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January 7, 2020

Washington Department of Ecology
Northwest Regional Office
Attn: VCP Coordinator
3190 160th Avenue SE
Bellevue, WA 98008-5452

Dear VCP Coordinator:

Please find the enclosed Soil Vapor Probe Installation and Soil Vapor Sampling Report, that documents the results at ARCO Facility No. 980 located at 10822 Roosevelt Way NE, Seattle, Washington.

Sincerely yours,

Wade Melton
Operations Project Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

cc: File, Antea Group

Soil Vapor Probe Installation and Soil Vapor Sampling Report

ARCO Facility No. 980
10822 Roosevelt Way NE, Seattle, Washington

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR
Remediation Management Services Company
An affiliate of Atlantic Richfield Company
4 Centerpointe Drive, Suite 200
Room LPR-4-222
La Palma, CA 90623

January 7, 2020
FSID No. 68996432
Antea Group Project No. 00980SA191

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1.0 Introduction

1.1 PURPOSE AND SCOPE OF WORK

On behalf of Remediation Management Services Company (RMSC, a BP affiliated company), Antea®Group (Antea Group) directed the installation of soil vapor probes and conducted soil vapor investigations at Atlantic Richfield Company (ARCO) Facility No. 980, located at 10822 Roosevelt Way NE, Seattle, King County, Washington (hereinafter referred to as the "Site"). Light non-aqueous phase liquid (LNAPL) has been intermittently measured in injection well IW-1 since its installation in December 2014. IW-1 is located on the adjacent property to the south (10800 Roosevelt Way NE, Seattle, Washington) and within 30 feet of the Caribbean House Apartments. Soil vapor probe installation and subsequent sampling were conducted in order to assess if the vapor intrusion pathway at the Caribbean House Apartments property is currently complete.

The investigation scope of work included the following:

- Update the Health and Safety Plan (HASP) for the Site.
- Coordinating work activities with Caribbean House Apartments property owner;
- Request a public locate via the One-Call Notification Center;
- Conduct a meeting with subcontractors to develop Level 1 and Level 2 Task Risk Assessment (TRA);
- Perform a site visits to evaluate access limitations and other activities;
- Identify location, depth, and construction materials of subsurface utilities at the Site;
- Contract Applied Professional Services (APS) to conduct a private utility locate to identify all private utilities at the Site;
- Contract Cascade Drilling (Cascade) to complete soil boring and vapor probe installation activities at the Site;
- Install 4 soil borings and complete them as soil vapor probes to depths between 5 and 8.25 feet below ground surface (bgs) using a hand auger;
- Collect soil samples using a hand auger;
- Submit soil samples for quantitative chemical analyses;
- Collect seasonal soil vapor samples;
- Interpret the data obtained; and
- Prepare this report.

1.2 SITE DESCRIPTION

The Site is an active ARCO branded retail gasoline station with a convenience store located on the southeast corner of the intersection of Roosevelt Way NE and NE Northgate Way in Seattle, Washington. A Site Location Map and Site Aerial Map are presented as **Figures 1 and 2**, respectively. The Site vicinity is a mix of commercial and residential land uses. The closest surface water body is Thornton Creek located approximately 250 feet south of the Site. According to Google Earth, the Site is approximately 260 feet above mean sea level.

Site features include the station building with a canopy extending north from the building over two pump islands and a separate canopy west of the building over a third pump island. The underground storage tank (UST) complex containing four double-walled tanks is located to the northeast of the station building. The Site surface consists of asphalt pavement and concrete except in three designated planter areas. Petroleum hydrocarbon contamination extends south to the Caribbean House Apartments property. The parking lot of the apartment building is approximately 5 feet lower in elevation than the Site's elevation. The two properties are separated by a cinder block retaining wall. The Caribbean House Apartments are located along the western portion of the property with a paved parking lot along the eastern portion of the property. The apartments consist of a multi-level building with a central courtyard. A Site Map detailing the structures is presented on **Figure 3**.

1.3 PREVIOUS INVESTIGATIONS

A summary of previous assessments is described below:

1.3.1 December 1989 – Preliminary Soil Assessment

On September 12, 1989, ARC contracted Geraghty & Miller (G&M) to install four soil borings (B1 – B4) in the vicinity of the UST complex at the Site. The soil borings were installed as part of a preliminary soil assessment prior to UST removal activities. Hydrocarbon concentrations were detected above Model Toxics Control Act (MTCA) Method A cleanup levels at three of the four borings.

1.3.2 October 1990 – Station Upgrades

In October 1990, ARC contracted Joe Hall Construction Company to remove four gasoline USTs, and the associated product distribution piping from the Site. The USTs consisted of one 10,000-gallon steel UST, and three 6,000-gallon steel USTs. Petroleum hydrocarbon concentrations were detected above the MTCA Method A Cleanup Levels in soil samples collected from the UST cavity and from below the product lines. During excavation activities, an abandoned septic tank was discovered. Light non-aqueous phase liquid (LNAPL) was measured in the abandoned septic tank and the contents were removed; however, the septic tank was left in place due to the proximity to structures on the ARCO property. In addition to the gasoline USTs, a waste oil UST was also reportedly removed.

1.3.3 March 1992 – Monitoring Well and Bioventing Well Installation

Between March 1992 and September 1992, ARC contracted G&M to install 10 soil borings at the Site. Five soil borings were subsequently completed as groundwater monitoring wells (MW-1 through MW-5), and five borings were completed as bioventing wells (BV-1 through BV-5). Petroleum hydrocarbon concentrations were detected above the MTCA Method A Cleanup Levels in soil samples collected from the borings for MW-1, MW-4, MW-5, BV-3, and BV-5. LNAPL was subsequently measured in wells MW-4 and BV-3 in March 1993.

1.3.4 1993 – Monitoring Well Installation and Soil Vapor Extraction Pilot Test

In early 1993, ARC contracted G&M to install four additional soil borings to further delineate soil and groundwater contamination at the Site. Two soil borings were subsequently completed as groundwater monitoring wells (MW-6 and MW-7), and two borings were completed as bioventing wells (BV-6 and BV-7). In addition to the subsurface investigation, a soil vapor extraction (SVE) feasibility test was conducted on select bioventing wells. Soil samples collected from MW-6 and BV-7 contained concentrations of petroleum hydrocarbons in excess of cleanup levels.

1.3.5 September 1993 – Offsite Investigation

James P. Hurley and Company (JPHC) completed Phase I and Phase II Environmental Site Assessments (ESA) for the adjacent property located at 10800 Roosevelt Way NE, located just south of the ARCO station (Caribbean

Apartments). The Phase II ESA included the installation of three soil borings on the Caribbean House Apartments property, two of which were completed as groundwater monitoring wells B1 (JPHC) and B3 (JPHC). The results of the assessment indicated the presence of elevated hydrocarbon concentrations in soil and groundwater.

1.3.6 1994 – Offsite Investigation and Well Install

In early 1994, G&M completed a subsurface investigation on the Caribbean House Apartments property. The investigation consisted of the installation of nine soil borings. Three soil borings were completed as groundwater monitoring wells (MW-8 through MW-10), two as nested pressure and vacuum monitoring wells (VP-1 and VP-2), one soil vacuum extraction well nested with one air sparge well (SVE-1/AS-1), one SVE well (SVE-2), and two air sparge wells (AS-2 and AS-3).

1.3.7 September 1994 – Soil Vapor Extraction System Installation

In September 1994, G&M installed a soil vapor extraction system with a combination thermal and catalytic oxidizer at the Site. The SVE system extracted from wells BV-3, BV-7, and MW-5. The SVE system was started in November 1994 by Delta Consultants (Delta).

1.3.8 March 1995 – Air Sparge Pilot Test

In March and April 1995, Delta oversaw the installation of two air sparge wells (AS-4 and AS-5), and one monitoring well (MW-11) at the Site. Soil samples AS-5-12 and MW-11-17 contained concentrations of total petroleum hydrocarbons as gasoline (TPH-G) at 1,200 parts per million (ppm) and 140 ppm, respectively. Concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in AS-5-12, ranging from 4.7 ppm (benzene) to 240 ppm (xylenes). Following installation of the air sparge wells, Delta completed an air sparge pilot test on the newly installed air sparge wells with favorable results.

1.3.9 April 1996 – Remediation System Upgrades

In April 1996, the remediation system was shut down for system upgrades. Remediation system upgrades included: the addition of air sparge components, the enlargement of existing SVE wells from 2 to 4-inch diameter wells and installing more SVE and air sparge wells. The remediation system was restarted on May 1, 1996.

1.3.10 July 1996 – Additional Assessment

In July 1996, Delta oversaw the installation of soil borings B-4 and B-5 and monitoring well MW-12 on the Caribbean House Apartments property for additional assessment and delineation of soil and groundwater impacts. Soil analytical results indicated concentrations of TPH-G and/or benzene from sample B-4 at 20 feet bgs and MW-12 at 10 feet bgs.

1.3.11 September 1997 – Enhanced Fluid Recovery Program

In September 1997, Delta began an enhanced fluid recovery (EFR) program for the recovery of LNAPL and petroleum hydrocarbon impacted groundwater from wells located on the Site and the Caribbean House Apartments property. EFR events were conducted through 2003. Details on volumes recovered are included in groundwater monitoring reports for the Site.

1.3.12 October 1999 – Air Sparge System Shutdown

In October 1999, the air sparge portion of the remediation system was shut down.

1.3.13 August 2002 – Temporary System Shutdown

In August 2002, the SVE system was shut down to evaluate LNAPL rebound.

1.3.14 October 2005 – Remediation System Expansion

In October 2005, Delta oversaw the installation of additional remediation wells at the subject property. In preparation for the installation of a duel phase extraction (DPE) remediation system, six extraction wells (EX-1 through EX-6) were installed along the southern portion of the ARCO property. Soil samples were collected during extraction well installation. Soil analytical results indicated the presence of benzene and TPH-G in the soil samples collected from EX-4 at 16.5 and 21.0 feet bgs. The system was tested and optimized before being placed in full-time operation in the first quarter 2008. The DPE system operated at the Site until fourth quarter 2012, when it was shut down and subsequently removed in August 2014. A total of 6,583,867 gallons of water was treated and discharged to sanitary sewer during the operational lifetime of the DPE system.

1.3.15 December 2014 – Injection Well Installation

In December 2014, Innovex Environmental Management, Inc. (Innovex) personnel oversaw the installation of four injection wells IW-1 through IW-4 on the Caribbean House Apartments property to address remaining dissolved-phase and soil bound hydrocarbon impacts.

1.3.16 April 2016 – Hydrogen Peroxide Injection

In April 2016, Innovex contracted In-Situ Oxidative Technologies, Inc. (Isotec) to conduct injection of stabilized hydrogen peroxide in injection wells IW-1 through IW-4. On April 19, 2016, injection well IW-2 received 50 gallons of ferrous iron catalyst followed by 50 gallons of stabilized hydrogen peroxide. While preparing for injection in IW-1 Innovex measured and confirmed the presence of approximately 0.25 inches of LNAPL in IW-1. Injections were stopped due to health and safety concerns associated with hydrogen peroxide application into free LNAPL.

1.3.17 November 2017 – Confirmation Soil Sampling

In August 2017, Antea Group was informed of product line and dispenser upgrade activities being conducted at the Site. On August 17, 2017 Antea Group personnel arrived on site and observed that all dispensers and associated product piping had been removed. The depth of the product piping trench ranged from 2.5 to 4 feet bgs. Varying amounts of pea gravel was observed in isolated locations at the bottom of the trenches and in the locations of the former dispenser islands as well as a stockpile consisting of nearly all pea gravel. The pea gravel was likely put in place during the 1990 upgrade activities. Soil samples were collected at four locations from the bottom of the excavated product piping trench at depths of 2.5 and 4 feet bgs to confirm soil concentrations previously identified as impacted during the 1990 upgrades. Historical tank pit sampling locations were not accessible during the August 2017 upgrade activities. Laboratory analytical results of the four soil samples indicated that concentrations of BTEX and TPH-G were not detected in excess of Washington Department of Ecology's (Ecology) MTCA Method A Cleanup Levels or laboratory method reporting limits (MRLs).

1.3.18 December 2018 – Orphan Tank Decommissioning

On December 12, 2018, Antea Group was notified of the presence of an unknown oily substance in an open trench cut at ARCO facility 980. Upon arrival at the site, Antea Group personnel observed the accumulated fluid and collected a sample for profiling. Laboratory analysis identified the fluid as a light, oil-range petroleum product with a chromatogram characteristic of transmission or hydraulic fluid. Between December 12 and 18, 2018, a previously unidentified 140-gallon oil tank was discovered and removed from the Site. Approximately 175 gallons of a mixture of oil, stormwater, sludge, soil, and rinse water was removed from the tank prior to removal from the ground on December 18, 2018. An area approximately 8 feet wide, 8 feet long, and 6 feet deep was excavated from around the tank to remove petroleum impacted soil. Soil samples contained petroleum hydrocarbon impacts in excess of the MTCA Method A Cleanup Levels. On January 2 and 3, 2019, additional soil was removed to extend each sidewall 3 to 4 feet beyond the prior limit and an additional 1 foot of soil was removed from the bottom of the excavation. Following removal of additional soil from the sidewalls, soil

samples collected from the north, south and east sidewalls still contained petroleum hydrocarbon impacts in excess of the respective MTCA Method A Cleanup Levels. Due to the limits imposed by buried utilities and fuel dispensers in the area, no additional soil was removed.

1.4 CURRENT SITE STATUS

The Site is listed on Ecology's Leaking Underground Storage Tanks (LUST) list with facility site ID 68996432. The Site was enrolled in Ecology's Voluntary Cleanup Program (VCP) with VCP ID NW2729 but was subsequently terminated from the program in February 2017. All remedial activities are currently being conducted as an independent cleanup action outside of the VCP. The current status on the Ecology Integrated Site Information System (ISIS) is "Cleanup Started". There are currently eight monitoring wells on the ARCO property and fourteen monitoring wells on the Caribbean Apartments property. Currently, monitoring wells MW-2, MW-4, MW-8 through MW-16, and B1(JPHC) are sampled on a semi-annual basis. Passive LNAPL recovery is performed on IW-1 as necessary.

2.0 Project Activities

2.1 DRILLING AND SOIL SAMPLING

Antea Group oversaw the installation four soil borings to depths between 5 and 8.25 feet bgs using a hand auger and subsequently completing them as soil vapor probes on November 11 and November 27, 2018. Soil samples were collected at approximately 5 feet bgs in borings SB-1 and SB-2; 5 feet and 8 feet in SB-3; and 3 feet and 4.5 feet in SB-4. Soil sampling field procedures are summarized in **Appendix A**.

2.2 SOIL VAPOR PROBE COMPLETION

All four soil borings were completed as soil vapor probes SG-1 through SG-4 to depths ranging from 5 to 8.25 feet bgs. Well screen intervals were positioned from 5.5 to 6 feet bgs in SG-1, from 5 to 5.5 feet bgs in SG-2, from 7.75 to 8.25 feet bgs in SG-3, and 4.5 to 5 feet bgs in SG-4. The depth to groundwater has historically ranged from 12.36 to 18.83 feet bgs in the vicinity of SG-1, from 8.65 to 21.82 in the vicinity of SG-2 and SG-3, and from 5.54 to 17.30 feet bgs in the vicinity of SG-4. The soil vapor probe was constructed in accordance with the provisions set forth in the Petroleum Vapor Intrusion Guidance Document prepared by The Interstate Technology & Regulatory Council (ITRC) Petroleum Vapor Intrusion Team, dated October 2014. The vapor point wells were constructed of a ½ inch diameter 6-inch long vapor implant screen fitted with ¼ inch Teflon tubing to grade. Clean silica sand was used to fill the annular space to a height of approximately 2-inches above the top of the screened interval, and two inches below the screened interval. A seal of hydrated bentonite was installed above the silica sand to the bottom of the concrete slab. Soil vapor probes were completed to ground surface with concrete and a flush-mounted well monument. Soil vapor probe locations are presented on **Figure 3**. Boring logs showing soil probe completion details are included as **Appendix B.**

2.3 ON-SITE CONTAINMENT OF DRILL CUTTINGS AND DECONTAMINATION WATER

Soil cuttings and decontamination water generated from the subsurface investigation were temporarily stored in 55-gallon drums onsite. The drums were properly labeled, sealed, and stored in a discreet location. Investigation derived waste was disposed of along with waste generated during the 2018 stormwater system upgrade activities at the Site. Waste disposal documentation is included at **Appendix C.**

2.4 SOIL VAPOR SAMPLING

Following vapor probe installation, soil vapor conditions were allowed to equilibrate for more than one month. Soil vapor sampling was performed at each probe location by using the following procedure:

A shut-in test was conducted to confirm that the sample train could hold a vacuum, and a leak test to confirm that no ambient air was entering the sample train. A vacuum pump was utilized to apply vacuum to the system, and the valves at either end of the sample train were closed. The vacuum gauge was monitored for 30 seconds to confirm that a vacuum was being held. When a vacuum was not held, the system was rechecked, and the test was repeated until a vacuum was held for at least 5 minutes. Following the shut-in test, the entire sampling system was placed under a shroud, and helium was added inside the shroud. Antea Group utilized a helium detector to verify that the air under the shroud was saturated with helium, and then drew a vacuum through the probe and the entire sampling train. The helium detector was used to monitor the vapor being pulled through the system, to confirm the integrity of the sample train, and verify that there was no helium entering the system. According to the ITRC - Petroleum Vapor Intrusion Guidance Document (Appendix G – G.10.11.3), up to 15% of the helium level measured under the shroud is allowed when confirming integrity of the system. Following completion of the two tests, a vapor sample was collected in a laboratory supplied SUMMA® Canister with a flow regulator set at a rate of approximately 150 milliliters per minute (ml/min). The entire SUMMA Canister and regulator assembly were shipped back the laboratory under proper chain-of-custody protocols.

Antea Group conducted seasonal soil vapor sampling from vapor probes SG-1 through SG-4 in January, April, August, and October of 2019. Results of the sampling events are detailed in Section 3.3.

3.0 Project Results

3.1 SITE GEOLOGY AND HYDROGEOLOGY

The area is in the Puget Sound Lowland geomorphic province, which consists mainly of glacially-deposited sediments. The Puget Sound Lowland is a basin lying between the Cascade Mountains to the east and the Olympic Mountains (coastal range) to the west. At least five major advances of continental glacial ice have been identified as having occurred in the Puget Sound Lowlands. Geologic units resulting from these glacial events include complex sequences of lacustrine deposits, advance outwash, glaciomarine drift, till, and recessional outwash. More recent erosional processes have deposited alluvial sand and gravel, primarily along river valleys.

The Site vicinity is underlain by Alderwood Soils, which is a Quaternary stratified sequence consisting of sandy loam with varying amounts of gravel. In addition, Alderwood soils are considered hydrologically as Class C, which indicates slow infiltration rates with layers impeding downward movement of water, or soils with moderately fine or fine textures. Soils observed at the Site during previous investigations include dense to very dense silty sand, sand, gravelly sand, and sandy gravel.

3.2 SUBSURFACE LITHOLOGIC CONDITIONS

Soils encountered during this investigation consisted of silty sand with some mixtures containing cobbles and gravels. Detailed soil descriptions are presented in the boring logs in **Appendix B**.

3.3 QUANTITATIVE CHEMICAL ANALYSIS

3.3.1 Soil Analytical

Soil samples were analyzed for the presence of the following constituents:

- BTEX, methyl tert-butyl ether (MTBE), dibromoethane (EDB), dichloroethane (EDC), and naphthalene by EPA Method 8260C;
- TPH-G by Northwest Method NWTPH-Gx;
- Total petroleum hydrocarbons as diesel (TPH-D) and as oil (TPH-O) by Northwest Method NWTPH-Dx;

- One composite sample collected from soil cuttings was analyzed for the Resource Conservation and Recovery Act (RCRA) 8 Metals by EPA Method 6020A and EPA Method 7471A for waste characterization purposes.

A total of five soil samples were collected during the installation of soil vapor probes SG-1 through SG-4. Quantitative laboratory analysis from the November 2, and 27, 2018, drilling events indicated that there were no concentrations of TPH-G, TPH-D, TPH-O, BTEX, MTBE, EDB, EDC, or naphthalenes in excess of MTCA Method A Cleanup Levels in any of the soil samples collected during this event.

Soil analytical results are summarized in **Table 1** and **Figure 4**. A copy of the Soil Laboratory Analytical Report is included in **Appendix D.**

3.3.2 Soil Vapor Analytical

Soil vapor samples were analyzed for the presence of the following constituents:

- BTEX, MTBE, naphthalene, and hexane by EPA Method TO-15, and;
- Helium by EPA Method 3C or Method ASTM D1946.

On January 15 and 30 of 2019, soil vapor samples were collected from soil vapor probes SG-1, SG-2 and SG-4. Soil vapor samples were not collected from SB-3 due to the presence of water in the screen. Laboratory analytical results indicated concentrations of BTEX, MTBE, naphthalene and hexane were not detected in excess of MRLs; however, the MRLs for naphthalene and benzene were greater than the Washington State Ecology Screening Levels (ESLs) in samples collected from SG-2 and SG-4, therefore another sampling event was scheduled for April of 2019.

On April 18, 2019 soil vapor samples were collected from SG-2 and SG-4. Soil vapor was not sampled from SG-1 in April as the results of the previous investigation were below MRLs/ESLs. Soil vapor was not sampled from SG-3 due to perched water in the screened interval. Hexane was detected below the ESL in SG-2. No other analyzed constituent was detected above laboratory MRLs, all of which were below the ESLs.

A third round of soil vapor sampling was completed on August 27, 2019. Laboratory analytical results indicated concentrations of petroleum hydrocarbons were below MRLs and/or ESLs; however, it should be noted that the MRL for naphthalene was above the ESL. Analysis of naphthalene by method TO-15 SIM was requested to ensure the MRL would be below the ESL. The laboratory failed to analyze the samples by method TO-15 SIM resulting in the samples being analyzed by the standard method TO-15 with a higher MRL. Additionally, analysis of helium was performed outside of the method hold time. Helium analysis is necessary to confirm the tightness of the sampling assembly. Without accurate leak detection analysis, the integrity of the August 27th sampling results are questionable.

A resample of the soil vapor wells was performed on October 30, 2019. Soil vapor samples were collected from SG-1 through SG-4. All quality control criteria were within acceptable limits. The results of this analysis did not contain concentrations of analyzed constituents above the ESLs. All MRLs were below the ELSs for each analyte.

Soil vapor analytical results are summarized in **Table 2** and **Figure 5**. Copies of the soil vapor laboratory analytical reports are included in **Appendix E**.

4.0 Summary

Between November 2, 2018 and January 30, 2019, four soil borings were advanced at 10800 Roosevelt Way NE, Seattle, Washington (Caribbean House Apartments), located south of ARCO Facility No. 980. The borings were completed as soil vapor probes (SG-1 through SG-4) in order to assess if the vapor intrusion pathway at the Caribbean House Apartments property is currently complete. A total of five soil samples were collected during vapor probe installation and submitted to Washington State accredited laboratories for quantitative chemical analysis. Laboratory analytical results indicated that of the samples analyzed no constituents were in excess of MTCA Method A Cleanup Levels. The soil vapor wells were constructed of a 6-inch vapor implant screen fitted with ¼ inch Teflon tubing to grade. On January 15, 2019 soil vapor samples were collected from vapor probes SG-1 and SG-4 and on January 30, 2019 soil vapor samples were collected from vapor probe SG-2. Additional sampling events were performed in April, August, and October of 2019. Laboratory analytical results indicated concentrations of BTEX, MTBE, naphthalene, and hexane were not in excess of Ecology Screening Levels in any of the samples collected. Based on the results of the soil vapor sampling detailed in this report Antea Group believes that there is currently no soil vapor intrusion risk at the Caribbean House Apartments.

5.0 Remarks

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

Should you have any questions, or require additional information concerning this report, please contact the undersigned at (503) 863-2114.

Sincerely,

Prepared by:

Date: January 7, 2020

Brad Jackson
Project Manager

Reviewed by:

State of Washington 3157 Licensed Geologist MEGAN RICHARD

Date: January 7, 2020

Megan Richard, LG
Senior Project Manager

cc: VCP Coordinator, Washington Department of Ecology, Northwest Regional Office (Hardcopy, Electronic Copy)
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Tables

Table 1 Soil Analytical Data

Table 2 Soil Vapor Analytical Data

Table 1
Soil Analytical Data
ARCO Facility 980
10822 Rosevelt Way NE
Seattle, WA 98125

		CONSTITUENT	Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether	1,2-Dibromoethane (EDB)	1,2-Dichloroethane (EDC)	TPH-G	TPH-D	TPH-O	Naphthalene
		UNIT	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
MTCA Method A Cleanup Levels			**0.03**	**7**	**6**	**9**	**0.1**	**0.005**	**NGV**	**30**	**2000**	**2000**	**5**
Sample ID	Date	Depth											
SG-1-5	11/2/2018	5	< 0.0017	< 0.0017	< 0.0017	< 0.0051	< 0.0017	< 0.0017	< 0.0017	14	< 54	93	< 0.0042
SG-2-5	11/2/2018	5	< 0.0016	< 0.0016	< 0.0016	< 0.0049	< 0.0016	< 0.0016	< 0.0016	5.4	< 56	64	< 0.0041
SG-3-5	11/2/2018	5	< 0.0017	< 0.0017	< 0.0017	< 0.0052	< 0.0017	< 0.0017	< 0.0017	< 4.8	< 55	71	< 0.0043
SG-3-8	11/2/2018	8	< 0.0017	< 0.0017	< 0.0017	< 0.0051	< 0.0017	< 0.0017	< 0.0017	< 4.9	< 55	< 55	< 0.0043
SG-4-5	11/27/2018	5	< 0.0016	< 0.0016	< 0.0016	< 0.0047	< 0.0016	< 0.0016	< 0.0016	< 4.6	< 49	56	< 0.0040

NOTES:
Results in bold exceed applicable action limits
NGV = No given value
mg/kg = milligrams/kilogram
< = Not detected at or above indicated laboratory reporting limit
MTCA = Model Toxics Control Act
TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
TPH-G = Total petroleum hydrocarbons as oil

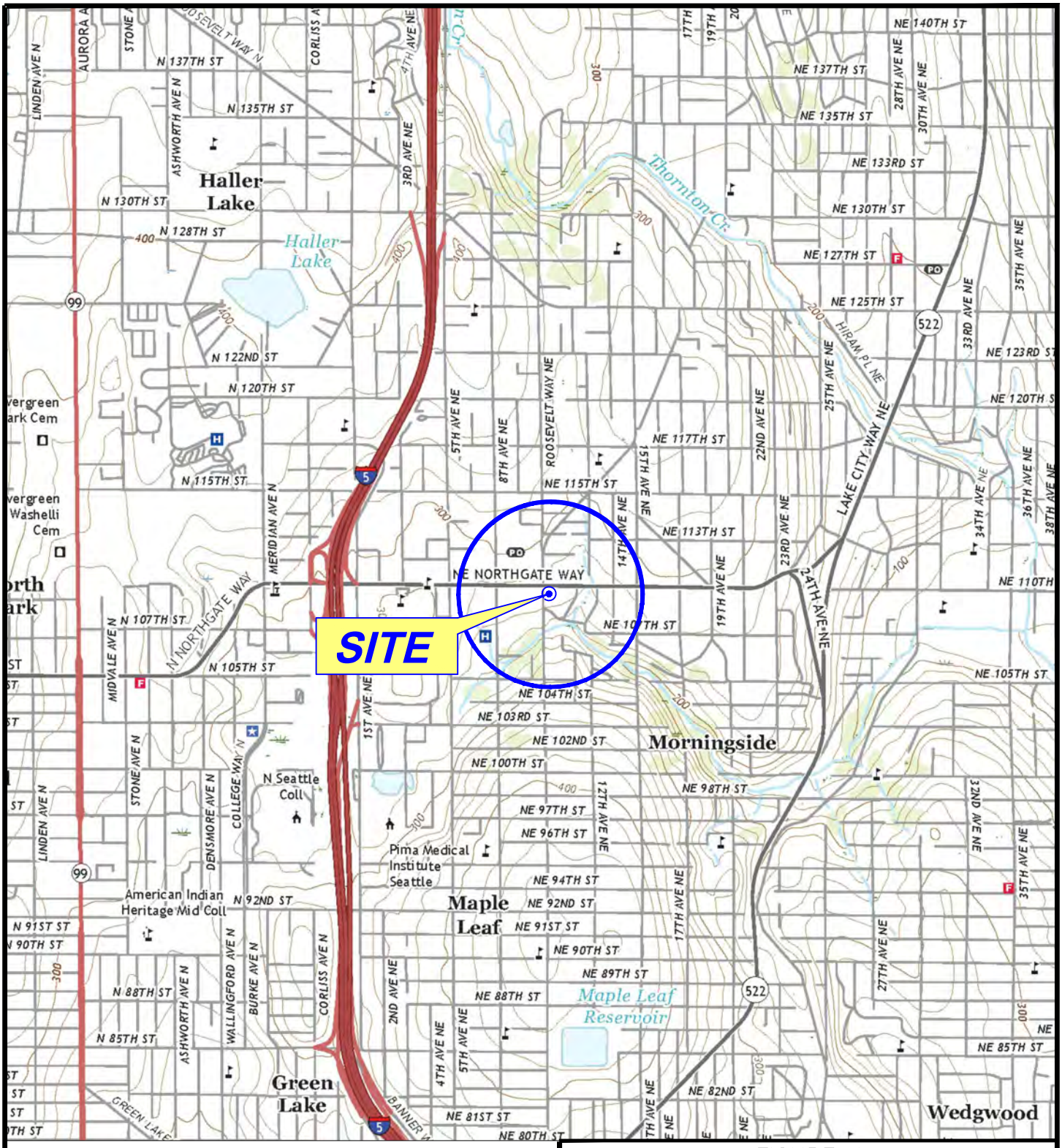
Table 2
Soil Vapor Analytical Data
ARCO Facility 980
10822 Rosevelt Way NE
Seattle, WA 98125

CONSTITUENT		Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene	Hexane	Methyl-tertiary-butyl ether	Naphthalene	Helium
UNIT		(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(%)
Soil Vapor DOE Screening Levels		10.7	76200	15200	1520*	1520*	10700	32100	2.45	NGV
Well ID	Date									
SG-1	1/15/2019	< 0.24	< 0.57	< 0.66	< 1.3	< 0.66	< 0.53	< 2.7	< 2.0	< 3.6 N2
SG-1	8/27/2019	< 1.3	< 1.5	< 1.7	< 3.5	< 1.7	< 2.8	< 2.9	< 4.2	<0.17 H
SG-1	10/30/2019	< 0.35	5.8	< 0.83	< 1.1	< 0.83	< 0.46	< 0.54	< 0.105	< 0.978
SG-2	1/30/2019	< 13.1	< 30.8	< 35.5	< 71.2	< 35.5	< 28.8	< 147	< 107	< 4.8 N2
SG-2	4/18/2019	< 0.45	< 1.1	< 1.2	< 2.5	< 1.2	1.1	< 5.1	< 1.8	< 3.6 N2
SG-2	8/27/2019	2.7	5.3	3.3	7.3	3.4	3.5	< 2.9	< 4.2	<0.22 H
SG-2	10/30/2019	< 0.35	< 0.45	< 0.83	< 1.1	< 0.83	< 0.46	< 0.54	< 0.105	< 0.978
SG-3	8/27/2019	< 1.3	< 1.5	< 1.7	< 3.5	< 1.7	< 2.8	< 2.9	< 4.2	<0.17 H
SG-3	10/30/2019	0.36 J	8.0	< 0.83	< 1.1	< 0.83	< 0.46	< 0.54	< 0.105	< 0.978
SG-4	1/15/2019	< 14.2	< 33.6	< 38.7	< 77.5	< 38.7	47.7	< 160	< 117	< 3.6 N2
SG-4	4/18/2019	< 0.45	< 1.1	< 1.2	< 2.5	< 1.2	< 1.0	< 5.1	< 1.8	< 3.6
SG-4	8/27/2019	< 1.3	< 1.5	< 1.7	< 3.5	< 1.7	< 2.8	< 2.9	< 4.2	<0.17 H
SG-4	10/30/2019	< 0.35	0.64 J	< 0.83	< 1.1	< 0.83	< 0.46	< 0.54	< 0.105	< 0.978

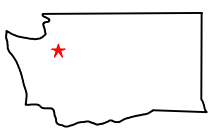
NOTES:
DOE = Washington State Department of Ecology
Results in bold exceed applicable action limits
* Screening value for combined m,o-xylene is 1520 ug/m^3
H - Sample was prepped or analyzed beyond the specified holding time
NGV = No given value
ug/m3 = micrograms/cubic meter
% = percent
< = Not detected at or above indicated laboratory reporting limit
N2 = The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
J = Estimated value >= the Method Detection Limit and < the Limit of Quantitation

Figures

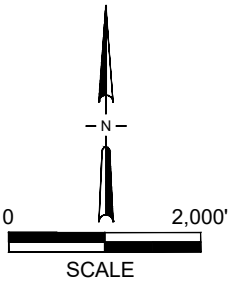
Figure 1 Site Location Map
Figure 2 Site Aerial Map
Figure 3 Site Map with Soil Vapor Probe Locations
Figure 4 Soil Analytical Map
Figure 5 Soil Vapor Analytical Map



GENERAL NOTES:
BASE MAP FROM TOPO!
SEATTLE NORTH E., WA. QUADRANGLE
7.5 MINUTE TOPOGRAPHIC MAP



QUADRANGLE LOCATION



SCALE

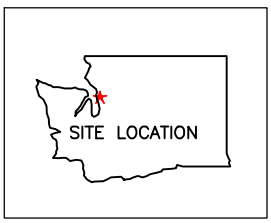
FIGURE 1
SITE LOCATION MAP

ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO. 00980SA191		DRAWN BY J. HIGHFILL	
FILE NO. 0980-SLM18		PREPARED BY M. BERNARD	
DATE 12 Dec 18	REV. 0	REVIEWED BY	

antea group

GENERAL NOTES:
BASE MAP FROM GOOGLE EARTH 2018



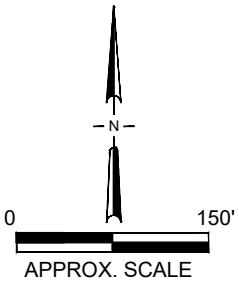
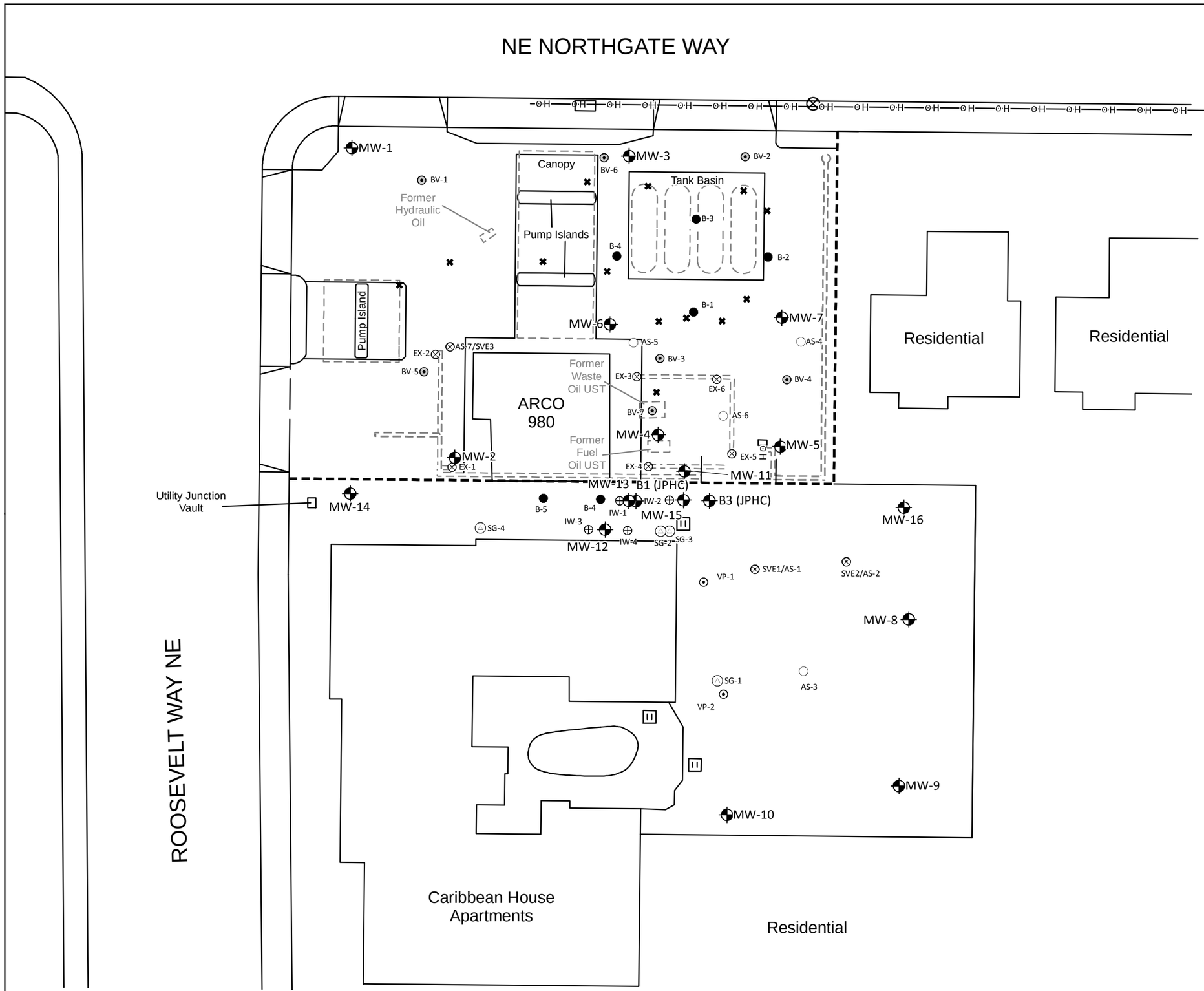


FIGURE 2
SITE AERIAL MAP

ARCO FACILITY NO. 0980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO. 00980SA191	DRAWN BY J. HIGHFILL	
FILE NO. 980G-SAM18	PREPARED BY M. BERNARD	
DATE 12 DEC 18 / REV. 1	REVIEWED BY	

antea group



LEGEND

- GROUNDWATER MONITORING WELL
- AIR SPARGING WELL LOCATION
- EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INJECTION WELL LOCATION INSTALLED BY INNOVEX
- SOIL VAPOR EXTRACTION / VACUUM PRESSURE MONITORING POINT
- BIOVENTING WELL LOCATION
- SOIL GAS PROBE LOCATION
- SOIL BORING LOCATION
- SOIL SAMPLING LOCATION
- PROPERTY BOUNDARY
- SITE FEATURES
- FORMER SITE FEATURES
- OVERHEAD UTILITY LINES
- CATCH BASIN

0 5 10 20 30 40 Feet

N

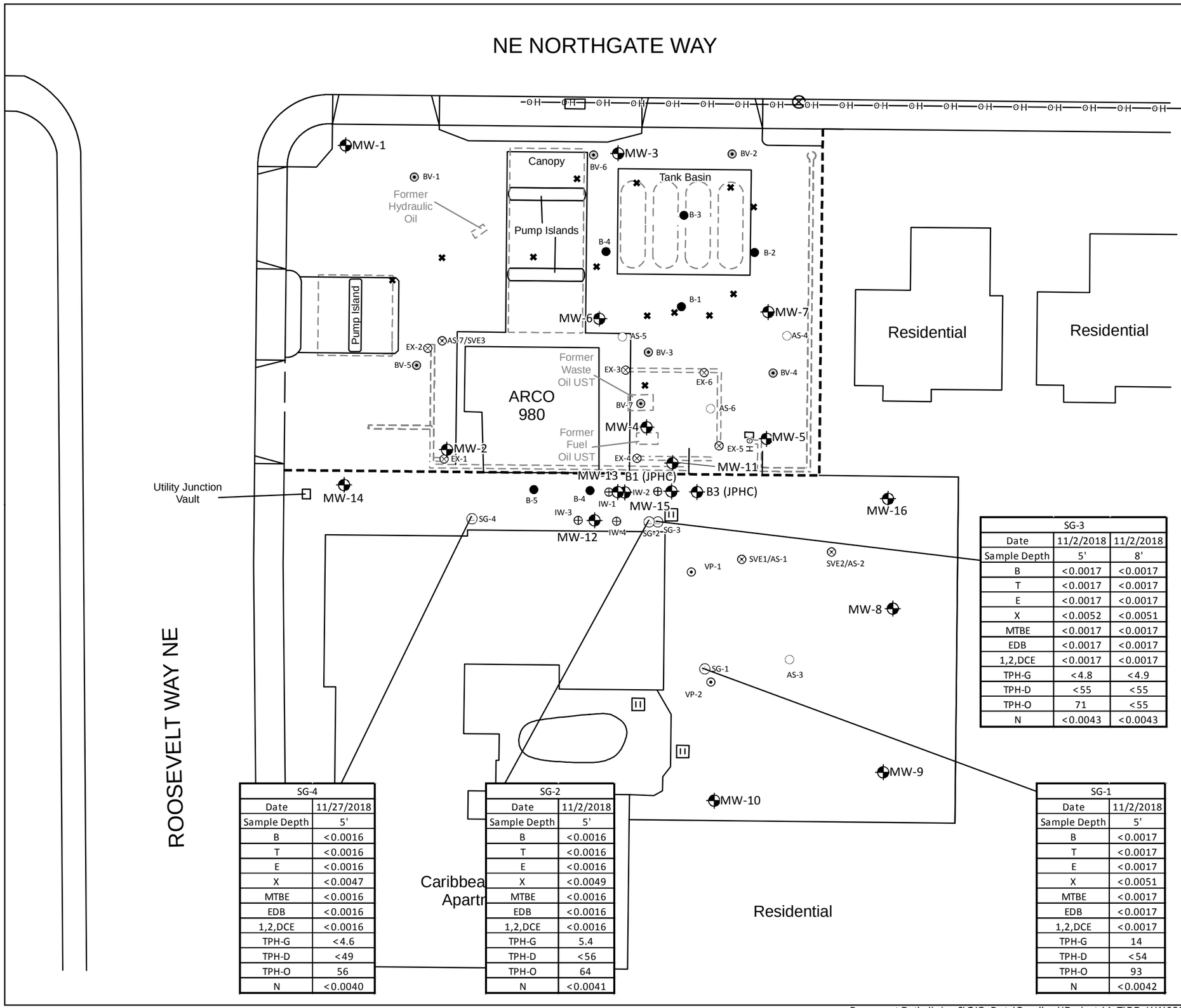
FIGURE 3

SITE MAP WITH SOIL VAPOR PROBE LOCATIONS
ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
00980SA191	MB/ALR	1:360
DATE	REVIEWED BY	MAP SCALE
12/10/2019	ES	1 inch = 30 feet

antea group

Document Path: \\gis-s3\GIS_Data\Sandbox\!Projects\A-E\BP_WA\980 Seattle- CROSS CHECK CAD FILE\Layout\UpdatedSiteMap.mxd



