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Analysis of Respirator Cartridge Performance Testing on a Hanford AW Tank Farm Exhauster Slipstream

July 2020

SK Nune
CK Clayton
J Liu
CJ Freeman
TM Brouns
LA Mahoney

U.S. DEPARTMENT OF ENERGY

Prepared for the U.S. Department of Energy
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Pacific Northwest National Laboratory
Richland, Washington 99352

Executive Summary

Washington River Protection Solutions conducted tests on two types of chemical cartridges for use in air-purifying respirators to determine the period of time that the respirators would provide adequate performance[1] to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPCs) from vapors exiting the exhauster for the Hanford AW tank farm. The Occupational Safety and Health Administration (OSHA) identifies cartridge testing as a valid approach for establishing a cartridge change schedules.[3] Testing is commonly applied in situations where mixtures of COPCs exist, and where other approaches, such as manufacturer recommendations and modeling, are less reliable. The tests were designed and conducted to assure measurement and/or control of the key variables OSHA identified as important to estimate cartridge service life, including temperature, humidity, COPC concentration, breathing rate, and cartridge adsorption capacity.

Testing was conducted from September 23–25, 2016, on a slipstream from the AW exhauster, under static conditions fed to a respirator cartridge test stand developed by Washington River Protection Solutions in collaboration with HiLine Engineering (Richland, Washington). Multipurpose respirator cartridges, SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina), were assessed on separate days. Sample media (sorbent tubes) were used to collect samples of the vapor stream entering and exiting the respirator cartridge, and were subsequently analyzed for COPC concentrations. Pacific Northwest National Laboratory was tasked with conducting an independent analysis of the analytical results and making recommendations based on the results for respiratory cartridge performance and service life. Key conclusions from the assessment of the 59 COPCs in this study are described below:

- Based on measured cartridge inlet vapor concentrations from the AW exhauster, two COPCs—ammonia and N-nitrosodimethylamine (NDMA)—exceeded their corresponding Occupational Exposure Limits (OEL). [2,3] One COPC—N-nitrosomethylethylamine—had one or more inlet concentration measurements >10% of its OEL, but <100%. N-Nitrosodiethylamine had a detection limit[4] (DL) of ~24% of the OEL, but all inlet and outlet measurements were less than the DL. All other COPC inlet and outlet measurements were not >10% of their OELs.

[1] "Adequate performance" refers to being below the breakthrough criteria used in this analysis. The breakthrough criteria for this analysis is having sustained cartridge outlet concentrations >10% of the compound's OEL. Ultimately, Industrial Hygiene professionals will use these results along with specific hazard assessments to determine service life, change schedules, and cartridge selection needed to provide the necessary performance for specific applications in the Hanford tank farms.

[2] Inlet concentrations for furan using the Carbotrap 300 TDU results were significantly higher than documented in this report although breakthrough was not observed on either cartridge. The inlet maximum using the volatile organic analyte method was 203.9% of the OEL for the 7422-SD1 cartridge and 180.0% for the 7422-SC1 cartridge. Furans measured on the effluent were all below the DLs, indicating no breakthrough for either cartridge during the testing period. All inlet and effluent Carbotrap 300 TDU results for 2,5-dihydrofuran and 2-methylfuran were below the DLs. Re-evaluation of the furan, 2,5-dihydrofuran and 2-methylfuran using the Carbotrap 300 TDU is discussed in Pacific Northwest National Laboratory technical report PNNL-26821.[19]

[3] OELs accepted for Hanford tank farm use are based on OELs established by a U.S. governmental agency or national professional organization (e.g., OSHA, National Institute for Occupational Safety and Health, American Conference of Governmental Industrial Hygienists), or if no U.S. OEL exists, standard toxicological practices are applied to develop OELs based on the best available science. The OEL for NDMA was established in 2005 based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

[4] The term "detection limit" is used here to refer either to an analytical reporting limit (RL) or a DL. The use of either an RL or a DL varied among analytical laboratories. An RL (equivalent to a limit of quantification) was used instead of an analytical method DL by several laboratories for specific COPC analyses. See Appendix C and Appendix F for additional information on the specific use of RLs or DLs for each COPC.

- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 106% of its OEL (26.5 ppm) during the testing, which was lower than average (158%) and maximum (644%) historical measurements from the exhauster. The lowest concentration observed was 41.8% of the OEL for the SCOTT 7422-SD1 cartridge for the 12 hour measurement. For the SCOTT 7422-SC1 cartridge, ammonia appeared to break through the cartridge above 10% of the OEL after 12 hours. For the SCOTT 7422-SD1 cartridge, the outlet concentrations were less than the DL initially, began increasing gradually after 12 hours, but remained <10% of the OEL through the end of the test.
- Cartridge inlet concentration measurements for NDMA reached 1638% of its OEL (4.9 ppb), which was higher than the average (963%) and slightly lower than the maximum (2163%) historical concentration measurements from the exhauster. However, all outlet concentrations were less than the analytical RL of ~11% of the OEL, indicating no breakthrough for either cartridge during the testing period.
- Cartridge inlet concentration measurements for N-nitrosomethylethylamine reached a maximum of 14% of its OEL (0.04 ppb) and average concentration of ~12% of OEL. The average concentration was slightly lower than average historical measurements from the exhauster. All outlet concentrations were less than the analytical RL of ~9.2% of the OEL, indicating no breakthrough for either cartridge during the testing period.
- All inlet and outlet concentrations for NDEA were less than the analytical RL of ~24% of the OEL, indicating no breakthrough for either cartridge during the testing period.
- Based on measurements taken for this study, the ammonia breakthrough above 10% of its OEL for the SCOTT 7422-SD1 cartridge was after 12 hours. For the SCOTT 7422-SD1 cartridge, the outlet concentrations were less than the DL initially, began increasing gradually after 12 hours, but remained <10% of the OEL through the end of the test. However, variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact breakthrough time, especially if OEL thresholds are exceeded. In these circumstances, additional respirator cartridge evaluations may be necessary to determine proper respiratory protection requirements.

The *Overview of 2016 through 2018 Testing of Air-Purifying Respirator Cartridge Performance on Multiple Hanford Tank Headspaces and Exhausters* provides additional information on the use of the cartridge testing results for the first 28 cartridge tests with the manufacturers service life models.[19]

Revision History

Revision Number	Effective Date	Description of Change
0		Initial issue
1	July 2020	This report has been revised to address external peer review comments on the Rev. A report and other test reports from 2016 cartridge testing, The principal changes include: 1. Adding descriptive information to Appendices A, B, and C to provide additional clarity on the contents and methods applied. 2. A furans analytical methods review was conducted in 2018 (Assessment of the Use of Alternate Furan Measurements for Respirator Cartridge Performance Determinations letter report 69802-01). The assessment recommended the use of the Carbotrap 300 TDU volatile organic compound tube analytical results for furan, 2,5-dihydrofuran, and 2-methylfuran in lieu of the TDU Tenax TA tube. All of the furan, 2,5-dihydrofuran, and 2-methylfuran results for the 2016 air-purifying respirator cartridge testing have been re-evaluated and documented in Freeman et al.[19].[5] Therefore values for furan, 2,5-dihydrofuran, and 2-methylfuran have not been updated in this revision of the report. Inlet concentrations for furan, 2,5-dihydrofuran, and 2-methylfuran using the Carbotrap 300 results were significantly higher than documented in this report.[6] No breakthrough of these furan compounds was observed on either cartridge tested.

[5] See Appendix F of Freeman Freeman CJ, J Liu, C Clayton, SK Nune, LA Mahoney, CL Bottenus, TM Brouns, MJ Minette, and P Humble. 2020. Overview of 2016 through 2018 Testing of Air-Purifying Respirator Cartridge Performance on Multiple Hanford Tank Headspaces and Exhausters. PNNL-26821, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington..

