,380	50.6	2,532	36.24	53.2	45.2	107	1,554	11.6	30	
Fluoranthene	1,580	50.6	2,532	239.0	53.1	44.9	111	2,129	29.4	30	
Pyrene	1,610	50.6	2,532	277.6	52.7	41.8	109	2,214	31.5	30	R
Benz(a)anthracene	1,450	25.3	2,532	169.4	50.5	45	110	1,765	19.8	30	
Chrysene	1,540	50.6	2,532	243.9	51.4	42.4	106	1,839	17.4	30	
Benzo(b)fluoranthene	1,200	25.3	2,532	200.7	39.7	43.7	108	1,621	29.4	30	S
Benzo(k)fluoranthene	1,290	25.3	2,532	154.5	44.9	39.5	113	1,397	7.87	30	
Benzo(a)pyrene	1,170	25.3	2,532	170.9	39.6	44.1	122	1,535	26.7	30	S
Indeno(1,2,3-cd)pyrene	890	50.6	2,532	107.4	30.9	40.2	109	1,165	26.8	30	S
Dibenz(a,h)anthracene	924	50.6	2,532	51.72	34.4	31.4	126	1,153	22.1	30	
Benzo(g,h,i)perylene	780	25.3	2,532	117.3	26.2	28.8	108	1,068	31.1	30	RS
Surr: 2-Fluorobiphenyl	672		1,266		53.1	27.9	129		0		
Surr: Terphenyl-d14 (surr)	703		1,266		55.5	39.1	145		0		

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.
R - High RPD indicates matrix interference.

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2107217**
Logged by:	**Gabrielle Coeuille**	Date Received:	**7/14/2021 1:30:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	UPS		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	6.0

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Client: Libby Environmental, Inc
Address: See Above
City: State: Zip:
Phone: Fax:
Client Project # LZ10713-2

Date: 7-13-21 Page: 1 of 1
Project Manager: Kodey Eley
Project Name: Jacks Auto
Location: City, State: Olympia, WA
Collector: JH / AR Date of Collection: 7/12 + 7/13
Email: Libbyenv@Gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	Field Notes
1 SO-MW2-1-3-0713	1-3	1100	SO	Jar										X			
2 SO-MW2-17-19-0713	17-19	1130												X			
3 SO-MW3-1-3-0712	1-3	1430												X			Run Dup on this sample
4 SO-MW3-1-3-0712-01	1-3	1430												X			using sample 4
5 SO-MW3-17-19-0712	17-19	1445												X			
6 SO-SB201-1-2-0713	1-2	0811												X			
7 SO-SB201-6-8-0713	6-8	0906												X			
8 SO-SB201-16-18-0713	16-18	0910												X			
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	7/13/21 1630	UPS	
UPS		Justine Manty	7/14 13:30

Sample Receipt

	Y	N	
Good Condition?			
Cooler Temp.			°C
Sample Temp.			°C
Total Number of Containers			

Remarks: LZ b EDD
Run LCS-Dup with this project
Standard TAT

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Date: 7-13-21 Page: 1 of 1

Client: Libby Environmental, Inc
Address: See Above
City: State: Zip:
Phone: Fax:
Client Project # LZ10713-2

Project Manager: Kodey Eley
Project Name: Jacks Auto
Location: City, State: Olympia, WA
Collector: JH / AR Date of Collection: 7/12 + 7/13
Email: Libbyenv@Gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	Field Notes
1 SO-MW2-1-3-0713	1-3	1100	Eq	Jar										X			
2 SO-MW2-17-19-0713	17-19	1130												X			
3 SO-MW3-1-3-0712	1-3	1430												X			Run as dupe
4 ~~SO-MW3-1-3-0712-01~~	1-3	1430												X			Dup to this sample using sample 4
5 SO-MW3-17-19-0712	17-19	1445												X			
6 SO-SB201-1-2-0713	1-2	~~0811~~												X			
7 SO-SB201-6-8-0713	6-8	0906												X			
8 SO-SB201-16-18-0713	16-18	0910												X			
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by: [signature] Date / Time 7/13/21 1630 Received by: UPS Date / Time

Relinquished by: UPS Date / Time Received by: Justine Manty 7/14 13:30 Date / Time

Relinquished by: Date / Time Received by: Date / Time

Sample Receipt

	Y	N	
Good Condition?			
Cooler Temp.			°C
Sample Temp.			°C
Total Number of Containers			

Remarks: L2b EDD
Run LCS-Dup with this project
Standard TAT

TAT: 24HR 48HR 5-DAY

Update per SC 7/15/21 - gac

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - Originator

DATA SET for Review -- Deliverable Requirements

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Fremont Analytical Work Order No. 2107217

Libby Environmental

Project Name: Jacks Auto

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information
- Tune Information

Injection Log

Data Directory: C:\GC-14\Data\2021\071521\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 071501.D	PAH-SIM.M			
CO		2	1.000	15 Jul 2021 08:06 am
2) 071502.D	SEMI9.M			
TUNE		1	1.000	15 Jul 2021 08:27 am
3) 071503.D	SEMI9.M			
TUNE		1	1.000	15 Jul 2021 08:50 am
4) 071504.D	SEMI9.M			
TUNE		1	1.000	15 Jul 2021 09:12 am
5) 071505.D	PAH-SIM.M			
CO		2	1.000	15 Jul 2021 10:48 am
6) 071506.D	SEMI9.M			
TUNE		1	1.000	15 Jul 2021 11:09 am
7) 071507.D	PAH-SIM.M			
CO		2	1.000	15 Jul 2021 11:31 am
8) 071508.D	SEMI9.M			
TUNE		1	1.000	15 Jul 2021 11:53 am
9) 071509.D	SEMI9.M			
TUNE		1	1.000	15 Jul 2021 01:34 pm
10) 071510.D	PAH-SIM.M			
PAH 10		12	1.000	15 Jul 2021 02:02 pm
11) 071511.D	PAH-SIM.M			
PAH 20		13	1.000	15 Jul 2021 02:24 pm
12) 071512.D	PAH-SIM.M			
PAH 40		14	1.000	15 Jul 2021 02:46 pm
13) 071513.D	PAH-SIM.M			
PAH 100		15	1.000	15 Jul 2021 03:10 pm
14) 071514.D	PAH-SIM.M			
PAH 200		16	1.000	15 Jul 2021 03:32 pm
15) 071515.D	PAH-SIM.M			
PAH 500		17	1.000	15 Jul 2021 03:54 pm
16) 071516.D	PAH-SIM.M			
PAH 750		18	1.000	15 Jul 2021 04:15 pm
17) 071517.D	PAH-SIM.M			
PAH 1000		19	1.000	15 Jul 2021 04:37 pm
18) 071518.D	PAH-SIM.M			
PAH 2000		20	1.000	15 Jul 2021 04:59 pm
19) 071519.D	PAH-SIM.M			
PAH 5000		21	1.000	15 Jul 2021 05:21 pm
20) 071520.D	PAH-SIM.M			
PAH ICB		22	1.000	15 Jul 2021 05:43 pm
21) 071521.D	PAH-SIM.M			
PAH ICV		23	1.000	15 Jul 2021 06:04 pm

22) 071522.D PAH-LOWLEVEL.M
CO 22 1.000 15 Jul 2021 06:26 pm

23) 071523.D PAH-LOWLEVEL.M
PAH LL 2 11 1.000 15 Jul 2021 06:48 pm

24) 071524.D PAH-LOWLEVEL.M
PAH LL 10 12 1.000 15 Jul 2021 07:10 pm

25) 071525.D PAH-LOWLEVEL.M
PAH LL 20 13 1.000 15 Jul 2021 07:32 pm

26) 071526.D PAH-LOWLEVEL.M
PAH LL 40 14 1.000 15 Jul 2021 07:53 pm

27) 071527.D PAH-LOWLEVEL.M
PAH LL 100 15 1.000 15 Jul 2021 08:15 pm

28) 071528.D PAH-LOWLEVEL.M
PAH LL 200 16 1.000 15 Jul 2021 08:37 pm

29) 071529.D PAH-LOWLEVEL.M
PAH LL 500 17 1.000 15 Jul 2021 08:58 pm

30) 071530.D PAH-LOWLEVEL.M
PAH LL 750 18 1.000 15 Jul 2021 09:20 pm

31) 071531.D PAH-LOWLEVEL.M
PAH LL 1000 19 1.000 15 Jul 2021 09:41 pm

32) 071532.D PAH-LOWLEVEL.M
PAH LL 2000 20 1.000 15 Jul 2021 10:03 pm

33) 071533.D PAH-LOWLEVEL.M
PAH LL 5000 21 1.000 15 Jul 2021 10:25 pm

34) 071534.D PAH-LOWLEVEL.M
PAH LL ICB 22 1.000 15 Jul 2021 10:46 pm

35) 071535.D PAH-LOWLEVEL.M
PAH LL ICV 23 1.000 15 Jul 2021 11:08 pm

36) 071536.D PAH-LOWLEVEL.M
CCV-LL-32998 2 1.000 15 Jul 2021 11:30 pm

37) 071537.D PAH-LOWLEVEL.M
MB-32998 31 1.000 15 Jul 2021 11:51 pm

38) 071538.D PAH-LOWLEVEL.M
LCS-32998 32 1.000 16 Jul 2021 12:13 am

39) 071539.D PAH-LOWLEVEL.M
LCSD-32998 33 1.000 16 Jul 2021 12:35 am

40) 071540.D PAH-LOWLEVEL.M
2107110-001C 34 1.000 16 Jul 2021 12:56 am

41) 071541.D PAH-LOWLEVEL.M
QCS-LL-32998 2 1.000 16 Jul 2021 01:18 am

42) 071542.D SEMI9.M
TUNE 1 1.000 16 Jul 2021 01:39 am

43) 071543.D PAH-SIM.M
CCV-33012 2 1.000 16 Jul 2021 02:02 am

44) 071544.D PAH-SIM.M
MB-33012 41 1.000 16 Jul 2021 02:24 am

45) 071545.D PAH-SIM.M

LCS-33012		42	1.000	16 Jul 2021	02:45 am
46) 071546.D	PAH-SIM.M				
2107170-001A		43	1.000	16 Jul 2021	03:07 am
47) 071547.D	PAH-SIM.M				
2107170-001AMS		44	1.000	16 Jul 2021	03:28 am
48) 071548.D	PAH-SIM.M				
2107170-001AMSD		45	1.000	16 Jul 2021	03:50 am
49) 071549.D	PAH-SIM.M				
2107170-006A		46	1.000	16 Jul 2021	04:11 am
50) 071550.D	PAH-SIM.M				
2107170-011A		47	1.000	16 Jul 2021	04:33 am
51) 071551.D	PAH-SIM.M				
2107170-015A		48	1.000	16 Jul 2021	04:54 am
52) 071552.D	PAH-SIM.M				
2107170-019A		49	1.000	16 Jul 2021	05:16 am
53) 071553.D	PAH-SIM.M				
2107179-001A		50	1.000	16 Jul 2021	05:37 am
54) 071554.D	PAH-SIM.M				
2107179-002A		51	1.000	16 Jul 2021	05:59 am
55) 071555.D	PAH-SIM.M				
2107179-003A		52	1.000	16 Jul 2021	06:21 am
56) 071556.D	PAH-SIM.M				
2107181-001A		53	1.000	16 Jul 2021	06:42 am
57) 071557.D	PAH-SIM.M				
2107197-001A		54	1.000	16 Jul 2021	07:04 am
58) 071558.D	PAH-SIM.M				
2107197-006A		55	1.000	16 Jul 2021	07:25 am
59) 071559.D	PAH-SIM.M				
2107197-009A		56	1.000	16 Jul 2021	07:47 am
60) 071560.D	PAH-SIM.M				
2107197-013A		57	1.000	16 Jul 2021	08:08 am
61) 071561.D	PAH-SIM.M				
2107197-017A		58	1.000	16 Jul 2021	08:30 am
62) 071562.D	PAH-SIM.M				
2107197-022A		59	1.000	16 Jul 2021	08:52 am
63) 071563.D	PAH-SIM.M				
QCS-33012		2	1.000	16 Jul 2021	09:13 am

Injection Log

Data Directory: C:\GC-14\Data\2021\072221\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	072201.D	PAH-SIM.M			
CO			2	1.000	22 Jul 2021 07:59 am
2)	072202.D	SEMI9.M			
TUNE			1	1.000	22 Jul 2021 08:20 am
3)	072203.D	PAH-SIM.M			
CCV			2	1.000	22 Jul 2021 08:43 am
4)	072204.D	PAH-SIM.M			
MB-33062			11	1.000	22 Jul 2021 09:04 am
5)	072205.D	PAH-SIM.M			
LCS-33062			12	1.000	22 Jul 2021 09:26 am
6)	072206.D	PAH-SIM.M			
2107281-002A			24	1.000	22 Jul 2021 09:47 am
7)	072207.D	PAH-SIM.M			
MB-33027			31	1.000	22 Jul 2021 10:09 am
8)	072208.D	PAH-SIM.M			
LCS-33027			32	1.000	22 Jul 2021 10:31 am
9)	072209.D	PAH-SIM.M			
LCSD-33027			33	1.000	22 Jul 2021 10:52 am
10)	072210.D	PAH-SIM.M			
2107217-001A			40	1.000	22 Jul 2021 11:14 am
11)	072211.D	PAH-SIM.M			
2107219-004A			46	1.000	22 Jul 2021 11:35 am
12)	072212.D	PAH-SIM.M			
2107219-011A			47	1.000	22 Jul 2021 11:57 am
13)	072213.D	PAH-SIM.M			
2107217-002A			41	1.000	22 Jul 2021 12:19 pm
14)	072214.D	PAH-SIM.M			
2107217-004A			42	1.000	22 Jul 2021 12:40 pm
15)	072215.D	PAH-SIM.M			
2107217-005A			43	1.000	22 Jul 2021 01:02 pm
16)	072216.D	PAH-SIM.M			
2107217-006A			44	1.000	22 Jul 2021 01:24 pm
17)	072217.D	PAH-SIM.M			
2107217-007A			45	1.000	22 Jul 2021 01:45 pm
18)	072218.D	PAH-SIM.M			
2107217-003A			49	1.000	22 Jul 2021 02:07 pm
19)	072219.D	PAH-SIM.M			
2107217-003ADUP			50	1.000	22 Jul 2021 02:29 pm
20)	072220.D	PAH-SIM.M			
2107123-002A			13	1.000	22 Jul 2021 02:51 pm
21)	072221.D	PAH-SIM.M			
2107123-002AMS			14	1.000	22 Jul 2021 03:12 pm

22) 072222.D PAH-SIM.M
2107123-002AMSD 15 1.000 22 Jul 2021 03:34 pm

23) 072223.D PAH-SIM.M
QCS 2 1.000 22 Jul 2021 03:56 pm

24) 072224.D PAH-SIM.M
CCV 2 1.000 22 Jul 2021 04:18 pm

25) 072225.D PAH-SIM.M
2107123-003A 16 1.000 22 Jul 2021 04:40 pm

26) 072226.D PAH-SIM.M
2107123-005A 17 1.000 22 Jul 2021 05:01 pm

27) 072227.D PAH-SIM.M
2107123-006A 18 1.000 22 Jul 2021 05:23 pm

28) 072228.D PAH-SIM.M
2107123-008A 19 1.000 22 Jul 2021 05:45 pm

29) 072229.D PAH-SIM.M
2107123-017A 20 1.000 22 Jul 2021 06:06 pm

30) 072230.D PAH-SIM.M
2107280-001A 21 1.000 22 Jul 2021 06:28 pm

31) 072231.D PAH-SIM.M
2107280-004A 22 1.000 22 Jul 2021 06:50 pm

32) 072232.D PAH-SIM.M
2107280-008A 23 1.000 22 Jul 2021 07:12 pm

33) 072233.D PAH-SIM.M
2107096-002A 34 1.000 22 Jul 2021 07:33 pm

34) 072234.D PAH-SIM.M
2107096-008A 35 1.000 22 Jul 2021 07:55 pm

35) 072235.D PAH-SIM.M
2107216-001A 36 1.000 22 Jul 2021 08:16 pm

36) 072236.D PAH-SIM.M
2107216-001A 10X 54 1.000 22 Jul 2021 08:38 pm

37) 072237.D PAH-SIM.M
2107216-002A 37 1.000 22 Jul 2021 09:00 pm

38) 072238.D PAH-SIM.M
2107216-005A 38 1.000 22 Jul 2021 09:21 pm

39) 072239.D PAH-SIM.M
2107216-006A 39 1.000 22 Jul 2021 09:43 pm

40) 072240.D PAH-SIM.M
2107248-001A 48 1.000 22 Jul 2021 10:04 pm

41) 072241.D PAH-SIM.M
2107248-013A 51 1.000 22 Jul 2021 10:26 pm

42) 072242.D PAH-SIM.M
2107248-013AMS 52 1.000 22 Jul 2021 10:47 pm

43) 072243.D PAH-SIM.M
2107248-013AMSD 53 1.000 22 Jul 2021 11:09 pm

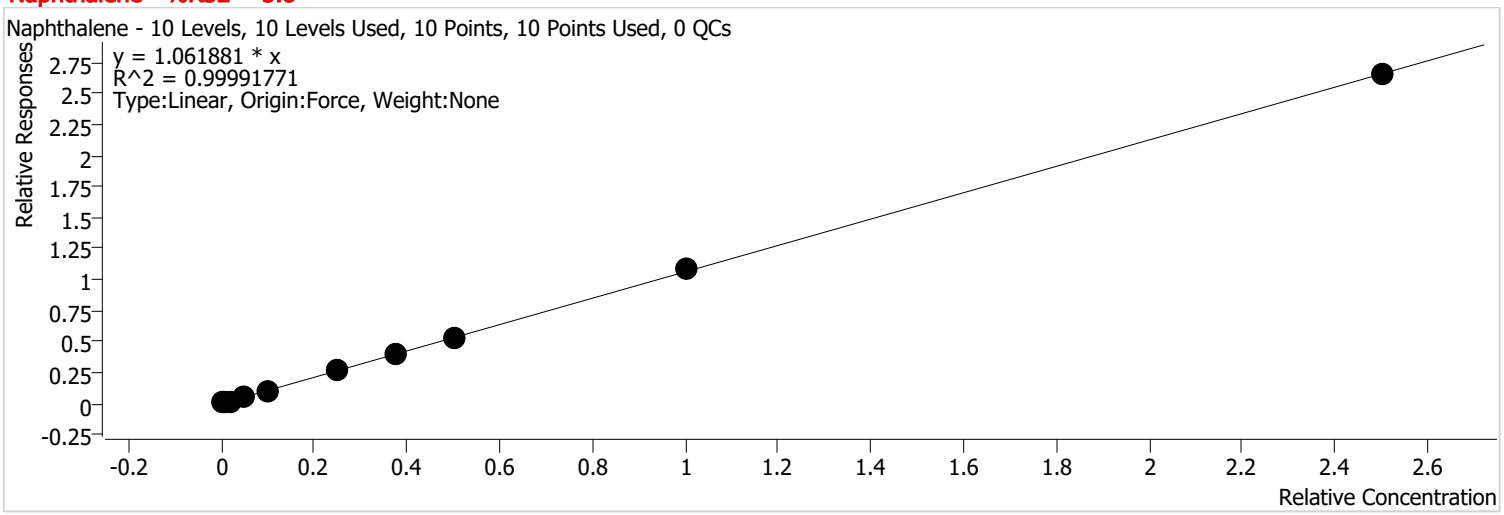
44) 072244.D PAH-SIM.M
QCS 2 1.000 22 Jul 2021 11:31 pm

Calibration

Calibration Report

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:29 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Naphthalene %RSE = 3.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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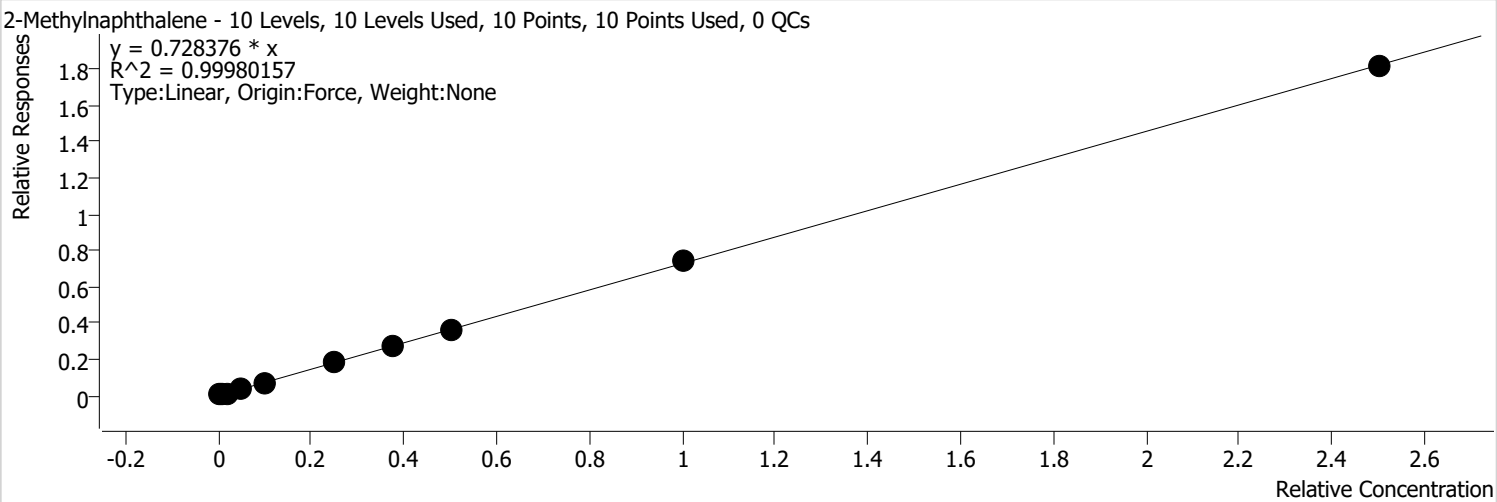
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1429	20.0000	1.1327	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2683	40.0000	1.0862	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6742	100.0000	1.0730	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	13446	200.0000	1.0512	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	33735	500.0000	1.0747	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	51219	750.0000	1.0745	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	66217	1000.0000	1.0430	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	135178	2000.0000	1.0802	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	326728	5000.0000	1.0593	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

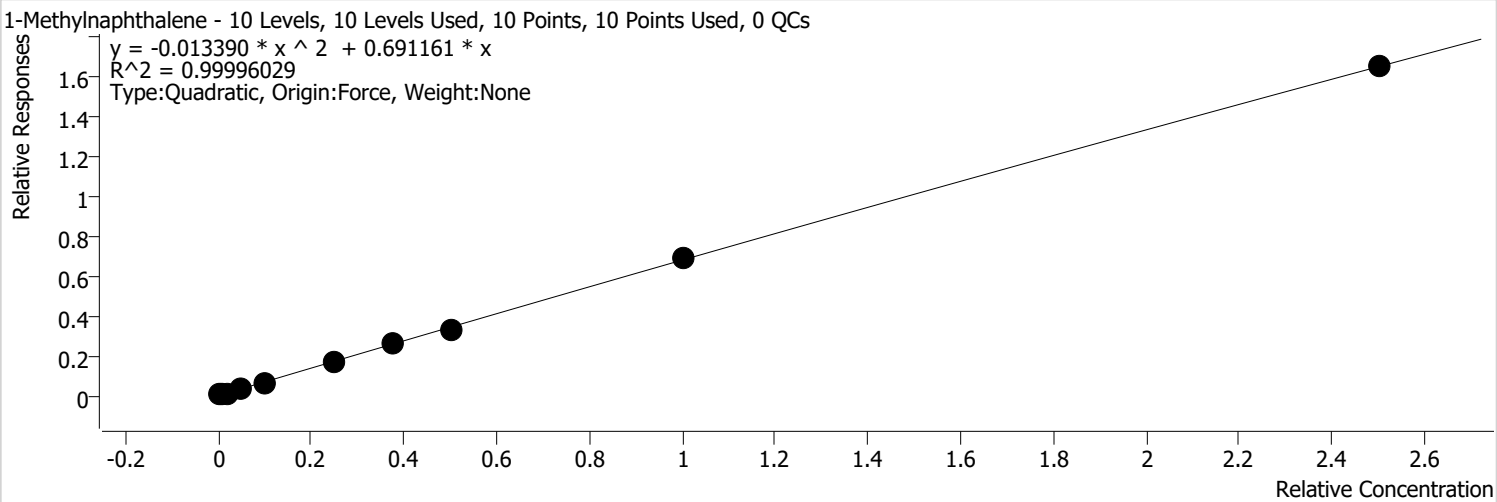
2-Methylnaphthalene %RSE = 2.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	451	10.0000	0.7135	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	900	20.0000	0.7133	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1753	40.0000	0.7097	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4428	100.0000	0.7047	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	8908	200.0000	0.6964	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	22889	500.0000	0.7292	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	35732	750.0000	0.7496	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	45898	1000.0000	0.7229	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	93687	2000.0000	0.7486	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	223594	5000.0000	0.7249	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

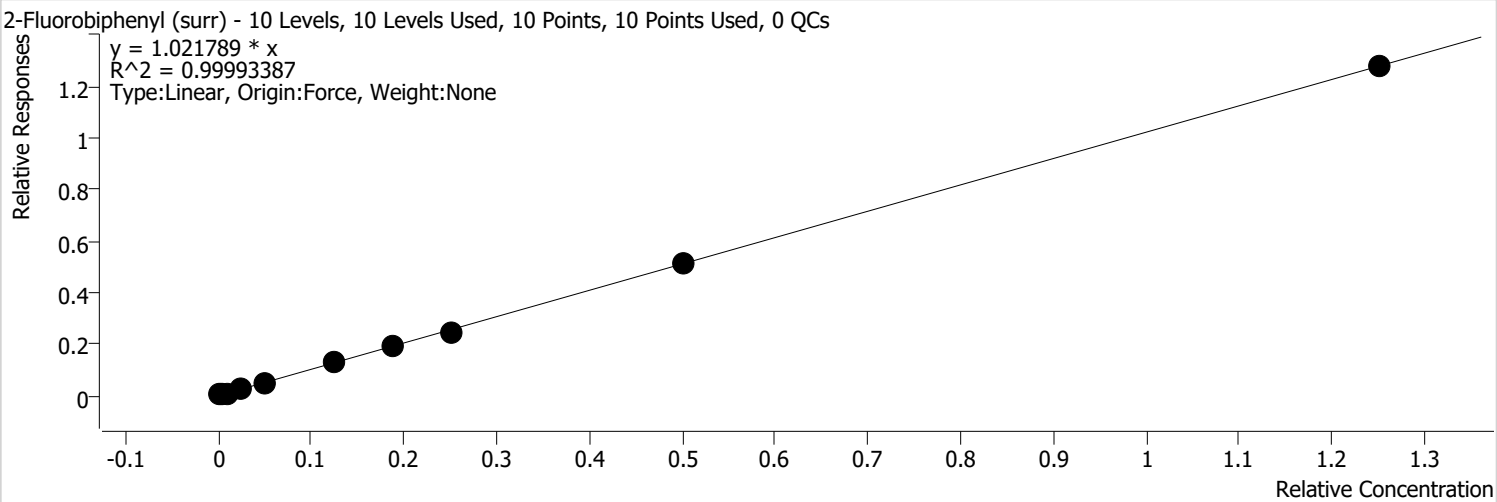
1-Methylnaphthalene %RSE = 1.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	449	10.0000	0.7102	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	868	20.0000	0.6879	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1689	40.0000	0.6837	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4264	100.0000	0.6786	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	8614	200.0000	0.6734	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	21745	500.0000	0.6927	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	32876	750.0000	0.6897	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	42425	1000.0000	0.6682	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	85389	2000.0000	0.6823	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	202798	5000.0000	0.6575	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

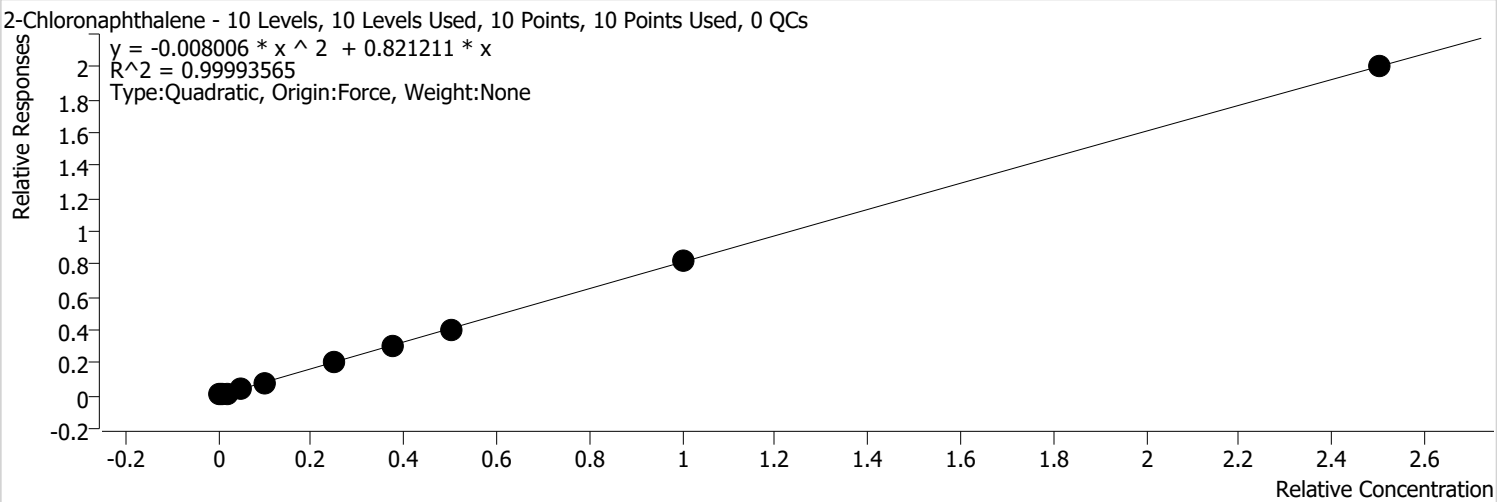
2-Fluorobiphenyl (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	333	5.0000	1.0537	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	640	10.0000	1.0142	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1244	20.0000	1.0076	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3186	50.0000	1.0140	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	6495	100.0000	1.0156	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	16188	250.0000	1.0314	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	24605	375.0000	1.0323	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	31695	500.0000	0.9984	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	64815	1000.0000	1.0359	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	157325	2500.0000	1.0202	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

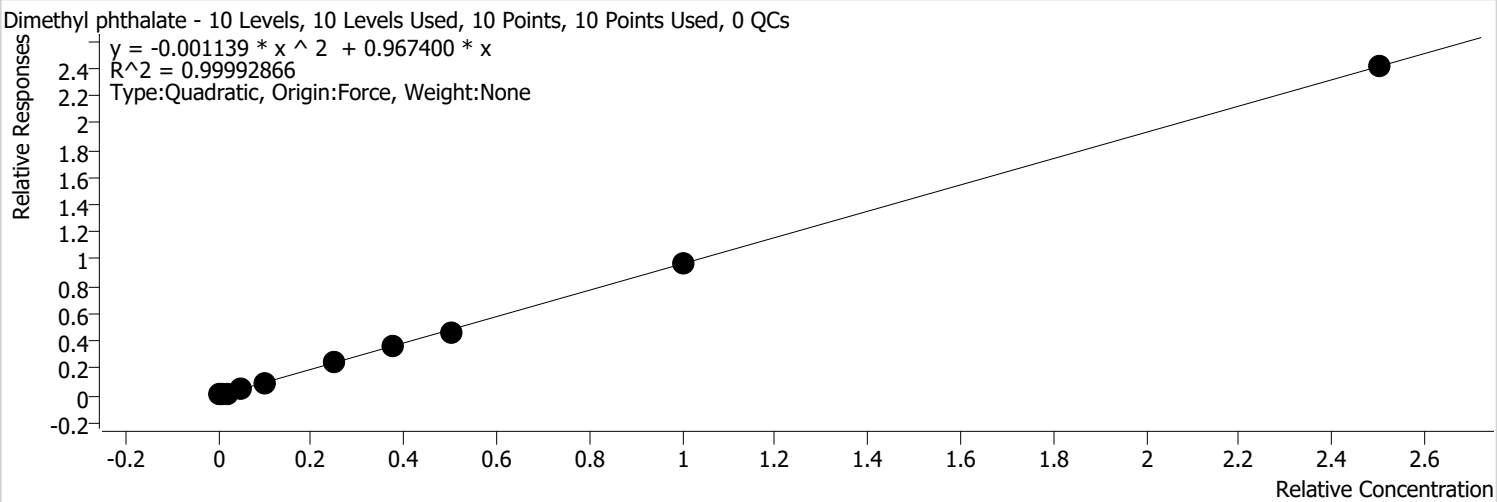
2-Chloronaphthalene %RSE = 2.0



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	515	10.0000	0.8158	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1037	20.0000	0.8219	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2004	40.0000	0.8113	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5000	100.0000	0.7957	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	10241	200.0000	0.8006	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	25730	500.0000	0.8197	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	38803	750.0000	0.8140	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	50409	1000.0000	0.7940	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	102888	2000.0000	0.8222	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	247002	5000.0000	0.8008	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

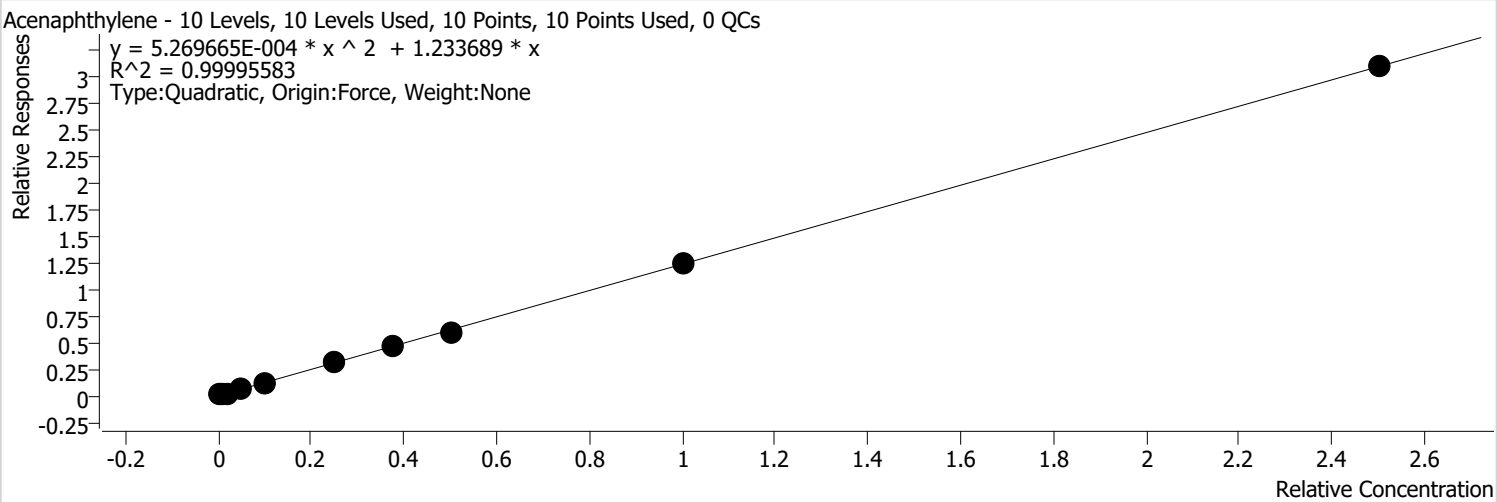
Dimethyl phthalate %RSE = 39.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1228	10.0000	1.9436	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1530	20.0000	1.2128	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2653	40.0000	1.0740	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6299	100.0000	1.0025	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	12230	200.0000	0.9562	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	30218	500.0000	0.9627	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	45613	750.0000	0.9569	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	59690	1000.0000	0.9402	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	122322	2000.0000	0.9775	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	297358	5000.0000	0.9641	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

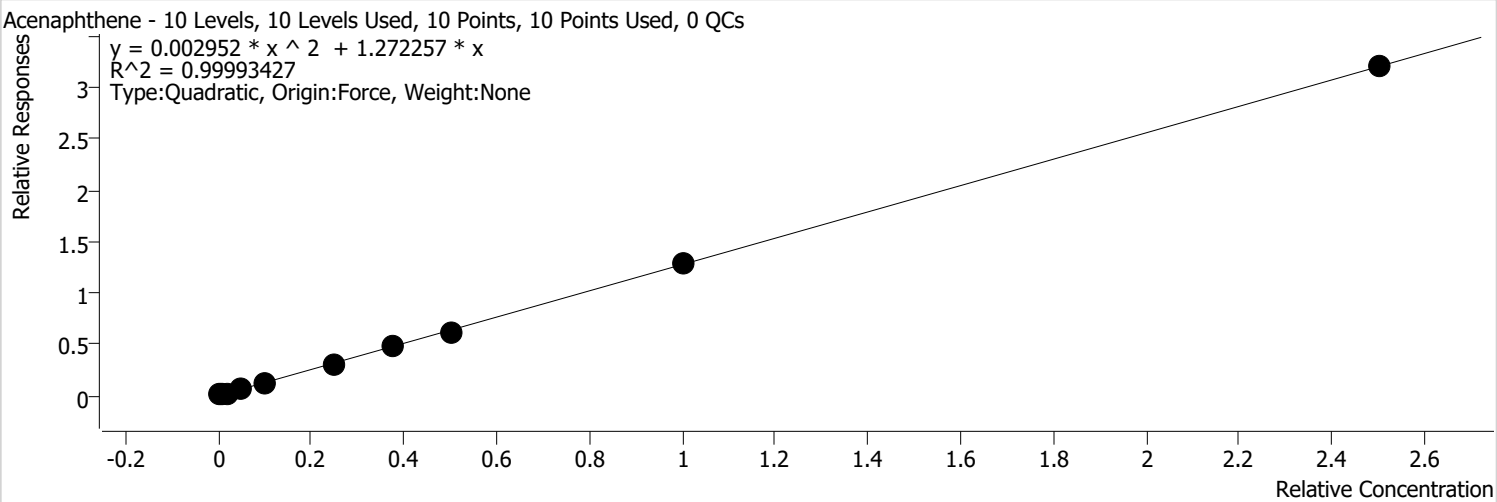
Acenaphthylene %RSE = 3.4



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	834	10.0000	1.3206	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1613	20.0000	1.2788	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3024	40.0000	1.2244	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7573	100.0000	1.2052	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	15430	200.0000	1.2063	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	38420	500.0000	1.2240	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	59022	750.0000	1.2382	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	76417	1000.0000	1.2036	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	155796	2000.0000	1.2449	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	380782	5000.0000	1.2346	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Acenaphthene %RSE = 5.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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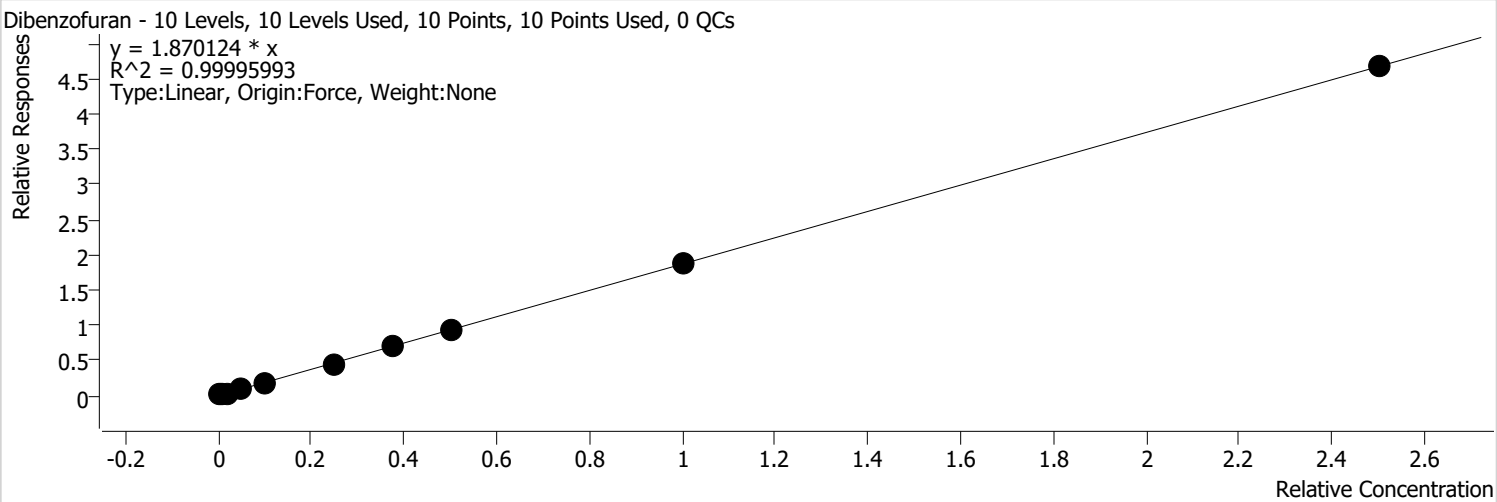
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1053	20.0000	1.3388	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2013	40.0000	1.3067	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5016	100.0000	1.2724	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	10055	200.0000	1.2558	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	24819	500.0000	1.2595	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	38101	750.0000	1.2876	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	48823	1000.0000	1.2340	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	100463	2000.0000	1.2871	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	242833	5000.0000	1.2792	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

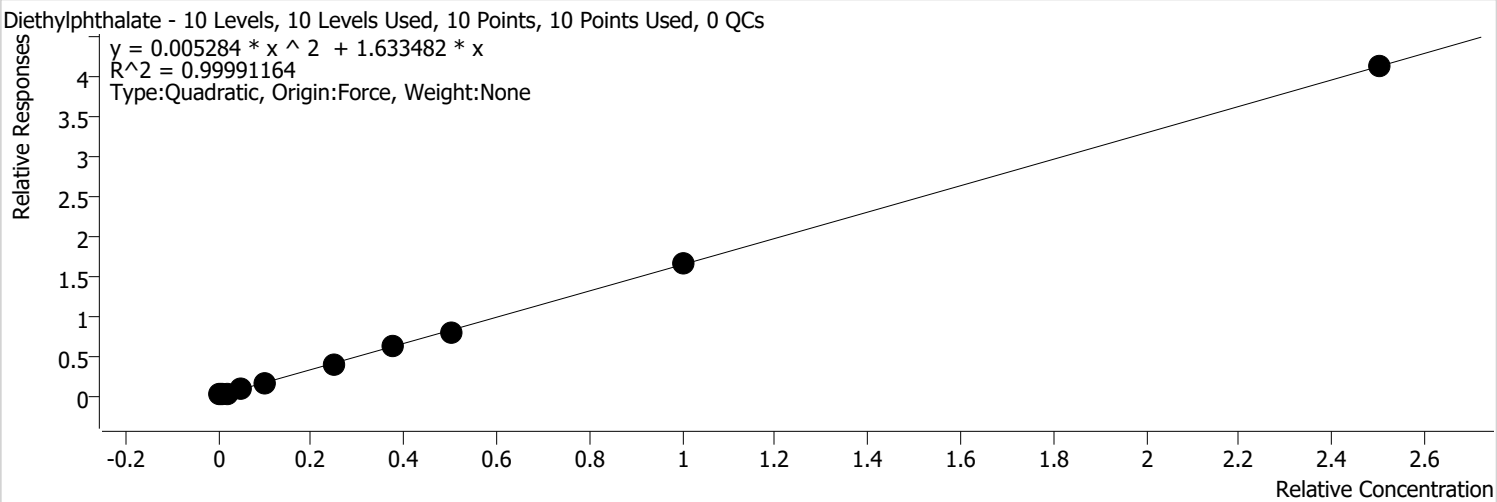
Dibenzofuran %RSE = 2.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	780	10.0000	1.9861	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1488	20.0000	1.8910	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2877	40.0000	1.8676	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7211	100.0000	1.8293	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	14588	200.0000	1.8219	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	36154	500.0000	1.8348	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	55337	750.0000	1.8701	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	72588	1000.0000	1.8347	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	147389	2000.0000	1.8883	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	354822	5000.0000	1.8691	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

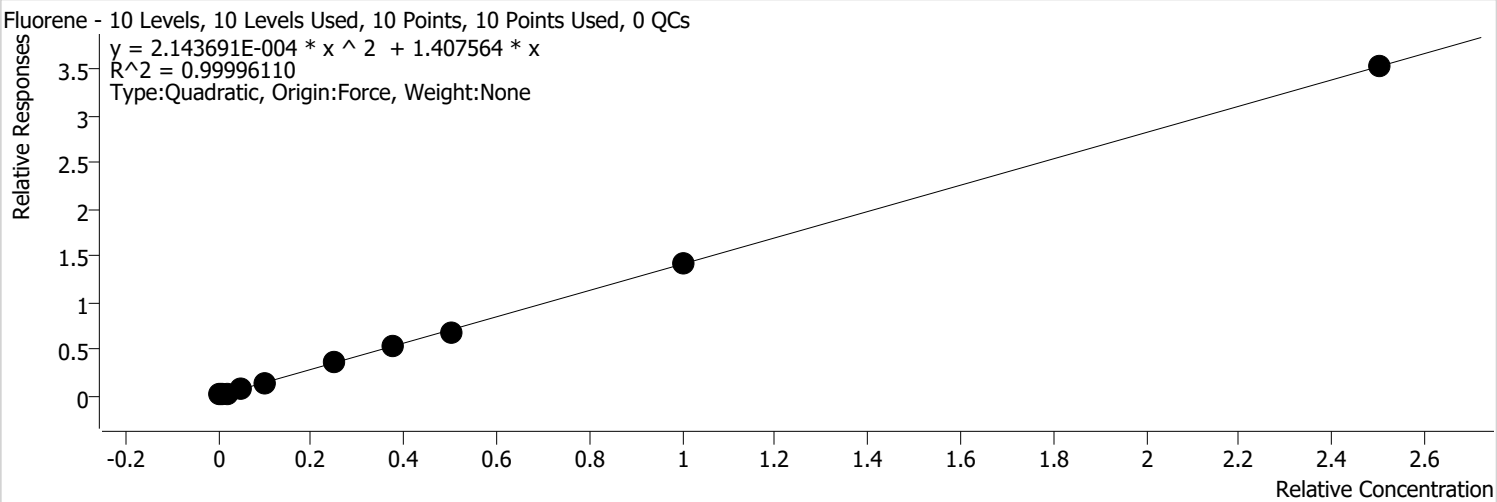
Diethylphthalate %RSE = 5.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	720	10.0000	1.8339	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1337	20.0000	1.6999	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2456	40.0000	1.5945	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6216	100.0000	1.5769	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	12547	200.0000	1.5670	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	31537	500.0000	1.6004	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	48176	750.0000	1.6281	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	62739	1000.0000	1.5857	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	129690	2000.0000	1.6616	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	312416	5000.0000	1.6457	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

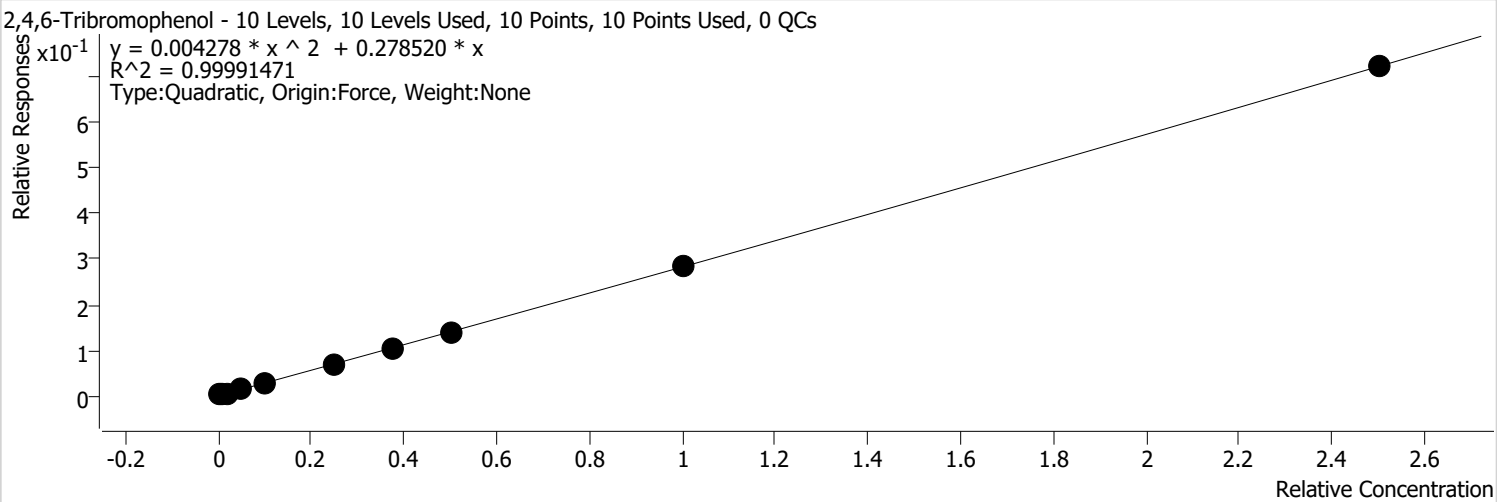
Fluorene %RSE = 3.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	594	10.0000	1.5131	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1123	20.0000	1.4274	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2162	40.0000	1.4032	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5415	100.0000	1.3737	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	11001	200.0000	1.3739	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	27589	500.0000	1.4001	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	41635	750.0000	1.4070	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	54439	1000.0000	1.3759	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	110824	2000.0000	1.4199	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	267215	5000.0000	1.4076	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

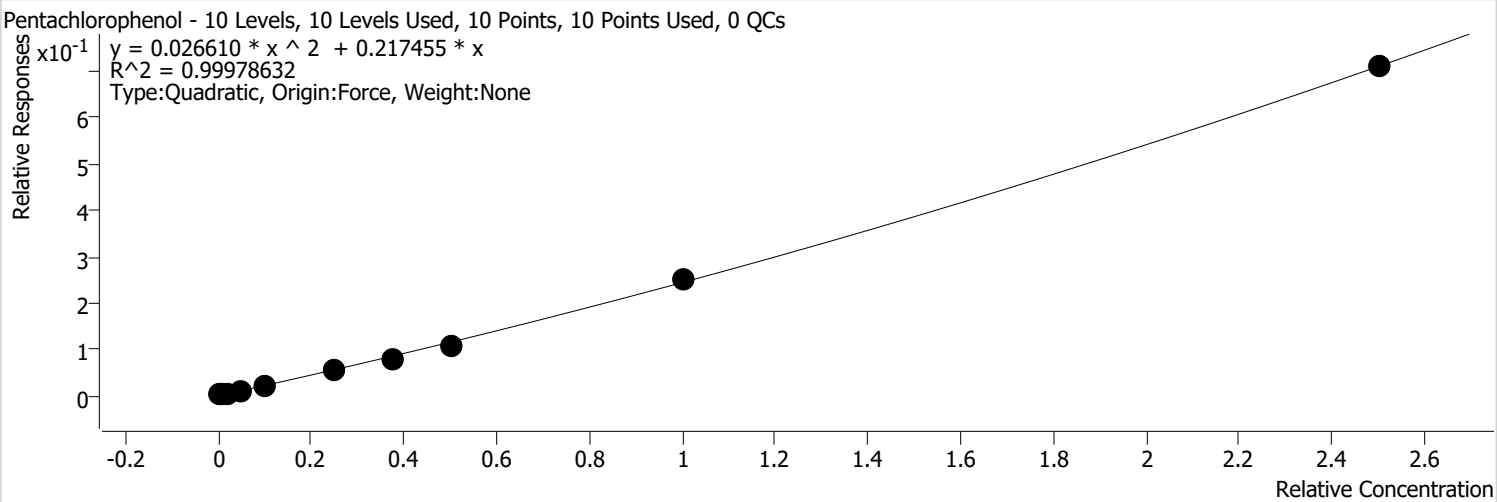
2,4,6-Tribromophenol %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	117	10.0000	0.2982	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	222	20.0000	0.2821	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	417	40.0000	0.2705	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	1043	100.0000	0.2645	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	2128	200.0000	0.2658	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	5354	500.0000	0.2717	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	8211	750.0000	0.2775	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	10802	1000.0000	0.2730	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	22392	2000.0000	0.2869	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	54870	5000.0000	0.2890	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

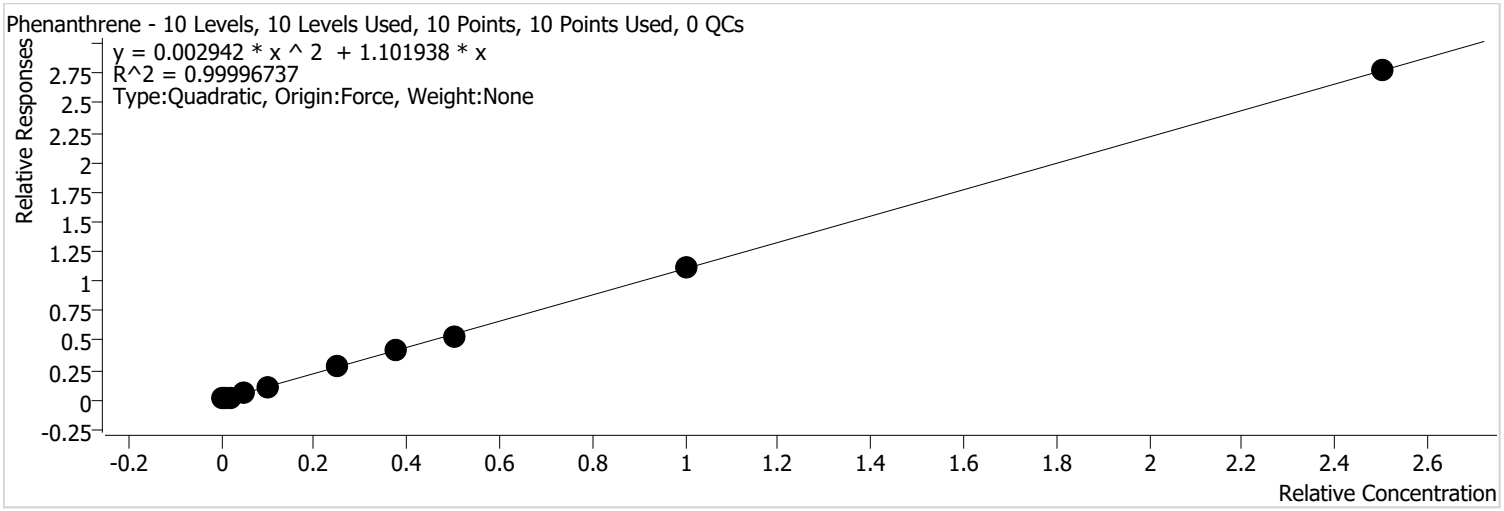
Pentachlorophenol %RSE = 10.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	93	10.0000	0.2365	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	152	20.0000	0.1932	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	272	40.0000	0.1767	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	753	100.0000	0.1911	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	1693	200.0000	0.2114	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	4515	500.0000	0.2291	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	6402	750.0000	0.2164	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	8665	1000.0000	0.2190	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	19514	2000.0000	0.2500	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	53862	5000.0000	0.2837	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