SG-4	
Date	11/27/2018
Sample Depth	5'
B	<0.0016
T	<0.0016
E	<0.0016
X	<0.0047
MTBE	<0.0016
EDB	<0.0016
1,2,DCE	<0.0016
TPH-G	<4.6
TPH-D	<49
TPH-O	56
N	<0.0040

SG-2	
Date	11/2/2018
Sample Depth	5'
B	<0.0016
T	<0.0016
E	<0.0016
X	<0.0049
MTBE	<0.0016
EDB	<0.0016
1,2,DCE	<0.0016
TPH-G	5.4
TPH-D	<56
TPH-O	64
N	<0.0041

SG-3		
Date	11/2/2018	11/2/2018
Sample Depth	5'	8'
B	<0.0017	<0.0017
T	<0.0017	<0.0017
E	<0.0017	<0.0017
X	<0.0052	<0.0051
MTBE	<0.0017	<0.0017
EDB	<0.0017	<0.0017
1,2,DCE	<0.0017	<0.0017
TPH-G	<4.8	<4.9
TPH-D	<55	<55
TPH-O	71	<55
N	<0.0043	<0.0043

SG-1	
Date	11/2/2018
Sample Depth	5'
B	<0.0017
T	<0.0017
E	<0.0017
X	<0.0051
MTBE	<0.0017
EDB	<0.0017
1,2,DCE	<0.0017
TPH-G	14
TPH-D	<54
TPH-O	93
N	<0.0042

LEGEND

- GROUNDWATER MONITORING WELL
- AIR SPARGING WELL LOCATION
- EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INJECTION WELL LOCATION INSTALLED BY INNOVEX
- SOIL VAPOR EXTRACTION / VACUUM PRESSURE MONITORING POINT
- BIOVENTING WELL LOCATION
- SOIL GAS PROBE LOCATION
- SOIL BORING LOCATION
- SOIL SAMPLING LOCATION
- PROPERTY BOUNDARY
- SITE FEATURES
- FORMER SITE FEATURES
- OVERHEAD UTILITY LINES
- CATCH BASIN

Analyte	Abbreviation	MTCA Exceedance Levels
Benzene	B	**0.03**
Toluene	T	**7**
Ethylbenzene	E	**6**
Xylene (Total)	X	**9**
Methyl-tertiary-butyl ether	MTBE	**0.1**
1,2-Dibromoethane (EDB)	EDB	**0.005**
1,2-Dichloroethane	1,2,DCE	**NGV**
Total Petroleum Hydrocarbons as Gasoline	TPH-G	**30**
Total Petroleum Hydrocarbons as Diesel	TPH-D	**2000**
Total Petroleum Hydrocarbons as Oil	TPH-O	**2000**
Naphthalene	N	**5**

Notes: All Data is in milligrams per kilogram (mg/kg)
Results in bold exceed applicable action limits
NGV = No given value
< = Not detected at or above indicated laboratory reporting limit

0 5 10 20 30 40 Feet

N

FIGURE 4

SOIL ANALYTICAL MAP
ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
00980SA191	ALR	1:360
DATE	REVIEWED BY	MAP SCALE
12/10/2019	BJ	1 inch = 30 feet

antea group

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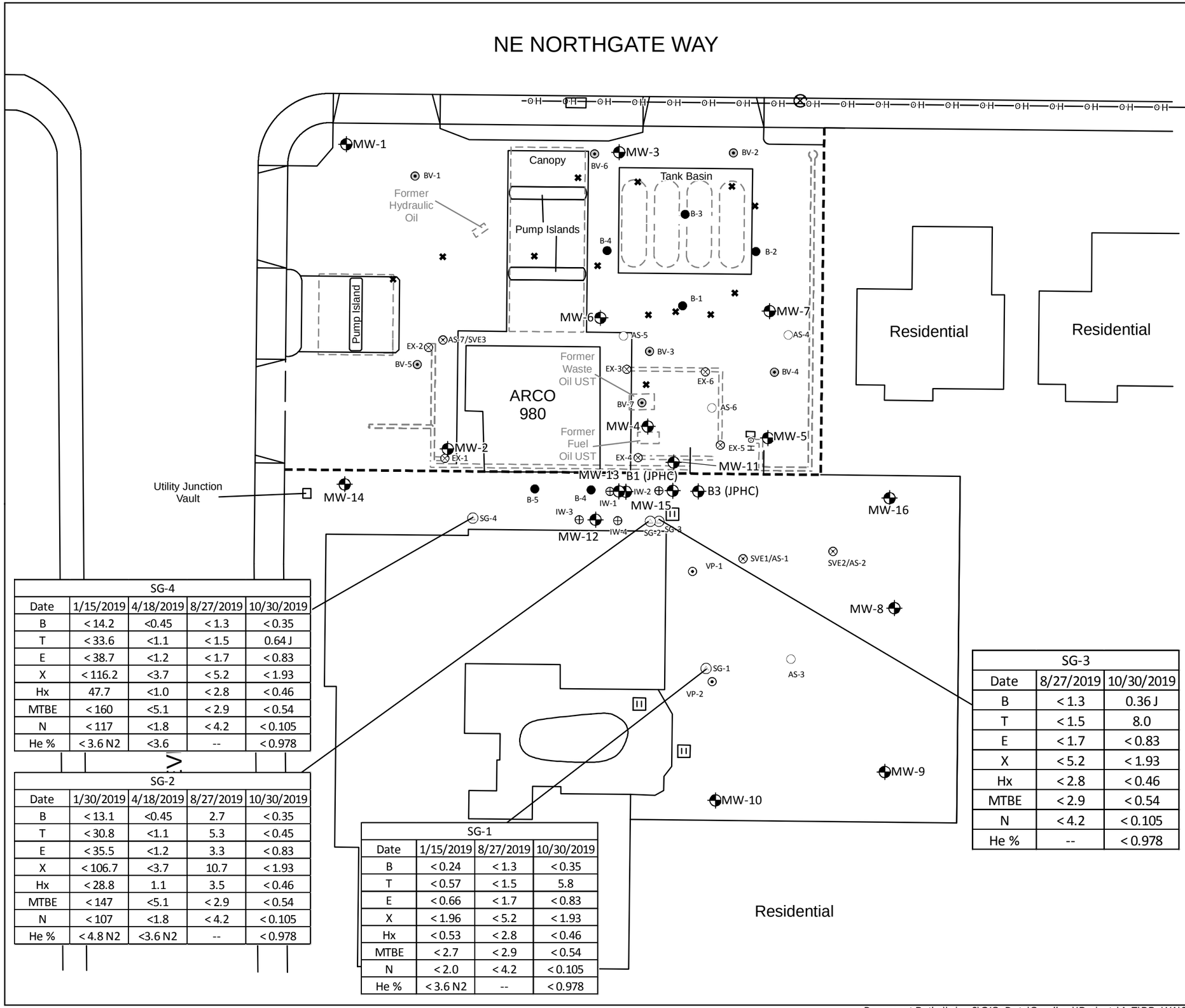

SG-4				
Date	1/15/2019	4/18/2019	8/27/2019	10/30/2019
B	< 14.2	<0.45	< 1.3	< 0.35
T	< 33.6	<1.1	< 1.5	0.64 J
E	< 38.7	<1.2	< 1.7	< 0.83
X	< 116.2	<3.7	< 5.2	< 1.93
Hx	47.7	<1.0	< 2.8	< 0.46
MTBE	< 160	<5.1	< 2.9	< 0.54
N	< 117	<1.8	< 4.2	< 0.105
He %	< 3.6 N2	<3.6	--	< 0.978

SG-2				
Date	1/30/2019	4/18/2019	8/27/2019	10/30/2019
B	< 13.1	<0.45	2.7	< 0.35
T	< 30.8	<1.1	5.3	< 0.45
E	< 35.5	<1.2	3.3	< 0.83
X	< 106.7	<3.7	10.7	< 1.93
Hx	< 28.8	1.1	3.5	< 0.46
MTBE	< 147	<5.1	< 2.9	< 0.54
N	< 107	<1.8	< 4.2	< 0.105
He %	< 4.8 N2	<3.6 N2	--	< 0.978

SG-1			
Date	1/15/2019	8/27/2019	10/30/2019
B	< 0.24	< 1.3	< 0.35
T	< 0.57	< 1.5	5.8
E	< 0.66	< 1.7	< 0.83
X	< 1.96	< 5.2	< 1.93
Hx	< 0.53	< 2.8	< 0.46
MTBE	< 2.7	< 2.9	< 0.54
N	< 2.0	< 4.2	< 0.105
He %	< 3.6 N2	--	< 0.978

SG-3		
Date	8/27/2019	10/30/2019
B	< 1.3	0.36 J
T	< 1.5	8.0
E	< 1.7	< 0.83
X	< 5.2	< 1.93
Hx	< 2.8	< 0.46
MTBE	< 2.9	< 0.54
N	< 4.2	< 0.105
He %	--	< 0.978

LEGEND

- GROUNDWATER MONITORING WELL
- AIR SPARGING WELL LOCATION
- EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INJECTION WELL LOCATION INSTALLED BY INNOVEX
- SOIL VAPOR EXTRACTION / VACUUM PRESSURE MONITORING POINT
- BIOVENTING WELL LOCATION
- SOIL GAS PROBE LOCATION
- SOIL BORING LOCATION
- SOIL SAMPLING LOCATION
- PROPERTY BOUNDARY
- SITE FEATURES
- FORMER SITE FEATURES
- OVERHEAD UTILITY LINES
- CATCH BASIN

Analyte	Abbreviation	Soil Vapor DOE Screening Levels
Benzene	B	10.7
Toluene	T	76200
Ethylbenzene	E	15200
Total Xylenes	X	1520
Hexane	Hx	10700
Methyl-tertiary-butyl ether	MTBE	32100
Naphthalene	N	2.45
Helium	He %	NGV

N2 = THE LAB DOES NOT HOLD NELAC/TNI ACCREDITATION FOR THIS PARAMENTER BUT OTHER ACCREDITATIONS/CERTIFICATIONS MAY APPLY.
< = NOT DETECTED AT OR ABOVE INDICATED REPORTING LIMIT
J = ESTIMATED VALUE

CONCENTRATIONS IN MICROGRAMS PER CUBIC METER (µg/m³).

0 5 10 20 30 40 Feet

N

FIGURE 5

SOIL VAPOR ANALYTICAL MAP
ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
00980SA191	ALR	1:360
DATE	REVIEWED BY	MAP SCALE
12/10/2019	BJ	1 inch = 30 feet

antea group

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Appendix A

Summary of Field Procedures and Quality Assurance Plan

FIELD PROCEDURES

All borings were advanced using a hand auger by Cascade Drilling (Cascade). Discrete soil samples were collected from each boring to characterize site soils with respect to petroleum hydrocarbon impacts.
The hand auger was decontaminated between each sample.

Soil samples were collected directly from the hand auger using a single-use syringe sampler and placed into laboratory-supplied 40-milliliter (mL) VOA vials preserved with methanol in accordance with Environmental Protection Agency (EPA) Method 5035A. Additional soil was placed into 8-ounce laboratory-supplied glass soil jars.

After sample collection, soil was field screened for the presence of volatile organic compounds with a photoionization detector (PID) to aid in the facilitation of selecting representative soil samples for chemical analysis. The PID was a RAE Systems MiniRAE 3000 PID equipped with a 10.6 electron volt (eV) ultraviolet (UV) lamp and calibrated to a 100-ppm isobutylene calibration gas for direct readings in parts per million (ppm). The operating range of the detector is from 0 to 15,000 parts per million with a minimum detection limit of 0.1 ppm. Clear plastic bags were filled to one-third to half capacity and then sealed. Soils in the bags were gently agitated to facilitate the breakup of any lumps and allowed to sit for approximately 10 minutes prior to analyzing the air above the soil in the bag. The PID probe was inserted into an opening of the plastic bag and the maximum vapor concentration was recorded for each soil sample collected.

The vapor point wells were constructed of a 6-inch vapor implant screen fitted with ¼ inch Teflon tubing to grade. Clean silica sand was used to fill the annular space to a height of approximately 2-inches above the top of the screened interval, and two inches below the screened interval. A seal of hydrated bentonite was installed above the silica sand to the bottom of the concrete slab. Soil vapor probes were completed to ground surface with concrete and a flush-mounted well monument. Following vapor probe installation, soil gas conditions were allowed to equilibrate for more than one month.

A shut-in test was conducted to confirm that the sample train can hold a vacuum, and a leak test to confirm that no ambient air was entering the sample train. A vacuum pump was utilized to apply vacuum to the system, and the valves at either end of the sample train were closed. The vacuum gauge was monitored for 30 seconds to confirm that a vacuum was being held. When a vacuum was not held, the system was rechecked and the test was repeated until a vacuum was held for at least 30 seconds. Following the shut-in test, the entire sampling system was placed under a shroud, and helium was added inside the shroud. A helium detector was utilized to verify that the air under the shroud was saturated with helium, and then a vacuum drawn through the probe and the entire sampling train. The helium detector was used to monitor the vapor being pulled through the system, to confirm the integrity of the sample train, and verify that there was no helium entering the system.

Soil gas vapor samples were collected in a laboratory supplied SUMMA® Canister with a flow regulator set at a rate of approximately 150 milliliters per minute (ml/min). The entire SUMMA Canister and regulator assembly were shipped back the laboratory under proper chain-of-custody protocols.

ANALYTICAL METHODS

SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to delivery to the laboratory. Each sample submitted for analysis was labeled and identified with the project number, date and time of sample collection, sampler and sample number unique to the sample. This information, in addition to any field measurements, noted names of on-site personnel, and any other pertinent field observations were recorded in the field notes.

Upon arrival at the laboratory, the sample control personnel at the laboratory verified sample integrity and confirmed that the sample was collected in the proper container, packaged correctly, and that there was adequate volume of sample for the required analyses. The laboratory assigned a unique log number for identification of each sample throughout analyses and reporting. The log number was recorded on the chain of custody form and in the legally required logbook maintained in the laboratory. The sample description, date received, client name, and any other relevant information was recorded.

ANALYTICAL QUALITY ASSURANCE

In addition to routine calibration of the analytical instruments with standards and blanks, the analyst is required to run matrix duplicates and spikes on 10 percent of the analyses to insure an added measure of precision and accuracy. Accuracy is also verified through the following:

1. U.S. Environmental Protection Agency (EPA) and State certification programs.
2. Participation in an inter-laboratory or "round-robin" quality assurance program.
3. Verification of results with an alternative method. For example, calcium may be determined by atomic absorption, ion chromatography, or titrimetric methods.

Appendix B

Boring Logs

	WELL/BORING: SG-1	Unique Ecology Well ID: BKF 807
	INSTALLATION DATE: 11/02/2018	DRILLING METHOD: Hand Auger
	PROJECT: ARCO 980	SAMPLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 3"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 6'
	CITY: Seattle	WELL CASING: Teflon 1/4"
	STATE: WA	WELL SCREEN: 5.5' – 6' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 5' – 6' (12 x 20)

CASING ELEVATION	-
SURVEY DATE:	-
DTW:	-

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	Temperature	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: Eric Sanchez
Concrete Hydrated Bentonite Dry Bentonite Sand						1 2 3 4 5 6 7 8 9 10 11					Surface = Asphalt 4" Hand Auger to 6'
			MST	0.4	-				SM		Silty Gravelly SAND: brown; 10% silt; 60% fine to medium sand; 30% fine to coarse gravel; loose.

antea group	WELL/BORING: SG-2	Unique Ecology Well ID: BKF 806
	INSTALLATION DATE: 11/02/2018	DRILLING METHOD: Hand Auger
	PROJECT: ARCO 980	SAMPLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 3"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 5.5'
	CITY: Seattle	WELL CASING: Teflon 1/4"
	STATE: WA	WELL SCREEN: 5' – 5.5' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 4.5' – 5.5' (12 x 20)

CASING ELEVATION	-
SURVEY DATE:	-
DTW:	-

DESCRIPTION/LOGGED BY: Eric Sanchez

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	Temperature	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete / Hydrated Bentonite / Dry Bentonite / Sand			-	0.3	-	1 2 3 4 5 6 7 8 9 10 11			SM		Surface = Asphalt 4" Hand Auger to 5.5' Silty Gravelly SAND: brown; 15% silt; 75% fine to medium sand; 10% fine to coarse gravel; loose.

	WELL/BORING: SG-3	Unique Ecology Well ID: BKF 808
	INSTALLATION DATE: 11/02/2018	DRILLING METHOD: Hand Auger
	PROJECT: ARCO 980	SAMPLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 3"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 8.25'
	CITY: Seattle	WELL CASING: Teflon 1/4"
	STATE: WA	WELL SCREEN: 7.75' – 8.25' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 7.25' – 8.25' (12 x 20)

CASING ELEVATION	-
SURVEY DATE:	-
DTW:	-

DESCRIPTION/LOGGED BY: Eric Sanchez

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	Temperature	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						1					Surface = Asphalt 4" Hand Auger to 8.25'
Hydrated Bentonite						2					
						3					
						4					
			-	1.2	-	5			SM		Silty SAND: brown; 30% silt; 55% very fine to fine sand; trace fine to medium gravel.
						6					TILL @6', very dense.
Dry Bentonite						7					
Sand			-	1.3	-	8			SM		Same as Above: gray; very dense; refusal @8.5'.
						9					
						10					
						11					

	WELL/BORING: SG-4	Unique Ecology Well ID: BKF 871
	INSTALLATION DATE: 11/27/2018	DRILLING METHOD: Hand Auger
	PROJECT: ARCO 980	SAMPLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 3"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 5'
	CITY: Seattle	WELL CASING: Teflon 1/4"
	STATE: WA	WELL SCREEN: 4.5' – 5' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 4' – 5' (12 x 20)

CASING ELEVATION	-
SURVEY DATE:	-
DTW:	-

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	Temperature	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: Eric Sanchez
Concrete						1					Surface = Asphalt 4" Hand Auger to 5'
Hydrated Bentonite						2					
			DRY	0.2	-	3			SM		Silty Gravelly SAND: grayish brown; 10% silt; 80% fine to coarse sand; 10% fine to medium gravel; dense.
Dry Bentonite						4					
Sand			MST	0.3	-	5			SM		Same as Above; very dense.
						6					
						7					
						8					
						9					
						10					
						11					

Appendix C

Waste Disposal Documentation

JAN 26 '19 AM 7:30

***24 HOUR EMERGENCY RESPONSE, CALL (877) 577-2669 ***

Stericycle®
Environmental Solutions

SHIPPING PAPER

Lading Manifest: 013978-19

	DELIVERY DATE / JOB # 3445248
SHIPPER / CUSTOMER: BP 00980	POINT OF CONTACT: Larry Moothart
ADDRESS: 10822 Roosevelt Way NE	PHONE #: (949)460-5200
CITY, STATE, ZIP: SEATTLE WA 98125	
CARRIER / TRANSPORTER: Stericycle Specialty Waste	PHONE #: (612)285-9865
CONSIGNEE / FACILITY: BURLINGTON ENVIRONMENTAL, LLC.	POINT OF CONTACT
ADDRESS: 1701 East Alexander Avenue	PHONE #: (253)627-7568
CITY, STATE, ZIP: TACOMA , WA 98421	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM
A	MATERIAL NOT REGULATED BY DOT	2 DM	DM	875	P
B					
C					
D					

Special Handling Instruction and Additional Information:

a) 997725-00 - SOIL - LF07 (2) FSO 261042 ORDER # 301255

Placards Provided YES_____ NO_____

SHIPPER'S CERTIFICATION: "I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations." I also certify that all times listed above are true and correct.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME: X Joe Gonzales for Burlington	SIGNATURE	1	25	19
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME: X Joe Gonzales	SIGNATURE: X	1	25	19
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME: X Kevin Quiteno	SIGNATURE: X	1	25	19

00980
1999229

CONSIGNEE

7169

Appendix D

Soil Laboratory Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-81736-1
Client Project/Site: BP -ARCO 980
Revision: 1

For:
Antea USA, Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Eric Sanchez

M. Elaine Walker

Authorized for release by:
11/27/2018 12:20:26 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The signature on the cover page extends to the case narrative and all the data and forms in the package. The Chain of Custody is included and is an integral part of this report.

Elaine Walker
Project Manager II
11/27/2018 12:20:26 PM

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Case Narrative

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Job ID: 580-81736-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-81736-1

Revision 1: November 27, 2018
This revision was required to change the client IDs. The samples were logged as S6....., but they should be SG..... per client.

Receipt
Four samples were received on 11/7/2018 1:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.3º C.

Receipt Exceptions

All samples were collected on 11/2/18. The client froze the low level VOA sample vials on 11/2/18 1800 hrs until lab pickup on 11/7/18 1300 hrs. The sample was received on 11/7/18 and placed in the freezer on 11/7/18 1620 hrs

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

GC Semi VOA
Method(s) NWTPH-Dx: The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: SG-1-5 (580-81736-1), SG-2-5 (580-81736-2), SG-3-5 (580-81736-3) and SG-1-5 DU (580-81736-1 DU).

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

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: SG-1-5
Date Collected: 11/02/18 10:45
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-1
Matrix: Solid
Percent Solids: 87.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
EDB	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
EDC	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
Ethylbenzene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
Methyl tert-butyl ether	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
m-Xylene & p-Xylene	ND		0.0034		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
Naphthalene	ND		0.0042		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
o-Xylene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
Toluene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1
Xylenes, Total	ND		0.0051		mg/Kg	☼	11/16/18 11:29	11/16/18 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*	*11/16/18 11:29*	*11/16/18 15:32*	*1*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*	*11/16/18 11:29*	*11/16/18 15:32*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 130*	*11/16/18 11:29*	*11/16/18 15:32*	*1*
Toluene-d8 (Surr)	*104*		*70 - 130*	*11/16/18 11:29*	*11/16/18 15:32*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**14**		5.0		mg/Kg	☼	11/14/18 17:23	11/15/18 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*50 - 150*	*11/14/18 17:23*	*11/15/18 03:17*	*1*
Trifluorotoluene (Surr)				*11/14/18 17:23*	*11/15/18 03:17*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		54		mg/Kg	☼	11/15/18 18:04	11/17/18 20:50	1
Motor Oil (>C24-C36)	**93**		54		mg/Kg	☼	11/15/18 18:04	11/17/18 20:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*100*		*50 - 150*	*11/15/18 18:04*	*11/17/18 20:50*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**87.8**		0.1		%			11/13/18 09:20	1
Percent Moisture	**12.2**		0.1		%			11/13/18 09:20	1

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Client Sample ID: SG-2-5
Date Collected: 11/02/18 12:30
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-2
Matrix: Solid
Percent Solids: 87.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
EDB	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
EDC	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
Ethylbenzene	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
Methyl tert-butyl ether	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
m-Xylene & p-Xylene	ND		0.0033		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
Naphthalene	ND		0.0041		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
o-Xylene	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
Toluene	ND		0.0016		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1
Xylenes, Total	ND		0.0049		mg/Kg	☼	11/16/18 11:29	11/16/18 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:00*	*1*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:00*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:00*	*1*
Toluene-d8 (Surr)	*100*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:00*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**5.4**		5.0		mg/Kg	☼	11/14/18 17:23	11/15/18 03:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*50 - 150*	*11/14/18 17:23*	*11/15/18 03:45*	*1*
Trifluorotoluene (Surr)				*11/14/18 17:23*	*11/15/18 03:45*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		56		mg/Kg	☼	11/15/18 18:04	11/17/18 21:33	1
Motor Oil (>C24-C36)	**64**		56		mg/Kg	☼	11/15/18 18:04	11/17/18 21:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*93*		*50 - 150*	*11/15/18 18:04*	*11/17/18 21:33*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**87.0**		0.1		%			11/13/18 09:20	1
Percent Moisture	**13.0**		0.1		%			11/13/18 09:20	1

Client Sample ID: SG-3-5

Date Collected: 11/02/18 14:15
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-3

Matrix: Solid
Percent Solids: 89.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
EDB	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
EDC	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
Ethylbenzene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
Methyl tert-butyl ether	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
m-Xylene & p-Xylene	ND		0.0035		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
Naphthalene	ND		0.0043		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
o-Xylene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
Toluene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1
Xylenes, Total	ND		0.0052		mg/Kg	☼	11/16/18 11:29	11/16/18 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:29*	*1*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:29*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:29*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:29*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.8		mg/Kg	☼	11/14/18 17:23	11/15/18 04:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*	*11/14/18 17:23*	*11/15/18 04:12*	*1*
Trifluorotoluene (Surr)				*11/14/18 17:23*	*11/15/18 04:12*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		55		mg/Kg	☼	11/15/18 18:04	11/17/18 21:55	1
Motor Oil (>C24-C36)	**71**		55		mg/Kg	☼	11/15/18 18:04	11/17/18 21:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*100*		*50 - 150*	*11/15/18 18:04*	*11/17/18 21:55*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**89.5**		0.1		%			11/13/18 09:20	1
Percent Moisture	**10.5**		0.1		%			11/13/18 09:20	1

Client Sample ID: SG-3-8

Date Collected: 11/02/18 16:15
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-4

Matrix: Solid
Percent Solids: 88.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
EDB	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
EDC	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
Ethylbenzene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
Methyl tert-butyl ether	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
m-Xylene & p-Xylene	ND		0.0034		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
Naphthalene	ND		0.0043		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
o-Xylene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
Toluene	ND		0.0017		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1
Xylenes, Total	ND		0.0051		mg/Kg	☼	11/16/18 11:29	11/16/18 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:57*	*1*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:57*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:57*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*	*11/16/18 11:29*	*11/16/18 16:57*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.9		mg/Kg	☼	11/14/18 17:23	11/15/18 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*50 - 150*	*11/14/18 17:23*	*11/15/18 04:39*	*1*
Trifluorotoluene (Surr)				*11/14/18 17:23*	*11/15/18 04:39*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		55		mg/Kg	☼	11/15/18 18:04	11/17/18 22:16	1
Motor Oil (>C24-C36)	ND		55		mg/Kg	☼	11/15/18 18:04	11/17/18 22:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*50 - 150*	*11/15/18 18:04*	*11/17/18 22:16*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**88.7**		0.1		%			11/13/18 09:20	1
Percent Moisture	**11.3**		0.1		%			11/13/18 09:20	1

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

Lab Sample ID: MB 490-557860/6
Matrix: Solid
Analysis Batch: 557860

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg			11/16/18 15:04	1
EDB	ND		0.0020		mg/Kg			11/16/18 15:04	1
EDC	ND		0.0020		mg/Kg			11/16/18 15:04	1
Ethylbenzene	ND		0.0020		mg/Kg			11/16/18 15:04	1
Methyl tert-butyl ether	ND		0.0020		mg/Kg			11/16/18 15:04	1
m-Xylene & p-Xylene	ND		0.0040		mg/Kg			11/16/18 15:04	1
Naphthalene	ND		0.0050		mg/Kg			11/16/18 15:04	1
o-Xylene	ND		0.0020		mg/Kg			11/16/18 15:04	1
Toluene	ND		0.0020		mg/Kg			11/16/18 15:04	1
Xylenes, Total	ND		0.0060		mg/Kg			11/16/18 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*		*11/16/18 15:04*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*11/16/18 15:04*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*11/16/18 15:04*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*11/16/18 15:04*	*1*

Lab Sample ID: LCS 490-557860/3
Matrix: Solid
Analysis Batch: 557860

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.0448		mg/Kg		90	70 - 130
EDB	0.0500	0.0395		mg/Kg		79	69 - 130
EDC	0.0500	0.0408		mg/Kg		82	65 - 134
Ethylbenzene	0.0500	0.0472		mg/Kg		94	70 - 130
Methyl tert-butyl ether	0.0500	0.0374		mg/Kg		75	54 - 145
m-Xylene & p-Xylene	0.0500	0.0473		mg/Kg		95	70 - 130
Naphthalene	0.0500	0.0398		mg/Kg		80	55 - 149
o-Xylene	0.0500	0.0479		mg/Kg		96	70 - 130
Toluene	0.0500	0.0459		mg/Kg		92	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*
4-Bromofluorobenzene (Surr)	*106*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*70 - 130*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 490-557860/4
Matrix: Solid
Analysis Batch: 557860

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0500	0.0444		mg/Kg		89	70 - 130	1	37
EDB	0.0500	0.0394		mg/Kg		79	69 - 130	0	17
EDC	0.0500	0.0410		mg/Kg		82	65 - 134	0	16
Ethylbenzene	0.0500	0.0468		mg/Kg		94	70 - 130	1	38

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

Lab Sample ID: LCSD 490-557860/4
Matrix: Solid
Analysis Batch: 557860

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether			0.0500	0.0378		mg/Kg		76	54 - 145	1	36
m-Xylene & p-Xylene			0.0500	0.0476		mg/Kg		95	70 - 130	1	38
Naphthalene			0.0500	0.0371		mg/Kg		74	55 - 149	7	37
o-Xylene			0.0500	0.0476		mg/Kg		95	70 - 130	0	38
Toluene			0.0500	0.0451		mg/Kg		90	70 - 130	2	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*70 - 130*
Toluene-d8 (Surr)	*101*		*70 - 130*

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

Lab Sample ID: MB 580-288951/17-A
Matrix: Solid
Analysis Batch: 288959

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 288951

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		11/14/18 17:38	11/14/18 21:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*50 - 150*	*11/14/18 17:38*	*11/14/18 21:25*	*1*
Trifluorotoluene (Surr)	*128*		*50 - 150*	*11/14/18 17:38*	*11/14/18 21:25*	*1*

Lab Sample ID: LCS 580-288951/18-A
Matrix: Solid
Analysis Batch: 288959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 288951

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline			40.0	40.1		mg/Kg		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*50 - 150*
Trifluorotoluene (Surr)	*129*		*50 - 150*

Lab Sample ID: LCSD 580-288951/19-A
Matrix: Solid
Analysis Batch: 288959

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 288951

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline			40.0	41.6		mg/Kg		104	80 - 120	4	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*50 - 150*
Trifluorotoluene (Surr)	*124*		*50 - 150*

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

Lab Sample ID: MB 580-289071/1-A
Matrix: Solid
Analysis Batch: 289208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289071

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50		mg/Kg		11/15/18 18:04	11/17/18 15:05	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		11/15/18 18:04	11/17/18 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*93*		*50 - 150*	*11/15/18 18:04*	*11/17/18 15:05*	*1*

Lab Sample ID: LCS 580-289071/2-A
Matrix: Solid
Analysis Batch: 289208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289071

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	478		mg/Kg		96	70 - 125		
Motor Oil (>C24-C36)			500	509		mg/Kg		102	70 - 129		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*108*		*50 - 150*

Lab Sample ID: LCSD 580-289071/3-A
Matrix: Solid
Analysis Batch: 289208

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 289071

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	466		mg/Kg		93	70 - 125	3	16
Motor Oil (>C24-C36)			500	494		mg/Kg		99	70 - 129	3	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*96*		*50 - 150*

Lab Sample ID: 580-81736-1 DU
Matrix: Solid
Analysis Batch: 289208

Client Sample ID: SG-1-5
Prep Type: Total/NA
Prep Batch: 289071

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
#2 Diesel (C10-C24)	ND			ND		mg/Kg	☼			NC	35
Motor Oil (>C24-C36)	93			76.9		mg/Kg	☼			19	35

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
o-Terphenyl	*95*		*50 - 150*

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Client Sample ID: SG-1-5
Date Collected: 11/02/18 10:45
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	288725	11/13/18 09:20	BAH	TAL SEA

Client Sample ID: SG-1-5
Date Collected: 11/02/18 10:45
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-1
Matrix: Solid
Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			557835	11/16/18 11:29	JLP	TAL NSH
Total/NA	Analysis	8260C		1	557860	11/16/18 15:32	AK1	TAL NSH
Total/NA	Prep	5035			288951	11/14/18 17:23	CJB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	288959	11/15/18 03:17	CJB	TAL SEA
Total/NA	Prep	3546			289071	11/15/18 18:04	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	289208	11/17/18 20:50	W1T	TAL SEA

Client Sample ID: SG-2-5
Date Collected: 11/02/18 12:30
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	288725	11/13/18 09:20	BAH	TAL SEA

Client Sample ID: SG-2-5
Date Collected: 11/02/18 12:30
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-2
Matrix: Solid
Percent Solids: 87.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			557835	11/16/18 11:29	JLP	TAL NSH
Total/NA	Analysis	8260C		1	557860	11/16/18 16:00	AK1	TAL NSH
Total/NA	Prep	5035			288951	11/14/18 17:23	CJB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	288959	11/15/18 03:45	CJB	TAL SEA
Total/NA	Prep	3546			289071	11/15/18 18:04	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	289208	11/17/18 21:33	W1T	TAL SEA

Client Sample ID: SG-3-5
Date Collected: 11/02/18 14:15
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	288725	11/13/18 09:20	BAH	TAL SEA

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Client Sample ID: SG-3-5

Date Collected: 11/02/18 14:15
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-3
Matrix: Solid
Percent Solids: 89.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			557835	11/16/18 11:29	JLP	TAL NSH
Total/NA	Analysis	8260C		1	557860	11/16/18 16:29	AK1	TAL NSH
Total/NA	Prep	5035			288951	11/14/18 17:23	CJB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	288959	11/15/18 04:12	CJB	TAL SEA
Total/NA	Prep	3546			289071	11/15/18 18:04	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	289208	11/17/18 21:55	W1T	TAL SEA

Client Sample ID: SG-3-8

Date Collected: 11/02/18 16:15
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	288725	11/13/18 09:20	BAH	TAL SEA

Client Sample ID: SG-3-8

Date Collected: 11/02/18 16:15
Date Received: 11/07/18 13:15

Lab Sample ID: 580-81736-4
Matrix: Solid
Percent Solids: 88.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			557835	11/16/18 11:29	JLP	TAL NSH
Total/NA	Analysis	8260C		1	557860	11/16/18 16:57	AK1	TAL NSH
Total/NA	Prep	5035			288951	11/14/18 17:23	CJB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	288959	11/15/18 04:39	CJB	TAL SEA
Total/NA	Prep	3546			289071	11/15/18 18:04	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	289208	11/17/18 22:16	W1T	TAL SEA

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177
TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

Laboratory: TestAmerica Nashville

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	06-30-19
Arizona	State Program	9	AZ0473	05-05-19
Arkansas DEQ	State Program	6	88-0737	04-25-19
California	State Program	9	2938	10-31-18 *
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-19
Georgia	State Program	4	NA: NELAP & A2LA	12-31-19
Illinois	NELAP	5	200010	12-09-18
Iowa	State Program	7	131	04-01-20
Kansas	NELAP	7	E-10229	10-31-18 *
Kentucky (UST)	State Program	4	19	06-30-19
Kentucky (WW)	State Program	4	90038	12-31-18
Louisiana	NELAP	6	30613	06-30-19
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-19
Massachusetts	State Program	1	M-TN032	06-30-19
Minnesota	NELAP	5	047-999-345	12-31-18
Mississippi	State Program	4	N/A	06-30-19
Montana (UST)	State Program	8	NA	02-24-20
Nevada	State Program	9	TN00032	07-31-19
New Hampshire	NELAP	1	2963	10-09-19
New Jersey	NELAP	2	TN965	06-30-19
New York	NELAP	2	11342	03-31-19
North Carolina (WW/SW)	State Program	4	387	12-31-18
North Dakota	State Program	8	R-146	06-30-19
Ohio VAP	State Program	5	CL0033	07-06-19
Oklahoma	State Program	6	9412	08-31-19
Oregon	NELAP	10	TN200001	04-26-19
Pennsylvania	NELAP	3	68-00585	07-31-19
Rhode Island	State Program	1	LAO00268	12-30-18
South Carolina	State Program	4	84009 (001)	02-28-19
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-19
USDA	Federal		P330-13-00306	12-01-19
Utah	NELAP	8	TN00032	07-31-19
Virginia	NELAP	3	460152	06-14-19
Washington	State Program	10	C789	07-19-19
West Virginia DEP	State Program	3	219	02-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Laboratory: TestAmerica Nashville (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998020430	08-31-19
Wyoming (UST)	A2LA	8	453.07	12-31-19

Sample Summary

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-81736-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-81736-1	SG-1-5	Solid	11/02/18 10:45	11/07/18 13:15
580-81736-2	SG-2-5	Solid	11/02/18 12:30	11/07/18 13:15
580-81736-3	SG-3-5	Solid	11/02/18 14:15	11/07/18 13:15
580-81736-4	SG-3-8	Solid	11/02/18 16:15	11/07/18 13:15

Loc: 580
81736

bp rm

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 **Req Due Date (mm/dd/yy):** Standard TAT Rush TAT Yes ____ No X

BP/RM Facility No: ARCO Facility No. 00980 **Lab Work Order Number:**

Lab Name:	Test America	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA181.20100
Lab PM:	Elaine Walker	Lead Regulatory Agency:	WA DOE - NW Region	Address:	4006 148th Ave NE, Redmond, WA 98052
Lab Phone:	253.248.4972	California Global ID No.:	NA	Consultant/Contractor PM:	Eric Sanchez
Lab Shipping Accnt:	NA	Enfos Proposal No:	009VH-0006/WR321243	Phone: 425-498-7717	Email: Eric.Sanchez@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision ___X___ OOC-BU _____ OOC-RM _____	Send/Submit EDD to:	Eric.Sanchez@anteagroup.com
Other Info:	elaine.walker@testamericainc.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM _____ BP/ARC ___X___
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level: Limited (Standard) Package ____ Limited Plus Package ____ Full Package ____

Lab No.	Sample Description	Date	Time	Field Matrix	Start Depth	End Depth	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Filt	Pres	BTEX by EPA 8260	MTBE by EPA 8260	NWTPH-Gx	NWTPH-Dx	Pb-T by EPA 6020	Pb-D by EPA 6020	EDB/EDC	Naphthalenes	EPH/VPH	Comments
	~~SG-5~~																				55
	SG-1-5	11/2/18	1045	S	5	5.5	FT	G	5			X	X	X	X			X	X		
	SG-2-5	11/2/18	1230	S	5	5.5	FT	G	5			X	X	X	X			X	X		
	SG-3-5	11/2/18	1415	S	5	5.5	FT	G	5			X	X	X	X			X	X		
	SG-3-8	11/2/18	1615	S	8	8.5	FT	G	5			X	X	X	X			X	X		

580-81736 Chain of Custody

Sampler's Name:	Eric Sanchez	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Antea Group	Zac Bezold / ANTEA	11/7/18	1315	[signature] / TH SIFA	11/7/18	1315
Ship Method:	Courier	Ship Date: 11/7/18					
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS

Therm. ID: IR5 Cor: 5.3 ° Unc: 5.5 °
Cooler Dsc: Lg Blue
Packing: Bubble
Cust. Seal: Yes ___ No ✓
Blue Ice, Wet, None, Dry
FedEx: _____
UPS: _____
Lab Courier: ✓
Other: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

580-81736 Chain of Custody

Cooler Received/Opened On 11-16-2018 @ 10:15

Time Samples Removed From Cooler 11:05 Time Samples Placed In Storage 11:08 (2 Hour Window)

1. Tracking # 6072 (last 4 digits, FedEx) Courier: FedEx

IR Gun ID 14740456 pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: -2.5 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES NO NA

If yes, how many and where: 1 (side)

5. Were the seals intact, signed, and dated correctly? YES NO NA

6. Were custody papers inside cooler? YES NO NA

I certify that I opened the cooler and answered questions 1-6 (intial) KD

7. Were custody seals on containers: YES NO and Intact YES NO NA

Were these signed and dated correctly? YES NO NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES NO NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES NO NA

12. Did all container labels and tags agree with custody papers? YES NO NA

13a. Were VOA vials received? YES NO NA

b. Was there any observable headspace present in any VOA vial? YES NO NA


Larger than this.