[6] Inlet concentrations for furan using the Carbotrap 300 TDU results were significantly higher than documented in this report though breakthrough was not observed on either cartridge. The Inlet maximum using the volatile organic analyte methods was 203.9% of the OEL for the 7422-SD1 cartridge and 180.0% for the 7422-SC1 cartridge. Furan measured on the effluent were all below DL indicating no breakthrough for either cartridge during the testing period. All inlet and effluent Carbotrap 300 TDU results for 2,5-dihydrofuran and 2-methylfuran were below DL.

Acronyms and Abbreviations

ALS	ALS Environmental Salt Lake City
APR	air purifying respirator
BBI	Best Basis Inventory
CBAL	Columbia Basin Analytical Laboratory, part of the RJ Lee Group
CFR	Code of Federal Regulations
COPC	Chemicals Of Potential Concern
CVAA	Cold Vapor Atomic Absorption
DL	detection limit
EPA	U.S. Environmental Protection Agency
GC–FID	gas chromatography–flame ionization detector
GC/MS	gas chromatography/mass spectrometry
GC–TEA	gas chromatrography–thermal energy analyzer
HPLC	high performance liquid chromatography
HPLC–UV	high performance liquid chromatography–ultraviolet
IC	ion chromatography
NDEA	N-Nitrosodiethylamine
NDMA	N-Nitrosodimethylamine
NIOSH	National Institute of Occupational Safety and Health
NMEA	N-Nitrosomethylethylamine
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
SCBA	self-contained breathing apparatus
ppm	Parts Per Million
PNNL	Pacific Northwest National Laboratory
RL	reporting limit
SWIHD	Site-Wide Industrial Hygiene Database
TIC	Tentatively Identified Compound
TWINS	Tank Waste Information Network System
VOC	volatile organic compound
WC	water column
WHL	Wastren Hanford Laboratory (222S)
WRPS	Washington River Protection Solutions

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1.0 Introduction/Project Description

As the Tank Operations Contractor for U.S. Department of Energy operations at the Hanford site, Washington River Protection Solutions (WRPS) is responsible for managing highly radioactive wastes stored in tanks at Hanford. WRPS recently identified the need to test air-purifying respirator (APR) chemical cartridges commonly used at Hanford tank farms. The tests were conducted to determine the period of time that the cartridges would provide adequate performance for APRs used to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPCs) from any vapors exiting headspaces in the tanks. Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulations (CFR) 1910.134(d)(3)(iii)(b)(2) specifies that for protection against gases and vapors, employers shall implement a schedule for cartridges to ensure that change-outs occur before the end of service life.[1-4] The change schedule can be based on objective information or data that ensures cartridge change-outs occur before the end of their service life.[2-5] The primary function of the WRPS APR Cartridge Test Program is to obtain objective data to determine service lives for the APR cartridges in use at Hanford tank farms. WRPS contracted Pacific Northwest National Laboratory (PNNL) to analyze the test data and offer an independent analysis and any recommendations. This report summarizes data analysis of cartridge testing on vapors from the exhauster on the Hanford AW tank farm.

2.0 Regulatory Requirements

2.1 Background on Regulatory Requirements

OSHA Respiratory Protection Standard (29 CFR 1910.134) mandates/requires that employers provide protective equipment, including respirators, to their employees to protect them against potential exposure to contaminants at or above documented Occupational Exposure Limits (OELs) and establish cartridge change-out schedules to ensure cartridges are changed before the end of service life.[1] End of service life is the time when a respirator cartridge can no longer filter/capture harmful contaminants (i.e., the cartridge no longer functions effectively).

Protective respirator cartridges are frequently used in workplaces with low contaminant concentrations, and where respirators provide essential protection for longer periods of time (>2 hours). If the contaminant concentration in a workplace is high, supplied air respirators (SAR) or self-contained breathing apparatuses (SCBA) must be used to provide additional protection. While the use of SARs or SCBAs offers more protection, a tradeoff exists, particularly for SCBAs that employ a large, heavy (~30 pounds), back-mounted compressed air cylinder.[1]

2.2 OSHA-Approved Methods for Determining Cartridge Change-Out Times

The National Institute of Occupational Safety and Health (NIOSH) certifies organic vapor cartridges using the criteria in 42 CFR 84, Approval of Respiratory Protective Devices. Still, there is no widely accepted, standard protocol for performing service-life testing.[4] However, OSHA has identified three valid approaches for establishing cartridge service lives.[3] These approaches are described below.