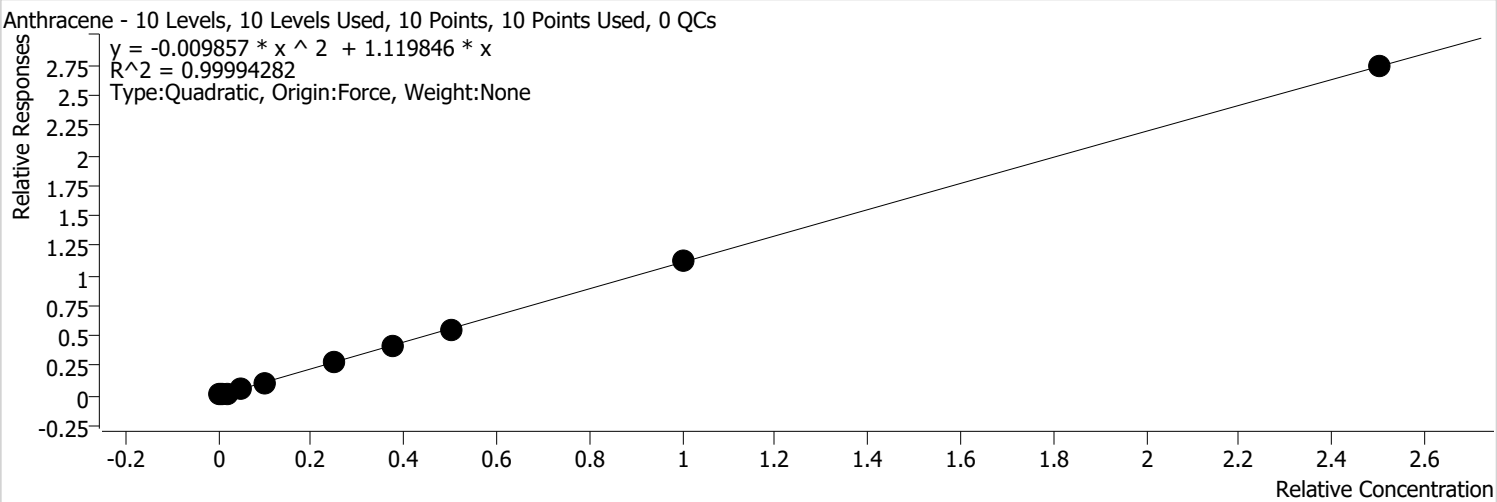
Phenanthrene %RSE = 9.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1023	10.0000	1.3338	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1907	20.0000	1.2501	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3485	40.0000	1.1648	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8699	100.0000	1.1544	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17436	200.0000	1.1082	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	42582	500.0000	1.1251	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	65343	750.0000	1.1222	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	84647	1000.0000	1.0815	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	172407	2000.0000	1.1059	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	418705	5000.0000	1.1093	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

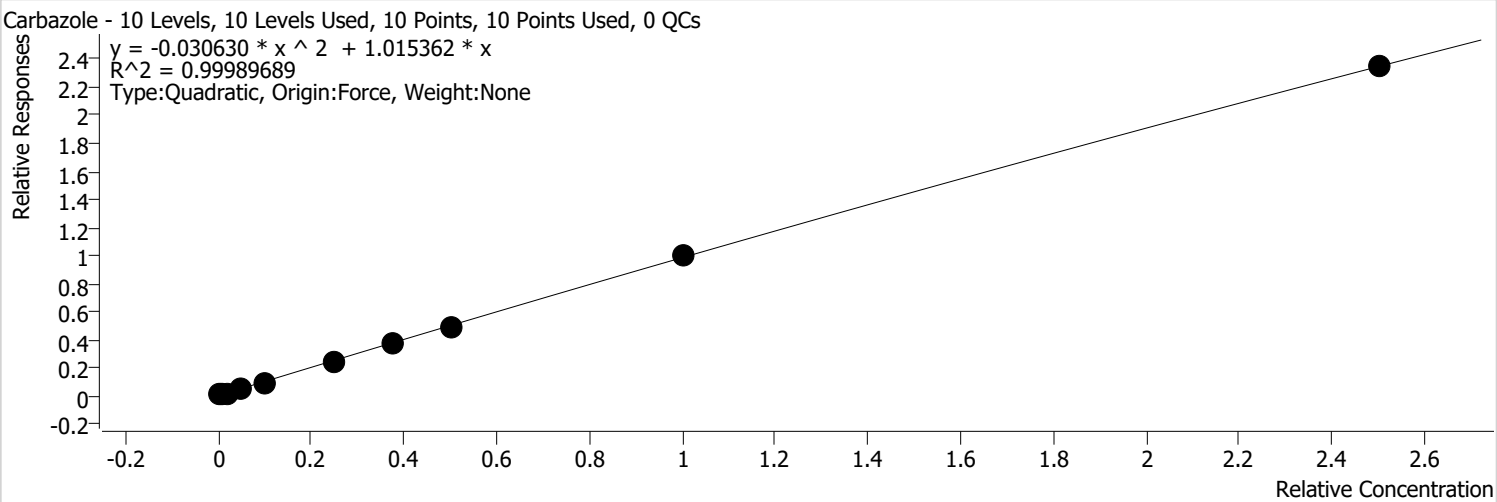
Anthracene %RSE = 3.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	904	10.0000	1.1786	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1776	20.0000	1.1641	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3267	40.0000	1.0919	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8285	100.0000	1.0994	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17075	200.0000	1.0852	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	42089	500.0000	1.1121	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	64473	750.0000	1.1072	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	85079	1000.0000	1.0870	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	174950	2000.0000	1.1222	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	413183	5000.0000	1.0947	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

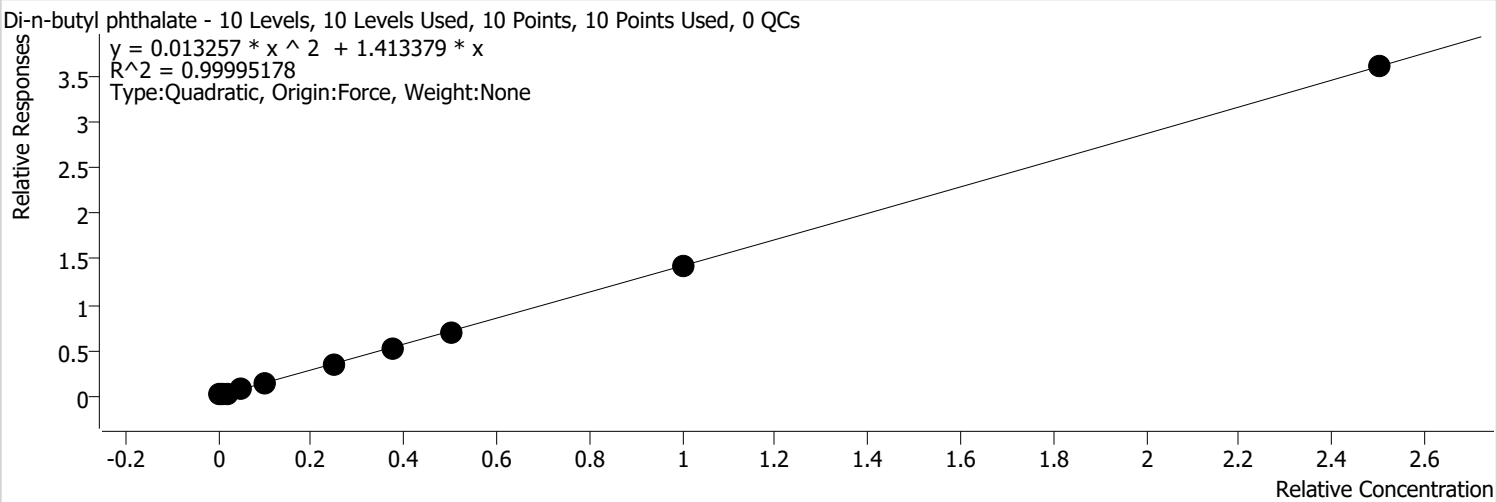
Carbazole %RSE = 3.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	778	10.0000	1.0149	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1563	20.0000	1.0247	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2881	40.0000	0.9630	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7387	100.0000	0.9804	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	15196	200.0000	0.9658	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	37646	500.0000	0.9946	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	57723	750.0000	0.9913	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	75941	1000.0000	0.9702	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	155790	2000.0000	0.9993	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	354101	5000.0000	0.9382	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

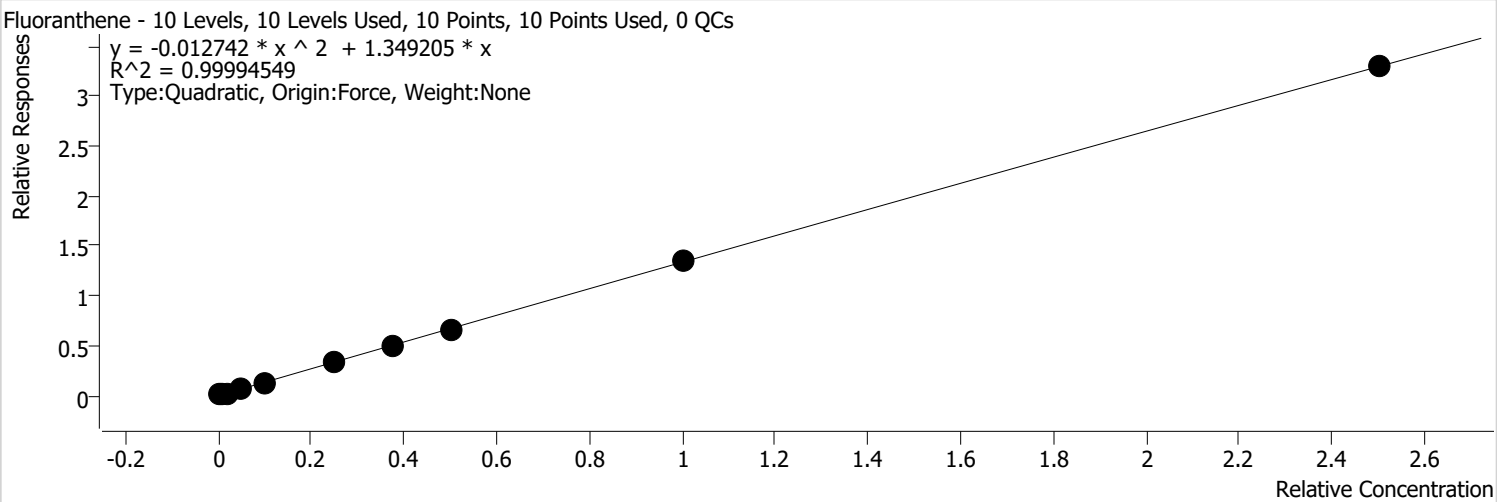
Di-n-butyl phthalate %RSE = 12.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1399	10.0000	1.8243	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2446	20.0000	1.6033	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4277	40.0000	1.4296	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10598	100.0000	1.4065	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	21721	200.0000	1.3805	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	53598	500.0000	1.4161	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	82496	750.0000	1.4168	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	108231	1000.0000	1.3828	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	224483	2000.0000	1.4399	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	545777	5000.0000	1.4460	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

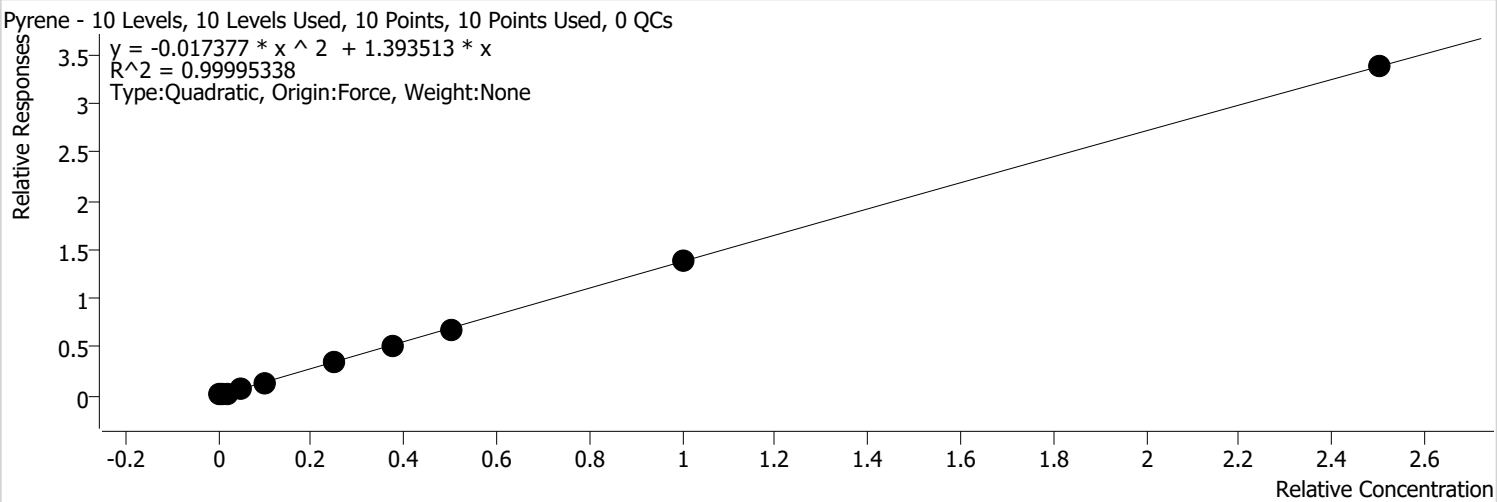
Fluoranthene %RSE = 3.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1128	10.0000	1.4709	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2116	20.0000	1.3869	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4003	40.0000	1.3378	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10114	100.0000	1.3422	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20596	200.0000	1.3090	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51033	500.0000	1.3484	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	77790	750.0000	1.3359	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	102399	1000.0000	1.3083	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	210478	2000.0000	1.3501	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	497013	5000.0000	1.3168	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

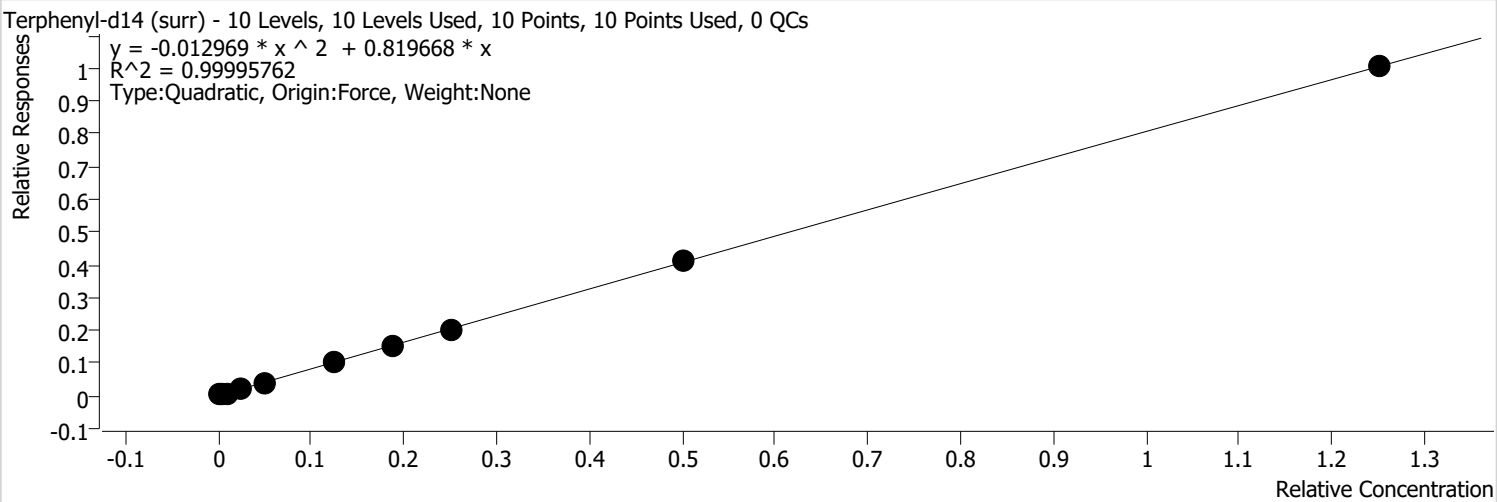
Pyrene %RSE = 7.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1248	10.0000	1.6273	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2291	20.0000	1.5015	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4243	40.0000	1.4182	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10651	100.0000	1.4135	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	21473	200.0000	1.3648	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	53029	500.0000	1.4011	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	80683	750.0000	1.3856	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	105624	1000.0000	1.3495	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	216290	2000.0000	1.3874	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	509411	5000.0000	1.3496	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

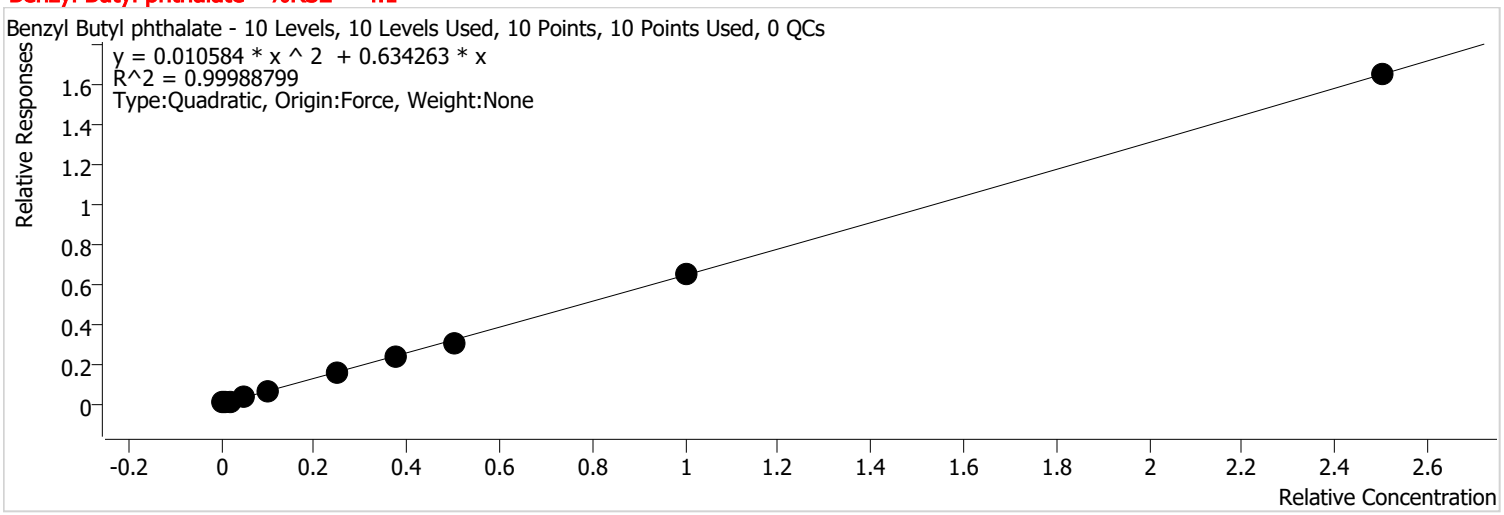
Terphenyl-d14 (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	356	5.0000	0.9282	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	661	10.0000	0.8661	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1282	20.0000	0.8571	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3119	50.0000	0.8277	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	6358	100.0000	0.8082	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	15496	250.0000	0.8189	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	23830	375.0000	0.8185	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	31159	500.0000	0.7962	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	63895	1000.0000	0.8197	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	151581	2500.0000	0.8032	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Benzyl Butyl phthalate %RSE = 4.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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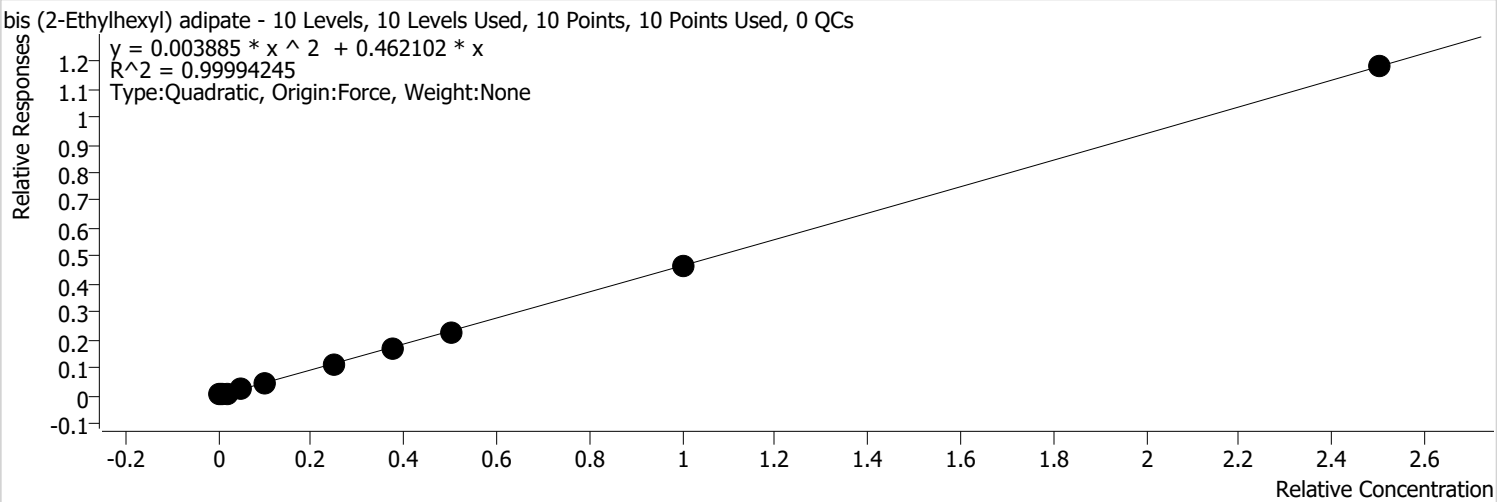
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	945	20.0000	0.6196	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1798	40.0000	0.6008	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4542	100.0000	0.6028	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	9526	200.0000	0.6055	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	23773	500.0000	0.6281	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	36576	750.0000	0.6281	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	48360	1000.0000	0.6179	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	102198	2000.0000	0.6555	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	249211	5000.0000	0.6603	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

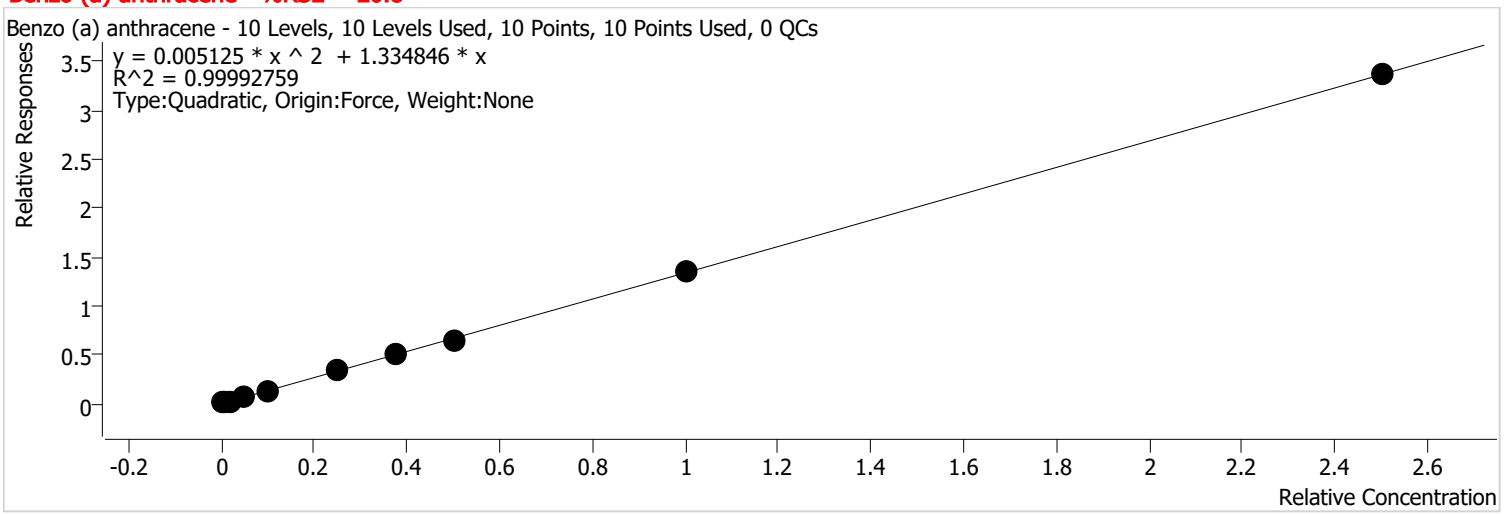
bis (2-Ethylhexyl) adipate %RSE = 64.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	936	10.0000	1.2197	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	992	20.0000	0.6505	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1622	40.0000	0.5421	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3696	100.0000	0.4905	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	7190	200.0000	0.4570	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	17603	500.0000	0.4651	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	26822	750.0000	0.4606	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	35469	1000.0000	0.4532	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	73251	2000.0000	0.4699	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	178026	5000.0000	0.4717	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

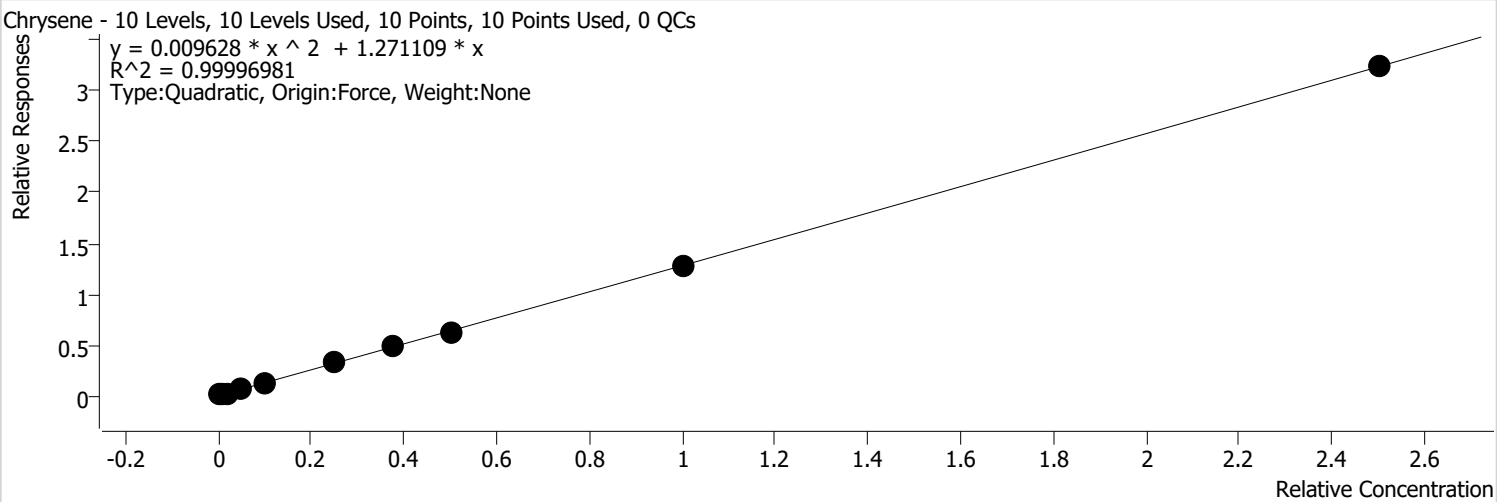
Benzo (a) anthracene %RSE = 20.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1514	10.0000	1.9739	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2518	20.0000	1.6504	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4497	40.0000	1.5030	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10324	100.0000	1.3701	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20676	200.0000	1.3141	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51017	500.0000	1.3479	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	77124	750.0000	1.3245	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	101487	1000.0000	1.2966	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	211228	2000.0000	1.3549	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	508441	5000.0000	1.3471	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

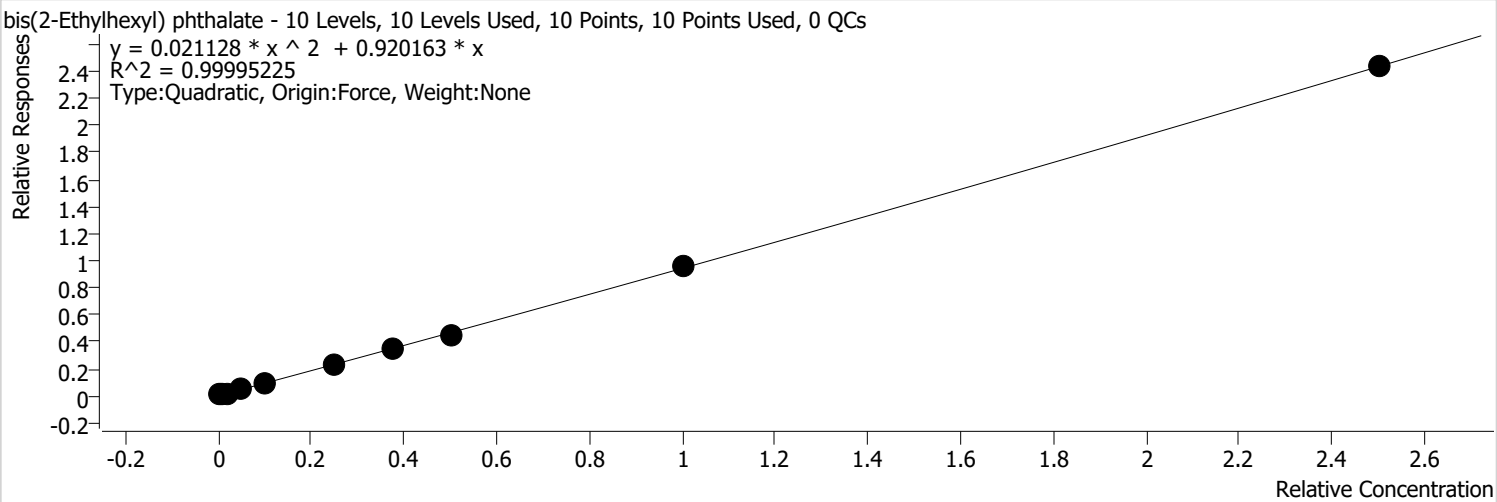
Chrysene %RSE = 7.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1086	10.0000	1.4487	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2102	20.0000	1.3856	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3860	40.0000	1.3233	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10111	100.0000	1.3458	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20705	200.0000	1.3183	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	48427	500.0000	1.2839	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	73999	750.0000	1.3005	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	97203	1000.0000	1.2527	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	198350	2000.0000	1.2813	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	468037	5000.0000	1.2952	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

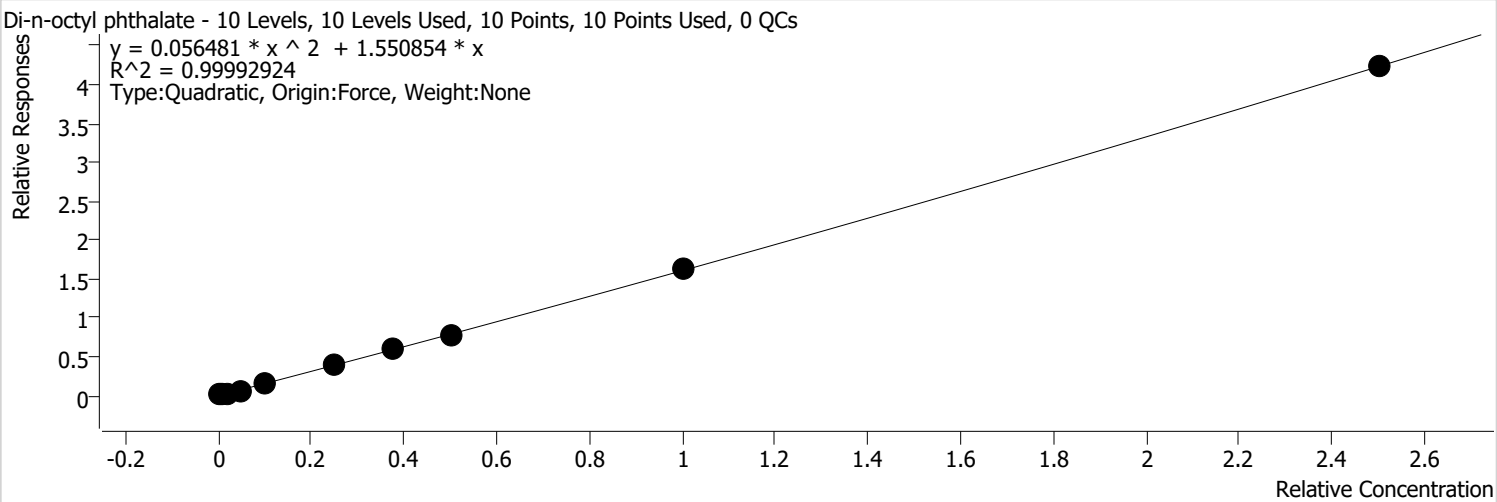
bis(2-Ethylhexyl) phthalate %RSE = 10.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	871	10.0000	1.1623	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1492	20.0000	0.9832	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2655	40.0000	0.9101	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6605	100.0000	0.8792	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	13638	200.0000	0.8683	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	34543	500.0000	0.9158	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	52939	750.0000	0.9304	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	70498	1000.0000	0.9086	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	147091	2000.0000	0.9501	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	351453	5000.0000	0.9726	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

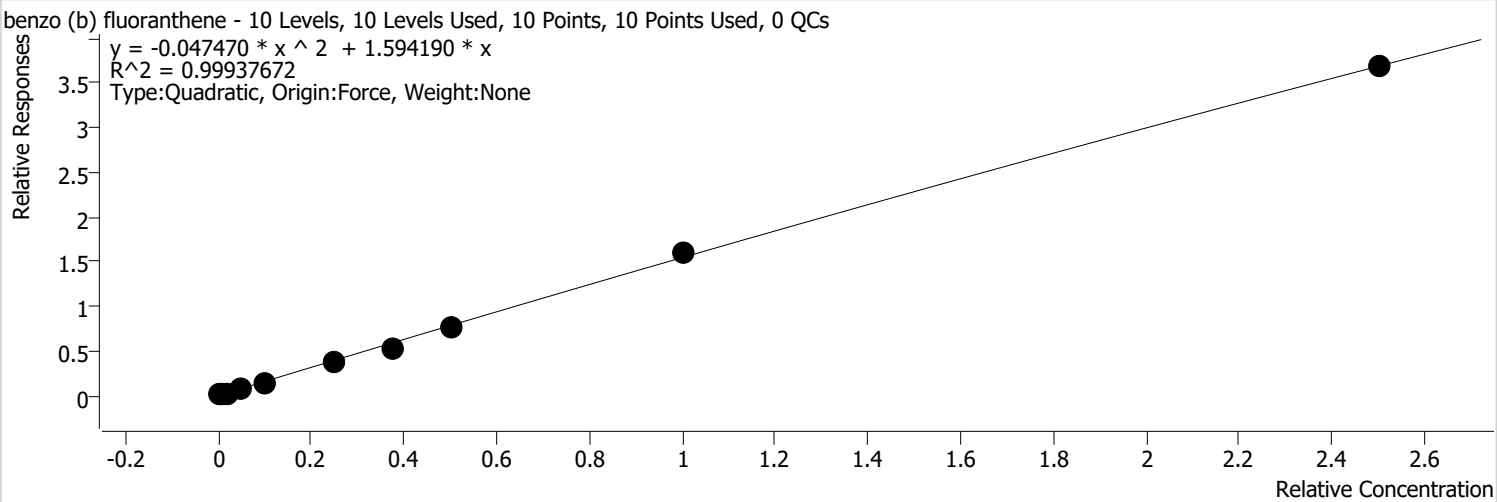
Di-n-octyl phthalate %RSE = 5.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1159	10.0000	1.5460	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2234	20.0000	1.4725	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4215	40.0000	1.4451	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10767	100.0000	1.4332	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	22830	200.0000	1.4536	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	58108	500.0000	1.5405	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	89433	750.0000	1.5717	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	119003	1000.0000	1.5337	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	251881	2000.0000	1.6270	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	611119	5000.0000	1.6912	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

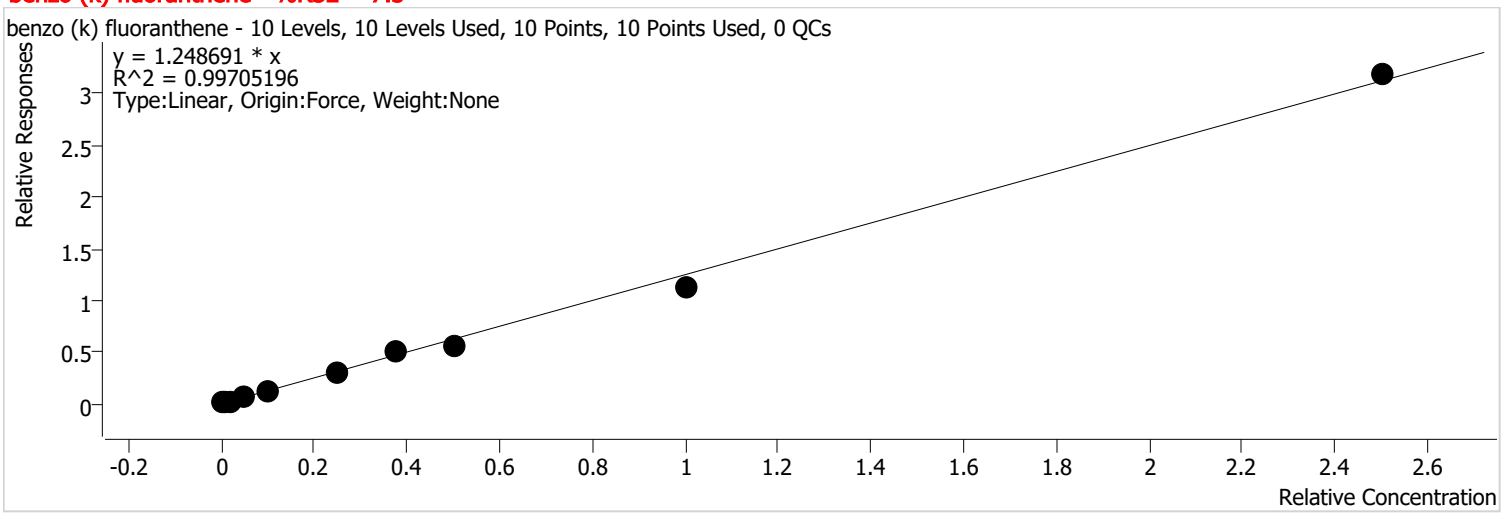
benzo (b) fluoranthene %RSE = 6.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1187	10.0000	1.5835	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2379	20.0000	1.5682	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4560	40.0000	1.5633	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10985	100.0000	1.4622	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	23684	200.0000	1.5080	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	56084	500.0000	1.4869	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	80251	750.0000	1.4103	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	119983	1000.0000	1.5463	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	247484	2000.0000	1.5986	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	532292	5000.0000	1.4730	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

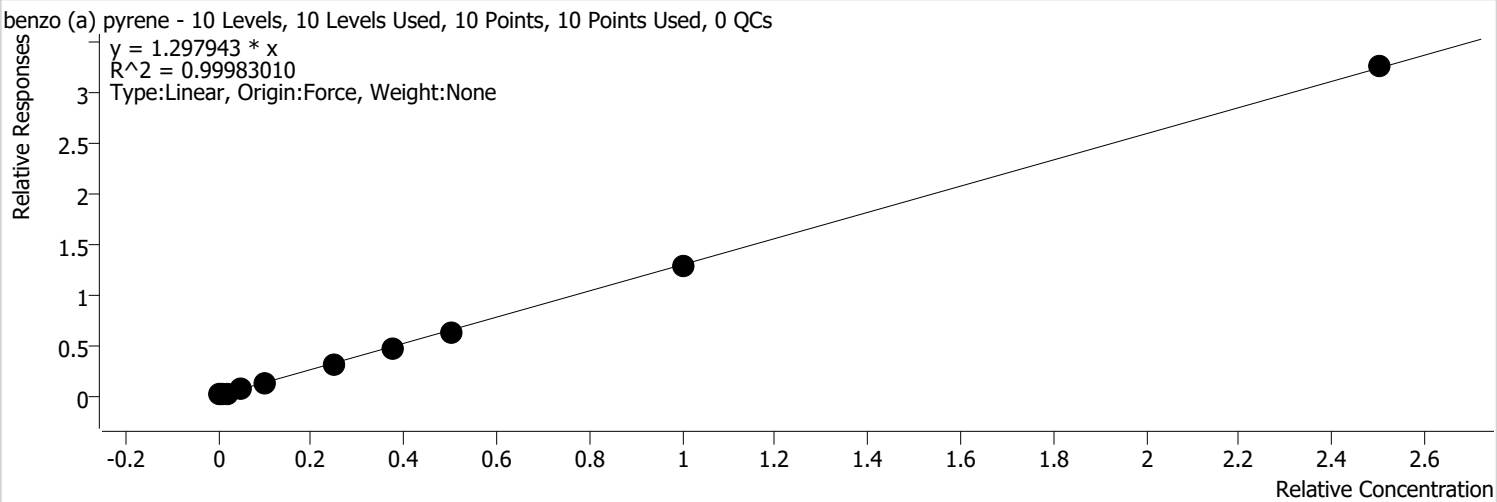
benzo (k) fluoranthene %RSE = 7.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	934	10.0000	1.2463	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1815	20.0000	1.1965	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3447	40.0000	1.1817	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	9279	100.0000	1.2351	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17738	200.0000	1.1294	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	46840	500.0000	1.2418	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	75778	750.0000	1.3317	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	85524	1000.0000	1.1022	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	174191	2000.0000	1.1252	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	459899	5000.0000	1.2727	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

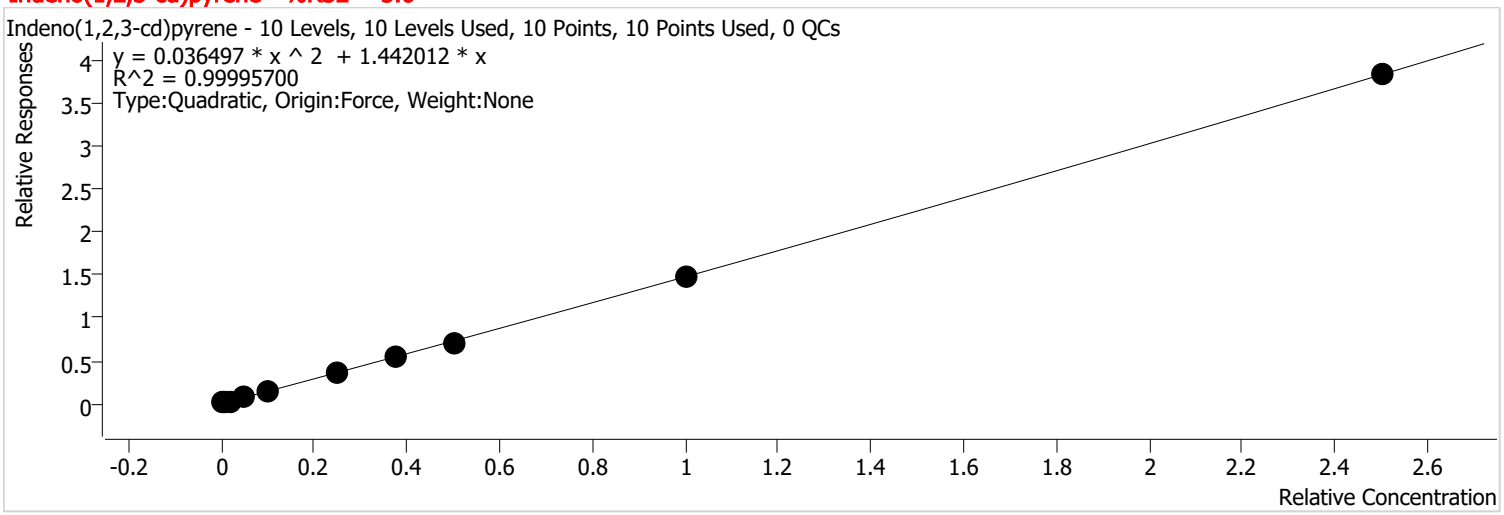
benzo (a) pyrene %RSE = 5.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1022	10.0000	1.3634	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1869	20.0000	1.2320	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3522	40.0000	1.2073	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8958	100.0000	1.1923	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	18603	200.0000	1.1845	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	48133	500.0000	1.2761	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	71451	750.0000	1.2557	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	96469	1000.0000	1.2433	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	198908	2000.0000	1.2849	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	471069	5000.0000	1.3036	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

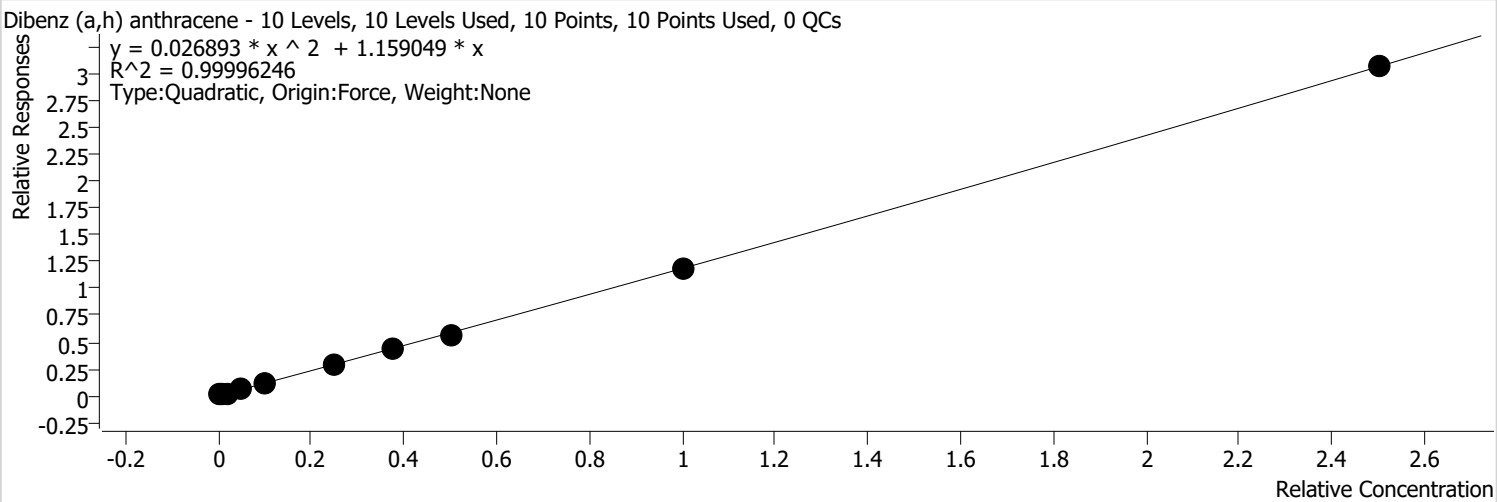
Indeno(1,2,3-cd)pyrene %RSE = 3.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1250	10.0000	1.5472	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2416	20.0000	1.4804	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4465	40.0000	1.4153	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	11489	100.0000	1.4268	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	23459	200.0000	1.3901	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	59058	500.0000	1.4590	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	89820	750.0000	1.4782	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	117368	1000.0000	1.4221	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	242324	2000.0000	1.4870	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	577768	5000.0000	1.5329	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

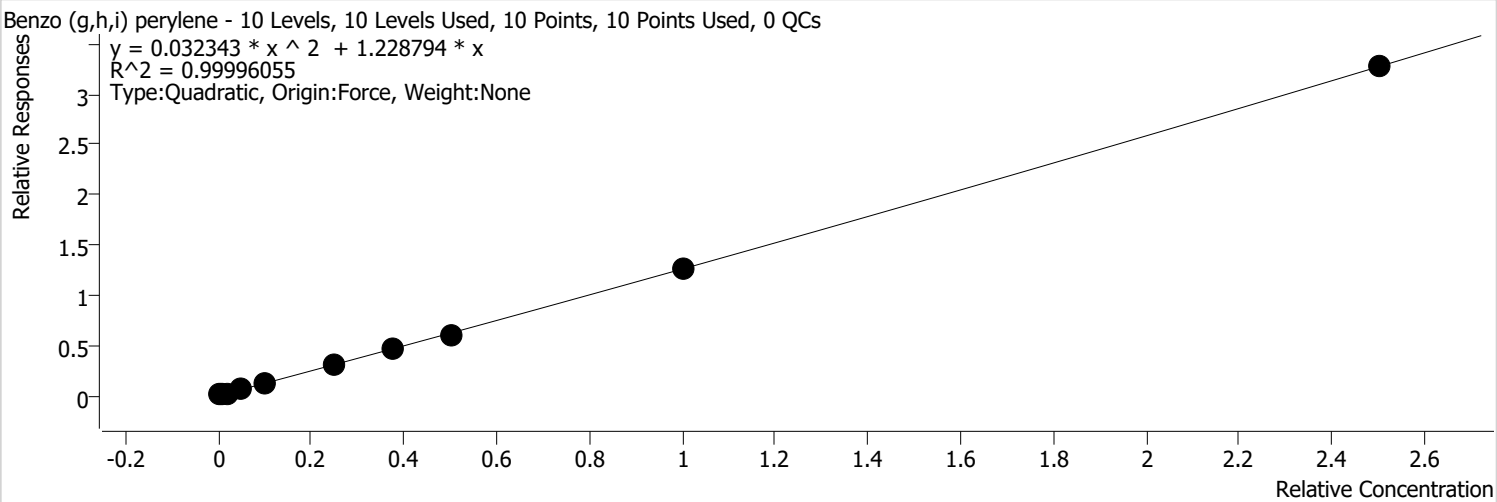
Dibenz (a,h) anthracene %RSE = 3.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1015	10.0000	1.2559	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1937	20.0000	1.1866	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3675	40.0000	1.1651	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	9200	100.0000	1.1425	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	18973	200.0000	1.1242	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	47474	500.0000	1.1728	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	71987	750.0000	1.1847	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	94385	1000.0000	1.1436	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	194328	2000.0000	1.1925	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	462097	5000.0000	1.2260	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Benzo (g,h,i) perylene %RSE = 28.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2631	20.0000	1.6121	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4430	40.0000	1.4045	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10433	100.0000	1.2956	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20818	200.0000	1.2336	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51046	500.0000	1.2611	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	76849	750.0000	1.2647	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	100479	1000.0000	1.2174	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	205789	2000.0000	1.2628	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	493615	5000.0000	1.3097	

Semivolatile Calibration

Date: 07/14/21

Analyst: Sam Beerman

MeCl2: 5919

Cal		ICV	
8270 Megamix:	24373	8270 Megamix:	24490
2,4-DNP:	24498	2,4-DNP:	~3305
Benzoic Acid:	23362	Benzoic Acid:	24501

8270 Surrogate: 25511 IS 25636

Spike Conc. (ppb) 2	BN/Acid Surr Conc. (ppb) 2 1	2° Spike (uL) 0.2	B/N Surr (uL)	Internal Standard (uL) 10.	Remove (uL) 10.2	Final Vol. (mL)	Comments (uL) 8270 MM (SS) (uL) HBr SS (uL) Benzoic Acid
10	10/5	1	--	10	11	1	
20	20/10	2	--	10	12	1	
40	40/20	4	--	10	14	1	
100	100/50	10	--	10	20	1	
200	200/100	20	--	10	30	1	
500	500/250	~~40~~ 50	--	10	60	1	
750	750/375	75	88 7/14/21	10	85	1	
1000	1000/500	100	--	10	110	1	
2000	2000/1000	200	--	10	210	1	
5000	5000/2500	500	-- 88 7/14/21	10	510	1	
ICB	1000/500		~~1~~ 5	10	~~11~~ 15	1	
ICV (1000 ppb)	1000/500	~~100 (2° SS)~~	-- 5	10	~~110~~ 15	1	' ' '

	Mega Mix (uL)	2,4-DNP (uL)	Benzoic Acid (uL)	8270 Surr (uL)	Final Volume (mL)
2° Intermediate (cal)	100	100	100	100	10
2° Intermediate (SS)	50	50	50	50	5

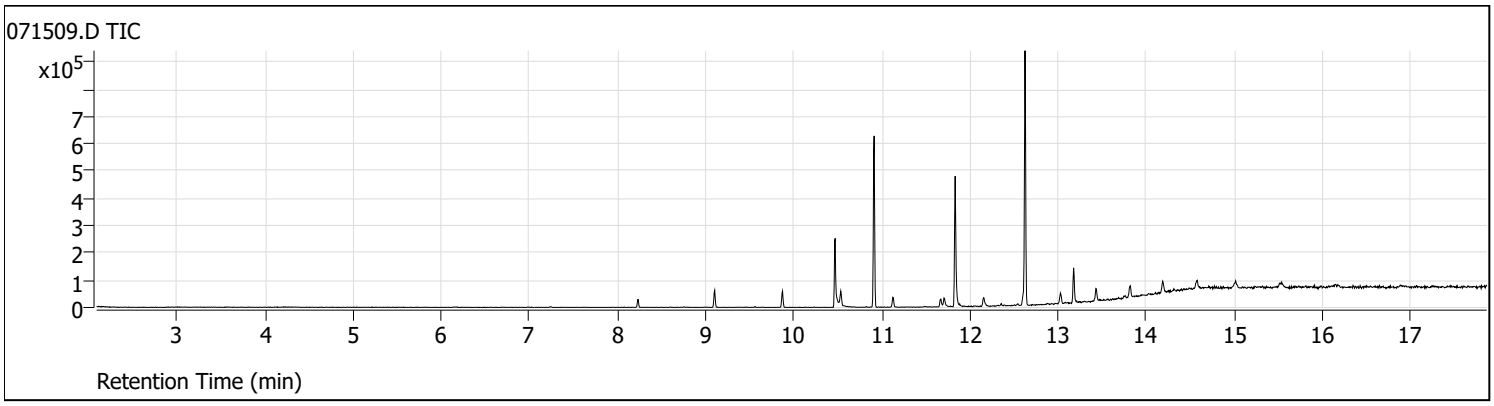
Signature and Date: Sam Beerman 07/14/21