14. Was there a Trip Blank in this cooler? YES NO NA If multiple coolers, sequence # _____

I certify that I unloaded the cooler and answered questions 7-14 (intial) KD

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES NO NA

b. Did the bottle labels indicate that the correct preservatives were used YES NO NA

16. Was residual chlorine present? YES NO NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) KD

17. Were custody papers properly filled out (ink, signed, etc)? YES NO NA

18. Did you sign the custody papers in the appropriate place? YES NO NA

19. Were correct containers used for the analysis requested? YES NO NA

20. Was sufficient amount of sample sent in each container? YES NO NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) KD

I certify that I attached a label with the unique LIMS number to each container (intial) KD

21. Were there Non-Conformance issues at login? YES NO Was a NCM generated? YES NO #_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 8/23/17

11/27/2018 (Rev. 1)

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	COC No: 580-61284.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Washington / Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - Washington	Job #: 580-81736-1
Address: 2960 Foster Creighton Drive,	Due Date Requested: 11/19/2018		
City: Nashville	TAT Requested (days):		
State, Zip: TN, 37204			
Phone: 615-726-0177(Tel) 615-726-3404(Fax)	PO #:		
Email:	WO #:		
Project Name: BP -ARCO 980	Project #: 58010261		
Site: ARCO 980 Antea	SSOW#:		

Analysis Requested

Loc: 580
81736

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C/5035FP_Calc (MOD) BTEX/MTBE/EDB/EDC/Naphthalene	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
S6-1-5 (580-81736-1)	11/2/18	10:45 Pacific		Solid			X	2	BP LaMP ICOC, Analyze LCS/LCSD if no MS/MSD volume is available
S6-2-5 (580-81736-2)	11/2/18	12:30 Pacific		Solid			X	2	BP LaMP ICOC, Analyze LCS/LCSD if no MS/MSD volume is available
S6-3-5 (580-81736-3)	11/2/18	14:15 Pacific		Solid			X	2	BP LaMP ICOC, Analyze LCS/LCSD if no MS/MSD volume is available
S6-3-8 (580-81736-4)	11/2/18	16:15 Pacific		Solid			X	2	BP LaMP ICOC, Analyze LCS/LCSD if no MS/MSD volume is available

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: Tom Hunt	Date/Time: 11/14/18	Company TA-Sea	Received by:	Date/Time: 11-16-2018 10:15	Company TA-NAS		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: -25.0

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Antea USA, Inc.

Job Number: 580-81736-1

Login Number: 81736
List Number: 1
Creator: Gall, Brandon A

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-82158-1
Client Project/Site: BP -ARCO 980

For:
Antea USA, Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Megan Richard

M. Elaine Walker

Authorized for release by:
12/11/2018 4:05:46 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The signature on the cover page extends to the case narrative and all the data and forms in the package. The Chain of Custody is included and is an integral part of this report.

Elaine Walker
Project Manager II
12/11/2018 4:05:46 PM

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Job ID: 580-82158-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-82158-1

Receipt
One sample was received on 11/28/2018 12:50 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8º C.

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

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

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

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-82158-1

Client Sample ID: SG-4-5
Date Collected: 11/27/18 10:00
Date Received: 11/28/18 12:50

Lab Sample ID: 580-82158-1
Matrix: Solid
Percent Solids: 91.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
EDB	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
EDC	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
Ethylbenzene	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
Methyl tert-butyl ether	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
m-Xylene & p-Xylene	ND		0.0032		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
Naphthalene	ND		0.0040		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
o-Xylene	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
Toluene	ND		0.0016		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1
Xylenes, Total	ND		0.0047		mg/Kg	☼	12/03/18 10:55	12/03/18 16:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 130*	*12/03/18 10:55*	*12/03/18 16:05*	*1*
4-Bromofluorobenzene (Surr)	*106*		*70 - 130*	*12/03/18 10:55*	*12/03/18 16:05*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*	*12/03/18 10:55*	*12/03/18 16:05*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*	*12/03/18 10:55*	*12/03/18 16:05*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.6		mg/Kg	☼	12/06/18 10:40	12/06/18 22:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*50 - 150*	*12/06/18 10:40*	*12/06/18 22:38*	*1*
Trifluorotoluene (Surr)				*12/06/18 10:40*	*12/06/18 22:38*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		49		mg/Kg	☼	12/01/18 19:40	12/11/18 03:44	1
Motor Oil (>C24-C36)	**56**		49		mg/Kg	☼	12/01/18 19:40	12/11/18 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*50 - 150*	*12/01/18 19:40*	*12/11/18 03:44*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**91.5**		0.1		%			11/30/18 14:31	1
Percent Moisture	**8.5**		0.1		%			11/30/18 14:31	1

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

Lab Sample ID: MB 490-561023/7
Matrix: Solid
Analysis Batch: 561023

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg			12/03/18 13:16	1
EDB	ND		0.0020		mg/Kg			12/03/18 13:16	1
EDC	ND		0.0020		mg/Kg			12/03/18 13:16	1
Ethylbenzene	ND		0.0020		mg/Kg			12/03/18 13:16	1
Methyl tert-butyl ether	ND		0.0020		mg/Kg			12/03/18 13:16	1
m-Xylene & p-Xylene	ND		0.0040		mg/Kg			12/03/18 13:16	1
Naphthalene	ND		0.0050		mg/Kg			12/03/18 13:16	1
o-Xylene	ND		0.0020		mg/Kg			12/03/18 13:16	1
Toluene	ND		0.0020		mg/Kg			12/03/18 13:16	1
Xylenes, Total	ND		0.0060		mg/Kg			12/03/18 13:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 130*		*12/03/18 13:16*	*1*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*		*12/03/18 13:16*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*12/03/18 13:16*	*1*
Toluene-d8 (Surr)	*95*		*70 - 130*		*12/03/18 13:16*	*1*

Lab Sample ID: LCS 490-561023/3
Matrix: Solid
Analysis Batch: 561023

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			0.0500	0.0463		mg/Kg		93	70 - 130		
EDB			0.0500	0.0411		mg/Kg		82	69 - 130		
EDC			0.0500	0.0375		mg/Kg		75	65 - 134		
Ethylbenzene			0.0500	0.0491		mg/Kg		98	70 - 130		
Methyl tert-butyl ether			0.0500	0.0398		mg/Kg		80	54 - 145		
m-Xylene & p-Xylene			0.0500	0.0489		mg/Kg		98	70 - 130		
Naphthalene			0.0500	0.0426		mg/Kg		85	55 - 149		
o-Xylene			0.0500	0.0494		mg/Kg		99	70 - 130		
Toluene			0.0500	0.0476		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*70 - 130*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*92*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

Lab Sample ID: LCSD 490-561023/4
Matrix: Solid
Analysis Batch: 561023

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			0.0500	0.0463		mg/Kg		93	70 - 130	0	37
EDB			0.0500	0.0402		mg/Kg		80	69 - 130	2	17
EDC			0.0500	0.0365		mg/Kg		73	65 - 134	3	16
Ethylbenzene			0.0500	0.0482		mg/Kg		96	70 - 130	2	38

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

Lab Sample ID: LCSD 490-561023/4
Matrix: Solid
Analysis Batch: 561023

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether			0.0500	0.0382		mg/Kg		76	54 - 145	4	36
m-Xylene & p-Xylene			0.0500	0.0476		mg/Kg		95	70 - 130	3	38
Naphthalene			0.0500	0.0427		mg/Kg		85	55 - 149	0	37
o-Xylene			0.0500	0.0483		mg/Kg		97	70 - 130	2	38
Toluene			0.0500	0.0472		mg/Kg		94	70 - 130	1	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*70 - 130*
4-Bromofluorobenzene (Surr)	*106*		*70 - 130*
Dibromofluoromethane (Surr)	*93*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

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

Lab Sample ID: MB 580-290422/1-A
Matrix: Solid
Analysis Batch: 290426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290422

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		12/06/18 10:40	12/06/18 12:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*50 - 150*	*12/06/18 10:40*	*12/06/18 12:15*	*1*
Trifluorotoluene (Surr)	*111*		*50 - 150*	*12/06/18 10:40*	*12/06/18 12:15*	*1*

Lab Sample ID: LCS 580-290422/2-A
Matrix: Solid
Analysis Batch: 290426

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290422

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline			40.0	40.9		mg/Kg		102	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*
Trifluorotoluene (Surr)	*119*		*50 - 150*

Lab Sample ID: LCSD 580-290422/3-A
Matrix: Solid
Analysis Batch: 290426

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 290422

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline			40.0	43.3		mg/Kg		108	80 - 120	6	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*50 - 150*
Trifluorotoluene (Surr)	*120*		*50 - 150*

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

Lab Sample ID: MB 580-290093/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 290662 — **Prep Batch: 290093**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50		mg/Kg		12/01/18 19:40	12/10/18 19:26	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		12/01/18 19:40	12/10/18 19:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*91*		*50 - 150*	*12/01/18 19:40*	*12/10/18 19:26*	*1*

Lab Sample ID: LCS 580-290093/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 290662 — **Prep Batch: 290093**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	448		mg/Kg		90	70 - 125		
Motor Oil (>C24-C36)			500	481		mg/Kg		96	70 - 129		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*70*		*50 - 150*

Lab Sample ID: LCSD 580-290093/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 290662 — **Prep Batch: 290093**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	455		mg/Kg		91	70 - 125	2	16
Motor Oil (>C24-C36)			500	495		mg/Kg		99	70 - 129	3	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*76*		*50 - 150*

Lab Sample ID: 580-82158-1 DU — **Client Sample ID: SG-4-5**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 290662 — **Prep Batch: 290093**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
#2 Diesel (C10-C24)	ND			ND		mg/Kg	☼			NC	35
Motor Oil (>C24-C36)	56			ND	F5	mg/Kg	☼			55	35

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
o-Terphenyl	*90*		*50 - 150*

Method: D 2216 - Percent Moisture

Lab Sample ID: 580-82158-1 DU — **Client Sample ID: SG-4-5**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 290057

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	91.5			91.4		%				0.06	20

Method: D 2216 - Percent Moisture (Continued)

Lab Sample ID: 580-82158-1 DU
Matrix: Solid
Analysis Batch: 290057

Client Sample ID: SG-4-5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	8.5			8.6		%				0.6	20

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-82158-1

Client Sample ID: SG-4-5 — **Lab Sample ID: 580-82158-1**
Date Collected: 11/27/18 10:00 — **Matrix: Solid**
Date Received: 11/28/18 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	290057	11/30/18 14:31	BAH	TAL SEA

Client Sample ID: SG-4-5 — **Lab Sample ID: 580-82158-1**
Date Collected: 11/27/18 10:00 — **Matrix: Solid**
Date Received: 11/28/18 12:50 — **Percent Solids: 91.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			561068	12/03/18 10:55	DHC	TAL NSH
Total/NA	Analysis	8260C		1	561023	12/03/18 16:05	SW1	TAL NSH
Total/NA	Prep	5035			290422	12/06/18 10:40	CJB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	290426	12/06/18 22:38	T1W	TAL SEA
Total/NA	Prep	3546			290093	12/01/18 19:40	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	290662	12/11/18 03:44	Z1R	TAL SEA

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-82158-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

Laboratory: TestAmerica Nashville

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	06-30-19
Arizona	State Program	9	AZ0473	05-05-19
Arkansas DEQ	State Program	6	88-0737	04-25-19
California	State Program	9	2938	10-31-18 *
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-19
Georgia	State Program	4	NA: NELAP & A2LA	12-31-19
Illinois	NELAP	5	200010	12-09-18 *
Iowa	State Program	7	131	04-01-20
Kansas	NELAP	7	E-10229	10-31-18 *
Kentucky (UST)	State Program	4	19	06-30-19
Kentucky (WW)	State Program	4	90038	12-31-18
Louisiana	NELAP	6	30613	06-30-19
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-19
Massachusetts	State Program	1	M-TN032	06-30-19
Minnesota	NELAP	5	047-999-345	12-31-18
Mississippi	State Program	4	N/A	06-30-19
Montana (UST)	State Program	8	NA	02-24-20
Nevada	State Program	9	TN00032	07-31-19
New Hampshire	NELAP	1	2963	10-09-19
New Jersey	NELAP	2	TN965	06-30-19
New York	NELAP	2	11342	03-31-19
North Carolina (WW/SW)	State Program	4	387	12-31-18
North Dakota	State Program	8	R-146	06-30-19
Ohio VAP	State Program	5	CL0033	07-06-19
Oklahoma	State Program	6	9412	08-31-19
Oregon	NELAP	10	TN200001	04-26-19
Pennsylvania	NELAP	3	68-00585	07-31-19
Rhode Island	State Program	1	LAO00268	12-30-18
South Carolina	State Program	4	84009 (001)	02-28-19
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-19
USDA	Federal		P330-13-00306	12-01-19
Utah	NELAP	8	TN00032	07-31-19
Virginia	NELAP	3	460152	06-14-19
Washington	State Program	10	C789	07-19-19
West Virginia DEP	State Program	3	219	02-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-82158-1

Laboratory: TestAmerica Nashville (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998020430	08-31-19
Wyoming (UST)	A2LA	8	453.07	12-31-19

Sample Summary

Client: Antea USA, Inc.
Project/Site: BP -ARCO 980

TestAmerica Job ID: 580-82158-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-82158-1	SG-4-5	Solid	11/27/18 10:00	11/28/18 12:50

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ____ No X | Page 1 of 1

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number:

Loc: 580
82158

Lab Name: Test America	BP/ARC Facility Address: 10822 Roosevelt Way NE	Consultant/Contractor: Antea Group	
Lab Address: 5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code: Seattle, WA	Consultant/Contractor Project No: 00980SA181.20100	
Lab PM: Elaine Walker	Lead Regulatory Agency: WA DOE - NW Region	Address: 4006 148th Ave NE, Redmond, WA 98052	
Lab Phone: 253.248.4972	California Global ID No.: NA	Consultant/Contractor PM: Eric Sanchez	
Lab Shipping Accnt: NA	Enfos Proposal No: 009VH-0006/WR321243	Phone: 425-498-7717 Email: Eric.Sanchez@anteagroup.com	
Lab Bottle Order No: NA	Accounting Mode: Provision X OOC-BU ____ OOC-RM ____	Send/Submit EDD to: Eric.Sanchez@anteagroup.com	
Other Info: elaine.walker@testamericainc.com	Stage 2_Select (20) Activity Additional Data Collection (100)	Invoice To: BP-RM ____ BP/ARC X	
BP/RM PM: Wade Melton			
PM Phone: 360-594-7978			
PM Email: wade.melton@bp.com			

Sample Details | **Requested Analyses** | **Report Type & QC Level**

Report Type & QC Level: Limited (Standard) Package ____ ; Limited Plus Package ____ ; Full Package ____

Lab No.	Sample Description	Date	Time	Field Matrix	Start Depth	End Depth	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Filt	Pres	Analysis: BTEX by EPA 8260	MTBE by EPA 8260	NWTPH-Gx	NWTPH-Dx	Pb-T by EPA 6020	Pb-D by EPA 6020	EDB/EDC	Naphthalenes
	SG-4-5	11/27/18	1000	S	4.5	5	FT	G	5			X	X	X	X			X	X

580-82158 Chain of Custody

Therm. ID: A2 Cor: 5.5 ° Unc: 5.5 °
Cooler Dsc: Lg Sled
Packing: Bubble
Cust. Seal: Yes Y No ____
Blue Ice, Wet, Dry, None
FedEx: ____
UPS: ____
Lab Cour: Y
Other: ____

Sampler's Name: Eric Sanchez
Sampler's Company: Antea Group
Ship Method: Courier Ship Date: 11/28/18
Shipment Tracking No:

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Eric Sanchez/Antea	11/28/18	1250	[signature] TA-SF-11	11/28/18	12 50

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP LaMP Soil/H2O COC July 2018

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Page 1 of 1

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ____ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number:

Loc: 580
82158

Lab Name:	Test America	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA181.20100
Lab PM:	Elaine Walker	Lead Regulatory Agency:	WA DOE - NW Region	Address:	4006 148th Ave NE, Redmond, WA 98052
Lab Phone:	253.248.4972	California Global ID No.:	NA	Consultant/Contractor PM:	Eric Sanchez
Lab Shipping Accnt:	NA	Enfos Proposal No:	009VH-0006/WR321243	Phone: 425-498-7717	Email: Eric.Sanchez@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision ___X___ OOC-BU _____ OOC-RM _____	Send/Submit EDD to:	Eric.Sanchez@anteagroup.com
Other Info:	elaine.walker@testamericainc.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM _____ BP/ARC ___X___
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level

Limited (Standard) Package ____

Limited Plus Package ____

Full Package ____

580-82158 Chain of Custody

Lab No.	Sample Description	Date	Time	Field Matrix	Start Depth	End Depth	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Filt	Pres	Analysis	BTEX by EPA 8260	MTBE by EPA 8260	NWTPH-Gx	NWTPH-Dx	Pb-T by EPA 6020	Pb-D by EPA 6020	EDB/EDC	Naphthalenes
	SG-4-5	11/27/18	1000	S	4.5	5	FT	G	5				X	X	X	X			X	X

Therm. ID: A2 Cor: 5.5 ° Unc: 5.5 °

Cooler Dsc: Lg Blue

Packing: Bubble

Cust. Seal: Yes Y No ____

Blue Ice, Wet, Dry, None

FedEx: ____

UPS: ____

Lab Cour: X

Other: ____

Sampler's Name:	Eric Sanchez					
Sampler's Company:	Antea Group	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Ship Method:	Courier Ship Date: 11/28/18	Eric Sanchez/Antea	11/28/18	1250	TASF H	11/26/18	12 50
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP LaMP Soil/H2O COC July 2018

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

580-82158 Chain of Custody

Cooler Received/Opened On 12/1/2018 @ 10:35

Time Samples Removed From Cooler 13:40 Time Samples Placed In Storage 13:41 (2 Hour Window)

1. Tracking # 8307 (last 4 digits, FedEx) Courier: FedEx

IR Gun ID 17960358 pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: -1.2 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES NO NA

If yes, how many and where: 1 front

5. Were the seals intact, signed, and dated correctly? YES NO NA

6. Were custody papers inside cooler? YES NO NA

I certify that I opened the cooler and answered questions 1-6 (intial) _____

7. Were custody seals on containers: YES NO and Intact YES NO NA

Were these signed and dated correctly? YES NO NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES NO NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES NO NA

12. Did all container labels and tags agree with custody papers? YES NO NA

13a. Were VOA vials received? YES NO NA

b. Was there any observable headspace present in any VOA vial? YES NO NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES NO NA If multiple coolers, sequence # 1

I certify that I unloaded the cooler and answered questions 7-14 (intial) KA

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES NO NA

b. Did the bottle labels indicate that the correct preservatives were used YES NO NA

16. Was residual chlorine present? YES NO NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) KA

17. Were custody papers properly filled out (ink, signed, etc)? YES NO NA

18. Did you sign the custody papers in the appropriate place? YES NO NA

19. Were correct containers used for the analysis requested? YES NO NA

20. Was sufficient amount of sample sent in each container? YES NO NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) KA

I certify that I attached a label with the unique LIMS number to each container (intial) KA

21. Were there Non-Conformance issues at login? YES NO Was a NCM generated? YES NO #_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 8/23/17

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M		COC No: 580-61717.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Washington	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - Washington		Job #: 580-82158-1
Address: 2960 Foster Creighton Drive,	Due Date Requested: 12/10/2018	**Analysis Requested**		**Preservation Codes:**
City: Nashville	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
State, Zip: TN, 37204				M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Phone: 615-726-0177(Tel) 615-726-3404(Fax)	PO #:	Loc: 580 **82158**		
Email:	WO #:			
Project Name: BP -ARCO 980	Project #: 58010261			Other:
Site: ARCO 980 Antea	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C/5035FP_Calc (MOD) BTEX/MTBE/EDB/EDC/Naphthalene	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SG-4-5 (580-82158-1)	11/27/18	10:00 Pacific		Solid			X	2	BP LaMP ICOC, Analyze LCS/LCSD if no MS/MSD volume is available

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:		Method of Shipment:	
Relinquished by: [signature]	Date/Time: 11-30-18	Company: TASEA	Received by: [signature]	Date/Time: 12-01-2018 10:35	Company: TA-NAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 17.2		

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Antea USA, Inc.

Job Number: 580-82158-1

Login Number: 82158
List Number: 1
Creator: Hobbs, Kenneth F

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix E

Soil Vapor Laboratory Analytical Reports

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

February 05, 2019

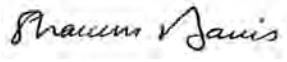
Megan Richard
Antea USA
4006 148th Ave NE
Redmond, WA 98052

RE: Project: ARCO 980
Pace Project No.: 10462737

Dear Megan Richard:
Enclosed are the analytical results for sample(s) received by the laboratory on January 29, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Shawn Davis
shawn.davis@pacelabs.com
612-607-6378
Project Manager

Enclosures

cc: Eric Sanchez, ELT_Antea Group, Washington

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: ARCO 980
Pace Project No.: 10462737

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: ARCO 980
Pace Project No.: 10462737

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10462737001	**SG-1_20190115**	Air	01/15/19 14:15	01/29/19 10:40
10462737002	**SG-4_20190115**	Air	01/15/19 16:07	01/29/19 10:40
10462737003	**Helium Blank**	Air	01/15/19 16:00	01/29/19 10:40
10462737004	**Unused Can 1575**	Air		01/29/19 10:40

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: ARCO 980
Pace Project No.: 10462737

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10462737001	**SG-1_20190115**	Method 3C Gases	NCK	1	PASI-M
		TO-15	MJL	8	PASI-M
10462737002	**SG-4_20190115**	Method 3C Gases	NCK	1	PASI-M
		TO-15	MJL	8	PASI-M
10462737003	**Helium Blank**	TO-15	MJL	8	PASI-M

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Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: ARCO 980
Pace Project No.: 10462737

Method: **Method 3C Gases**
Description: Method 3C AIR - Fixed Gases
Client: BP-Antea Group WA
Date: February 05, 2019

General Information:
2 samples were analyzed for Method 3C Gases. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 588290

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

- BLANK (Lab ID: 3183348)
  - Helium
- DUP (Lab ID: 3183351)
  - Helium
- LCS (Lab ID: 3183349)
  - Helium
- LCSD (Lab ID: 3183350)
  - Helium
- SG-1_20190115 (Lab ID: 10462737001)
  - Helium
- SG-4_20190115 (Lab ID: 10462737002)
  - Helium

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: ARCO 980
Pace Project No.: 10462737

Method: **TO-15**
Description: TO15 MSV AIR
Client: BP-Antea Group WA
Date: February 05, 2019

General Information:
3 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 588409

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SG-4_20190115 (Lab ID: 10462737002)
  - Benzene

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: ARCO 980
Pace Project No.: 10462737

Sample: SG-1_20190115 **Lab ID: 10462737001** Collected: 01/15/19 14:15 Received: 01/29/19 10:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Method 3C AIR - Fixed Gases	Analytical Method: Method 3C Gases							
Helium	ND	%	3.6	1		02/01/19 12:05	7440-59-7	N2
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	0.24	0.745		02/01/19 18:59	71-43-2	
Ethylbenzene	ND	ug/m3	0.66	0.745		02/01/19 18:59	100-41-4	
n-Hexane	ND	ug/m3	0.53	0.745		02/01/19 18:59	110-54-3	
Methyl-tert-butyl ether	ND	ug/m3	2.7	0.745		02/01/19 18:59	1634-04-4	
Naphthalene	ND	ug/m3	2.0	0.745		02/01/19 18:59	91-20-3	
Toluene	ND	ug/m3	0.57	0.745		02/01/19 18:59	108-88-3	
m&p-Xylene	ND	ug/m3	1.3	0.745		02/01/19 18:59	179601-23-1	
o-Xylene	ND	ug/m3	0.66	0.745		02/01/19 18:59	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: ARCO 980
Pace Project No.: 10462737

Sample: SG-4_20190115 **Lab ID: 10462737002** Collected: 01/15/19 16:07 Received: 01/29/19 10:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Method 3C AIR - Fixed Gases	Analytical Method: Method 3C Gases							
Helium	ND	%	3.6	1		02/01/19 12:16	7440-59-7	N2
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	14.2	43.8		02/02/19 14:52	71-43-2	D3
Ethylbenzene	ND	ug/m3	38.7	43.8		02/02/19 14:52	100-41-4	
n-Hexane	**47.7**	ug/m3	31.4	43.8		02/02/19 14:52	110-54-3	
Methyl-tert-butyl ether	ND	ug/m3	160	43.8		02/02/19 14:52	1634-04-4	
Naphthalene	ND	ug/m3	117	43.8		02/02/19 14:52	91-20-3	
Toluene	ND	ug/m3	33.6	43.8		02/02/19 14:52	108-88-3	
m&p-Xylene	ND	ug/m3	77.5	43.8		02/02/19 14:52	179601-23-1	
o-Xylene	ND	ug/m3	38.7	43.8		02/02/19 14:52	95-47-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: ARCO 980
Pace Project No.: 10462737

Sample: Helium Blank **Lab ID: 10462737003** Collected: 01/15/19 16:00 Received: 01/29/19 10:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**0.76**	ug/m3	0.44	1.34		02/01/19 15:49	71-43-2	
Ethylbenzene	ND	ug/m3	1.2	1.34		02/01/19 15:49	100-41-4	
n-Hexane	**1.8**	ug/m3	0.96	1.34		02/01/19 15:49	110-54-3	
Methyl-tert-butyl ether	ND	ug/m3	4.9	1.34		02/01/19 15:49	1634-04-4	
Naphthalene	ND	ug/m3	3.6	1.34		02/01/19 15:49	91-20-3	
Toluene	**4.5**	ug/m3	1.0	1.34		02/01/19 15:49	108-88-3	
m&p-Xylene	**3.3**	ug/m3	2.4	1.34		02/01/19 15:49	179601-23-1	
o-Xylene	ND	ug/m3	1.2	1.34		02/01/19 15:49	95-47-6	

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QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10462737

QC Batch: 588290 Analysis Method: Method 3C Gases
QC Batch Method: Method 3C Gases Analysis Description: METHOD 3C AIR - FIXED GASES
Associated Lab Samples: 10462737001, 10462737002

METHOD BLANK: 3183348 Matrix: Air
Associated Lab Samples: 10462737001, 10462737002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Helium	%	ND	3.6	02/01/19 11:49	N2

LABORATORY CONTROL SAMPLE & LCSD: 3183349 3183350

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Helium	%	18	18.9	19.3	105	107	70-130	2	30	N2

SAMPLE DUPLICATE: 3183351

Parameter	Units	10462659001 Result	Dup Result	RPD	Max RPD	Qualifiers
Helium	%	ND	ND		30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10462737

QC Batch: 588346 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10462737001, 10462737003

METHOD BLANK: 3183698 Matrix: Air
Associated Lab Samples: 10462737001, 10462737003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.16	02/01/19 13:03	
Ethylbenzene	ug/m3	ND	0.44	02/01/19 13:03	
m&p-Xylene	ug/m3	ND	0.88	02/01/19 13:03	
Methyl-tert-butyl ether	ug/m3	ND	1.8	02/01/19 13:03	
n-Hexane	ug/m3	ND	0.36	02/01/19 13:03	
Naphthalene	ug/m3	ND	1.3	02/01/19 13:03	
o-Xylene	ug/m3	ND	0.44	02/01/19 13:03	
Toluene	ug/m3	ND	0.38	02/01/19 13:03	

LABORATORY CONTROL SAMPLE: 3183699

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	34.4	30.3	88	70-130	
Ethylbenzene	ug/m3	45.5	40.4	89	67-131	
m&p-Xylene	ug/m3	45.9	46.6	102	70-132	
Methyl-tert-butyl ether	ug/m3	37.4	36.3	97	70-130	
n-Hexane	ug/m3	37.6	33.5	89	66-130	
Naphthalene	ug/m3	52.7	64.6	123	56-130	
o-Xylene	ug/m3	44.1	39.1	89	70-130	
Toluene	ug/m3	39.4	35.0	89	70-130	

SAMPLE DUPLICATE: 3183954

Parameter	Units	10462737003 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	0.76	0.73	4	25	
Ethylbenzene	ug/m3	ND	.93J		25	
m&p-Xylene	ug/m3	3.3	3.4	0	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	1.8	1.9	2	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	1.1J		25	
Toluene	ug/m3	4.5	4.5	0	25	

SAMPLE DUPLICATE: 3183955

Parameter	Units	10462836001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10462737

SAMPLE DUPLICATE: 3183955

Parameter	Units	10462836001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	1.9	1.9	2	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	ND		25	
Toluene	ug/m3	ND	.8J		25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10462737

QC Batch: 588409
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10462737002

METHOD BLANK: 3184076
Matrix: Air
Associated Lab Samples: 10462737002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	02/02/19 10:07	
Ethylbenzene	ug/m3	ND	0.88	02/02/19 10:07	
m&p-Xylene	ug/m3	ND	1.8	02/02/19 10:07	
Methyl-tert-butyl ether	ug/m3	ND	3.7	02/02/19 10:07	
n-Hexane	ug/m3	ND	0.72	02/02/19 10:07	
Naphthalene	ug/m3	ND	2.7	02/02/19 10:07	
o-Xylene	ug/m3	ND	0.88	02/02/19 10:07	
Toluene	ug/m3	ND	0.77	02/02/19 10:07	

LABORATORY CONTROL SAMPLE: 3184077

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	34.1	105	70-130	
Ethylbenzene	ug/m3	44.1	48.2	109	67-131	
m&p-Xylene	ug/m3	88.3	95.2	108	70-132	
Methyl-tert-butyl ether	ug/m3	36.6	40.1	109	70-130	
n-Hexane	ug/m3	35.8	35.8	100	66-130	
Naphthalene	ug/m3	53.3	50.5	95	56-130	
o-Xylene	ug/m3	44.1	47.5	108	70-130	
Toluene	ug/m3	38.3	41.8	109	70-130	

SAMPLE DUPLICATE: 3184093

Parameter	Units	10462834041 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	1.5	1.3	11	25	
Ethylbenzene	ug/m3	<1.6	ND		25	
m&p-Xylene	ug/m3	<3.2	ND		25	
Methyl-tert-butyl ether	ug/m3	<6.6	ND		25	
n-Hexane	ug/m3	<1.3	.95J		25	
Naphthalene	ug/m3	<4.8	ND		25	
o-Xylene	ug/m3	<1.6	ND		25	
Toluene	ug/m3	<1.4	ND		25	

SAMPLE DUPLICATE: 3184094

Parameter	Units	10462835001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	0.60	0.57	5	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10462737

SAMPLE DUPLICATE: 3184094

Parameter	Units	10462835001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethylbenzene	ug/m3	3.6	3.5	2	25	
m&p-Xylene	ug/m3	14.6	14.6	0	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	ND	.68J		25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	4.6	4.3	7	25	
Toluene	ug/m3	ND	.77J		25	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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QUALIFIERS

Project: ARCO 980
Pace Project No.: 10462737

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ARCO 980
Pace Project No.: 10462737

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10462737001	**SG-1_20190115**	Method 3C Gases	588290		
10462737002	**SG-4_20190115**	Method 3C Gases	588290		
10462737001	**SG-1_20190115**	TO-15	588346		
10462737002	**SG-4_20190115**	TO-15	588409		
10462737003	**Helium Blank**	TO-15	588346		

WO# : 10462737

10462737

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ____ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number:

Lab Name:	Pace Analytical	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	1700 Elm Street SE	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA181.20100
Lab PM:	Shawn Davis	Lead Regulatory Agency:	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	612.607.1700	California Global ID No.:	NA	Consultant/Contractor PM:	Eric Sanchez
Lab Shipping Accnt:	NA	Enfos Proposal No:	pending	Phone: 425-498-7717 Email:	Eric.Sanchez@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision X OOC-BU ____ OOC-RM ____	Send/Submit EDD to:	Eric.Sanchez@anteagroup.com
Other Info:	shawn.davis@pacelabs.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM ____ BP/ARC X
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level

Limited (Standard) Package ____

Limited Plus Package ____

Full Package ——

Lab No.	Sample Description	Date	Start/End time	Summa Can Number	Flow Controler Number	Field Matrix	Initial vacuum (inHg)	Final vacuum (inHg)	~~Depth Unit~~	Grab (G) or Composite (C)	Total Number of Containers	Filt	Pres	Analysis: Benzene	Toluene	Ethylbenzene	m,p xylenes	o xylene (TO-15)	Naphthalene	n hexane	MTBE	Helium (3C)	Comments
	SG-1-20190115	1/15/19	1333/1415	1721	1902	A	30	3		G	1			x	x	x	x	x	x	x	x	x	001
	SG-4-20190115	1/15/19	1527/1607	1483	1615	A	30	3		G	1			x	x	x	x	x	x	x	x	x	002
	Helium Blank	1/15/19	1600	0624	—	A	30	0		G	1			x	x	x	x	x	x	x	x	x — FS	003

Sampler's Name:	Eric Sanchez	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Antea Group	Eric Sanchez / Antea	1/25/19	1500	Pace	01/29/19	1040
Ship Method:	FedEx Ship Date: ~~12/2~~ 1/25/19						
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP LaMP Soil/H2O COC July 2018

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 11Oct2018 Page 1 of 1
	Document No.: F-MN-A-106-rev.16	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: BP

Project #: WO#: 10462737

PM: SRD Due Date: 02/05/19

CLIENT: BP_Antea WA

Courier: ☑Fed Ex ☐UPS ☐Speedee ☐Client ☐Commercial ☐Pace ☐Other:_____

Tracking Number: 4154 5 9908 6911

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☑Foam ☐None ☐Tin Can ☐Other:_____ **Temp Blank rec:** ☐Yes ☑No

Temp. (TO17 and TO13 samples only) (°C): — **Corrected Temp (°C):** — **Thermom. Used:** ☐G87A9170600254 ☐G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** ~ **Date & Initials of Person Examining Contents:** 01/29/19 ES

Type of ice Received ☐Blue ☐Wet ☑None

			Comments:
Chain of Custody Present?	☑Yes	☐No	1.
Chain of Custody Filled Out?	☑Yes	☐No	2.
Chain of Custody Relinquished?	☑Yes	☐No	3.
Sampler Name and/or Signature on COC?	☑Yes	☐No ☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No	5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No	6.
Rush Turn Around Time Requested?	☐Yes	☑No	7.
Sufficient Volume?	☑Yes	☐No	8.
Correct Containers Used?	☑Yes	☐No	9.
-Pace Containers Used?	☑Yes	☐No	
Containers Intact?	☑Yes	☐No	10.
Media: (Air Can) Airbag Filter TDT Passive			11. Individually Certified Cans Y (N) (list which samples)
Is sufficient information available to reconcile samples to the COC?	☑Yes	☐No	12.

Samples Received: FED EX Pressure Gauge # 10AIR35

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-1			-3.0	—					
" 4			-2.5	—					
Blank		0628	0.0	—					
unused	1575	1597	-29.0	—					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Shaun Davis **Date:** 1/29/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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February 11, 2019

Megan Richard
Antea USA
4006 148th Ave NE
Redmond, WA 98052

RE: Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Dear Megan Richard:
Enclosed are the analytical results for sample(s) received by the laboratory on February 04, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shawn Davis
shawn.davis@pacelabs.com
612-607-6378
Project Manager

Enclosures

cc: Eric Sanchez, ELT_Antea Group, Washington

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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CERTIFICATIONS

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10463260001	**SG-2-20190130**	Air	01/30/19 11:14	02/04/19 10:50
10463260002	**Unused Can 0594**	Air		02/04/19 10:50

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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(612)607-1700

SAMPLE ANALYTE COUNT

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10463260001	**SG-2-20190130**	Method 3C Gases	NCK	1	PASI-M
		TO-15	MG2	8	PASI-M

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Date: February 11, 2019

SG-2-20190130 (Lab ID: 10463260001)

- Sample was filled with Nitrogen prior to 3C analysis.

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PROJECT NARRATIVE

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Method: **Method 3C Gases**
Description: Method 3C AIR - Fixed Gases
Client: BP-Antea Group WA
Date: February 11, 2019

General Information:
1 sample was analyzed for Method 3C Gases. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 589028

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

- BLANK (Lab ID: 3186514)
  - Helium
- DUP (Lab ID: 3186517)
  - Helium
- LCS (Lab ID: 3186515)
  - Helium
- LCSD (Lab ID: 3186516)
  - Helium
- SG-2-20190130 (Lab ID: 10463260001)
  - Helium

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1700 Elm Street - Suite 200
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(612)607-1700

PROJECT NARRATIVE

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Method: **TO-15**
Description: TO15 MSV AIR
Client: BP-Antea Group WA
Date: February 11, 2019

General Information:
1 sample was analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 589229

R1: RPD value was outside control limits.

- DUP (Lab ID: 3187945)
  - n-Hexane

Additional Comments:

Analyte Comments:

QC Batch: 589229

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SG-2-20190130 (Lab ID: 10463260001)
  - Benzene

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Sample: SG-2-20190130 **Lab ID: 10463260001** Collected: 01/30/19 11:14 Received: 02/04/19 10:50 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Method 3C AIR - Fixed Gases	Analytical Method: Method 3C Gases								
Helium	ND	%	4.8	2.0	1.34		02/07/19 13:25	7440-59-7	N2
TO15 MSV AIR	Analytical Method: TO-15								
Benzene	ND	ug/m3	13.1	6.2	40.2		02/08/19 23:56	71-43-2	D3
Ethylbenzene	ND	ug/m3	35.5	12.3	40.2		02/08/19 23:56	100-41-4	
n-Hexane	ND	ug/m3	28.8	12.5	40.2		02/08/19 23:56	110-54-3	
Methyl-tert-butyl ether	ND	ug/m3	147	26.7	40.2		02/08/19 23:56	1634-04-4	
Naphthalene	ND	ug/m3	107	53.1	40.2		02/08/19 23:56	91-20-3	
Toluene	ND	ug/m3	30.8	14.1	40.2		02/08/19 23:56	108-88-3	
m&p-Xylene	ND	ug/m3	71.2	28.1	40.2		02/08/19 23:56	179601-23-1	
o-Xylene	ND	ug/m3	35.5	13.8	40.2		02/08/19 23:56	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

QC Batch: 589028 Analysis Method: Method 3C Gases
QC Batch Method: Method 3C Gases Analysis Description: METHOD 3C AIR - FIXED GASES
Associated Lab Samples: 10463260001

METHOD BLANK: 3186514 Matrix: Air
Associated Lab Samples: 10463260001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Helium	%	ND	3.6	1.5	02/07/19 12:50	N2

LABORATORY CONTROL SAMPLE & LCSD: 3186515 3186516

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Helium	%	18	19.6	20.2	109	112	70-130	3	30	N2

SAMPLE DUPLICATE: 3186517

Parameter	Units	10463260001 Result	Dup Result	RPD	Max RPD	Qualifiers
Helium	%	ND	ND		30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

QC Batch: 589229
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10463260001

METHOD BLANK: 3187512 Matrix: Air
Associated Lab Samples: 10463260001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.16	0.076	02/08/19 09:19	
Ethylbenzene	ug/m3	ND	0.44	0.15	02/08/19 09:19	
m&p-Xylene	ug/m3	ND	0.88	0.35	02/08/19 09:19	
Methyl-tert-butyl ether	ug/m3	ND	1.8	0.33	02/08/19 09:19	
n-Hexane	ug/m3	ND	0.36	0.16	02/08/19 09:19	
Naphthalene	ug/m3	ND	1.3	0.66	02/08/19 09:19	
o-Xylene	ug/m3	ND	0.44	0.17	02/08/19 09:19	
Toluene	ug/m3	ND	0.38	0.18	02/08/19 09:19	

LABORATORY CONTROL SAMPLE: 3187513

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	28.8	89	70-130	
Ethylbenzene	ug/m3	44.1	43.7	99	67-131	
m&p-Xylene	ug/m3	88.3	85.7	97	70-132	
Methyl-tert-butyl ether	ug/m3	36.6	36.5	100	70-130	
n-Hexane	ug/m3	35.8	33.6	94	66-130	
Naphthalene	ug/m3	53.3	62.8	118	56-130	
o-Xylene	ug/m3	44.1	45.4	103	70-130	
Toluene	ug/m3	38.3	35.9	94	70-130	

SAMPLE DUPLICATE: 3187944

Parameter	Units	10463296005 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	.4J		25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	ND	ND		25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	ND		25	
Toluene	ug/m3	ND	ND		25	

SAMPLE DUPLICATE: 3187945

Parameter	Units	10463296004 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	0.78	0.67	14	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

SAMPLE DUPLICATE: 3187945

Parameter	Units	10463296004 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	2.5	3.5	33	25	R1
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	ND		25	
Toluene	ug/m3	1.5	1.6	5	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

SAMPLE QUALIFIERS

Sample: 10463260001

[1]	Sample was filled with Nitrogen prior to 3C analysis.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ARCO Facility No. 00980
Pace Project No.: 10463260

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10463260001	**SG-2-20190130**	Method 3C Gases	589028		
10463260001	**SG-2-20190130**	TO-15	589229		

WO#: 10463260

10463260

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Page 1 of 1

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ___ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number:

Lab Name:	Pace Analytical	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	1700 Elm Street SE	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA181.20100
Lab PM:	Shawn Davis	Lead Regulatory Agency:	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	612.607.1700	California Global ID No.:	NA	Consultant/Contractor PM:	Eric Sanchez
Lab Shipping Accnt:	NA	Enfos Proposal No:	pending	Phone: 425-498-7717	Email: Eric.Sanchez@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision _X_ OOC-BU ___ OOC-RM ___	Send/Submit EDD to:	Eric.Sanchez@anteagroup.com
Other Info:	shawn.davis@pacelabs.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM ___ BP/ARC _X_
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level: Limited (Standard) Package ___ Limited Plus Package ___ Full Package ___

Sample Details / Requested Analyses (TO-15 low)

Lab No.	Sample Description	Date	Start/End time	Summa Can Number	Flow Controler Number	Field Matrix	Initial vacuum (inHg)	Final vacuum (inHg)		Grab (G) or Composite (C)	Total Number of Containers	Analysis	Benzene	Toluene	Ethylbenzene	m,p xylenes	o xylene	naphthalene	n hexane	MTBE	Helium - 3c	Comments
	SG-2-20190130	1/30/2019	1030/1114	3504	0705	A	30	3		G	1		X	X	X	X	X	X	X	X	X	001

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Eric Sanchez						
Sampler's Company:	Antea Group	Eric Sanchez/Antea	1/31/19	1400	FedEx		
Ship Method: FedEx	Ship Date: 1/31/2019				[illegible]/PACE	2-4-19	1050
Shipment Tracking No:	454599086922						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ______°F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP LaMP Soil/H2O COC July 2018

Proprietary and Confidential
Property of BP and its Affiliates

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 31Jan2019 Page 1 of 1
	Document No.: F-MN-A-106-rev.18	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: BP Antea **Project #:** **WO#: 10463260**

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exception** ☐

Tracking Number: 4545 9908 6922

PM: SRD **Due Date: 02/11/19**

CLIENT: BP_Antea WA

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Tin Can ☐ Other: _____ **Temp Blank rec:** ☐ Yes ☑ No

Temp. (TO17 and TO13 samples only) (°C): X **Corrected Temp (°C):** X **Thermometer Used:** ☐ G87A9170600254 ☐ G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** X **Date & Initials of Person Examining Contents:** 2-4-19 AA

Type of Ice Received ☐ Blue ☐ Wet ☑ None

		Comments:
Chain of Custody Present?	☑ Yes ☐ No	1.
Chain of Custody Filled Out?	☑ Yes ☐ No	2.
Chain of Custody Relinquished?	☑ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☑ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☑ No	6.
Rush Turn Around Time Requested?	☐ Yes ☑ No	7.
Sufficient Volume?	☑ Yes ☐ No	8.
Correct Containers Used? -Pace Containers Used?	☑ Yes ☐ No ☑ Yes ☐ No	9.
Containers Intact?	☑ Yes ☐ No	10.
Media: Air Can Airbag Filter TDT Passive		11. Individually Certified Cans Y N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☑ Yes ☐ No	12.
Do cans need to be pressurized (3C and ASTM 1946 DO NOT PRESSURIZE)?	☐ Yes ☑ No	13.