- Conduct experimental tests – First, gather all available information about the nature of all contaminants present in the workplace. Obtain breathing rates of workers and estimate worst-case exposures. For most employers, this approach is the most time consuming, and resources needed to perform these tests may not be available. If an employer has the resources needed to pursue this approach, it is the most reliable method of estimating cartridge service life. Concentrations at different points in time are obtained using actual respirator cartridges exposed to actual or simulated gases to gather service-life information. A safety factor that includes the assumptions made, variable factors, or conditions needs to be applied to the service life and used in the respiratory protection program. This approach is commonly used in situations where mixtures of contaminants are present and can also be used to validate an existing cartridge change-out schedule.
- Use the manufacture's recommendation – Once information about airborne contaminants (including concentrations, temperature, and humidity) has been obtained, contact the manufacturer of the respirator to be used and provide all the information. Manufacturers should be able to provide be able to provide the exact objective information they used to project the service life. Using the information obtained, service lives are proposed. This approach is not as reliable as conducting application-specific experiments, and manufacturers may not have all the information for workplace hazards and user factors. If any safety factor is applied considering all the variable factors, it must be clearly identified in the respiratory protection program. For complex mixtures such as those present in the waste storage tanks at Hanford, manufacturer recommendations may be of limited value, and experimental testing is recommended.

- *Use mathematical models* – Mathematical models are usually applicable for single contaminant exposure situations. OSHA and NIOSH have worked over the years with researchers and industrial partners to develop mathematical models for predicting respirator cartridge service life.[3, 5-11] OSHA offers guidance on using mathematical models to estimate respirator cartridge service life based on single components, but the models have not been adopted for mixtures. NIOSH has developed a computer tool for estimating breakthrough times and service lives of respirator cartridges. Manufacturers can use those results to make service-life recommendations for their products (canister/cartridge) in multi-gas environments. Two types of mathematical models are used: 1) predictive models[3, 5-7] and 2) descriptive models.[9] Each model has its own mathematical basis for its estimations. To estimate the service lives of cartridges, the following information is needed:
  - the number of cartridges used by the respirator
  - the mass of the sorbent used in each cartridge
  - the carbon micro-pore volume
  - the density of the packed bed
  - the maximum temperature
  - the maximum relative humidity
  - the maximum concentration of the contaminants and the work (volumetric flow) rate.

  The primary advantages of using mathematical models are that they are relatively inexpensive and take little time. However, the estimates are not as accurate as testing; sometimes modeling might result in a service-life estimate that is shorter than it needs to be because of conservative assumptions used during calculations.

In addition to the methods described above, "rules of thumb" can be allowed as part of the overall workplace organic vapor assessment for determining a cartridge change-out schedule. Chapter 36 of the American Industrial Hygiene Association publication, *The Occupational Environment: Its Evaluation and Control and Management*, outlines the approach.[12] The "rules of thumb" may not work for every chemical or situation, but provide an estimation of cartridge life. The following are rules of thumb outlined in the publication:

- If the compound's boiling point is >70°C and the concentration is <200 ppm, a service life of 8 hours at a normal work rate can be expected.
- Service life is inversely proportional to worker breathing rate.
- Reducing the concentration of a contaminant by a factor of 10 will increase service life by a factor of 5.
- Relative humidity above 85% will reduce the service life by 50%.

These rules of thumb do not apply in certain situations, including for mixtures of hazardous contaminants (e.g., Hanford tank farm vapors) and inorganic gases such as ammonia, sulfur dioxide, and hydrogen sulfide, compositions that vary with time and, location, and contaminants that undergo continuous reactions. However, some of the general drivers[7] can help in interpreting the results obtained from experimental testing of respirator cartridges.

[7] The general drivers (a.k.a., rules of thumb) are applicable to certain compounds but not to all compounds in a mixture, such as those in specific Hanford tank mixtures. However, an Industrial Hygiene professional can use these rules of thumb to support interpretation of results from both experiments and predictions.