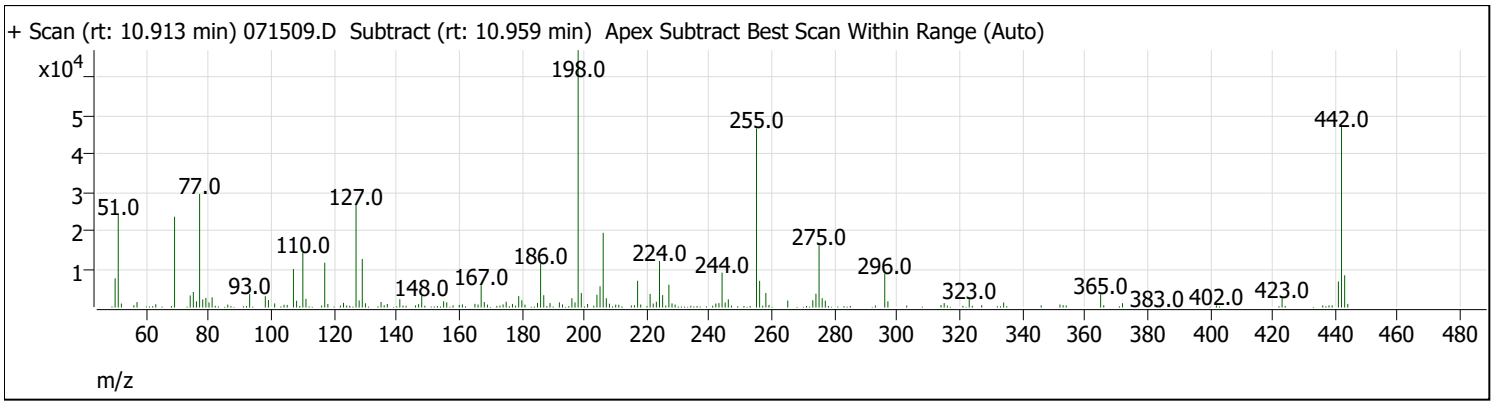
Signature: EM

Tunes

Tune Evaluation Report

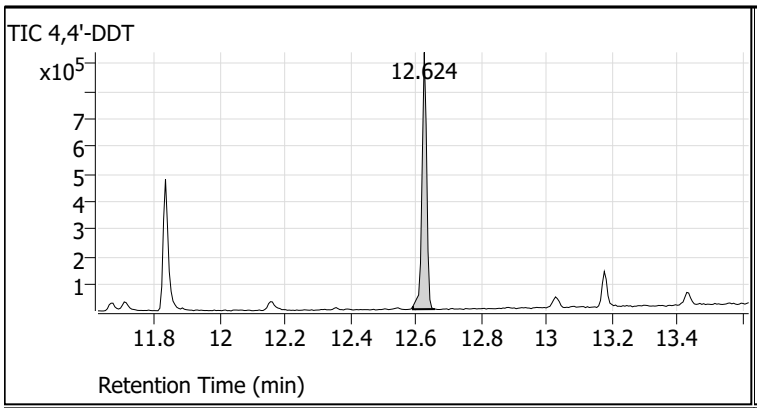
Data Path:	C:\GC-14\Data\2021\071521\071509.D
Acq on:	7/15/2021 1:34:10 PM
Operator:	FA\gc14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

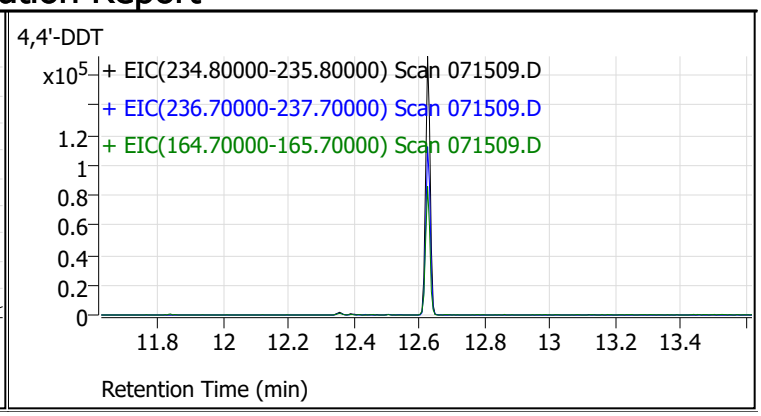


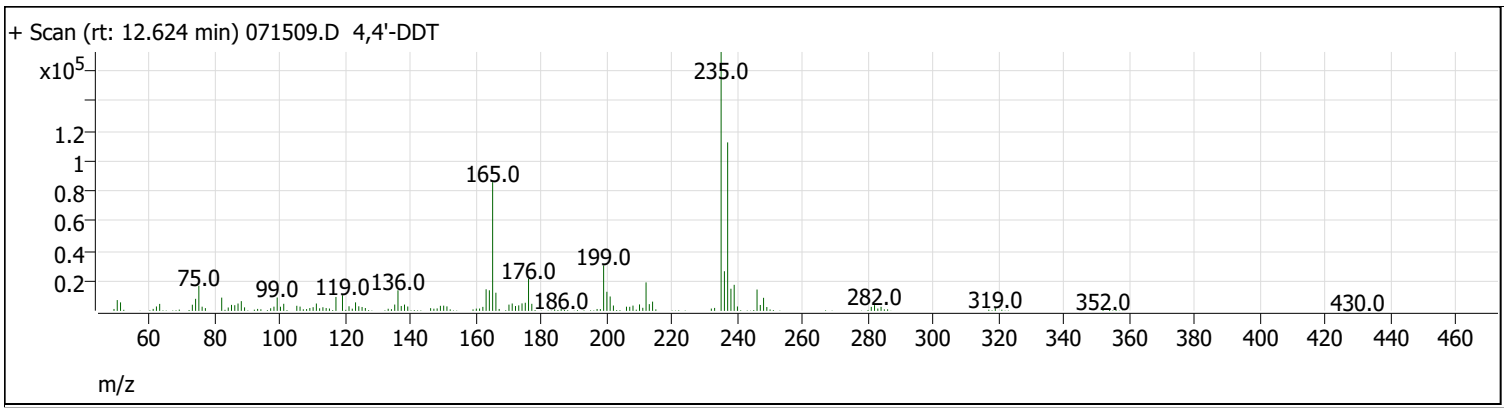


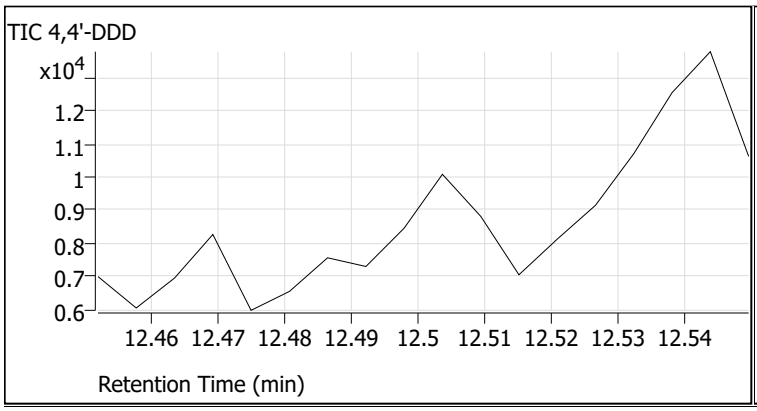
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.6	387	Pass
70	69	0	2	0.0	0	Pass
197	198	0	2	2.0	1329	Pass
198	198	100	100	100.0	66872	Pass
199	198	5	9	5.7	3783	Pass
365	198	1	100	5.2	3464	Pass
441	443	1E-10	150	80.8	6773	Pass
442	442	100	100	100.0	46896	Pass
443	442	15	24	17.9	8378	Pass
69	69	100	100	100.0	23600	Pass

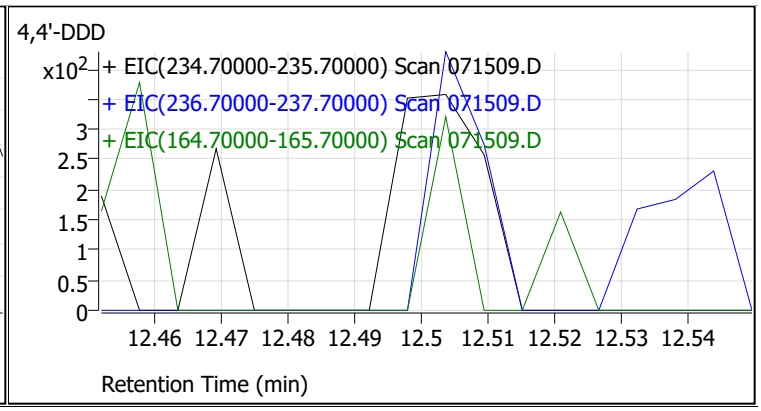
Tune Evaluation Report

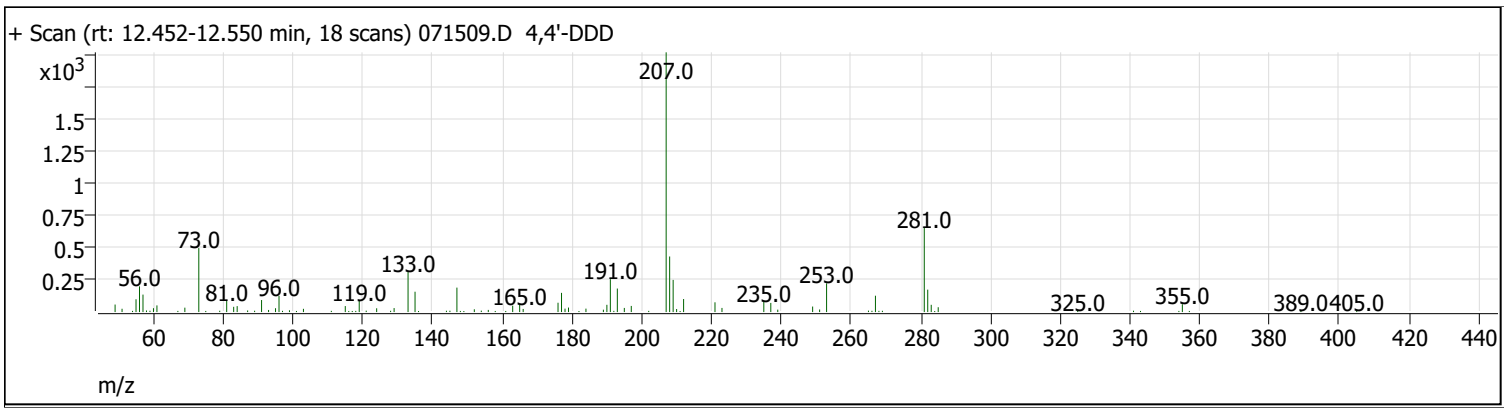






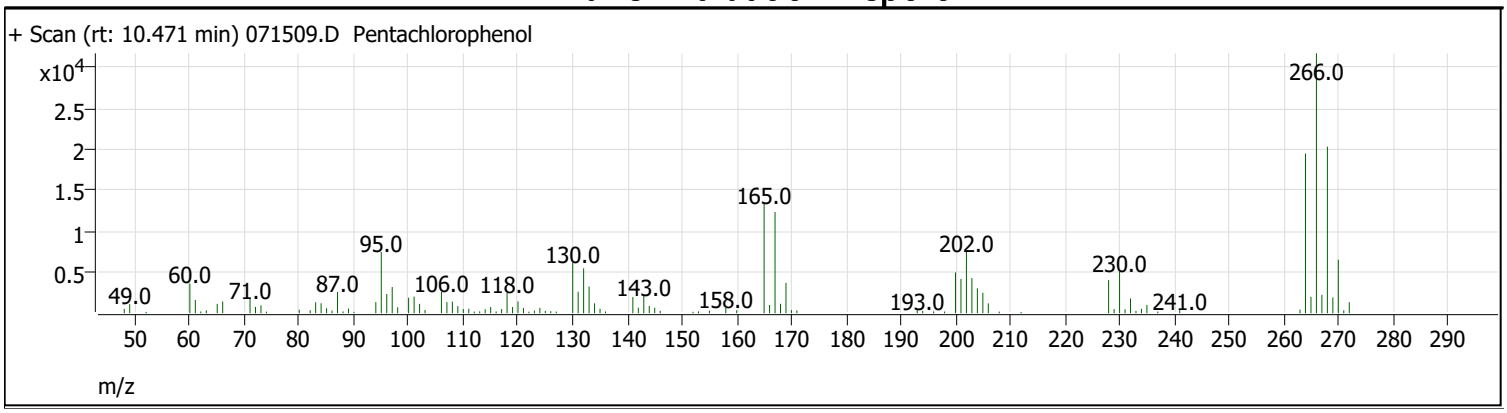


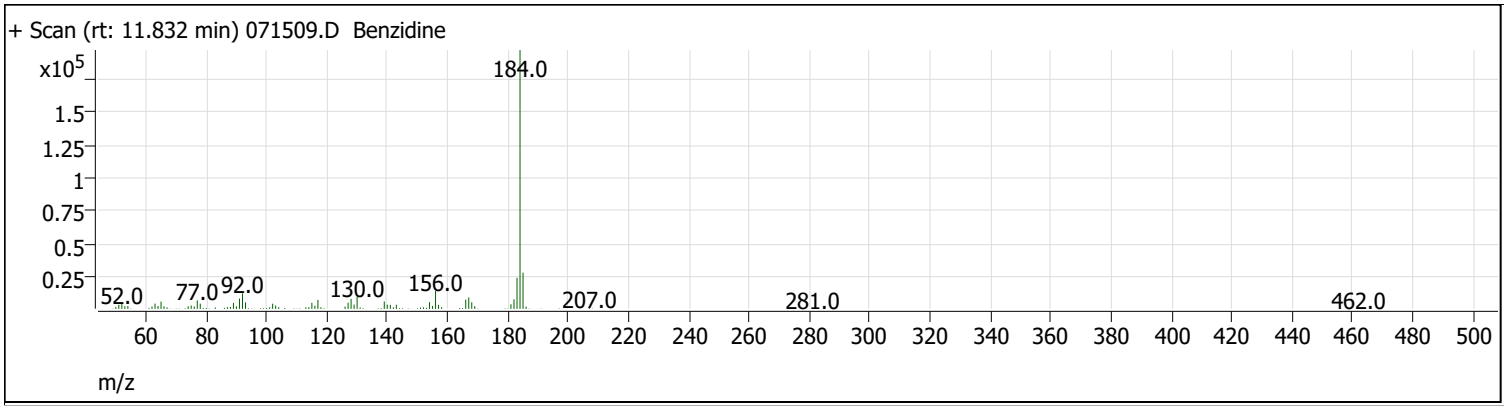




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.620	12.624	931975	0.0	Pass
4,4'-DDD	12.500	0.000	0		

Tune Evaluation Report

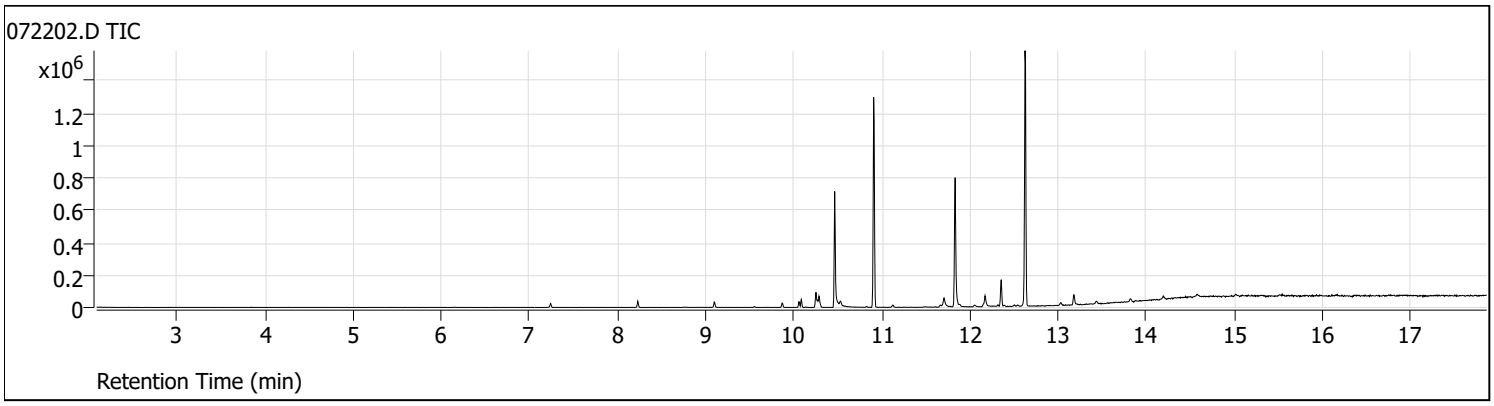


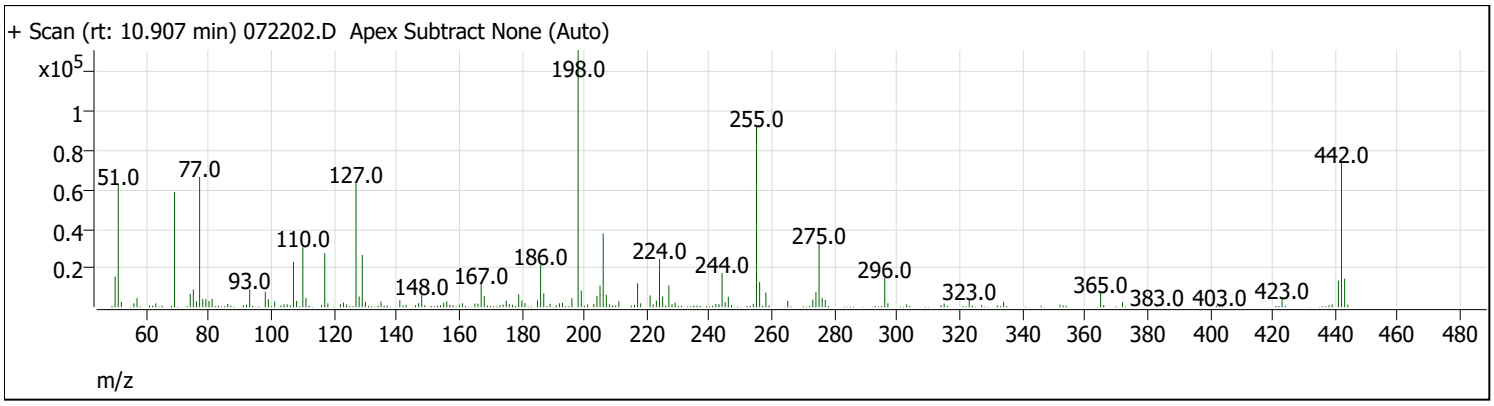


Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.470	10.471	1.6	2.9	Pass
Benzidine	11.832	11.832	1.5	2.7	Pass

Tune Evaluation Report

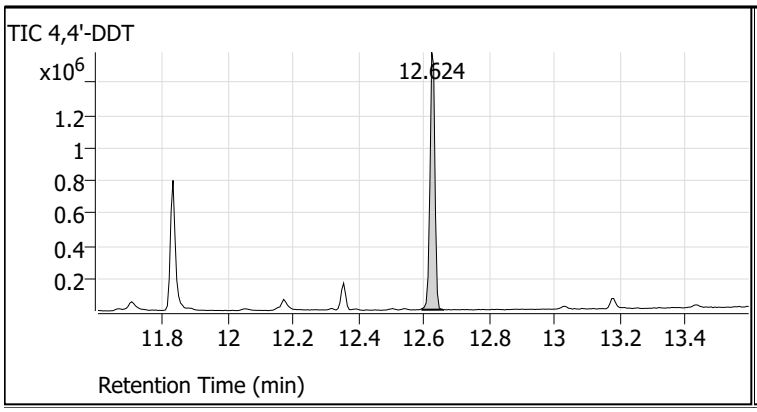
Data Path:	C:\GC-14\Data\2021\072221\072202.D
Acq on:	7/22/2021 8:20:46 AM
Operator:	FA\GC14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

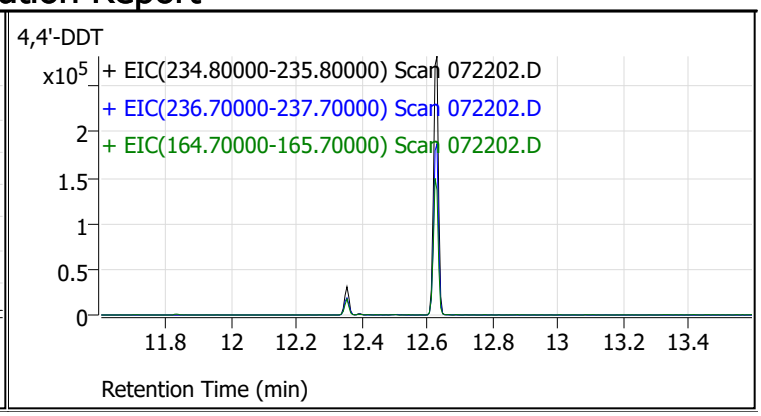


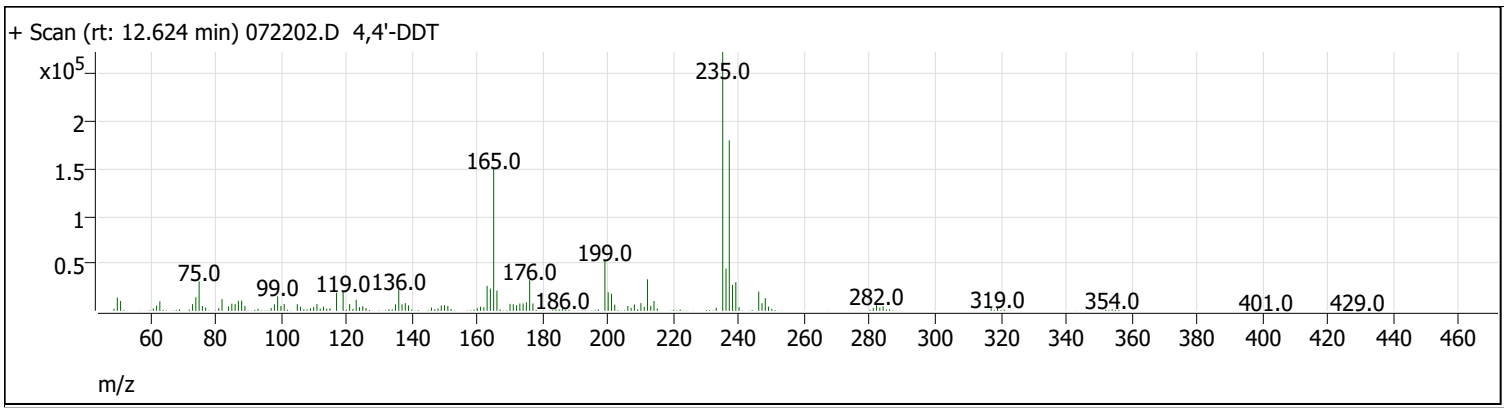


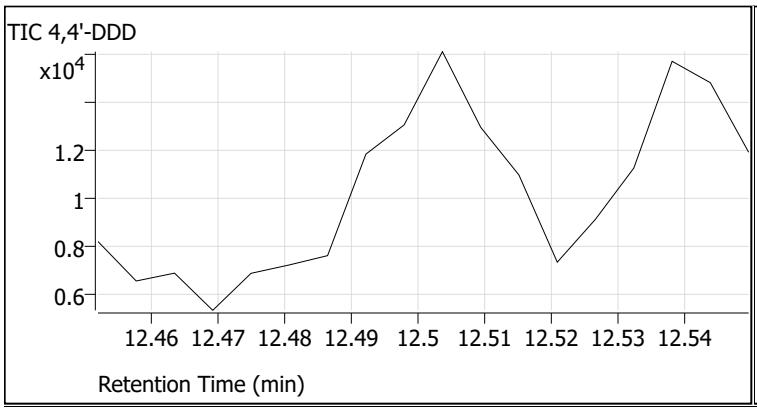
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.3	763	Pass
70	69	0	2	0.6	366	Pass
197	198	0	2	0.0	0	Pass
198	198	100	100	100.0	131264	Pass
199	198	5	9	6.5	8472	Pass
365	198	1	100	5.6	7292	Pass
441	443	1E-10	150	93.0	13615	Pass
442	442	100	100	100.0	73656	Pass
443	442	15	24	19.9	14640	Pass
69	69	100	100	100.0	58760	Pass

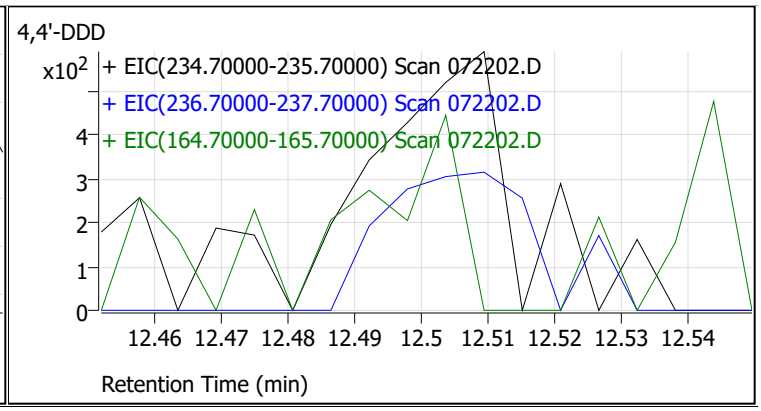
Tune Evaluation Report

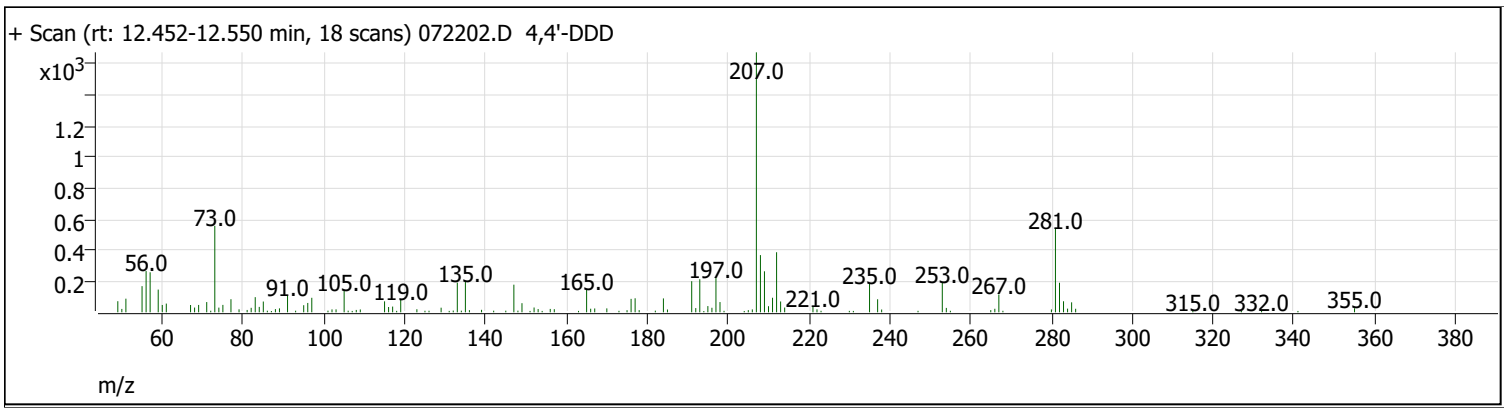






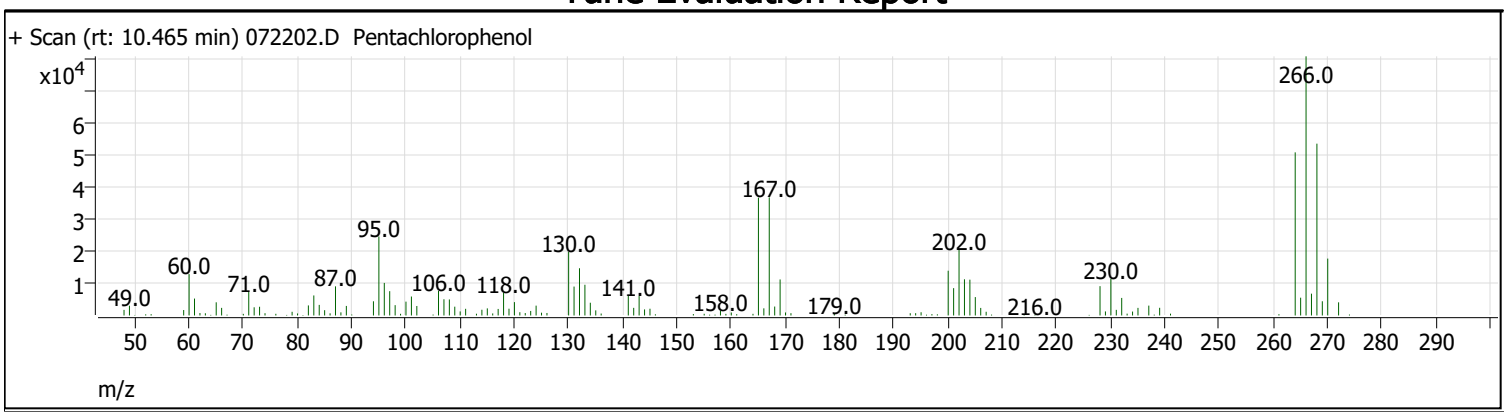


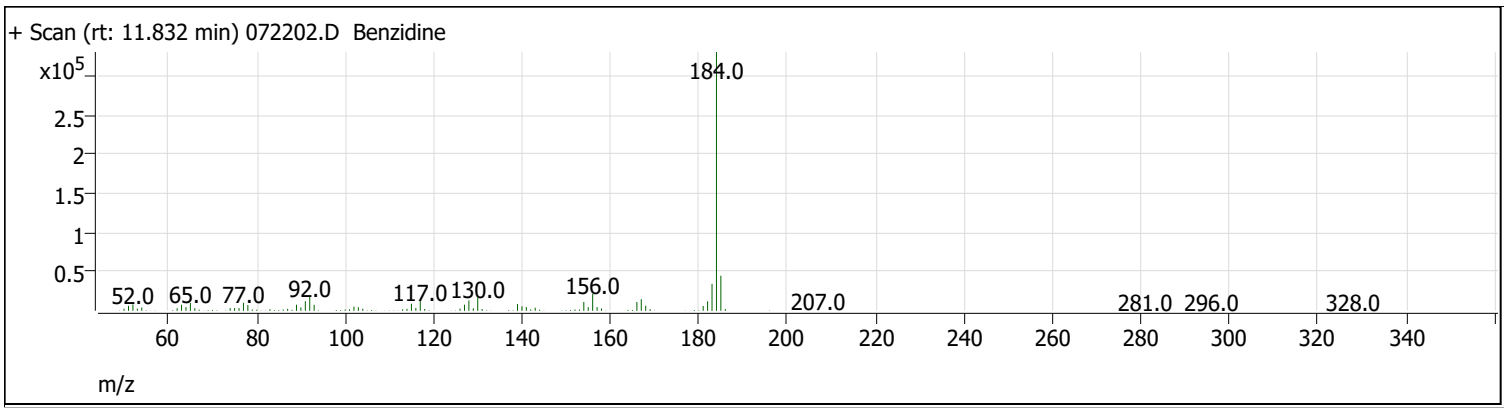




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.600	12.624	1650674	0.0	Pass
4,4'-DDD	12.500	0.000	0		

Tune Evaluation Report





Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.540	10.465	1.5	4.4	Pass
Benzidine	11.906	11.832	1.2	3.8	Pass

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

August 24, 2021

Joel Hecker
Pioneer Technologies Corporation
5205 Corporate Center Ct SE, Suite C
Lacey, WA 98503

Dear Mr. Hecker:

Please find enclosed the analytical data report for the Jacks Auto (JA) Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 7/9/21 Page: 1 of 1

Client: Pioneer Technologies Corp
Address: 5205 Corporate Cnte Ct. SE
City: Oly State: WA Zip: 98503
Phone: 360-828-3739 Fax:
Client Project # Jacks Auto (JA)

Project Manager: Joel Hecker
Project Name: Jacks Auto (JA)
Location: 1400 Bethel City, State: Olympia WA
Collector: JH Date of Collection: ~~7/8~~ 7/9
Email: Heckerj@uspioneer.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	~~e-PAH 8270~~ TOC	PAH 8270	Semi Vol. 8270	MTCA VOCs	Pb	VPH	Field Notes
1 SO-MW1-14-15-0709	14-15	1010	G	mult			X			X							X	X		7-19-21 VPH ADDED
2 SO-MW1-21-23-0709	21-23	1000	↓	↓			X			X							X	X		PER JOEL VIA EMAIL
3 SO-MW4-15-17-0708	15-17	0953					X			X					X		X	X		STD TAT.
4 SO-MW5-18-20-0708	18-20	1316					X			X				X			X	X		
5 SO-MW6-12-14-0708	12-14	1550					X			X							X	X	X	Hold For VPH
6 SO-MW6-20-22-0709	20-22	1641					X			X							X	X		
7 SO-MW7-7-9-0709	7-9	1330					X			X							X	X		
8 SO-MW7-19-21-0709	19-21	1350					X			X							X	X		Run internal Dup on this Sample
9 SO-MW7-26-28-0709	26-28	1400	↓	↓			X			X							X	X		Hold For EPH/VPH
10 TB-070921	—	—		VOAs													X			
11																				8-12-21 TOC added
12																				per Joel via email.
13																				STD
14																				
15																				
16																				
17																				

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	07/09/21 19:50	[signature]	7.9.21 14:00
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks: Added per Joel via email 7/12/21

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO (JA) PROJECT
Pioneer Technologies Corp.
Libby Project # L210709-4B
Date Received 7/9/2021
Time Received 2:50 PM

Received By RJK

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	-1.3 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	1.7 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☐ Yes	☐ No	☑ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies? ☐ Yes ☐ No ☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. _____

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Jacks Auto (JA)
Work Order Number: 2108179

August 20, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 1 sample(s) on 8/13/2021 for the analyses presented in the following report.

Total Organic Carbon by EPA 9060

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *08/20/2021*

CLIENT: Libby Environmental
Project: Jacks Auto (JA)
Work Order: 2108179

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2108179-001	SO-MW5-18-20-0708	07/08/2021 1:16 PM	08/13/2021 9:28 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2108179**
Date: **8/20/2021**

CLIENT: Libby Environmental
Project: Jacks Auto (JA)

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2108179**
Date Reported: **8/20/2021**

Client: Libby Environmental
Collection Date: 7/8/2021 1:16:00 PM
Project: Jacks Auto (JA)
Lab ID: 2108179-001
Matrix: Soil
Client Sample ID: SO-MW5-18-20-0708

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA 9060				Batch ID: 33436		Analyst: SS
Total Organic Carbon	ND	0.150	H	%-dry	1	8/20/2021 1:33:00 PM

Work Order: 2108179
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Total Organic Carbon by EPA 9060

Sample ID: **LCS-33436** SampType: **LCS** Units: **%-dry** Prep Date: **8/20/2021** RunNo: **69395**
Client ID: **LCSS** Batch ID: **33436** Analysis Date: **8/20/2021** SeqNo: **1405988**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	1.10	0.150	1.000	0	110	80	120				

Sample ID: **MB-33436** SampType: **MBLK** Units: **%-dry** Prep Date: **8/20/2021** RunNo: **69395**
Client ID: **MBLKS** Batch ID: **33436** Analysis Date: **8/20/2021** SeqNo: **1405990**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.150									

Sample ID: **2108181-001ADUP** SampType: **DUP** Units: **%-dry** Prep Date: **8/20/2021** RunNo: **69395**
Client ID: **BATCH** Batch ID: **33436** Analysis Date: **8/20/2021** SeqNo: **1405993**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.04	0.150						2.112	3.57	20	H

Sample ID: **2108181-001AMS** SampType: **MS** Units: **%-dry** Prep Date: **8/20/2021** RunNo: **69395**
Client ID: **BATCH** Batch ID: **33436** Analysis Date: **8/20/2021** SeqNo: **1405994**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.77	0.150	1.000	2.112	65.9	75	125				SH

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **2108181-001AMSD** SampType: **MSD** Units: **%-dry** Prep Date: **8/20/2021** RunNo: **69395**
Client ID: **BATCH** Batch ID: **33436** Analysis Date: **8/20/2021** SeqNo: **1405995**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.75	0.150	1.000	2.112	63.8	75	125	2.771	0.765	20	SH

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2108179**
Logged by:	**Matt Langston**	Date Received:	**8/13/2021 9:28:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present ☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No	☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No	☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA ☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No	☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes	☑	No	☐	
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐	
10.	Are samples properly preserved?	Yes	☑	No	☐	
11.	Was preservative added to bottles?	Yes	☐	No	☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes	☐	No	☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No	☐	
14.	Does paperwork match bottle labels?	Yes	☑	No	☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐	
16.	Is it clear what analyses were requested?	Yes	☑	No	☐	
17.	Were all holding times able to be met?	Yes	☐	No	☑	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Authorization to proceed with analysis out of hold provided on COC.

Item Information

Item #	Temp ºC
Sample	3.1

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

Fremont

www.LibbyEnvironmental.com

2108179

Date: 8-12-2021 Page: 1 of 1

Page 8 of 8

Client: Libby Environmental, Inc.
Address: (see above)
City: State: Zip:
Phone: Fax:
Client Project # L210709-4B

Project Manager: Kodey Eley
Project Name: Jacks Auto (JA)
Location: City, State: Olympia, WA
Collector: JH Date of Collection: 7-8-2021
Email: libbyenv@gmail.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	TOC			Field Notes
1	SO-MW5-18-20-080821	18-20	1316	soil	Jar													X			
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					
16																					
17																					

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	8-12-21 1630	UPS	
UPS		[signature]	8/13/21 0928

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
Level 2b report

Analyze out of hold

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

August 24, 2021

Joel Hecker
Pioneer Technologies Corporation
5205 Corporate Center Ct SE, Suite C
Lacey, WA 98503

Dear Mr. Hecker:

Please find enclosed the analytical data report for the Jacks Auto Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

www.LibbyEnvironmental.com

Chain of Custody Record

Date: 7/13/21 Page: 1 of 1

Client: Pioneer Technology Corp.
Address: 5205 Corporate Center Ct. SE
City: Lacey State: WA Zip:
Phone: 360-858-3739 Fax:
Client Project # JACKS AUTO

Project Manager: Joel Heath
Project Name: Jacks Auto
Location: 1400 Bethel St. City, State: Oly WA
Collector: JH/AR Date of Collection: 7/12-13
Email: Heathj@pioneer.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	~~cPAH 8270~~ TOC	PAH 8270	Semi Vol 8270	MTCA VOCs	Pb	Field Notes
1 SO-MW2-1-3-0713	1-3	1100	G	mult.	X		X			X			⊗		X			X	
2 SO-MW2-17-19-0713	17-19	1130			X		X			X					X			X	
3 SO-MW3-1-3-0712	1-3	1430			X		X			X	X				X			X	Run internal dup on this sample
4 SO-MW3-1-3-0712-61	1-3	1430													X				Submit to Fremont for Dup PAH analysis
5 SO-MW3-17-19-0712	17-19	1445			X		X			X	X				X			X	
6 SO-SB201-1-2-0713	1-2	0811			X		X			X	X				X			X	8-12-21 TOC added
7 SO-SB201-6-8-0713	6-8	0906			X		X			X	X				X			X	per Joel via email.
8 SO-SB201-16-18-0713	16-18	0916			X		X			X	X				X			X	STD
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	7/13/21 1344	[signature]	7-13-21 1344
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO PROJECT
Pioneer Technologies Corp.
Libby Project # L210713-2B
Date Received 7/13/2021
Time Received 1:44 PM

Received By KLI

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	5.9 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	6.9 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☑ Yes	☐ No	☐ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies? ☐ Yes ☐ No ☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. VOAs pre-preserved with 4mL methanol

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Jacks Auto (JA)
Work Order Number: 2108181

August 20, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 1 sample(s) on 8/13/2021 for the analyses presented in the following report.

Total Organic Carbon by EPA 9060

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *08/20/2021*

CLIENT: Libby Environmental
Project: Jacks Auto (JA)
Work Order: 2108181

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2108181-001	SO-MW2-1-3-0713	07/13/2021 11:00 AM	08/13/2021 9:28 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2108181**
Date: **8/20/2021**

CLIENT: Libby Environmental
Project: Jacks Auto (JA)

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2108181**
Date Reported: **8/20/2021**

Client: Libby Environmental
Collection Date: 7/13/2021 11:00:00 AM
Project: Jacks Auto (JA)
Lab ID: 2108181-001
Matrix: Soil
Client Sample ID: SO-MW2-1-3-0713

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA 9060				Batch ID: 33436		Analyst: SS
Total Organic Carbon	2.11	0.150	H	%-dry	1	8/20/2021 1:51:00 PM

Work Order: 2108181
CLIENT: Libby Environmental
Project: Jacks Auto (JA)

QC SUMMARY REPORT

Total Organic Carbon by EPA 9060

Sample ID: **LCS-33436**	SampType: **LCS**			Units: **%-dry**		Prep Date: **8/20/2021**			RunNo: **69395**		
Client ID: **LCSS**	Batch ID: **33436**					Analysis Date: **8/20/2021**			SeqNo: **1405988**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	1.10	0.150	1.000	0	110	80	120				

Sample ID: **MB-33436**	SampType: **MBLK**			Units: **%-dry**		Prep Date: **8/20/2021**			RunNo: **69395**		
Client ID: **MBLKS**	Batch ID: **33436**					Analysis Date: **8/20/2021**			SeqNo: **1405990**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.150									

Sample ID: **2108181-001ADUP**	SampType: **DUP**			Units: **%-dry**		Prep Date: **8/20/2021**			RunNo: **69395**		
Client ID: **SO-MW2-1-3-0713**	Batch ID: **33436**					Analysis Date: **8/20/2021**			SeqNo: **1405993**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.04	0.150						2.112	3.57	20	H

Sample ID: **2108181-001AMS**	SampType: **MS**			Units: **%-dry**		Prep Date: **8/20/2021**			RunNo: **69395**		
Client ID: **SO-MW2-1-3-0713**	Batch ID: **33436**					Analysis Date: **8/20/2021**			SeqNo: **1405994**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.77	0.150	1.000	2.112	65.9	75	125				SH

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **2108181-001AMSD**	SampType: **MSD**			Units: **%-dry**		Prep Date: **8/20/2021**			RunNo: **69395**		
Client ID: **SO-MW2-1-3-0713**	Batch ID: **33436**					Analysis Date: **8/20/2021**			SeqNo: **1405995**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.75	0.150	1.000	2.112	63.8	75	125	2.771	0.765	20	SH

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2108181**
Logged by:	**Matt Langston**	Date Received:	**8/13/2021 9:28:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present ☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No	☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No	☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA ☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No	☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes	☑	No	☐	
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐	
10.	Are samples properly preserved?	Yes	☑	No	☐	
11.	Was preservative added to bottles?	Yes	☐	No	☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes	☐	No	☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No	☐	
14.	Does paperwork match bottle labels?	Yes	☑	No	☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐	
16.	Is it clear what analyses were requested?	Yes	☑	No	☐	
17.	Were all holding times able to be met?	Yes	☑	No	☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Authorization to proceed with analysis out of hold provided on COC.

Item Information

Item #	Temp ºC
Sample	3.1

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Fremont

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

2108181

www.LibbyEnvironmental.com

Page 8 of 8

Date: 8-12-2021 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (see above)
City: State: Zip:
Phone: Fax:
Client Project # L210713-2B

Project Manager: Kodey Eley
Project Name: Jacks Auto
Location: City, State: Olympia, WA
Collector: JH Date of Collection: 7-13-2021
Email: libbyenv@gmail.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	TOC			Field Notes
1	SO-MW2-1-3-0713	1-3	1100	soil	Jar												X				
2																					
3																					
4																					
5																					
6																					
7																					
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15																					
16																					
17																					

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	8-12-21 1630	UPS	
UPS		[signature]	8/13/21 0928

Sample Receipt

	Y	N	
Good Condition?			
Cooler Temp.			°C
Sample Temp.			°C
Total Number of Containers			

Remarks:
Level 2b report

analyze out of hold

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

August 16, 2021

Joel Hecker
Pioneer Technologies Corporation
5205 Corporate Center Ct SE, Suite C
Lacey, WA 98503

Dear Mr. Hecker:

Please find enclosed the analytical data report for the Jacks Auto Groundwater Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Date: 7/22/21 (7) Page: 1 of 1

Client: Pioneer Technologies
Address: 5205 Corporate Center Ct. SE
City: Olympia State: WA Zip: 98503
Phone: 360-828-3739 Fax:
Client Project # Jacks Auto Groundwater

Project Manager: Joel Hecker
Project Name: Jacks Auto Groundwater
Location: 1400 Bethel City, State: Oly,
Collector: JH / MK Date of Collection: 7/22/21
Email: Heckerj@uspioneer.com (7)

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	Pb (DISSOLVED)	EPH	VPH	Field Notes
1 GW-MW1-0722	11:02	~~10:47~~	G	mult	X		X			X	X				X		X			
2 GW-MW2-0722	9:08	~~8:45~~													X					
3 GW-MW3-0722		7:30													X					
4 GW-MW4-0722	~~8:15~~	~~7:55~~													X					
5 GW-MW5-0722	~~10:06~~	~~9:50~~													X					
6 GW-MW6-0722	11:57	~~11:38~~													X			⊗		Run internal Dups on MW6
7 GW-MW6-0722-01	11:57	~~11:38~~													X					Submit extra vial to account for PAHs
8 GW-MW7-0722	13:23	~~12:53~~					X			X	X				X		X			
9 TB-0722	-	—		VOAs	X															
10																				
11																				
12																				
13																				
14																				
15																				7-30-21 ANALYSIS
16																				ADDED PER JOEL
17																				VIA EMAIL.

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	7/22/21 1433	[signature]	7.22.21 1433
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks: Hold for EPH/VPH on MW6 + MW7

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

JACKS AUTO GROUNDWATER PROJECT
Pioneer Technologies
Olympia, Washington
Libby Project # L210722-4

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	GW-MW1-0722	GW-MW2-0722	GW-MW3-0722	GW-MW4-0722	GW-MW5-0722
Date Sampled	Reporting	N/A	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits	7/24/2021	7/24/2021	7/24/2021	7/25/2021	7/25/2021	7/25/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.2	nd	nd	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.5	nd	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Benzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.4	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Toluene	2.0	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	2.0	nd	nd	nd	nd	nd	nd
Styrene	1.0	nd	nd	nd	nd	nd	nd

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JACKS AUTO GROUNDWATER PROJECT
Pioneer Technologies
Olympia, Washington
Libby Project # L210722-4

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	GW-MW1-0722	GW-MW2-0722	GW-MW3-0722	GW-MW4-0722	GW-MW5-0722
Date Sampled	Reporting	N/A	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits	7/24/2021	7/24/2021	7/24/2021	7/25/2021	7/25/2021	7/25/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	nd	nd	nd	nd	nd
Isopropylbenzene	4.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
n-Propylbenzene	1.0	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
p-Isopropyltoluene	1.0	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
n-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd	nd	nd
Naphthalene	5.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		100	95	101	97	99	97
1,2-Dichloroethane-d4		108	98	105	98	95	95
Toluene-d8		96	104	98	100	97	97
4-Bromofluorobenzene		93	98	93	95	92	93

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
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Olympia, Washington
Libby Project # L210722-4

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-MW6-0722	GW-MW6-0722 Dup	GW-MW7-0722	TB-0722
Date Sampled	Reporting	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits	7/25/2021	7/25/2021	7/25/2021	7/24/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd
Vinyl chloride	0.2	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd
1,1-Dichloroethene	0.5	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd
Benzene	1.0	18	18	10	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd
Trichloroethene (TCE)	0.4	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd
Toluene	2.0	11	11	2.7	nd
Trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd
Ethylbenzene	1.0	1000	970	1.7	nd
Total Xylenes	2.0	1800	1700	2.5	nd
Styrene	1.0	nd	nd	nd	nd

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JACKS AUTO GROUNDWATER PROJECT
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Olympia, Washington
Libby Project # L210722-4

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-MW6-0722	GW-MW6-0722-Dup	GW-MW7-0722	TB-0722
Date Sampled	Reporting	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits	7/25/2021	7/25/2021	7/25/2021	7/24/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	nd	nd	nd
Isopropylbenzene	4.0	98	100	1.4	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd
n-Propylbenzene	1.0	220	200	2.9	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	120	110	2.8	nd
tert-Butylbenzene	1.0	90	83	nd	nd
1,2,4-Trimethylbenzene	1.0	670	630	3.9	nd
sec-Butylbenzene	1.0	11	11	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd
p-Isopropyltoluene	1.0	4.5	4.7	1.2	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd
n-Butylbenzene	1.0	17	17	1.1	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd
Naphthalene	5.0	200	190	6.7	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd
Surrogate Recovery					
Dibromofluoromethane		65	63 S	82	101
1,2-Dichloroethane-d4		83	72	72	102
Toluene-d8		82	79	100	96
4-Bromofluorobenzene		100	103	102	92

"nd" Indicates not detected at listed detection limit.
"S" Spike compound recovery is outside acceptance limits. A duplicate analysis was performed with acceptable recovery.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
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Olympia, Washington
Libby Project # L210722-4

Gasoline by NWTPH-Gx in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/L)
Method Blank	7/24/2021	96%	nd
GW-MW1-0722	7/24/2021	104%	110
GW-MW2-0722	7/24/2021	98%	nd
GW-MW3-0722	7/25/2021	100%	nd
GW-MW4-0722	7/25/2021	97%	nd
GW-MW5-0722	7/25/2021	97%	nd
GW-MW6-0722	7/25/2021	98%	21000
GW-MW6-0722 Dup	7/25/2021	97%	19000
GW-MW7-0722	7/25/2021	100%	2700
Practical Quantitation Limit			100

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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Olympia, Washington
Libby Project # L210722-4

Diesel & Oil by NWTPH-Dx/Dx Extended in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (µg/L)	Oil (µg/L)
Method Blank	7/24/2021	104%	nd	nd
GW-MW1-0722	7/24/2021	102%	nd	nd
GW-MW2-0722	7/24/2021	103%	nd	nd
GW-MW3-0722	7/24/2021	103%	nd	nd
GW-MW4-0722	7/24/2021	103%	nd	nd
GW-MW5-0722	7/24/2021	107%	nd	nd
GW-MW6-0722	7/24/2021	100%	nd	nd
GW-MW6-0722 Dup	7/24/2021	103%	nd	nd
GW-MW7-0722	7/24/2021	118%	nd	nd
Practical Quantitation Limit			200	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
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Analyses of PCB (Polychlorinated Biphenyls) in Water by EPA Method 8082

Sample Description	PQL	Method Blank	GW-MW1-0722	GW-MW2-0722	GW-MW3-0722	GW-MW4-0722	GW-MW5-0722
Date Sampled		N/A	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed		7/25/2021	7/25/2021	7/25/2021	7/25/2021	7/25/2021	7/25/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Aroclor 1016	0.02	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.02	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.02	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.02	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.02	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.02	nd	nd	nd	nd	nd	nd
Aroclor 1260	0.02	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
TCMX		77	74	129	78	132	78
DCBP		88	83	128	86	119	78

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
Pioneer Technologies
Olympia, Washington
Libby Project # L210722-4

Analyses of PCB (Polychlorinated Biphenyls) in Water by EPA Method 8082

Sample Description	PQL	GW-MW6-0722	GW-MW7-0722
Date Sampled		7/22/2021	7/22/2021
Date Analyzed		7/25/2021	7/25/2021
	(µg/L)	(µg/L)	(µg/L)
Aroclor 1016	0.02	nd	nd
Aroclor 1221	0.02	nd	nd
Aroclor 1232	0.02	nd	nd
Aroclor 1242	0.02	nd	nd
Aroclor 1248	0.02	nd	nd
Aroclor 1254	0.02	nd	nd
Aroclor 1260	0.02	nd	nd
Surrogate Recovery			
TCMX		134	79
DCBP		131	88

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
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Dissolved Lead by EPA Method 7010 Series in Water

Sample Number	Date Analyzed	Lead (µg/L)
Method Blank	7/24/2021	nd
GW-MW1-0722	7/24/2021	nd
GW-MW2-0722	7/24/2021	nd
GW-MW3-0722	7/24/2021	nd
GW-MW4-0722	7/24/2021	nd
GW-MW5-0722	7/24/2021	7.2
GW-MW6-0722	7/24/2021	nd
GW-MW6-0722 Dup	7/24/2021	nd
GW-MW7-0722	7/24/2021	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO GROUNDWATER PROJECT
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Libby Project # L210722-4

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Water

Matrix Spike Sample Identification: GW-MW6-0722
Date Analyzed: 7/25/2021

	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	5.0	3.1	3.1	62	62	0.3	65-135	S
Chloromethane	5.0	3.7	3.8	74	75	2.1	65-135	
Vinyl chloride	5.0	3.6	3.6	72	72	1.1	65-135	
Bromomethane	5.0	4.0	4.0	79	81	2.3	65-135	
Chloroethane	5.0	9.3	10.9	186	217	15.5	65-135	S
Trichlorofluoromethane	5.0	4.1	4.1	81	83	2.0	65-135	
1,1-Dichloroethene	5.0	4.5	4.6	90	92	2.2	65-135	
Methylene chloride	5.0	5.6	5.8	113	115	2.3	65-135	
Methyl *tert*- Butyl Ether (MTBE)	5.0	4.2	4.6	85	92	7.9	65-135	
trans -1,2-Dichloroethene	5.0	4.4	4.6	89	91	2.7	65-135	
1,1-Dichloroethane	5.0	5.5	5.7	109	113	3.4	65-135	
2,2-Dichloropropane	5.0	3.7	4.5	74	91	20.2	65-135	
cis -1,2-Dichloroethene	5.0	6.3	0.9	126	18	151	65-135	R, S
Chloroform	5.0	4.1	4.5	81	90	9.6	65-135	
1,1,1-Trichloroethane (TCA)	5.0	4.8	4.9	96	97	1.7	65-135	
Carbon tetrachloride	5.0	4.5	4.7	89	94	4.9	65-135	
1,1-Dichloropropene	5.0	5.0	5.4	100	107	6.6	65-135	
Benzene	5.0	11.9	13.8	238	276	14.8	65-135	S
1,2-Dichloroethane (EDC)	5.0	5.3	5.4	105	108	3.0	65-135	
Trichloroethene (TCE)	5.0	5.9	6.3	118	126	6.7	65-135	
1,2-Dichloropropane	5.0	5.2	5.3	104	106	2.3	65-135	
Dibromomethane	5.0	4.9	5.5	98	110	12.1	65-135	
Bromodichloromethane	5.0	4.1	4.6	82	91	10.6	65-135	
cis-1,3-Dichloropropene	5.0	4.9	5.2	97	103	6.0	65-135	
Toluene	5.0	9.0	10.5	180	210	15.4	65-135	S
Trans-1,3-Dichloropropene	5.0	4.2	4.1	83	81	1.9	65-135	
1,1,2-Trichloroethane	5.0	62.0	67.6	1240	1352	8.6	65-135	S
Tetrachloroethene (PCE)	5.0	4.8	5.4	96	107	11.3	65-135	
1,3-Dichloropropane	5.0	4.4	4.9	87	98	11.0	65-135	
Dibromochloromethane	5.0	4.0	4.5	80	89	10.2	65-135	
1,2-Dibromoethane (EDB)	5.0	4.7	5.1	94	103	9.4	65-135	
Chlorobenzene	5.0	5.0	5.5	100	110	8.8	65-135	
Ethylbenzene	5.0	0.0	0.0	0	0	0.0	65-135	S
1,1,1,2-Tetrachloroethane	5.0	4.7	4.9	94	99	5.0	65-135	
Total Xylenes	15.0	0.0	0.0	0	0	0.0	65-135	S
Styrene	5.0	5.1	5.6	102	111	8.8	65-135	