Samples Received: Pressure Gauge # ☐ 10AIR34 ☑ 10AIR35

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-2	3524	0705	-0.5	-0.5					
unused can	0594	1507	-29.5	—					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Shaun Davis **Date:** 2/5/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 01, 2019

Megan Richard
Antea USA
4006 148th Ave NE
Redmond, WA 98052

RE: Project: ARCO 980
Pace Project No.: 10471999

Dear Megan Richard:
Enclosed are the analytical results for sample(s) received by the laboratory on April 24, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shawn Davis
shawn.davis@pacelabs.com
612-607-6378
Project Manager

Enclosures

cc: Eric Sanchez, ELT_Antea Group, Washington

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: ARCO 980
Pace Project No.: 10471999

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: ARCO 980
Pace Project No.: 10471999

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10471999001	**SG-2-20190418**	Air	04/18/19 11:05	04/24/19 09:45
10471999002	**SG-4-20190418**	Air	04/18/19 13:05	04/24/19 09:45
10471999003	**UNUSED CAN 0053**	Air		04/24/19 09:45
10471999004	**UNUSED CAN 0005**	Air		04/24/19 09:45

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SAMPLE ANALYTE COUNT

Project: ARCO 980
Pace Project No.: 10471999

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10471999001	**SG-2-20190418**	Method 3C Gases	NCK	1	PASI-M
		TO-15	MJL	8	PASI-M
10471999002	**SG-4-20190418**	Method 3C Gases	NCK	1	PASI-M
		TO-15	MJL	8	PASI-M

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PROJECT NARRATIVE

Project: ARCO 980
Pace Project No.: 10471999

Method: **Method 3C Gases**
Description: Method 3C AIR - Fixed Gases
Client: BP-Antea Group WA
Date: May 01, 2019

General Information:
2 samples were analyzed for Method 3C Gases. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 602486

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

- BLANK (Lab ID: 3257602)
  - Helium
- DUP (Lab ID: 3257868)
  - Helium
- LCS (Lab ID: 3257603)
  - Helium
- LCSD (Lab ID: 3257604)
  - Helium
- SG-2-20190418 (Lab ID: 10471999001)
  - Helium
- SG-4-20190418 (Lab ID: 10471999002)
  - Helium

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PROJECT NARRATIVE

Project: ARCO 980
Pace Project No.: 10471999

Method: **TO-15**
Description: TO15 MSV AIR
Client: BP-Antea Group WA
Date: May 01, 2019

General Information:
2 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: ARCO 980
Pace Project No.: 10471999

Sample: SG-2-20190418 **Lab ID: 10471999001** Collected: 04/18/19 11:05 Received: 04/24/19 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Method 3C AIR - Fixed Gases	Analytical Method: Method 3C Gases								
Helium	ND	%	3.6	1.5	1		04/29/19 13:21	7440-59-7	N2
TO15 MSV AIR	Analytical Method: TO-15								
Benzene	ND	ug/m3	0.45	0.21	1.39		04/30/19 19:36	71-43-2	
Ethylbenzene	ND	ug/m3	1.2	0.42	1.39		04/30/19 19:36	100-41-4	
n-Hexane	**1.1**	ug/m3	1.0	0.43	1.39		04/30/19 19:36	110-54-3	
Methyl-tert-butyl ether	ND	ug/m3	5.1	0.92	1.39		04/30/19 19:36	1634-04-4	
Naphthalene	ND	ug/m3	1.8	0.91	0.69		05/01/19 10:04	91-20-3	
Toluene	ND	ug/m3	1.1	0.49	1.39		04/30/19 19:36	108-88-3	
m&p-Xylene	ND	ug/m3	2.5	0.97	1.39		04/30/19 19:36	179601-23-1	
o-Xylene	ND	ug/m3	1.2	0.48	1.39		04/30/19 19:36	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: ARCO 980
Pace Project No.: 10471999

Sample: SG-4-20190418 **Lab ID: 10471999002** Collected: 04/18/19 13:05 Received: 04/24/19 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Method 3C AIR - Fixed Gases	Analytical Method: Method 3C Gases								
Helium	ND	%	3.6	1.5	1		04/29/19 13:35	7440-59-7	N2
TO15 MSV AIR	Analytical Method: TO-15								
Benzene	ND	ug/m3	0.45	0.21	1.39		04/30/19 20:36	71-43-2	
Ethylbenzene	ND	ug/m3	1.2	0.42	1.39		04/30/19 20:36	100-41-4	
n-Hexane	ND	ug/m3	1.0	0.43	1.39		04/30/19 20:36	110-54-3	
Methyl-tert-butyl ether	ND	ug/m3	5.1	0.92	1.39		04/30/19 20:36	1634-04-4	
Naphthalene	ND	ug/m3	1.8	0.91	0.69		05/01/19 10:37	91-20-3	
Toluene	ND	ug/m3	1.1	0.49	1.39		04/30/19 20:36	108-88-3	
m&p-Xylene	ND	ug/m3	2.5	0.97	1.39		04/30/19 20:36	179601-23-1	
o-Xylene	ND	ug/m3	1.2	0.48	1.39		04/30/19 20:36	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10471999

QC Batch: 602486 Analysis Method: Method 3C Gases
QC Batch Method: Method 3C Gases Analysis Description: METHOD 3C AIR - FIXED GASES
Associated Lab Samples: 10471999001, 10471999002

METHOD BLANK: 3257602 Matrix: Air
Associated Lab Samples: 10471999001, 10471999002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Helium	%	ND	3.6	1.5	04/29/19 12:43	N2

LABORATORY CONTROL SAMPLE & LCSD: 3257603 3257604

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Helium	%	18	20.2	19.0	112	106	70-130	6	30	N2

SAMPLE DUPLICATE: 3257868

Parameter	Units	10472351001 Result	Dup Result	RPD	Max RPD	Qualifiers
Helium	%	ND	ND		30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10471999

QC Batch: 602680 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10471999001, 10471999002

METHOD BLANK: 3258442 Matrix: Air
Associated Lab Samples: 10471999001, 10471999002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	0.15	04/30/19 08:56	
Ethylbenzene	ug/m3	ND	0.88	0.30	04/30/19 08:56	
m&p-Xylene	ug/m3	ND	1.8	0.70	04/30/19 08:56	
Methyl-tert-butyl ether	ug/m3	ND	3.7	0.66	04/30/19 08:56	
n-Hexane	ug/m3	ND	0.72	0.31	04/30/19 08:56	
Naphthalene	ug/m3	ND	2.7	1.3	04/30/19 08:56	
o-Xylene	ug/m3	ND	0.88	0.34	04/30/19 08:56	
Toluene	ug/m3	ND	0.77	0.35	04/30/19 08:56	

LABORATORY CONTROL SAMPLE: 3258443

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	30.3	93	70-130	
Ethylbenzene	ug/m3	44.1	47.0	106	67-131	
m&p-Xylene	ug/m3	88.3	93.7	106	70-132	
Methyl-tert-butyl ether	ug/m3	36.6	35.9	98	70-130	
n-Hexane	ug/m3	35.8	33.4	93	66-130	
Naphthalene	ug/m3	53.3	52.9	99	56-130	
o-Xylene	ug/m3	44.1	46.2	105	70-130	
Toluene	ug/m3	38.3	37.2	97	70-130	

SAMPLE DUPLICATE: 3259997

Parameter	Units	10471507003 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	1.0	1.0	2	25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	3.3J		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	ND	ND		25	
Naphthalene	ug/m3	134	133	1	25	
o-Xylene	ug/m3	ND	ND		25	
Toluene	ug/m3	4.9	4.7	4	25	

SAMPLE DUPLICATE: 3259998

Parameter	Units	10471507005 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	1.5	1.5	4	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: ARCO 980
Pace Project No.: 10471999

SAMPLE DUPLICATE: 3259998

Parameter	Units	10471507005 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethylbenzene	ug/m3	ND	.94J		25	
m&p-Xylene	ug/m3	3.3	3.2	2	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
n-Hexane	ug/m3	2.7	2.5	7	25	
Naphthalene	ug/m3	4.0	3.7J		25	
o-Xylene	ug/m3	ND	1.1J		25	
Toluene	ug/m3	4.9	5.0	2	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: ARCO 980
Pace Project No.: 10471999

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: ARCO 980
Pace Project No.: 10471999

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10471999001	**SG-2-20190418**	Method 3C Gases	602486		
10471999002	**SG-4-20190418**	Method 3C Gases	602486		
10471999001	**SG-2-20190418**	TO-15	602680		
10471999002	**SG-4-20190418**	TO-15	602680		

WO# : 10471999

10471999

bp rm Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ____ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number:

Lab Name:	Pace Analytical	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	1700 Elm Street SE	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA181.20100
Lab PM:	Shawn Davis	Lead Regulatory Agency:	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	612.607.1700	California Global ID No.:	NA	Consultant/Contractor PM:	Eric Sanchez
Lab Shipping Accnt:	NA	Enfos Proposal No:	009VH-0010 / WR329961	Phone: 425-498-7717	Email: Eric.Sanchez@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision ___X___ OOC-BU ____ OOC-RM ____	Send/Submit EDD to:	Eric.Sanchez@anteagroup.com
Other Info:	shawn.davis@pacelabs.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM ____ BP/ARC ___X___
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Sample Details | **Requested Analyses** | **Report Type & QC Level**

Report Type & QC Level: Limited (Standard) Package ____ ; Limited Plus Package ____ ; Full Package ——

Lab No.	Sample Description	Date	Start/End time	Summa Can Number	Flow Controller Number	Field Matrix	Initial vacuum (inHg)	Final vacuum (inHg)	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Filt	Pres	Analysis: Benzene	Toluene	Ethylbenzene	m,p-xylenes	o-xylene (TO-15)	Naphthalene	n-hexane	MTBE	Helium	Comments
	SG-2-20190418	4/18/19	1029/1105	3633	0393	A	30	2.5	—	G	1			X	X	X	X	X	X	X	X	X	001
	SG-4-20190418	4/18/19	1225/1305	0962	0176	A	30	1	—	G	1			X	X	X	X	X	X	X	X	X	002

Sampler's Name:	Eric Sanchez	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Antea Group	Eric Sanchez / Antea	4/22/19	1200	FedEx		
Ship Method:	FedEx Ship Date: 4/18/19					4/24/19	945
Shipment Tracking No:	4545 9910 9261						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes (No) | Temp Blank: Yes / (No) | Cooler Temp on Receipt: ____ °F/C | Trip Blank: Yes (No) | MS/MSD Sample Submitted: Yes / (No)

BP LaMP Soil/H2O COC July 2018

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 31Jan2019 Page 1 of 1
	Document No.: F-MN-A-106-rev.18	

WO#: 10471999

Air Sample Condition Upon Receipt

Client Name: BP Antea

Project #:

PM: SRD **Due Date: 05/01/19**

CLIENT: BP_Antea WA

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exception** ☐

Tracking Number: USUS 9910 9264

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Tin Can ☐ Other: _____ **Temp Blank rec:** ☐ Yes ☒ No

Temp. (TO17 and TO13 samples only) (°C): — **Corrected Temp (°C):** —

Temp should be above freezing to 6°C **Correction Factor:** —

Thermometer Used: ☐ G87A9170600254 ☐ G87A9155100842

Date & Initials of Person Examining Contents: EV 4/24/19

Type of ice Received ☐ Blue ☐ Wet ☒ None

		Comments:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out?	☒ Yes ☐ No	2.
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☐ Yes ☒ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used?	☒ Yes ☐ No	9.
-Pace Containers Used?	☒ Yes ☐ No	
Containers Intact?	☒ Yes ☐ No	10.
Media: (Air Can) Airbag Filter TDT Passive		11. Individually Certified Cans Y (N) (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒ Yes ☐ No	12.
Do cans need to be pressurized (3C and ASTM 1946 DO NOT PRESSURIZE)?	☒ Yes ☐ No	13.

Samples Received: Pressure Gauge # ☐ 10AIR34 ☒ 10AIR35

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-2	3633	0393	-1						
SG-4	0962	0176	-1						
Unused	0053	0187	-28.5						
"	0005	0194	-28.5						

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Shannon Davis **Date:** 4/24/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-53855-1
Laboratory SDG: Washington State Department of Ecology
Client Project/Site: BP -ARCO 980
Revision: 1

For:
Antea USA Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Megan Richard

M. Elaine Walker

Authorized for release by:
10/8/2019 3:54:41 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

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Definitions/Glossary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-53855-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-53855-1

Revision 1: October 1,2019
Per client request, the report has been revised to include the alternate units of ug/m3. In addition, the "H" flags were removed as the analyses took place within the holding time.

Receipt
The samples were received on 8/30/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

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

Detection Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Client Sample ID: SG-1_20190827 — Lab Sample ID: 320-53855-1

No Detections.

Client Sample ID: SG-2_20190827 — Lab Sample ID: 320-53855-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.83		0.40		ppb v/v	1		TO-15	Total/NA
Ethylbenzene	0.76		0.40		ppb v/v	1		TO-15	Total/NA
Hexane	0.99		0.80		ppb v/v	1		TO-15	Total/NA
m,p-Xylene	1.7		0.80		ppb v/v	1		TO-15	Total/NA
o-Xylene	0.77		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	1.4		0.40		ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.7		1.3		ug/m3	1		TO-15	Total/NA
Ethylbenzene	3.3		1.7		ug/m3	1		TO-15	Total/NA
Hexane	3.5		2.8		ug/m3	1		TO-15	Total/NA
m,p-Xylene	7.3		3.5		ug/m3	1		TO-15	Total/NA
o-Xylene	3.4		1.7		ug/m3	1		TO-15	Total/NA
Toluene	5.3		1.5		ug/m3	1		TO-15	Total/NA

Client Sample ID: SG-3_20190827 — Lab Sample ID: 320-53855-3

No Detections.

Client Sample ID: SG-4_20190827 — Lab Sample ID: 320-53855-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Client Sample ID: SG-1_20190827

Lab Sample ID: 320-53855-1

Date Collected: 08/27/19 10:06
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ppb v/v			09/24/19 23:28	1
Ethylbenzene	ND		0.40		ppb v/v			09/24/19 23:28	1
Hexane	ND		0.80		ppb v/v			09/24/19 23:28	1
m,p-Xylene	ND		0.80		ppb v/v			09/24/19 23:28	1
Methyl-t-Butyl Ether (MTBE)	ND		0.80		ppb v/v			09/24/19 23:28	1
o-Xylene	ND		0.40		ppb v/v			09/24/19 23:28	1
Toluene	ND		0.40		ppb v/v			09/24/19 23:28	1
Naphthalene	ND		0.80		ppb v/v			09/24/19 23:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.3		ug/m3			09/24/19 23:28	1
Ethylbenzene	ND		1.7		ug/m3			09/24/19 23:28	1
Hexane	ND		2.8		ug/m3			09/24/19 23:28	1
m,p-Xylene	ND		3.5		ug/m3			09/24/19 23:28	1
Methyl-t-Butyl Ether (MTBE)	ND		2.9		ug/m3			09/24/19 23:28	1
o-Xylene	ND		1.7		ug/m3			09/24/19 23:28	1
Toluene	ND		1.5		ug/m3			09/24/19 23:28	1
Naphthalene	ND		4.2		ug/m3			09/24/19 23:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*		*09/24/19 23:28*	*1*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*09/24/19 23:28*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*09/24/19 23:28*	*1*

Client Sample ID: SG-2_20190827

Lab Sample ID: 320-53855-2

Date Collected: 08/27/19 13:41
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.83**		0.40		ppb v/v			09/25/19 00:25	1
Ethylbenzene	**0.76**		0.40		ppb v/v			09/25/19 00:25	1
Hexane	**0.99**		0.80		ppb v/v			09/25/19 00:25	1
m,p-Xylene	**1.7**		0.80		ppb v/v			09/25/19 00:25	1
Methyl-t-Butyl Ether (MTBE)	ND		0.80		ppb v/v			09/25/19 00:25	1
o-Xylene	**0.77**		0.40		ppb v/v			09/25/19 00:25	1
Toluene	**1.4**		0.40		ppb v/v			09/25/19 00:25	1
Naphthalene	ND		0.80		ppb v/v			09/25/19 00:25	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**2.7**		1.3		ug/m3			09/25/19 00:25	1
Ethylbenzene	**3.3**		1.7		ug/m3			09/25/19 00:25	1
Hexane	**3.5**		2.8		ug/m3			09/25/19 00:25	1
m,p-Xylene	**7.3**		3.5		ug/m3			09/25/19 00:25	1
Methyl-t-Butyl Ether (MTBE)	ND		2.9		ug/m3			09/25/19 00:25	1
o-Xylene	**3.4**		1.7		ug/m3			09/25/19 00:25	1
Toluene	**5.3**		1.5		ug/m3			09/25/19 00:25	1
Naphthalene	ND		4.2		ug/m3			09/25/19 00:25	1

Client Sample ID: SG-2_20190827

Lab Sample ID: 320-53855-2

Date Collected: 08/27/19 13:41
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*		*09/25/19 00:25*	*1*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*09/25/19 00:25*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*09/25/19 00:25*	*1*

Client Sample ID: SG-3_20190827

Lab Sample ID: 320-53855-3

Date Collected: 08/27/19 15:09
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ppb v/v			09/25/19 01:24	1
Ethylbenzene	ND		0.40		ppb v/v			09/25/19 01:24	1
Hexane	ND		0.80		ppb v/v			09/25/19 01:24	1
m,p-Xylene	ND		0.80		ppb v/v			09/25/19 01:24	1
Methyl-t-Butyl Ether (MTBE)	ND		0.80		ppb v/v			09/25/19 01:24	1
o-Xylene	ND		0.40		ppb v/v			09/25/19 01:24	1
Toluene	ND		0.40		ppb v/v			09/25/19 01:24	1
Naphthalene	ND		0.80		ppb v/v			09/25/19 01:24	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.3		ug/m3			09/25/19 01:24	1
Ethylbenzene	ND		1.7		ug/m3			09/25/19 01:24	1
Hexane	ND		2.8		ug/m3			09/25/19 01:24	1
m,p-Xylene	ND		3.5		ug/m3			09/25/19 01:24	1
Methyl-t-Butyl Ether (MTBE)	ND		2.9		ug/m3			09/25/19 01:24	1
o-Xylene	ND		1.7		ug/m3			09/25/19 01:24	1
Toluene	ND		1.5		ug/m3			09/25/19 01:24	1
Naphthalene	ND		4.2		ug/m3			09/25/19 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*		*09/25/19 01:24*	*1*
4-Bromofluorobenzene (Surr)	*83*		*70 - 130*		*09/25/19 01:24*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*09/25/19 01:24*	*1*

Client Sample ID: SG-4_20190827

Lab Sample ID: 320-53855-4

Date Collected: 08/27/19 11:53
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ppb v/v			09/25/19 03:21	1
Ethylbenzene	ND		0.40		ppb v/v			09/25/19 03:21	1
Hexane	ND		0.80		ppb v/v			09/25/19 03:21	1
m,p-Xylene	ND		0.80		ppb v/v			09/25/19 03:21	1
Methyl-t-Butyl Ether (MTBE)	ND		0.80		ppb v/v			09/25/19 03:21	1
o-Xylene	ND		0.40		ppb v/v			09/25/19 03:21	1
Toluene	ND		0.40		ppb v/v			09/25/19 03:21	1
Naphthalene	ND		0.80		ppb v/v			09/25/19 03:21	1

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Client Sample ID: SG-4_20190827
Date Collected: 08/27/19 11:53
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Lab Sample ID: 320-53855-4
Matrix: Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.3		ug/m3			09/25/19 03:21	1
Ethylbenzene	ND		1.7		ug/m3			09/25/19 03:21	1
Hexane	ND		2.8		ug/m3			09/25/19 03:21	1
m,p-Xylene	ND		3.5		ug/m3			09/25/19 03:21	1
Methyl-t-Butyl Ether (MTBE)	ND		2.9		ug/m3			09/25/19 03:21	1
o-Xylene	ND		1.7		ug/m3			09/25/19 03:21	1
Toluene	ND		1.5		ug/m3			09/25/19 03:21	1
Naphthalene	ND		4.2		ug/m3			09/25/19 03:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*		*09/25/19 03:21*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*09/25/19 03:21*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*09/25/19 03:21*	*1*

Surrogate Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	BFB	TOL
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)
320-53855-1	SG-1_20190827	96	94	99
320-53855-2	SG-2_20190827	98	90	98
320-53855-3	SG-3_20190827	100	83	99
320-53855-3 DU	SG-3_20190827	100	97	99
320-53855-4	SG-4_20190827	103	93	101
LCS 320-325786/4	Lab Control Sample	96	95	101
LCSD 320-325786/5	Lab Control Sample Dup	97	97	100
MB 320-325786/8	Method Blank	101	91	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-325786/8
Matrix: Air
Analysis Batch: 325786

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.13		ppb v/v			09/24/19 21:38	0.333
Ethylbenzene	ND		0.13		ppb v/v			09/24/19 21:38	0.333
Hexane	ND		0.27		ppb v/v			09/24/19 21:38	0.333
m,p-Xylene	ND		0.27		ppb v/v			09/24/19 21:38	0.333
Methyl-t-Butyl Ether (MTBE)	ND		0.27		ppb v/v			09/24/19 21:38	0.333
o-Xylene	ND		0.13		ppb v/v			09/24/19 21:38	0.333
Toluene	ND		0.13		ppb v/v			09/24/19 21:38	0.333
Naphthalene	ND		0.27		ppb v/v			09/24/19 21:38	0.333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.43		ug/m3			09/24/19 21:38	0.333
Ethylbenzene	ND		0.58		ug/m3			09/24/19 21:38	0.333
Hexane	ND		0.94		ug/m3			09/24/19 21:38	0.333
m,p-Xylene	ND		1.2		ug/m3			09/24/19 21:38	0.333
Methyl-t-Butyl Ether (MTBE)	ND		0.96		ug/m3			09/24/19 21:38	0.333
o-Xylene	ND		0.58		ug/m3			09/24/19 21:38	0.333
Toluene	ND		0.50		ug/m3			09/24/19 21:38	0.333
Naphthalene	ND		1.4		ug/m3			09/24/19 21:38	0.333

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*09/24/19 21:38*	*0.333*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*09/24/19 21:38*	*0.333*
Toluene-d8 (Surr)	*101*		*70 - 130*		*09/24/19 21:38*	*0.333*

Lab Sample ID: LCS 320-325786/4
Matrix: Air
Analysis Batch: 325786

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	21.0	20.9		ppb v/v		99	68 - 128
Ethylbenzene	21.0	16.6		ppb v/v		79	64 - 124
Hexane	22.0	22.0		ppb v/v		100	70 - 130
m,p-Xylene	40.8	32.9		ppb v/v		81	65 - 125
Methyl-t-Butyl Ether (MTBE)	21.4	19.8		ppb v/v		92	72 - 132
o-Xylene	20.8	17.7		ppb v/v		85	65 - 125
Toluene	21.2	20.1		ppb v/v		95	68 - 128
Naphthalene	21.4	19.1		ppb v/v		89	50 - 147

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	67	66.7		ug/m3		99	68 - 128
Ethylbenzene	91	72.1		ug/m3		79	64 - 124
Hexane	78	77.6		ug/m3		100	70 - 130
m,p-Xylene	180	143		ug/m3		81	65 - 125
Methyl-t-Butyl Ether (MTBE)	77	71.4		ug/m3		92	72 - 132
o-Xylene	90	77.0		ug/m3		85	65 - 125
Toluene	80	75.9		ug/m3		95	68 - 128
Naphthalene	110	99.9		ug/m3		89	50 - 147

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-325786/4
Matrix: Air
Analysis Batch: 325786

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

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 320-325786/5
Matrix: Air
Analysis Batch: 325786

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			21.0	21.4		ppb v/v		102	68 - 128	2	25
Ethylbenzene			21.0	19.7		ppb v/v		94	64 - 124	17	25
Hexane			22.0	22.2		ppb v/v		101	70 - 130	1	25
m,p-Xylene			40.8	37.9		ppb v/v		93	65 - 125	14	25
Methyl-t-Butyl Ether (MTBE)			21.4	20.7		ppb v/v		97	72 - 132	5	25
o-Xylene			20.8	19.5		ppb v/v		94	65 - 125	10	25
Toluene			21.2	21.4		ppb v/v		101	68 - 128	6	25
Naphthalene			21.4	20.0		ppb v/v		93	50 - 147	5	25

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			67	68.2		ug/m3		102	68 - 128	2	25
Ethylbenzene			91	85.7		ug/m3		94	64 - 124	17	25
Hexane			78	78.4		ug/m3		101	70 - 130	1	25
m,p-Xylene			180	165		ug/m3		93	65 - 125	14	25
Methyl-t-Butyl Ether (MTBE)			77	74.8		ug/m3		97	72 - 132	5	25
o-Xylene			90	84.8		ug/m3		94	65 - 125	10	25
Toluene			80	80.5		ug/m3		101	68 - 128	6	25
Naphthalene			110	105		ug/m3		93	50 - 147	5	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

Lab Sample ID: 320-53855-3 DU
Matrix: Air
Analysis Batch: 325786

Client Sample ID: SG-3_20190827
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Benzene	ND			ND		ppb v/v				NC	25
Ethylbenzene	ND			ND		ppb v/v				NC	25
Hexane	ND			ND		ppb v/v				NC	25
m,p-Xylene	ND			ND		ppb v/v				NC	25
Methyl-t-Butyl Ether (MTBE)	ND			ND		ppb v/v				NC	25
o-Xylene	ND			ND		ppb v/v				NC	25
Toluene	ND			ND		ppb v/v				NC	25
Naphthalene	ND			ND		ppb v/v				NC	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Benzene	ND			ND		ug/m3				NC	25
Ethylbenzene	ND			ND		ug/m3				NC	25
Hexane	ND			ND		ug/m3				NC	25
m,p-Xylene	ND			ND		ug/m3				NC	25
Methyl-t-Butyl Ether (MTBE)	ND			ND		ug/m3				NC	25
o-Xylene	ND			ND		ug/m3				NC	25
Toluene	ND			ND		ug/m3				NC	25
Naphthalene	ND			ND		ug/m3				NC	25

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

QC Association Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Air - GC/MS VOA

Analysis Batch: 325786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53855-1	SG-1_20190827	Total/NA	Air	TO-15	
320-53855-2	SG-2_20190827	Total/NA	Air	TO-15	
320-53855-3	SG-3_20190827	Total/NA	Air	TO-15	
320-53855-4	SG-4_20190827	Total/NA	Air	TO-15	
MB 320-325786/8	Method Blank	Total/NA	Air	TO-15	
LCS 320-325786/4	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-325786/5	Lab Control Sample Dup	Total/NA	Air	TO-15	
320-53855-3 DU	SG-3_20190827	Total/NA	Air	TO-15	

Lab Chronicle

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Client Sample ID: SG-1_20190827
Date Collected: 08/27/19 10:06
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-1
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	325786	09/24/19 23:28	AP1	TAL SAC

Client Sample ID: SG-2_20190827
Date Collected: 08/27/19 13:41
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-2
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	325786	09/25/19 00:25	AP1	TAL SAC

Client Sample ID: SG-3_20190827
Date Collected: 08/27/19 15:09
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-3
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	325786	09/25/19 01:24	AP1	TAL SAC

Client Sample ID: SG-4_20190827
Date Collected: 08/27/19 11:53
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-4
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	325786	09/25/19 03:21	AP1	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State Program	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	08-09-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
Arkansas DEQ	State Program	88-0691	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Maine	State Program	CA0004	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State Program	CA00044	07-31-20
New Hampshire	NELAP	2997	04-20-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA00044	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State Program	C553	02-17-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-1
SDG: Washington State Department of Ecology

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-53855-1	SG-1_20190827	Air	08/27/19 10:06	08/30/19 09:20	Air Canister (6-Liter) #7703
320-53855-2	SG-2_20190827	Air	08/27/19 13:41	08/30/19 09:20	Air Canister (6-Liter) #34000494
320-53855-3	SG-3_20190827	Air	08/27/19 15:09	08/30/19 09:20	Air Canister (6-Liter) #34000267
320-53855-4	SG-4_20190827	Air	08/27/19 11:53	08/30/19 09:20	Air Canister (6-Liter) #34000584

320-53855 Chain of Custody

Laboratory Management Program (LaMP) Chain of Custody Record

Soil, Sediment and Groundwater Samples

Page 1 of 1

BP Site Node Path: ARCO 980 | **Req Due Date (mm/dd/yy):** Standard TAT | Rush TAT Yes ___ No X

BP/RM Facility No: ARCO Facility No. 00980 | **Lab Work Order Number:**

Lab Name:	Test America	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA191.20100
Lab PM:	00980SA191.20100	WR329961/009VH-0006	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	253.248.4972	California Global ID No.:	NA	Consultant/Contractor PM:	Brad Jackson
Lab Shipping Accnt:	NA	Enfos Proposal No:	WR329961/009VH-0010	Phone: 503-863-2114	Email: brad.jackson@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision _X_ OOC-BU ___ OOC-RM ___	Send/Submit EDD to:	brad.jackson\@anteagroup.com
Other Info:	elaine.walker@testamericainc.com	Stage 2_Select (20)	Activity Additional Data Collection (100)	Invoice To:	BP-RM ___ BP/ARC _X_
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level: Limited (Standard) Package ___ ; Limited Plus Package ___ ; Full Package ___

Sample Details / Requested Analyses

Lab No.	e Description	Date	Start/End Time	Summa Can Number	Flow Controler Number	Field Matrix	Initial Vacuum (inHg)	Final Vacuum (inHg)	Grab (G) or Composite ©	Number of Containers	Analysis	Benzene - TO-15	Toluene - TO-15	Ethylbenzene - TO-15	m, p xylene - TO-15	o xylene - TO-15	naphthalene - TO-15 SIM	n-Hexane - TO-15	MTBE - TO-15	Helium - 3C	Comments
	SG-1_20190827	8/27/2019	09:27/10:06	7703	7667	A	30	5	G	1		X	X	X	X	X	X	X	X	X	
	SG-2_20190827	8/27/2019	12:59/13:41	34000494	7091	A	30	5	G	1		X	X	X	X	X	X	X	X	X	
	SG-3_20190827	8/27/2019	14:20/15:09	34000267	7222	A	30	5	G	1		X	X	X	X	X	X	X	X	X	
	SG-4_20190827	8/27/2019	11:09/11:53	34000584	8596	A	30	3	G	1		X	X	X	X	X	X	X	X	X	

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Eric Sanchez	Eric Sanchez / Antea	8/29/19	1215	B. Hall SEA TA	8-29-19	1215
Sampler's Company:	Antea Group	B. Hall SEA TA	8/29/19	1330	Galeriela [illegible]	8-30-19	
Ship Method: Courier	Ship Date: 8/29/2019						
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No | Temp Blank: Yes / No N/A | Cooler Temp on Receipt: 2.1 / 1.8 °F/C | Trip Blank: Yes / No N/A | MS/MSD Sample Submitted: Yes / No N/A

AC-AIR S/N 160190838 [illegible] 8/30/19

BP LaMP Soil/H2O COC July 2018

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Property of BP and its Affiliates

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-53855
Sample # 1

Client/Project:		VFR ID:		
Canister Serial #:	7703	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.65	09/09/19	ccb
FINAL PRESSURE (PSIA)	20.11	09/09/19	ccb
Pressurization Gas: ☑ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 1.73			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.73		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

Date	Instr.	File #
9/10/2019	ATMS7	

Canister DF = 1.73 X Load DF = 0.5800464 X Bag DF = 1 = FINAL DF 1.001264651
250 (LVf mLs) / BVf (mLs)
431 (LVi mLs) / Bvi (mLs)

Date	Instr.	File #
9/17/2019	ATMS9	

Canister DF = 1.73 X Load DF = 0.5800464 X Bag DF = 1 = FINAL DF 1.001264651
LVf (mLs) 250 / BVf (mLs)
LVi (mLs) 431 / Bvi (mLs)

Date	Instr.	File #
9/24/2019	ATMS9	

Canister DF = 1.73 X Load DF = 0.5800464 X Bag DF = 1 = FINAL DF 1.001264651
LVf (mLs) 250 / BVf (mLs)
LVi (mLs) 431 / Bvi (mLs)

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-53855
Sample # 2

Client/Project:		VFR ID:		
Canister Serial #:	34000494	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.24	09/09/19	ccb
FINAL PRESSURE (PSIA)	20.50	09/09/19	ccb
Pressurization Gas: ☑ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 1.67			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.67		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

Date	Instr.	File #
9/10/2019	ATMS7	

Canister DF = 1.67 X Load DF = 0.5980861 X Bag DF = 1 = FINAL DF 1.001696532
250 (LVf) / BVf (mLs)
418 (LVi) / Bvi (mLs)

Date	Instr.	File #
9/17/2019	ATMS9	

Canister DF = 1.67 X Load DF = 0.5980861 X Bag DF = 1 = FINAL DF 1.001696532
LVf (mLs) 250 / BVf (mLs)
LVi (mLs) 418 / Bvi (mLs)

Date	Instr.	File #
9/24/2019	ATMS9	

Canister DF = 1.67 X Load DF = 0.5980861 X Bag DF = 1 = FINAL DF 1.001696532
LVf (mLs) 250 / BVf (mLs)
LVi (mLs) 418 / Bvi (mLs)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-53855
Sample # 3

Client/Project:		VFR ID:		
Canister Serial #:	34000267	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.79	09/09/19	ccb
FINAL PRESSURE (PSIA)	20.21	09/09/19	ccb
Pressurization Gas: ☑ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 1.71			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.71		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

Date	Instr.	File #
9/10/2019	ATMS7	

Canister DF = 1.71 X Load DF = 0.5841121 X Bag DF = 1 = FINAL DF 1.001264338
250 BVf (mLs)
428 Bvi (mLs)

Date	Instr.	File #
9/17/2019	ATMS9	

Canister DF = 1.71 X Load DF = 0.5841121 X Bag DF = 1 = FINAL DF 1.001264338
LVf (mLs) 250 BVf (mLs)
LVi (mLs) 428 Bvi (mLs)

Date	Instr.	File #
9/24/2019	ATMS9	

Canister DF = 1.71 X Load DF = #DIV/0! X Bag DF = 1 = FINAL DF #DIV/0!
LVf (mLs) 250 BVf (mLs)
LVi (mLs) Bvi (mLs)

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CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-53855
Sample # 4

Client/Project:		VFR ID:		
Canister Serial #:	34000584	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.55	09/09/19	ccb
FINAL PRESSURE (PSIA)	20.13	09/09/19	ccb
Pressurization Gas: ☑ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 1.60			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.60		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

Date	Instr.	File #
9/10/2019	ATMS7	

Canister DF = 1.60 X Load DF = 0.6234414 X Bag DF = 1 = FINAL DF 0.999990065
250 BVf (mLs)
401 Bvi (mLs)

Date	Instr.	File #
9/17/2019	ATMS9	

Canister DF = 1.60 X Load DF = 0.6234414 X Bag DF = 1 = FINAL DF 0.999990065
LVf (mLs) 250 BVf (mLs)
LVi (mLs) 401 Bvi (mLs)

Date	Instr.	File #
9/24/2019	ATMS9	

Canister DF = 1.60 X Load DF = 0.6234414 X Bag DF = 1 = FINAL DF 0.999990065
LVf (mLs) 250 BVf (mLs)
LVi (mLs) 401 Bvi (mLs)

CANISTER RECEIVING

Canister ID	Flow ID	Canister ID	Flow ID
1	1 7796	16	16
2 77 03	2 7476	17	17
3 34000584	3 7222	18	18
4 34000494	4 8596	19	19
5 34000267	5 7091	20	20
6	6	21	21
7	7	22	22
8	8	23	23
9	9	24	24
10	10	25	25
11	11	26	26
12	12	27	27
13	13	28	28
14	14	29	29
15	15	30	30

GMT 8/30/19

325B Pelican Case Inventory

Case ID:_____ # of Filter Caps:_____ Zip Seal:

Temperature:_____ # of Sample Tubes:_____

# of Wrenches:_____ # of Unused Tubes:_____

# of Gloves:_____

320-53855 Field Sheet

Sacramento

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Receiving Notes - Job_____

Service: FedEx UPS Lab Courier Client Drop Off

P.O. Std. Overnight 2-Day Ground Other:_____

Tracking #: 1 of 2 118407545569

2 of 2 118407545570

Notes:_____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Cooler Custody Seal: 497131; 497132

Transferred by Sacramento - Yes ☐ No ☒

Bags: _____ 1L, _____ 2L, _____ 10L n/a

Canisters: _____ 1L, 4 6L, TA ☒ Non TA ☐

Canisters Unused: _____ 1L, 1 6L

Co-Locators 0, # Gauges: 0

Flow Regulators: 4

Initial & Date GMT 8/30/19 9:20

CANISTER RECEIVING

Canister ID	Flow ID	Canister ID	Flow ID
1	~~1~~ 7796	~~16~~	16
2 77 03	2 7476	17	17
3 34000584	3 7222	18	18
4 34000494	4 8596	19	19
5 34000267	5 7091	20	20
6	6	21	21
7	7	22	22
8	8	23	23
9	9	24	24
10	10	25	25
11	11	26	26
12	12	27	27
13	13	28	28
14	14	29	29
15	15	30	30

GMT 8/30/19

325B Pelican Case Inventory

Case ID:_____ # of Filter Caps:_____ Zip Seal:

Temperature:_____ # of Sample Tubes:_____

# of Wrenches:_____ # of Unused Tubes:_____

# of Gloves:_____

320-53855 Field Sheet

Sacramento

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Receiving Notes - Job_____

Service: FedEx UPS Lab Courier Client Drop Off

P.O. Std. Overnight 2-Day Ground Other:_____

Tracking #: 1 → 2 1184 0754 5569

2 → 2 1184 0754 5570

Notes:_____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Cooler Custody Seal: 497131 ; 497132

Transferred by Sacramento - Yes ☐ No ☒

Bags: _____ 1L, _____ 2L, _____ 10L n/a

Canisters: _____ 1L, 4 6L, TA ☒ Non TA ☐

Canisters Unused: _____ 1L, 1 6L

Co-Locators 0, # Gauges: 0

Flow Regulators: 4

Initial & Date GMT 8/30/19 9:20

eurofins | Environment Testing TestAmerica

ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
TA-SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US

SHIP DATE: 29AUG19
ACTWGT: 7.80 LB
CAD: 989746/CAFE3310

BILL RECIPIENT

TO SAMPLE RECEIVING
TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 95605
(916) 373-6600
INV:
PO:
REF:
DEPT:

FedEx Express

J191219061901uv

Part # 159471-434 RIT EXP 05/20

TRK# 0201 1184 0754 5569
MASTER

1 of 2

FRI - 30 AUG 10:30A
PRIORITY OVERNIGHT

95605
CA-US SMF

WD BLUA

eurofins | Environment Testing TestAmerica

ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
TA-SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US

SHIP DATE: 29AUG19
ACTWGT: 29.15 LB
CAD: 989746/CAFE3310

BILL RECIPIENT

TO SAMPLE RECEIVING
TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 95605
(916) 373-6600
INV:
PO:
REF:
DEPT:

FedEx Express

J191219061901uv

Part # 159471-434 RIT EXP 05/20

MPS# 0263 1184 0754 5570
Mstr# 1184 0754 5569

2 of 2

FRI - 30 AUG 10:30A
PRIORITY OVERNIGHT

0201

95605
CA-US SMF

WD BLUA

Custody Seal

DATE

SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
497131

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
497132

Login Sample Receipt Checklist

Client: Antea USA Inc.