3.0 Description of Testing Program

Based on the OSHA guidance described in the previous section, a sample testing approach was pursued for quantifying respirator cartridge effectiveness for Hanford tank vapors. WRPS developed a sampling approach outlined in TFC-PLN-168, "Industrial Hygiene Sampling and Analysis Plan for Respirator Cartridge Testing," and "Air Purifying Respirator Cartridge Test Apparatus, RPP-STE-59226."[13,14]

Appendix A provides a description of the respirator cartridge testing setup developed by WRPS and used for measurements of vapors from the AW exhauster.[13-15] The test system and methodology were developed in consultation with recognized subject matter experts to follow the example of tank farm headspace field sampling for the purposes of cartridge testing.

The Sampling and Analysis Plan was developed under the direction and oversight of the Industrial Hygienist in conjunction with the Tank Farms Operations Contractor Retrieval and Closure, and Tank Farms Project and/or Production Operations Project Management Team, as applicable. Trained Industrial Hygiene Technicians under the direction of a qualified Industrial Hygienist collected chemical vapor samples from the influent and effluent sides of the cartridge test apparatus. Training was performed at HiLine Engineering (Richland, Washington) on the test stands for WRPS Sampling Equipment Operators, Industrial Hygiene Technicians, and the Field Work Supervisors, prior to transport of the stands to tank farms.

The APR cartridge test assembly was designed and constructed to operate without negative effects on performance to the following environmental conditions:

- Temperature: 32 to 115°F
- Relative Humidity: 5% to 100%
- Precipitation: Up to 4 inches in 6 hours
- Wind: Up to 20 mph with blowing dust.

WRPS developed a testing program with the following conservative conditions to support robust cartridge service life estimates:

- The flow rate through each cartridge was set at 30 L/min (equivalent to 60 L/min for a pair of cartridges), which corresponds to more than twice the normal breathing rate and is slightly higher than OSHA recommended testing flow rate of 53.3 L/ min.[3,5]
- Tank farm vapors source sampling was performed on headspace or exhauster stack vapors rather than from Hanford tank farm atmospheric concentrations (i.e., source sampling vs. the breathing zone).
- 10% of the OEL for each COPC was considered as a threshold concentration.

Using the cartridge testing setup described in Appendix A, separate test surveys were performed on two NIOSH-approved respiratory protection twin cartridges: SCOTT 7422-SD1 for Survey 1 and SCOTT 7422-SC1[8] for Survey 2.[16] These cartridges were chosen because they are suitable for capturing organic vapors, acid gases, ammonia, formaldehyde, and particulates.[16]

[8] SCOTT part numbers 7422-SC1 and 7422-SD1 are multipurpose APR respirator cartridges for use on Xcel Half-Mask and all SCOTT full facepieces with NIOSH approval for OV/AM/MA/CL/HC/SD/CD/HF/FM/HS application. The -SD1 cartridge has the same multipurpose features as the -SC1, but also includes a P100 particulate filter. https://www.3mscott.com/download/742-series-cartridges-user-instructions-english/

Vapor concentrations upstream and downstream of the APR cartridge were monitored with an array of sorbent tubes (see Appendix B). Influent (upstream) concentrations were measured at the beginning and end of each 16-hour verification survey. Downstream sorbent tubes were changed out every 2 hours until the experiment was finished. A measured quantity of sample air was drawn in through the sorbent tube (see Appendix A).[13,14] Compounds from the sorbent tubes were extracted and analyzed using analytical methods referenced in Appendix B.

The characteristics of 59 COPCs were the primary focus of the testing. The 59 COPCs represent a set of tank vapor chemicals found in a tank farm source >10% of the OEL, or are considered “known” or “probable” carcinogens by the International Agency for Research Cancer or other regulatory agencies.[17,18] A full listing of these COPCs is shown in Section 4.0.