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Libby Project # L210722-4

QA/QC Data - Volatile Organic Compounds by EPA 8260D in Water

Matrix Spike Sample Identification: GW-MW6-0722
Date Analyzed: 7/25/2021

	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	5.0	3.4	3.7	69	74	7.0	65-135	
Isopropylbenzene	5.0	1.2	13.5	24	270	167	65-135	R, S
1,1,2,2-Tetrachloroethane	5.0	3.5	3.9	70	78	10.8	65-135	
Bromobenzene	5.0	4.8	5.2	97	104	7.4	65-135	
n-Propylbenzene	5.0	0.0	0.0	0	0	0.0	65-135	S
1,2,3-Trichloropropane	5.0	4.3	4.9	86	98	13.4	65-135	
2-Chlorotoluene	5.0	15.0	16.4	299	327	9.0	65-135	S
1,3,5-Trimethylbenzene	5.0	0.0	6.4	0	128	200.0	65-135	R, S
4-Chlorotoluene	5.0	4.8	5.2	96	105	8.6	65-135	
tert-Butylbenzene	5.0	5.6	6.3	112	125	10.8	65-135	
1,2,4-Trimethylbenzene	5.0	0.0	0.0	0	0	0.0	65-135	S
sec-Butylbenzene	5.0	4.3	6.2	86	124	36.2	65-135	R, S
Isopropyltoluene	5.0	8.2	6.7	164	134	20.1	65-135	S
1,3-Dichlorobenzene	5.0	4.7	5.2	94	104	9.4	65-135	
1,4-Dichlorobenzene	5.0	5.0	5.6	101	112	10.3	65-135	
n-Butylbenzene	5.0	2.8	5.6	56	112	66.7	65-135	R, S
1,2-Dichlorobenzene	5.0	4.7	5.2	94	105	10.5	65-135	
1,2-Dibromo-3-Chloropropane	5.0	3.3	3.8	66	75	12.4	65-135	
1,2,4-Trichlorolbenzene	5.0	4.6	5.5	92	110	18.3	65-135	
Hexachloro-1,3-butadiene	5.0	4.2	5.3	84	107	23.9	65-135	
Naphthalene	5.0	0.0	0.0	0	0	0.0	65-135	S
1,2,3-Trichlorobenzene	5.0	4.3	5.2	85	105	20.9	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	98	96	65-135
1,2-Dichloroethane-d4	105	105	65-135
Toluene-d8	119	116	65-135
4-Bromofluorobenzene	102	103	65-135

"S" Spike compound recovery is outside acceptance limits. A duplicate analysis was performed with similar results indicating possible matrix interference.
"R" High relative percent difference observed.
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
Pioneer Technologies
Olympia, Washington
Libby Project # L210722-4

Laboratory Control Sample

Date Analyzed: 7/24/2021

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	4.8	95	80-120	
Chloromethane	5.0	4.0	80	80-120	
Vinyl chloride	5.0	4.5	91	80-120	
Bromomethane	5.0	5.7	113	80-120	
Chloroethane	5.0	5.8	116	80-120	
Trichlorofluoromethane	5.0	6.0	119	80-120	
1,1-Dichloroethene	5.0	5.7	115	80-120	
Methylene chloride	5.0	5.9	119	80-120	
Methyl *tert*- Butyl Ether (MTBE)	5.0	5.4	107	80-120	
trans -1,2-Dichloroethene	5.0	5.7	114	80-120	
1,1-Dichloroethane	5.0	5.8	115	80-120	
2,2-Dichloropropane	5.0	4.2	85	80-120	
cis -1,2-Dichloroethene	5.0	4.9	99	80-120	
Chloroform	5.0	5.6	112	80-120	
1,1,1-Trichloroethane (TCA)	5.0	5.7	113	80-120	
Carbon tetrachloride	5.0	5.3	105	80-120	
1,1-Dichloropropene	5.0	4.4	87	80-120	
Benzene	5.0	5.1	103	80-120	
1,2-Dichloroethane (EDC)	5.0	5.4	108	80-120	
Trichloroethene (TCE)	5.0	5.3	107	80-120	
1,2-Dichloropropane	5.0	5.1	102	80-120	
Dibromomethane	5.0	5.2	104	80-120	
Bromodichloromethane	5.0	5.1	102	80-120	
cis-1,3-Dichloropropene	5.0	4.1	81	80-120	
Toluene	5.0	5.1	102	80-120	
Trans-1,3-Dichloropropene	5.0	4.2	84	80-120	
1,1,2-Trichloroethane	5.0	5.5	110	80-120	
Tetrachloroethene (PCE)	5.0	4.6	91	80-120	
1,3-Dichloropropane	5.0	4.8	95	80-120	
Dibromochloromethane	5.0	4.2	84	80-120	
1,2-Dibromoethane (EDB)	5.0	4.7	93	80-120	
Chlorobenzene	5.0	4.9	99	80-120	
Ethylbenzene	5.0	4.6	93	80-120	
1,1,1,2-Tetrachloroethane	5.0	4.9	98	80-120	
Total Xylenes	15.0	13.6	91	80-120	
Styrene	5.0	4.6	91	80-120	

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JACKS AUTO GROUNDWATER PROJECT
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Olympia, Washington
Libby Project # L210722-4

Laboratory Control Sample

Date Analyzed: 7/24/2021

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	4.2	83	80-120	
Isopropylbenzene	5.0	4.4	88	80-120	
1,1,2,2-Tetrachloroethane	5.0	4.9	97	80-120	
Bromobenzene	5.0	4.7	95	80-120	
n-Propylbenzene	5.0	4.8	96	80-120	
1,2,3-Trichloropropane	5.0	5.0	100	80-120	
2-Chlorotoluene	5.0	4.6	93	80-120	
1,3,5-Trimethylbenzene	5.0	4.7	94	80-120	
4-Chlorotoluene	5.0	4.7	94	80-120	
tert-Butylbenzene	5.0	4.5	89	80-120	
1,2,4-Trimethylbenzene	5.0	4.8	96	80-120	
sec-Butylbenzene	5.0	4.8	97	80-120	
Isopropyltoluene	5.0	4.5	90	80-120	
1,3-Dichlorobenzene	5.0	4.9	99	80-120	
1,4-Dichlorobenzene	5.0	4.9	98	80-120	
n-Butylbenzene	5.0	4.4	89	80-120	
1,2-Dichlorobenzene	5.0	4.7	95	80-120	
1,2-Dibromo-3-Chloropropane	5.0	4.1	81	80-120	
1,2,4-Trichlorolbenzene	5.0	4.3	85	80-120	
Hexachloro-1,3-butadiene	5.0	4.9	97	80-120	
Naphthalene	5.0	4.5	89	80-120	
1,2,3-Trichlorobenzene	5.0	4.6	92	80-120	

Surrogate Recovery		
Dibromofluoromethane	107	65-135
1,2-Dichloroethane-d4	113	65-135
Toluene-d8	108	65-135
4-Bromofluorobenzene	104	65-135

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JACKS AUTO GROUNDWATER PROJECT
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CCV 7-24-2021

	Spiked Conc. (µg/L)	CCV Response (µg/L)	CCV Recovery (%)	CCV Recovery Limits (%)
Dichlorodifluoromethane	10.0	9.3	93	80-120
Chloromethane	10.0	8.0	80	80-120
SIM Vinyl chloride	10.0	8.2	82	80-120
Vinyl chloride	10.0	10.1	101	80-120
Bromomethane	10.0	10.1	101	80-120
Chloroethane	10.0	10.8	108	80-120
Trichlorofluoromethane	10.0	11.0	110	80-120
1,1-Dichloroethene	10.0	10.7	107	80-120
Methylene chloride	10.0	10.6	106	80-120
Methyl *tert*- Butyl Ether (MTBE)	10.0	11.2	112	80-120
trans -1,2-Dichloroethene	10.0	10.4	104	80-120
1,1-Dichloroethane	10.0	11.5	115	80-120
2,2-Dichloropropane	10.0	8.1	81	80-120
cis -1,2-Dichloroethene	10.0	9.1	91	80-120
Chloroform	10.0	10.5	105	80-120
1,1,1-Trichloroethane (TCA)	10.0	10.5	105	80-120
Carbon tetrachloride	10.0	9.9	99	80-120
1,1-Dichloropropene	10.0	8.6	86	80-120
Benzene	10.0	9.6	96	80-120
1,2-Dichloroethane (EDC)	10.0	9.8	98	80-120
SIM Trichloroethene (TCE)	10.0	10.3	103	80-120
Trichloroethene (TCE)	10.0	9.8	98	80-120
1,2-Dichloropropane	10.0	9.4	94	80-120
Dibromomethane	10.0	9.9	99	80-120
Bromodichloromethane	10.0	9.6	96	80-120
cis-1,3-Dichloropropene	10.0	8.2	82	80-120
Toluene	10.0	9.2	92	80-120
Trans-1,3-Dichloropropene	10.0	8.4	84	80-120
1,1,2-Trichloroethane	10.0	10.8	108	80-120
Tetrachloroethene (PCE)	10.0	9.2	92	80-120
1,3-Dichloropropane	10.0	10.2	102	80-120
Dibromochloromethane	10.0	8.9	89	80-120
SIM 1,2-Dibromoethane (EDB)	10.0	11.8	118	80-120
1,2-Dibromoethane (EDB)	10.0	9.9	99	80-120
Chlorobenzene	10.0	9.7	97	80-120
Ethylbenzene	10.0	9.7	97	80-120
1,1,1,2-Tetrachloroethane	10.0	9.6	96	80-120
Total Xylenes	30.0	29.1	97	80-120
Styrene	10.0	10.1	101	80-120

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JACKS AUTO GROUNDWATER PROJECT
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Libby Project # L210722-4

CCV 7-24-2021

	Spiked Conc. (µg/L)	CCV Response (µg/L)	CCV Recovery (%)	CCV Recovery Limits (%)
Bromoform	10.0	8.6	86	80-120
Isopropylbenzene	10.0	9.8	98	80-120
1,1,2,2-Tetrachloroethane	10.0	10.2	102	80-120
Bromobenzene	10.0	9.3	93	80-120
n-Propylbenzene	10.0	9.9	99	80-120
1,2,3-Trichloropropane	10.0	10.7	107	80-120
2-Chlorotoluene	10.0	9.6	96	80-120
1,3,5-Trimethylbenzene	10.0	10.2	102	80-120
4-Chlorotoluene	10.0	9.7	97	80-120
tert-Butylbenzene	10.0	9.6	96	80-120
1,2,4-Trimethylbenzene	10.0	10.1	101	80-120
sec-Butylbenzene	10.0	10.2	102	80-120
Isopropyltoluene	10.0	9.3	93	80-120
1,3-Dichlorobenzene	10.0	9.6	96	80-120
1,4-Dichlorobenzene	10.0	9.4	94	80-120
n-Butylbenzene	10.0	8.8	88	80-120
1,2-Dichlorobenzene	10.0	9.4	94	80-120
1,2-Dibromo-3-Chloropropane	10.0	8.0	80	80-120
1,2,4-Trichlorolbenzene	10.0	8.6	86	80-120
Hexachloro-1,3-butadiene	10.0	9.4	94	80-120
Naphthalene	10.0	9.1	91	80-120
1,2,3-Trichlorobenzene	10.0	9.3	93	80-120

Surrogate Recovery		
Dibromofluoromethane	102	65-135
1,2-Dichloroethane-d4	107	65-135
Toluene-d8	104	65-135
4-Bromofluorobenzene	105	65-135

ANALYSES PERFORMED BY: Sherry Chilcutt

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QA/QC Gasoline by NWTPH-Gx in Water

Sample Number	Date Analyzed	Gasoline (µg/L)	Gasoline (% Recovery)	CCV Recovery Limits (%)
500 ppb LCS	7/24/2021	456	91%	70-130%
500 ppb LCSD	7/25/2021	471	94%	70-130%
RPD			3%	30%
Practical Quantitation Limit		100		

CCV Gasoline by NWTPH-Gx in Water

Sample Number	Date Analyzed	Gasoline (µg/L)	CCV Recovery (%)	CCV Recovery Limits (%)
1000 ppb CCV	7/24/2021	1049	105%	80-120%
Practical Quantitation Limit		100		

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QA/QC Diesel by NWTPH-Dx in Water

Sample Number	Date Analyzed	Diesel (µg/L)	Diesel (% Recovery)	CCV Recovery Limits (%)
400 ppb LCS 072621	7/26/2021	343	86%	70-130%
400 ppb LCSD 072621	7/26/2021	312	78%	70-130%
RPD			10%	30%
Practical Quantitation Limit		50		

CCV Diesel by NWTPH-Dx in Water

Sample Number	Date Analyzed	Diesel (ppm)	CCV (%)	CCV Recovery Limits (%)
CCV Shiva FID 1 500 ppm	7/26/2021	470	94%	85-115%
Practical Quantitation Limit		50		

ANALYSES PERFORMED BY: Sherry Chilcutt

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JACKS AUTO GROUNDWATER PROJECT
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Libby Project # L210722-4

QA/QC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Water

Sample Description	LCS 072520	LCSD 072520	RPD
	(%)	(%)	(%)
Aroclor 1016	113%	114%	1%
Aroclor 1260	96%	97%	1%
Surrogate Recovery			
TCMX	87	87	
DCBP	96	96	

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

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QA/QC PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Water

Sample Description	Spike Concentration	LCS 072520	LCSD 072520	RPD
	(µg/L)	(µg/L)	(µg/L)	(%)
Aroclor 1016	0.10	0.113	0.114	1%
Aroclor 1260	0.10	0.096	0.097	1%
Surrogate Recovery				
TCMX		87		
DCBP		96		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

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CCV PCB (Polychlorinated Biphenyls) by EPA Method 8082 in Water

Sample Description	Date Analyzed	CCV Concentration (µg/L)	CCV Recovery (µg/L)	CCV Recovery (%)	CCV Recovery (%)
Pollux ECD1					
Aroclor 1016	7/25/2021	0.50	0.52	104%	85-115%
Aroclor 1260	7/25/2021	0.50	0.52	104%	85-115%
Pollux ECD2					
Aroclor 1016	7/25/2021	0.50	0.50	100%	85-115%
Aroclor 1260	7/25/2021	0.50	0.43	87%	85-115%

ANALYSES PERFORMED BY: Sherry Chilcutt

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QA/QC Dissolved Lead by EPA Method 7010 Series in Water

Sample Number	Date Analyzed	Lead (% Recovery)
LCS 072721	7/27/2021	118%
GW-MW6-0722 MS	7/27/2021	124%
GW-MW6-0722 MSD	7/27/2021	123%
RPD	7/27/2021	1%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

QA/QC Dissolved Lead by EPA Method 7010 Series in Water

Sample Number	Date Analyzed	Lead (µg/L)
Spike Concentration		20.0
LCS 072721	7/27/2021	23.5
Spike Concentration		20.0
GW-MW6-0722 MS	7/27/2021	24.89
GW-MW6-0722 MSD	7/27/2021	24.67
RPD	7/27/2021	1%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Kodey Eley

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CCV Dissolved Lead by EPA Method 7010 Series in Water

Sample Number	Date Analyzed	Lead (µg/L)
Spike Concentration		50
CCV 7/27/2021	7/27/2021	54.6
CCV Recovery %		109%
CCB		nd

CCV Recovery Limits %: 90-110%

ANALYSES PERFORMED BY: Kodey Eley

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JACKS AUTO GROUNDWATER PROJECT
Pioneer Technologies
Libby Project # L210722-4
Date Received 7/22/2021
Time Received 2:33 PM

Received By RJC

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	-1.3 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	4.1 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☑ Yes	☐ No	☐ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies? ☑ Yes ☐ No ☐ N/A

Person Notified: Joel Hecker Date: 7/23/2021

By Whom: Jenny Anderson Via: E-mail

Regarding: Collection date

19. Comments. Collection date on COC is 4-22-21. Joel confirmed collection date is 7-22-21

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info@fremontanalytical.com

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Jacks Auto Ground Water
Work Order Number: 2107361

August 10, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 7 sample(s) on 7/23/2021 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Volatile Petroleum Hydrocarbons by NWVPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *08/16/2021*

CLIENT: Libby Environmental
Project: Jacks Auto Ground Water
Work Order: 2107361

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2107361-001	GW-MW1-0722	07/22/2021 11:02 AM	07/23/2021 12:41 PM
2107361-002	GW-MW2-0722	07/22/2021 9:08 AM	07/23/2021 12:41 PM
2107361-003	GW-MW3-0722	07/22/2021 7:30 AM	07/23/2021 12:41 PM
2107361-004	GW-MW4-0722	07/22/2021 8:15 AM	07/23/2021 12:41 PM
2107361-005	GW-MW5-0722	07/22/2021 10:06 AM	07/23/2021 12:41 PM
2107361-006	GW-MW6-0722	07/22/2021 11:57 AM	08/03/2021 10:17 AM
2107361-007	GW-MW7-0722	07/22/2021 1:23 PM	07/23/2021 12:41 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Revision v2

Case Narrative

WO#: **2107361**
Date: **8/10/2021**

CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

8/10/2021: Revision 1 includes additional analysis requested by client.
8/16/2021: Revision 2 includes level 2B data package.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2107361**
Date Reported: **8/10/2021**

Client: Libby Environmental
Collection Date: 7/22/2021 11:02:00 AM
Project: Jacks Auto Ground Water
Lab ID: 2107361-001
Matrix: Groundwater
Client Sample ID: GW-MW1-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	0.590	0.0997		µg/L	1	7/26/2021 9:41:50 PM
2-Methylnaphthalene	0.501	0.0997		µg/L	1	7/26/2021 9:41:50 PM
1-Methylnaphthalene	0.416	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Acenaphthylene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Acenaphthene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Fluorene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Phenanthrene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Anthracene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Fluoranthene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Pyrene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Benz(a)anthracene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Chrysene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Benzo(b)fluoranthene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Benzo(k)fluoranthene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Benzo(a)pyrene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Indeno(1,2,3-cd)pyrene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Dibenz(a,h)anthracene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Benzo(g,h,i)perylene	ND	0.0997		µg/L	1	7/26/2021 9:41:50 PM
Surr: 2-Fluorobiphenyl	101	34.2 - 137		%Rec	1	7/26/2021 9:41:50 PM
Surr: Terphenyl-d14	105	37.3 - 150		%Rec	1	7/26/2021 9:41:50 PM

Analytical Report

Work Order: **2107361**
Date Reported: **8/10/2021**

Client: Libby Environmental
Collection Date: 7/22/2021 9:08:00 AM
Project: Jacks Auto Ground Water
Lab ID: 2107361-002
Matrix: Groundwater
Client Sample ID: GW-MW2-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
2-Methylnaphthalene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
1-Methylnaphthalene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Acenaphthylene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Acenaphthene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Fluorene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Phenanthrene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Anthracene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Fluoranthene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Pyrene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Benz(a)anthracene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Chrysene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Benzo(b)fluoranthene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Benzo(k)fluoranthene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Benzo(a)pyrene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Indeno(1,2,3-cd)pyrene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Dibenz(a,h)anthracene	ND	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Benzo(g,h,i)perylene	0.104	0.0990		µg/L	1	7/26/2021 10:03:23 PM
Surr: 2-Fluorobiphenyl	102	34.2 - 137		%Rec	1	7/26/2021 10:03:23 PM
Surr: Terphenyl-d14	104	37.3 - 150		%Rec	1	7/26/2021 10:03:23 PM

Client: Libby Environmental
Collection Date: 7/22/2021 7:30:00 AM
Project: Jacks Auto Ground Water
Lab ID: 2107361-003
Matrix: Groundwater
Client Sample ID: GW-MW3-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
2-Methylnaphthalene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
1-Methylnaphthalene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Acenaphthylene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Acenaphthene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Fluorene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Phenanthrene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Anthracene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Fluoranthene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Pyrene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Benz(a)anthracene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Chrysene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Benzo(b)fluoranthene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Benzo(k)fluoranthene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Benzo(a)pyrene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Indeno(1,2,3-cd)pyrene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Dibenz(a,h)anthracene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Benzo(g,h,i)perylene	ND	0.0992		µg/L	1	7/26/2021 10:24:59 PM
Surr: 2-Fluorobiphenyl	77.8	34.2 - 137		%Rec	1	7/26/2021 10:24:59 PM
Surr: Terphenyl-d14	96.2	37.3 - 150		%Rec	1	7/26/2021 10:24:59 PM

Analytical Report

Work Order: **2107361**
Date Reported: **8/10/2021**

Client: Libby Environmental
Collection Date: 7/22/2021 8:15:00 AM
Project: Jacks Auto Ground Water
Lab ID: 2107361-004
Matrix: Groundwater
Client Sample ID: GW-MW4-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
2-Methylnaphthalene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
1-Methylnaphthalene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Acenaphthylene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Acenaphthene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Fluorene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Phenanthrene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Anthracene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Fluoranthene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Pyrene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Benz(a)anthracene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Chrysene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Benzo(b)fluoranthene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Benzo(k)fluoranthene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Benzo(a)pyrene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Indeno(1,2,3-cd)pyrene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Dibenz(a,h)anthracene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Benzo(g,h,i)perylene	ND	0.0993		µg/L	1	7/26/2021 10:46:37 PM
Surr: 2-Fluorobiphenyl	107	34.2 - 137		%Rec	1	7/26/2021 10:46:37 PM
Surr: Terphenyl-d14	112	37.3 - 150		%Rec	1	7/26/2021 10:46:37 PM

Client: Libby Environmental
Collection Date: 7/22/2021 10:06:00 AM
Project: Jacks Auto Ground Water
Lab ID: 2107361-005
Matrix: Groundwater
Client Sample ID: GW-MW5-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
2-Methylnaphthalene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
1-Methylnaphthalene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Acenaphthylene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Acenaphthene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Fluorene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Phenanthrene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Anthracene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Fluoranthene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Pyrene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Benz(a)anthracene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Chrysene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Benzo(b)fluoranthene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Benzo(k)fluoranthene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Benzo(a)pyrene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Indeno(1,2,3-cd)pyrene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Dibenz(a,h)anthracene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Benzo(g,h,i)perylene	ND	0.0987		µg/L	1	7/26/2021 11:08:12 PM
Surr: 2-Fluorobiphenyl	92.2	34.2 - 137		%Rec	1	7/26/2021 11:08:12 PM
Surr: Terphenyl-d14	99.6	37.3 - 150		%Rec	1	7/26/2021 11:08:12 PM

Client: Libby Environmental
Collection Date: 7/22/2021 11:57:00 AM
Project: Jacks Auto Ground Water
Lab ID: 2107361-006
Matrix: Groundwater
Client Sample ID: GW-MW6-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	193	9.83	D	µg/L	100	7/27/2021 10:35:51 AM
2-Methylnaphthalene	104	9.83	D	µg/L	100	7/27/2021 10:35:51 AM
1-Methylnaphthalene	58.8	9.83	D	µg/L	100	7/27/2021 10:35:51 AM
Acenaphthylene	0.235	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Acenaphthene	0.575	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Fluorene	1.24	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Phenanthrene	1.74	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Anthracene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Fluoranthene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Pyrene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Benz(a)anthracene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Chrysene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Benzo(b)fluoranthene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Benzo(k)fluoranthene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Benzo(a)pyrene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Indeno(1,2,3-cd)pyrene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Dibenz(a,h)anthracene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Benzo(g,h,i)perylene	ND	0.0983		µg/L	1	7/26/2021 11:51:33 PM
Surr: 2-Fluorobiphenyl	98.5	34.2 - 137		%Rec	1	7/26/2021 11:51:33 PM
Surr: Terphenyl-d14	95.3	37.3 - 150		%Rec	1	7/26/2021 11:51:33 PM
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 33239		Analyst: CR
Aliphatic Hydrocarbon (C5-C6)	1,010	25.0		µg/L	1	8/4/2021 7:52:52 PM
Aliphatic Hydrocarbon (C6-C8)	1,910	45.0		µg/L	1	8/4/2021 7:52:52 PM
Aliphatic Hydrocarbon (C8-C10)	800	20.0		µg/L	1	8/4/2021 7:52:52 PM
Aliphatic Hydrocarbon (C10-C12)	1,210	250	DH	µg/L	10	8/10/2021 12:06:16 PM
Aliphatic Hydrocarbon (C10-C12)	1,180	25.0	E	µg/L	1	8/4/2021 7:52:52 PM
Aromatic Hydrocarbon (C8-C10)	3,060	50.0		µg/L	1	8/4/2021 7:52:52 PM
Aromatic Hydrocarbon (C10-C12)	2,330	20.0	E	µg/L	1	8/4/2021 7:52:52 PM
Aromatic Hydrocarbon (C10-C12)	2,270	200	DH	µg/L	10	8/10/2021 12:06:16 PM
Aromatic Hydrocarbon (C12-C13)	504	25.0		µg/L	1	8/4/2021 7:52:52 PM
Surr: 1,4-Difluorobenzene	101	65 - 140		%Rec	1	8/4/2021 7:52:52 PM
Surr: Bromofluorobenzene	86.4	65 - 140		%Rec	1	8/4/2021 7:52:52 PM

Client: Libby Environmental
Collection Date: 7/22/2021 1:23:00 PM
Project: Jacks Auto Ground Water
Lab ID: 2107361-007
Matrix: Groundwater
Client Sample ID: GW-MW7-0722

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33116		Analyst: SB
Naphthalene	2.60	0.0996		µg/L	1	7/26/2021 11:29:51 PM
2-Methylnaphthalene	3.81	0.0996		µg/L	1	7/26/2021 11:29:51 PM
1-Methylnaphthalene	1.78	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Acenaphthylene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Acenaphthene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Fluorene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Phenanthrene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Anthracene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Fluoranthene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Pyrene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Benz(a)anthracene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Chrysene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Benzo(b)fluoranthene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Benzo(k)fluoranthene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Benzo(a)pyrene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Indeno(1,2,3-cd)pyrene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Dibenz(a,h)anthracene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Benzo(g,h,i)perylene	ND	0.0996		µg/L	1	7/26/2021 11:29:51 PM
Surr: 2-Fluorobiphenyl	91.9	34.2 - 137		%Rec	1	7/26/2021 11:29:51 PM
Surr: Terphenyl-d14	66.6	37.3 - 150		%Rec	1	7/26/2021 11:29:51 PM

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICB** SampType: **ICB** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICB** Batch ID: **33116** Analysis Date: **7/15/2021** SeqNo: **1386897**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
2-Chloronaphthalene	ND	20.0									
Acenaphthene	ND	20.0									
Dimethyl phthalate	ND	50.0									
Acenaphthylene	ND	20.0									
Dibenzofuran	ND	40.0									
Fluorene	ND	20.0									
Diethyl phthalate	ND	20.0									
Pentachlorophenol	ND	80.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Carbazole	ND	20.0									
Di-n-butyl phthalate	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Butylbenzylphthalate	ND	20.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Bis(2-ethylhexyl) phthalate	ND	20.0									
Di-n-octyl phthalate	ND	20.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2-Fluorobiphenyl	570		500.0		114	50.4	142				
Surr: Terphenyl-d14 (surr)	572		500.0		114	48.8	157				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICB**	SampType: **ICB**	Units: **µg/L**	Prep Date: **7/15/2021**	RunNo: **68621**
Client ID: **ICB**	Batch ID: **33116**		Analysis Date: **7/15/2021**	SeqNo: **1386897**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **PAH ICV**	SampType: **ICV**	Units: **µg/L**	Prep Date: **7/15/2021**	RunNo: **68621**
Client ID: **ICV**	Batch ID: **33116**		Analysis Date: **7/15/2021**	SeqNo: **1386898**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,150	20.0	1,000	0	115	70	130				
2-Methylnaphthalene	1,170	20.0	1,000	0	117	70	130				
1-Methylnaphthalene	1,150	20.0	1,000	0	115	70	130				
2-Chloronaphthalene	1,150	20.0	1,000	0	115	70	130				
Acenaphthene	1,080	20.0	1,000	0	108	70	130				
Dimethyl phthalate	1,160	50.0	1,000	0	116	70	130				
Acenaphthylene	1,150	20.0	1,000	0	115	70	130				
Dibenzofuran	1,150	40.0	1,000	0	115	70	130				
Fluorene	1,140	20.0	1,000	0	114	70	130				
Diethyl phthalate	1,140	20.0	1,000	0	114	70	130				
Pentachlorophenol	1,080	80.0	1,000	0	108	70	130				
Phenanthrene	1,130	40.0	1,000	0	113	70	130				
Anthracene	1,110	40.0	1,000	0	111	70	130				
Carbazole	1,150	20.0	1,000	0	115	70	130				
Di-n-butyl phthalate	1,150	40.0	1,000	0	115	70	130				
Fluoranthene	1,150	40.0	1,000	0	115	70	130				
Pyrene	1,160	40.0	1,000	0	116	70	130				
Butylbenzylphthalate	1,160	20.0	1,000	0	116	70	130				
Benz(a)anthracene	1,130	20.0	1,000	0	113	70	130				
Chrysene	1,160	40.0	1,000	0	116	70	130				
Bis(2-ethylhexyl) phthalate	1,150	20.0	1,000	0	115	70	130				
Di-n-octyl phthalate	1,150	20.0	1,000	0	115	70	130				
Benzo(b)fluoranthene	1,130	20.0	1,000	0	113	70	130				
Benzo(k)fluoranthene	1,150	20.0	1,000	0	115	70	130				
Benzo(a)pyrene	1,190	20.0	1,000	0	119	70	130				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **PAH ICV** SampType: **ICV** Units: **µg/L** Prep Date: **7/15/2021** RunNo: **68621**
Client ID: **ICV** Batch ID: **33116** Analysis Date: **7/15/2021** SeqNo: **1386898**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	1,140	40.0	1,000	0	114	70	130				
Dibenz(a,h)anthracene	1,160	40.0	1,000	0	116	70	130				
Benzo(g,h,i)perylene	1,160	20.0	1,000	0	116	70	130				
Surr: 2-Fluorobiphenyl	532		500.0		106	60.9	160				
Surr: Terphenyl-d14 (surr)	533		500.0		107	62.2	159				

Sample ID: **CCV-33116** SampType: **CCV** Units: **µg/L** Prep Date: **7/26/2021** RunNo: **68816**
Client ID: **CCV** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1391738**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	938	0.100	1,000	0	93.8	80	120				
2-Methylnaphthalene	957	0.100	1,000	0	95.7	80	120				
1-Methylnaphthalene	948	0.100	1,000	0	94.8	80	120				
Acenaphthylene	958	0.100	1,000	0	95.8	80	120				
Acenaphthene	906	0.100	1,000	0	90.6	80	120				
Fluorene	917	0.100	1,000	0	91.7	80	120				
Phenanthrene	921	0.100	1,000	0	92.1	80	120				
Anthracene	915	0.100	1,000	0	91.5	80	120				
Fluoranthene	957	0.100	1,000	0	95.7	80	120				
Pyrene	957	0.100	1,000	0	95.7	80	120				
Benz(a)anthracene	955	0.100	1,000	0	95.5	80	120				
Chrysene	939	0.100	1,000	0	93.9	80	120				
Benzo(b)fluoranthene	891	0.100	1,000	0	89.1	80	120				
Benzo(k)fluoranthene	909	0.100	1,000	0	90.9	80	120				
Benzo(a)pyrene	914	0.100	1,000	0	91.4	80	120				
Indeno(1,2,3-cd)pyrene	929	0.100	1,000	0	92.9	80	120				
Dibenz(a,h)anthracene	936	0.100	1,000	0	93.6	80	120				
Benzo(g,h,i)perylene	920	0.100	1,000	0	92.0	80	120				
Surr: 2-Fluorobiphenyl	479		500.0		95.8	70.2	145				
Surr: Terphenyl-d14	484		500.0		96.7	71.3	142				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-33116**	SampType: **CCV**			Units: **µg/L**		Prep Date: **7/26/2021**			RunNo: **68816**		
Client ID: **CCV**	Batch ID: **33116**					Analysis Date: **7/26/2021**			SeqNo: **1391738**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **MB-33116**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **7/23/2021**			RunNo: **68816**		
Client ID: **MBLKW**	Batch ID: **33116**					Analysis Date: **7/26/2021**			SeqNo: **1391739**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	0.0992									
2-Methylnaphthalene	ND	0.0992									
1-Methylnaphthalene	ND	0.0992									
Acenaphthylene	ND	0.0992									
Acenaphthene	ND	0.0992									
Fluorene	ND	0.0992									
Phenanthrene	ND	0.0992									
Anthracene	ND	0.0992									
Fluoranthene	ND	0.0992									
Pyrene	ND	0.0992									
Benz(a)anthracene	ND	0.0992									
Chrysene	ND	0.0992									
Benzo(b)fluoranthene	ND	0.0992									
Benzo(k)fluoranthene	ND	0.0992									
Benzo(a)pyrene	ND	0.0992									
Indeno(1,2,3-cd)pyrene	ND	0.0992									
Dibenz(a,h)anthracene	ND	0.0992									
Benzo(g,h,i)perylene	ND	0.0992									
Surr: 2-Fluorobiphenyl	1.74		1.984		87.5	34.2	137				
Surr: Terphenyl-d14	1.84		1.984		93.0	37.3	150				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS1-33116** SampType: **LCS** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **LCSW** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1391740**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	3.27	0.0986	3.943	0	83.0	32.5	104				
2-Methylnaphthalene	3.40	0.0986	3.943	0	86.2	32.4	112				
1-Methylnaphthalene	3.35	0.0986	3.943	0	84.9	34.8	111				
Acenaphthylene	3.43	0.0986	3.943	0	87.1	37.5	110				
Acenaphthene	3.16	0.0986	3.943	0	80.2	39.5	106				
Fluorene	3.42	0.0986	3.943	0	86.8	45.7	111				
Phenanthrene	3.35	0.0986	3.943	0	84.9	49.5	109				
Anthracene	3.29	0.0986	3.943	0	83.4	52.2	104				
Fluoranthene	3.51	0.0986	3.943	0	89.0	51.9	113				
Pyrene	3.51	0.0986	3.943	0	88.9	49.2	111				
Benz(a)anthracene	3.41	0.0986	3.943	0	86.5	52.2	108				
Chrysene	3.41	0.0986	3.943	0	86.5	44.5	106				
Benzo(b)fluoranthene	3.60	0.0986	3.943	0	91.3	41.3	109				
Benzo(k)fluoranthene	3.17	0.0986	3.943	0	80.5	38.8	112				
Benzo(a)pyrene	3.47	0.0986	3.943	0	87.9	48.2	115				
Indeno(1,2,3-cd)pyrene	3.31	0.0986	3.943	0	83.9	35	111				
Dibenz(a,h)anthracene	3.36	0.0986	3.943	0	85.3	36.4	113				
Benzo(g,h,i)perylene	3.29	0.0986	3.943	0	83.5	28.9	108				
Surr: 2-Fluorobiphenyl	1.74		1.972		88.5	34.2	137				
Surr: Terphenyl-d14	1.78		1.972		90.5	37.3	150				

Sample ID: **CCV-33116** SampType: **CCV** Units: **µg/L** Prep Date: **7/26/2021** RunNo: **68816**
Client ID: **CCV** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1392072**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	948	0.100	1,000	0	94.8	80	120				
2-Methylnaphthalene	963	0.100	1,000	0	96.3	80	120				
1-Methylnaphthalene	946	0.100	1,000	0	94.6	80	120				
Acenaphthylene	949	0.100	1,000	0	94.9	80	120				
Acenaphthene	936	0.100	1,000	0	93.6	80	120				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-33116** SampType: **CCV** Units: **µg/L** Prep Date: **7/26/2021** RunNo: **68816**
Client ID: **CCV** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1392072**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	925	0.100	1,000	0	92.5	80	120				
Phenanthrene	920	0.100	1,000	0	92.0	80	120				
Anthracene	912	0.100	1,000	0	91.2	80	120				
Fluoranthene	940	0.100	1,000	0	94.0	80	120				
Pyrene	944	0.100	1,000	0	94.4	80	120				
Benz(a)anthracene	961	0.100	1,000	0	96.1	80	120				
Chrysene	917	0.100	1,000	0	91.7	80	120				
Benzo(b)fluoranthene	937	0.100	1,000	0	93.7	80	120				
Benzo(k)fluoranthene	858	0.100	1,000	0	85.8	80	120				
Benzo(a)pyrene	916	0.100	1,000	0	91.6	80	120				
Indeno(1,2,3-cd)pyrene	929	0.100	1,000	0	92.9	80	120				
Dibenz(a,h)anthracene	940	0.100	1,000	0	94.0	80	120				
Benzo(g,h,i)perylene	920	0.100	1,000	0	92.0	80	120				
Surr: 2-Fluorobiphenyl	476		500.0		95.3	70.2	145				
Surr: Terphenyl-d14	469		500.0		93.9	71.3	142				

Sample ID: **LCSD-33116** SampType: **LCSD** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **LCSW02** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1392073**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	3.85	0.0986	3.944	0	97.6	32.5	104	3.275	16.1	30	
2-Methylnaphthalene	4.02	0.0986	3.944	0	102	32.4	112	3.399	16.8	30	
1-Methylnaphthalene	3.93	0.0986	3.944	0	99.6	34.8	111	3.349	15.9	30	
Acenaphthylene	4.10	0.0986	3.944	0	104	37.5	110	3.435	17.7	30	
Acenaphthene	3.79	0.0986	3.944	0	96.1	39.5	106	3.163	18.0	30	
Fluorene	4.05	0.0986	3.944	0	103	45.7	111	3.423	16.7	30	
Phenanthrene	3.96	0.0986	3.944	0	100	49.5	109	3.347	16.9	30	
Anthracene	3.85	0.0986	3.944	0	97.6	52.2	104	3.287	15.8	30	
Fluoranthene	4.12	0.0986	3.944	0	105	51.9	113	3.510	16.1	30	
Pyrene	4.09	0.0986	3.944	0	104	49.2	111	3.506	15.3	30	

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCSD-33116** SampType: **LCSD** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **LCSW02** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1392073**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	3.85	0.0986	3.944	0	97.7	52.2	108	3.413	12.1	30	
Chrysene	4.08	0.0986	3.944	0	103	44.5	106	3.409	17.8	30	
Benzo(b)fluoranthene	3.21	0.0986	3.944	0	81.5	41.3	109	3.600	11.4	30	
Benzo(k)fluoranthene	3.58	0.0986	3.944	0	90.8	38.8	112	3.173	12.1	30	
Benzo(a)pyrene	3.08	0.0986	3.944	0	78.1	48.2	115	3.465	11.8	30	
Indeno(1,2,3-cd)pyrene	2.15	0.0986	3.944	0	54.4	35	111	3.307	42.6	30	R
Dibenz(a,h)anthracene	2.37	0.0986	3.944	0	60.0	36.4	113	3.364	34.8	30	R
Benzo(g,h,i)perylene	1.73	0.0986	3.944	0	44.0	28.9	108	3.292	62.0	30	R
Surr: 2-Fluorobiphenyl	2.07		1.972		105	34.2	137		0	0	
Surr: Terphenyl-d14	2.07		1.972		105	37.3	150		0	0	

NOTES:
R - High RPD observed, spike recovery is within range.

Sample ID: **2107283-001CMS** SampType: **MS** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **BATCH** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1392074**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	3.71	0.0994	3.975	0	93.3	34	110				
2-Methylnaphthalene	3.91	0.0994	3.975	0	98.4	14.8	131				
1-Methylnaphthalene	3.87	0.0994	3.975	0	97.5	25.1	123				
Acenaphthylene	3.95	0.0994	3.975	0	99.3	35.6	115				
Acenaphthene	3.61	0.0994	3.975	0	90.9	39.2	111				
Fluorene	3.90	0.0994	3.975	0	98.0	46.9	113				
Phenanthrene	3.98	0.0994	3.975	0	100	52.5	107				
Anthracene	3.84	0.0994	3.975	0	96.5	49.3	104				
Fluoranthene	4.06	0.0994	3.975	0	102	53.2	110				
Pyrene	4.03	0.0994	3.975	0	102	50.5	107				
Benz(a)anthracene	3.78	0.0994	3.975	0	95.0	48.3	104				
Chrysene	3.94	0.0994	3.975	0	99.0	41.7	105				
Benzo(b)fluoranthene	3.12	0.0994	3.975	0	78.4	34.4	109				
Benzo(k)fluoranthene	3.49	0.0994	3.975	0	87.8	29.2	111				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2107283-001CMS** SampType: **MS** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **BATCH** Batch ID: **33116** Analysis Date: **7/26/2021** SeqNo: **1392074**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	3.01	0.0994	3.975	0	75.7	34.8	114				
Indeno(1,2,3-cd)pyrene	2.24	0.0994	3.975	0	56.3	8.88	117				
Dibenz(a,h)anthracene	2.43	0.0994	3.975	0	61.1	9.16	119				
Benzo(g,h,i)perylene	1.91	0.0994	3.975	0	48.1	7.67	110				
Surr: 2-Fluorobiphenyl	2.04		1.987		103	34.2	137				
Surr: Terphenyl-d14	2.03		1.987		102	37.3	150				

Sample ID: **2107361-006ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **GW-MW6-0722** Batch ID: **33116** Analysis Date: **7/27/2021** SeqNo: **1392082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthylene	0.209	0.106						0.2352	12.0	30	
Acenaphthene	0.549	0.106						0.5752	4.62	30	
Fluorene	1.16	0.106						1.240	6.52	30	
Phenanthrene	1.68	0.106						1.738	3.25	30	
Anthracene	ND	0.106						0		30	
Fluoranthene	ND	0.106						0		30	
Pyrene	ND	0.106						0		30	
Benz(a)anthracene	ND	0.106						0		30	
Chrysene	ND	0.106						0		30	
Benzo(b)fluoranthene	ND	0.106						0		30	
Benzo(k)fluoranthene	ND	0.106						0		30	
Benzo(a)pyrene	ND	0.106						0		30	
Indeno(1,2,3-cd)pyrene	ND	0.106						0		30	
Dibenz(a,h)anthracene	ND	0.106						0		30	
Benzo(g,h,i)perylene	ND	0.106						0		30	
Surr: 2-Fluorobiphenyl	2.03		2.117		95.7	34.2	137		0		
Surr: Terphenyl-d14	1.90		2.117		89.9	37.3	150		0		

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-33116** SampType: **CCV** Units: **µg/L** Prep Date: **7/27/2021** RunNo: **68816**
Client ID: **CCV** Batch ID: **33116** Analysis Date: **7/27/2021** SeqNo: **1392399**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	945	0.100	1,000	0	94.5	80	120				
2-Methylnaphthalene	954	0.100	1,000	0	95.4	80	120				
1-Methylnaphthalene	946	0.100	1,000	0	94.6	80	120				
Acenaphthylene	960	0.100	1,000	0	96.0	80	120				
Acenaphthene	927	0.100	1,000	0	92.7	80	120				
Fluorene	932	0.100	1,000	0	93.2	80	120				
Phenanthrene	909	0.100	1,000	0	90.9	80	120				
Anthracene	896	0.100	1,000	0	89.6	80	120				
Fluoranthene	944	0.100	1,000	0	94.4	80	120				
Pyrene	954	0.100	1,000	0	95.4	80	120				
Benz(a)anthracene	965	0.100	1,000	0	96.5	80	120				
Chrysene	930	0.100	1,000	0	93.0	80	120				
Benzo(b)fluoranthene	906	0.100	1,000	0	90.6	80	120				
Benzo(k)fluoranthene	916	0.100	1,000	0	91.6	80	120				
Benzo(a)pyrene	919	0.100	1,000	0	91.9	80	120				
Indeno(1,2,3-cd)pyrene	943	0.100	1,000	0	94.3	80	120				
Dibenz(a,h)anthracene	949	0.100	1,000	0	94.9	80	120				
Benzo(g,h,i)perylene	936	0.100	1,000	0	93.6	80	120				
Surr: 2-Fluorobiphenyl	482		500.0		96.4	70.2	145				
Surr: Terphenyl-d14	473		500.0		94.7	71.3	142				

Sample ID: **2107361-006ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **GW-MW6-0722** Batch ID: **33116** Analysis Date: **7/27/2021** SeqNo: **1392401**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	175	10.6						192.9	9.66	30	D
2-Methylnaphthalene	93.3	10.6						104.4	11.2	30	D
1-Methylnaphthalene	52.2	10.6						58.84	12.0	30	D
Surr: 2-Fluorobiphenyl	1.89		2.117		89.2	34.2	137		0		D
Surr: Terphenyl-d14	1.97		2.117		93.2	37.3	150		0		D

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2107361-006ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **7/23/2021** RunNo: **68816**
Client ID: **GW-MW6-0722** Batch ID: **33116** Analysis Date: **7/27/2021** SeqNo: **1392401**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **ICB VPH**	SampType: **ICB**			Units: **µg/L**		Prep Date: **7/23/2021**		RunNo: **69132**			
Client ID: **ICB**	Batch ID: **33239**					Analysis Date: **7/23/2021**		SeqNo: **1402755**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	25.0									
Aliphatic Hydrocarbon (C6-C8)	ND	45.0									
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	25.0									
Aromatic Hydrocarbon (C8-C10)	ND	50.0									
Aromatic Hydrocarbon (C10-C12)	ND	20.0									
Aromatic Hydrocarbon (C12-C13)	ND	25.0									
Surr: 1,4-Difluorobenzene	43.1		50.00		86.2	65	140				
Surr: Bromofluorobenzene	49.5		50.00		99.0	65	140				

Sample ID: **ICV VPH 25080**	SampType: **ICV**			Units: **µg/L**		Prep Date: **7/23/2021**		RunNo: **69132**			
Client ID: **ICV**	Batch ID: **33239**					Analysis Date: **7/23/2021**		SeqNo: **1402754**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	536	25.0	600.0	0	89.3	70	130				
Aliphatic Hydrocarbon (C6-C8)	191	45.0	200.0	0	95.6	70	130				
Aliphatic Hydrocarbon (C8-C10)	183	20.0	200.0	0	91.7	70	130				
Aliphatic Hydrocarbon (C10-C12)	204	25.0	200.0	0	102	70	130				
Aromatic Hydrocarbon (C8-C10)	866	50.0	800.0	0	108	70	130				
Aromatic Hydrocarbon (C10-C12)	204	20.0	200.0	0	102	70	130				
Aromatic Hydrocarbon (C12-C13)	208	25.0	200.0	0	104	70	130				
Surr: 1,4-Difluorobenzene	52.5		50.00		105	65	140				
Surr: Bromofluorobenzene	52.1		50.00		104	65	140				

Sample ID: **CCV-33239A**	SampType: **CCV**			Units: **µg/L**		Prep Date: **8/4/2021**		RunNo: **69132**			
Client ID: **CCV**	Batch ID: **33239**					Analysis Date: **8/4/2021**		SeqNo: **1399671**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	584	25.0	600.0	0	97.3	80	120				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **CCV-33239A**	SampType: **CCV**			Units: **µg/L**		Prep Date: **8/4/2021**		RunNo: **69132**			
Client ID: **CCV**	Batch ID: **33239**					Analysis Date: **8/4/2021**		SeqNo: **1399671**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C6-C8)	201	45.0	200.0	0	101	80	120				
Aliphatic Hydrocarbon (C8-C10)	205	20.0	200.0	0	103	80	120				
Aliphatic Hydrocarbon (C10-C12)	211	25.0	200.0	0	106	80	120				
Aromatic Hydrocarbon (C8-C10)	737	50.0	800.0	0	92.1	80	120				
Aromatic Hydrocarbon (C10-C12)	194	20.0	200.0	0	97.2	80	120				
Aromatic Hydrocarbon (C12-C13)	213	25.0	200.0	0	107	80	120				
Surr: 1,4-Difluorobenzene	46.2		50.00		92.3	65	140				
Surr: Bromofluorobenzene	47.6		50.00		95.3	65	140				

Sample ID: **LCS-33239**	SampType: **LCS**			Units: **µg/L**		Prep Date: **8/4/2021**		RunNo: **69132**			
Client ID: **LCSW**	Batch ID: **33239**					Analysis Date: **8/4/2021**		SeqNo: **1399674**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	584	25.0	600.0	0	97.3	70	130				
Aliphatic Hydrocarbon (C6-C8)	201	45.0	200.0	0	101	70	130				
Aliphatic Hydrocarbon (C8-C10)	205	20.0	200.0	0	103	70	130				
Aliphatic Hydrocarbon (C10-C12)	211	25.0	200.0	0	106	70	130				
Aromatic Hydrocarbon (C8-C10)	737	50.0	800.0	0	92.1	70	130				
Aromatic Hydrocarbon (C10-C12)	194	20.0	200.0	0	97.2	70	130				
Aromatic Hydrocarbon (C12-C13)	213	25.0	200.0	0	107	70	130				
Surr: 1,4-Difluorobenzene	46.2		50.00		92.3	65	140				
Surr: Bromofluorobenzene	47.6		50.00		95.3	65	140				

Sample ID: **MB-33239**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **8/4/2021**		RunNo: **69132**			
Client ID: **MBLKW**	Batch ID: **33239**					Analysis Date: **8/4/2021**		SeqNo: **1399673**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	25.0		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	45.0		0	0						

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **MB-33239** SampType: **MBLK** Units: **µg/L** Prep Date: **8/4/2021** RunNo: **69132**
Client ID: **MBLKW** Batch ID: **33239** Analysis Date: **8/4/2021** SeqNo: **1399673**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	25.0		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	50.0		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	20.0		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	25.0		0	0						
Surr: 1,4-Difluorobenzene	36.8		50.00		73.5	65	140				
Surr: Bromofluorobenzene	43.8		50.00		87.6	65	140				

Sample ID: **2107361-006CMS** SampType: **MS** Units: **µg/L** Prep Date: **8/4/2021** RunNo: **69132**
Client ID: **GW-MW6-0722** Batch ID: **33239** Analysis Date: **8/4/2021** SeqNo: **1399831**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	1,300	25.0	600.0	1,007	49.1	70	130				S
Aliphatic Hydrocarbon (C6-C8)	1,820	45.0	200.0	1,912	-47.2	70	130				S
Aliphatic Hydrocarbon (C8-C10)	1,050	20.0	200.0	800.1	125	70	130				
Aliphatic Hydrocarbon (C10-C12)	2,100	25.0	200.0	1,177	461	70	130				S
Aromatic Hydrocarbon (C8-C10)	3,570	50.0	800.0	3,060	63.3	70	130				S
Aromatic Hydrocarbon (C10-C12)	2,520	20.0	200.0	2,328	97.5	70	130				
Aromatic Hydrocarbon (C12-C13)	737	25.0	200.0	504.5	116	70	130				
Surr: 1,4-Difluorobenzene	51.9		50.00		104	65	140				
Surr: Bromofluorobenzene	43.1		50.00		86.1	65	140				

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **LCSD-33239** SampType: **LCSD** Units: **µg/L** Prep Date: **8/4/2021** RunNo: **69132**
Client ID: **LCSW02** Batch ID: **33239** Analysis Date: **8/4/2021** SeqNo: **1399672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	540	25.0	600.0	0	90.0	70	130	583.6	7.77	20	
Aliphatic Hydrocarbon (C6-C8)	206	45.0	200.0	0	103	70	130	201.2	2.26	20	

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **LCSD-33239**	SampType: **LCSD**			Units: **µg/L**		Prep Date: **8/4/2021**		RunNo: **69132**		
Client ID: **LCSW02**	Batch ID: **33239**					Analysis Date: **8/4/2021**		SeqNo: **1399672**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	203	20.0	200.0	0	101	70	130	205.1	1.23	20	
Aliphatic Hydrocarbon (C10-C12)	203	25.0	200.0	0	102	70	130	211.4	3.84	20	
Aromatic Hydrocarbon (C8-C10)	710	50.0	800.0	0	88.8	70	130	737.0	3.67	20	
Aromatic Hydrocarbon (C10-C12)	228	20.0	200.0	0	114	70	130	194.5	15.9	20	
Aromatic Hydrocarbon (C12-C13)	206	25.0	200.0	0	103	70	130	213.0	3.46	20	
Surr: 1,4-Difluorobenzene	42.3		50.00		84.6	65	140		0		
Surr: Bromofluorobenzene	44.9		50.00		89.8	65	140		0		

Sample ID: **CCV-33239B**	SampType: **CCV**			Units: **µg/L**		Prep Date: **8/4/2021**		RunNo: **69132**		
Client ID: **CCV**	Batch ID: **33239**					Analysis Date: **8/4/2021**		SeqNo: **1399675**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	540	25.0	600.0	0	90.0	80	120				
Aliphatic Hydrocarbon (C6-C8)	206	45.0	200.0	0	103	80	120				
Aliphatic Hydrocarbon (C8-C10)	203	20.0	200.0	0	101	80	120				
Aliphatic Hydrocarbon (C10-C12)	203	25.0	200.0	0	102	80	120				
Aromatic Hydrocarbon (C8-C10)	710	50.0	800.0	0	88.8	80	120				
Aromatic Hydrocarbon (C10-C12)	228	20.0	200.0	0	114	80	120				
Aromatic Hydrocarbon (C12-C13)	206	25.0	200.0	0	103	80	120				
Surr: 1,4-Difluorobenzene	42.3		50.00		84.6	65	140				
Surr: Bromofluorobenzene	44.9		50.00		89.8	65	140				

Sample ID: **CCV-33239C**	SampType: **CCV**			Units: **µg/L**		Prep Date: **8/10/2021**		RunNo: **69132**		
Client ID: **CCV**	Batch ID: **33239**					Analysis Date: **8/10/2021**		SeqNo: **1399814**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	602	25.0	600.0	0	100	80	120				
Aliphatic Hydrocarbon (C6-C8)	215	45.0	200.0	0	108	80	120				
Aliphatic Hydrocarbon (C8-C10)	209	20.0	200.0	0	104	80	120				

Work Order: 2107361
CLIENT: Libby Environmental
Project: Jacks Auto Ground Water

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **CCV-33239C** SampType: **CCV** Units: **µg/L** Prep Date: **8/10/2021** RunNo: **69132**
Client ID: **CCV** Batch ID: **33239** Analysis Date: **8/10/2021** SeqNo: **1399814**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	202	25.0	200.0	0	101	80	120				
Aromatic Hydrocarbon (C8-C10)	762	50.0	800.0	0	95.3	80	120				
Aromatic Hydrocarbon (C10-C12)	194	20.0	200.0	0	97.2	80	120				
Aromatic Hydrocarbon (C12-C13)	197	25.0	200.0	0	98.4	80	120				
Surr: 1,4-Difluorobenzene	43.3		50.00		86.7	65	140				
Surr: Bromofluorobenzene	45.3		50.00		90.5	65	140				

Sample ID: **CCV-33239D** SampType: **CCV** Units: **µg/L** Prep Date: **8/10/2021** RunNo: **69132**
Client ID: **CCV** Batch ID: **33239** Analysis Date: **8/10/2021** SeqNo: **1399815**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	584	25.0	600.0	0	97.4	80	120				
Aliphatic Hydrocarbon (C6-C8)	196	45.0	200.0	0	98.1	80	120				
Aliphatic Hydrocarbon (C8-C10)	216	20.0	200.0	0	108	80	120				
Aliphatic Hydrocarbon (C10-C12)	201	25.0	200.0	0	101	80	120				
Aromatic Hydrocarbon (C8-C10)	745	50.0	800.0	0	93.1	80	120				
Aromatic Hydrocarbon (C10-C12)	189	20.0	200.0	0	94.3	80	120				
Aromatic Hydrocarbon (C12-C13)	185	25.0	200.0	0	92.4	80	120				
Surr: 1,4-Difluorobenzene	42.9		50.00		85.8	65	140				
Surr: Bromofluorobenzene	45.8		50.00		91.7	65	140				

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2107361**
Logged by:	**Clare Griggs**	Date Received:	**7/23/2021 12:41:07 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☑	No ☐	NA ☐ HCL to 006B & 007B
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☑	No ☐	NA ☐

Person Notified:	Libby Env	Date:	7/23/2021
By Whom:	Clare Griggs	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	Confirming sampling date & hold volume.		
Client Instructions:	Sample date 7/22/21. Preserve EPH volume w/ HCl to extend TAT.		