Job Number: 320-53855-1
SDG Number: Washington State Department of Ecology

Login Number: 53855
List Number: 1
Creator: Iliev, Gabriela K

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	497131;497132
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	True	21.8 Degree Celsius
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Canister QC Certification
Batch Certification

Date Cleaned/Batch ID: A07/03/19 SCAN

Date of QC: 7/11/19

320-52017 Chain of Custody

Data File Number: C:\MSDCHEM\1\DATA\190711\

(File ID for certification analysis of canister designated below)

CANISTER ID NUMBERS

*	34002048 ms7071125.d
	34001290
	34001364
	34000494
	34001212
	34000267
	34000584
	7796
	34000543
	34002010
	34000425
	7703

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type* " indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED

1st Level Reviewed By — Date: 7/12/19

2nd Level Reviewed By — Date: 7/19/19

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-52017-1

SDG No.:

Client Sample ID: 34002048 Lab Sample ID: 320-52017-1

Matrix: Air Lab File ID: MS7071125.D

Analysis Method: TO-15 Date Collected: 07/08/2019 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/12/2019 09:29

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 307011 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.27
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-52017-1

SDG No.:

Client Sample ID: 34002048 Lab Sample ID: 320-52017-1

Matrix: Air Lab File ID: MS7071125.D

Analysis Method: TO-15 Date Collected: 07/08/2019 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/12/2019 09:29

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 307011 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.12
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.10	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	0.072	J	0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.21
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-52017-1

SDG No.:

Client Sample ID: 34002048 Lab Sample ID: 320-52017-1

Matrix: Air Lab File ID: MS7071125.D

Analysis Method: TO-15 Date Collected: 07/08/2019 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/12/2019 09:29

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 307011 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054
1330-20-7	Xylenes, Total	ND		1.2	0.074
87-61-6	1,2,3-Trichlorobenzene	ND		2.0	0.62
60-29-7	Ethyl ether	ND		0.80	0.20
71-36-3	n-Butanol	ND		2.0	0.26
111-84-2	n-Nonane	ND		0.80	0.058

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	94		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D
Lims ID: 320-52017-A-1
Client ID: 34002048
Sample Type: Client
Inject. Date: 12-Jul-2019 09:29:30 ALS Bottle#: 16 Worklist Smp#: 25
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 320-52089-A-1
Misc. Info.: 35 mL
Operator ID: LHS Instrument ID: ATMS7

Method: \\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\TO15_ATMS7N.m
Limit Group: MSA - TO15 - ICAL
Last Update: 12-Jul-2019 10:48:24 Calib Date: 09-Jul-2019 18:23:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\ATMS7\20190709-79154.b\MS7070911.D

Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
Process Host: CTX0339

First Level Reviewer: leeh Date: 12-Jul-2019 10:48:24

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.274	12.286	-0.012	95	172273	10.0	
* 2 1,4-Difluorobenzene	114	14.385	14.397	-0.012	97	709820	10.0	
* 3 Chlorobenzene-d5 (IS)	117	21.023	21.029	-0.005	92	609944	10.0	
$ 4 1,2-Dichloroethane-d4 (Sur	65	13.455	13.455	-0.012	98	326848	9.35	
$ 5 Toluene-d8 (Surr)	100	17.756	17.747	-0.006	98	516832	10.1	
$ 6 4-Bromofluorobenzene (Surr	95	23.566	23.565	-0.005	83	466829	9.69	
11 Propene	41	4.098	4.094	0.000	88	1451	0.0679	
13 Dichlorodifluoromethane	85	4.159	4.155	0.000	96	3053	0.0519	
16 Chloromethane	50	4.615	4.598	0.012	15	2702	0.1228	
17 Butane	43	4.816	4.823	-0.012	82	2912	0.0816	
32 Acetone	43	7.493	7.467	0.019	97	5612	0.1644	
39 Methylene Chloride	49	8.813	8.804	0.000	94	3244	0.1012	
40 Carbon disulfide	76	8.849	8.853	-0.012	95	2371	0.0514	
73 n-Octane	43	17.750	17.771	-0.036	43	5139	0.0722	
87 m-Xylene & p-Xylene	91	21.461	21.454	0.001	95	4311	0.0480	
89 Styrene	104	22.385	22.385	-0.006	86	2351	0.0343	
90 Bromoform	173	22.957	22.957	-0.006	55	1022	0.0223	
102 4-Ethyltoluene	120	24.229	24.216	0.007	96	1073	0.0278	
107 1,2,4-Trimethylbenzene	120	25.105	25.103	-0.006	81	1455	0.0264	
110 1,3-Dichlorobenzene	146	25.871	25.870	-0.006	92	3239	0.0523	
111 1,4-Dichlorobenzene	146	26.066	26.071	-0.012	84	3267	0.0550	
113 Benzyl chloride	91	26.248	26.241	0.000	95	6540	0.0607	
116 1,2-Dichlorobenzene	146	26.802	26.800	-0.006	89	2874	0.0459	
119 1,2,4-Trichlorobenzene	180	30.118	30.115	-0.005	89	3544	0.0602	
121 Naphthalene	128	30.568	30.565	-0.006	98	10160	0.0646	
122 1,2,3-Trichlorobenzene	180	31.079	31.076	-0.006	92	3833	0.0628	
S 150 Xylenes, Total	91				0		0.0480	

Reagents:

VAMSIS50_00016 Amount Added: 50.00 Units: mL Run Reagent

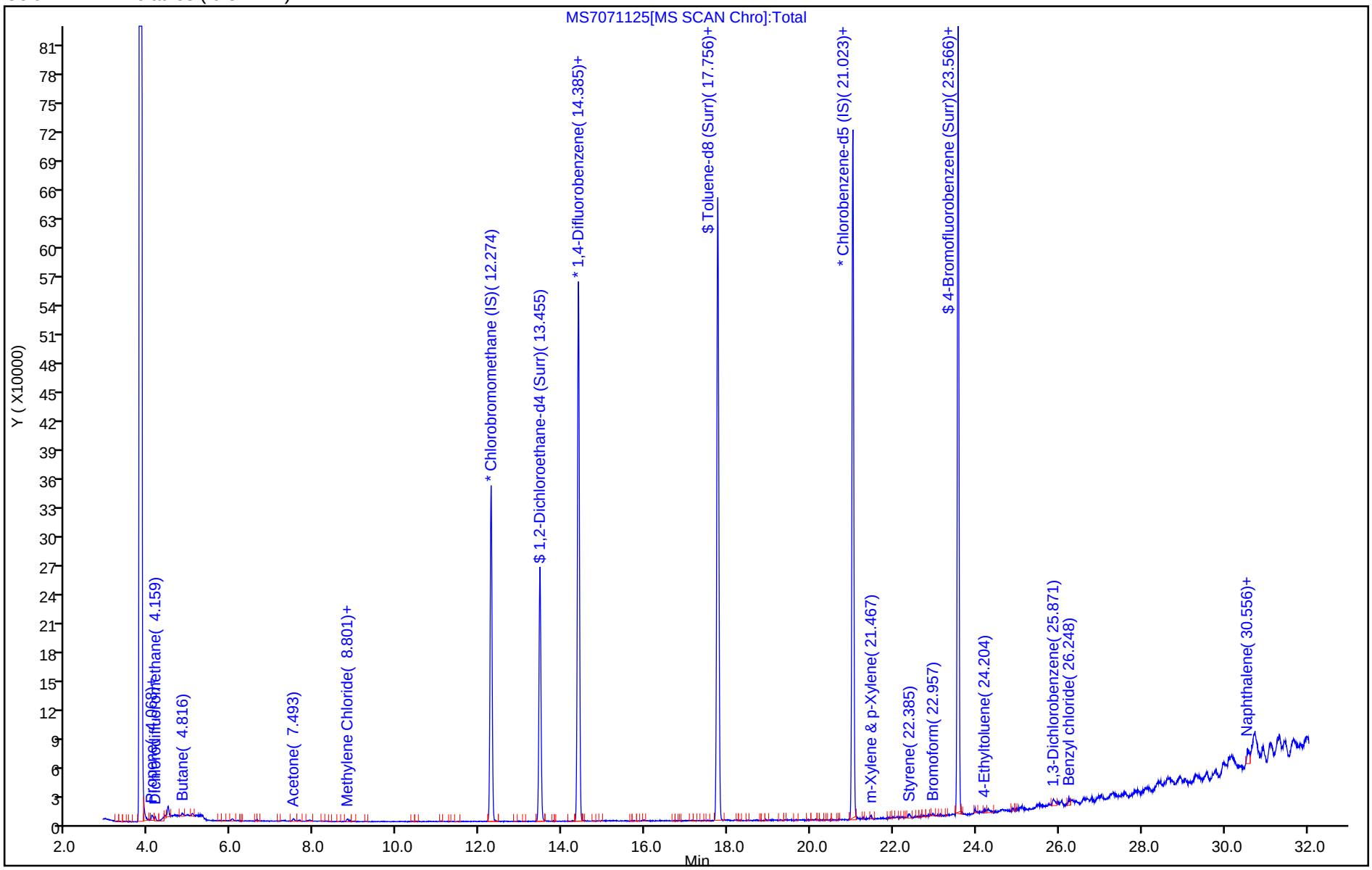
Report Date: 12-Jul-2019 10:49:25 Chrom Revision: 2.3 10-Jul-2019 14:12:46

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D

Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7	Operator ID:	LHS
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1	Worklist Smp#:	25
Client ID:	34002048				
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		

Column: RTX Volatiles (0.32 mm)

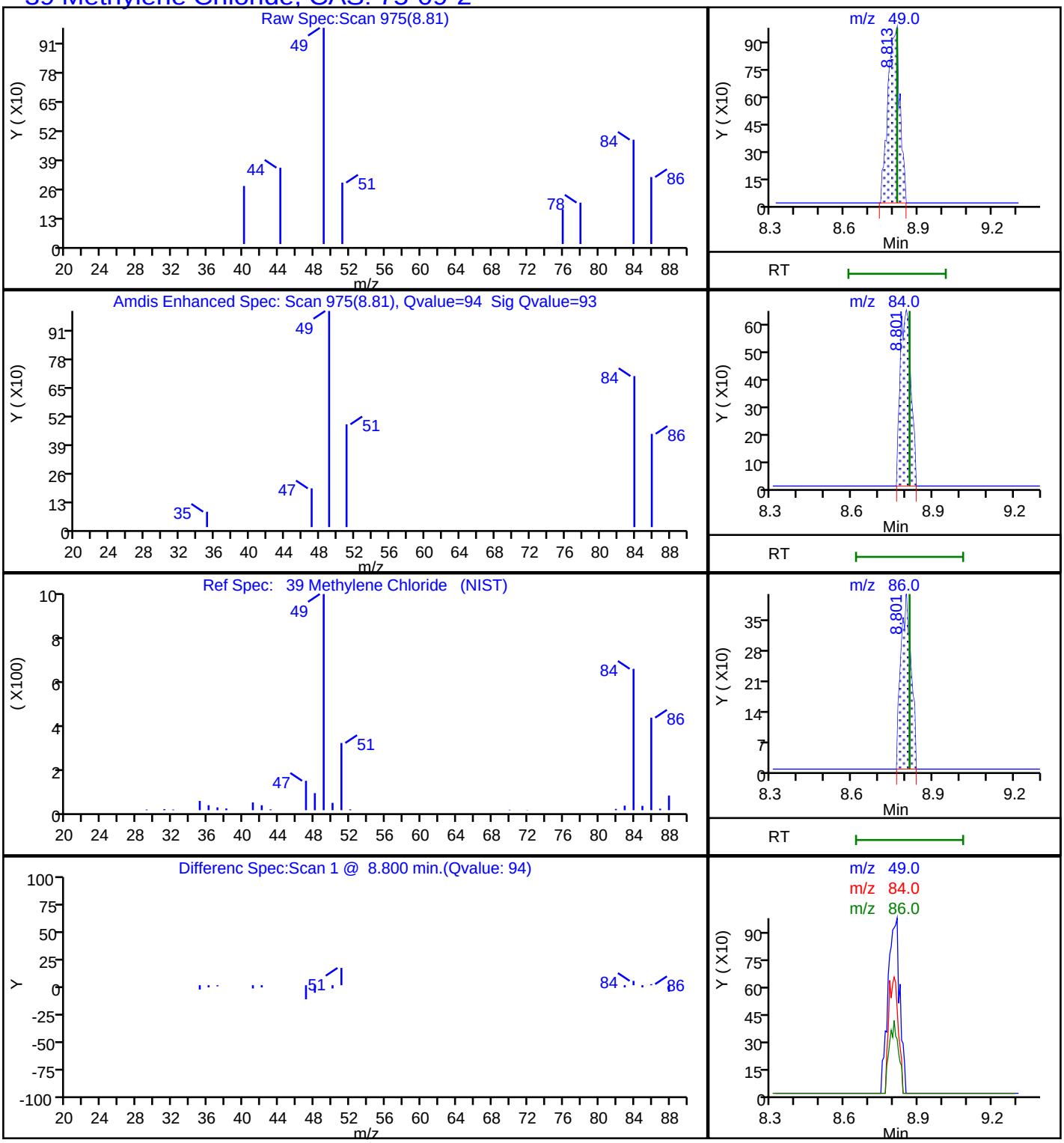


Report Date: 12-Jul-2019 10:49:25 Chrom Revision: 2.3 10-Jul-2019 14:12:46

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

39 Methylene Chloride, CAS: 75-09-2

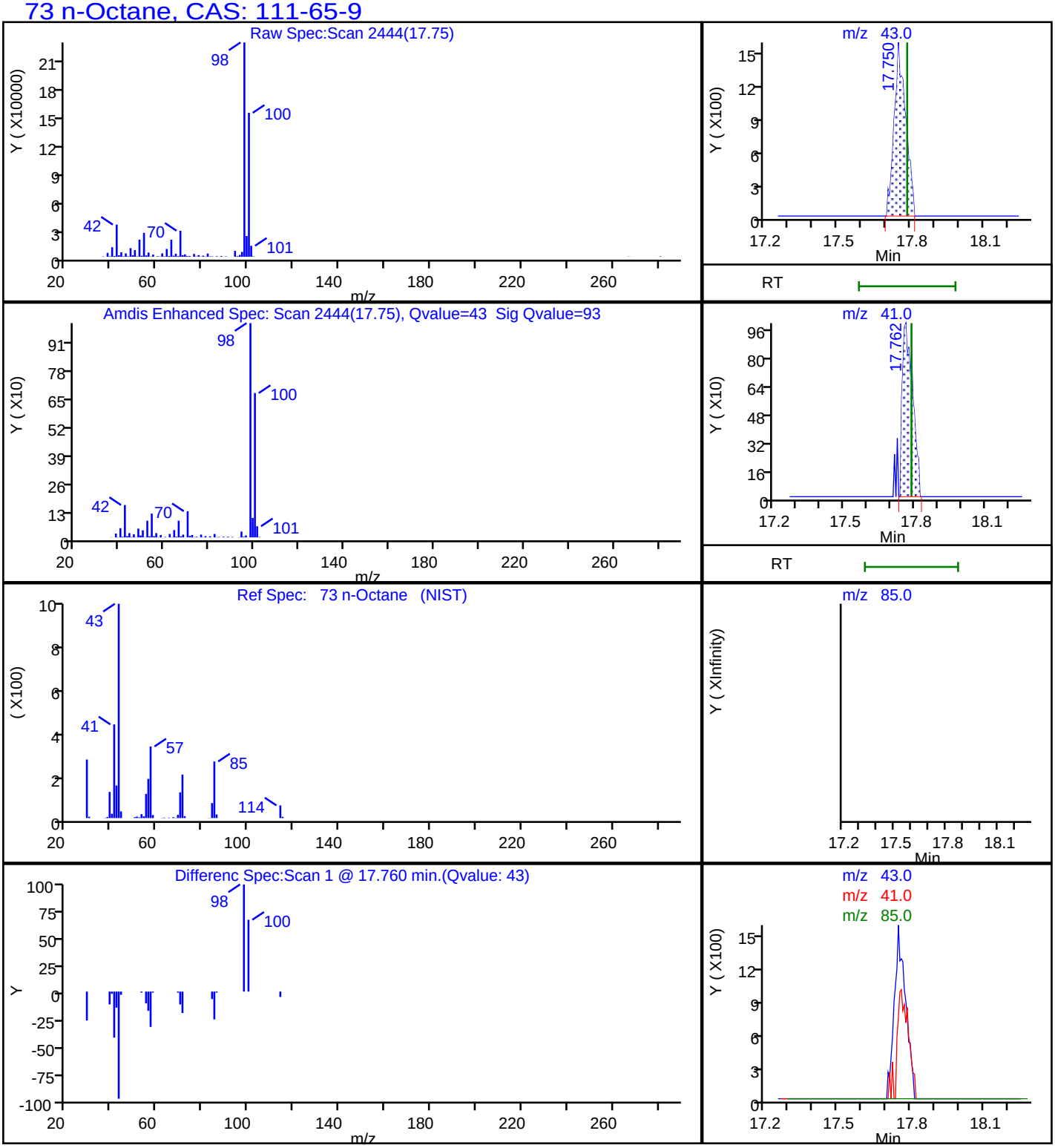


Report Date: 12-Jul-2019 10:49:26 Chrom Revision: 2.3 10-Jul-2019 14:12:46

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

73 n-Octane, CAS: 111-65-9



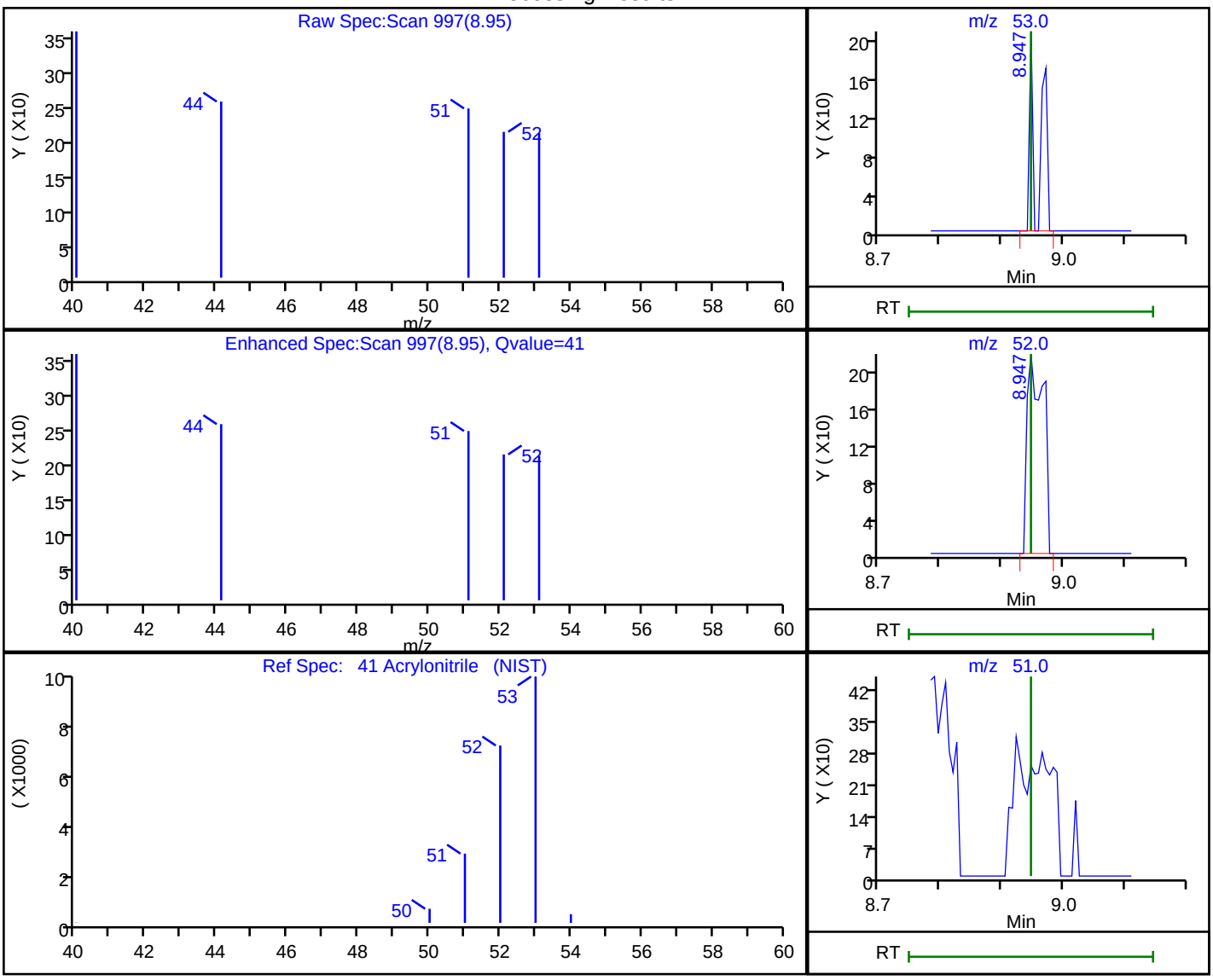
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

41 Acrylonitrile, CAS: 107-13-1

Processing Results



RT	Mass	Response	Amount
8.95	53.00	194	0.010436
8.95	52.00	390	
8.95	51.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

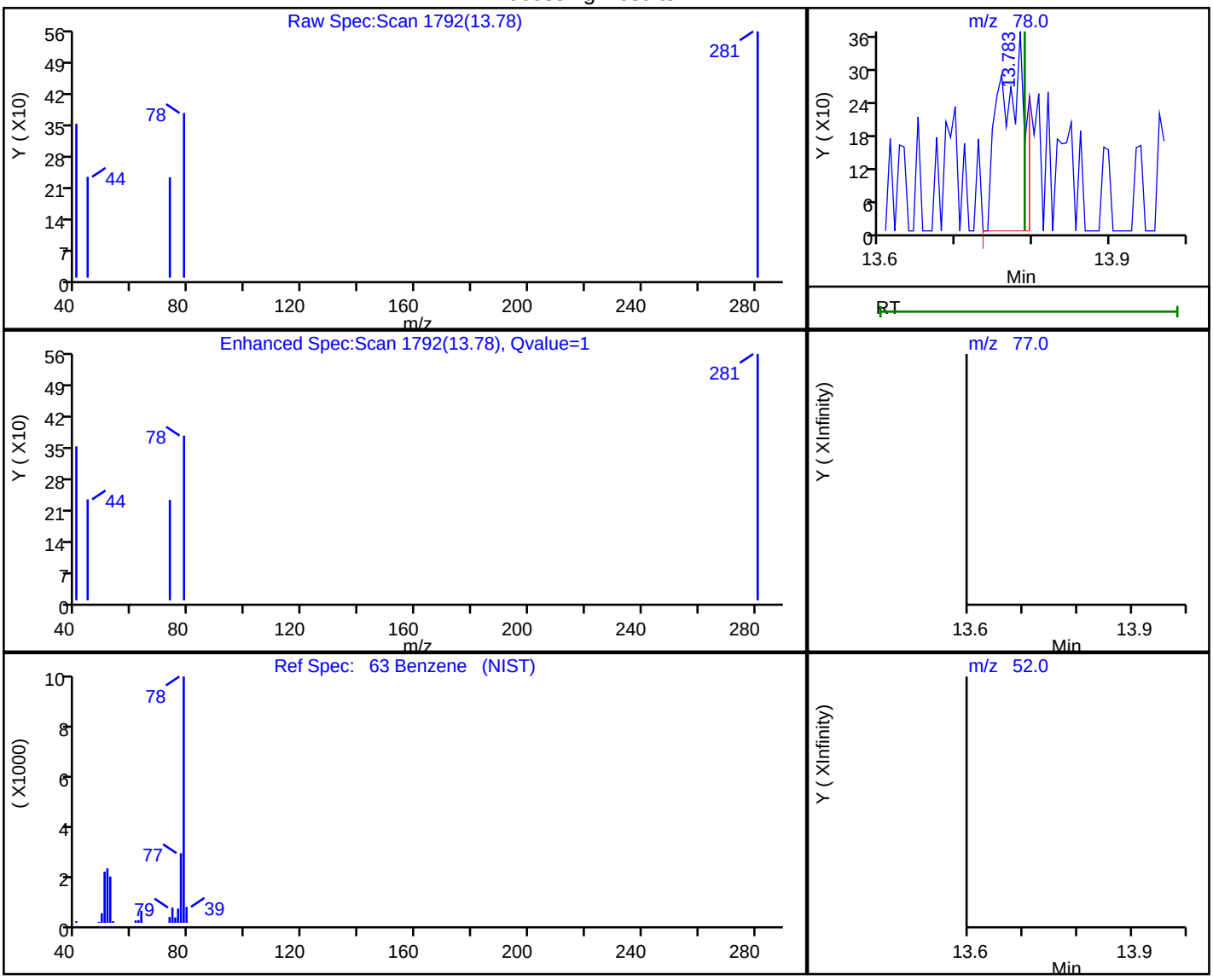
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

63 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
13.78	78.00	790	0.011844
13.79	77.00	0	
13.79	52.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:00

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

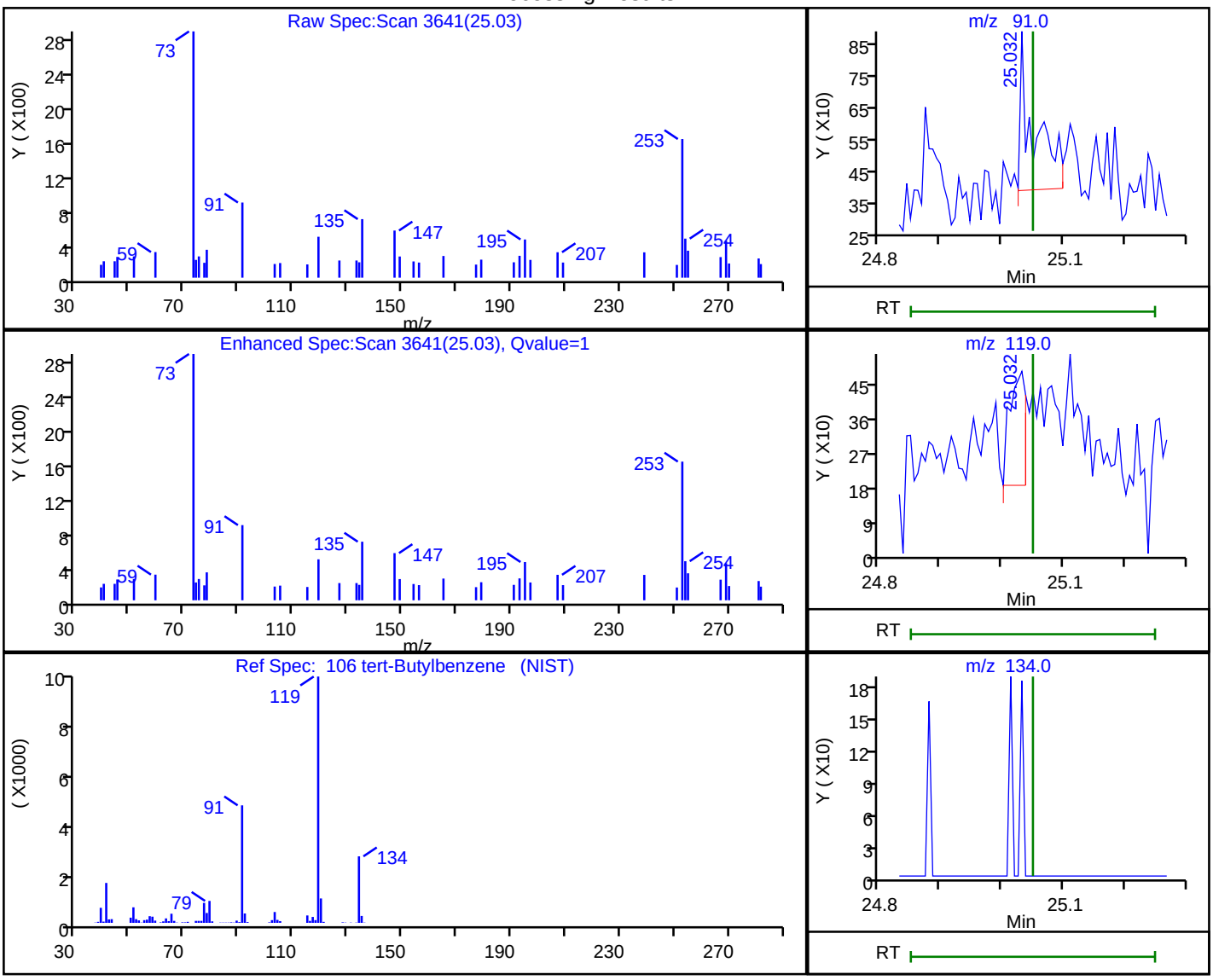
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

106 tert-Butylbenzene, CAS: 98-06-6

Processing Results



RT	Mass	Response	Amount
25.03	91.00	771	0.008749
25.03	119.00	539	
25.05	134.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:51

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

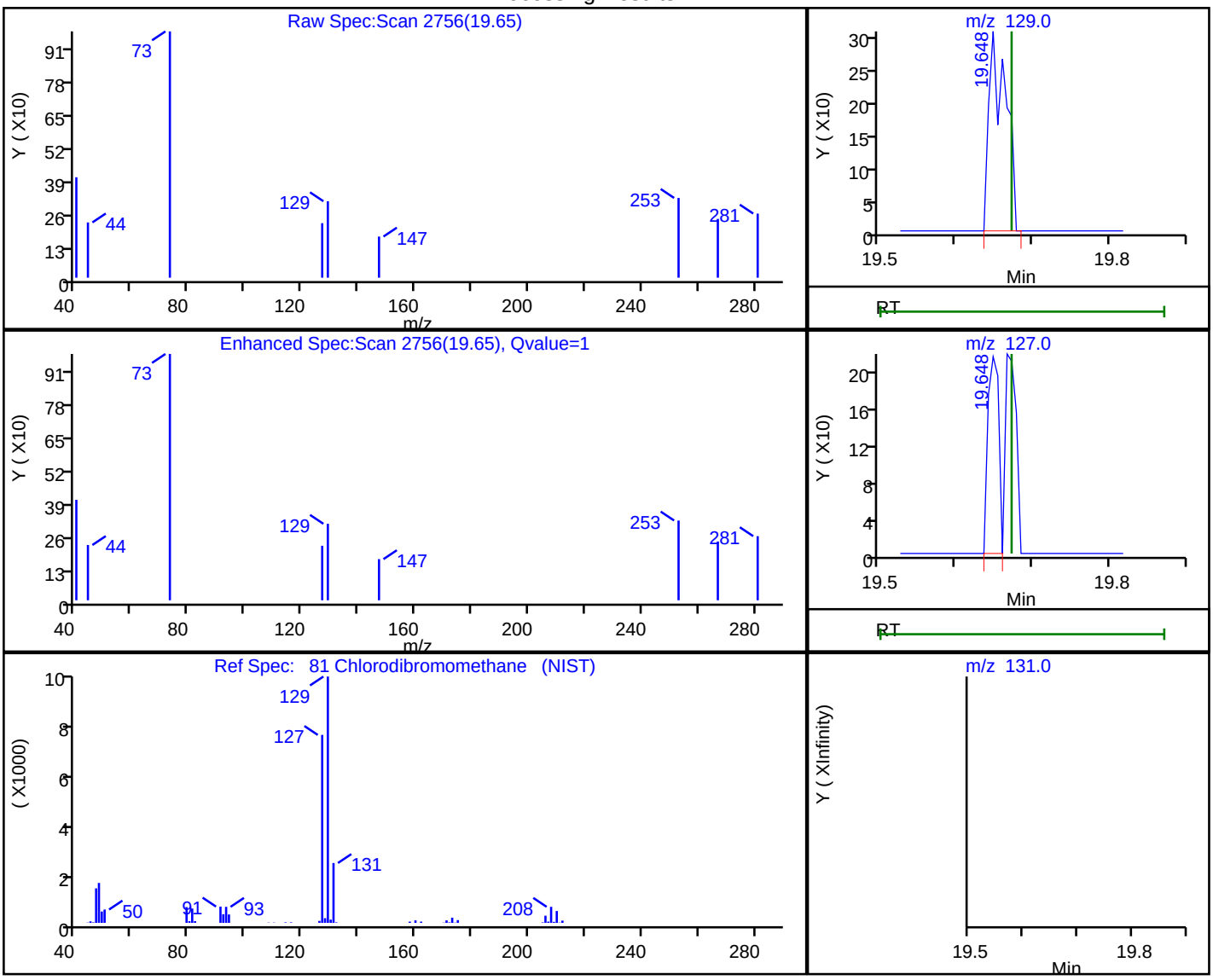
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

81 Chlorodibromomethane, CAS: 124-48-1

Processing Results



RT	Mass	Response	Amount
19.65	129.00	466	0.010254
19.65	127.00	214	
19.67	131.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

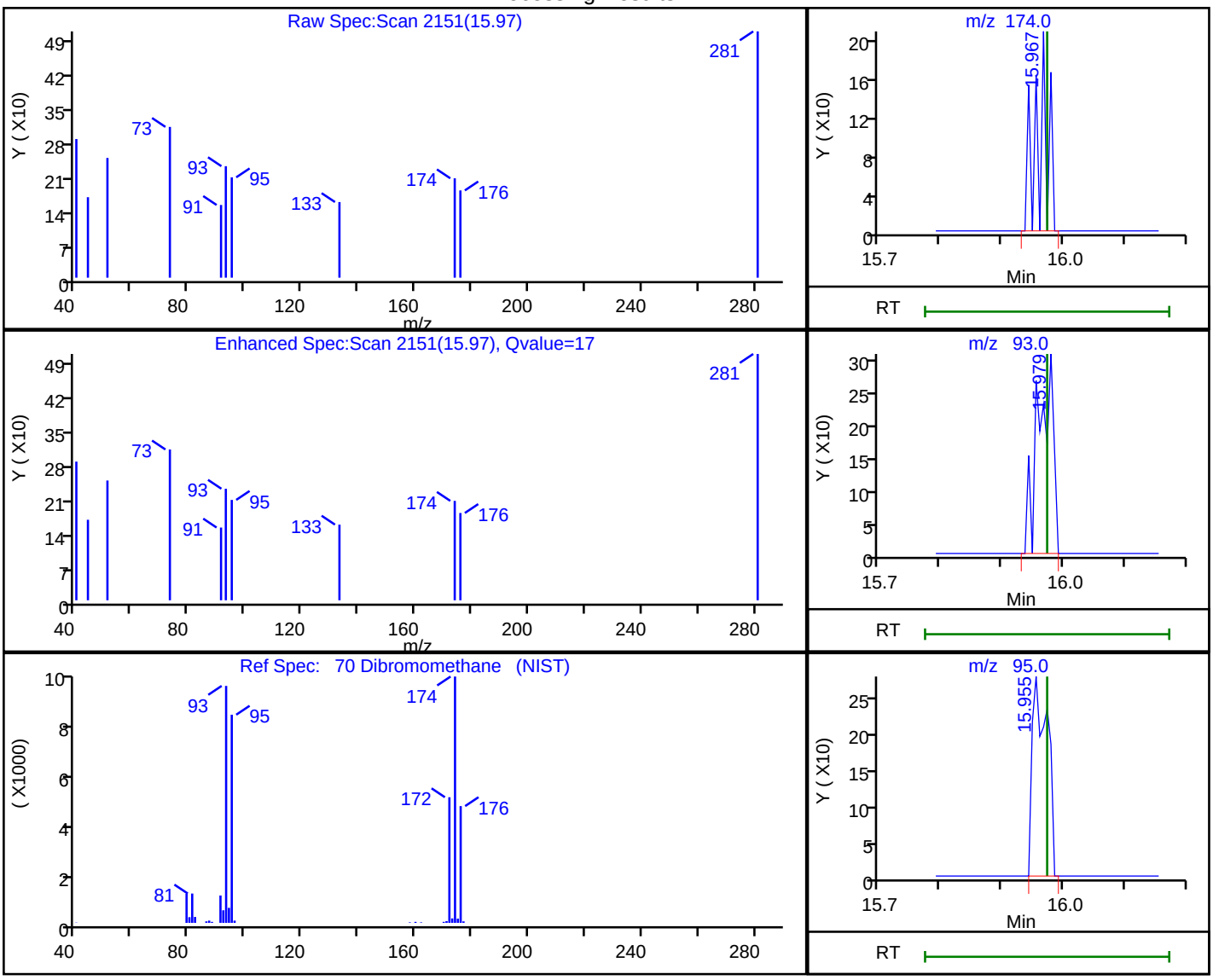
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

70 Dibromomethane, CAS: 74-95-3

Processing Results



RT	Mass	Response	Amount
15.97	174.00	247	0.010474
15.98	93.00	535	
15.95	95.00	477	

Reviewer: leeh, 12-Jul-2019 10:47:05

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

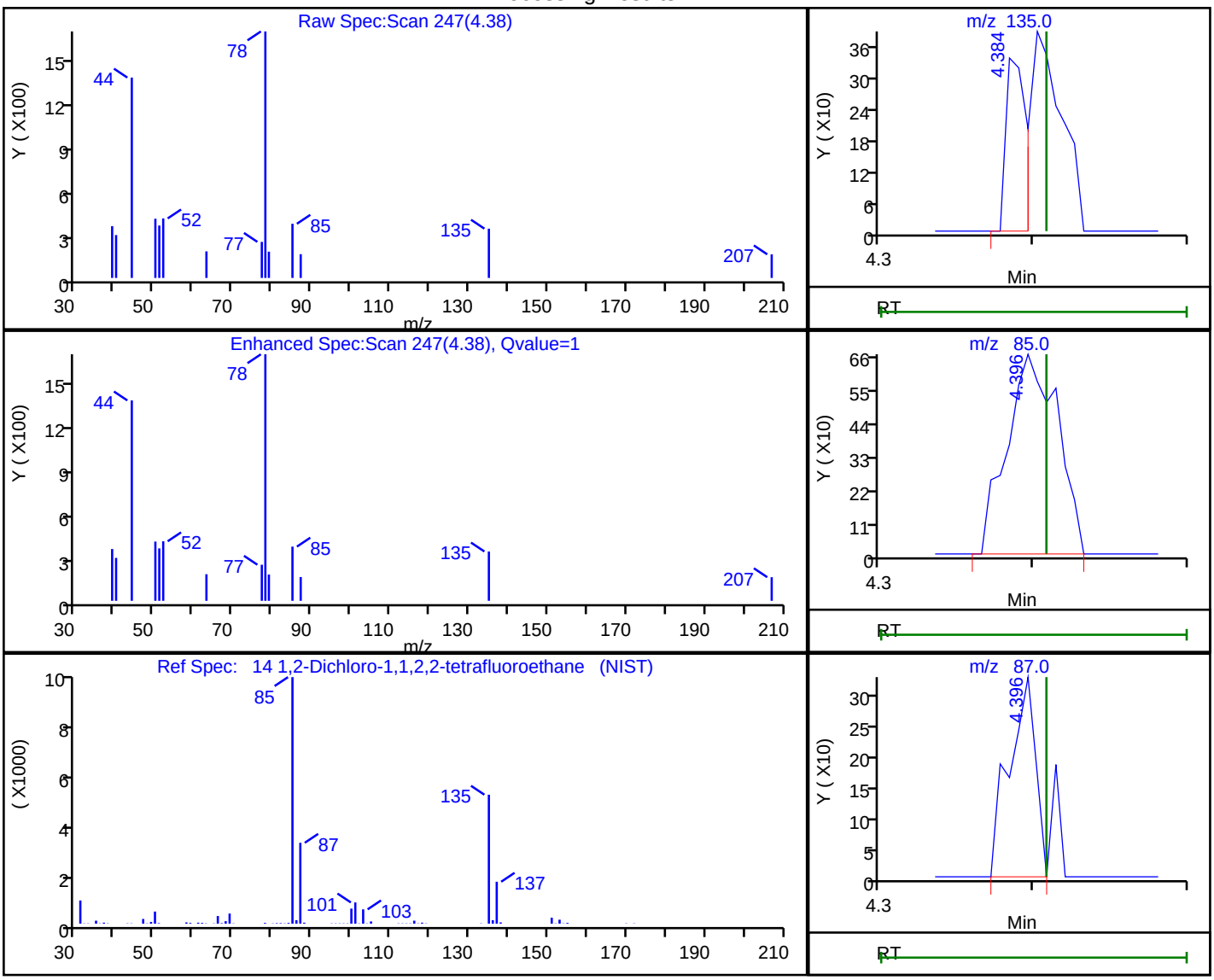
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

14 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Processing Results



RT	Mass	Response	Amount
4.38	135.00	307	0.010344
4.40	85.00	1537	
4.40	87.00	389	

Reviewer: leeh, 12-Jul-2019 10:45:52

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

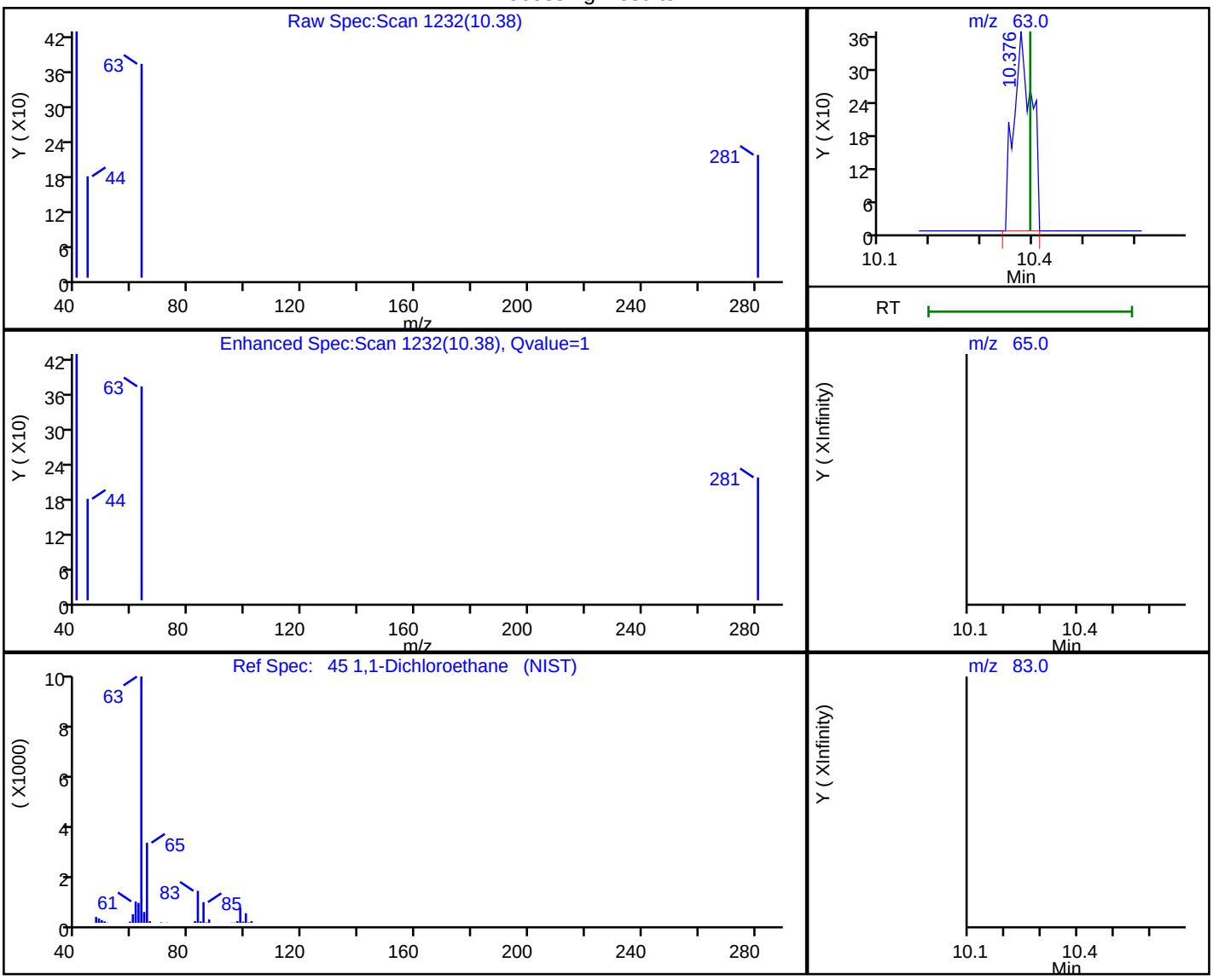
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