4.0 Data Analysis

Respirator cartridge testing on the AW exhauster was conducted from September 23–25, 2016. Each cartridge was tested for approximately 16 hours of continuous run time. Testing and analyses focused on the 59 COPCs identified in Table 1 and other hazardous airborne contaminants. Sorbent tubes were changed every 2 hours, and more than 200 sorbent tubes were sent to the 222S Laboratory at Hanford and dispositioned for analyses. Appendix C lists the raw data for all of contaminants analyzed during the tests, and Appendix D lists the corresponding calculated concentrations for the detected COPCs. Appendix C also gives the average temperatures of the sample slipstream during testing, which ranged from 57 to 76°F, and the average relative humidity ranged from 55 to 89%. Table 1 provides an overview of the results for each of the 59 COPCs. Note that nitrous oxide was not analyzed as it is not susceptible to respirator filtration, and there are no known NIOSH-approved respirator filtration cartridges approved for nitrous oxide. Additionally, methanol was not quantified as part of the COPC data set because it is used as a standard solvent and calibration standard in the analytical procedure for volatile organic compounds (VOC).

Table 1 shows the measured concentrations in the current study for all of the COPCs tested. This table further provides a summary of the test information. For example, if all of the measurements for a specific compound were less than detection limits (DL),[9] that compound is marked accordingly. Further, if concentrations were detected for a compound, the extent of the detection also is described. Inlet concentrations of two COPCs, ammonia and N-nitrosodimethylamine (NDMA), exceeded their corresponding OELs. The inlet (or outlet) concentrations of two additional COPCs were lower than their corresponding OELs or detection limits (DL) but still exceeded 10%. These COPCs were N-nitrosodiethylamine (NDEA) and N-nitrosomethylethylamine (NMEA). All four of these COPCs are highlighted in yellow in Table 1 and assessed in more detail in Section 5.0. Appendix E shows similar detailed assessments for an additional 13 COPCs with respirator cartridge inlet (or outlet) concentrations or DLs <10% of their OELs but >2%. These COPCs were mercury, 1,3-butadiene, formaldehyde, furan, 2,3-dihydrofuran, 2,5-dihydrofuran, 2-methylfuran, 2,5-dimethylfuran, 2-pentylfuran, 2-heptylfuran, 2-propylfuran, N-nitrosomorpholine and dibutyl butylphosphonate. All other COPCs had inlet (or outlet) concentrations or DLs that were <2% or their OELs.

[9] The term “detection limit” is used here to refer either to analytical reporting limit (RL) or DL. The use of either an RL or DL varied among analytical laboratories. The RL (equivalent to a limit of quantification) was used instead of a DL by several laboratories for specific COPC analyses. See Appendix C and Appendix F for additional information on the the specific use of reporting limits or DLs for each COPC. Nitrosamine analysis results were quantified to a reporting limit.

Table 1. Summary of Analyzed COPCs

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL[1] (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Inorganic						
1 Ammonia	7664-41-7	26.5 ppm	25 ppm	2.49%		Up to 106% of OEL for inlet values. All outlets <16.6%.
2 Nitrous Oxide	10024-97-2	Not Measured	50 ppm			
3 Mercury	7439-97-6	2.47 ug/m3	25 ug/m3	9.89%		Up to 7.3% of OEL for inlet values. All outlets <DL.
Hydrocarbons						
4 1,3-Butadiene	106-99-0	0.0203 ppm	1 ppm	2.03%	X	
5 Benzene	71-43-2	0.0002 ppm	0.5 ppm	0.026%		Up to 0.04% of OEL for inlet values. All outlets <DL.
6 Biphenyl	92-52-4	0.0003 ppm	0.2 ppm	0.141%	X	
Alcohols						
7 1-Butanol	71-36-3	0.213 ppm	20 ppm	0.004%		Up to 1.1% of OEL for inlet values. All outlets <0.007%.
8 Methanol	67-56-1	Not Measured	200 ppm			
Ketones						
9 2-Hexanone	591-78-6	0.0003 ppm	5 ppm	0.003%		Up to 0.005% of OEL for inlet values. All outlets <DL.
10 3-Methyl-3-butene-2-one	814-78-8	Not Detected	0.02 ppm	TIC[2]	X	
11 4-Methyl-2-hexanone	105-42-0	0.0002 ppm	0.5 ppm	0.031%	X	
12 6-Methyl-2-heptanone	928-68-7	Not Detected	8 ppm	TIC	X	
13 3-Buten-2-one	78-94-4	0.0006 ppm	0.2 ppm	0.092%		Up to 0.31% of OEL for inlet values. All outlets <DL.
Aldehydes						
14 Formaldehyde	50-00-0	0.0079 ppm	0.3 ppm	0.607%		Up to 2.6% of OEL for inlet values. All outlets <0.95%.
15 Acetaldehyde	75-07-0	0.0170 ppm	25 ppm	0.005%		Up to 0.07% of OEL for inlet values. All outlets <0.05%.
16 Butanal	123-72-8	0.0021 ppm	25 ppm	0.001%		Up to 0.009% of OEL for inlet values. All outlets <DL.
17 2-Methyl-2-butenal	1115-11-3	Not Detected	0.03 ppm	TIC	X	
18 2-Ethyl-hex-2-enal	645-62-5	Not Detected	0.1 ppm	TIC	X	