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.7

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2107361**
Logged by:	**Gabrielle Coeuille**	Date Received:	**7/23/2021 12:41:07 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☐	Not Present	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☑	NA	☐
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No ☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	5.6

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

2107361

Date: 7-22-21 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (SEE ABOVE)
City: State: Zip:
Phone: Fax:
Client Project # L210722-4

Project Manager: Kodey Eley
Project Name: Jack's Auto Ground Water
Location: City, State: Olympia, WA
Collector: JH/MK Date of Collection:
Email: libbyenv@gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270			Field Notes
1 GW-MW1-0722		11:02	G	Ambers										X					
2 GW-MW2-0722		9:08												X					
3 GW-MW3-0722		7:30												X					
4 GW-MW4-0722		8:15												X					
5 GW-MW5-0722		10:06												X					
6 GW-MW6-0722		11:57												X					Hold for EPH/VPH *
7 GW-MW7-0722		13:23												X					Hold for EPH/VPH
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
	7.22.21	UPS KD	
UPS KD			7/23/21 1201
	7/23/21 1201		7/23/21 1241

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
STD TAT
* use for internal Dup

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay. Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

2107361

Date: 7-22-21 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (SEE ABOVE)
City: State: Zip:
Phone: Fax:
Client Project # L210722-4

Project Manager: Kodey Eley
Project Name: Jack's Auto Ground Water
Location: City, State: Olympia, WA
Collector: JH/MK Date of Collection:
Email: libbyenv@gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	VPH	Field Notes
1 GW-MW1-0722		11:02	G	Ambers										X				
2 GW-MW2-0722		9:08												X				
3 GW-MW3-0722		7:30												X				
4 GW-MW4-0722		8:15												X				
5 GW-MW5-0722		10:06												X				
6 GW-MW6-0722		11:57												X			X	Hold for EPH/VPH
7 GW-MW7-0722		13:23												X				Hold for EPH/VPH
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		

Relinquished by: Date / Time 7.22.21
Received by: Date / Time

Relinquished by: Date / Time
Received by: Date / Time 7/23/21 1201

Relinquished by: Date / Time 7/23/21 1201
Received by: Date / Time 7/23/21 1241

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
Additional volume provided for VPH 8/3/21 per KI- gac
STD TAT
* use for internal Dup

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - Originator

Page 30 of 30

Page 30 of 90

DATA SET for Review -- Deliverable Requirements

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Fremont Analytical Work Order No. 2107361

Libby Environmental

Project Name: Jacks Auto Ground Water

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information
- Tune Information

Injection Log

Data Directory: C:\GC-14\Data\2021\071521\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	071501.D	PAH-SIM.M			
CO			2	1.000	15 Jul 2021 08:06 am
2)	071502.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 08:27 am
3)	071503.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 08:50 am
4)	071504.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 09:12 am
5)	071505.D	PAH-SIM.M			
CO			2	1.000	15 Jul 2021 10:48 am
6)	071506.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 11:09 am
7)	071507.D	PAH-SIM.M			
CO			2	1.000	15 Jul 2021 11:31 am
8)	071508.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 11:53 am
9)	071509.D	SEMI9.M			
TUNE			1	1.000	15 Jul 2021 01:34 pm
10)	071510.D	PAH-SIM.M			
PAH 10			12	1.000	15 Jul 2021 02:02 pm
11)	071511.D	PAH-SIM.M			
PAH 20			13	1.000	15 Jul 2021 02:24 pm
12)	071512.D	PAH-SIM.M			
PAH 40			14	1.000	15 Jul 2021 02:46 pm
13)	071513.D	PAH-SIM.M			
PAH 100			15	1.000	15 Jul 2021 03:10 pm
14)	071514.D	PAH-SIM.M			
PAH 200			16	1.000	15 Jul 2021 03:32 pm
15)	071515.D	PAH-SIM.M			
PAH 500			17	1.000	15 Jul 2021 03:54 pm
16)	071516.D	PAH-SIM.M			
PAH 750			18	1.000	15 Jul 2021 04:15 pm
17)	071517.D	PAH-SIM.M			
PAH 1000			19	1.000	15 Jul 2021 04:37 pm
18)	071518.D	PAH-SIM.M			
PAH 2000			20	1.000	15 Jul 2021 04:59 pm
19)	071519.D	PAH-SIM.M			
PAH 5000			21	1.000	15 Jul 2021 05:21 pm
20)	071520.D	PAH-SIM.M			
PAH ICB			22	1.000	15 Jul 2021 05:43 pm
21)	071521.D	PAH-SIM.M			
PAH ICV			23	1.000	15 Jul 2021 06:04 pm

22) 071522.D	PAH-LOWLEVEL.M				
CO		22	1.000	15 Jul 2021	06:26 pm
23) 071523.D	PAH-LOWLEVEL.M				
PAH LL 2		11	1.000	15 Jul 2021	06:48 pm
24) 071524.D	PAH-LOWLEVEL.M				
PAH LL 10		12	1.000	15 Jul 2021	07:10 pm
25) 071525.D	PAH-LOWLEVEL.M				
PAH LL 20		13	1.000	15 Jul 2021	07:32 pm
26) 071526.D	PAH-LOWLEVEL.M				
PAH LL 40		14	1.000	15 Jul 2021	07:53 pm
27) 071527.D	PAH-LOWLEVEL.M				
PAH LL 100		15	1.000	15 Jul 2021	08:15 pm
28) 071528.D	PAH-LOWLEVEL.M				
PAH LL 200		16	1.000	15 Jul 2021	08:37 pm
29) 071529.D	PAH-LOWLEVEL.M				
PAH LL 500		17	1.000	15 Jul 2021	08:58 pm
30) 071530.D	PAH-LOWLEVEL.M				
PAH LL 750		18	1.000	15 Jul 2021	09:20 pm
31) 071531.D	PAH-LOWLEVEL.M				
PAH LL 1000		19	1.000	15 Jul 2021	09:41 pm
32) 071532.D	PAH-LOWLEVEL.M				
PAH LL 2000		20	1.000	15 Jul 2021	10:03 pm
33) 071533.D	PAH-LOWLEVEL.M				
PAH LL 5000		21	1.000	15 Jul 2021	10:25 pm
34) 071534.D	PAH-LOWLEVEL.M				
PAH LL ICB		22	1.000	15 Jul 2021	10:46 pm
35) 071535.D	PAH-LOWLEVEL.M				
PAH LL ICV		23	1.000	15 Jul 2021	11:08 pm
36) 071536.D	PAH-LOWLEVEL.M				
CCV-LL-32998		2	1.000	15 Jul 2021	11:30 pm
37) 071537.D	PAH-LOWLEVEL.M				
MB-32998		31	1.000	15 Jul 2021	11:51 pm
38) 071538.D	PAH-LOWLEVEL.M				
LCS-32998		32	1.000	16 Jul 2021	12:13 am
39) 071539.D	PAH-LOWLEVEL.M				
LCSD-32998		33	1.000	16 Jul 2021	12:35 am
40) 071540.D	PAH-LOWLEVEL.M				
2107110-001C		34	1.000	16 Jul 2021	12:56 am
41) 071541.D	PAH-LOWLEVEL.M				
QCS-LL-32998		2	1.000	16 Jul 2021	01:18 am
42) 071542.D	SEMI9.M				
TUNE		1	1.000	16 Jul 2021	01:39 am
43) 071543.D	PAH-SIM.M				
CCV-33012		2	1.000	16 Jul 2021	02:02 am
44) 071544.D	PAH-SIM.M				
MB-33012		41	1.000	16 Jul 2021	02:24 am
45) 071545.D	PAH-SIM.M				

LCS-33012 42 1.000 16 Jul 2021 02:45 am

46) 071546.D PAH-SIM.M
2107170-001A 43 1.000 16 Jul 2021 03:07 am

47) 071547.D PAH-SIM.M
2107170-001AMS 44 1.000 16 Jul 2021 03:28 am

48) 071548.D PAH-SIM.M
2107170-001AMSD 45 1.000 16 Jul 2021 03:50 am

49) 071549.D PAH-SIM.M
2107170-006A 46 1.000 16 Jul 2021 04:11 am

50) 071550.D PAH-SIM.M
2107170-011A 47 1.000 16 Jul 2021 04:33 am

51) 071551.D PAH-SIM.M
2107170-015A 48 1.000 16 Jul 2021 04:54 am

52) 071552.D PAH-SIM.M
2107170-019A 49 1.000 16 Jul 2021 05:16 am

53) 071553.D PAH-SIM.M
2107179-001A 50 1.000 16 Jul 2021 05:37 am

54) 071554.D PAH-SIM.M
2107179-002A 51 1.000 16 Jul 2021 05:59 am

55) 071555.D PAH-SIM.M
2107179-003A 52 1.000 16 Jul 2021 06:21 am

56) 071556.D PAH-SIM.M
2107181-001A 53 1.000 16 Jul 2021 06:42 am

57) 071557.D PAH-SIM.M
2107197-001A 54 1.000 16 Jul 2021 07:04 am

58) 071558.D PAH-SIM.M
2107197-006A 55 1.000 16 Jul 2021 07:25 am

59) 071559.D PAH-SIM.M
2107197-009A 56 1.000 16 Jul 2021 07:47 am

60) 071560.D PAH-SIM.M
2107197-013A 57 1.000 16 Jul 2021 08:08 am

61) 071561.D PAH-SIM.M
2107197-017A 58 1.000 16 Jul 2021 08:30 am

62) 071562.D PAH-SIM.M
2107197-022A 59 1.000 16 Jul 2021 08:52 am

63) 071563.D PAH-SIM.M
QCS-33012 2 1.000 16 Jul 2021 09:13 am

Injection Log

Data Directory: C:\GC-14\Data\2021\072621\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 072617.D	PAH-SIM.M			
No data found			0.000	N/A
2) 072601.D	PAH-SIM.M			
CO		2	1.000	26 Jul 2021 07:38 am
3) 072602.D	SEMI9.M			
TUNE		1	1.000	26 Jul 2021 08:00 am
4) 072603.D	PAH-SIM.M			
CCV		2	1.000	26 Jul 2021 08:22 am
5) 072604.D	PAH-SIM.M			
MB-33108		11	1.000	26 Jul 2021 10:39 am
6) 072605.D	PAH-SIM.M			
LCS-33108		12	1.000	26 Jul 2021 11:01 am
7) 072606.D	PAH-SIM.M			
2107291-002A		13	1.000	26 Jul 2021 11:22 am
8) 072607.D	PAH-SIM.M			
2107291-011A		14	1.000	26 Jul 2021 11:44 am
9) 072608.D	PAH-SIM.M			
2107304-001A		24	1.000	26 Jul 2021 12:06 pm
10) 072609.D	PAH-SIM.M			
2107304-001AMS		25	1.000	26 Jul 2021 12:27 pm
11) 072610.D	PAH-SIM.M			
2107304-001AMSD		26	1.000	26 Jul 2021 12:49 pm
12) 072611.D	PAH-SIM.M			
MB-33116		31	1.000	26 Jul 2021 01:11 pm
13) 072612.D	PAH-SIM.M			
LCS1-33116		32	1.000	26 Jul 2021 01:33 pm
14) 072613.D	PAH-SIM.M			
2107283-001C		34	1.000	26 Jul 2021 01:54 pm
15) 072614.D	PAH-SIM.M			
2107285-001E		36	1.000	26 Jul 2021 02:16 pm
16) 072615.D	PAH-SIM.M			
LCS-33108		12	1.000	26 Jul 2021 02:38 pm
17) 072616.D	PAH-SIM.M			
MB-33108		11	1.000	26 Jul 2021 03:00 pm
18) 072618.D	PAH-SIM.M			
QCS		2	1.000	26 Jul 2021 03:32 pm
19) 072619.D	PAH-SIM.M			
CCV		2	1.000	26 Jul 2021 03:53 pm
20) 072620.D	PAH-SIM.M			
2107297-001A		15	1.000	26 Jul 2021 04:15 pm
21) 072621.D	PAH-SIM.M			
2107297-002A		16	1.000	26 Jul 2021 04:37 pm

22) 072622.D PAH-SIM.M
2107297-003A 17 1.000 26 Jul 2021 04:59 pm

23) 072623.D PAH-SIM.M
2107303-001A 18 1.000 26 Jul 2021 05:21 pm

24) 072624.D PAH-SIM.M
2107305-001A 19 1.000 26 Jul 2021 05:42 pm

25) 072625.D PAH-SIM.M
2107317-001A 20 1.000 26 Jul 2021 06:04 pm

26) 072626.D PAH-SIM.M
2107317-002A 21 1.000 26 Jul 2021 06:26 pm

27) 072627.D PAH-SIM.M
2107317-014A 22 1.000 26 Jul 2021 06:48 pm

28) 072628.D PAH-SIM.M
2107334-002A 23 1.000 26 Jul 2021 07:10 pm

29) 072629.D PAH-SIM.M
2107096-013A 27 1.000 26 Jul 2021 07:31 pm

30) 072630.D PAH-SIM.M
2107096-014A 28 1.000 26 Jul 2021 07:53 pm

31) 072631.D PAH-SIM.M
2107143-002A 29 1.000 26 Jul 2021 08:15 pm

32) 072632.D PAH-SIM.M
2107143-012A 30 1.000 26 Jul 2021 08:36 pm

33) 072633.D PAH-SIM.M
LCSD-33116 33 1.000 26 Jul 2021 08:58 pm

34) 072634.D PAH-SIM.M
2107283-001CMS 35 1.000 26 Jul 2021 09:20 pm

35) 072635.D PAH-SIM.M
2107361-001A 37 1.000 26 Jul 2021 09:41 pm

36) 072636.D PAH-SIM.M
2107361-002A 38 1.000 26 Jul 2021 10:03 pm

37) 072637.D PAH-SIM.M
2107361-003A 39 1.000 26 Jul 2021 10:24 pm

38) 072638.D PAH-SIM.M
2107361-004A 40 1.000 26 Jul 2021 10:46 pm

39) 072639.D PAH-SIM.M
2107361-005A 41 1.000 26 Jul 2021 11:08 pm

40) 072640.D PAH-SIM.M
2107361-007A 42 1.000 26 Jul 2021 11:29 pm

41) 072641.D PAH-SIM.M
2107361-006A 43 1.000 26 Jul 2021 11:51 pm

42) 072642.D PAH-SIM.M
2107361-006ADUP 44 1.000 27 Jul 2021 12:13 am

43) 072643.D PAH-SIM.M
QCS 2 1.000 27 Jul 2021 12:34 am

44) 072644.D PAH-SIM.M
CCV 2 1.000 27 Jul 2021 12:56 am

45) 072645.D PAH-SIM.M

MB-33130 111 1.000 27 Jul 2021 01:17 am

46) 072646.D PAH-SIM.M
LCS-33130 112 1.000 27 Jul 2021 01:39 am

47) 072647.D PAH-SIM.M
2107363-001A 113 1.000 27 Jul 2021 02:01 am

48) 072648.D PAH-SIM.M
2107363-002A 114 1.000 27 Jul 2021 02:22 am

49) 072649.D PAH-SIM.M
2107369-001A 115 1.000 27 Jul 2021 02:44 am

50) 072650.D PAH-SIM.M
2107369-002A 116 1.000 27 Jul 2021 03:05 am

51) 072651.D PAH-SIM.M
2107369-002AMS 117 1.000 27 Jul 2021 03:27 am

52) 072652.D PAH-SIM.M
2107369-002AMSD 118 1.000 27 Jul 2021 03:49 am

53) 072653.D PAH-SIM.M
QCS 2 1.000 27 Jul 2021 04:10 am

54) 072701.D PAH-SIM.M
CO 2 1.000 27 Jul 2021 08:03 am

55) 072702.D SEMI9.M
TUNE 1 1.000 27 Jul 2021 08:25 am

56) 072703.D PAH-SIM.M
CCV 2 1.000 27 Jul 2021 08:47 am

57) 072704.D PAH-SIM.M
MB-33130 111 1.000 27 Jul 2021 09:09 am

58) 072705.D PAH-SIM.M
LCS-33130 112 1.000 27 Jul 2021 09:30 am

59) 072706.D PAH-SIM.M
2107363-001A 113 1.000 27 Jul 2021 09:52 am

60) 072707.D PAH-SIM.M
2107363-002A 114 1.000 27 Jul 2021 10:14 am

61) 072708.D PAH-SIM.M
2107361-006A 100X 45 1.000 27 Jul 2021 10:35 am

62) 072709.D PAH-SIM.M
2107361-006ADUP 100X 46 1.000 27 Jul 2021 10:57 am

63) 072710.D PAH-SIM.M
2107096-013A 10X 47 1.000 27 Jul 2021 11:19 am

64) 072711.D PAH-SIM.M
2107305-001A 19 1.000 27 Jul 2021 11:40 am

65) 072712.D PAH-SIM.M
2107369-001A 115 1.000 27 Jul 2021 12:02 pm

66) 072713.D PAH-SIM.M
2107369-002A 116 1.000 27 Jul 2021 12:24 pm

67) 072714.D PAH-SIM.M
2107369-002AMS 117 1.000 27 Jul 2021 12:46 pm

68) 072715.D PAH-SIM.M
2107369-002AMSD 118 1.000 27 Jul 2021 01:08 pm

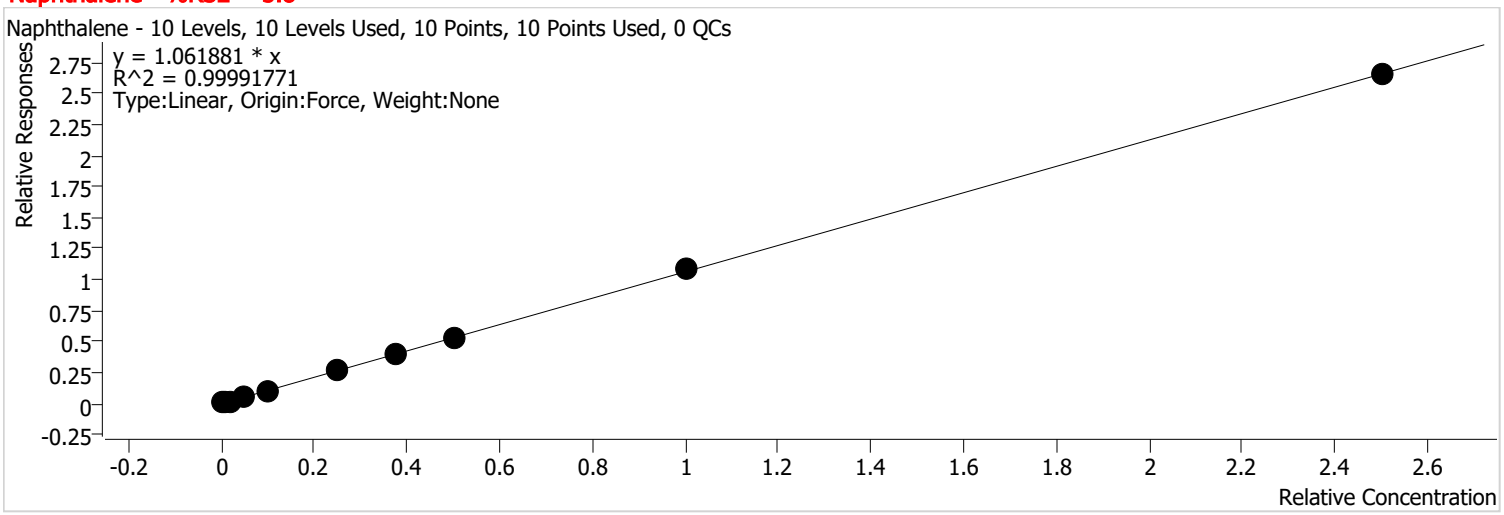
69)	072716.D	PAH-SIM.M				
QCS			2	1.000	27 Jul 2021	01:29 pm

Calibration

Calibration Report

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:29 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Naphthalene %RSE = 3.8



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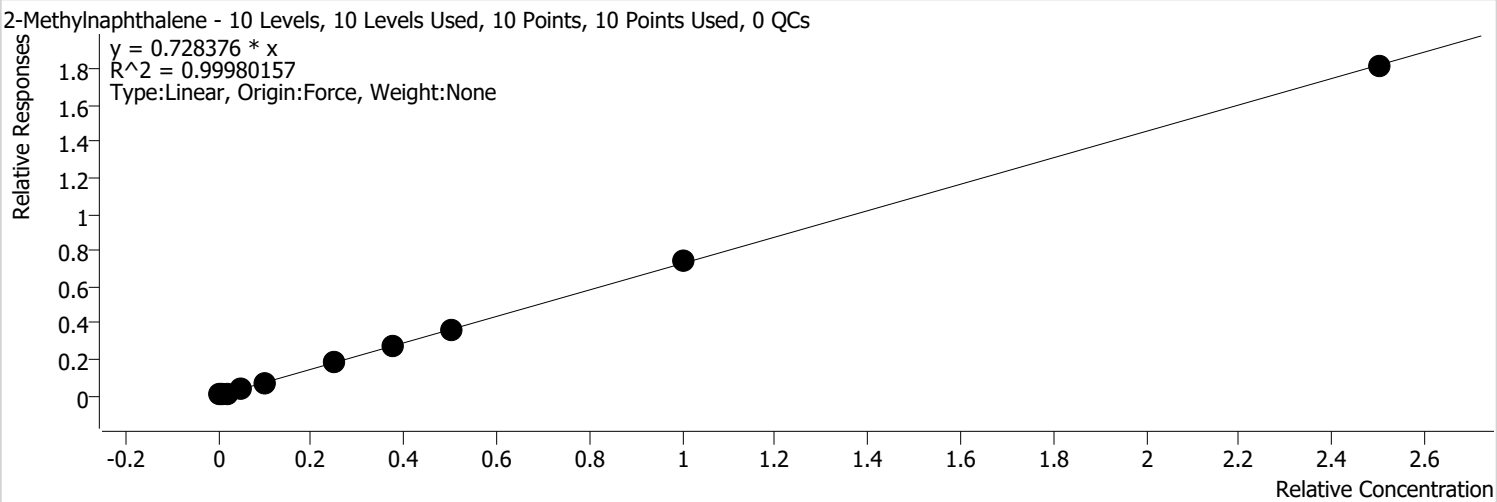
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1429	20.0000	1.1327	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2683	40.0000	1.0862	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6742	100.0000	1.0730	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	13446	200.0000	1.0512	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	33735	500.0000	1.0747	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	51219	750.0000	1.0745	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	66217	1000.0000	1.0430	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	135178	2000.0000	1.0802	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	326728	5000.0000	1.0593	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

2-Methylnaphthalene %RSE = 2.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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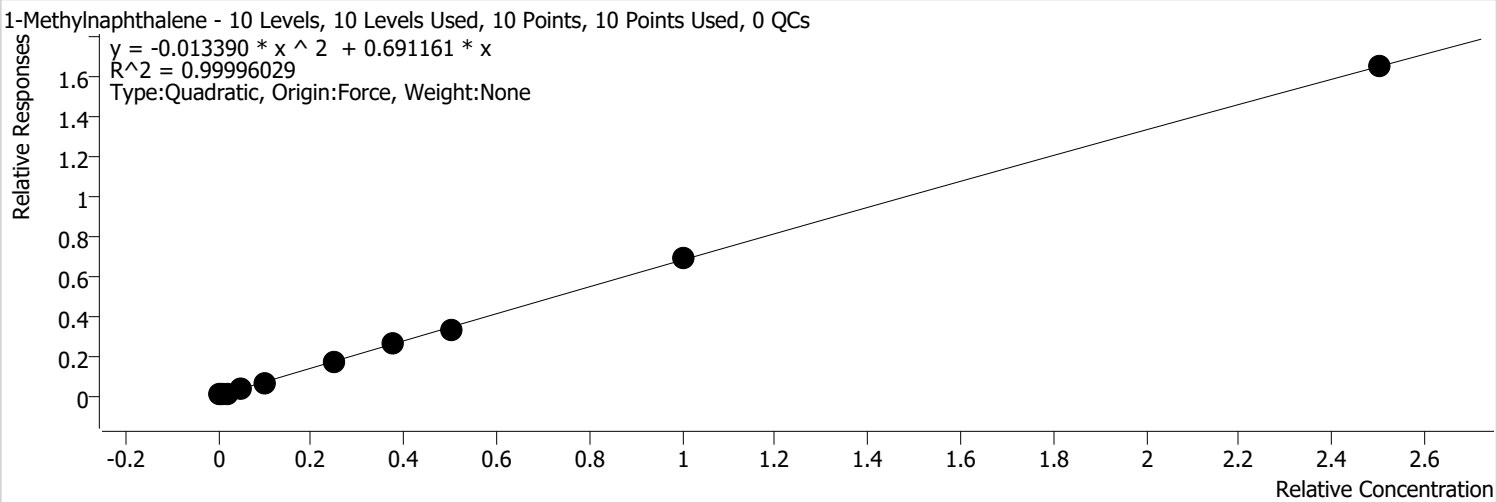
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1753	40.0000	0.7097	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4428	100.0000	0.7047	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	8908	200.0000	0.6964	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	22889	500.0000	0.7292	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	35732	750.0000	0.7496	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	45898	1000.0000	0.7229	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	93687	2000.0000	0.7486	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	223594	5000.0000	0.7249	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

1-Methylnaphthalene %RSE = 1.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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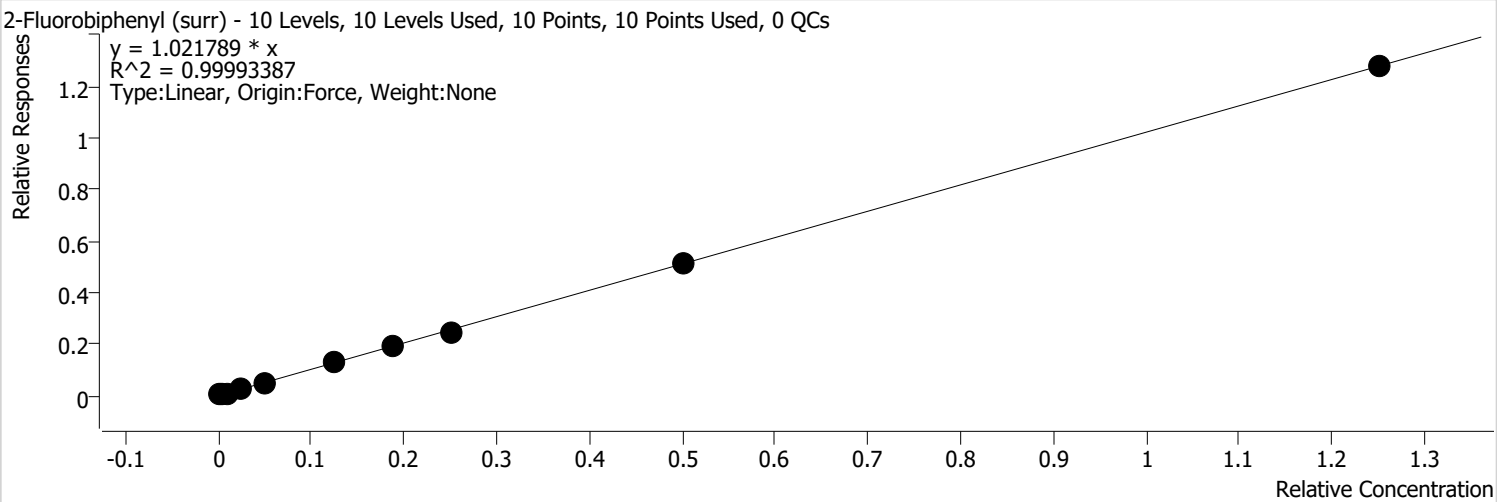
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1689	40.0000	0.6837	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4264	100.0000	0.6786	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	8614	200.0000	0.6734	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	21745	500.0000	0.6927	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	32876	750.0000	0.6897	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	42425	1000.0000	0.6682	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	85389	2000.0000	0.6823	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	202798	5000.0000	0.6575	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

2-Fluorobiphenyl (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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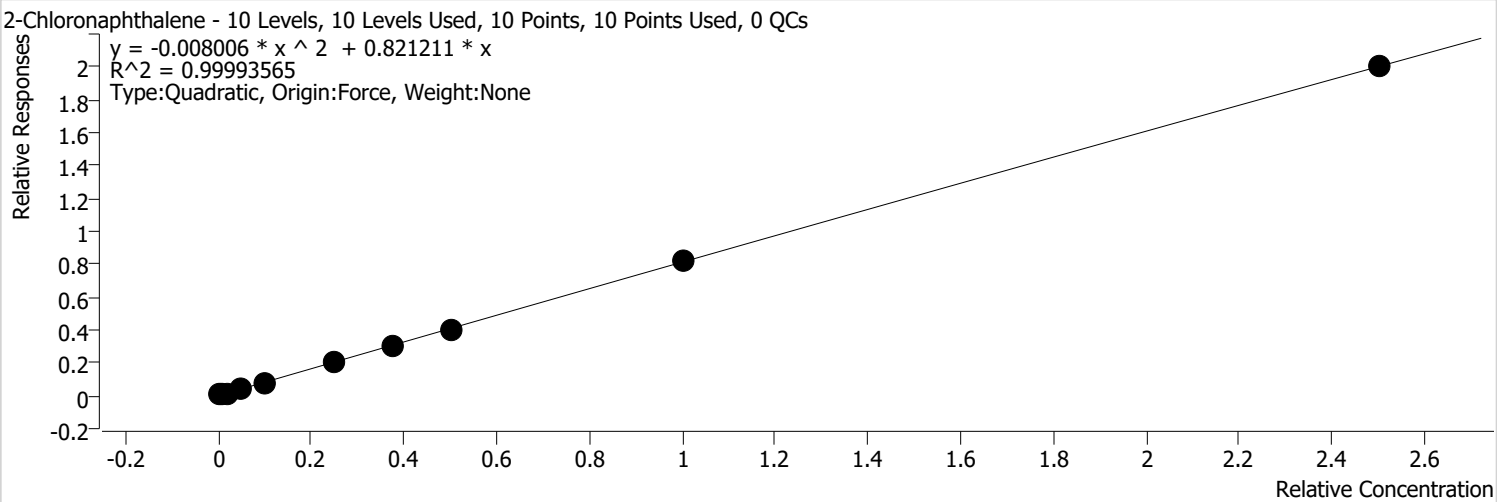
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1244	20.0000	1.0076	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3186	50.0000	1.0140	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	6495	100.0000	1.0156	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	16188	250.0000	1.0314	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	24605	375.0000	1.0323	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	31695	500.0000	0.9984	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	64815	1000.0000	1.0359	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	157325	2500.0000	1.0202	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

2-Chloronaphthalene %RSE = 2.0



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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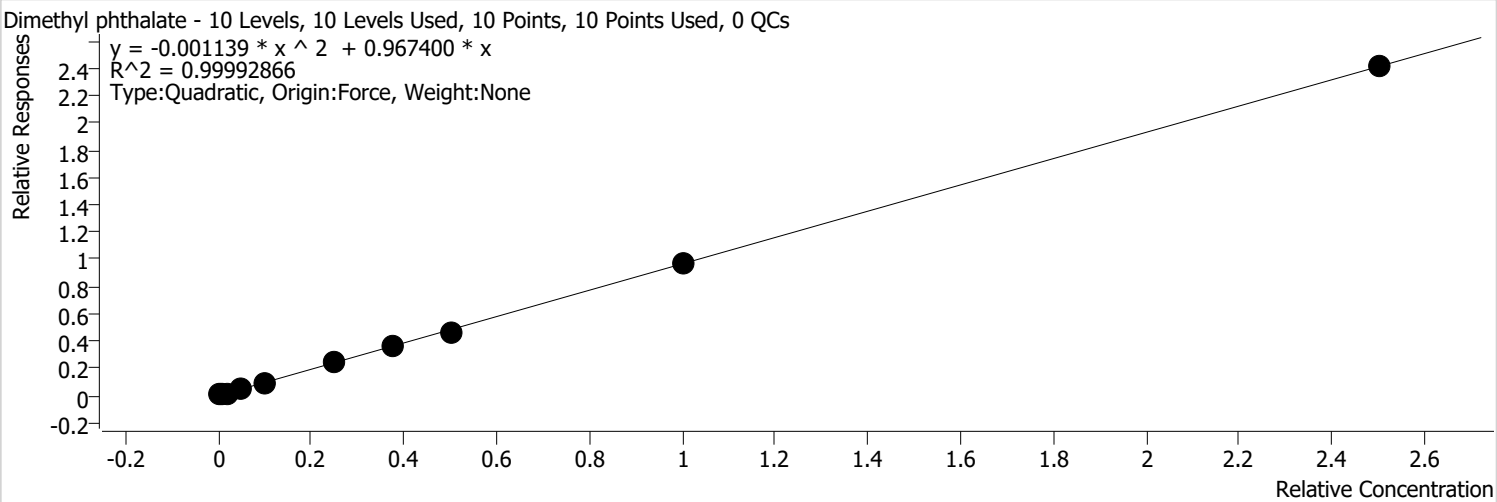
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2004	40.0000	0.8113	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5000	100.0000	0.7957	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	10241	200.0000	0.8006	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	25730	500.0000	0.8197	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	38803	750.0000	0.8140	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	50409	1000.0000	0.7940	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	102888	2000.0000	0.8222	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	247002	5000.0000	0.8008	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

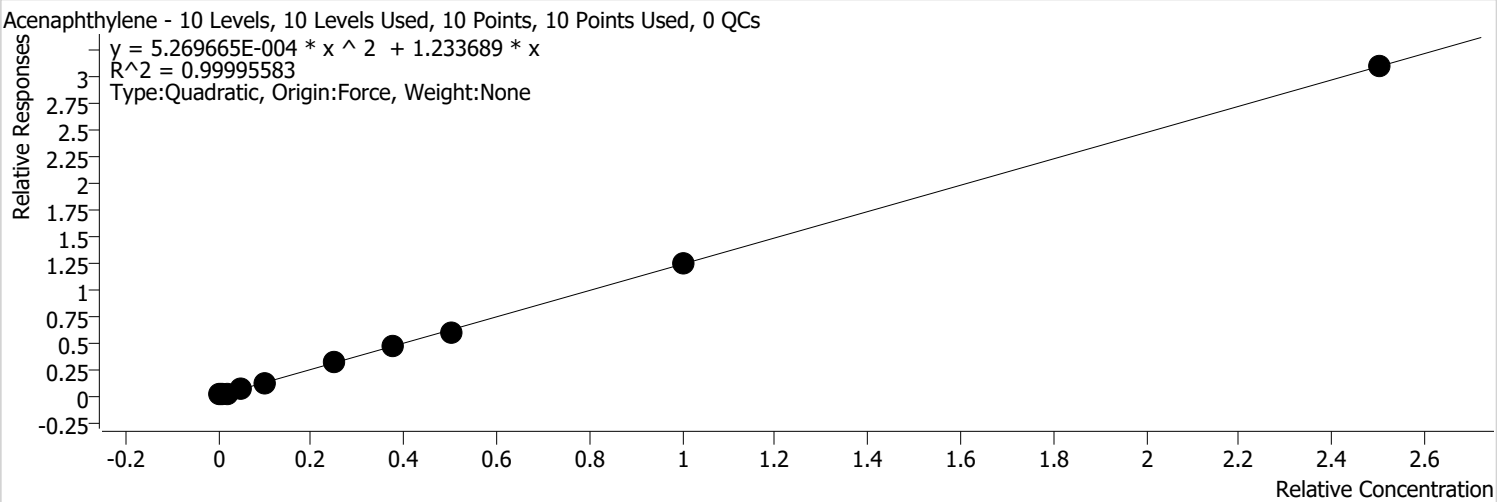
Dimethyl phthalate %RSE = 39.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1228	10.0000	1.9436	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1530	20.0000	1.2128	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2653	40.0000	1.0740	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6299	100.0000	1.0025	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	12230	200.0000	0.9562	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	30218	500.0000	0.9627	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	45613	750.0000	0.9569	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	59690	1000.0000	0.9402	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	122322	2000.0000	0.9775	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	297358	5000.0000	0.9641	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

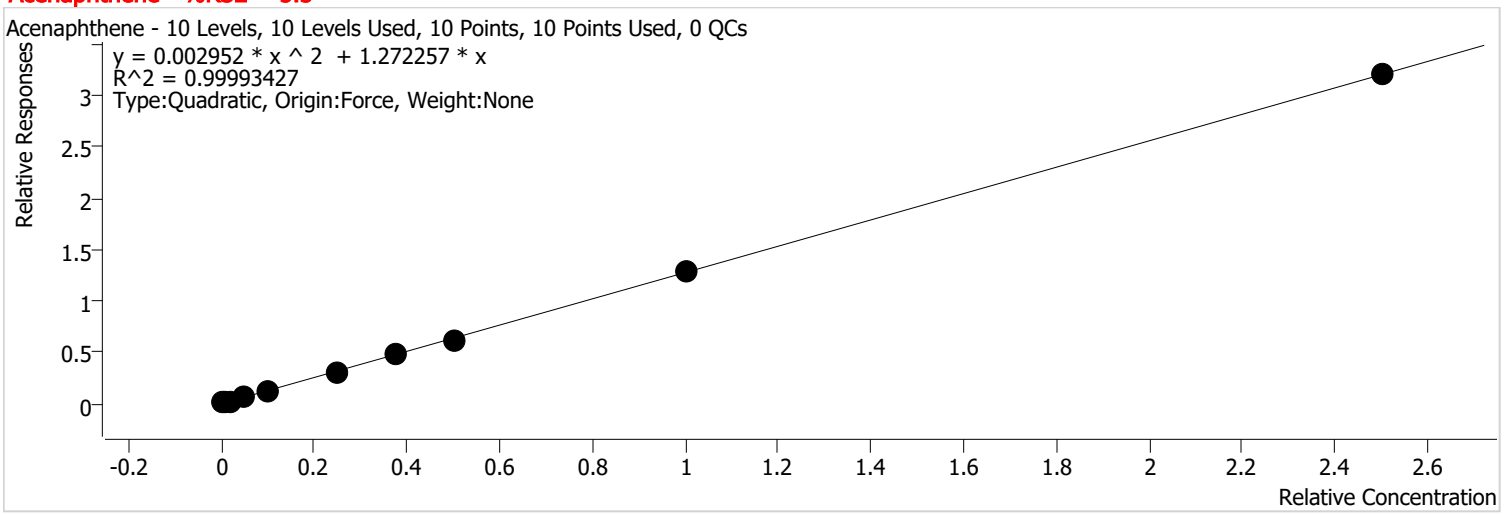
Acenaphthylene %RSE = 3.4



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	834	10.0000	1.3206	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1613	20.0000	1.2788	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3024	40.0000	1.2244	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7573	100.0000	1.2052	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	15430	200.0000	1.2063	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	38420	500.0000	1.2240	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	59022	750.0000	1.2382	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	76417	1000.0000	1.2036	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	155796	2000.0000	1.2449	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	380782	5000.0000	1.2346	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

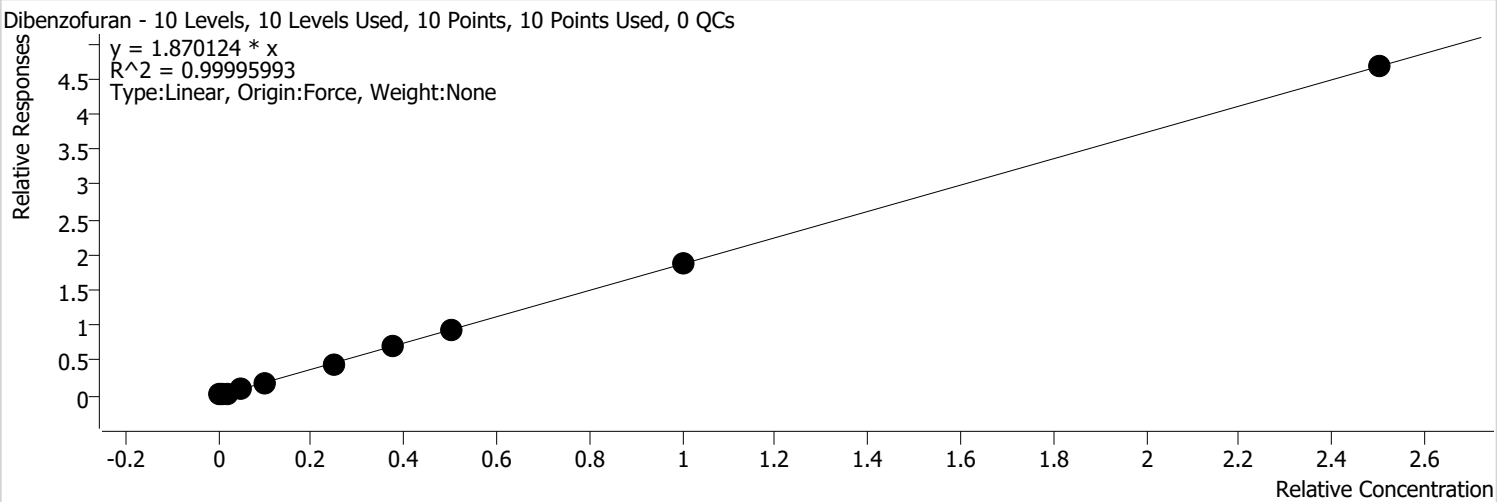
Acenaphthene %RSE = 5.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	560	10.0000	1.4257	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1053	20.0000	1.3388	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2013	40.0000	1.3067	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5016	100.0000	1.2724	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	10055	200.0000	1.2558	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	24819	500.0000	1.2595	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	38101	750.0000	1.2876	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	48823	1000.0000	1.2340	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	100463	2000.0000	1.2871	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	242833	5000.0000	1.2792	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

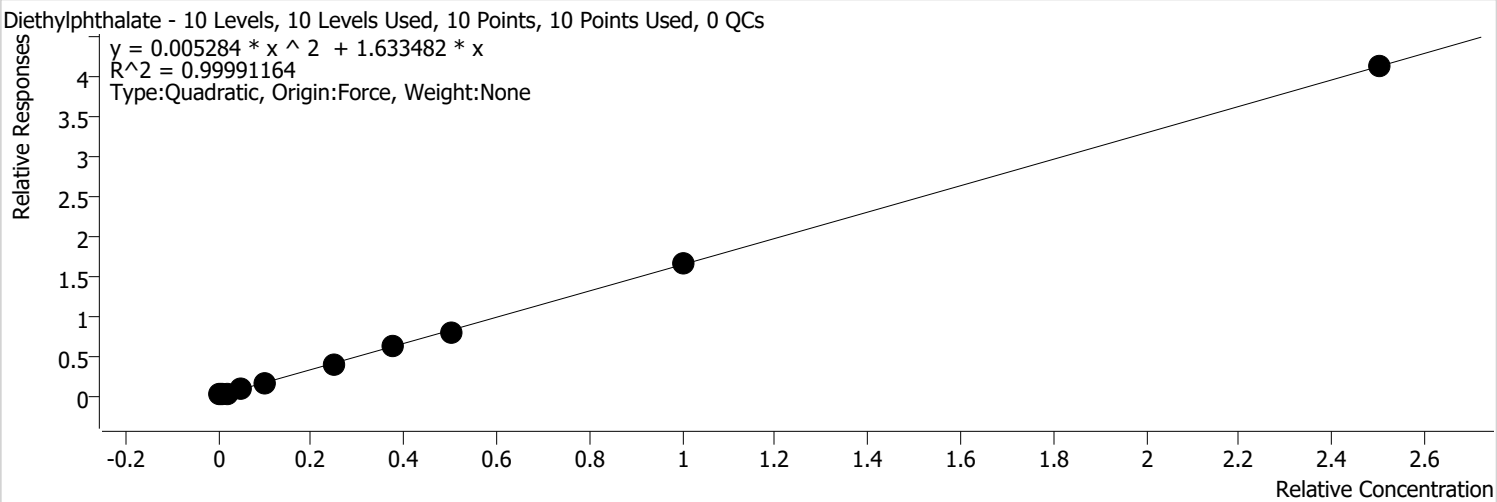
Dibenzofuran %RSE = 2.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	780	10.0000	1.9861	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1488	20.0000	1.8910	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2877	40.0000	1.8676	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7211	100.0000	1.8293	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	14588	200.0000	1.8219	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	36154	500.0000	1.8348	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	55337	750.0000	1.8701	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	72588	1000.0000	1.8347	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	147389	2000.0000	1.8883	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	354822	5000.0000	1.8691	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

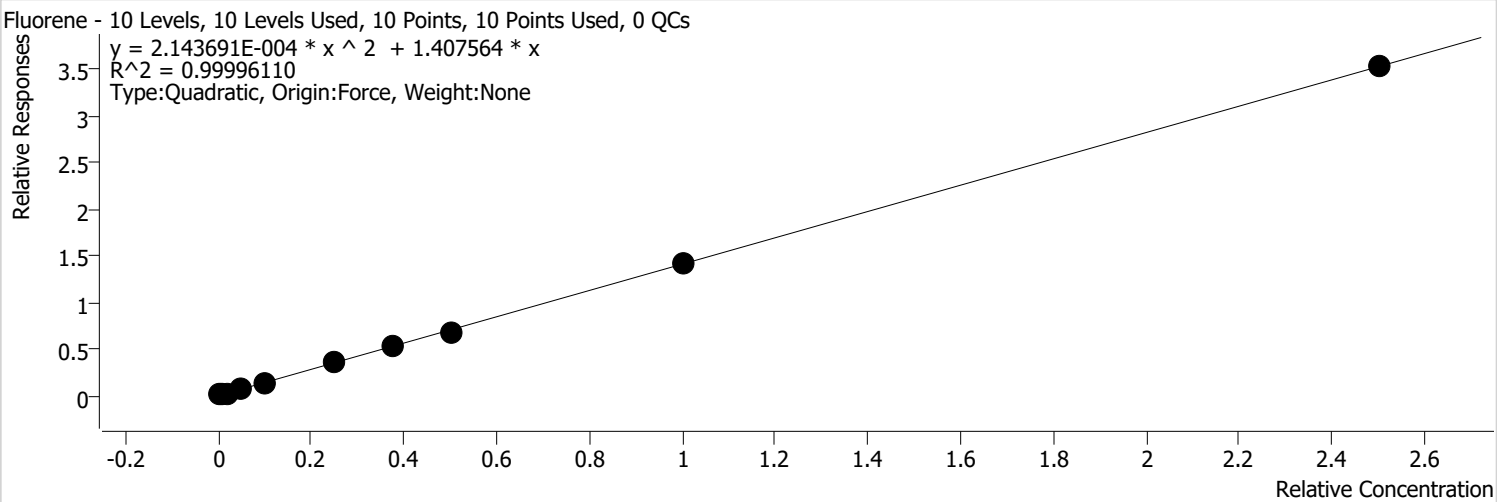
Diethylphthalate %RSE = 5.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	720	10.0000	1.8339	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1337	20.0000	1.6999	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2456	40.0000	1.5945	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6216	100.0000	1.5769	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	12547	200.0000	1.5670	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	31537	500.0000	1.6004	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	48176	750.0000	1.6281	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	62739	1000.0000	1.5857	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	129690	2000.0000	1.6616	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	312416	5000.0000	1.6457	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

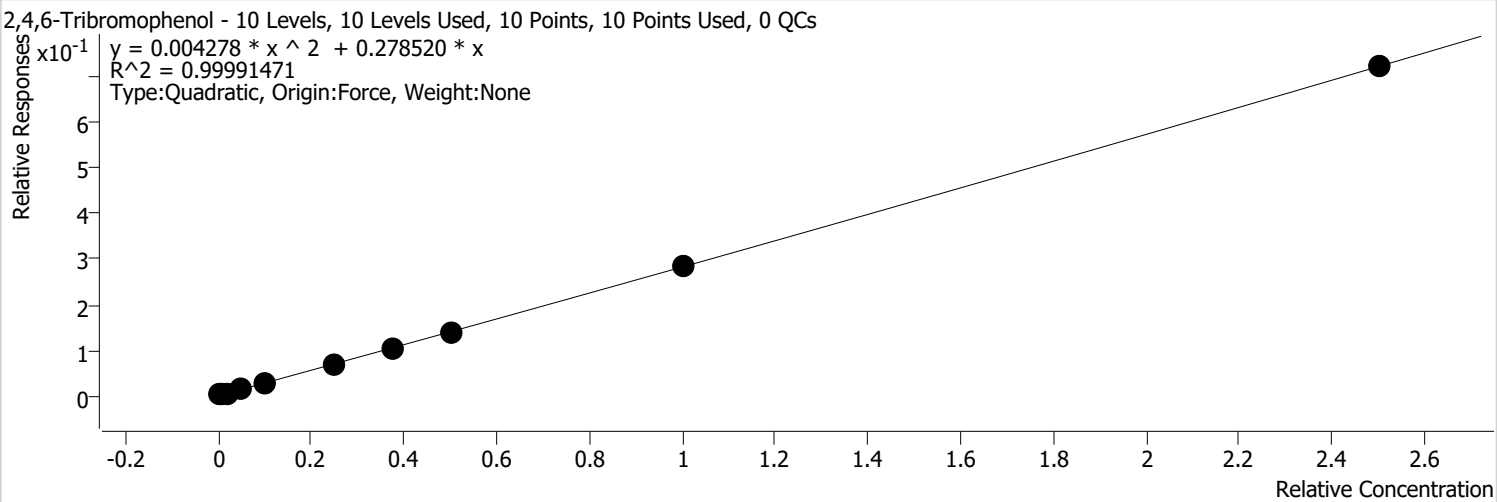
Fluorene %RSE = 3.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	594	10.0000	1.5131	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1123	20.0000	1.4274	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2162	40.0000	1.4032	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	5415	100.0000	1.3737	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	11001	200.0000	1.3739	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	27589	500.0000	1.4001	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	41635	750.0000	1.4070	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	54439	1000.0000	1.3759	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	110824	2000.0000	1.4199	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	267215	5000.0000	1.4076	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

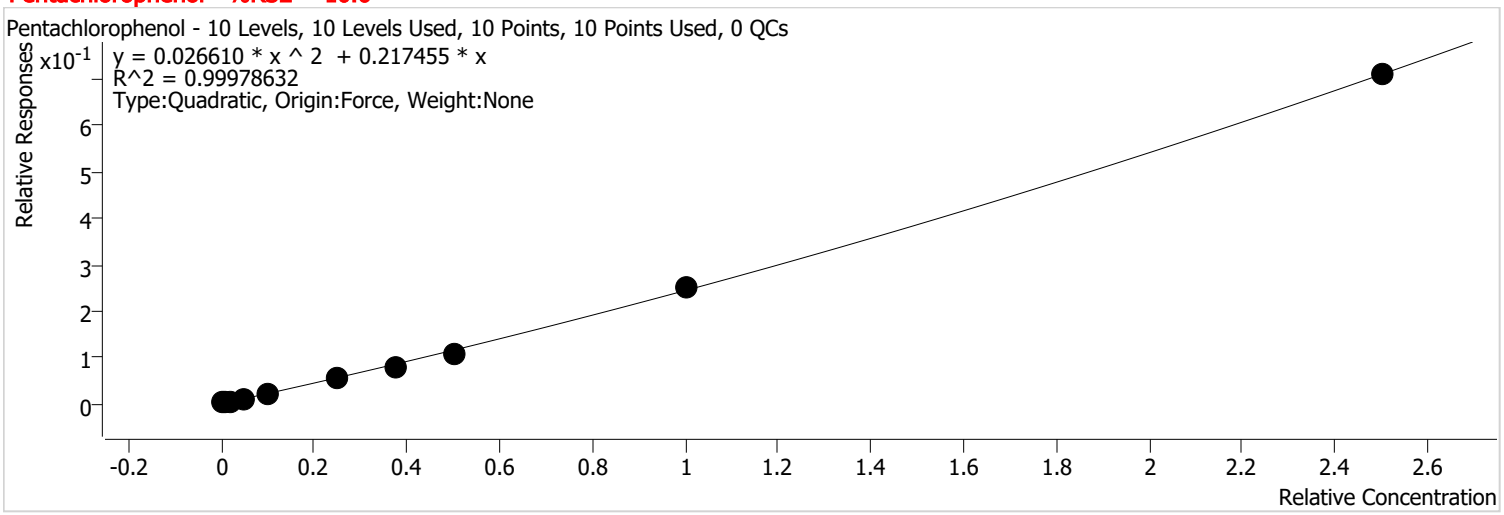
2,4,6-Tribromophenol %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	117	10.0000	0.2982	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	222	20.0000	0.2821	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	417	40.0000	0.2705	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	1043	100.0000	0.2645	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	2128	200.0000	0.2658	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	5354	500.0000	0.2717	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	8211	750.0000	0.2775	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	10802	1000.0000	0.2730	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	22392	2000.0000	0.2869	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	54870	5000.0000	0.2890	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

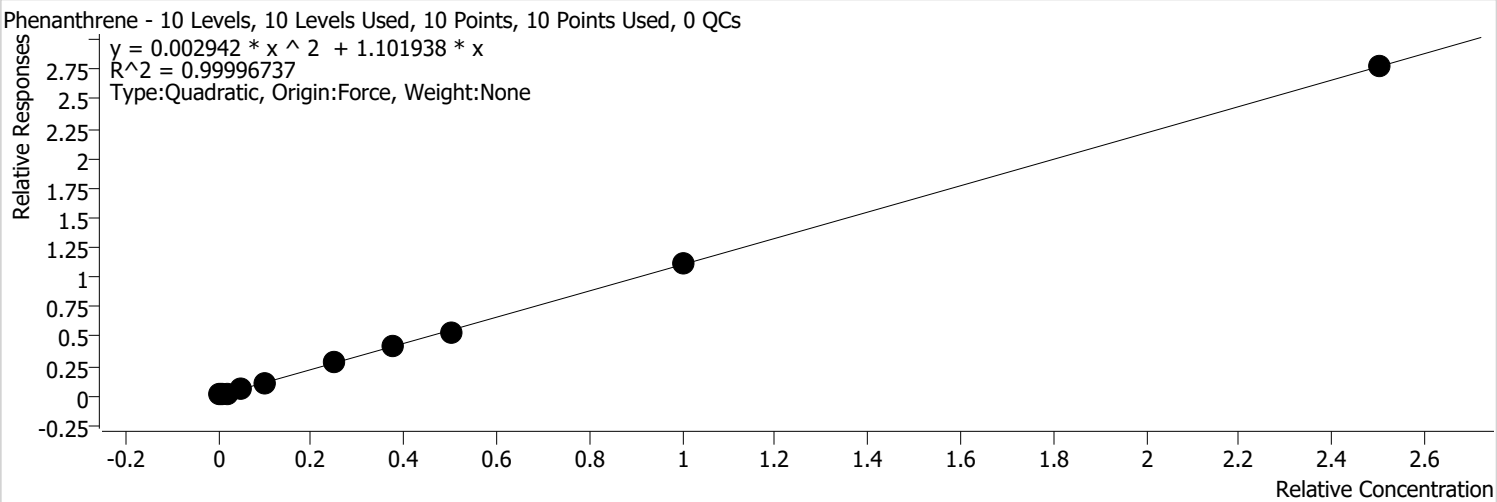
Pentachlorophenol %RSE = 10.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	93	10.0000	0.2365	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	152	20.0000	0.1932	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	272	40.0000	0.1767	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	753	100.0000	0.1911	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	1693	200.0000	0.2114	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	4515	500.0000	0.2291	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	6402	750.0000	0.2164	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	8665	1000.0000	0.2190	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	19514	2000.0000	0.2500	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	53862	5000.0000	0.2837	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