45 1,1-Dichloroethane, CAS: 75-34-3

Processing Results



RT	Mass	Response	Amount
10.38	63.00	901	0.019924
10.39	65.00	0	
10.39	83.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:25

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

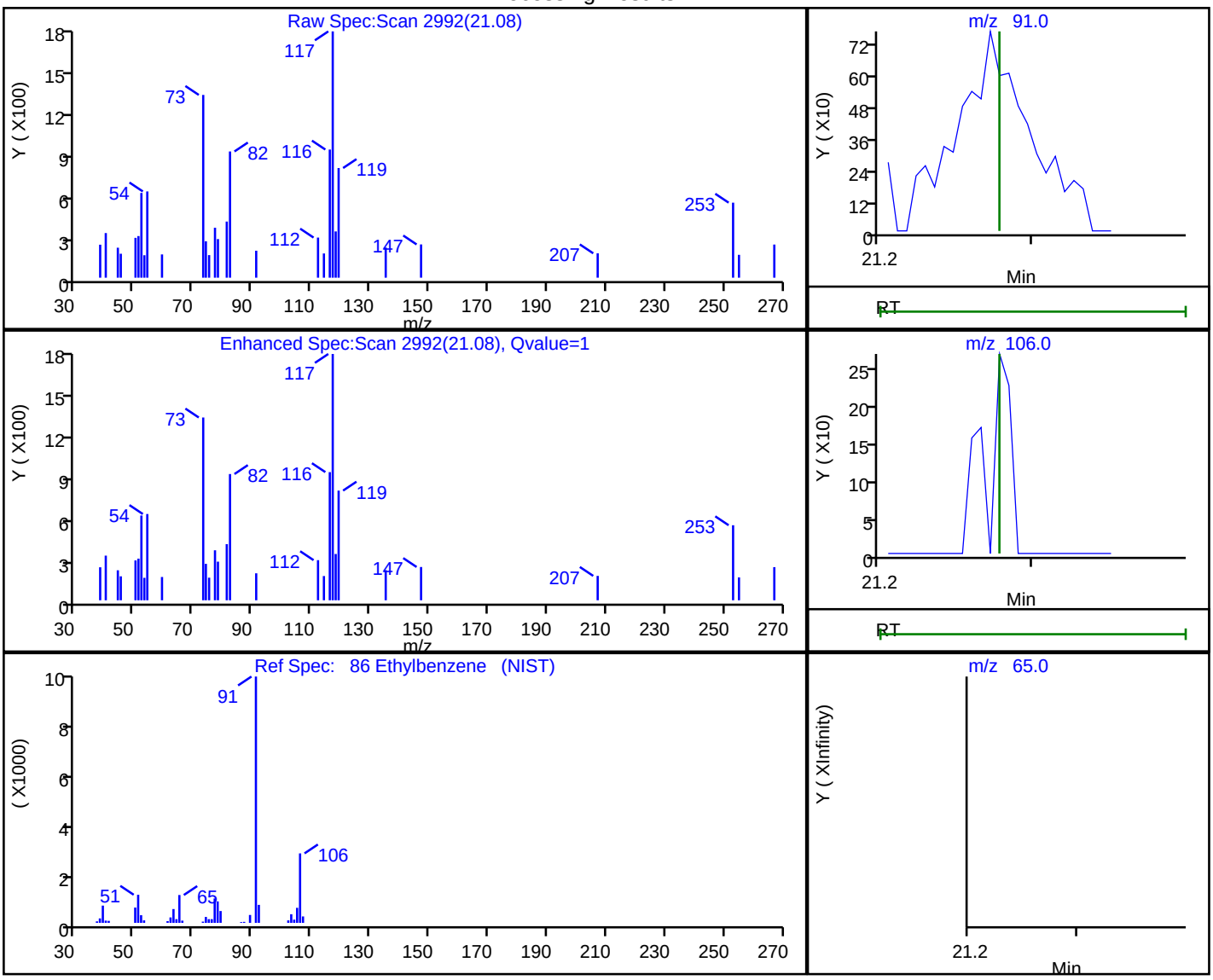
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

86 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
21.08	91.00	139	0.001256
21.28	106.00	0	
21.28	65.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:28

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

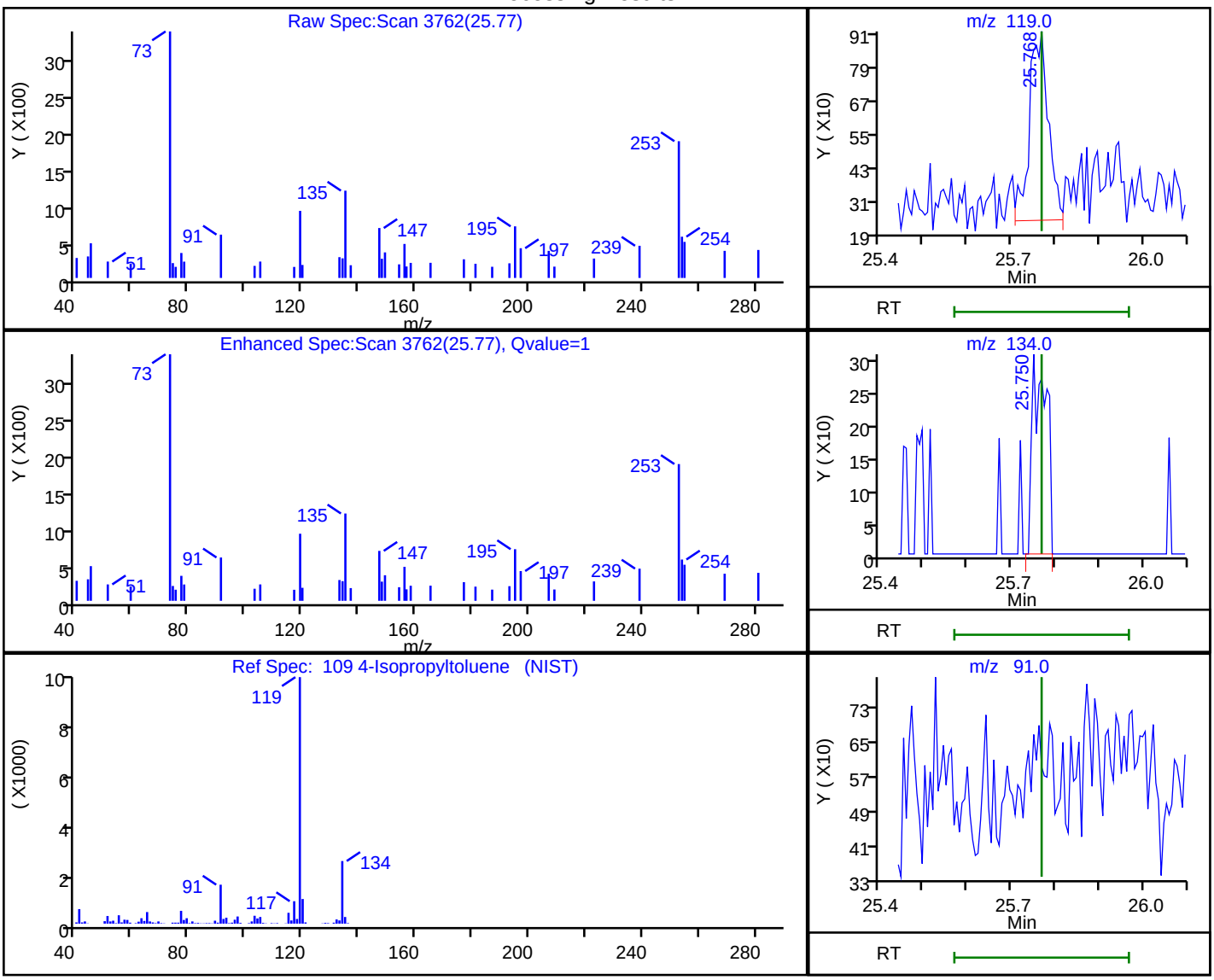
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

109 4-Isopropyltoluene, CAS: 99-87-6

Processing Results



RT	Mass	Response	Amount
25.77	119.00	2050	0.014061
25.75	134.00	692	
25.77	91.00	0	

Reviewer: leeh, 12-Jul-2019 10:48:03

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

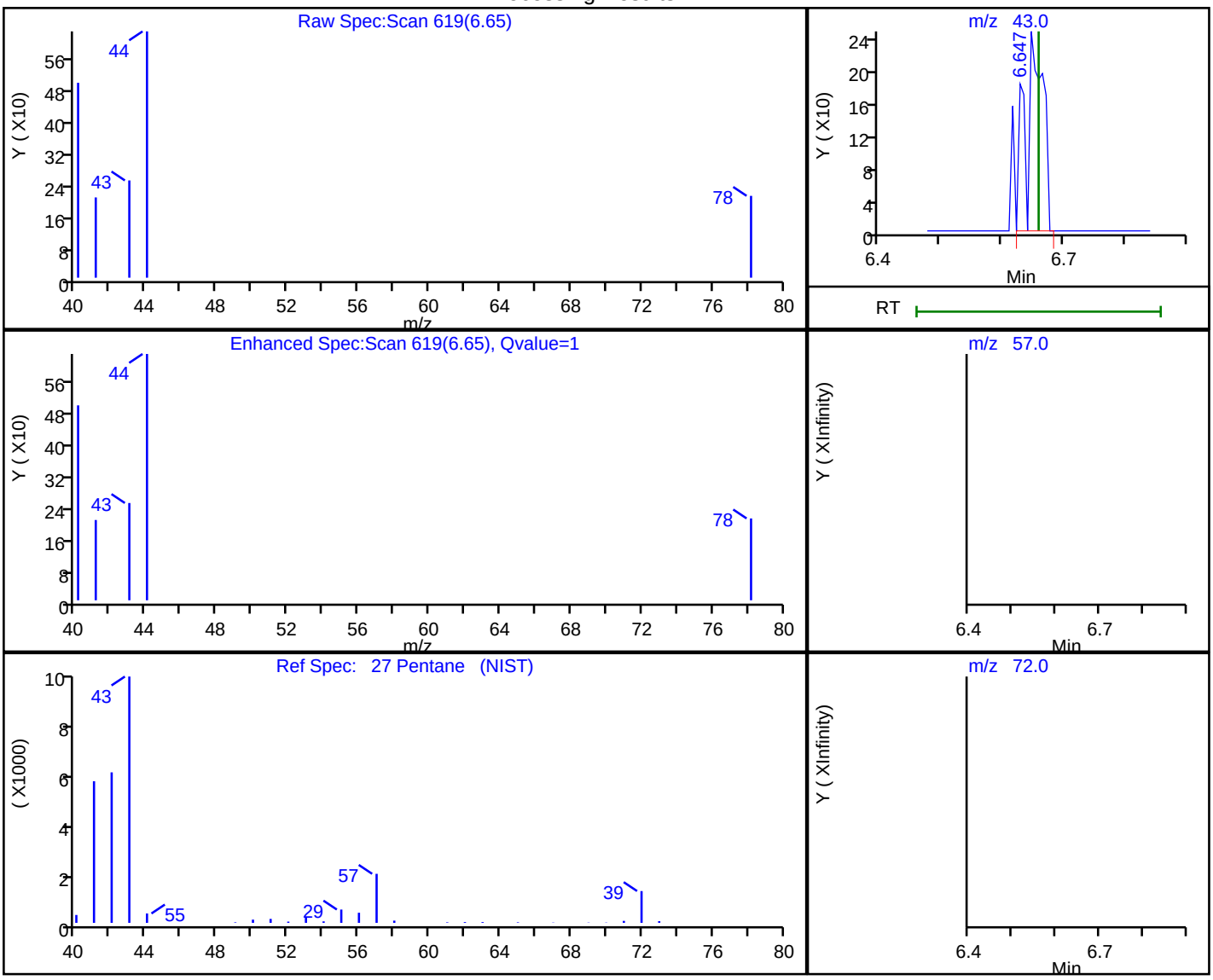
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

27 Pentane, CAS: 109-66-0

Processing Results



RT	Mass	Response	Amount
6.65	43.00	489	0.011022
6.66	57.00	0	
6.66	72.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:05

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

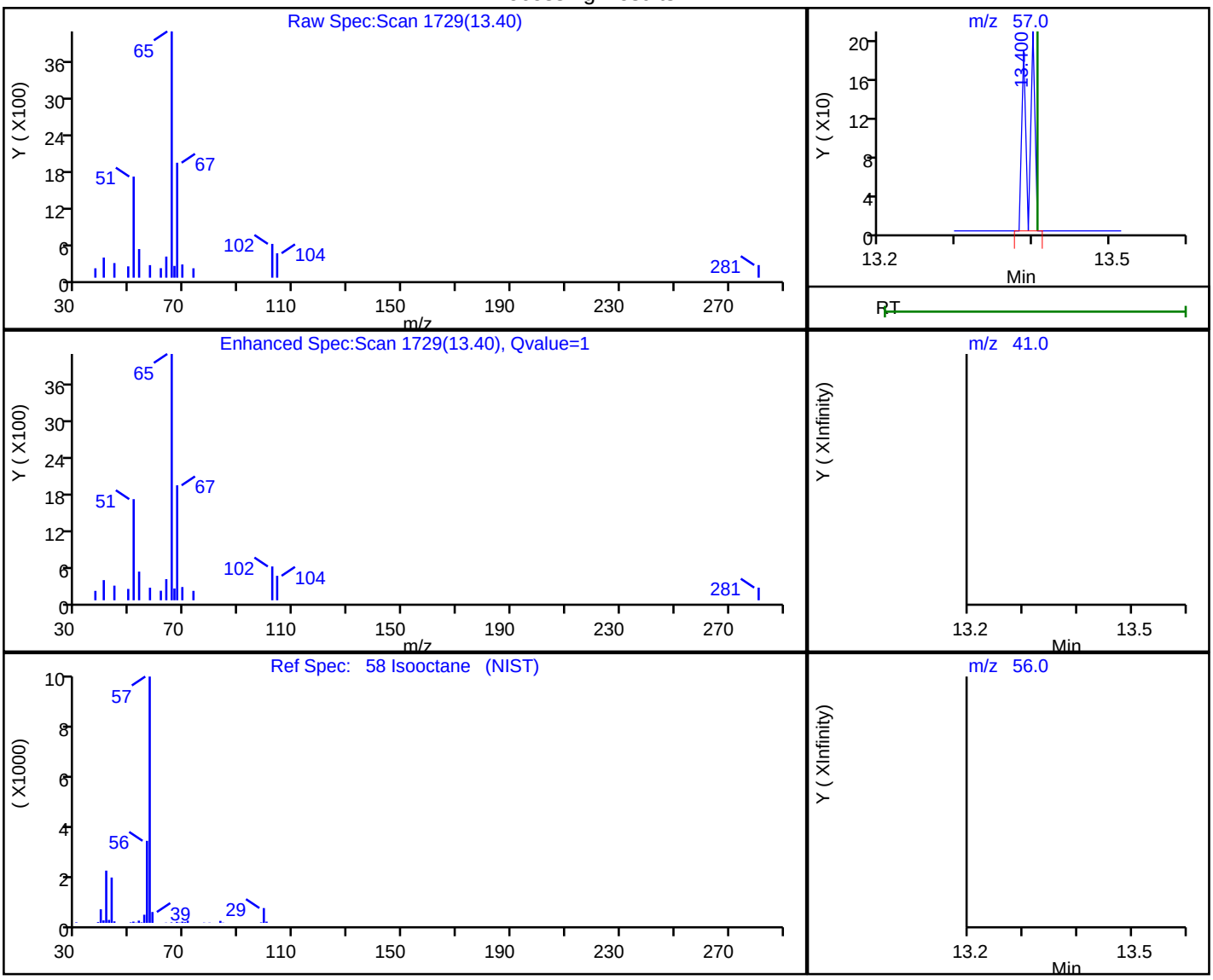
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

58 Isooctane, CAS: 540-84-1

Processing Results



RT	Mass	Response	Amount
13.40	57.00	144	0.001181
13.41	41.00	0	
13.41	56.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:51

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

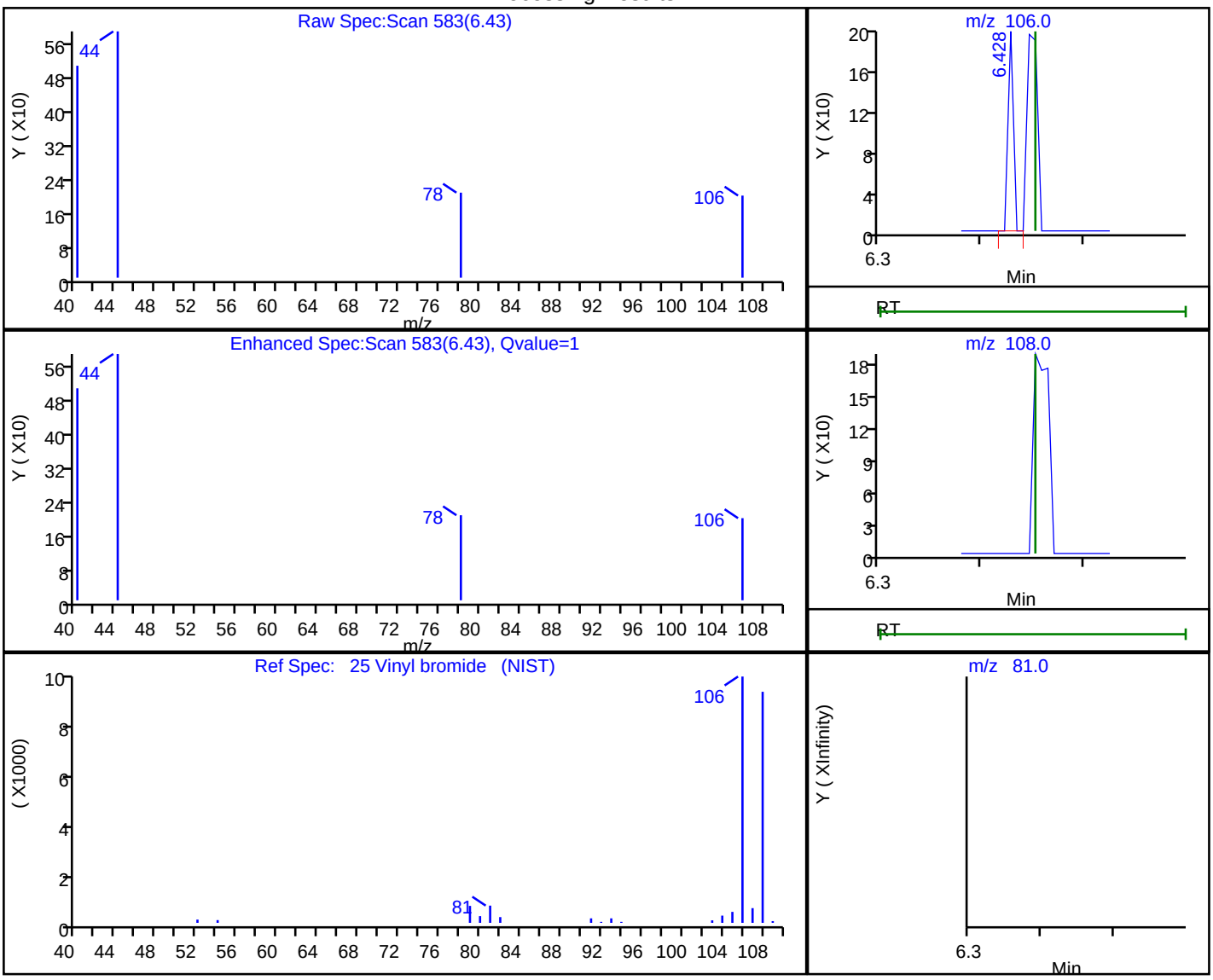
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

25 Vinyl bromide, CAS: 593-60-2

Processing Results



RT	Mass	Response	Amount
6.43	106.00	72	0.004250
6.45	108.00	0	
6.45	81.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:03

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

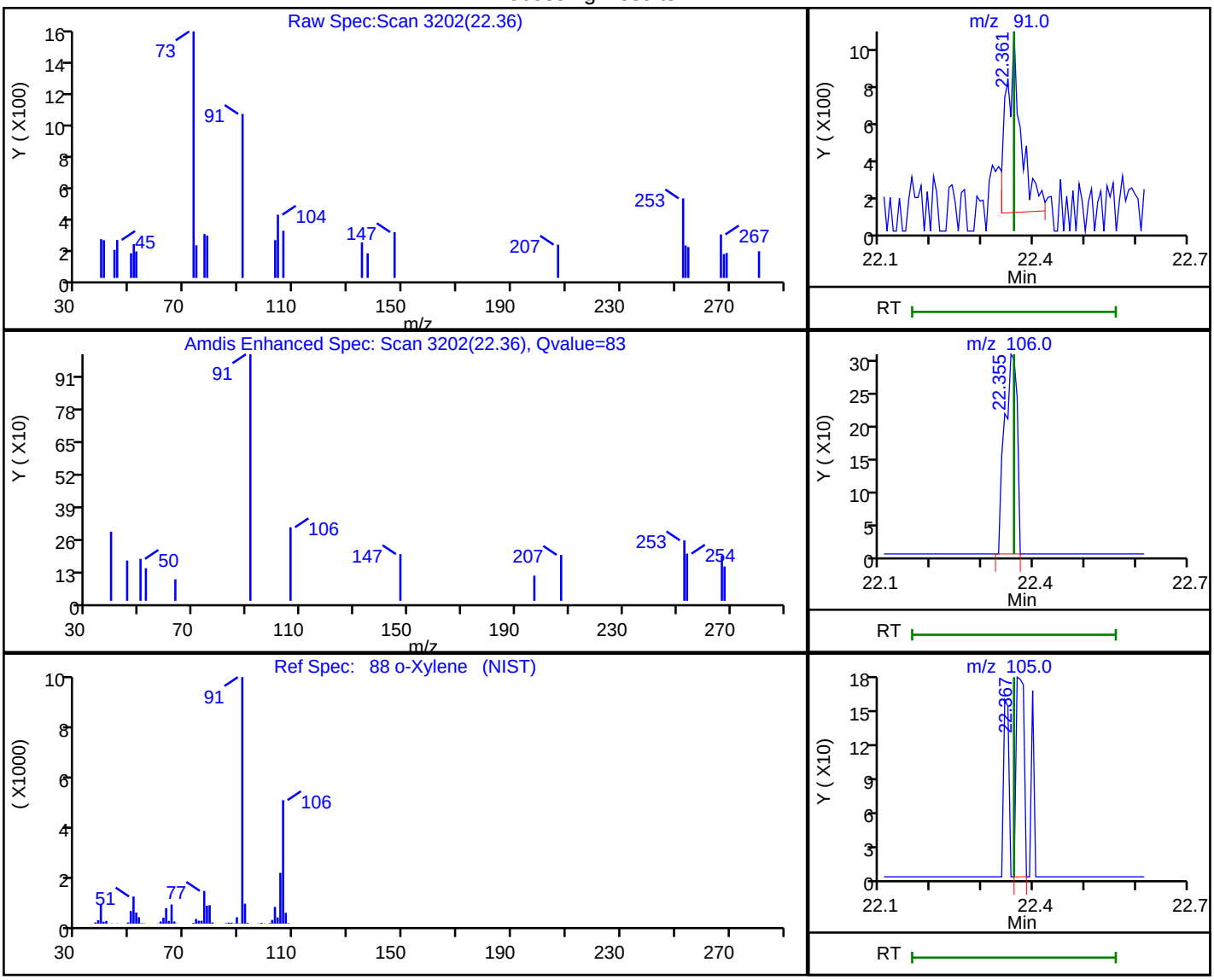
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

88 o-Xylene, CAS: 95-47-6

Processing Results



RT	Mass	Response	Amount
22.36	91.00	1860	0.019589
22.35	106.00	522	
22.37	105.00	192	
22.39	78.00	2417	

Reviewer: leeh, 12-Jul-2019 10:47:34

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

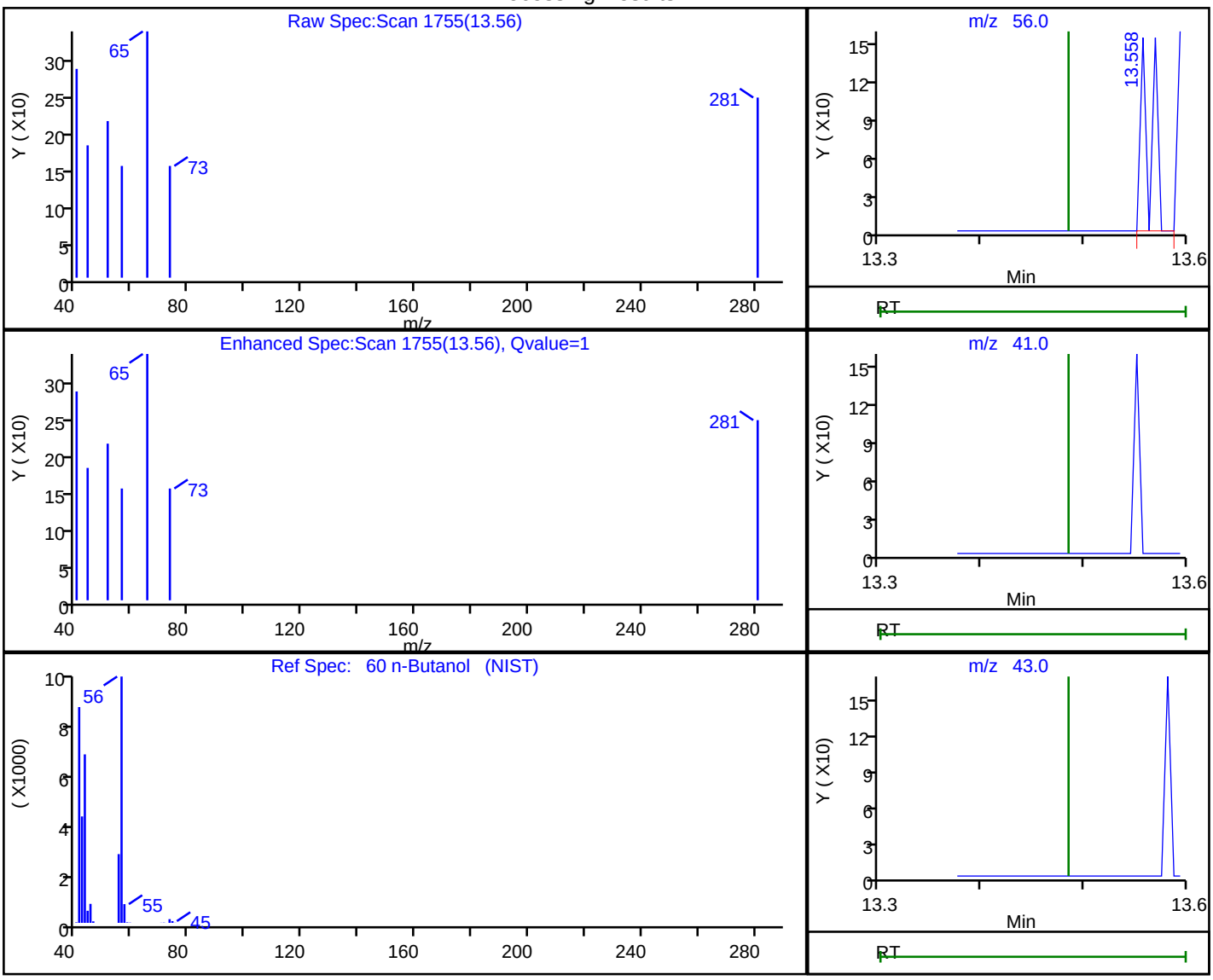
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

60 n-Butanol, CAS: 71-36-3

Processing Results



RT	Mass	Response	Amount
13.56	56.00	111	0.003991
13.48	41.00	0	
13.48	43.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:54

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

AIR - GC/MS VOA BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-53855-1

SDG No.: Washington State Department of Ecology

Batch Number: 325786 Batch Start Date: 09/24/19 15:20 Batch Analyst: Phanthasen, Atchara 1

Batch Method: TO-15 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialPressure	FinalPressure	InitialAmount	FinalAmount	VACORPIC200 00029	VAMSIS50 00033
LCS 320-325786/4		TO-15		1	1	250 mL	250 mL	25 mL	50 mL
LCSD 320-325786/5		TO-15		1	1	250 mL	250 mL	25 mL	50 mL
MB 320-325786/8		TO-15		1	1	250 mL	250 mL		50 mL
320-53855-A-1	SG-1_20190827	TO-15	T	11.65	20.11	431 mL	250 mL		50 mL
320-53855-A-2	SG-2_20190827	TO-15	T	12.24	20.5	418 mL	250 mL		50 mL
320-53855-A-3	SG-3_20190827	TO-15	T	11.79	20.21	428 mL	250 mL		50 mL
320-53855-A-3 DU	SG-3_20190827	TO-15	T	11.79	20.21	428 mL	250 mL		50 mL
320-53855-A-4	SG-4_20190827	TO-15	T	12.55	20.13	401 mL	250 mL		50 mL

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-53855-2
Laboratory SDG: Washington State Department of Ecology
Client Project/Site: BP -ARCO 980

For:
Antea USA Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Megan Richard

M. Elaine Walker

Authorized for release by:
10/30/2019 11:00:06 AM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

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Definitions/Glossary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Qualifiers

Air - GC VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-53855-2

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-53855-2

Receipt
Four samples were received on 8/30/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

This report contains results for Method D1946 for Helium. This analysis was not logged upon receipt. The Eurofins TestAmerica Sacramento laboraotyr peformed Volatiles by Method TO-15; however, they do not perform Helium analysis and the samples were forwarded to Eurofins TestAnerica Burlington for analysis. The samples were analyzed outside hold time and there is no charge for this analysis.

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

Detection Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Client Sample ID: SG-1_20190827 — Lab Sample ID: 320-53855-1

No Detections.

Client Sample ID: SG-2_20190827 — Lab Sample ID: 320-53855-2

No Detections.

Client Sample ID: SG-3_20190827 — Lab Sample ID: 320-53855-3

No Detections.

Client Sample ID: SG-4_20190827 — Lab Sample ID: 320-53855-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SG-1_20190827
Lab Sample ID: 320-53855-1

Date Collected: 08/27/19 10:06
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: D1946 - Fixed Gases (Helium)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	0.17		% v/v			10/09/19 16:17	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	280000		ug/m3			10/09/19 16:17	1

Client Sample ID: SG-2_20190827
Lab Sample ID: 320-53855-2

Date Collected: 08/27/19 13:41
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: D1946 - Fixed Gases (Helium)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	0.22		% v/v			10/09/19 16:26	1.29

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	360000		ug/m3			10/09/19 16:26	1.29

Client Sample ID: SG-3_20190827
Lab Sample ID: 320-53855-3

Date Collected: 08/27/19 15:09
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: D1946 - Fixed Gases (Helium)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	0.17		% v/v			10/09/19 16:39	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	280000		ug/m3			10/09/19 16:39	1

Client Sample ID: SG-4_20190827
Lab Sample ID: 320-53855-4

Date Collected: 08/27/19 11:53
Matrix: Air
Date Received: 08/30/19 09:20
Sample Container: Summa Canister 6L

Method: D1946 - Fixed Gases (Helium)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	0.17		% v/v			10/09/19 16:47	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND	H	280000		ug/m3			10/09/19 16:47	1

Default Detection Limits

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Method: D1946 - Fixed Gases (Helium)

Analyte	RL	MDL	Units
Helium	0.17	0.17	% v/v

Method: D1946 - Fixed Gases (Helium)

Lab Sample ID: MB 200-148269/4
Matrix: Air
Analysis Batch: 148269

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND		0.17		% v/v			10/09/19 15:27	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Helium	ND		280000		ug/m3			10/09/19 15:27	1

Lab Sample ID: LCS 200-148269/2
Matrix: Air
Analysis Batch: 148269

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Helium	5.00	5.51		% v/v		110	70 - 130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Helium	8200000	9020000		ug/m3		110	70 - 130

Lab Sample ID: LCSD 200-148269/3
Matrix: Air
Analysis Batch: 148269

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Helium	5.00	5.52		% v/v		110	70 - 130	0	30

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Helium	8200000	9040000		ug/m3		110	70 - 130	0	30

QC Association Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Air - GC VOA

Analysis Batch: 148269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53855-1	SG-1_20190827	Total/NA	Air	D1946	
320-53855-2	SG-2_20190827	Total/NA	Air	D1946	
320-53855-3	SG-3_20190827	Total/NA	Air	D1946	
320-53855-4	SG-4_20190827	Total/NA	Air	D1946	
MB 200-148269/4	Method Blank	Total/NA	Air	D1946	
LCS 200-148269/2	Lab Control Sample	Total/NA	Air	D1946	
LCSD 200-148269/3	Lab Control Sample Dup	Total/NA	Air	D1946	

Lab Chronicle

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Client Sample ID: SG-1_20190827
Date Collected: 08/27/19 10:06
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-1
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D1946		1	148269	10/09/19 16:17	MLT	TAL BUR

Client Sample ID: SG-2_20190827
Date Collected: 08/27/19 13:41
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-2
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D1946		1.29	148269	10/09/19 16:26	MLT	TAL BUR

Client Sample ID: SG-3_20190827
Date Collected: 08/27/19 15:09
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-3
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D1946		1	148269	10/09/19 16:39	MLT	TAL BUR

Client Sample ID: SG-4_20190827
Date Collected: 08/27/19 11:53
Date Received: 08/30/19 09:20

Lab Sample ID: 320-53855-4
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D1946		1	148269	10/09/19 16:47	MLT	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
Alaska (UST)	State Program	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	08-09-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA00044	02-29-20
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Laboratory: Eurofins TestAmerica, Burlington

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

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2336	02-25-20
Connecticut	State	PH-0751	09-30-21
Connecticut	State Program	PH-0751	09-30-21
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	05-15-20
Florida	NELAP	E87467	06-30-20
Minnesota	NELAP	050-999-436	12-31-19
New Hampshire	NELAP	2006	12-18-19
New Hampshire	NELAP	2006	10-18-19
New Jersey	NELAP	VT972	06-30-20
New York	NELAP	10391	03-31-20
Pennsylvania	NELAP	68-00489	04-30-20
Rhode Island	State	LAO00298	12-30-19
Rhode Island	State Program	LAO00298	12-30-19
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00272	08-09-20
Vermont	State	VT4000	12-31-19
Virginia	NELAP	460209	12-14-19

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State Program	C553	02-17-20

Method Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Method	Method Description	Protocol	Laboratory
D1946	Fixed Gases (Helium)	ASTM	TAL BUR

Protocol References:

ASTM = ASTM International

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 320-53855-2
SDG: Washington State Department of Ecology

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-53855-1	SG-1_20190827	Air	08/27/19 10:06	08/30/19 09:20	Air Canister (6-Liter) #7703
320-53855-2	SG-2_20190827	Air	08/27/19 13:41	08/30/19 09:20	Air Canister (6-Liter) #34000494
320-53855-3	SG-3_20190827	Air	08/27/19 15:09	08/30/19 09:20	Air Canister (6-Liter) #34000267
320-53855-4	SG-4_20190827	Air	08/27/19 11:53	08/30/19 09:20	Air Canister (6-Liter) #34000584

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916-373-5600 Fax: 916-372-1059

Chain of Custody Record

320-53855 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	COC No: 320-161377.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Washington	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Washington	Job #: 320-53855-2
Address: 30 Community Drive, Suite 11,	Due Date Requested: 10/16/2019		
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:		
Email:	WO #:		
Project Name: BP -ARCO 980	Project #: 58010261		
Site: ARCO 980 Antea	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	D1946_He/Air_Summa_Can	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SG-1_20190827 (320-53855-1)	8/27/19	10:06 Pacific		Air			X	1	
SG-2_20190827 (320-53855-2)	8/27/19	13:41 Pacific		Air			X	1	
SG-3_20190827 (320-53855-3)	8/27/19	15:09 Pacific		Air			X	1	
SG-4_20190827 (320-53855-4)	8/27/19	11:53 Pacific		Air			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by:	Date/Time: 10-08-19 12:39PM	Company ETAS	Received by:	Date/Time: 10/9/19 10:10	Company TAL Sac		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

ORIGIN ID:BLUA (916) 373-5600
EUROFINS TESTAMERICA
EUROFINS TESTAMERICA
880 RIVERSIDE PARKWAY

WEST SACRAMENTO, CA 95605
UNITED STATES US

SHIP DATE: 080CT19
ACTWGT: 28.00 LB MAN
CAD: 0594334/CAFE3310

BILL SENDER

TO SHIPPING/RECEIVING
TESTAMERICA LABORATORIES, INC.
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403

(802) 660-1990
REF: S320-29045
PO: YES

FedEx Express

J191219061901v

TRK# 0201 4727 9463 9282

WED - 09 OCT 10:30A
PRIORITY OVERNIGHT

XH BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: Antea USA Inc.

Job Number: 320-53855-2
SDG Number: Washington State Department of Ecology

Login Number: 53855
List Number: 1
Creator: Iliev, Gabriela K

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	497131;497132
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	True	21.8 Degree Celsius
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Antea USA Inc.