[1] Approximate DL is calculated using the reported DLs (or RL) from the analytical laboratory and the average volume (from flowrate × time) of vapor exposed to the sorbent tube.

[2] TIC (Tentatively Identified Compound) indicates that a mass spectrometry "peak" not associated with calibrated compounds has been tentatively assigned to a compound based on an adequate match to the analytical methods reference library. Reference standards for the compound are not available to accurately quantify, assign an analytical DL, or definitively confirm the identity of the TIC. TICs are reported when the peak area is sufficiently large, estimated as greater than or equal to 5 nanograms of TIC mass, and other analytical criteria are met. For the respirator cartridge testing, this mass of TIC represents an approximate concentration of less than 1.0 ppb, based on the average of all TICs in the COPC list.

[3] Inlet concentrations for furan using the Carbotrap 300 TDU results were significantly higher than documented in this report though breakthrough was not observed on either cartridge. The inlet maximum using the Carbotrap 300 TDU method was 203.9% of the OEL for the 7422-SD1 cartridge and 180.0% for the 7422-SC1 cartridge. Furans measured on the effluent were all below DL indicating no breakthrough for either cartridge during the testing period. All inlet and effluent Carbotrap 300 TDU results for 2,5-dihydrofuran and 2-methylfuran were below DL. The re-evaluation of the furan, 2,5-dihydrofuran, and 2-methylfuran using the Carbotrap 300 TDU is discussed in Freeman et al. [19].

Table 1. (continued)

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL[1] (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Furans [3]						
19 Furan	110-00-9	0.06 ppb	1 ppb	5.65%	X	
20 2,3-Dihydrofuran	1191-99-7	0.03 ppb	1 ppb	3.03%		Up to 2.5% OEL for inlet values. All outlets <DL.
21 2,5-Dihydrofuran	1708-29-8	0.04 ppb	1 ppb	4.26%	X	
22 2-Methylfuran	534-22-5	0.04 ppb	1 ppb	3.58%	X	
23 2,5-Dimethylfuran	625-86-5	0.05 ppb	1 ppb	4.99%	X	
24 2-Ethyl-5-methylfuran	1703-52-2	Not Detected	1 ppb	TIC	X	
25 4-(1-Methylpropyl)-2,3-dihydrofuran	34379-54-9	Not Detected	1 ppb	TIC	X	
26 3-(1,1-Dimethylethyl)-2,3-dihydrofuran	34314-82-4	Not Detected	1 ppb	TIC	X	
27 2-Pentylfuran	3777-69-3	0.04 ppb	1 ppb	4.16%	X	
28 2-Heptylfuran	3777-71-7	0.03 ppb	1 ppb	3.31%	X	
29 2-Propylfuran	4229-91-8	0.04 ppb	1 ppb	3.60%	X	
30 2-Octylfuran	4179-38-8	Not Detected	1 ppb	TIC	X	
31 2-(3-Oxo-3-phenylprop-1-enyl)furan	717-21-5	Not Detected	1 ppb	TIC	X	
32 2-(2-Methyl-6-oxoheptyl)furan	51595-87-0	Not Detected	1 ppb	TIC	X	
Phthalates						
33 Diethylphthalate	84-66-2	0.0003 mg/m3	5 mg/m3	0.062%	X	
Nitriles						
34 Acetonitrile	75-05-8	0.256 ppm	20 ppm	0.001%		Up to 0.5% of OEL for all inlet values. Al outlet values <1.3%.
35 Propanenitrile	107-12-0	0.0004 ppm	6 ppm	0.004%		Up to 0.006% of OEL for inlet values. All outlets <DL.
36 Butanenitrile	109-74-0	0.0002 ppm	8 ppm	0.003%		Up to 0.003% of OEL for inlet values. All outlets <DL.
37 Pentanenitrile	110-59-8	0.0002 ppm	6 ppm	0.004%	X	
38 Hexanenitrile	628-73-9	0.0002 ppm	6 ppm	0.003%		Up to 0.002% of OEL for inlet values. All outlets <DL.
39 Heptanenitrile	629-08-3	Not Detected	6 ppm	TIC	X	
40 2-Methylene butanenitrile	1647-11-6	Not Detected	0.3 ppm	TIC	X	
41 2,4-Pentadienenitrile	1615-70-9	Not Detected	0.3 ppm	TIC	X	