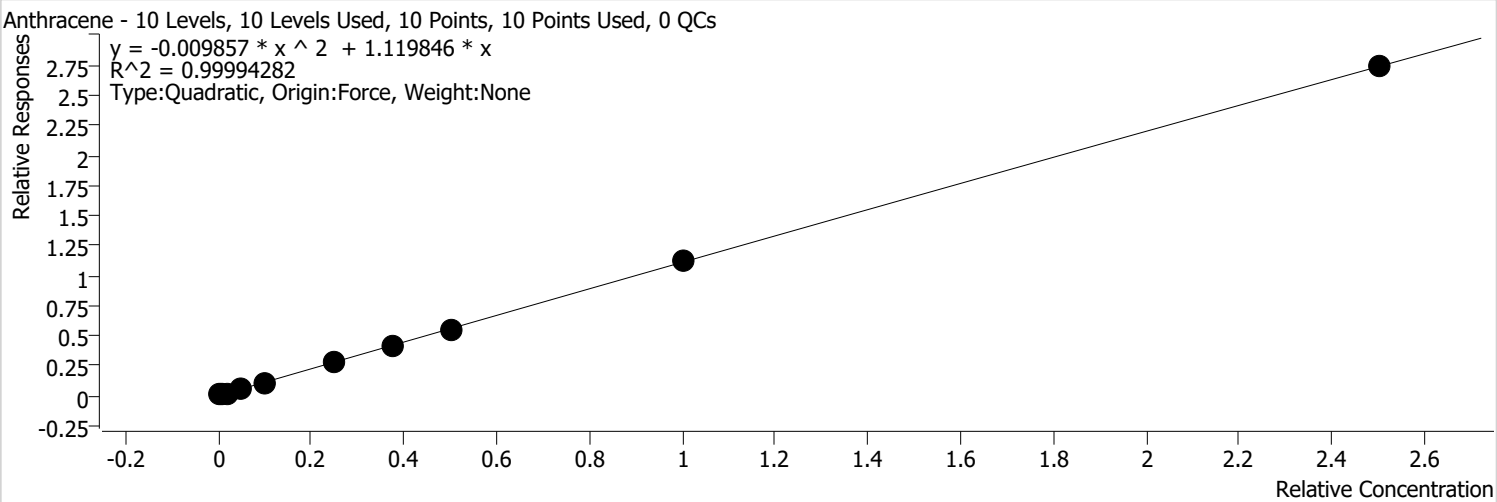
Phenanthrene %RSE = 9.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1023	10.0000	1.3338	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1907	20.0000	1.2501	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3485	40.0000	1.1648	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8699	100.0000	1.1544	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17436	200.0000	1.1082	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	42582	500.0000	1.1251	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	65343	750.0000	1.1222	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	84647	1000.0000	1.0815	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	172407	2000.0000	1.1059	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	418705	5000.0000	1.1093	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

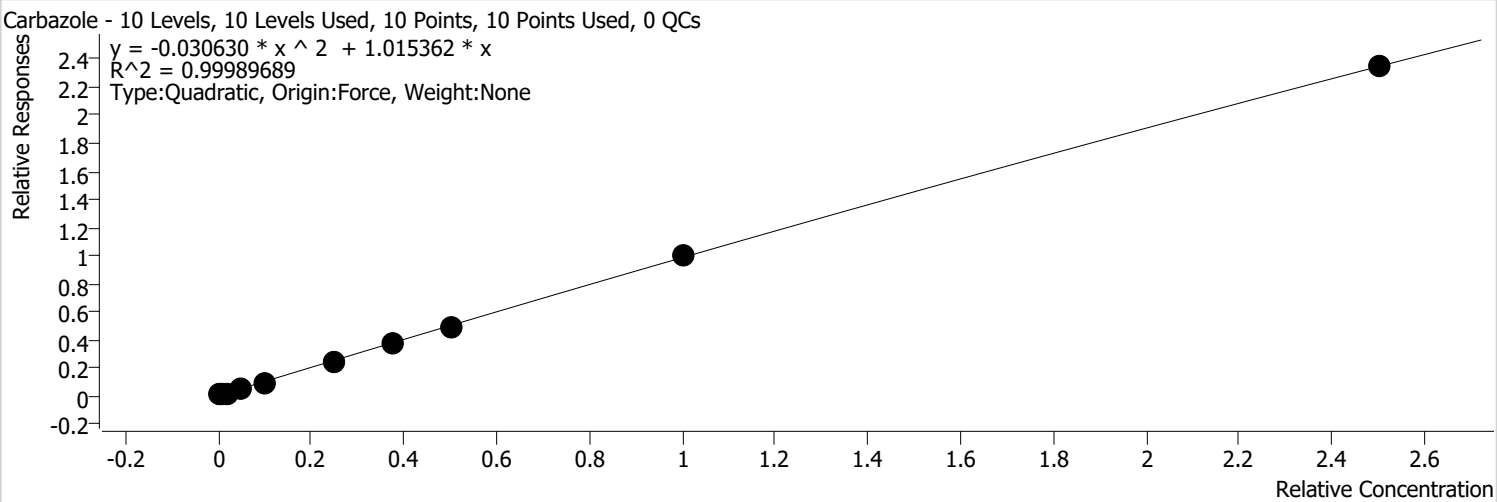
Anthracene %RSE = 3.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	904	10.0000	1.1786	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1776	20.0000	1.1641	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3267	40.0000	1.0919	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8285	100.0000	1.0994	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17075	200.0000	1.0852	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	42089	500.0000	1.1121	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	64473	750.0000	1.1072	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	85079	1000.0000	1.0870	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	174950	2000.0000	1.1222	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	413183	5000.0000	1.0947	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

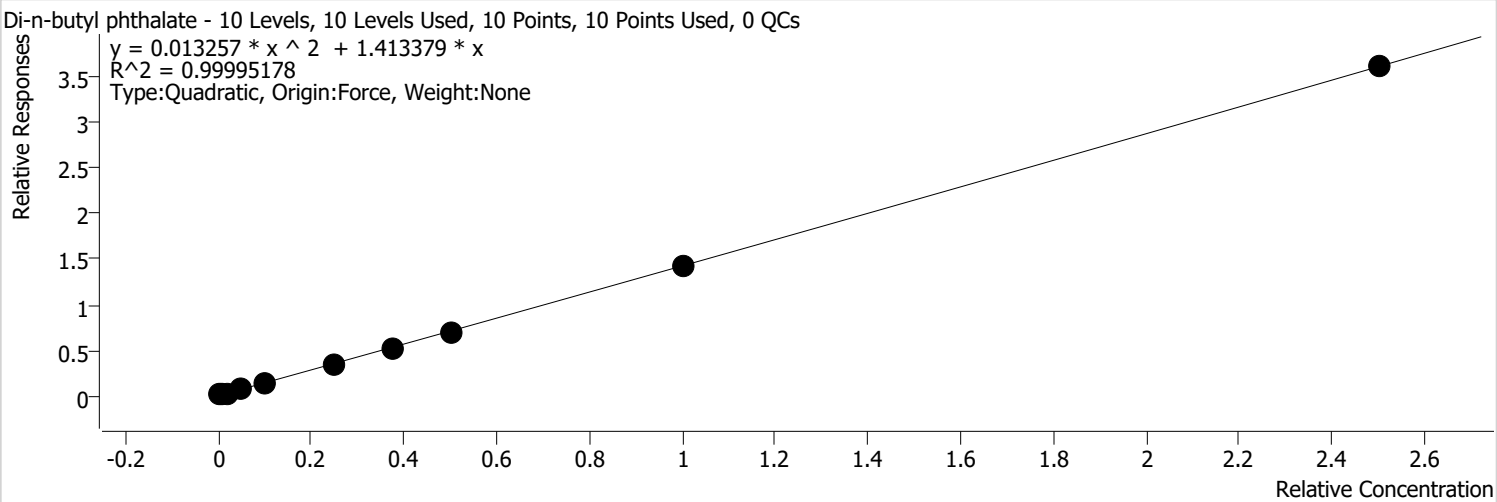
Carbazole %RSE = 3.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	778	10.0000	1.0149	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1563	20.0000	1.0247	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2881	40.0000	0.9630	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	7387	100.0000	0.9804	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	15196	200.0000	0.9658	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	37646	500.0000	0.9946	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	57723	750.0000	0.9913	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	75941	1000.0000	0.9702	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	155790	2000.0000	0.9993	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	354101	5000.0000	0.9382	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

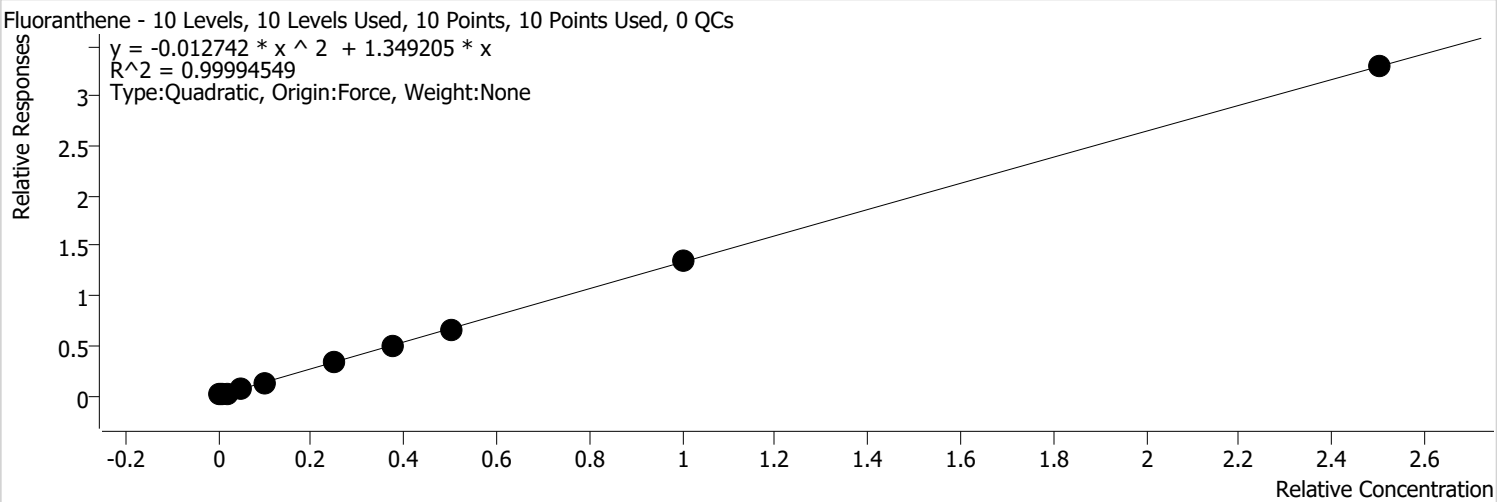
Di-n-butyl phthalate %RSE = 12.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1399	10.0000	1.8243	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2446	20.0000	1.6033	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4277	40.0000	1.4296	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10598	100.0000	1.4065	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	21721	200.0000	1.3805	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	53598	500.0000	1.4161	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	82496	750.0000	1.4168	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	108231	1000.0000	1.3828	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	224483	2000.0000	1.4399	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	545777	5000.0000	1.4460	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

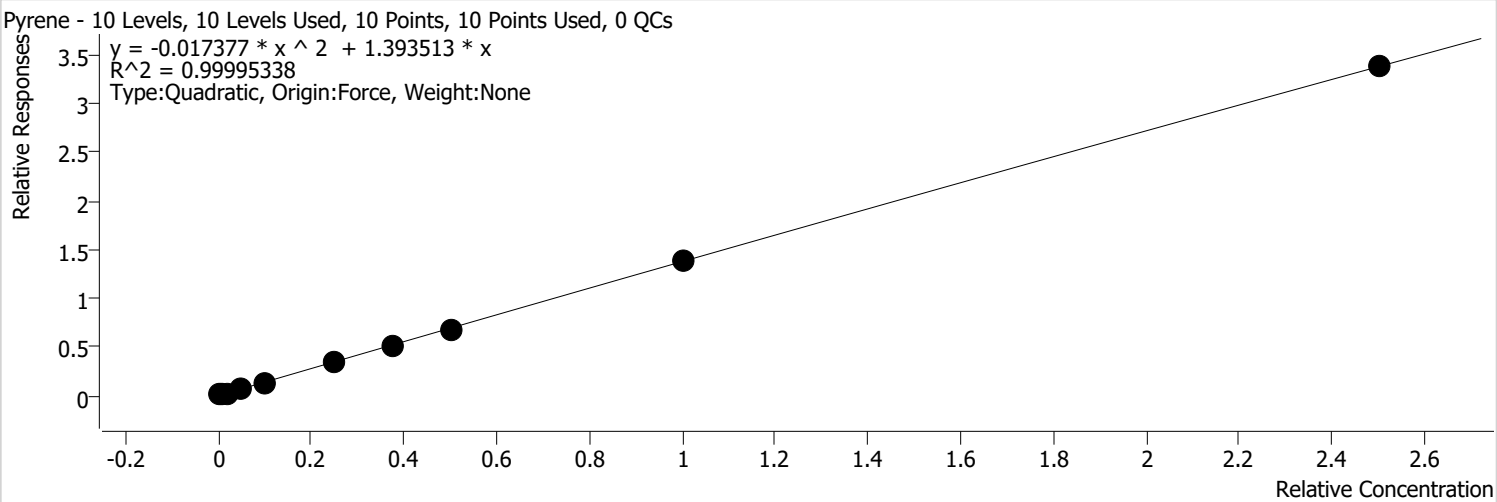
Fluoranthene %RSE = 3.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1128	10.0000	1.4709	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2116	20.0000	1.3869	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4003	40.0000	1.3378	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10114	100.0000	1.3422	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20596	200.0000	1.3090	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51033	500.0000	1.3484	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	77790	750.0000	1.3359	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	102399	1000.0000	1.3083	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	210478	2000.0000	1.3501	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	497013	5000.0000	1.3168	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

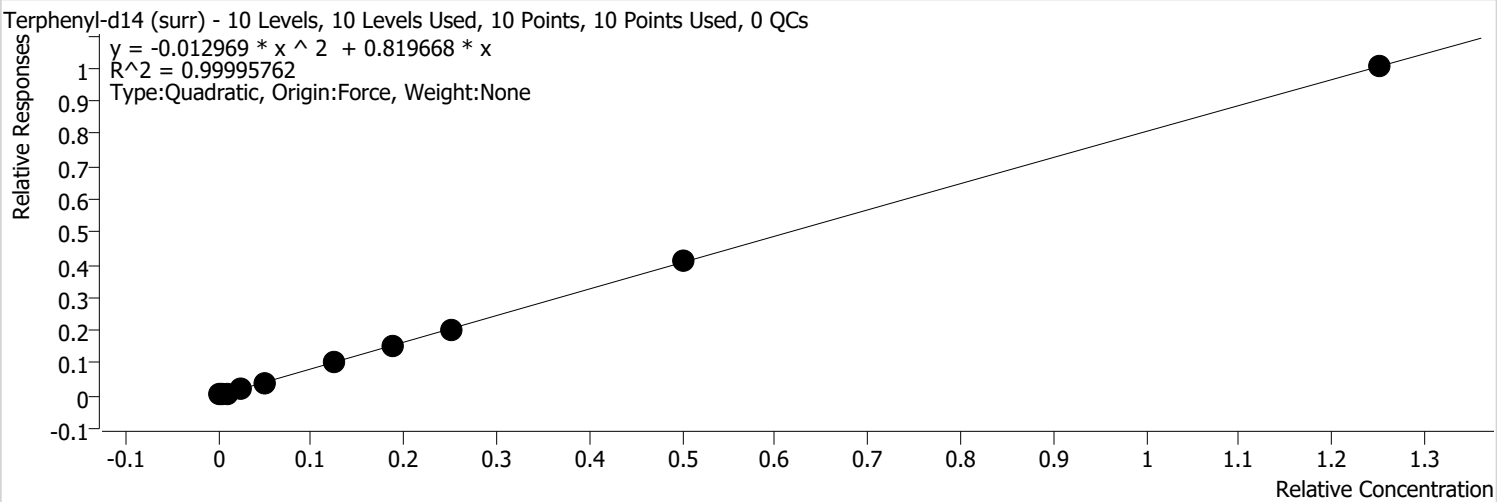
Pyrene %RSE = 7.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1248	10.0000	1.6273	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2291	20.0000	1.5015	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4243	40.0000	1.4182	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10651	100.0000	1.4135	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	21473	200.0000	1.3648	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	53029	500.0000	1.4011	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	80683	750.0000	1.3856	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	105624	1000.0000	1.3495	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	216290	2000.0000	1.3874	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	509411	5000.0000	1.3496	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

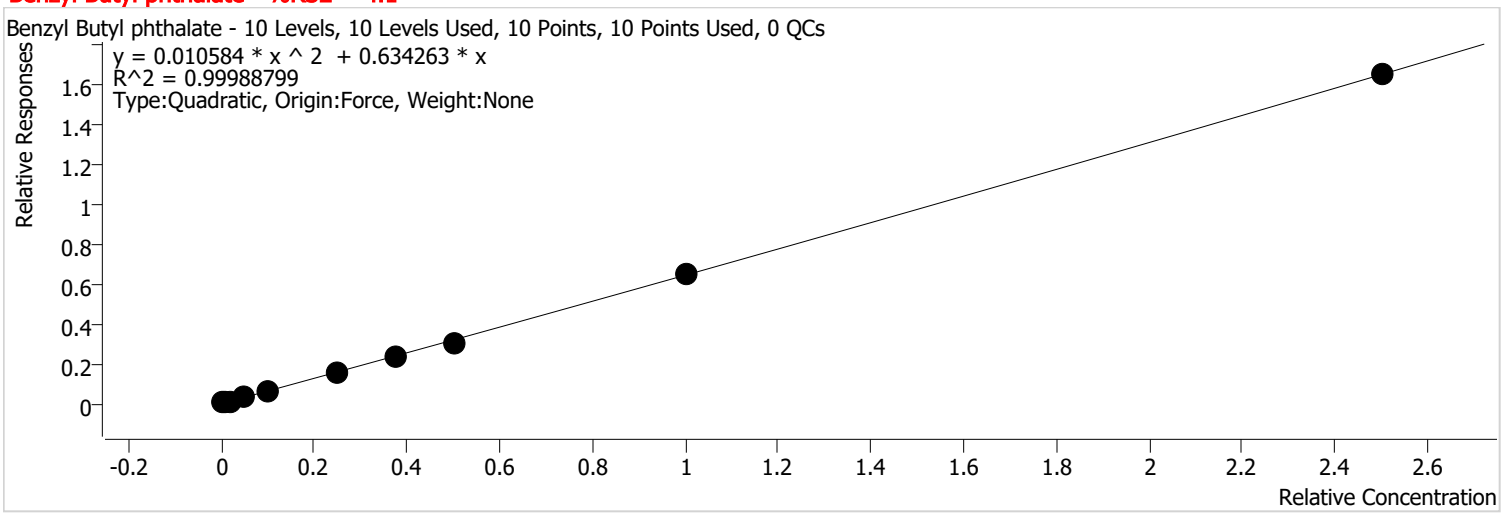
Terphenyl-d14 (surr) %RSE =



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	356	5.0000	0.9282	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	661	10.0000	0.8661	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1282	20.0000	0.8571	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3119	50.0000	0.8277	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	6358	100.0000	0.8082	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	15496	250.0000	0.8189	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	23830	375.0000	0.8185	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	31159	500.0000	0.7962	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	63895	1000.0000	0.8197	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	151581	2500.0000	0.8032	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

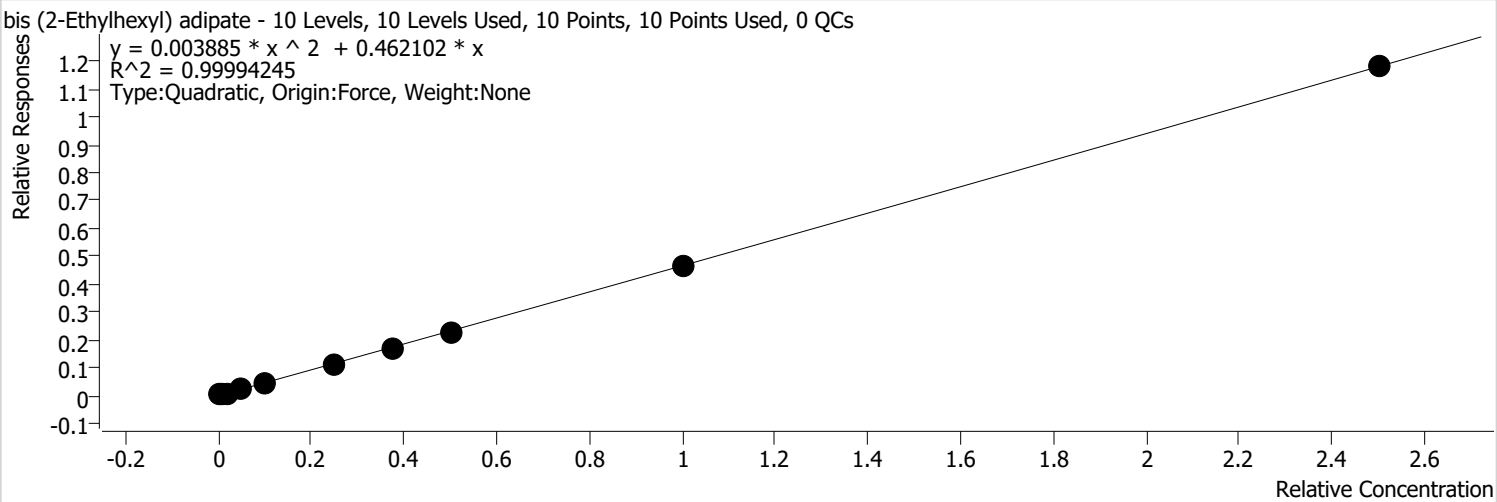
Benzyl Butyl phthalate %RSE = 4.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	508	10.0000	0.6618	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	945	20.0000	0.6196	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1798	40.0000	0.6008	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	4542	100.0000	0.6028	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	9526	200.0000	0.6055	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	23773	500.0000	0.6281	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	36576	750.0000	0.6281	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	48360	1000.0000	0.6179	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	102198	2000.0000	0.6555	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	249211	5000.0000	0.6603	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

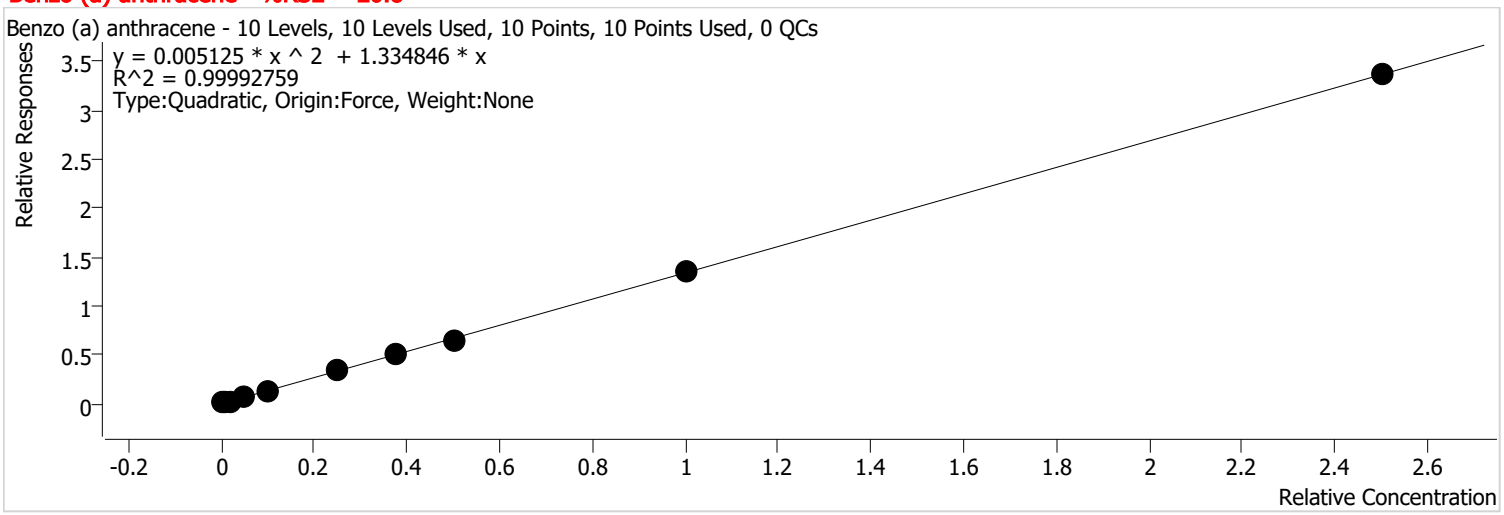
bis (2-Ethylhexyl) adipate %RSE = 64.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	936	10.0000	1.2197	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	992	20.0000	0.6505	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	1622	40.0000	0.5421	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	3696	100.0000	0.4905	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	7190	200.0000	0.4570	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	17603	500.0000	0.4651	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	26822	750.0000	0.4606	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	35469	1000.0000	0.4532	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	73251	2000.0000	0.4699	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	178026	5000.0000	0.4717	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

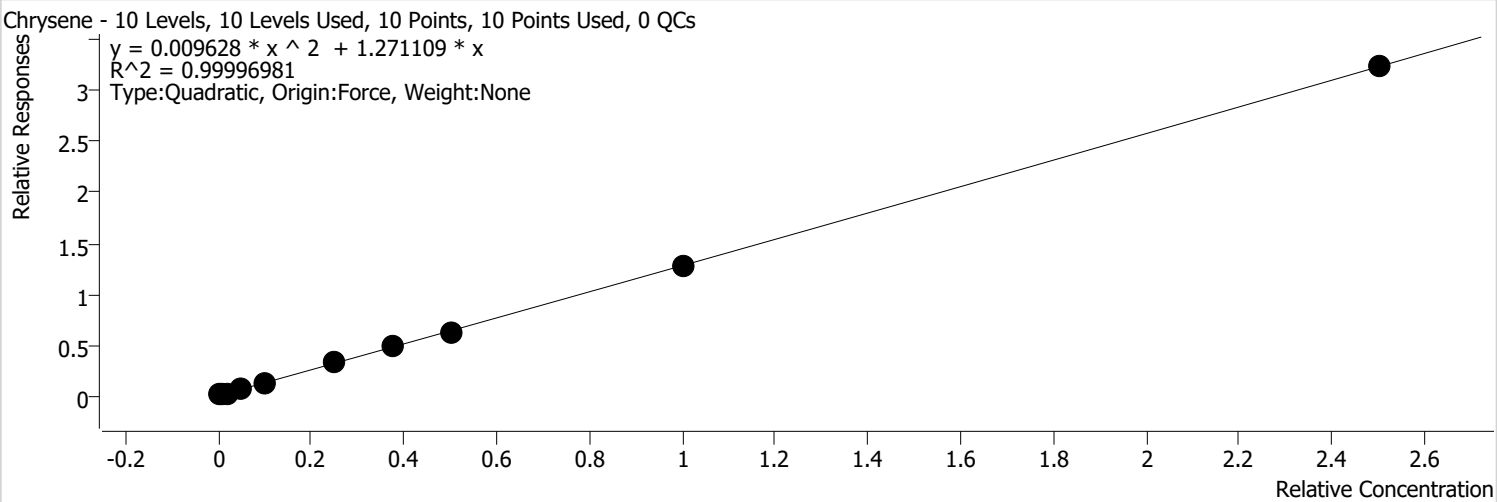
Benzo (a) anthracene %RSE = 20.8



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1514	10.0000	1.9739	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2518	20.0000	1.6504	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4497	40.0000	1.5030	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10324	100.0000	1.3701	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20676	200.0000	1.3141	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51017	500.0000	1.3479	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	77124	750.0000	1.3245	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	101487	1000.0000	1.2966	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	211228	2000.0000	1.3549	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	508441	5000.0000	1.3471	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

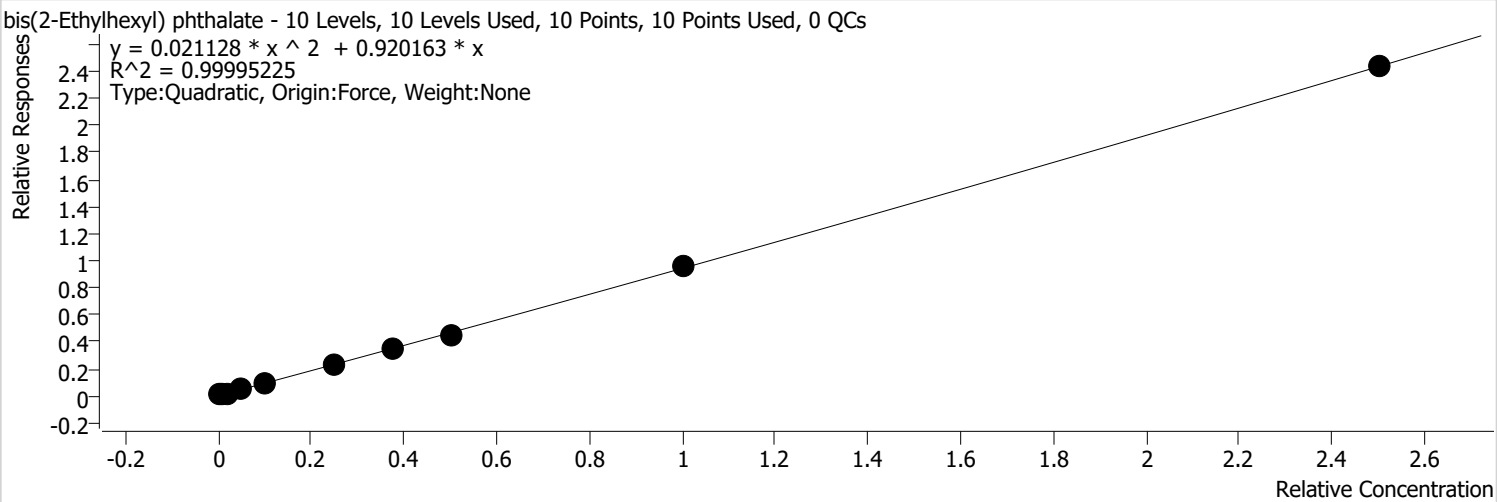
Chrysene %RSE = 7.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1086	10.0000	1.4487	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2102	20.0000	1.3856	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3860	40.0000	1.3233	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10111	100.0000	1.3458	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20705	200.0000	1.3183	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	48427	500.0000	1.2839	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	73999	750.0000	1.3005	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	97203	1000.0000	1.2527	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	198350	2000.0000	1.2813	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	468037	5000.0000	1.2952	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

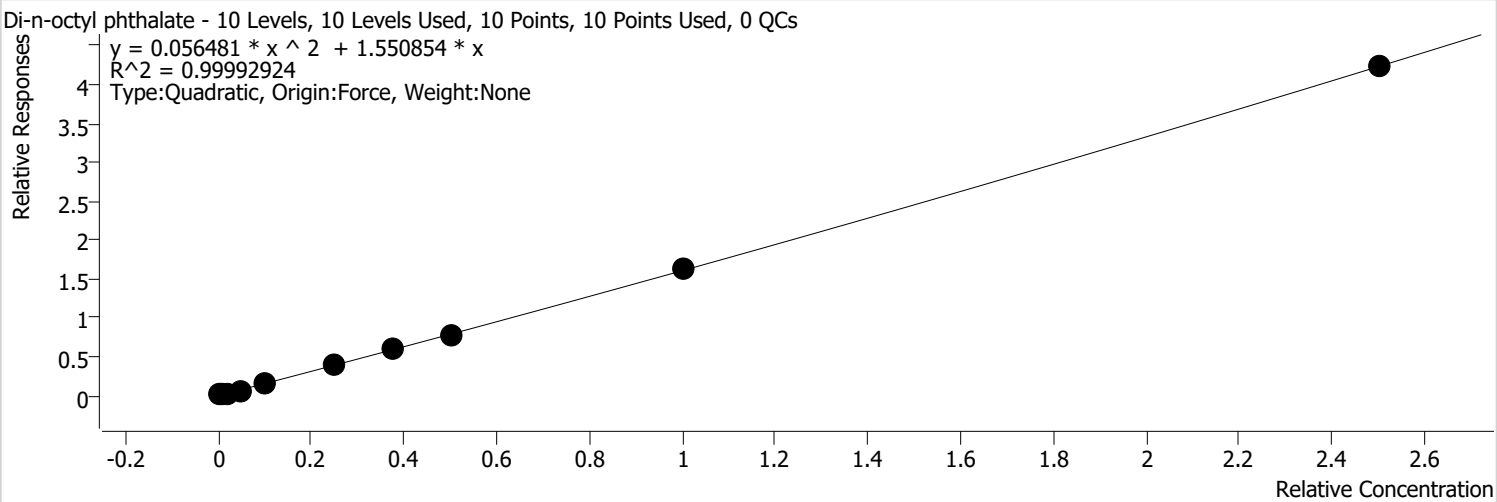
bis(2-Ethylhexyl) phthalate %RSE = 10.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	871	10.0000	1.1623	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1492	20.0000	0.9832	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	2655	40.0000	0.9101	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	6605	100.0000	0.8792	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	13638	200.0000	0.8683	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	34543	500.0000	0.9158	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	52939	750.0000	0.9304	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	70498	1000.0000	0.9086	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	147091	2000.0000	0.9501	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	351453	5000.0000	0.9726	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

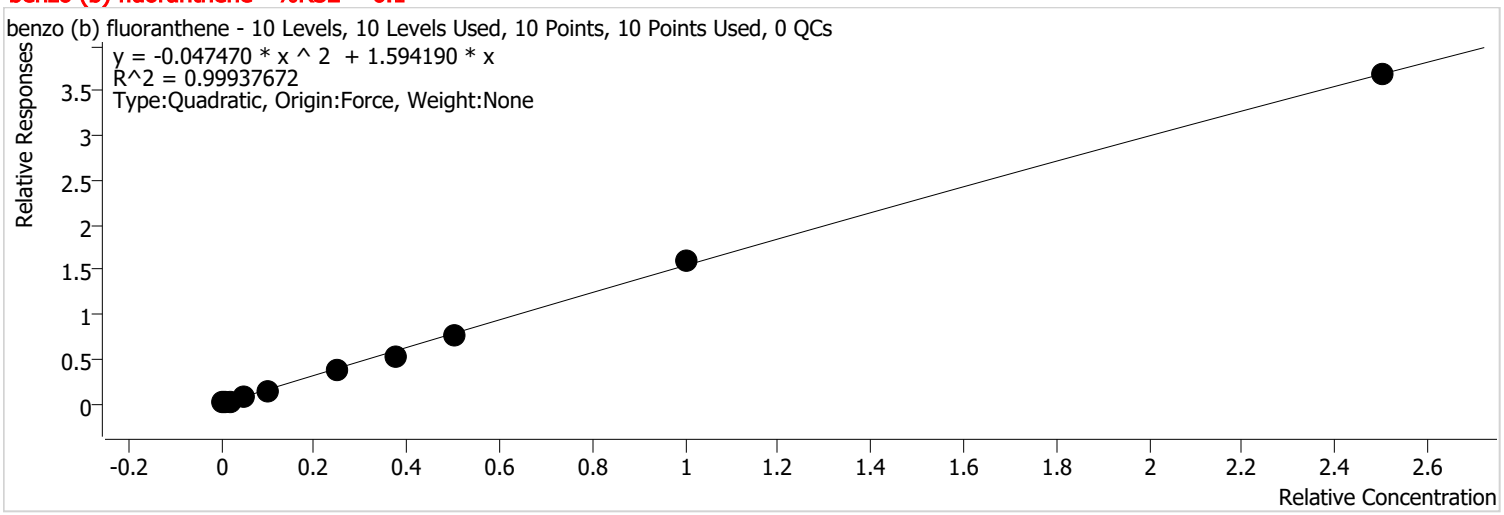
Di-n-octyl phthalate %RSE = 5.2



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1159	10.0000	1.5460	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2234	20.0000	1.4725	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4215	40.0000	1.4451	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10767	100.0000	1.4332	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	22830	200.0000	1.4536	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	58108	500.0000	1.5405	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	89433	750.0000	1.5717	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	119003	1000.0000	1.5337	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	251881	2000.0000	1.6270	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	611119	5000.0000	1.6912	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

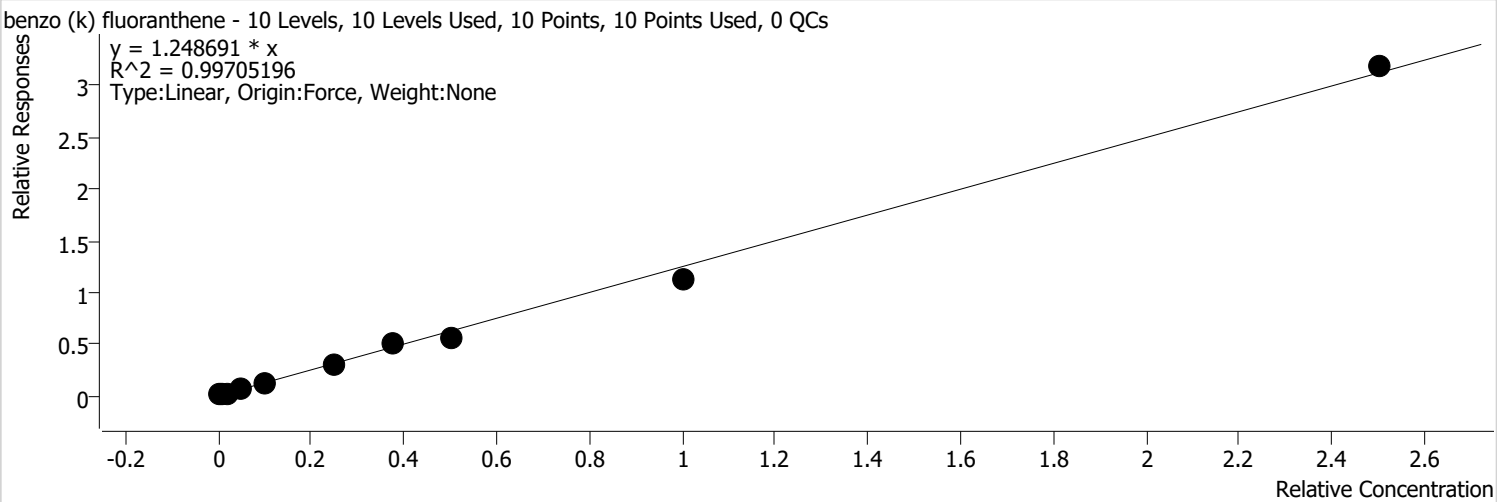
benzo (b) fluoranthene %RSE = 6.1



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1187	10.0000	1.5835	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2379	20.0000	1.5682	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4560	40.0000	1.5633	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10985	100.0000	1.4622	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	23684	200.0000	1.5080	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	56084	500.0000	1.4869	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	80251	750.0000	1.4103	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	119983	1000.0000	1.5463	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	247484	2000.0000	1.5986	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	532292	5000.0000	1.4730	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

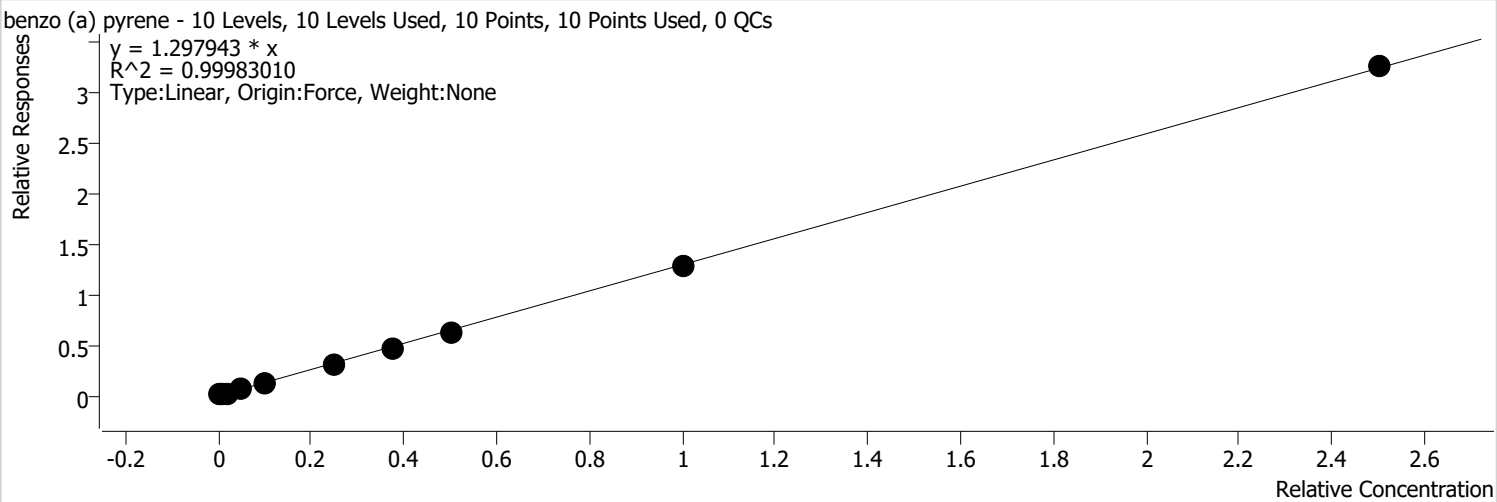
benzo (k) fluoranthene %RSE = 7.3



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	934	10.0000	1.2463	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1815	20.0000	1.1965	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3447	40.0000	1.1817	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	9279	100.0000	1.2351	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	17738	200.0000	1.1294	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	46840	500.0000	1.2418	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	75778	750.0000	1.3317	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	85524	1000.0000	1.1022	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	174191	2000.0000	1.1252	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	459899	5000.0000	1.2727	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

benzo (a) pyrene %RSE = 5.9



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
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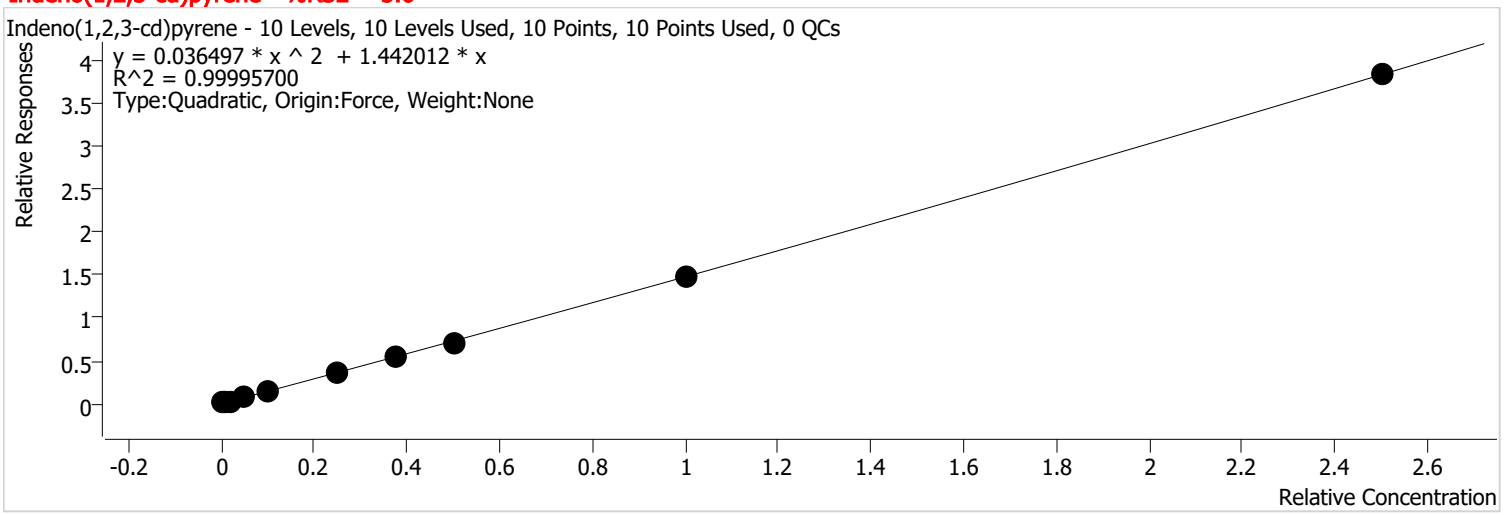
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1869	20.0000	1.2320	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3522	40.0000	1.2073	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	8958	100.0000	1.1923	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	18603	200.0000	1.1845	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	48133	500.0000	1.2761	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	71451	750.0000	1.2557	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	96469	1000.0000	1.2433	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	198908	2000.0000	1.2849	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	471069	5000.0000	1.3036	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

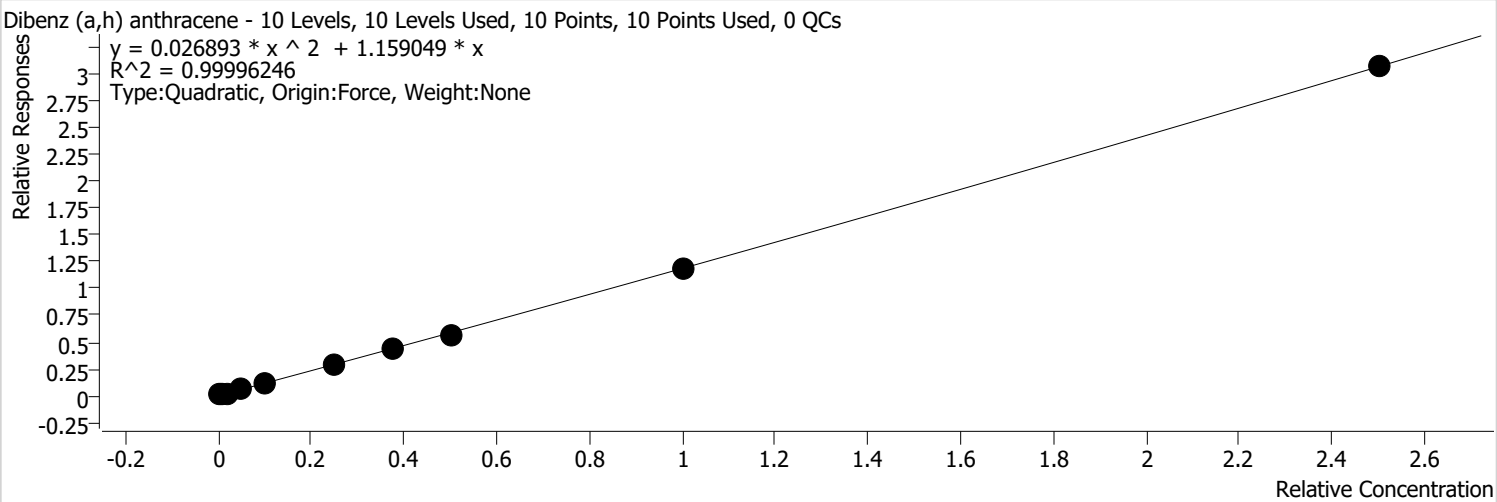
Indeno(1,2,3-cd)pyrene %RSE = 3.6



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1250	10.0000	1.5472	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2416	20.0000	1.4804	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4465	40.0000	1.4153	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	11489	100.0000	1.4268	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	23459	200.0000	1.3901	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	59058	500.0000	1.4590	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	89820	750.0000	1.4782	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	117368	1000.0000	1.4221	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	242324	2000.0000	1.4870	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	577768	5000.0000	1.5329	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

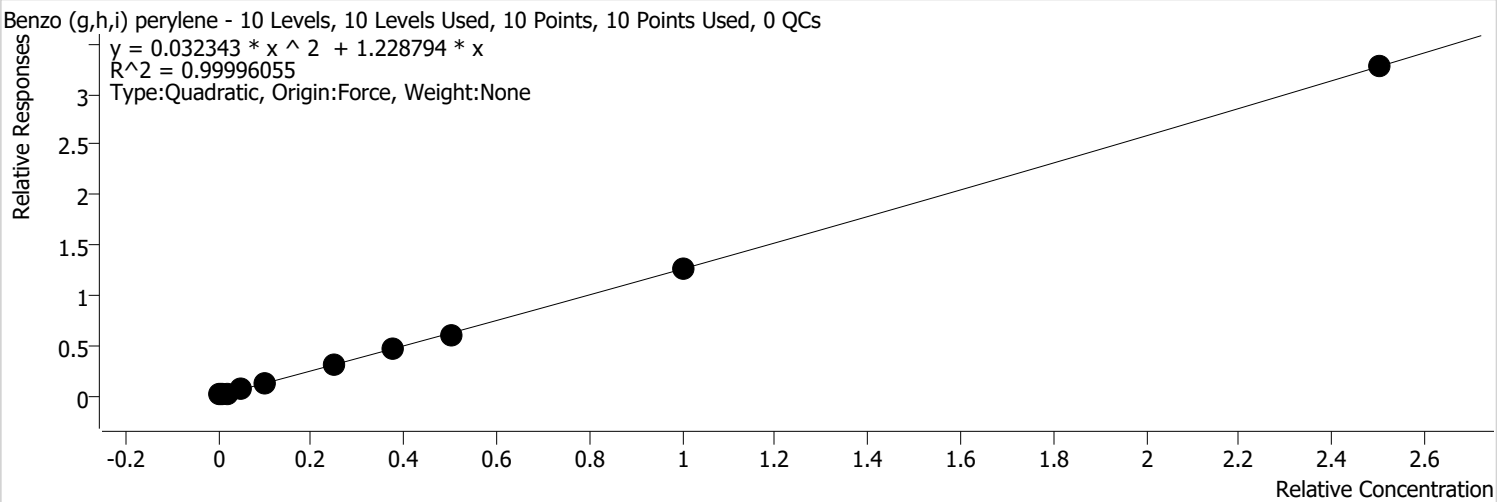
Dibenz (a,h) anthracene %RSE = 3.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1015	10.0000	1.2559	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	1937	20.0000	1.1866	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	3675	40.0000	1.1651	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	9200	100.0000	1.1425	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	18973	200.0000	1.1242	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	47474	500.0000	1.1728	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	71987	750.0000	1.1847	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	94385	1000.0000	1.1436	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	194328	2000.0000	1.1925	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	462097	5000.0000	1.2260	

Batch Path	C:\GC-14\Data\2021\071521\QuantResults\PAH CAL.batch.bin		
Analysis Time	7/16/2021 9:46 AM	**Analyst Name**	FA\GC14
Report Time	7/16/2021 10:42:30 AM	**Reporter Name**	FA\GC14
Last Calib Update	7/16/2021 9:46 AM	**Batch State**	Processed
Quant Batch Version	10.0	**Quant Report Version**	10.0

Benzo (g,h,i) perylene %RSE = 28.7



Calibration STD Path	Cal Type	Level	Enabled	Resp.	Exp. Conc	Resp. Factor	Level RSD
C:\GC-14\Data\2021\071521\071510.D	Calibration	1	x	1662	10.0000	2.0571	
C:\GC-14\Data\2021\071521\071511.D	Calibration	2	x	2631	20.0000	1.6121	
C:\GC-14\Data\2021\071521\071512.D	Calibration	3	x	4430	40.0000	1.4045	
C:\GC-14\Data\2021\071521\071513.D	Calibration	4	x	10433	100.0000	1.2956	
C:\GC-14\Data\2021\071521\071514.D	Calibration	5	x	20818	200.0000	1.2336	
C:\GC-14\Data\2021\071521\071515.D	Calibration	6	x	51046	500.0000	1.2611	
C:\GC-14\Data\2021\071521\071516.D	Calibration	7	x	76849	750.0000	1.2647	
C:\GC-14\Data\2021\071521\071517.D	Calibration	8	x	100479	1000.0000	1.2174	
C:\GC-14\Data\2021\071521\071518.D	Calibration	9	x	205789	2000.0000	1.2628	
C:\GC-14\Data\2021\071521\071519.D	Calibration	10	x	493615	5000.0000	1.3097	

Semivolatile Calibration

Date: 07/14/21

Analyst: Sam Beerman

MeCl2: 5919

Cal		ICV	
8270 Megamix:	24373	8270 Megamix:	24490
2,4-DNP:	24498	2,4-DNP:	~3305
Benzoic Acid:	23362	Benzoic Acid:	24501

8270 Surrogate: 25511 IS 25636

Spike Conc. (ppb) 2	BN/Acid Surr Conc. (ppb) 2 1	2° Spike (uL) 0.2	B/N Surr (uL)	Internal Standard (uL) 10.	Remove (uL) 10.2	Final Vol. (mL)	Comments (uL) 8270 MM (SS) (uL) HBr SS (uL) Benzoic Acid
10	10/5	1	--	10	11	1	
20	20/10	2	--	10	12	1	
40	40/20	4	--	10	14	1	
100	100/50	10	--	10	20	1	
200	200/100	20	--	10	30	1	
500	500/250	~~40~~ 50	--	10	60	1	
750	750/375	75	88 7/14/21	10	85	1	
1000	1000/500	100	--	10	110	1	
2000	2000/1000	200	--	10	210	1	
5000	5000/2500	500	-- 88 7/14/21	10	510	1	
ICB	1000/500		~~1~~ 5	10	~~11~~ 15	1	
ICV (1000 ppb)	1000/500	~~100 (2° SS)~~	-- 5	10	~~110~~ 15	1	1 1 1

	Mega Mix (uL)	2,4-DNP (uL)	Benzoic Acid (uL)	8270 Surr (uL)	Final Volume (mL)
2° Intermediate (cal)	100	100	100	100	10
2° Intermediate (SS)	50	50	50	50	5

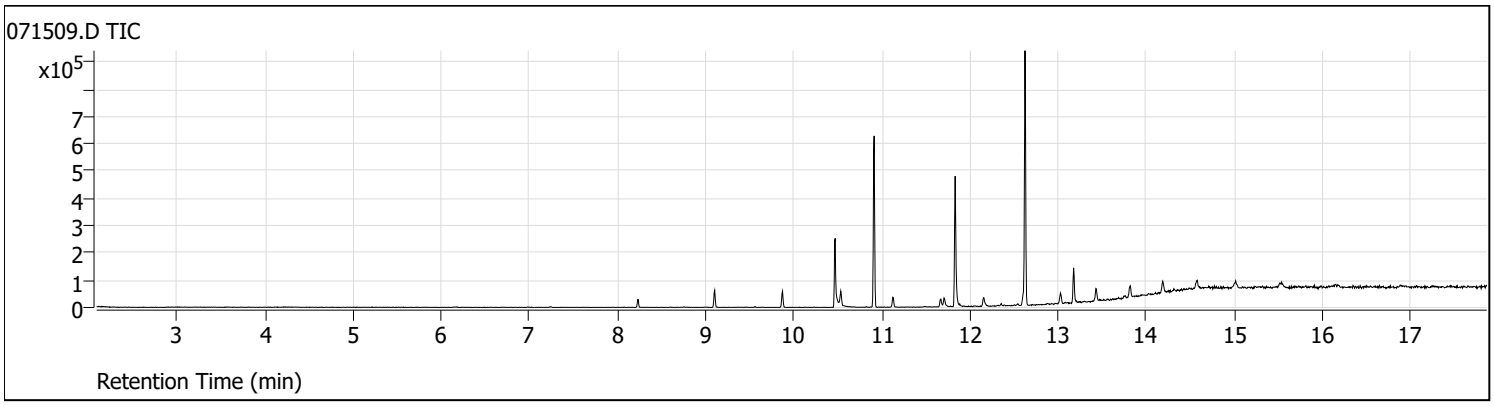
Signature and Date: Sam Beerman 07/14/21