Job Number: 320-53855-2
SDG Number: Washington State Department of Ecology

Login Number: 53855
List Number: 2
Creator: McNabb, Robert W

List Source: Eurofins TestAmerica, Burlington
List Creation: 10/09/19 01:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Not present
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Canister QC Certification
Batch Certification

Date Cleaned/Batch ID: A07/03/19 SCAN

Date of QC: 7/11/19

320-52017 Chain of Custody

Data File Number: C:\MSDCHEM\1\DATA\190711\

(File ID for certification analysis of canister designated below)

CANISTER ID NUMBERS

*	34002048 ms7071125.d
	34001290
	34001364
	34000494
	34001212
	34000267
	34000584
	7796
	34000543
	34002010
	34000425
	7703

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type* " indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED

1st Level Reviewed By — Date: 7/12/19

2nd Level Reviewed By — Date: 7/19/19

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-52017-1

SDG No.:

Client Sample ID: 34002048 Lab Sample ID: 320-52017-1

Matrix: Air Lab File ID: MS7071125.D

Analysis Method: TO-15 Date Collected: 07/08/2019 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/12/2019 09:29

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 307011 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.27
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-52017-1

SDG No.:

Client Sample ID: 34002048 Lab Sample ID: 320-52017-1

Matrix: Air Lab File ID: MS7071125.D

Analysis Method: TO-15 Date Collected: 07/08/2019 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/12/2019 09:29

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 307011 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.12
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.10	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	0.072	J	0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.21
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-52017-1

SDG No.:

Client Sample ID: 34002048 Lab Sample ID: 320-52017-1

Matrix: Air Lab File ID: MS7071125.D

Analysis Method: TO-15 Date Collected: 07/08/2019 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/12/2019 09:29

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 307011 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054
1330-20-7	Xylenes, Total	ND		1.2	0.074
87-61-6	1,2,3-Trichlorobenzene	ND		2.0	0.62
60-29-7	Ethyl ether	ND		0.80	0.20
71-36-3	n-Butanol	ND		2.0	0.26
111-84-2	n-Nonane	ND		0.80	0.058

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	94		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D
Lims ID: 320-52017-A-1
Client ID: 34002048
Sample Type: Client
Inject. Date: 12-Jul-2019 09:29:30 ALS Bottle#: 16 Worklist Smp#: 25
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 320-52089-A-1
Misc. Info.: 35 mL
Operator ID: LHS Instrument ID: ATMS7

Method: \\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\TO15_ATMS7N.m
Limit Group: MSA - TO15 - ICAL
Last Update: 12-Jul-2019 10:48:24 Calib Date: 09-Jul-2019 18:23:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\ATMS7\20190709-79154.b\MS7070911.D

Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
Process Host: CTX0339

First Level Reviewer: leeh Date: 12-Jul-2019 10:48:24

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.274	12.286	-0.012	95	172273	10.0	
* 2 1,4-Difluorobenzene	114	14.385	14.397	-0.012	97	709820	10.0	
* 3 Chlorobenzene-d5 (IS)	117	21.023	21.029	-0.005	92	609944	10.0	
$ 4 1,2-Dichloroethane-d4 (Sur	65	13.455	13.455	-0.012	98	326848	9.35	
$ 5 Toluene-d8 (Surr)	100	17.756	17.747	-0.006	98	516832	10.1	
$ 6 4-Bromofluorobenzene (Surr	95	23.566	23.565	-0.005	83	466829	9.69	
11 Propene	41	4.098	4.094	0.000	88	1451	0.0679	
13 Dichlorodifluoromethane	85	4.159	4.155	0.000	96	3053	0.0519	
16 Chloromethane	50	4.615	4.598	0.012	15	2702	0.1228	
17 Butane	43	4.816	4.823	-0.012	82	2912	0.0816	
32 Acetone	43	7.493	7.467	0.019	97	5612	0.1644	
39 Methylene Chloride	49	8.813	8.804	0.000	94	3244	0.1012	
40 Carbon disulfide	76	8.849	8.853	-0.012	95	2371	0.0514	
73 n-Octane	43	17.750	17.771	-0.036	43	5139	0.0722	
87 m-Xylene & p-Xylene	91	21.461	21.454	0.001	95	4311	0.0480	
89 Styrene	104	22.385	22.385	-0.006	86	2351	0.0343	
90 Bromoform	173	22.957	22.957	-0.006	55	1022	0.0223	
102 4-Ethyltoluene	120	24.229	24.216	0.007	96	1073	0.0278	
107 1,2,4-Trimethylbenzene	120	25.105	25.103	-0.006	81	1455	0.0264	
110 1,3-Dichlorobenzene	146	25.871	25.870	-0.006	92	3239	0.0523	
111 1,4-Dichlorobenzene	146	26.066	26.071	-0.012	84	3267	0.0550	
113 Benzyl chloride	91	26.248	26.241	0.000	95	6540	0.0607	
116 1,2-Dichlorobenzene	146	26.802	26.800	-0.006	89	2874	0.0459	
119 1,2,4-Trichlorobenzene	180	30.118	30.115	-0.005	89	3544	0.0602	
121 Naphthalene	128	30.568	30.565	-0.006	98	10160	0.0646	
122 1,2,3-Trichlorobenzene	180	31.079	31.076	-0.006	92	3833	0.0628	
S 150 Xylenes, Total	91				0		0.0480	

Reagents:

VAMSIS50_00016 Amount Added: 50.00 Units: mL Run Reagent

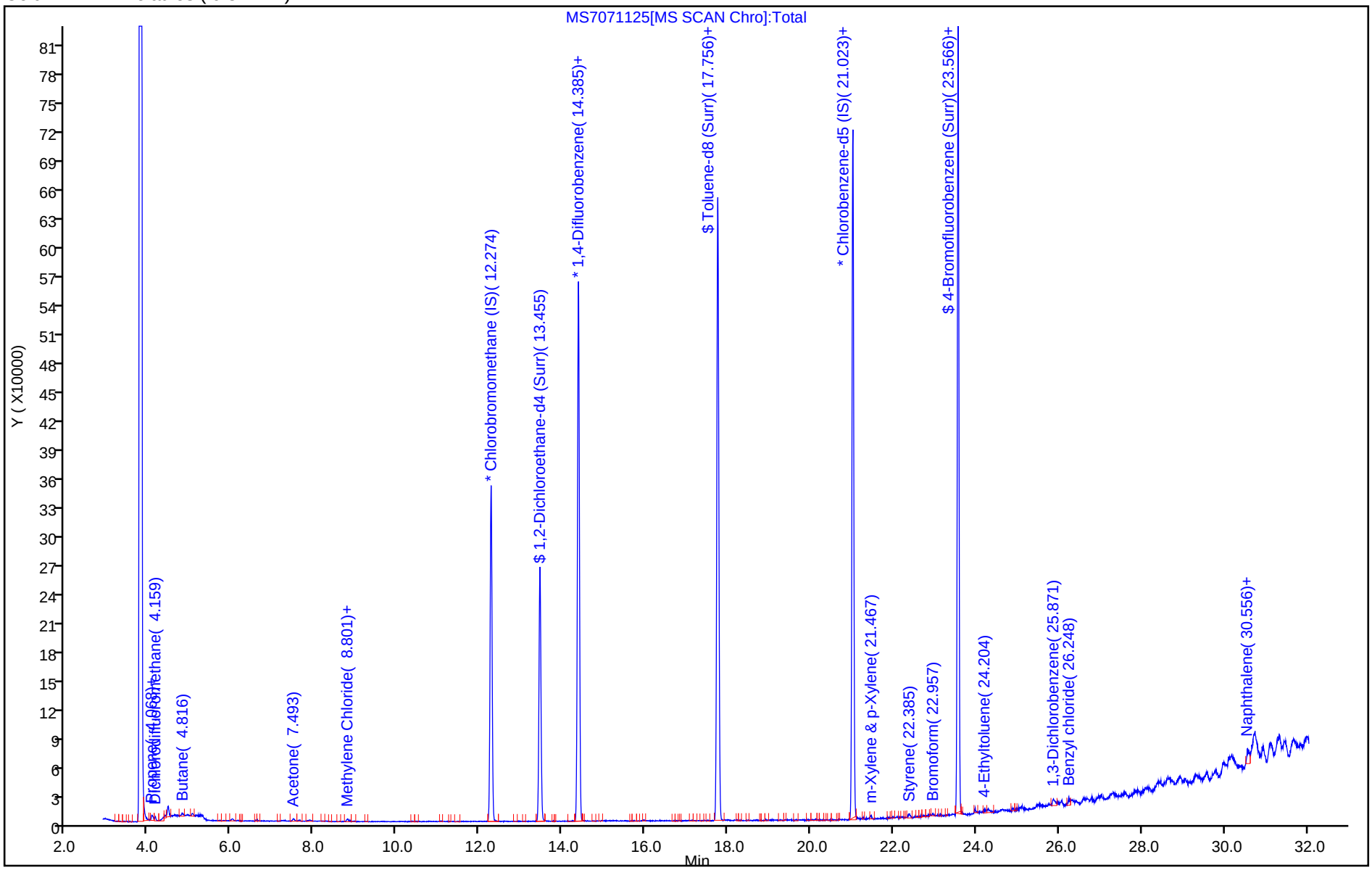
Report Date: 12-Jul-2019 10:49:25 Chrom Revision: 2.3 10-Jul-2019 14:12:46

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D

Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7	Operator ID:	LHS
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1	Worklist Smp#:	25
Client ID:	34002048				
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		

Column: RTX Volatiles (0.32 mm)

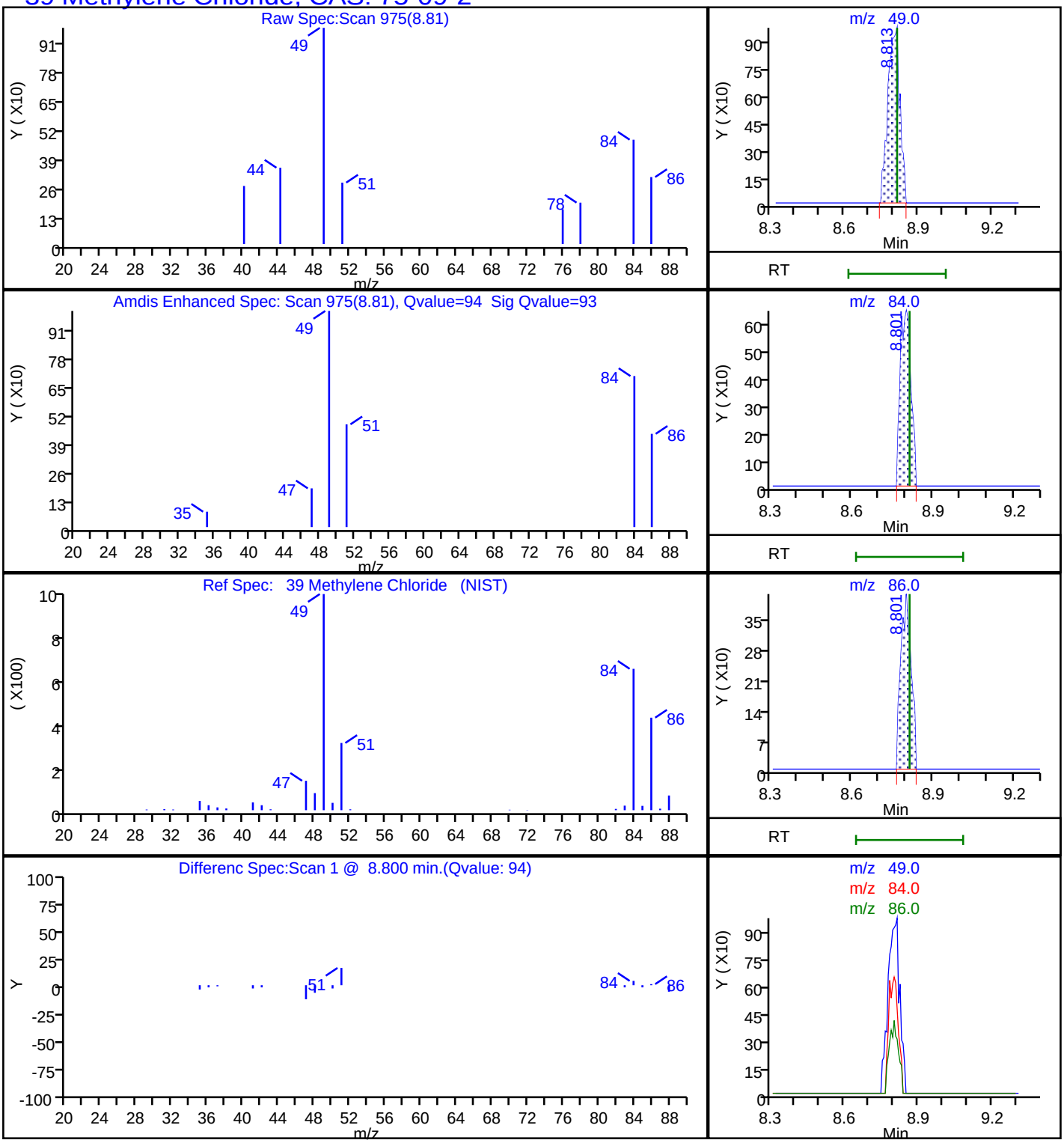


Report Date: 12-Jul-2019 10:49:25 Chrom Revision: 2.3 10-Jul-2019 14:12:46

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

39 Methylene Chloride, CAS: 75-09-2

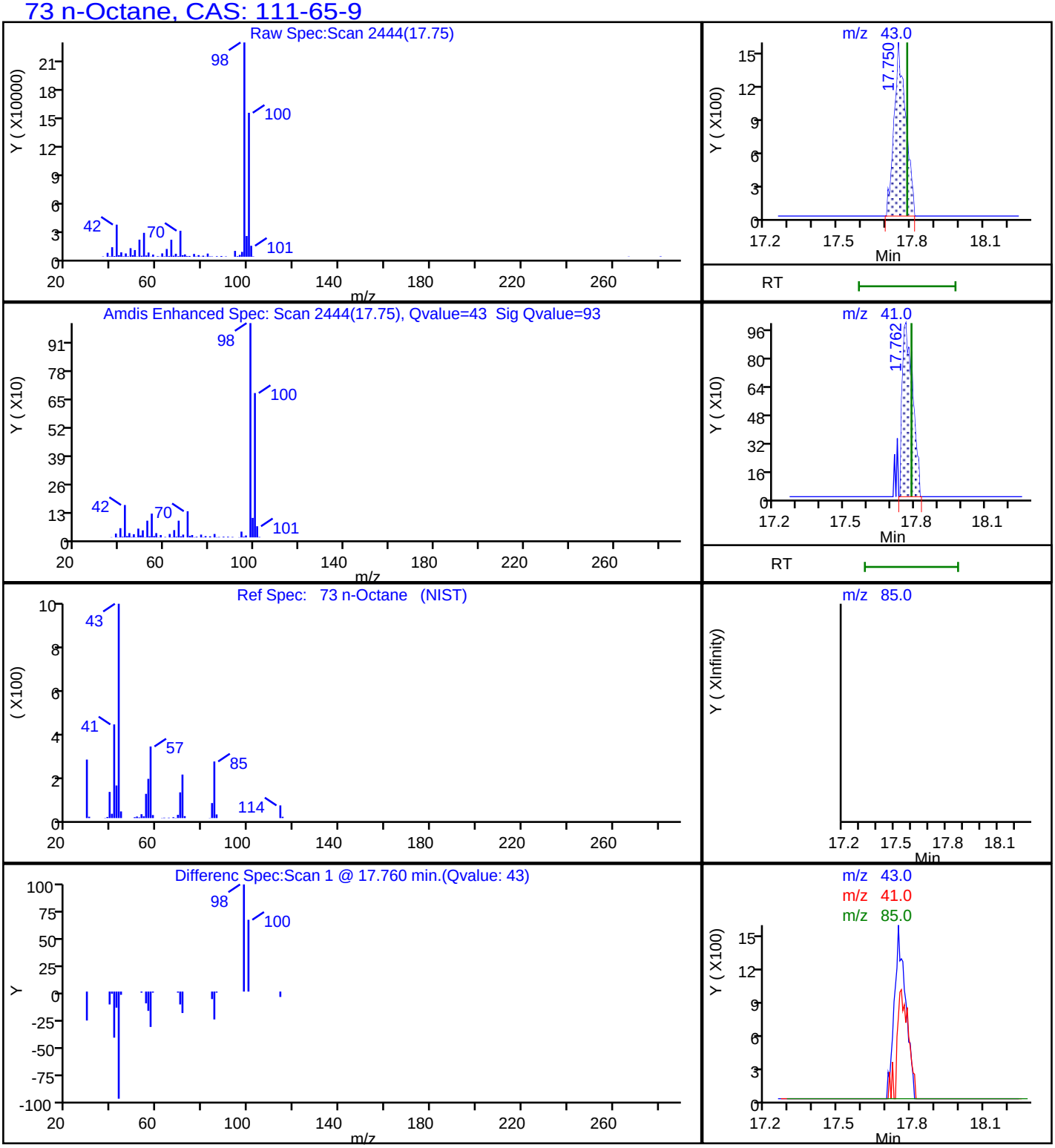


Report Date: 12-Jul-2019 10:49:26 Chrom Revision: 2.3 10-Jul-2019 14:12:46

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

73 n-Octane, CAS: 111-65-9



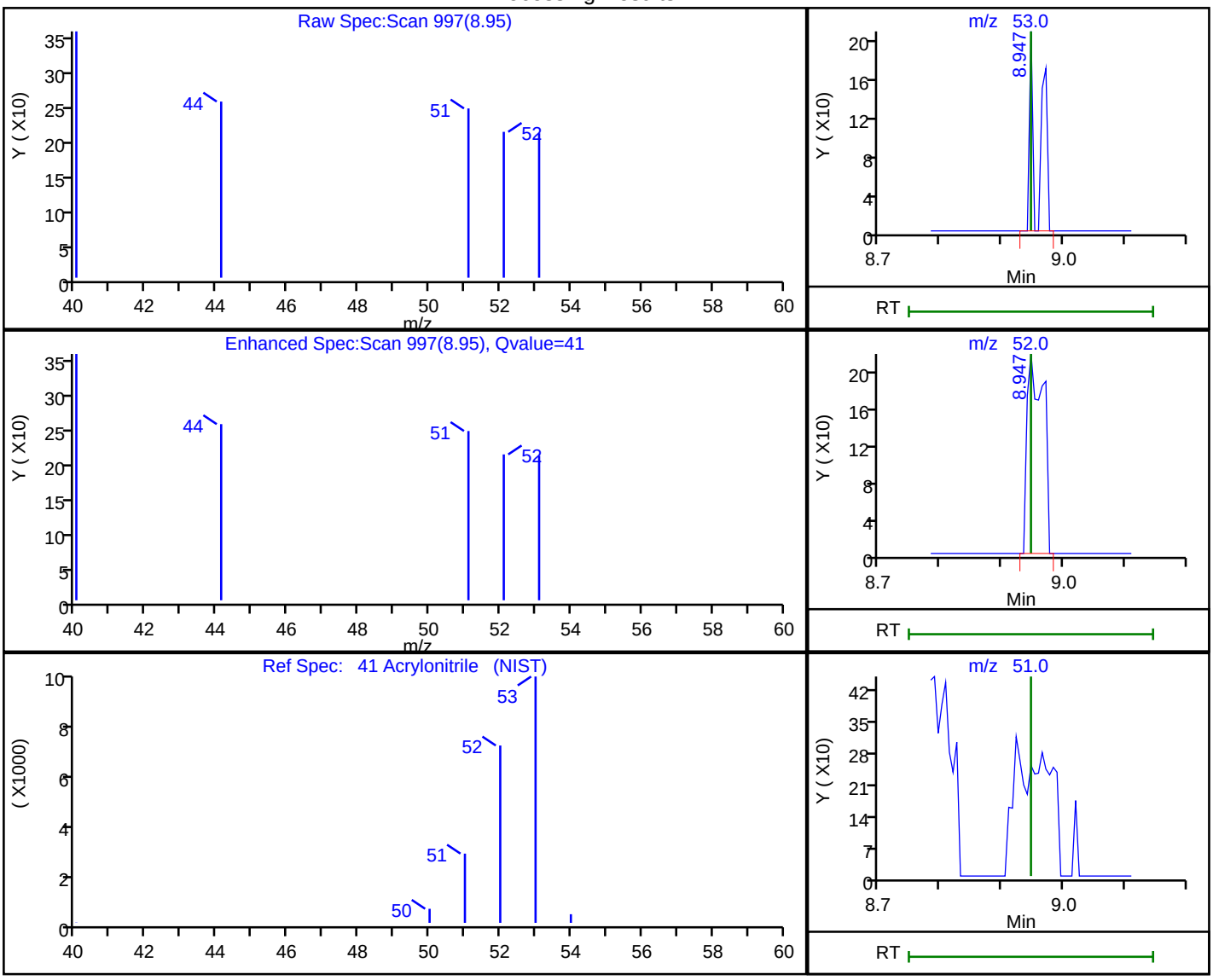
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

41 Acrylonitrile, CAS: 107-13-1

Processing Results



RT	Mass	Response	Amount
8.95	53.00	194	0.010436
8.95	52.00	390	
8.95	51.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

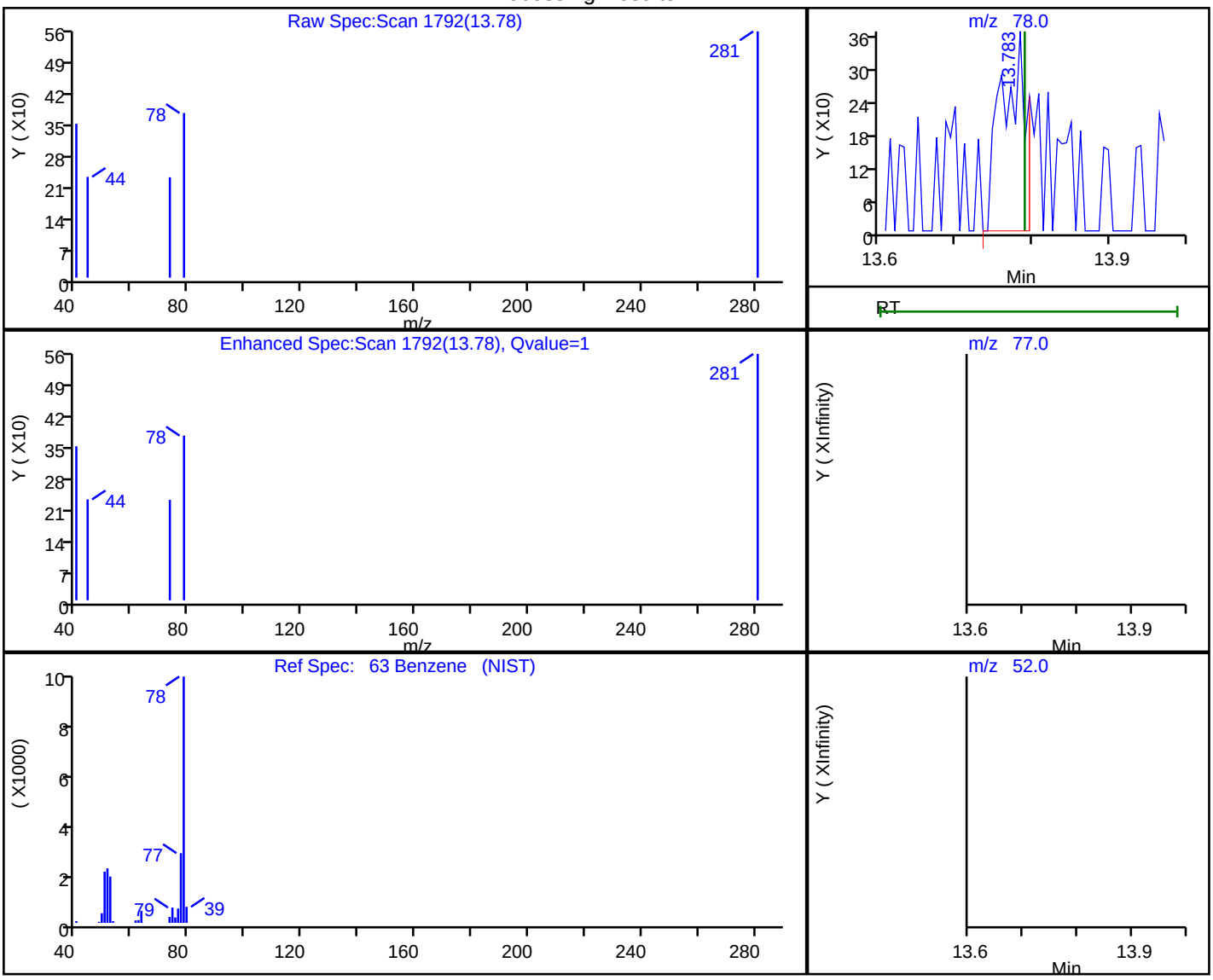
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

63 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
13.78	78.00	790	0.011844
13.79	77.00	0	
13.79	52.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:00

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

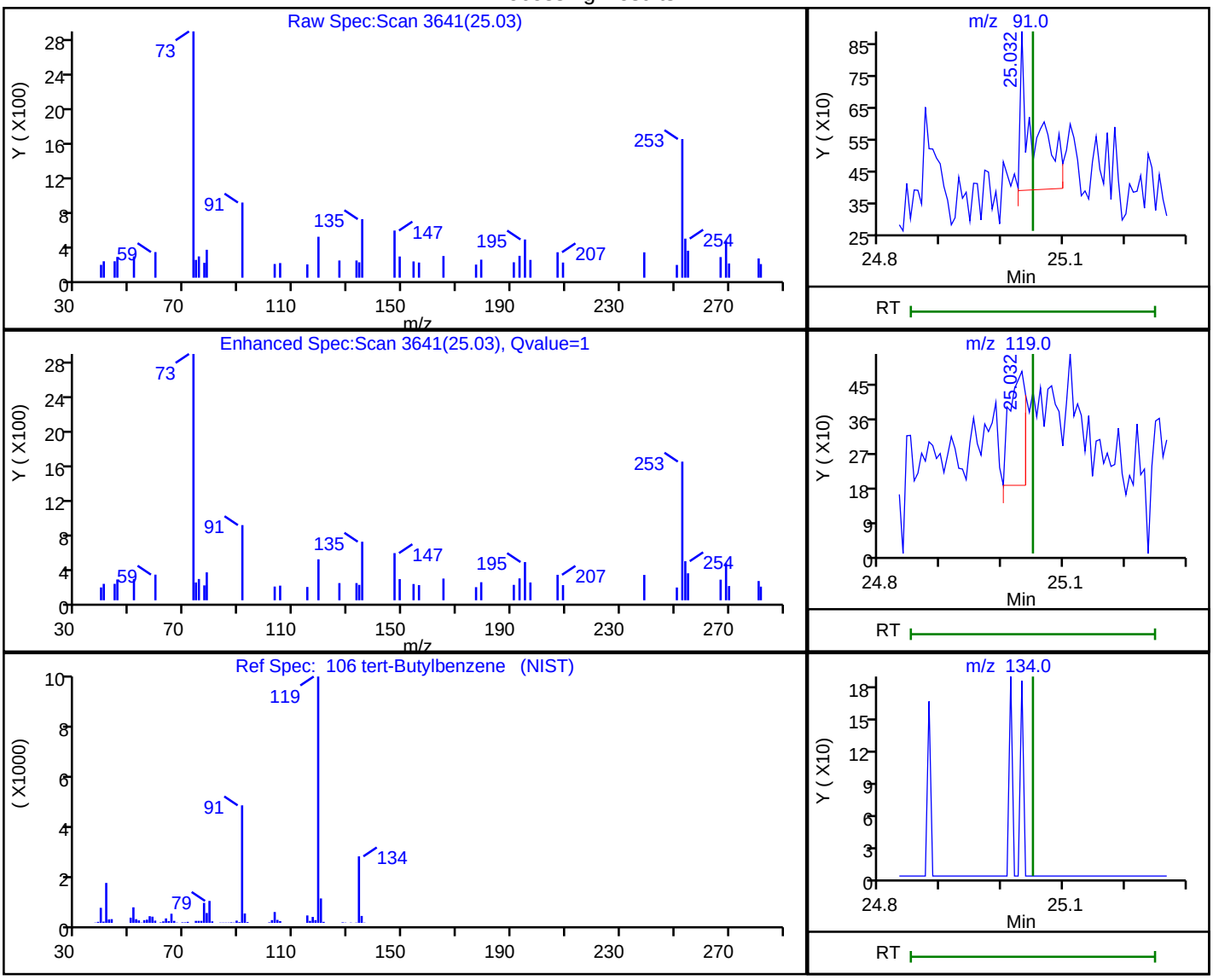
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

106 tert-Butylbenzene, CAS: 98-06-6

Processing Results



RT	Mass	Response	Amount
25.03	91.00	771	0.008749
25.03	119.00	539	
25.05	134.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:51

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

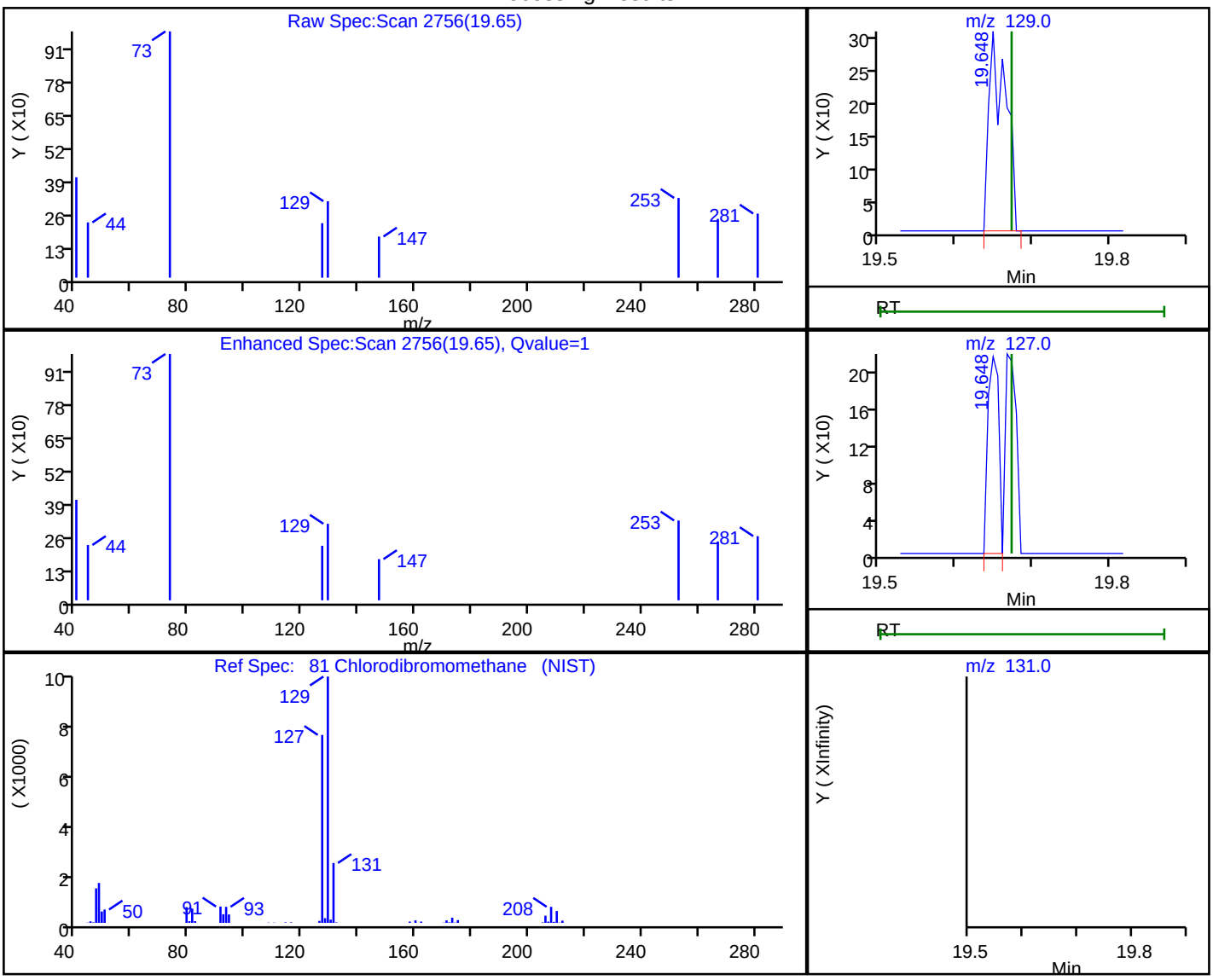
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

81 Chlorodibromomethane, CAS: 124-48-1

Processing Results



RT	Mass	Response	Amount
19.65	129.00	466	0.010254
19.65	127.00	214	
19.67	131.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

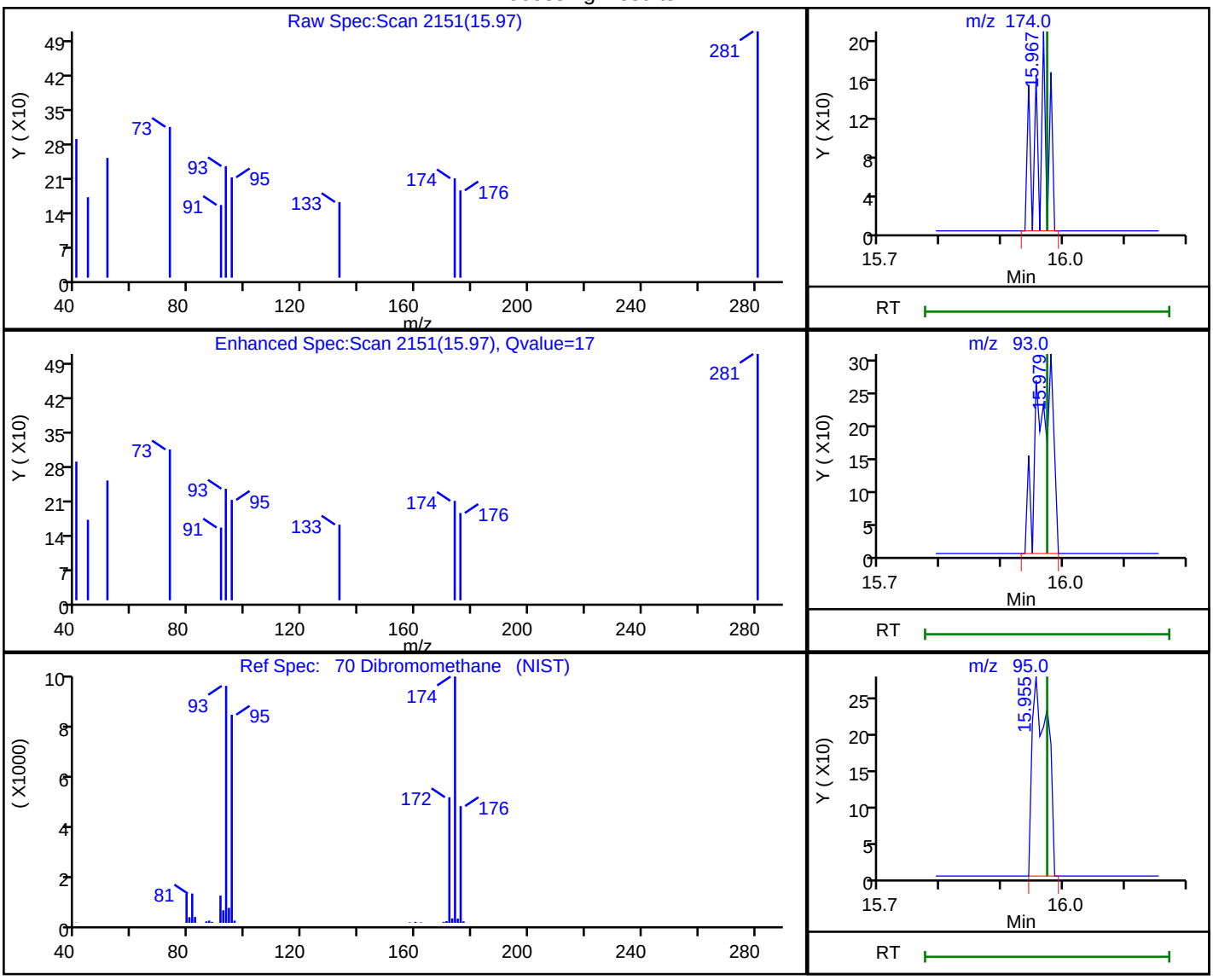
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

70 Dibromomethane, CAS: 74-95-3

Processing Results



RT	Mass	Response	Amount
15.97	174.00	247	0.010474
15.98	93.00	535	
15.95	95.00	477	

Reviewer: leeh, 12-Jul-2019 10:47:05

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

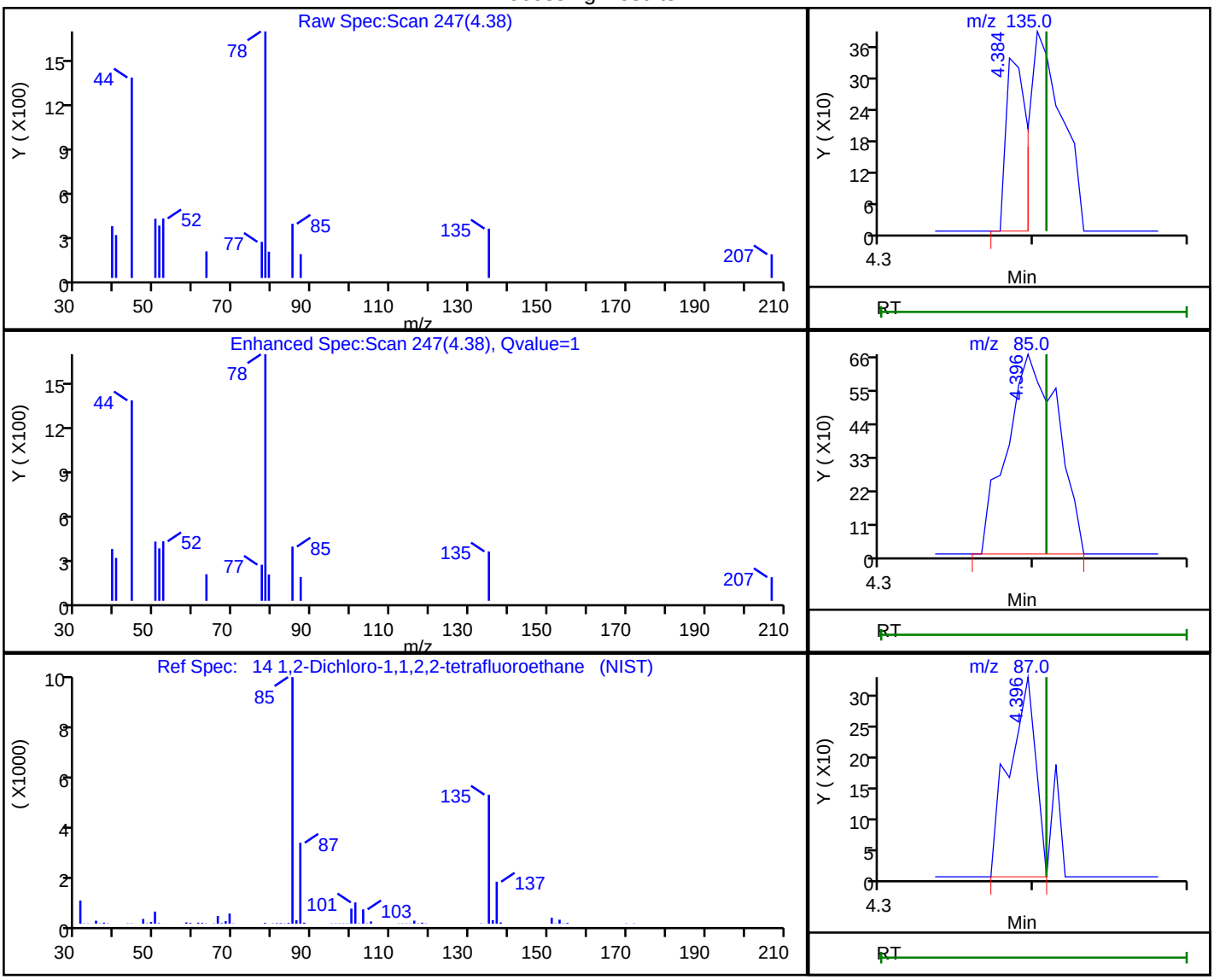
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

14 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Processing Results



RT	Mass	Response	Amount
4.38	135.00	307	0.010344
4.40	85.00	1537	
4.40	87.00	389	

Reviewer: leeh, 12-Jul-2019 10:45:52

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

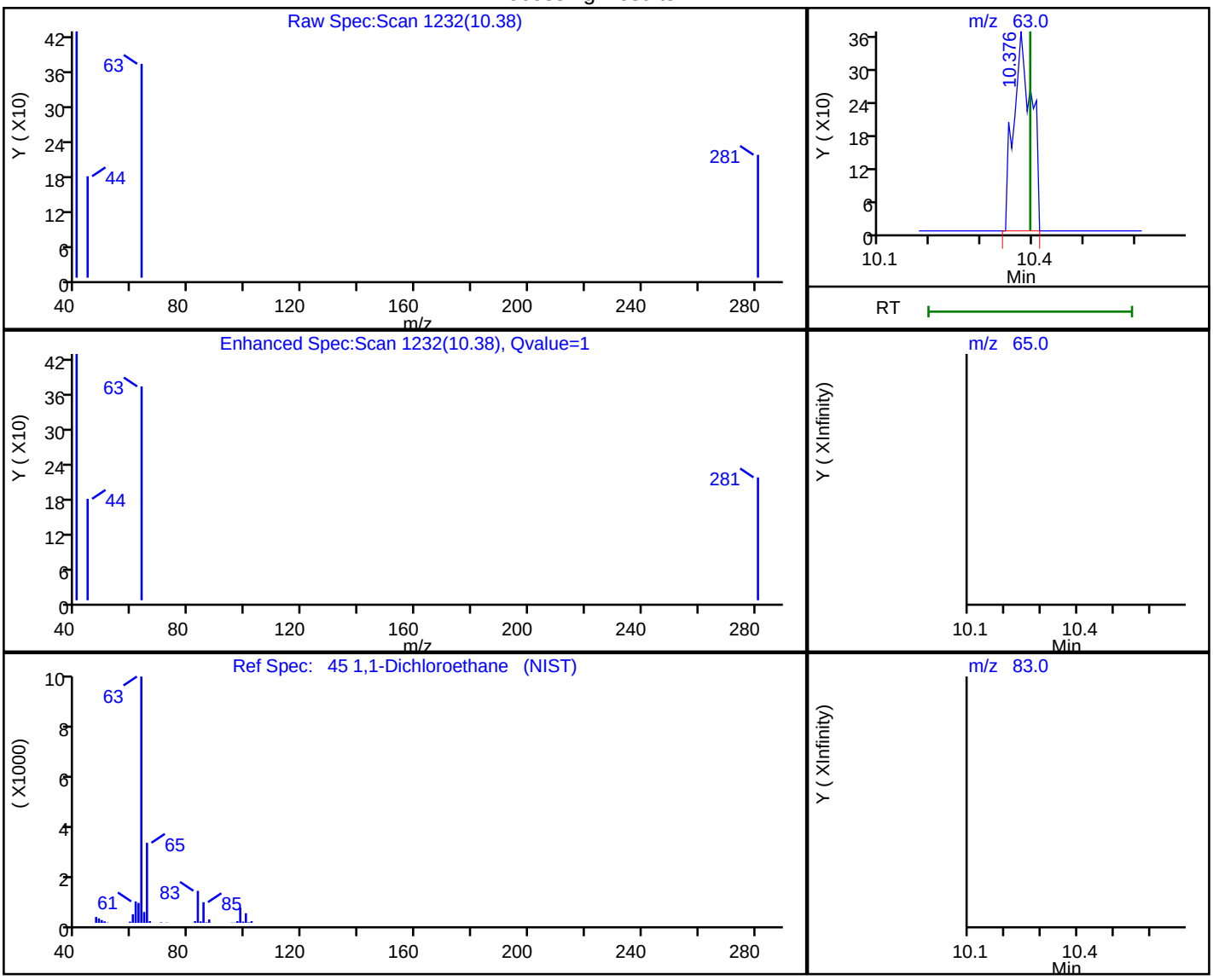
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

45 1,1-Dichloroethane, CAS: 75-34-3

Processing Results



RT	Mass	Response	Amount
10.38	63.00	901	0.019924
10.39	65.00	0	
10.39	83.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:25

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

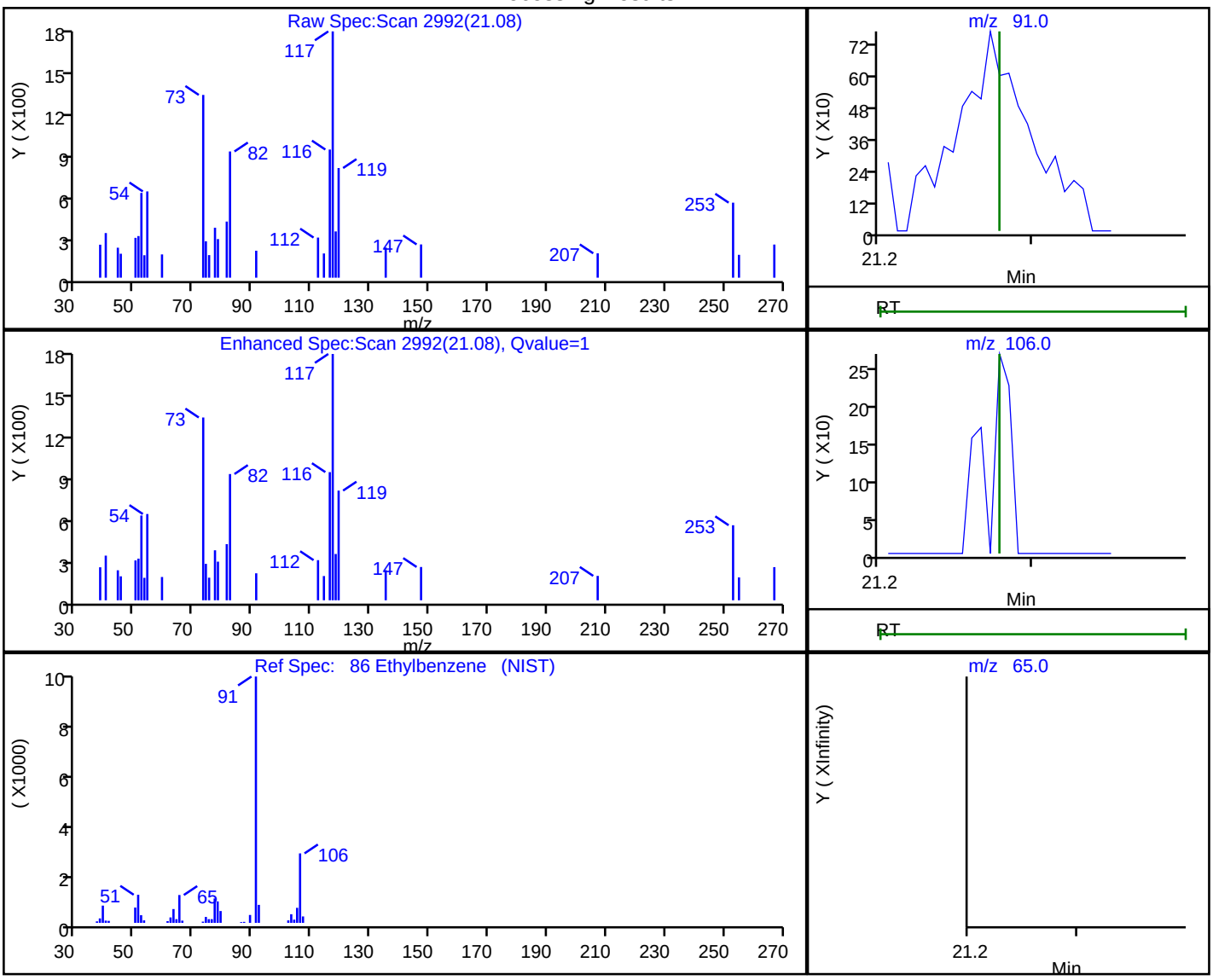
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

86 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
21.08	91.00	139	0.001256
21.28	106.00	0	
21.28	65.00	0	

Reviewer: leeh, 12-Jul-2019 10:47:28

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

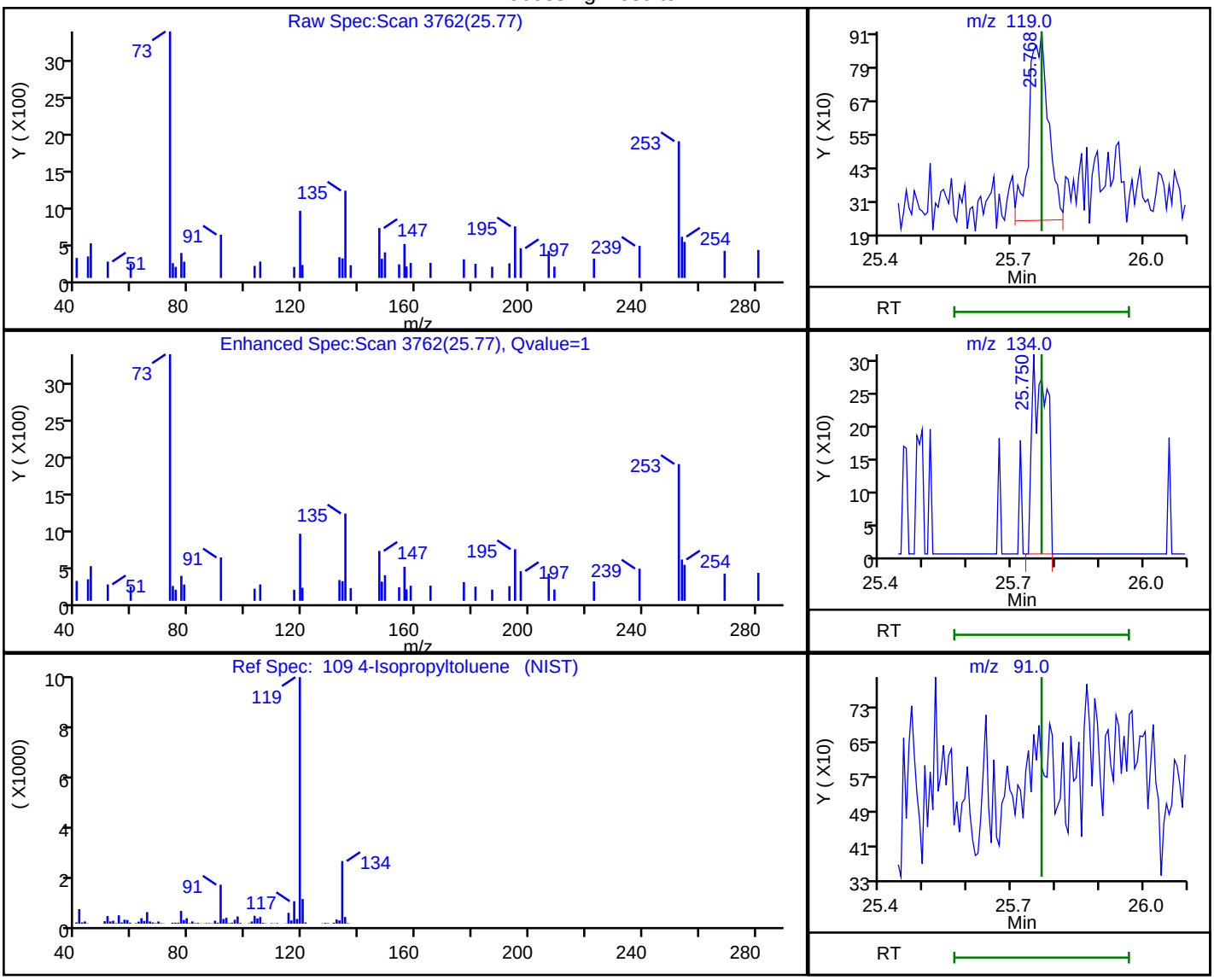
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

109 4-Isopropyltoluene, CAS: 99-87-6

Processing Results



RT	Mass	Response	Amount
25.77	119.00	2050	0.014061
25.75	134.00	692	
25.77	91.00	0	

Reviewer: leeh, 12-Jul-2019 10:48:03

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

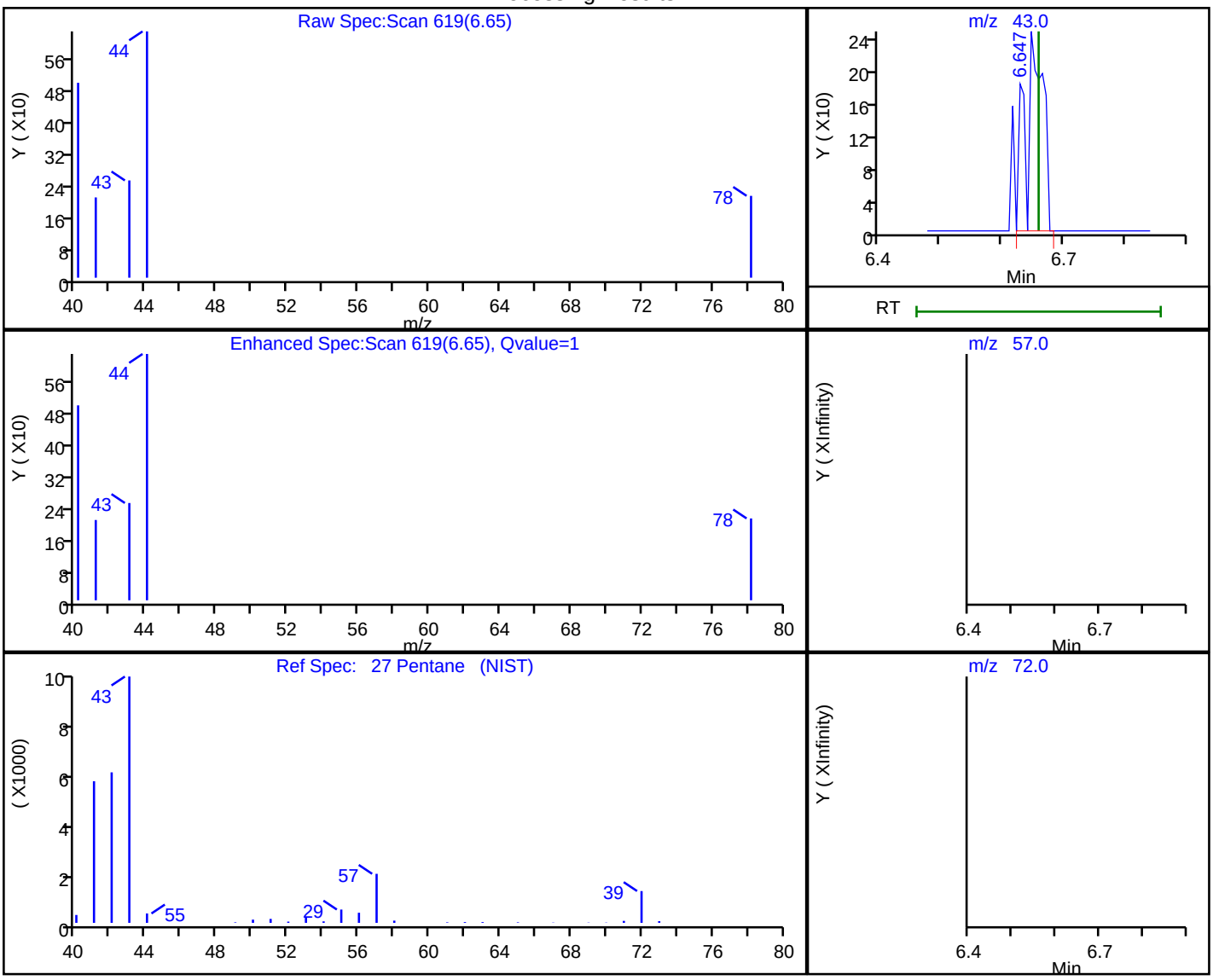
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

27 Pentane, CAS: 109-66-0

Processing Results



RT	Mass	Response	Amount
6.65	43.00	489	0.011022
6.66	57.00	0	
6.66	72.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:05

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

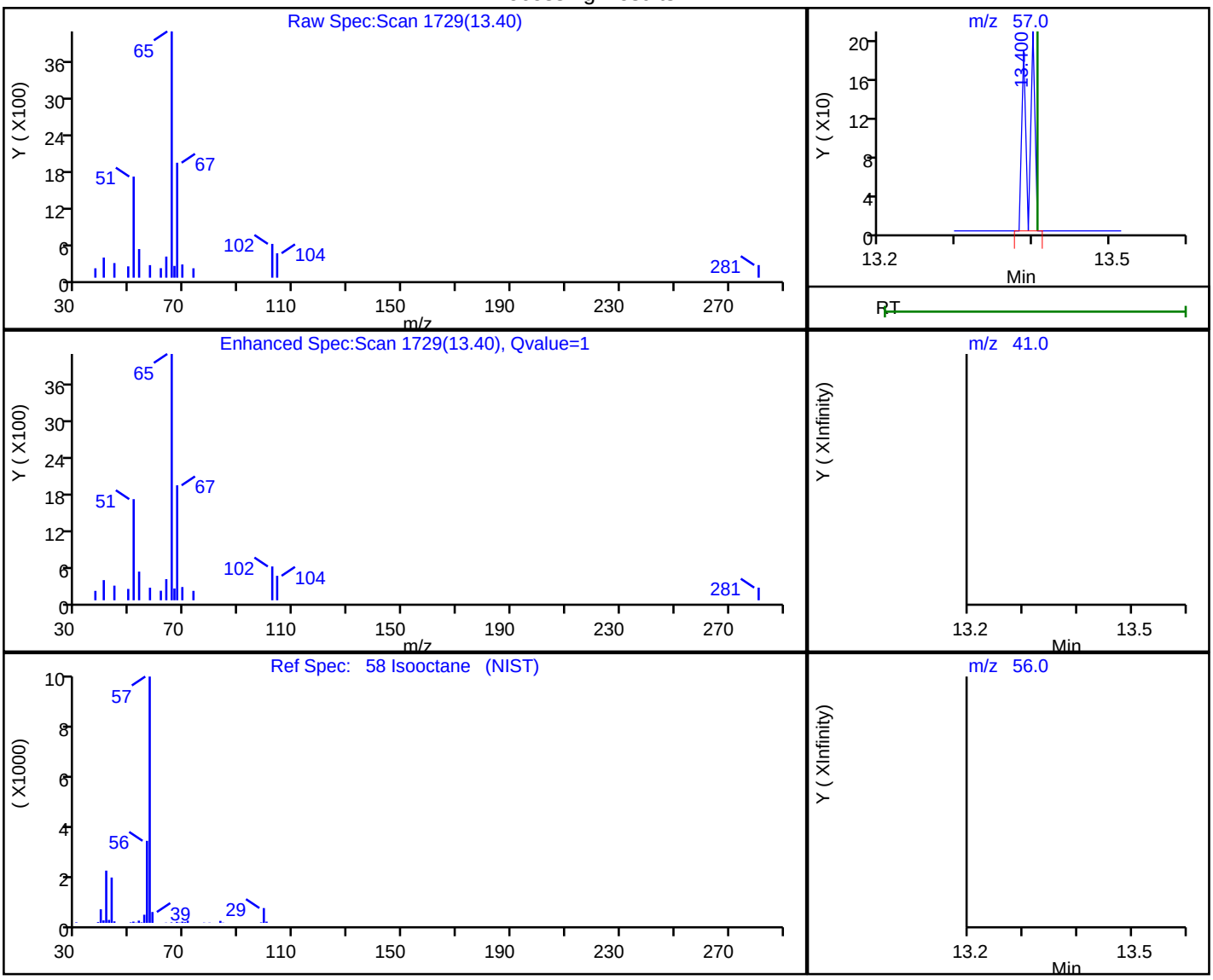
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

58 Isooctane, CAS: 540-84-1

Processing Results



RT	Mass	Response	Amount
13.40	57.00	144	0.001181
13.41	41.00	0	
13.41	56.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:51

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

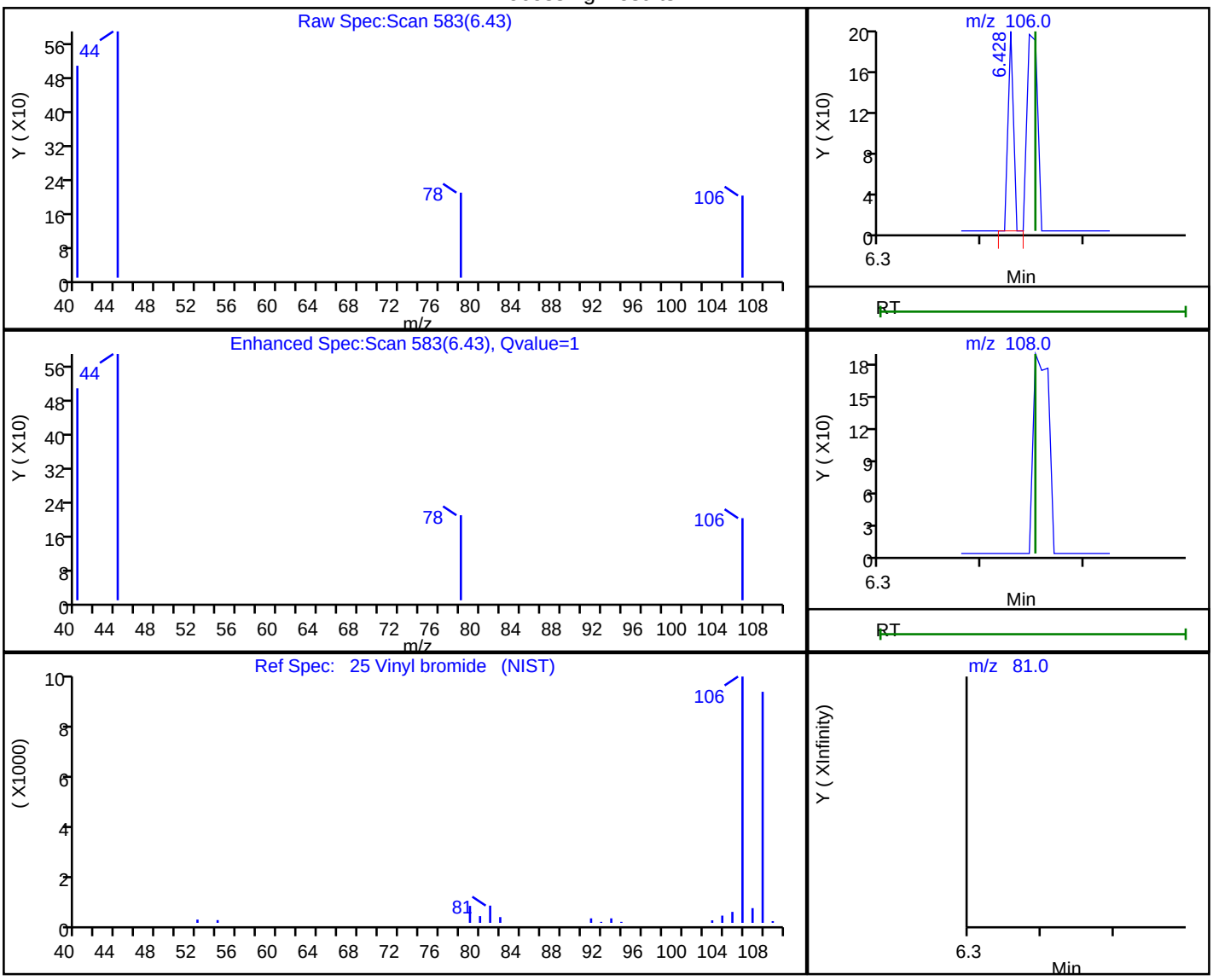
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

25 Vinyl bromide, CAS: 593-60-2

Processing Results



RT	Mass	Response	Amount
6.43	106.00	72	0.004250
6.45	108.00	0	
6.45	81.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:03

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

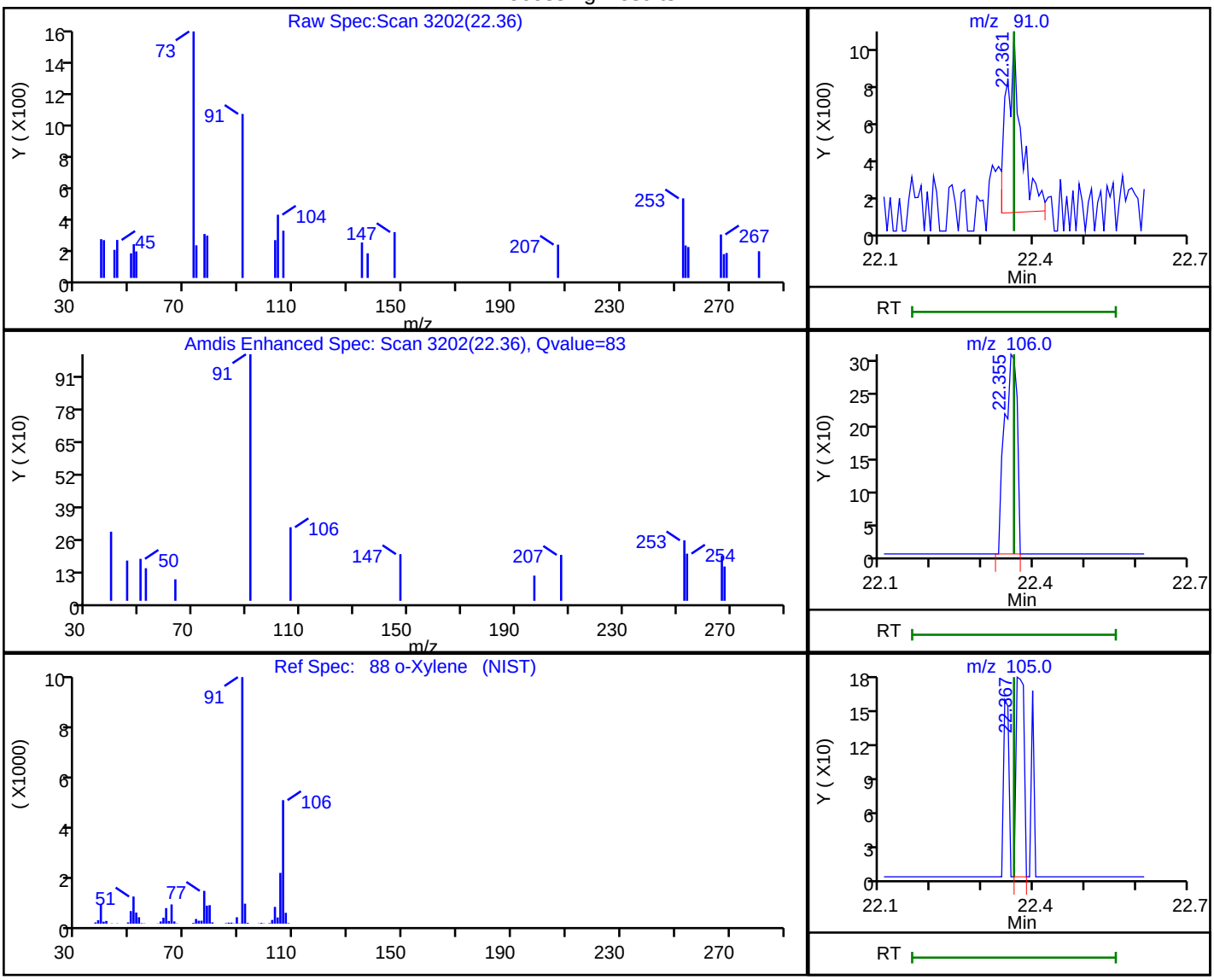
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

88 o-Xylene, CAS: 95-47-6

Processing Results



RT	Mass	Response	Amount
22.36	91.00	1860	0.019589
22.35	106.00	522	
22.37	105.00	192	
22.39	78.00	2417	

Reviewer: leeh, 12-Jul-2019 10:47:34

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

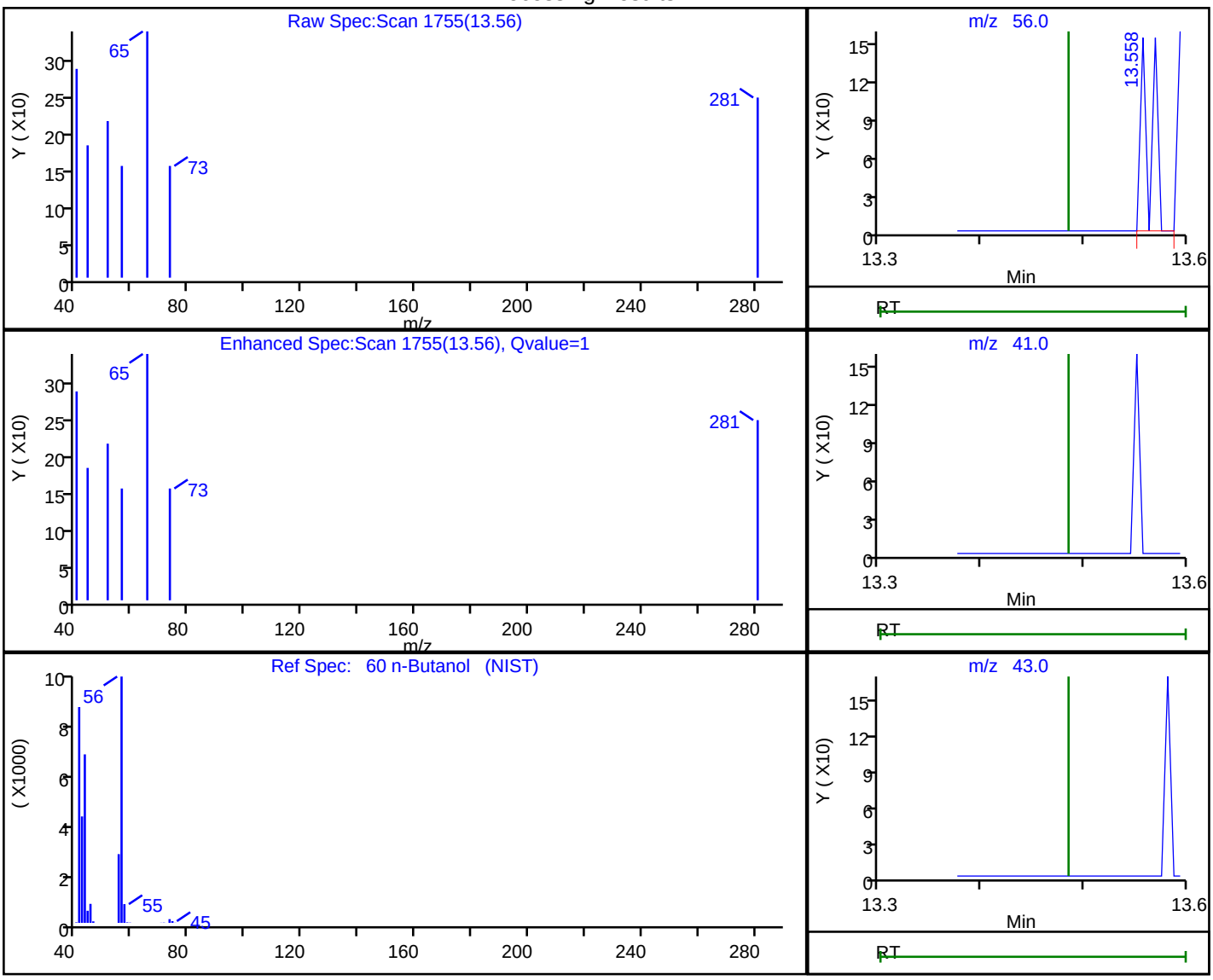
User Disabled Compound Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\ATMS7\20190711-79291.b\MS7071125.D				
Injection Date:	12-Jul-2019 09:29:30	Instrument ID:	ATMS7		
Lims ID:	320-52017-A-1	Lab Sample ID:	320-52017-1		
Client ID:	34002048				
Operator ID:	LHS	ALS Bottle#:	16	Worklist Smp#:	25
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS7N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

60 n-Butanol, CAS: 71-36-3

Processing Results



RT	Mass	Response	Amount
13.56	56.00	111	0.003991
13.48	41.00	0	
13.48	43.00	0	

Reviewer: leeh, 12-Jul-2019 10:46:54

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

AIR - GC VOA BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Burlingt Job No.: 320-53855-2

SDG No.: Washington State Department of Ecology

Batch Number: 148269 Batch Start Date: 10/09/19 14:44 Batch Analyst: Tice, Melissa L.

Batch Method: D1946 Batch End Date: 10/09/19 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialPressure	FinalPressure	InitialAmount	FinalAmount	ATASTMHEICVw 00055	
LCS 200-148269/2		D1946		1	1	300 uL	300 uL	300 uL	
LCSD 200-148269/3		D1946		1	1	300 uL	300 uL	300 uL	
MB 200-148269/4		D1946		1	1	300 uL	300 uL		
320-53855-A-1	SG-1_20190827	D1946	T	1	1	300 uL	300 uL		
320-53855-A-2	SG-2_20190827	D1946	T	1	1	300 uL	300 uL		
320-53855-A-3	SG-3_20190827	D1946	T	1	1	300 uL	300 uL		
320-53855-A-4	SG-4_20190827	D1946	T	1	1	300 uL	300 uL		

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Antea Group
2006 148th Ave NE
Suite 200
Redmond WA 98052

Report Date: November 17, 2019 16:39

Project: 00980SA191.20100

Account #: 12860
Group Number: 2072512
PO Number: 00980SA191.20100
State of Sample Origin: PA

Electronic Copy To Antea Group Attn: Brad Jackson

Respectfully Submitted,

Marrissa Williams
Project Manager

(717) 556-7246

To view our laboratory's current scopes of accreditation please go to https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/ . Historical copies may be requested through your project manager.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
SG-1_20191030 Can # CEL D661 Grab Air	10/30/2019 09:41 - 10/30/2019 10:32	1191718
SG-2_20191030 Can # CEL D915 Grab Air	10/30/2019 14:00 - 10/30/2019 15:36	1191719
SG-3_20191030 Can # CEL D337 Grab Air	10/30/2019 11:36 - 10/30/2019 12:39	1191720
SG-4_20191030 Can # SIM054 Grab Air	10/30/2019 16:10 - 10/30/2019 17:30	1191721

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: SG-1_20191030 Can # CEL D661 Grab Air 980
SG-1

Antea Group
ELLE Sample #: AQ 1191718
ELLE Group #: 2072512
Matrix: Air

Project Name: 00980SA191.20100

Submittal Date/Time: 10/01/2019 11:12
Collection Date/Time: 10/30/2019 09:41 through 10/30/2019 10:32

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Volatiles in Air²		**ASTM D1946**		**ug/m3**	**ug/m3**	**ug/m3**	
10341	Helium as Tracer Gas		7440-59-7	N.D.	1,600,000	1,600,000	2
Volatiles in Air²		**EPA TO-15**		**ug/m3**	**ug/m3**	**ug/m3**	
05298	Benzene		71-43-2	N.D.	0.35	3.2	1
05298	Ethylbenzene		100-41-4	N.D.	0.83	4.3	1
05298	Hexane		110-54-3	N.D.	0.46	3.5	1
05298	Methyl t-Butyl Ether		1634-04-4	N.D.	0.54	3.6	1
05298	Toluene		108-88-3	5.8	0.45	3.8	1
05298	m/p-Xylene		179601-23-1	N.D.	1.1	8.7	1
05298	o-Xylene		95-47-6	N.D.	0.83	4.3	1
Volatiles in Air²		**EPA TO-15 using SIM**		**ug/m3**	**ug/m3**	**ug/m3**	
07345	Naphthalene		91-20-3	N.D.	0.105	0.262	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/20.

² = PA DEP certification is not offered for Air samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10341	Helium as Tracer Gas	ASTM D1946	1	19321HE01	11/17/2019 15:54	Jeffrey B Smith	2
05298	TO 15 VOA Ext. List	EPA TO-15	1	F1931130AA	11/07/2019 17:09	Jacob E Bailey	1
07345	Naphthalene-TO-15 SIM Add-On	EPA TO-15 using SIM	1	E1931130AA	11/07/2019 13:59	Jacob E Bailey	1

*=This limit was used in the evaluation of the final result

Sample Description: **SG-2_20191030 Can # CEL D915 Grab Air 980**
SG-2

Antea Group
ELLE Sample #: AQ 1191719
ELLE Group #: 2072512
Matrix: Air

Project Name: **00980SA191.20100**

Submittal Date/Time: 10/01/2019 11:12
Collection Date/Time: 10/30/2019 14:00 through 10/30/2019 15:36

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Volatiles in Air²		**ASTM D1946**		**ug/m3**	**ug/m3**	**ug/m3**	
10341	Helium as Tracer Gas		7440-59-7	N.D.	1,600,000	1,600,000	2
Volatiles in Air²		**EPA TO-15**		**ug/m3**	**ug/m3**	**ug/m3**	
05298	Benzene		71-43-2	N.D.	0.35	3.2	1
05298	Ethylbenzene		100-41-4	N.D.	0.83	4.3	1
05298	Hexane		110-54-3	N.D.	0.46	3.5	1
05298	Methyl t-Butyl Ether		1634-04-4	N.D.	0.54	3.6	1
05298	Toluene		108-88-3	N.D.	0.45	3.8	1
05298	m/p-Xylene		179601-23-1	N.D.	1.1	8.7	1
05298	o-Xylene		95-47-6	N.D.	0.83	4.3	1
Volatiles in Air²		**EPA TO-15 using SIM**		**ug/m3**	**ug/m3**	**ug/m3**	
07345	Naphthalene		91-20-3	N.D.	0.105	0.262	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/20.

² = PA DEP certification is not offered for Air samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10341	Helium as Tracer Gas	ASTM D1946	1	19321HE01	11/17/2019 16:01	Jeffrey B Smith	2
05298	TO 15 VOA Ext. List	EPA TO-15	1	F1931130AA	11/07/2019 17:42	Jacob E Bailey	1
07345	Naphthalene-TO-15 SIM Add-On	EPA TO-15 using SIM	1	E1931130AA	11/07/2019 14:28	Jacob E Bailey	1

*=This limit was used in the evaluation of the final result

Sample Description: **SG-3_20191030 Can # CEL D337 Grab Air 980**
SG-3

Antea Group
ELLE Sample #: AQ 1191720
ELLE Group #: 2072512
Matrix: Air

Project Name: **00980SA191.20100**

Submittal Date/Time: 10/01/2019 11:12
Collection Date/Time: 10/30/2019 11:36 through 10/30/2019 12:39

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Volatiles in Air²	**ASTM D1946**		**ug/m3**	**ug/m3**	**ug/m3**	
10341	Helium as Tracer Gas	7440-59-7	N.D.	1,600,000	1,600,000	2
Volatiles in Air²	**EPA TO-15**		**ug/m3**	**ug/m3**	**ug/m3**	
05298	Benzene	71-43-2	0.36 J	0.35	3.2	1
05298	Ethylbenzene	100-41-4	N.D.	0.83	4.3	1
05298	Hexane	110-54-3	N.D.	0.46	3.5	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	0.54	3.6	1
05298	Toluene	108-88-3	8.0	0.45	3.8	1
05298	m/p-Xylene	179601-23-1	N.D.	1.1	8.7	1
05298	o-Xylene	95-47-6	N.D.	0.83	4.3	1
Volatiles in Air²	**EPA TO-15 using SIM**		**ug/m3**	**ug/m3**	**ug/m3**	
07345	Naphthalene	91-20-3	N.D.	0.105	0.262	1

The GC/MS internal standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/20.

² = PA DEP certification is not offered for Air samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10341	Helium as Tracer Gas	ASTM D1946	1	19321HE01	11/17/2019 16:07	Jeffrey B Smith	2
05298	TO 15 VOA Ext. List	EPA TO-15	1	F1931130AA	11/07/2019 18:14	Jacob E Bailey	1
07345	Naphthalene-TO-15 SIM Add-On	EPA TO-15 using SIM	1	E1931130AA	11/07/2019 14:56	Jacob E Bailey	1

*=This limit was used in the evaluation of the final result

Sample Description: **SG-4_20191030 Can # SIM054 Grab Air 980**
SG-4

Project Name: **00980SA191.20100**

Submittal Date/Time: 10/01/2019 11:12
Collection Date/Time: 10/30/2019 16:10 through 10/30/2019 17:30

Antea Group
ELLE Sample #: AQ 1191721
ELLE Group #: 2072512
Matrix: Air

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Volatiles in Air²		**ASTM D1946**		**ug/m3**	**ug/m3**	**ug/m3**	
10341	Helium as Tracer Gas		7440-59-7	N.D.	1,600,000	1,600,000	2
Volatiles in Air²		**EPA TO-15**		**ug/m3**	**ug/m3**	**ug/m3**	
05298	Benzene		71-43-2	N.D.	0.35	3.2	1
05298	Ethylbenzene		100-41-4	N.D.	0.83	4.3	1
05298	Hexane		110-54-3	N.D.	0.46	3.5	1
05298	Methyl t-Butyl Ether		1634-04-4	N.D.	0.54	3.6	1
05298	Toluene		108-88-3	0.64 J	0.45	3.8	1
05298	m/p-Xylene		179601-23-1	N.D.	1.1	8.7	1
05298	o-Xylene		95-47-6	N.D.	0.83	4.3	1
Volatiles in Air²		**EPA TO-15 using SIM**		**ug/m3**	**ug/m3**	**ug/m3**	
07345	Naphthalene		91-20-3	N.D.	0.105	0.262	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/20.

² = PA DEP certification is not offered for Air samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10341	Helium as Tracer Gas	ASTM D1946	1	19321HE01	11/17/2019 16:14	Jeffrey B Smith	2
05298	TO 15 VOA Ext. List	EPA TO-15	1	F1931130AA	11/07/2019 18:46	Jacob E Bailey	1
07345	Naphthalene-TO-15 SIM Add-On	EPA TO-15 using SIM	1	E1931130AA	11/07/2019 15:24	Jacob E Bailey	1

*=This limit was used in the evaluation of the final result

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Quality Control Summary

Client Name: Antea Group
Reported: 11/17/2019 16:39

Group Number: 2072512

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ug/m3	ug/m3	ug/m3
Batch number: 19321HE01	Sample number(s): 1191718-1191721		
Helium as Tracer Gas	N.D.	820,000	820,000
Batch number: E1931130AA	Sample number(s): 1191718-1191721		
Naphthalene	N.D.	0.105	0.262
Batch number: F1931130AA	Sample number(s): 1191718-1191721		
Benzene	N.D.	0.35	3.2
Ethylbenzene	N.D.	0.83	4.3
Hexane	N.D.	0.46	3.5
Methyl t-Butyl Ether	N.D.	0.54	3.6
Toluene	N.D.	0.45	3.8
m/p-Xylene	N.D.	1.1	8.7
o-Xylene	N.D.	0.83	4.3

LCS/LCSD

Analysis Name	LCS Spike Added ug/m3	LCS Conc ug/m3	LCSD Spike Added ug/m3	LCSD Conc ug/m3	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: E1931130AA	Sample number(s): 1191718-1191721								
Naphthalene	2.62	1.25	2.62	1.27	48	49	29-143	2	25
Batch number: F1931130AA	Sample number(s): 1191718-1191721								
Benzene	31.95	36.43	31.95	36.38	114	114	70-130	0	25
Ethylbenzene	43.42	46.72	43.42	47.84	108	110	70-130	2	25
Hexane	35.25	33.46	35.25	36.82	95	104	70-130	10	25
Methyl t-Butyl Ether	36.05	35.77	36.05	38.11	99	106	70-130	6	25
Toluene	37.69	39.02	37.69	39.89	104	106	70-130	2	25
m/p-Xylene	43.42	45.95	43.42	46.75	106	108	78-119	2	25
o-Xylene	43.42	44.96	43.42	45.8	104	105	70-130	2	25

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Quality Control Summary

Client Name: Antea Group
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Reported: 11/17/2019 16:39

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

12800/2072512/1191718-21

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ____ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number:

Lab Name:	Eurofins Lancaster Laboratories Environmental	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	2425 New Holland Pike	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA191.20100
Lab PM:	Marissa Williams	WR329961/009VH-0006	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	717-6562300	California Global ID No.:	NA	Consultant/Contractor PM:	Brad Jackson
Lab Shipping Accnt:	1077-5826-4	Enfos Proposal No:	WR329961/009VH-0010	Phone: 503-863-2114	Email: brad.jackson@anteagroup.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision ___X__ OOC-BU _____ OOC-RM _____	Send/Submit EDD to:	brad.jackson\@anteagroup.com
Other Info:	MarissaWilliams@eurofinsUS.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM _____ BP/ARC ___X___
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level: Limited (Standard) Package ____ Limited Plus Package ____ Full Package ——

Lab No.	Sample Description	Date	Start/End Time	Summa Can Number	Flow Controler Number	Field Matrix	Initial Vacuum (inHg)	Final Vacuum (inHg)	Grab (G) or Composite ©	Number of Containers	Analysis	Benzene - TO-15	Toluene - TO-15	Ethylbenzene - TO-15	m, p xylene - TO-15	o xylene - TO-15	naphthalene - TO-15	n-Hexane - TO-15	MTBE - TO-15	Helium - 3C	Comments
	SG-1_20191030	10/30/2019	09:41/10:32	CEL D661	AD19	A	30	5	G	1		X	X	X	X	X	X	X	X	X	
	SG-2_20191030	10/30/2019	14:00/15:36	CEL D915	AD65	A	30	5	G	1		X	X	X	X	X	X	X	X	X	
	SG-3_20191030	10/30/2019	11:36/12:39	CEL D337	AD48	A	30	5	G	1		X	X	X	X	X	X	X	X	X	
	SG-4_20191030	10/30/2019	16:10/17:30	SIM054	AD38	A	30	4	G	1		X	X	X	X	X	X	X	X	X	

Sampler's Name:	Eric Sanchez	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Antea Group	Eric Sanchez / Antea	10/31/19	1200	FedEx	10/31/19	1200
Ship Method:	FedEx Ship Date: 10/31/2019						
Shipment Tracking No:						11/1/19	1112

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / (No) | Temp Blank: Yes (No) | Cooler Temp on Receipt: NA °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / (No)

BP LaMP Soil/H2O COC July 2018

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Sample Administration Receipt Documentation Log

Doc Log ID: 265100

Group Number(s): 2072512

Client: Antea

ARCO Facility no. 0090

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Date:	11/01/2019
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	VA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	N/A	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	Yes
Samples Intact:	Yes	Air Quality Flow Controllers Present:	Yes
Missing Samples:	No	Flow Controller Quantity:	4
Extra Samples:	No	Air Quality Returns:	No
Discrepancy in Container Qty on COC:	No		

Unpacked by Katie Hartlove

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
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www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report
B	Detection in the Method Blank
Q0	LCS/LCSD Low
Q1	LCS/LCSD High
Q2	MS/MSD Low
Q3	MS/MSD High
Q7	LCS/LCSD RPD
Q8	DUP RPD
Q9	MS/MSD RPD

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.