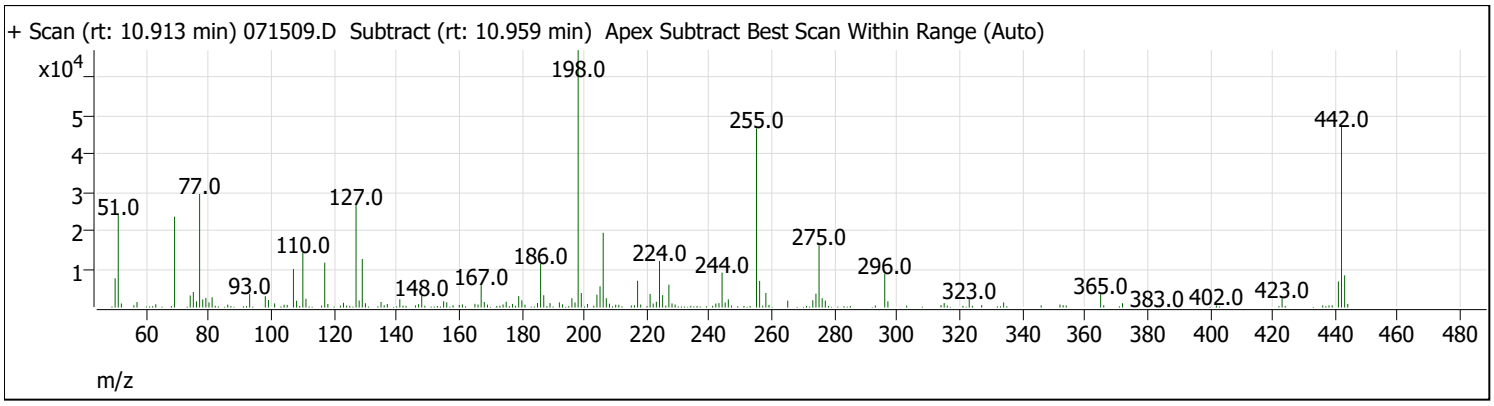
Signature: EM

Tunes

Tune Evaluation Report

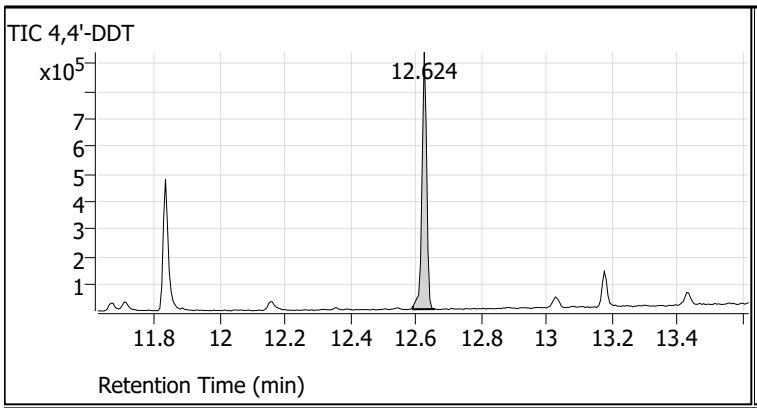
Data Path:	C:\GC-14\Data\2021\071521\071509.D
Acq on:	7/15/2021 1:34:10 PM
Operator:	FA\gc14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

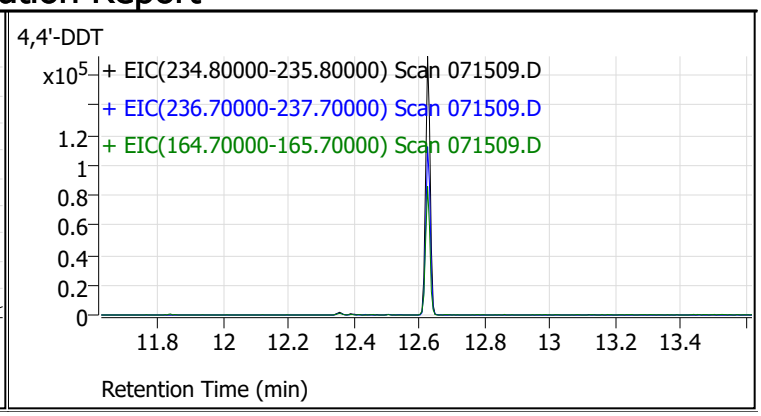


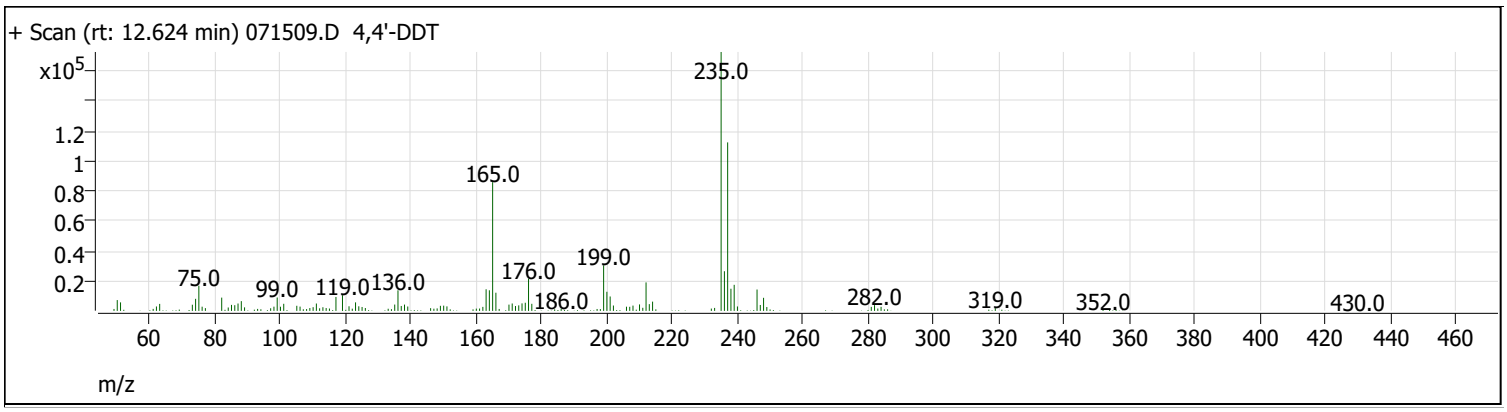


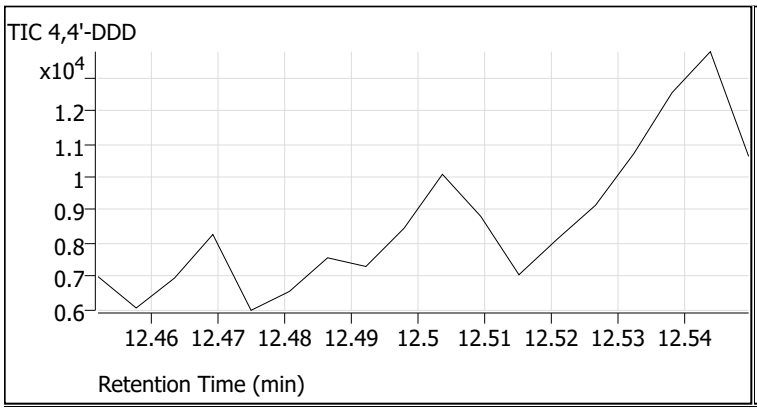
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.6	387	Pass
70	69	0	2	0.0	0	Pass
197	198	0	2	2.0	1329	Pass
198	198	100	100	100.0	66872	Pass
199	198	5	9	5.7	3783	Pass
365	198	1	100	5.2	3464	Pass
441	443	1E-10	150	80.8	6773	Pass
442	442	100	100	100.0	46896	Pass
443	442	15	24	17.9	8378	Pass
69	69	100	100	100.0	23600	Pass

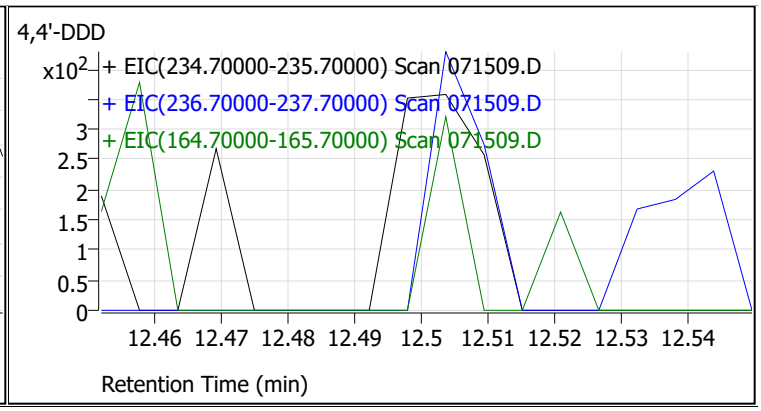
Tune Evaluation Report

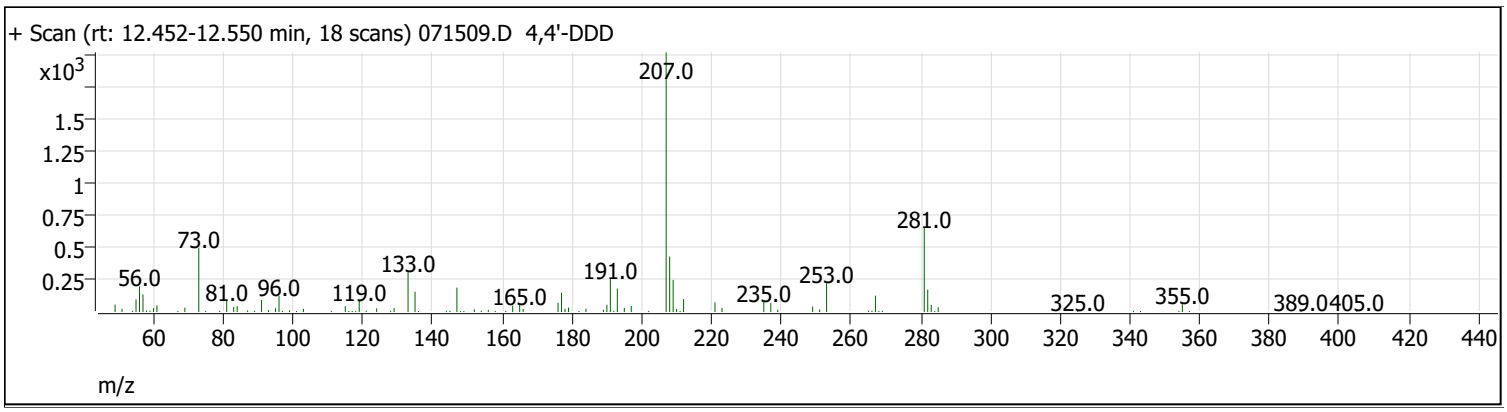






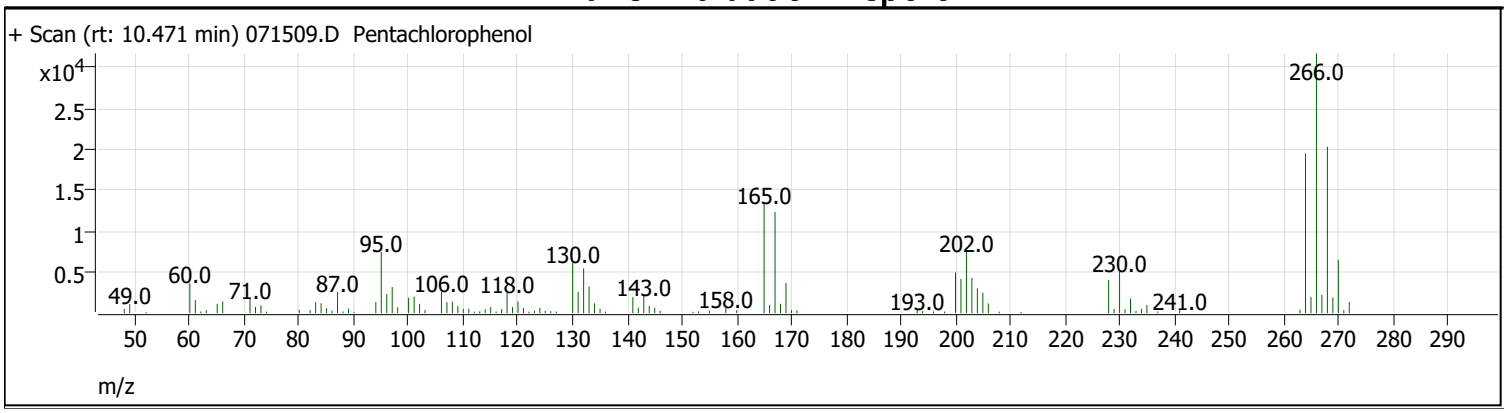


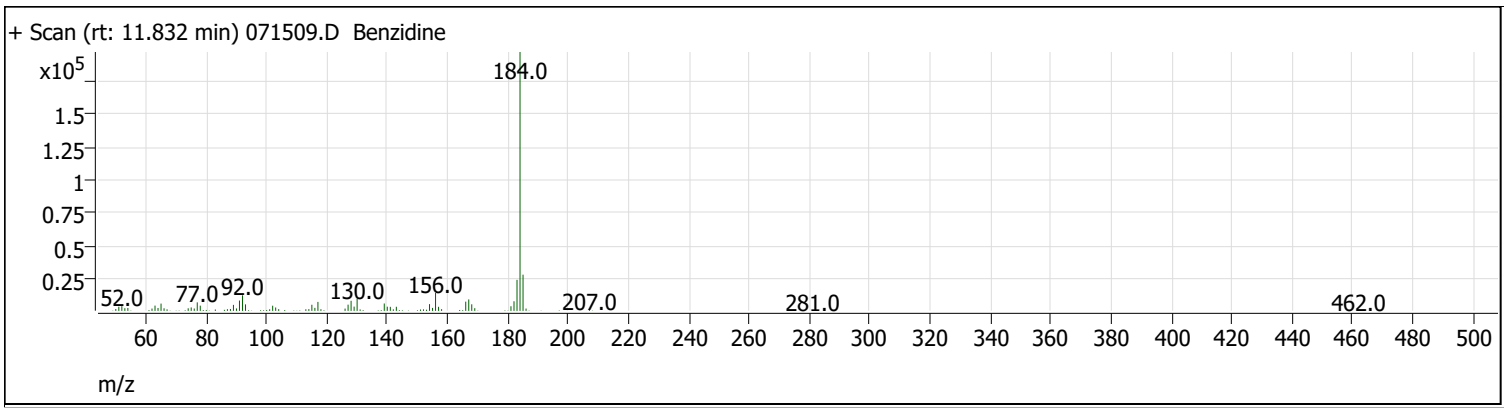




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.620	12.624	931975	0.0	Pass
4,4'-DDD	12.500	0.000	0		

Tune Evaluation Report

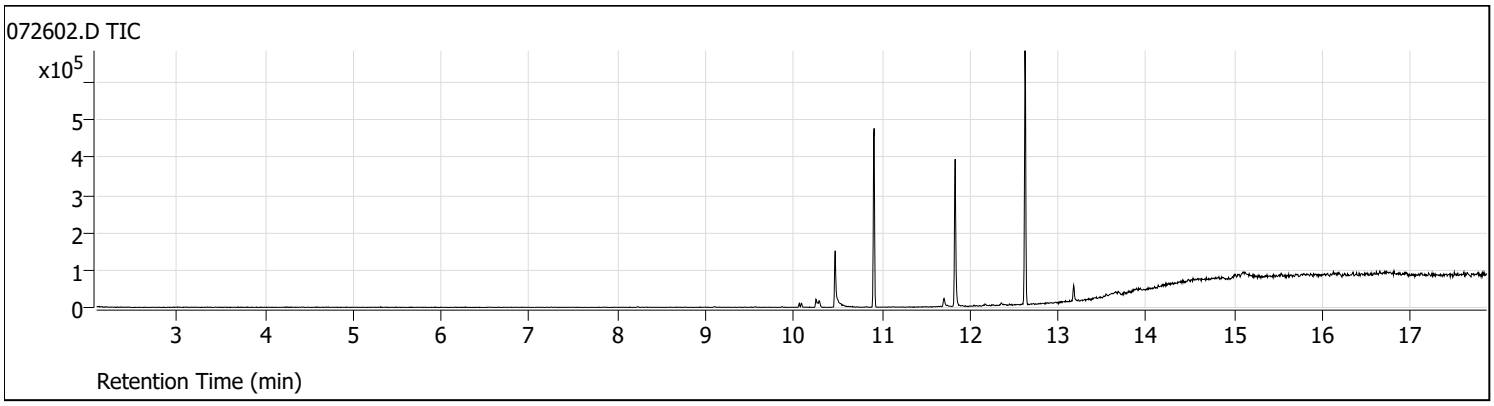


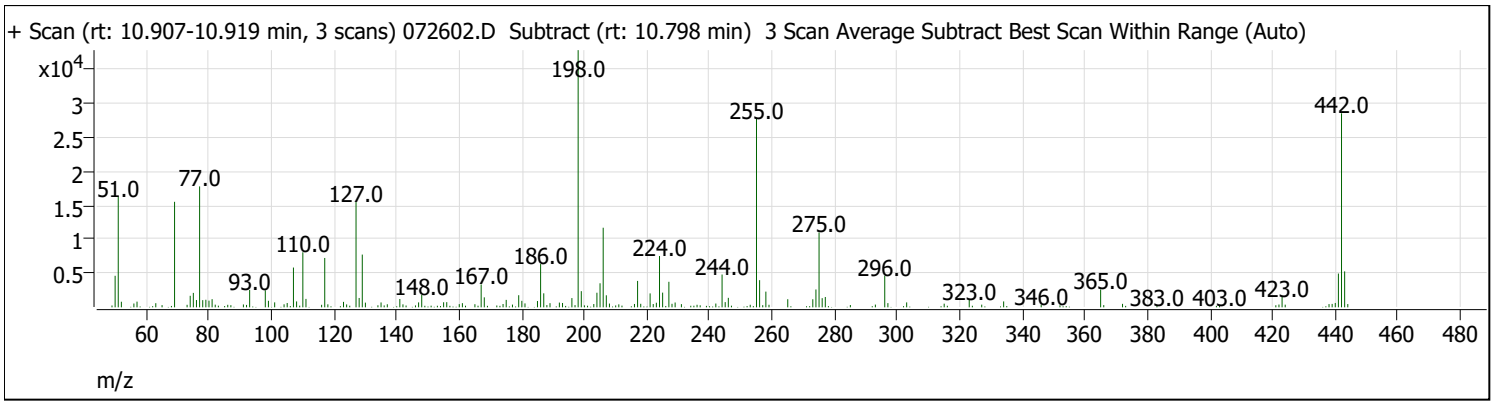


Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.470	10.471	1.6	2.9	Pass
Benzidine	11.832	11.832	1.5	2.7	Pass

Tune Evaluation Report

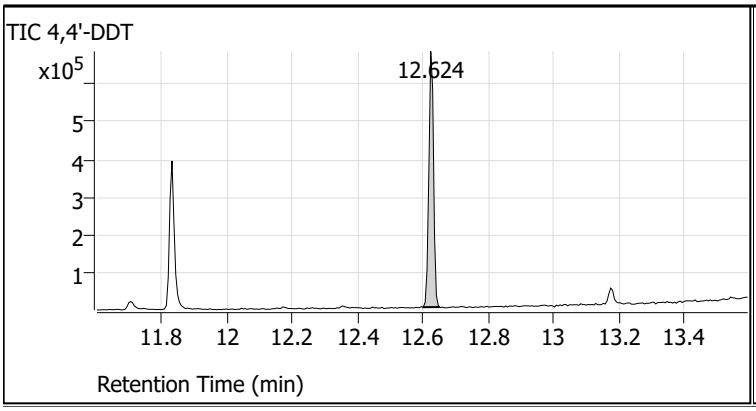
Data Path:	C:\GC-14\Data\2021\072621\072602.D
Acq on:	7/26/2021 8:00:07 AM
Operator:	FA\GC14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

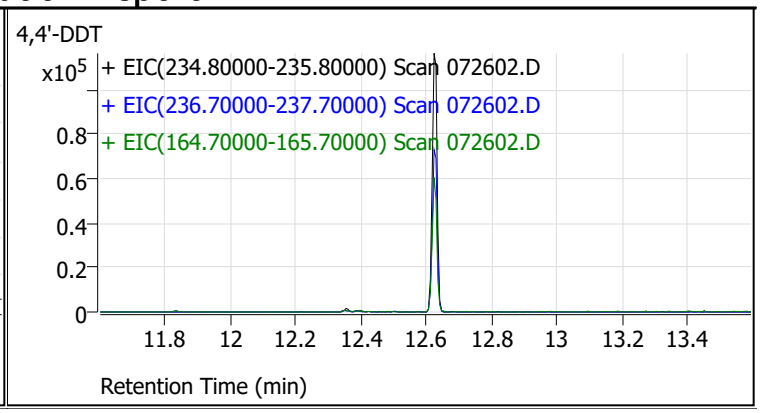


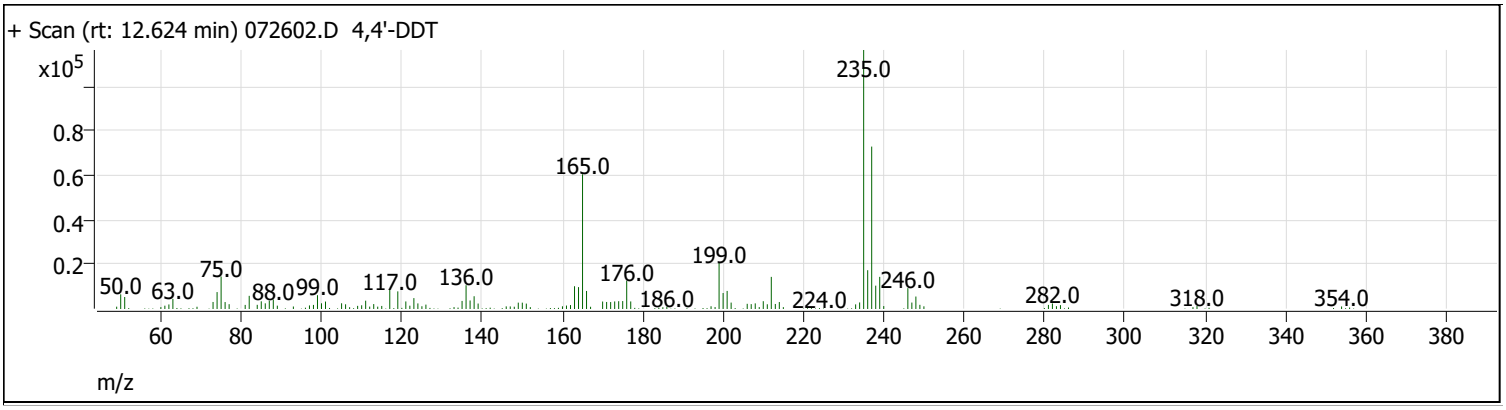


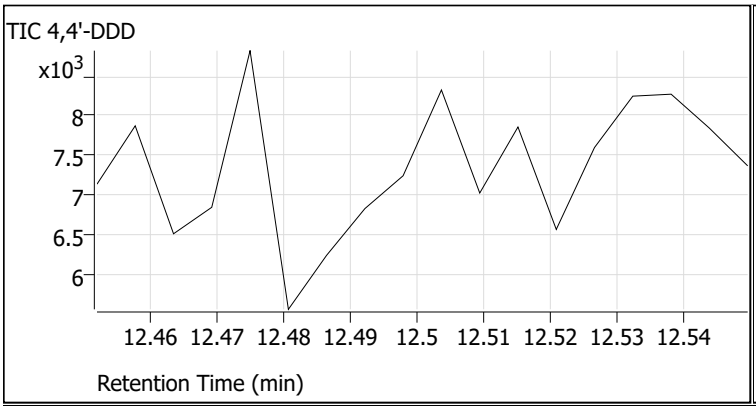
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.3	203	Pass
70	69	0	2	0.0	0	Pass
197	198	0	2	1.6	615	Pass
198	198	100	100	100.0	37739	Pass
199	198	5	9	6.3	2372	Pass
365	198	1	100	7.0	2624	Pass
441	443	1E-10	150	94.0	4960	Pass
442	442	100	100	100.0	28472	Pass
443	442	15	24	18.5	5277	Pass
69	69	100	100	100.0	15482	Pass

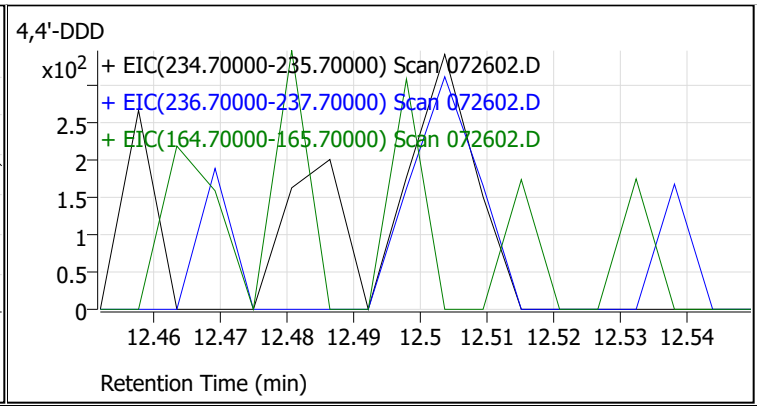
Tune Evaluation Report

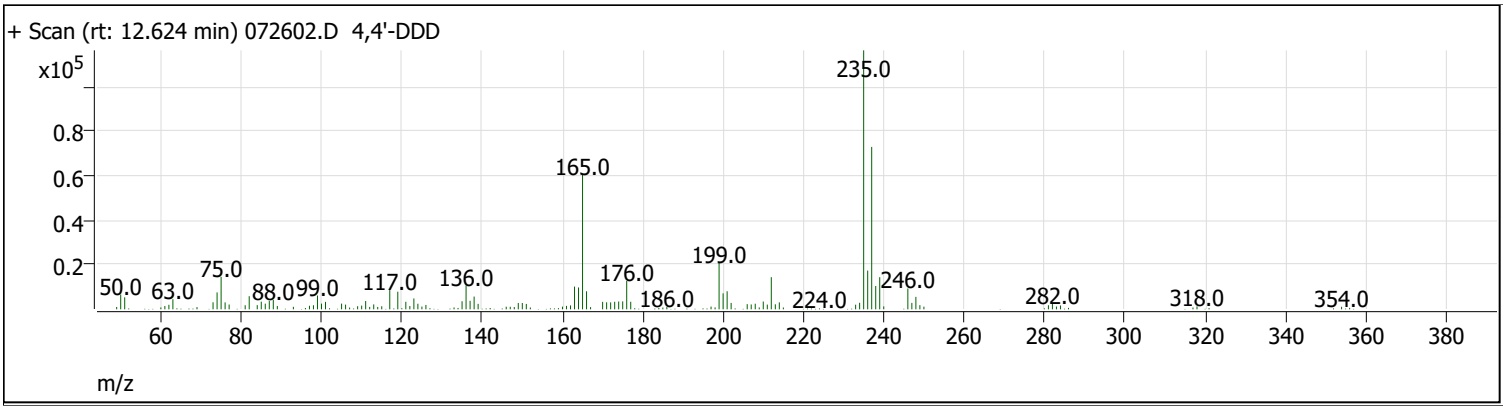






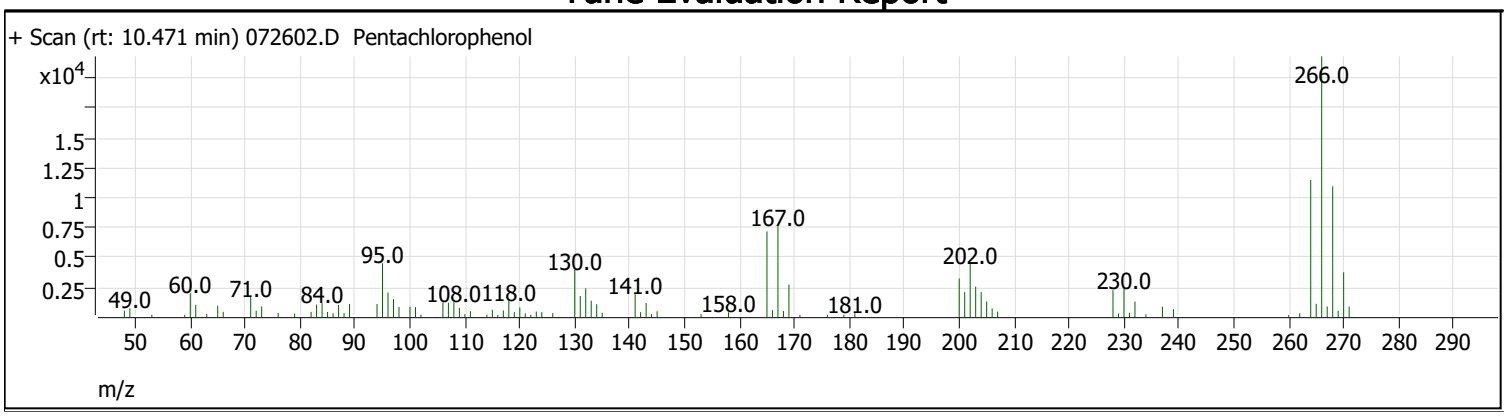


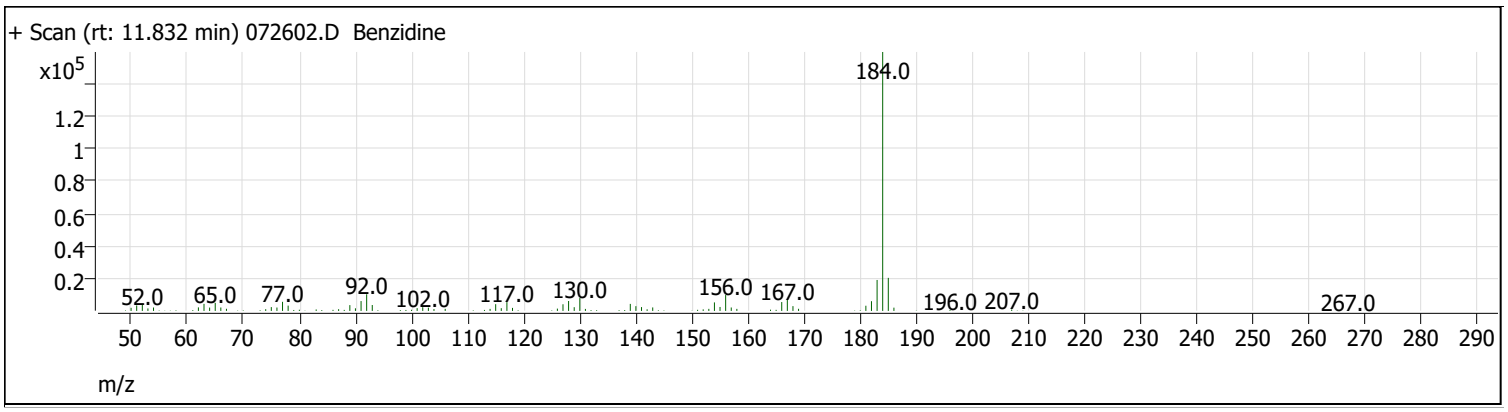




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.600	12.624	673251	50.0	Fail
4,4'-DDD	12.500	12.624	673251		

Tune Evaluation Report

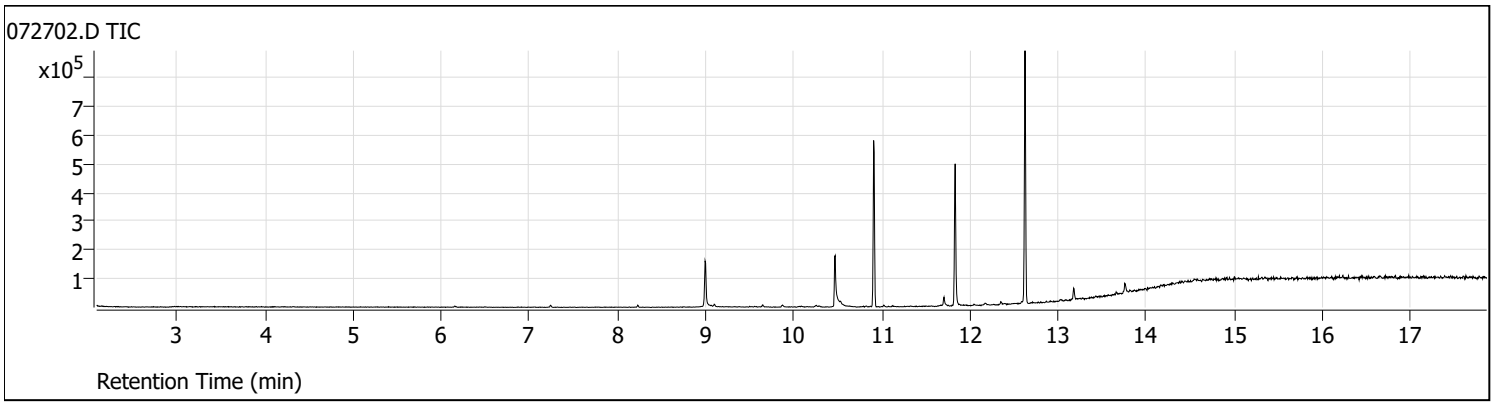


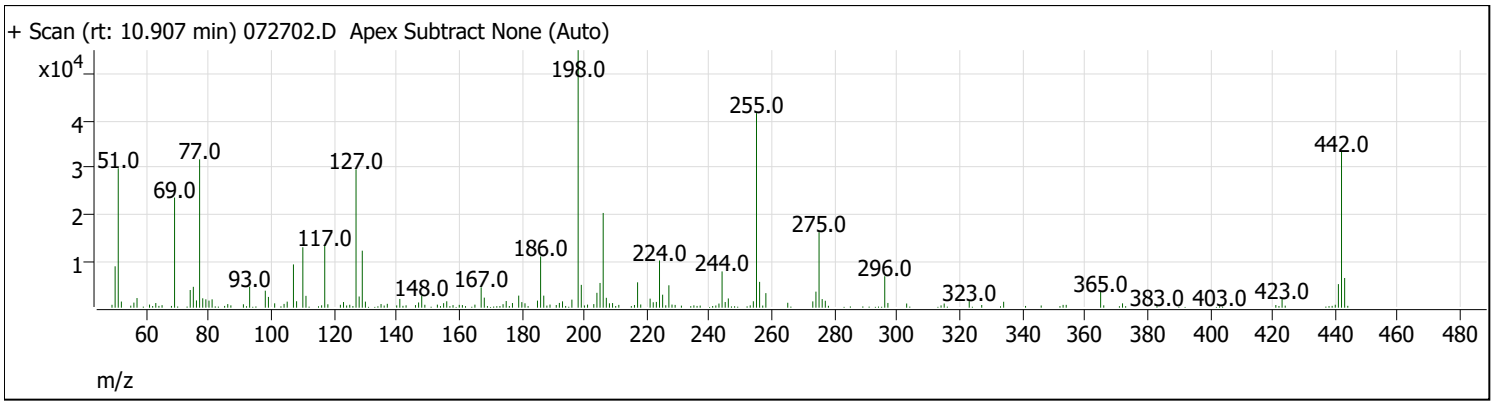


Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.540	10.471	2.6	3.8	Fail
Benzidine	11.906	11.832	1.1	3.9	Pass

Tune Evaluation Report

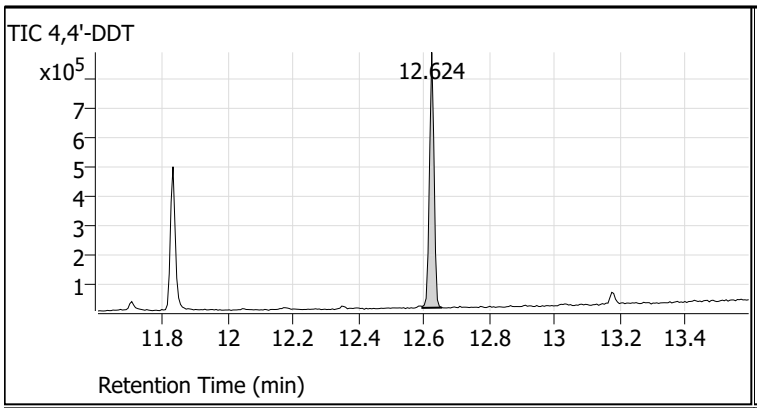
Data Path:	C:\GC-14\Data\2021\072621\072702.D
Acq on:	7/27/2021 8:25:19 AM
Operator:	FA\GC14
Sample:	TUNE
Inst Name:	GC-14
ALS Vial:	1
Method:	C:\GC-14\Methods\Quant Methods\TUNE\DFTPPwBreak&TailingGC218270E.m

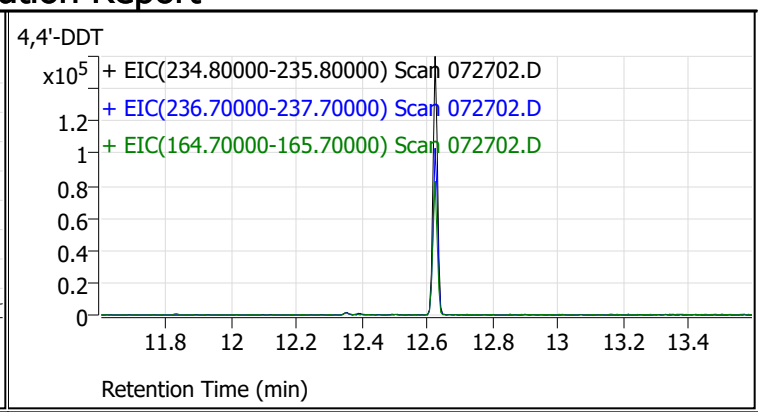


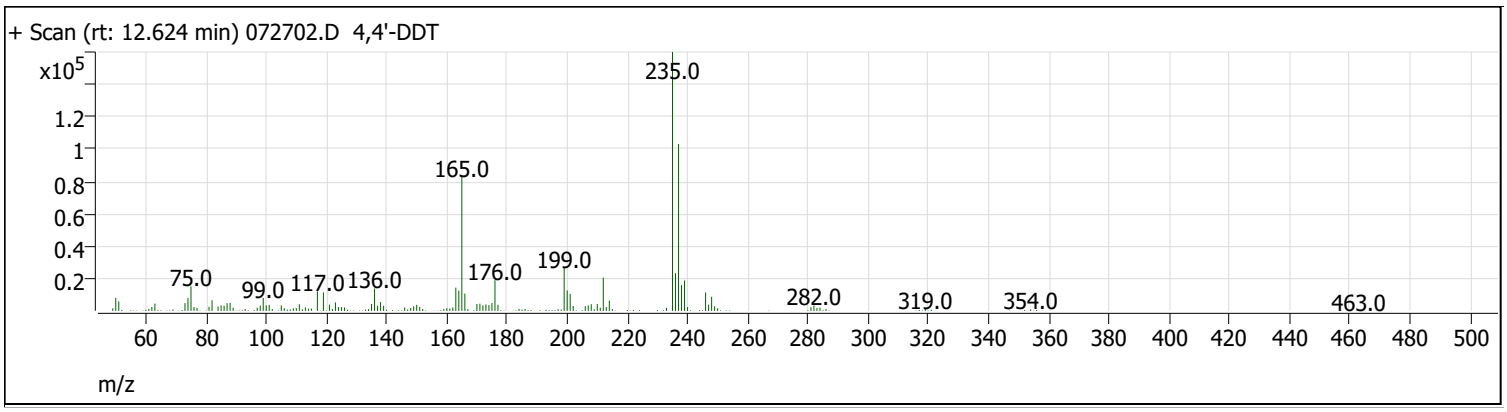


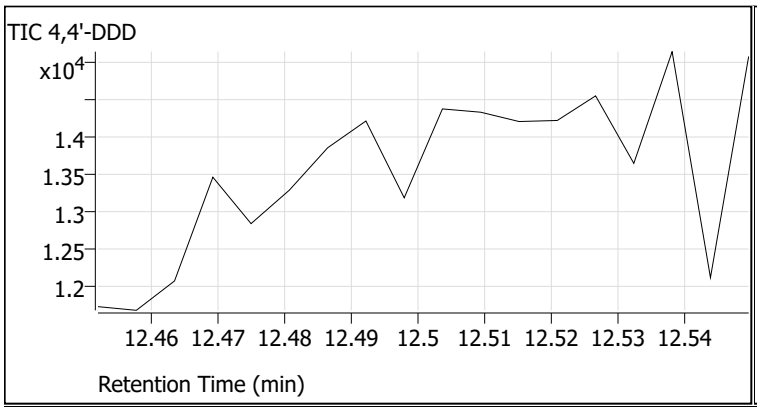
Target Mass	Rel. To Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Pass/Fail
68	69	0	2	1.6	376	Pass
70	69	0	2	1.1	251	Pass
197	198	0	2	0.0	0	Pass
198	198	100	100	100.0	55056	Pass
199	198	5	9	8.9	4879	Pass
365	198	1	100	6.3	3452	Pass
441	443	1E-10	150	79.3	5038	Pass
442	442	100	100	100.0	33280	Pass
443	442	15	24	19.1	6350	Pass
69	69	100	100	100.0	23544	Pass

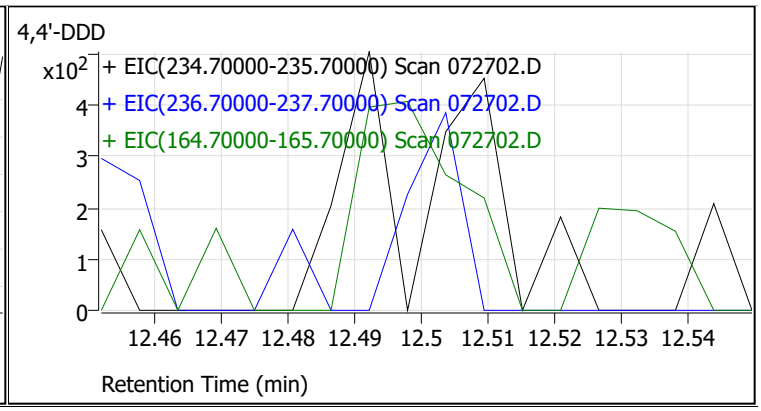
Tune Evaluation Report

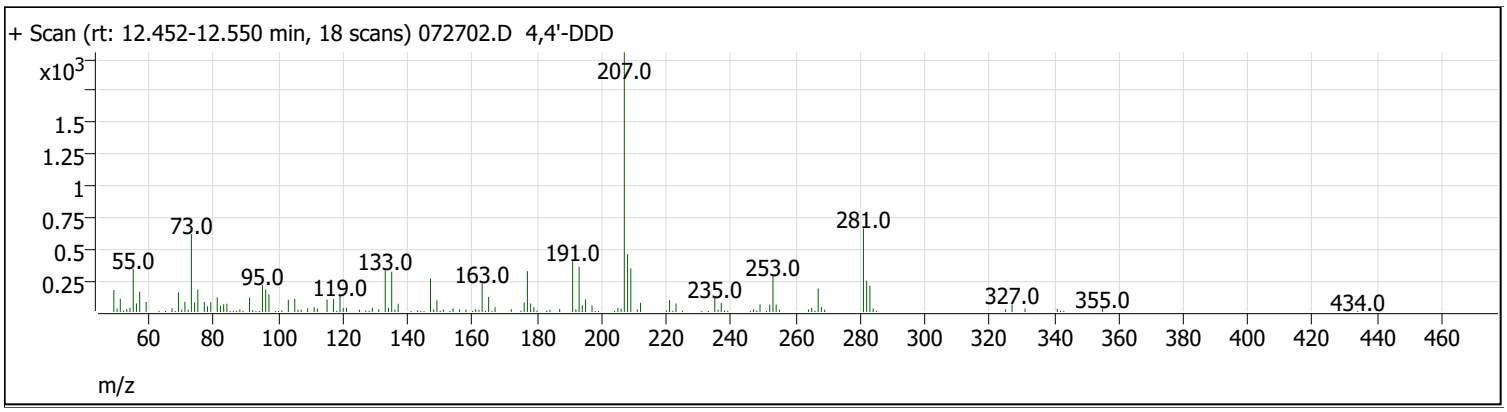






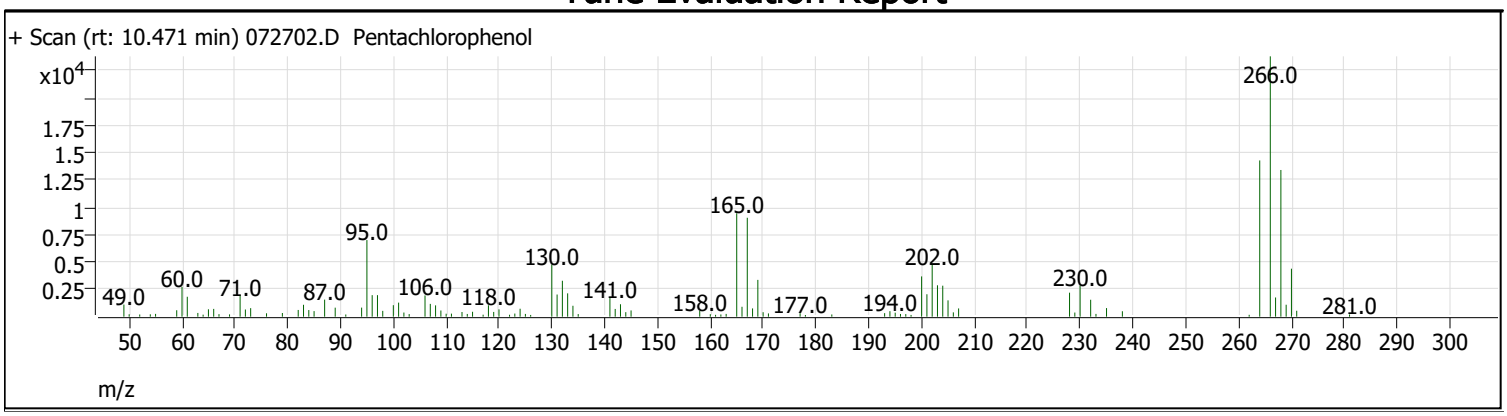


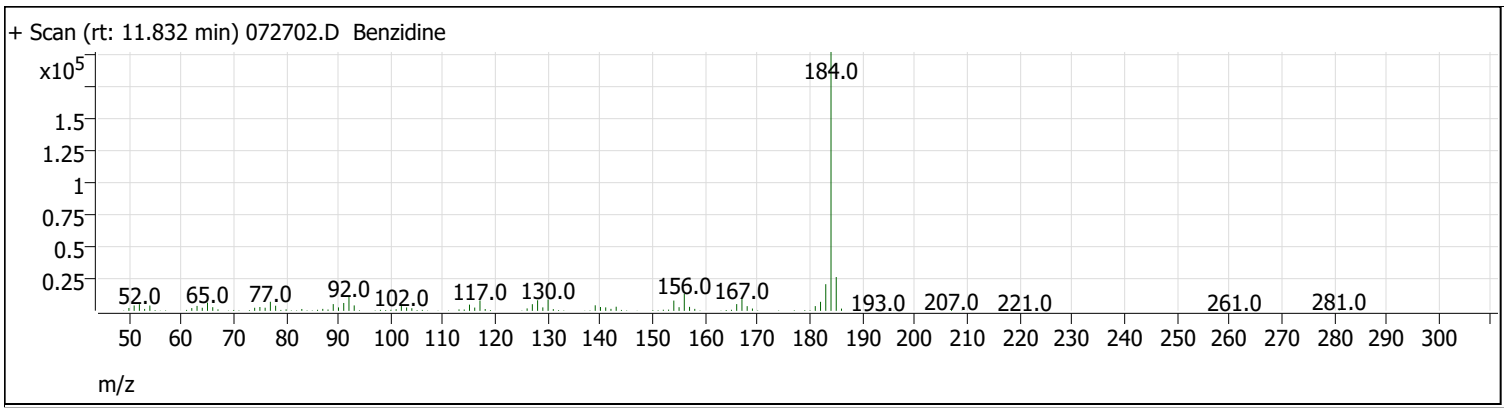




Compound Name	Expected RT	Observed RT	TIC Area	Breakdown %	Pass/Fail
4,4'-DDT	12.600	12.624	857687	0.0	Pass
4,4'-DDD	12.500	0.000	0		

Tune Evaluation Report





Compound Name	Expected RT	Observed RT	Tailing Factor	PGF	Pass/Fail
Pentachlorophenol	10.540	10.471	3.1	4.6	Fail
Benzidine	11.906	11.832	1.1	4.9	Pass

DATA SET for Review -- Deliverable Requirements

Volatile Petroleum Hydrocarbons by NWVPH

Fremont Analytical Work Order No. 2107361

Libby Environmental

Project Name: Jacks Auto Ground Water

This Data contains the following:

- Analytical Sequence Summary
- Calibration Information

Injection Log

Data Directory: C:\GC-2\DATA\072321\2021-07-23\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
CLEANOUTINVIAL		1	1.000	23-Jul-2021, 15:36:43
2) 001F0201.D				
CLEANOUTINVIAL		1	1.000	23-Jul-2021, 16:15:27
3) 001F0301.D				
VPH CAL1		1	1.000	23-Jul-2021, 16:54:30
4) 001F0401.D				
VPH CAL2		1	1.000	23-Jul-2021, 17:33:14
5) 001F0501.D				
VPH CAL3		1	1.000	23-Jul-2021, 18:12:06
6) 001F0601.D				
VPH CAL4		1	1.000	23-Jul-2021, 18:50:50
7) 001F0701.D				
VPH CAL5		1	1.000	23-Jul-2021, 19:29:36
8) 001F0801.D				
VPH CAL6		1	1.000	23-Jul-2021, 20:08:18
9) 001F0901.D				
VPH CAL7		1	1.000	23-Jul-2021, 20:47:06
10) 001F1001.D				
CLEANOUT		1	1.000	23-Jul-2021, 21:26:02
11) 001F1101.D				
ICB		1	1.000	23-Jul-2021, 22:04:54
12) 001F1201.D				
ICV VPH 25080		1	1.000	23-Jul-2021, 22:43:33
13) 001F1301.D				
CCV-33092A		1	1.000	23-Jul-2021, 23:22:11
14) 001F1401.D				
LCS-33092		1	1.000	24-Jul-2021, 00:00:54
15) 001F1501.D				
CLEANOUT		1	1.000	24-Jul-2021, 00:39:35
16) 001F1601.D				
MB-33092		1	1.000	24-Jul-2021, 01:18:14
17) 001F1701.D				
MDL2 SOIL VPH		1	1.000	24-Jul-2021, 01:56:53
18) 001F1801.D				
2107179-001B		1	1.000	24-Jul-2021, 02:35:43
19) 001F1901.D				
2107179-002B		1	1.000	24-Jul-2021, 03:14:22
20) 001F2001.D				
2107179-002BDUP		1	1.000	24-Jul-2021, 03:53:19
21) 001F2101.D				
2107216-003B		1	1.000	24-Jul-2021, 04:31:56

22) 001F2201.D
2107216-004B 1 1.000 24-Jul-2021, 05:10:31
---
23) 001F2301.D
2107181-001B10X 1 1.000 24-Jul-2021, 05:49:05
---
24) 001F2401.D
21017181-001B 1 1.000 24-Jul-2021, 06:27:38
---
25) 001F2501.D
2107216-003BMS 1 1.000 24-Jul-2021, 07:06:16
---
26) 001F2601.D
CLEANOUIT 1 1.000 24-Jul-2021, 07:45:02
---
27) 001F2701.D
CLEANOUT 1 1.000 24-Jul-2021, 08:23:44
---
28) 001F2801.D
CCV-33092B 1 1.000 24-Jul-2021, 09:02:30

Injection Log

Data Directory: C:\GC-2\DATA\080421\2021-08-04\

SampleName	MiscInfo	Vial	Multiplier	Injection Time
1) 001F0101.D				
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2) 001F0201.D				
CLEANOUTINVIAL		1	1.000	04-Aug-2021, 17:17:39
3) 001F0301.D				
CCV-33239A-LCS		1	1.000	04-Aug-2021, 17:56:28
4) 001F0401.D				
CLEANOUT		1	1.000	04-Aug-2021, 18:35:18
5) 001F0501.D				
MB-33239		1	1.000	04-Aug-2021, 19:14:03
6) 001F0601.D				
2107361-006C		1	1.000	04-Aug-2021, 19:52:52
7) 001F0701.D				
2107631-006CMS		1	1.000	04-Aug-2021, 20:31:49
8) 001F0801.D				
CCV-33239B-LCSD		1	1.000	04-Aug-2021, 21:10:27

Injection Log

Data Directory: C:\GC-2\DATA\081021\2021-08-10\

	SampleName	MiscInfo	Vial	Multiplier	Injection Time
1)	001F0101.D				
	CLEANOUTINVIAL		1	1.000	10-Aug-2021, 10:48:46
2)	001F0201.D				
	CCV-33239C		1	1.000	10-Aug-2021, 11:27:37
3)	001F0301.D				
	2107361-006C10X		1	1.000	10-Aug-2021, 12:06:16
4)	001F0401.D				
	CCV-33239D		1	1.000	10-Aug-2021, 12:45:01

Calibration

Response Factor Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH072321.M
Title : BTEX
Last Update : Mon Jul 26 09:48:30 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0301.D 2 =001F0401.D 3 =001F0501.D
4 =001F0601.D 5 =001F0701.D 6 =001F0801.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	S	1,4-Difluorob...	6.861	6.981	6.989	7.089	7.473	8.340	7.458	E4	9.07
2)	S	Bromofluorobe...	1.532	1.560	1.534	1.507	1.542	1.481	1.512	E5	2.96
3)	t	MTBE	6.277	7.015	5.932	5.675	5.377	4.954	5.687	E4	14.42
4)	t	Benzene	1.673	1.810	1.553	1.507	1.419	1.350	1.518	E5	11.77
5)	t	Toluene	1.675	1.806	1.561	1.508	1.424	1.362	1.520	E5	11.67
6)	t	Ethylbenzene	1.621	1.740	1.496	1.441	1.345	1.274	1.442	E5	13.66
7)	t	m&p xylenes	1.890	2.036	1.749	1.679	1.555	1.444	1.664	E5	15.36
8)	t	o xylene	1.622	1.752	1.517	1.457	1.362	1.275	1.450	E5	13.90
9)	t	1,2,3-Trimeth...	1.363	1.486	1.286	1.233	1.145	1.068	1.220	E5	14.59
10)	t	Naphthalene	6.738	7.277	5.987	5.572	5.304	4.857	5.747	E4	17.35
11)	T	PID C8-C10	4.411	3.481	2.459	2.146	1.923	1.735	2.531	E5	41.22
12)	T	PID C10-C12	1.564	1.395	0.942	0.771	0.684	0.593	0.926	E5	43.58
13)	T	PID C12-C13	1.314	0.748	0.384	0.265	0.192	0.155	0.455	E5	95.47
14)	T	SUB C6-C8	3.589	2.826	1.989	1.742	1.570	1.446	2.077	E5	39.85
15)	T	SUB C8-C10	5.172	3.967	2.769	2.416	2.136	1.925	2.873	E5	43.71
16)	T	SUB C10-C12	2.396	2.201	1.620	1.468	1.300	1.187	1.602	E5	32.10

Signal #2 Calibration Files
1 =001F0301.D 2 =001F0401.D 3 =001F0501.D
4 =001F0601.D 5 =001F0701.D 6 =001F0801.D

		Compound	1	2	3	4	5	6	Avg		%RSD
18)		Signal 2 #2							0.000		-1.00
19)	t	MTBE 2	4.338	3.719	2.862	2.677	2.559	2.310	2.949	E3	26.80
20)	t	HEXANE	5.863	5.492	4.554	4.557	4.146	3.961	4.641	E3	16.37
21)	T	FID C5-C6	7.228	6.375	4.652	4.266	3.647	3.263	4.656	E3	33.86
22)	T	FID C6-C8	1.806	1.394	0.886	0.710	0.579	0.525	0.915	E4	54.66
23)	T	FID C8-C10	1.715	1.348	0.980	0.852	0.725	0.681	0.992	E4	40.34
24)	T	FID C10-C12	1.530	1.036	0.691	0.491	0.426	0.346	0.687	E4	65.36

(#) = Out of Range ### Number of calibration levels exceeded format ###

QVPH072321.M Mon Jul 26 10:52:39 2021

Calibration Report HP5890

Method Path : C:\GC-2\METHODS\QUANT METHODS\VPH QUANT METHOD\
Method File : QVPH072321.M
Title : BTEX
Last Update : Mon Jul 26 09:48:30 2021
Response Via : Initial Calibration

Calibration Files
1 =001F0301 2 =001F0401 3 =001F0501 4 =001F0601 5 =001F0701
6 =001F0801 7 =001F0901

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
1)	S	1,4-Difluorobenzene	Avg	-----	7.4578 e4	-----	0.0907
2)	S	Bromofluorobenzene	Avg	-----	1.5120 e5	-----	0.0296
3)	t	MTBE	Lin	9.0293 e5	4.5557 e4	-----	0.9982
4)	t	Benzene	Lin	6.9432 e5	1.3311 e5	-----	0.9985
5)	t	Toluene	Lin	7.0486 e5	1.3306 e5	-----	0.9982
6)	t	Ethylbenzene	Lin	2.1326 e6	1.1708 e5	-----	0.9983
7)	t	m&p xylenes	Lin	2.2243 e6	1.3656 e5	-----	0.9933
8)	t	o xylene	Lin	8.6602 e5	1.2178 e5	-----	0.9951
9)	t	1,2,3-Trimethylbe...	Lin	7.7576 e5	1.0121 e5	-----	0.9937
10)	t	Naphthalene	Lin	9.4078 e5	4.4651 e4	-----	0.9983
11)	T	PID C8-C10	Lin	2.1681 e7	1.5353 e5	-----	0.9977
12)	T	PID C10-C12	Lin	2.2571 e6	5.1826 e4	-----	0.9972
13)	T	PID C12-C13	Lin	1.4105 e6	1.1604 e4	-----	0.9958
14)	T	SUB C6-C8	Lin	6.8334 e6	1.3520 e5	-----	0.9996
15)	T	SUB C8-C10	Lin	1.8980 e7	1.6932 e5	-----	0.9975
16)	T	SUB C10-C12	Lin	3.6599 e6	1.0284 e5	-----	0.9958

Signal #2

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
18)		Signal 2 #2	Lin	-----	-----	-----	0.0000
19)	t	MTBE 2	Lin	2.6839 e4	2.2286 e3	-----	0.9974
20)	t	HEXANE	Lin	2.6395 e4	3.9323 e3	-----	0.9991
21)	T	FID C5-C6	Lin	2.4394 e5	3.0924 e3	-----	0.9995
22)	T	FID C6-C8	Lin	5.5501 e5	4.8599 e3	-----	0.9997
23)	T	FID C8-C10	Lin	7.0668 e5	6.2830 e3	-----	0.9994
24)	T	FID C10-C12	Lin	4.1532 e5	2.7877 e3	-----	0.9935

QVPH072321.M Mon Jul 26 10:54:09 2021

Appendix E

ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

Limited Phase II ESA – Subsurface Investigation

Conducted on:

Former Jack's Auto Repair
1400 Bethel St. NE
Olympia, Washington 98506

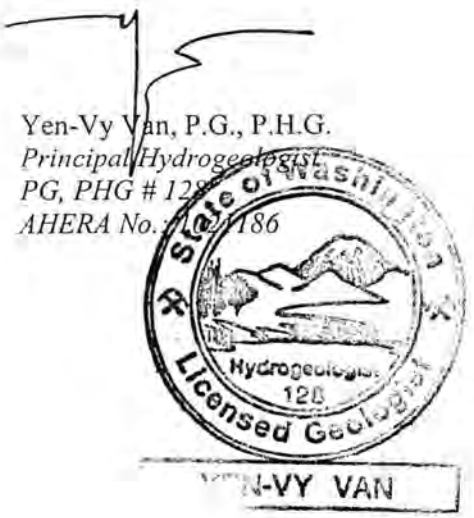
Prepared for:

Ms. So Young Cho
1408 Bethel St. NE
Olympia, Washington 98506

Prepared & Reviewed by:

Leobardo Chaidez, R.S.A.
Project Geologist

Yen-Vy Van, P.G., P.H.G.
Principal Hydrogeologist
PG, PHG # 128
AHERA No. [illegible]186



AEG Project #: 12-157
Date of Report: October 16, 2012

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Appendix A: Site Photographs
Appendix B: Supporting Documents
(Boring Logs/Laboratory Analytical Results)

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1 INTRODUCTION

Associated Environmental Group, LLC (AEG) has completed a Limited Phase II Environmental Site Assessment (ESA) – Subsurface Investigation at the former Jack's Auto Repair property, by advancing four borings to evaluate the subsurface environmental conditions. The former auto repair shop is located at 1408 Bethel Street NE in Olympia, Thurston County, Washington (the Site). The work was performed in general accordance with the Washington State Department of Ecology (Ecology) rules governing environmental assessment subsurface investigations, Model Toxics Control Act (MTCA), and the American Society for Testing and Materials (ASTM) Standard E 1903-97, *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process.*

1.1 Site Setting

The subject property, approximately 0.19 acres in size, is comprised of one parcel which includes a former automotive repair shop building, a canopy over what appears to be a former fuel dispenser island, and approximately 2,770 square feet of paved surface. According to the Thurston County Assessor, the general building and canopy were built in 1957. The property is located at the northeast corner of the intersection of Bethel St. NE, and San Francisco Ave. NE, in Olympia, Washington. The associated Thurston County Assessor's Parcel number is 73201800101 and is located within Township 18 North, Range 02 East, Section 12 (latitude North 47° 3'26.40", longitude West 122° 53' 4.72"). Figure 1, *Site and Vicinity Map*, presents the general boundaries and vicinity area of the subject site. Photographs documenting the subsurface investigation activities are presented in Appendix A, *Site Photographs.*

1.2 Previous Environmental Work Summary

According to the State of Washington Department of Ecology (Ecology), a leaking underground storage tank notification was received in their Southwest Regional office on October 2, 1990, regarding the Site. Ms. Pyung Ja An (property owner) informed AEG that independent action was taken to permanently close the underground storage tank (UST) system at the Site and the contractor had reported the property as cleaned up; however, the contractor did not provide a UST Site Assessment/closure report to Ecology, as required by Ecology MTCA regulations.

A file review of the Site by Ecology in January 2012 concluded that the Site had not been properly investigated and required an initial site assessment to be conducted to determine if the subsurface media (soil and groundwater) had been adversely affected by the reported UST leak.

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1.3 Objectives and Scope of Work

The objective of the Phase II ESA – Subsurface Investigation at the former Jack's Auto Repair facility was to evaluate whether subsurface (soil and/or groundwater media) was impacted beneath the property due to historical usages/operations at the property. The target areas of investigation included the immediate vicinity of the former fuel dispenser island and the current location of the auto repair shop.

AEG's scope of work for the subsurface investigation effort included:

- Subsurface explorations via direct push (Geoprobe) drilling
- collection of soil samples for laboratory analyses of the constituents of concern which included gasoline range total petroleum hydrocarbons (TPH) and associated volatile organic compounds (VOC) including fuel associated VOC such as benzene, toluene, ethylbenzene, and total xylenes. In addition, VOC associated with solvents typically used at automotive repair facilities include tetrachloroethene and its daughter products (trichloroethene and vinyl chloride) were also analyzed.
- field and laboratory data analysis and preparation of this report.

Specific tasks performed during the Subsurface Investigation included the following:

- Conducted both public and private utilities locates for the Site. The utility locates were performed by Underground Utilities Locate Center included only areas in the public right-of-ways. Applied Professional Services (APS) provided private utility locates on the Site.
- Advanced four soil borings (B-1 through B-4) using a direct push probe drilling rig to a maximum depth of 17 feet below ground surface (bgs) where drilling refusal was met. The borings were placed at selected areas at the Site to evaluate the potential presence of petroleum hydrocarbons and VOCs in subsurface soil and groundwater (if encountered) at the Site. Note: groundwater was not encountered during the subsurface investigation at all borings advanced.
- Logged soil borings documenting lithology encountered, lithology contacts, moisture, relative density, sample depths, photoionization detection readings, and information regarding sheens and odors, as applicable. Field screened soil samples utilizing a Photoionization Detector (PID) to facilitate the selection of appropriate soil samples to be submitted to the analytical laboratory.

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- Collected soil samples for laboratory analyses from each of the borings at depths ranging from 4 feet to 15 feet bgs. The soil samples were handled in accordance with industry standard chain-of-custody protocols and transported to ESN Northwest Chemistry Laboratory, in Olympia, Washington, for laboratory analysis.
- Analyzed soil samples for the following constituents of concern:
  - Gasoline range TPH via Northwest Method NWTPH-Gx;
  - Fuel associated volatile organic compounds (VOCs), specifically benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8260/5035; and
  - Solvents associated VOC, including tetrachloroethene (PCE) and its daughter products such as trichloroethene (TCE) and vinyl chloride via EPA Method 8260/5035.
- Compared soil analytical results to Ecology MTCA Method A soil cleanup levels for the constituents of concern.
- Prepared this report containing a summary of the subsurface conditions encountered, a discussion of Site soil and groundwater conditions, analytical laboratory results, findings, and recommendations.

1.4 Site Geology and Hydrogeology

According to the Geologic Map of the Tumwater 7.5-minute Quadrangle, Thurston County, Washington, the Site and vicinity area are underlain by Vashon Till deposits of continental glaciers consisting of *"unsorted and highly compacted mixture of clay, silt, sand, and gravel deposited directly by glacier ice"* (Walsh, T.J., Logan, R.L., et al, 2003)

Subsurface conditions at the subject site at locations of investigation generally consist of alternate layers of brown, very stiff silt with fine to coarse gravel to very dense, fine to coarse sand with fine to coarse gravel, to the total explored depth of 17 feet bgs.

Groundwater was not encountered during drilling activities to the total depth explored, at 17 feet bgs. A review of boring logs in the vicinity area shows presence of groundwater at variable depths, greater than 25 feet bgs. The inferred direction of regional groundwater flow is likely to the west-northwest, towards East Bay in the Budd Inlet and Puget Sound based on surface topography and regional discharge points.

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2 FIELD ACTIVITIES & METHODOLOGY

AEG and subcontractor ESN advanced boreholes B-1 through B-4 at the Site on August 9, 2012, to further assess the subsurface soil in the area of the former fuel dispenser island and the former and existing auto repair building.

Borehole B-1 was advanced to an approximate depth of 15.3 feet bgs on the southeast corner of the former auto repair building. Boreholes B-2 and B-3 were advanced on the north and south ends of the former fuel dispenser island to approximate depths of 15.5 and 17.0 feet bgs, respectively. Borehole B-4 was advanced on the northwest corner of the existing building. (Refer to Figure 2, *Site Plan*). Photo documentation of the subsurface investigations is presented in Appendix A, *Site Photographs*.

Drilling was performed by ESN Northwest, from Olympia, Washington, using a Powerprobe 9500 drill rig equipped with acetate liners for soil sampling. Soil samples were collected from the boreholes at selected depth intervals in accordance with visual observations of the soil samples by the field representative and the use of a Photoionization Detector (PID) instrument to measure potential presence of volatile organic compounds in soil.

AEG submitted selected soil samples for laboratory analyses for the following constituents of concern: Gasoline range TPH and associated VOC constituents.

2.1 Soil Sampling Procedures

Soil samples were collected utilizing a two-inch inside diameter, single tube acetate liners. Soil was observed to document lithology, color, moisture content, and sensory evidence of impairment. All soil samples collected were screened in the field for organic vapor content utilizing a PID instrument. The PID field screening results showed detections only in the soil samples collected from boring B-1 starting at 8 feet bgs, to the total depth of the borehole. The PID readings are presented in the soil boring logs provided in Appendix B, *Supporting Documents*.

Once collected, the selected soil samples were immediately transferred to laboratory provided containers. All soil samples were placed in a portable chilled ice chest. Soil sampling for VOC and field preservation methods followed methods set forth by Ecology's Method 5035A, "*Collecting and Preparing Soil Samples for VOC Analysis*" which minimizes VOC losses. The samples were couriered the day of collection to ESN Northwest Chemical Laboratory; a

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Washington State certified analytical laboratory located in Olympia, Washington. Soil samples were appropriately handled and transported following industry standard chain-of-custody procedures.

Table 1, *Summary of Soil Analytical Results*, presents analytical soil results as compared to Ecology's MTCA Method A cleanup levels for soil.

2.2 Quality Controls

All soil samples were collected in general accordance with industry protocols for the collection, documentation, and handling of samples. Descriptions of soil and sampling depths were carefully logged in the field, and the driller and geologist confirmed sample depths as soil samples were collected. A site map showing boring locations was completed prior to leaving the Site.

Soil samples were tightly packed into jars to eliminate sample headspace. Upon sampling, all samples were placed immediately into chilled ice chests. All samples were transported the day of sample collection and submitted under standard chain-of-custody protocols to ESN Northwest Chemical Laboratory. The laboratory provided standard quality assurance/quality control (QA/QC) which included the following: surrogate recoveries for each sample, method blank results, duplicate analyses, matrix or blank spiked analyses, and duplicate spiked analyses.

To reasonably ensure the purity of AEG's samples, nitrile gloves were used in handling all sampling jars and sampling devices and the sample containers were placed in a chilled cooler and transported to the analytical laboratory the day of sample collection.

2.3 Investigation Derived Waste

Investigation derived waste generated at the Site during this project consisted of soil cuttings from the subsurface exploration activities and purge water generated during the decontamination of the push probe rods and sampling rods. Soil cuttings generated during this investigation were placed in a 16-gallon capacity, Department of Transportation (DOT) approved steel drum and stored at the Site for subsequent characterization and disposal.

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3 CONCLUSIONS AND RECOMMENDATIONS

The findings and conclusions derived during the Limited Phase II ESA - Subsurface Investigation for the former Jack's Auto Repair property, located in Olympia, Washington, are as follows:

- Soil samples were collected at all four boreholes advanced at the Site to evaluate whether subsurface media was affected at areas of environmental concerns at the Site including adjacent and nearby previous dispenser islands and underground storage tanks, and to determine whether groundwater (if encountered) has been adversely impacted.

- Brown, very stiff silt with gravel was encountered in alternate layers with very dense, fine sand with coarse gravel, to total depth in all the borings.

- Shallow groundwater was not encountered during drilling activities to the maximum depth explored, at 17 feet below ground surface.

- Laboratory analytical results indicated presence of elevated concentrations of gasoline range total petroleum hydrocarbons (TPH), at boring B-1. The detected concentration, 1,100 milligrams per kilogram (mg/Kg), is above Ecology MTCA Method A cleanup level for this constituent at 100 mg/Kg. This borehole was advanced at the southwest corner of the existing and former auto repair building (refer to Table 1 and Appendix A). Low concentrations of fuel associated volatile organic compounds were also exhibited albeit at levels below Ecology cleanup levels.

- Low concentrations of gasoline range TPH were exhibited at borings B-2 and B-4 (at 20 mg/Kg and 11 mg/Kg, respectively). Solvent associated VOC including tetrachloroethene and its daughter/breakdown products were not exhibited in all soil samples analyzed.

Discussion:
The Site (soil media) is adversely impacted by historical operations at the Site. Gasoline range petroleum hydrocarbons was detected at a concentration above Ecology MTCA Method A soil cleanup level. AEG was unable to assess whether the groundwater media was impacted due to drilling refusal at 17 feet bgs.

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Recommendation:

Due to the confirmed soil contamination at a concentration above Ecology cleanup level, AEG recommends conducting additional subsurface investigation via installation of dedicated monitoring wells to assess the groundwater media and assess whether groundwater has been contaminated by gasoline range TPH and associated VOCs. The depth of the monitoring wells needs to be at least 25 to 30 feet bgs. Additionally the Supplemental Remedial Investigation needs to further characterize the vertical and lateral extent of the affected soil at the Site.

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4 LIMITATIONS

This report summarizes the findings of the services authorized under our agreement. It has been prepared using generally accepted professional practices, related to the nature of the work accomplished. This report was prepared for the exclusive use of Ms. So Young Cho and her designated representatives for the specific application to the project purpose.

Recommendations, opinions, site history and proposed actions contained in this report apply to conditions and information available at the time this report was completed. Since conditions and regulations beyond our control can change at any time after completion of this report, or our proposed work, we are not responsible for any impacts of any changes in conditions, standards, practices and/or regulations subsequent to our performance of services. We cannot warrant or validate the accuracy of information supplied by others, in whole or part.

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5 REFERENCES

American Society for Testing and Materials (ASTM) Standard E 1903-97, *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process.*

Walsh, T.J., Logan, R.L., and et. al., 2003. *Geologic Map of the Tumwater 7.5-minute Quadrangle, Thurston Co. Washington.*

Washington State Department of Ecology, 2004. *Collecting and Preparing Soil Samples for VOC analysis. Implementation Memorandum #5.*

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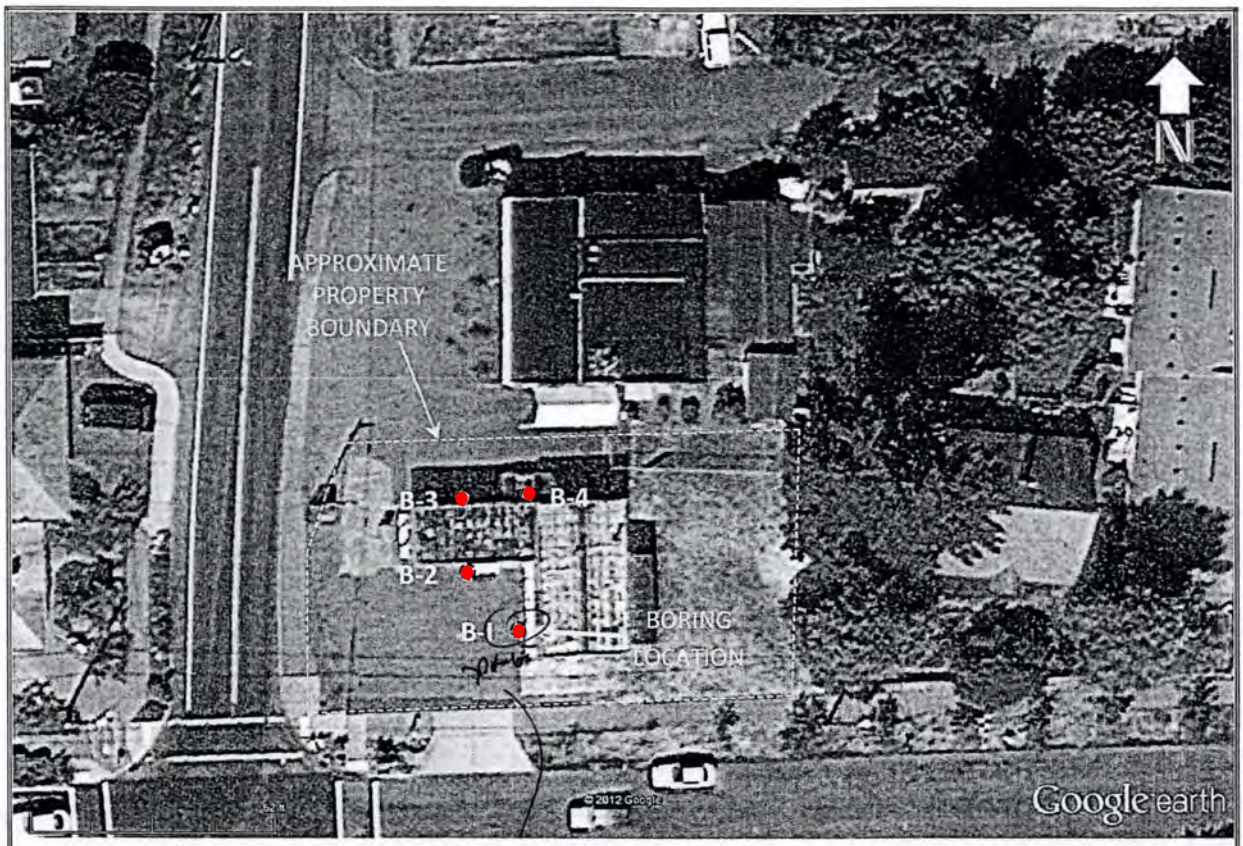
Source: Google Earth 2012

ASSOCIATED ENVIRONMENTAL GROUP, LLC.	FIGURE 1 SITE AND VICINITY MAP	JACK'S FORMER AUTO REPAIR 1408 Bethel St. NE Olympia, WA



Notes:

(1) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

(2) The locations of all borings shown are approximate.

location relative to USTs?

ASSOCIATED ENVIRONMENTAL GROUP, LLC.	FIGURE 2 SITE PLAN	**JACK'S FORMER AUTO REPAIR** 1408 Bethel ST. NE Olympia, WA

Need to determine location of former tanks.

Table 1 Summary of Soil Analytical Results
Phase II ESA - Subsurface Investigation
Former Jack's Auto Repair, Olympia, WA

Sample Number[1]	Date Sampled	Depth Sampled (feet)	Gasoline TPH[2] (mg/Kg)	Select Volatile Organic Compounds[3] (mg/Kg)							
				Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Naphthalenes	PCE	TCE	Vinyl Chloride
B1-4-15	8/9/2012	15.0	**1,100**	<0.02	<0.05	1.4	3.0	2.1	<0.02	<0.02	<0.05
B2-1-4	8/9/2012	4.0	20	<0.02	<0.05	<0.05	<0.15	<0.10	<0.02	<0.02	<0.05
B3-4-6	8/9/2012	6.0	<10	<0.02	<0.05	<0.05	<0.15	<0.10	<0.02	<0.02	<0.05
B4-3-9	8/9/2012	9.0	11	<0.02	<0.05	<0.05	<0.15	<0.10	<0.02	<0.02	<0.05
PQL			10	0.02	0.05	0.05	0.15	0.10	0.02	0.02	0.05
Ecology MTCA Method A Clean Up Levels			100[4]	0.03	7	6	9	5	0.05	0.03	*

Notes:
[1]Approximate sample locations are shown in figure 2
[2]Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Gx
[3]Select Volatile Organic Compounds. Analyzed by EPA Method 8260C.
[4]Cleanup level without presence of benzene
mg/Kg = milligrams per kilograms
PCE = tetrachlorocthene
TCE = trichlorocthene
MTCA = Model Toxics Control Act
PQL=Practical Quantitation Limits
-- = not analyzed for this constituent
< = not detected above laboratory limits
* Ecology has not designated a MTCA Method A cleanup level for this constituent
Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

APPENDIX A
SITE PHOTOGRAPHS

ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

SITE PHOTOGRAPHIC RECORD

Project No.: 12-157

Project Name: Jack's Former Auto Repair – Phase II ESA

Photo #1:	*Jack's Former Auto Repair property. Site looking north from San Francisco Ave. NE*

Photo #2:	*Canopy structure over the former fuel dispenser island. Site looking south.*

Photo #3:	*Location of Borehole B-1 on the on the southwest corner of the existing and former auto repair building. Photo looking east.*

Photo #4:	*Subsurface investigation at borehole B-2, located south of the former fuel dispenser island. Photo looking east.*

Photo #5:	*Advancing borehole B-3, north of the former fuel dispenser island. Borehole B-2 can be seen marked in white at the bottom of the photo. Picture looking north.*

Photo #6:	*Direct push rig positioned over Borehole B-4 on the northwest corner of the auto repair building. Photo looking east from Bethel St.*

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APPENDIX B
SUPPORTING DOCUMENTS

ASSOCIATED ENVIRONMENTAL GROUP, LLC **LOG OF BOREHOLE**

PROJECT:	Jack's (Former) Auto Repair - Phase II ESA	**JOB #** 12-157	**BORING #** B-1 **PAGE** 1 OF 1
Location:	1408 Bethel Street NE, Olympia, WA	**Approximate Elevation:**	
Subcontractor/Equipment:	ESN - John Medford	**Drilling Method/Drilling Rig:**	Direct Push Probe - Geoprobe
Date:	8/9/2012	**Logged By:**	L. Chaidez

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 3 inches underlain by:					0830				
	Brown, moist, very stiff, SILT with gravel, fine to coarse gravel, some fine sand.	ML					NA		NA	NA
					B1-1-4	0835		0.0		
5	at 4 feet: gray, dense, coarse GRAVEL, trace fine sand, Strong gasoline petroleum fuel odor.									
					B1-2-8	0847		44		
10	Gasoline petroleum fuel odor.									
					B1-3-12	0857		5		
15	Gasoline petroleum fuel odor. Drilling refusal at 15.3 feet.				B1-4-15	0907		158		
	TD at 15.3 feet bgs. Groundwater not encountered ATD. Boring backfilled with bentonite chips.									
20										
25										

Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

ASSOCIATED ENVIRONMENTAL GROUP, LLC **LOG OF BOREHOLE**

PROJECT:	Jack's (Former) Auto Repair - Phase II ESA	**JOB #** 12-157	**BORING #** B-2 **PAGE 1 OF 1**
Location:	1408 Bethel Street NE, Olympia, WA	**Approximate Elevation:**	
Subcontractor/Equipment:	ESN - John Medford	**Drilling Method/Drilling Rig:**	Direct Push Probe - Geoprobe
Date:	8/9/2012	**Logged By:**	L. Chaidez

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 3 inches underlain by:					0935				
	Brown, moist, dense, SAND with gravel; fine sand, fine to coarse gravel, trace to some silt.	SP					NA		NA	NA
					B2-1-4	0938		0.0		
5										
					B2-2-8	0942		0.0		
10										
	Brown, moist, very stiff, SILT with gravel, fine to coarse gravel, some fine sand.	ML			B2-3-12	0946		0.0		
15	Drilling refusal at 15-1/2 feet.				B2-4-15-1/2	1003		0.0		
	TD at 15-1/2 feet bgs. Groundwater not encountered ATD. Boring backfilled with bentonite chips.									
20										
25										

Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

ASSOCIATED ENVIRONMENTAL GROUP, LLC — LOG OF BOREHOLE

PROJECT:	Jack's (Former) Auto Repair - Phase II ESA	**JOB #** 12-157	**BORING #** B-3 **PAGE 1 OF 1**
Location:	1408 Bethel Street NE, Olympia, WA	**Approximate Elevation:**	
Subcontractor/Equipment:	ESN - John Medford	**Drilling Method/Drilling Rig:**	Direct Push Probe - Geoprobe
Date:	8/9/2012	**Logged By:**	L. Chaidez

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 3 inches underlain by:					1011				
	Brown, moist, very dense, SAND with gravel, fine grained sand, fine to coarse gravel, some silt.	SP					NA		NA	NA
	Reddish brown, moist, stiff, SILT with gravel, fine to coarse gravel, trace fine sand.	ML			B3-1-4	1016		0.0		
5	at 4 feet: light brown.				B3-5-6	1055		0.0		
					B3-2-8	1023		0.0		
	Brown, moist, very dense, SAND with gravel, fine to coarse sand, poorly graded, fine to coarse gravel, trace silt.	SP								
10					B3-3-12	1033		0.0		
	Brown, moist, hard, SILT with gravel, fine to coarse gravel, trace fine sand.	ML								
15					B3-4-16	1045		0.0		
	Drilling refusal at 17 feet.									
	TD at 17 feet bgs. Groundwater not encountered ATD. Boring backfilled with bentonite chips.									
20										
25										

Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

ASSOCIATED ENVIRONMENTAL GROUP, LLC — **LOG OF BOREHOLE**

PROJECT:	Jack's (Former) Auto Repair - Phase II ESA	**JOB #** 12-157	**BORING #** B-4 **PAGE 1 OF 1**
Location:	1408 Bethel Street NE, Olympia, WA	**Approximate Elevation:**	
Subcontractor/Equipment:	ESN - John Medford	**Drilling Method/Drilling Rig:**	Direct Push Probe - Geoprobe
Date:	8/9/2012	**Logged By:**	L. Chaidez

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 3 inches underlain by:					1103				
	Brown, moist, very dense, SAND with gravel, fine to coarse sand, Poorly Graded, fine to medium gravel, some silt.	SP					NA		NA	NA
	Reddish brown, moist, SILT with gravel, fine to coarse gravel, trace fine sand.	ML								
					B4-1-4	1108		0.0		
5	Tan, moist, very dense, silty SAND with gravel, fine sand, fine to coarse gravel.	SM								
					B4-2-6	1113		0.0		
	Light brown, moist, hard, SILT with gravel, fine to coarse gravel, some fine sand.	ML								
					B4-3-9	1123		0.0		
10	Light brown, moist, very dense, SAND with gravel, fine to coarse sand, Poorly Graded, fine to coarse gravel, some silt.	SP								
					B4-4-12	1132		0.0		
15					B4-5-15	1140		0.0		
	Drilling refusal at 16 feet.				B4-6-16	1148		0.0		
	TD at 16 feet bgs. Groundwater not encountered ATD. Boring backfilled with bentonite chips.									
20										
25										

Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

ESN NORTHWEST
Environmental Services Network

August 15, 2012

Yen-Vy Van
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Van:

Please find enclosed the analytical data report for the Jack's Auto Repair Project in Olympia, Washington. Probe services were conducted on August, 2012. Soil samples were analyzed for Gasoline by NWTPH-Gx and VOC's by Method 8260 on August 10, 2012.

The results of the analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

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Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
JACK'S AUTO REPAIR PROJECT
Client Project #12-157
Olympia, Washington

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Analysis of Gasoline Range Organics in Soil by Method NWTPH-Gx

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Gasoline Range Organics (mg/kg)
Method Blank	8/10/2012	8/10/2012	95	nd
LCS	8/10/2012	8/10/2012	103	89%
B1-4-15	8/10/2012	8/10/2012	108	**1100**
B2-1-4	8/10/2012	8/10/2012	107	**20**
B3-4-6	8/10/2012	8/10/2012	101	nd
B4-3-9	8/10/2012	8/10/2012	112	**11**
B4-3-9 Duplicate	8/10/2012	8/10/2012	106	nd
Reporting Limits				10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE: 65% TO 135%

ESN NORTHWEST CHEMISTRY LABORATORY

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Analysis of Volatile Organic Compounds in Soil by Method 8260/5035

Analytical Results

	Reporting	MTH BLK	LCS	LCSD	B1-4-15	B2-1-4	B3-4-6	B4-3-9
Date extracted	Limits	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12
Date analyzed	(mg/Kg)	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12
Dichlorodifluoromethane	0.05	nd			nd	nd	nd	nd
Chloromethane	0.05	nd			nd	nd	nd	nd
Vinyl chloride	0.05	nd	124%	121%	nd	nd	nd	nd
Bromomethane	0.05	nd			nd	nd	nd	nd
Chloroethane	0.05	nd			nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd	nd	nd
Acetone	0.25	nd			nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	123%	108%	nd	nd	nd	nd
Methylene chloride	0.02	nd			nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd	105%	102%	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd	nd	nd
2-Butanone (MEK)	0.25	nd			nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd	nd	nd
Chloroform	0.05	nd	113%	113%	nd	nd	nd	nd
Bromochloromethane	0.05	nd			nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd	119%	119%	nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	121%	118%	nd	nd	nd	nd
Benzene	0.02	nd	116%	116%	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	121%	120%	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd			nd	nd	nd	nd
Dibromomethane	0.05	nd			nd	nd	nd	nd
Bromodichloromethane	0.05	nd			nd	nd	nd	nd
4-Methyl-2-pentanone (MIBK)	0.25	nd			nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd
Toluene	0.05	nd	108%	112%	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd	nd	nd
2-Hexanone	0.25	nd			nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd	nd	nd
Dibromochloromethane	0.05	nd			nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	109%	111%	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	0.05	nd			nd	nd	nd	nd
Chlorobenzene	0.05	nd	124%	122%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd
Ethylbenzene	0.05	nd	117%	120%	**1.4**	nd	nd	nd
Xylenes	0.15	nd	117%	116%	**3.0**	nd	nd	nd
Styrene	0.05	nd			nd	nd	nd	nd
Bromoform	0.05	nd			nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd
Isopropylbenzene	0.05	nd			**0.34**	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd	nd	nd

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
JACK'S AUTO REPAIR PROJECT
Client Project #12-157
Olympia, Washington

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Analysis of Volatile Organic Compounds in Soil by Method 8260/5035

Analytical Results

	Reporting	MTH BLK	LCS	LCSD	B1-4-15	B2-1-4	B3-4-6	B4-3-9
Date extracted	Limits	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12
Date analyzed	(mg/Kg)	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12	08/10/12
Bromobenzene	0.05	nd			nd	nd	nd	nd
n-Propylbenzene	0.05	nd			**1.7**	nd	nd	nd
2-Chlorotoluene	0.05	nd			nd	nd	nd	nd
4-Chlorotoluene	0.05	nd			nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd			**3.6**	nd	nd	nd
tert-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd			**9.1**	nd	nd	nd
sec-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
Isopropyltoluene	0.05	nd			**0.54**	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
n-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd	nd	nd
Naphthalene	0.10	nd			**2.1**	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd			nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd			nd	nd	nd	nd
Surrogate recoveries								
Dibromofluoromethane		103%	105%	105%	102%	107%	101%	103%
Toluene-d8		106%	102%	104%	111%	107%	107%	109%
4-Bromofluorobenzene		95%	94%	99%	105%	107%	101%	112%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
JACK'S AUTO REPAIR PROJECT
Client Project #12-157
Olympia, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Volatile Organic Compounds in Soil by Method 8260/5035

Analytical Results

	Reporting	B4-3-9 Duplicate
Date extracted	Limits	08/10/12
Date analyzed	(mg/Kg)	08/10/12
Dichlorodifluoromethane	0.05	nd
Chloromethane	0.05	nd
Vinyl chloride	0.05	nd
Bromomethane	0.05	nd
Chloroethane	0.05	nd
Trichlorofluoromethane	0.05	nd
Acetone	0.25	nd
1,1-Dichloroethene	0.05	nd
Methylene chloride	0.02	nd
Methyl-t-butyl ether (MTBE)	0.05	nd
trans-1,2-Dichloroethene	0.05	nd
1,1-Dichloroethane	0.05	nd
2-Butanone (MEK)	0.25	nd
cis-1,2-Dichloroethene	0.05	nd
2,2-Dichloropropane	0.05	nd
Chloroform	0.05	nd
Bromochloromethane	0.05	nd
1,1,1-Trichloroethane	0.05	nd
1,2-Dichloroethane (EDC)	0.05	nd
1,1-Dichloropropene	0.05	nd
Carbon tetrachloride	0.05	nd
Benzene	0.02	nd
Trichloroethene (TCE)	0.02	nd
1,2-Dichloropropane	0.05	nd
Dibromomethane	0.05	nd
Bromodichloromethane	0.05	nd
4-Methyl-2-pentanone (MIBK)	0.25	nd
cis-1,3-Dichloropropene	0.05	nd
Toluene	0.05	nd
trans-1,3-Dichloropropene	0.05	nd
1,1,2-Trichloroethane	0.05	nd
2-Hexanone	0.25	nd
1,3-Dichloropropane	0.05	nd
Dibromochloromethane	0.05	nd
Tetrachloroethene (PCE)	0.02	nd
1,2-Dibromoethane (EDB)	0.05	nd
Chlorobenzene	0.05	nd
1,1,1,2-Tetrachloroethane	0.05	nd
Ethylbenzene	0.05	nd
Xylenes	0.15	nd
Styrene	0.05	nd
Bromoform	0.05	nd
1,1,2,2-Tetrachloroethane	0.05	nd
Isopropylbenzene	0.05	nd
1,2,3-Trichloropropane	0.05	nd

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lab@esnnw.com

Analysis of Volatile Organic Compounds in Soil by Method 8260/5035

Analytical Results

	Reporting	**B4-3-9 Duplicate**
Date extracted	Limits	08/10/12
Date analyzed	(mg/Kg)	08/10/12
Bromobenzene	0.05	nd
n-Propylbenzene	0.05	nd
2-Chlorotoluene	0.05	nd
4-Chlorotoluene	0.05	nd
1,3,5-Trimethylbenzene	0.05	nd
tert-Butylbenzene	0.05	nd
1,2,4-Trimethylbenzene	0.05	nd
sec-Butylbenzene	0.05	nd
1,3-Dichlorobenzene	0.05	nd
1,4-Dichlorobenzene	0.05	nd
Isopropyltoluene	0.05	nd
1,2-Dichlorobenzene	0.05	nd
n-Butylbenzene	0.05	nd
1,2-Dibromo-3-Chloropropane	0.05	nd
1,2,4-Trichlorobenzene	0.05	nd
Naphthalene	0.10	nd
Hexachloro-1,3-butadiene	0.10	nd
1,2,3-Trichlorobenzene	0.10	nd

Surrogate recoveries	
Dibromofluoromethane	103%
Toluene-d8	105%
4-Bromofluorobenzene	106%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG

ADDRESS: 615 11th ST SE SUITE 201 OLYMPIA, WA

PHONE: 360 352-9875 FAX:

CLIENT PROJECT #: 12-157 PROJECT MANAGER: Yen-Vu V

DATE: 08/09/12 PAGE 1 OF

PROJECT NAME: JACK'S AUTO REPAIR

LOCATION: 1408 BETHEL ST NE OLYMPIA

COLLECTOR: Leo Chandez DATE OF COLLECTION 08/09/12

Sample Number	Depth	Time	Sample Type	Container Type	TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite			NOTES	Total Number of Containers	Laboratory Note Number
1. B1-4-15	15	9:07	SOIL	4oz/VOAS			✓	✓		✓															2	
2. B2-1-4	4	9:28	↓	↓			✓	✓		✓															3	
3. B3-4-6	6	10:55	↓	↓			✓	✓		✓															2	
4. B4-2-9	9	11:23	↓	↓			✓	✓		✓															3	
5.																										
6.																										
7.																										
8.																										
9.																										
10.																										
11.																										
12.																										
13.																										
14.																										
15.																										
16.																										
17.																										
18.																										

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
L Chandez	08/09/12 12:46	[illegible]	18/9/12 1146
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

Appendix F

Table F-1: Calculation of Soil Direct Contact Screening Levels

Constituent Category	Detected Constituent	Unrestricted Land Use Scenario			Commercial/Industrial Land Use Scenario		
		Standard Method B Soil Value for Carcinogens [1] (mg/kg)	Standard Method B Soil Value for Non-carcinogens [1] (mg/kg)	Soil Direct Contact Screening Level for an Unrestricted Land Use Scenario [2] (mg/kg)	Standard Method C Soil Value for Carcinogens [1] (mg/kg)	Standard Method C Soil Value for Non-carcinogens [1] (mg/kg)	Soil Direct Contact Screening Level for a Commercial/Industrial Land Use Scenario [2] (mg/kg)
TPH	TPH-D [4]	--	--	3,000	--	--	39,000
	TPH-G [4]	--	--	4,700	--	--	150,000
	TPH-HO [4]	--	--	3,000	--	--	39,000
VOCs	1,2,4-Trimethylbenzene	--	800	800	--	35,000	35,000
	1,3,5-Trimethylbenzene	--	800	800	--	35,000	35,000
	Benzene	18	320	18	2,400	14,000	2,400
	Chloroform	32	800	32	4,200	35,000	4,200
	Cumene	--	8,000	8,000	--	350,000	350,000
	Ethylbenzene	--	8,000	8,000	--	350,000	350,000
	Methylene Chloride	94	480	94	66,000	21,000	21,000
	n-Butylbenzene	--	4,000	4,000	--	180,000	180,000
	n-Propylbenzene	--	8,000	8,000	--	350,000	350,000
	p-isopropyltoluene	--	--	No Value [3]	--	--	No Value [3]
	sec-Butylbenzene	--	8,000	8,000	--	350,000	350,000
	Styrene	--	16,000	16,000	--	700,000	700,000
	tert-Butylbenzene	--	8,000	8,000	--	350,000	350,000
	Tetrachloroethylene	480	480	480	63,000	21,000	21,000
	Toluene	--	6,400	6,400	--	280,000	280,000
	Xylenes, Total	--	16,000	16,000	--	700,000	700,000
PAHs	Acenaphthene	--	4,800	4,800	--	210,000	210,000
	Acenaphthylene	--	--	No Value [3]	--	--	No Value [3]
	Anthracene	--	24,000	24,000	--	1,100,000	1,100,000
	Benzo(ghi)perylene	--	--	No Value [3]	--	--	No Value [3]
	Fluoranthene	--	3,200	3,200	--	140,000	140,000
	Fluorene	--	3,200	3,200	--	140,000	140,000
	Naphthalenes, Total	--	1,600	1,600	--	70,000	70,000
	Phenanthrene	--	--	No Value [3]	--	--	No Value [3]
	Pyrene	--	2,400	2,400	--	110,000	110,000
	Total cPAHs TEF [5]	0.19	24	0.19	130	1,100	130
PCBs	Total PCBs [6]	0.50	--	0.70 [7]	66	--	66
Metals	Lead [8]	--	--	250	--	--	1,000

Notes:

--: No value exists for this constituent in the CLARC database (Ecology 2021).

All values are presented as two significant figures in standard notation.

Screening levels are shown only if the constituent was detected in one or more media during RI activities.

[1] Values from CLARC (Ecology 2021), unless otherwise noted.

[2] The screening level is the most stringent of the carcinogenic and non-carcinogenic values.

[3] A screening level cannot be calculated because no values exist in CLARC (Ecology 2021). In addition, in the case of alkylbenzenes and non-carcinogenic PAHs, the constituents are components of petroleum products that are already accounted for in the TPH cleanup levels (e.g., see footnote 14(a) to MTCA Table 830-1).

[4] Default TPH-D, TPH-G, and TPH-HO direct contact values for an unrestricted land use scenario (Ecology 2001a) and a commercial/industrial land use scenario (Ecology 2001b).

[5] Total cPAHs screening levels were based on the toxicity of benzo(a)pyrene in accordance with WAC 173-340-708(8). Total cPAHs concentrations were calculated using MTCA toxicity equivalence factors (TEFs).

[6] Total PCBs are the sum of the PCB aroclors.

[7] Adjusted up to the PQL per WAC 173-340-720(7)(c). For current screening purposes, the lowest PQL in any sample was considered when developing this table. Total PCBs were calculated as described in Footnote 6.

[8] MTCA Method A soil cleanup levels for lead.

Table F-2: Calculation of Groundwater as Drinking Water Screening Levels

Constituent Category	Detected Constituent	MTCA Method A Groundwater Cleanup Level [1] (ug/L)	Standard Method B Groundwater Value for Carcinogens [1] (ug/L)	Standard Method B Groundwater Value for Non-Carcinogens [1] (ug/L)	Maximum Contaminant Level (MCL) [1] (ug/L)	Groundwater Screening Level [2] (ug/L)
TPH	TPH-D	500	--	--	--	500
	TPH-G	800	--	--	--	800
	TPH-HO	500	--	--	--	500
VOCs	1,2,4-Trimethylbenzene	--	--	80	--	80
	1,3,5-Trimethylbenzene	--	--	80	--	80
	Benzene	5.0	0.80	32	5.0	5.0 [3]
	Chloroform	--	1.4	80	80	14 [3]
	Cumene	--	--	800	--	800
	Ethylbenzene	700	--	800	700	700
	Methylene Chloride	5.0	5.8	48	5.0	5.0
	n-Butylbenzene	--	--	400	--	400
	n-Propylbenzene	--	--	800	--	800
	p-isopropyltoluene	--	--	--	--	No Value [4]
	sec-Butylbenzene	--	--	800	--	800
	Styrene	--	--	1,600	100	100
	tert-Butylbenzene	--	--	800	--	800
	Tetrachloroethylene	5.0	21	48	5.0	5.0
	Toluene	1,000	--	640	1,000	640
	Xylenes, Total	1,000	--	1,600	10,000	1,600
PAHs	Acenaphthene	--	--	960	--	960
	Acenaphthylene	--	--	--	--	No Value [4]
	Anthracene	--	--	4,800	--	4,800
	Benzo(ghi)perylene	--	--	--	--	No Value [4]
	Fluoranthene	--	--	640	--	640
	Fluorene	--	--	640	--	640
	Naphthalenes, Total	160	--	160	--	160
	Phenanthrene	--	--	--	--	No Value [4]
	Pyrene	--	--	480	--	480
	Total cPAHs TEF [5]	0.10	0.023	4.8	0.20	0.20 [3]
PCBs	Total PCBs [6]	0.10	0.044	--	0.50	0.44 [3]
Metals	Lead	15	--	--	15	15

Notes:

--: No value exists for this constituent in the CLARC database (Ecology 2021).

All values are presented as two significant figures in standard notation.

Screening levels are shown only if the constituent was detected in one or more media during RI activities.

[1] Values from CLARC (Ecology 2021), unless otherwise noted.

[2] The screening level is the most stringent of the standard Method B groundwater value for carcinogens, the standard Method B groundwater value for non-carcinogens, and the MCL, unless otherwise noted. The MTCA Method A groundwater cleanup level was used if no other values were available. In accordance with WAC 173-340-720(7)(c), some screening levels may need to be adjusted up to the practical quantitation limit (PQL) in the future (beyond what is shown in this table).

[3] In accordance with WAC 173-340-720(7)(b), the standard Method B value for carcinogens was adjusted upward towards the MCL by a maximum factor of ten (not to exceed the MCL).

[4] A screening level cannot be calculated because no values exist in CLARC (Ecology 2021). In addition, in the case of alkylbenzenes and non-carcinogenic PAHs, the constituents are components of petroleum products that are already accounted for in the TPH cleanup levels (e.g., see footnote 14(a) to MTCA Table 830-1).

[5] In addition to the individual screening levels, the combined screening level for the trihalomethanes (i.e., bromodichloromethane, bromoform, chloroform, and dibromochloromethane) is the 80 ug/L MCL.

[6] Total PCBs are the sum of the PCB aroclors.

Table F-3: Calculation of Soil-to-Groundwater Screening Levels

Constituent Category	Detected Constituent	Groundwater Screening Level [1] (ug/L)	Physiochemical Properties [2]				Soil-to-Groundwater Calculations		
			Henry's Law Constant (Hcc) (unitless)	Organic Carbon Partitioning Coefficient (Koc) (L/kg)	Aqueous Solubility (mg/L)	Distribution Coefficient (Kd) (L/kg)	Soil Concentration Protective of Groundwater Screening Level [3] (mg/kg)	Soil Saturation Concentration [4] (mg/kg)	Soil-to-Groundwater Screening Level [5] (mg/kg)
TPH	TPH-D	500	--	--	--	Not applicable	1,000,000 [7]	2,000 [8]	2,000
	TPH-G	800	--	--	--	Not applicable	30 [7]	1,000 [8]	30
	TPH-HO	500	--	--	--	Not applicable	1,000,000 [7]	2,000 [8]	2,000
VOCs	1,2,4-Trimethylbenzene	80	--	--	--	--	--	--	No Value [6]
	1,3,5-Trimethylbenzene	80	0.11	--	--	--	--	--	No Value [6]
	Benzene	5.0	0.13	62	1,750	0.062	0.027	479	0.027
	Chloroform	14	0.092	53	7,920	--	0.073	2,067	0.073
	Cumene	800	0.26	--	--	--	--	--	No Value [6]
	Ethylbenzene	700	0.16	204	169	0.20	5.9	71	5.9
	Methylene Chloride	5.0	0.057	10.0	13,000	0.010	0.021	2,794	0.021
	n-Butylbenzene	400	0.24	--	--	--	--	--	No Value [6]
	n-Propylbenzene	800	0.20	--	--	--	--	--	No Value [6]
	p-isopropyltoluene	No Value	--	--	--	--	--	--	No Value [6]
	sec-Butylbenzene	800	0.26	--	--	--	--	--	No Value [6]
	Styrene	100	0.056	912	310	0.91	2.2	346	2.2
	tert-Butylbenzene	800	0.26	--	--	0.0	--	--	No Value [6]
	Tetrachloroethylene	5.0	0.40	265	200	0.27	0.050	100	0.050
	Toluene	640	0.15	140	526	0.14	4.5	186	4.5
	Xylenes, Total	1,600	0.14	233	171	0.23	14	76	14
PAHs	Acenaphthene	960	0.0021	4,898	4.2	4.9	98	22	22
	Acenaphthylene	No Value	--	--	--	--	--	--	No Value [6]
	Anthracene	4,800	0.00076	23,493	0.043	23	2,275	1.0	1.0
	Benzo(ghi)perylene	No Value	--	--	--	--	--	--	No Value [6]
	Fluoranthene	640	0.00017	49,096	0.21	49	631	10	10
	Fluorene	640	0.00086	7,707	2.0	7.7	101	16	16
	Naphthalenes, Total	160	0.0082	1,191	31	1.2	4.5	43	4.5
	Phenanthrene	No Value	--	--	--	--	--	--	No Value [6]
	Pyrene	480	0.00011	67,992	0.14	68	655	9.2	9.2
	Total cPAHs TEF [9]	0.20	0.0000064	969,000	0.0016	969	3.9	1.6	1.6
PCBs	Total PCBs [10]	0.44	0.017	309,000	0.70	309	2.7	216	2.7
Metals	Lead	15	0.0	Not applicable	Not applicable	10,000	3,000	Not applicable	3,000

Notes:

--: No value exists for this constituent in the CLARC database (Ecology 2021) or no value can be calculated.

All screening levels are presented as two significant figures in standard notation.

Screening levels are shown only if the constituent was detected in one or more media during RI activities.

[1] See Table F-2 for calculation of groundwater screening levels.

[2] Values from CLARC (Ecology 2021), unless otherwise noted. Henry's Law Constant values are for 13 degrees Celsius, with the exception that values for total PCBs are for 25 degrees Celsius.

[3] Calculated with the MTCA three-phase partitioning model using standard MTCA default inputs in WAC 173-340-747(4).

[4] Calculated by substituting aqueous solubility value for target groundwater concentration * dilution factor in MTCA Equation 747-1 (Ecology 2001a), unless otherwise noted.

[5] Most stringent of soil concentration protective of target groundwater concentration and soil saturation concentration. In accordance with WAC 173-340-740(5)(c), some screening levels may need to be adjusted up to the practical quantitation limit (PQL) in the future (beyond what is shown in this table).

[6] A screening level cannot be calculated because the applicable inputs to perform the calculation do not exist in CLARC (Ecology 2021). In addition, in the case of alkylbenzenes and non-carcinogenic PAHs, the constituents are components of petroleum products that are already accounted for in the TPH cleanup levels (e.g., see footnote 14(a) to MTCA Table 830-1).

[7] Screening level in Ecology 2001a.

[8] Default residual soil saturation concentration in MTCA Table 747-5.

[9] Total cPAHs screening levels were based on the toxicity of benzo(a)pyrene in accordance with WAC 173-340-708(8). Total cPAHs concentrations were calculated using MTCA toxicity equivalence factors (TEFs).

[10] Total PCBs are the sum of the PCB aroclors.

[11] Site-specific TOC values may be used to calculate site-specific soil-to-groundwater SLs during future investigation work.

Table F-4: Calculation of Preliminary Groundwater Vapor Intrusion Screening Levels

Constituent Category	Detected Volatile Constituent	Unrestricted Land Use Scenario			Commercial/Industrial Land Use Scenario		
		Standard Method B Groundwater VI Screening Level for Carcinogens [1] (ug/L)	Standard Method B Groundwater VI Screening Level for Non-carcinogens [1] (ug/L)	Groundwater VI Screening Level for an Unrestricted Land Use Scenario [2] (ug/L)	Standard Method C Groundwater VI Screening Level for Carcinogens [1] (ug/L)	Standard Method C VI Groundwater Screening Level for Non-carcinogens [1] (ug/L)	Groundwater VI Screening Level for a Commercial/Industrial Land Use Scenario [2] (ug/L)
TPH	TPH-D [3]	--	--	500	--	--	500
	TPH-G [3]	--	--	800	--	--	800
VOCs	1,2,4-Trimethylbenzene	--	240	240	--	520	520
	1,3,5-Trimethylbenzene	--	170	170	--	370	370
	Benzene	2.4	100	2.4	24	220	24
	Chloroethane	--	15,000	15,000	--	32,000	32,000
	Chloroform	1.2	490	1.2	12	1,100	12
	Cumene	--	910	910	--	2,000	2,000
	Ethylbenzene	--	2,800	2,800	--	6,100	6,100
	Methylene Chloride	1,200	4,800	1,200	11,000	44,000	11,000
	n-Butylbenzene	--	--	No Value [4]	--	--	--
	n-Propylbenzene		2,300	2,300	--	4,900	4,900
	p-isopropyltoluene	--	--	No Value [4]	--	--	No Value [4]
	sec-Butylbenzene	--	--	No Value [4]	--	--	No Value [4]
	Styrene	--	8,100	8,100	--	18,000	18,000
	tert-Butylbenzene	--	--	No Value [4]	--	--	No Value [4]
	Tetrachloroethylene	24	46	24	240	100	100
	Toluene	--	15,000	15,000	--	34,000	34,000
	Xylenes, Total	--	320	320	--	710	710
PAHs	Naphthalene	8.9	170	8.9	89	360	89

Notes:

--: No value exists for this constituent in the CLARC database (Ecology 2021).

All values are presented as two significant figures in standard notation.

Screening levels are shown only if a volatile constituent was detected in one or more media during RI activities.

[1] Values from CLARC (Ecology 2021), unless otherwise noted.

[2] The screening level is the most stringent of the carcinogenic and non-carcinogenic values.

[3] Method A groundwater cleanup levels were used as conservative, preliminary screening levels for TPH-G and TPH-D since there are no TPH-G or TPH-D values in the CLARC database. As indicated in Ecology guidance, "the vast majority of sites that meet the Method A soil and groundwater cleanup levels will be protective of the PVI pathway both now and if a building is constructed in the future" (Ecology 2018).

[4] A screening level cannot be calculated because no values exist in CLARC (Ecology 2021).