Table 1. (continued)

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL[1] (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Amines						
42 Ethylamine	75-04-7	0.0049 ppm	5 ppm	0.099%	X	
Nitrosamines						
43 N-Nitrosodimethylamine	62-75-9	4.91 ppb	0.3 ppb	10.7%		Up to 1638% of OEL for inlet values. All outlets <DL.
44 N-Nitrosodiethylamine	55-18-5	0.02 ppb	0.1 ppb	23.8%	X	All inlet and oulet values <DL. (23.8%)
45 N-Nitrosomethylethylamine	10595-95-6	0.04 ppb	0.3 ppb	9.18%		Up to 14% of OEL for inlet values. All outlets <DL.
46 N-Nitrosomorpholine	59-89-2	0.04 ppb	0.6 ppb	3.48%		Up to 6.2% of OEL for inlet values. All outlets <DL.
Organophospates						
47 Tributyl phosphate	126-73-8	0.23 ppb	200 ppb	0.114%	X	
48 Dibutyl butylphosphonate	78-46-6	0.16 ppb	7 ppb	2.23%	X	
Halogenated						
49 Chlorinated Biphenyls	Varies	Not Detected	1 mg/m3	TIC	X	
50 2-Fluoropropene	1184-60-7	Not Detected	0.1 ppm	TIC	X	
Pyridines						
51 Pyridine	110-86-1	0.35 ppb	1000 ppb	0.035%	X	
52 2,4-Dimethylpyridine	108-47-4	0.26 ppb	500 ppb	0.052%	X	
Organonitrites						
53 Methyl nitrite	624-91-9	Not Detected	0.1 ppm	TIC	X	
54 Butyl nitrite	544-16-1	Not Detected	0.1 ppm	TIC	X	
Organonitrates						
55 Butyl nitrate	928-45-0	Not Detected	2.5 ppm	TIC	X	
56 1,4-Butanediol, dinitrate	3457-91-8	Not Detected	0.05 ppm	TIC	X	
57 2-Nitro-2-methylpropane	594-70-7	Not Detected	0.3 ppm	TIC	X	
58 1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	Not Detected	0.05 ppm	TIC	X	
Isocyanates						
59 Methyl Isocyanate	624-83-9	Not Detected	20 ppb	TIC	X	

5.0 Plots of COPCs with Significant Detected Values

Of the 59 COPCs in Table 1, only ammonia and NDMA exceeded their OELs.[10] Two additional COPCs, NDEA and NMEA, had measured concentrations or DLs less than their corresponding OELs but >10% of their OELs (see COPCs highlighted in yellow in Table 1). This section provides more detail on these four COPCs, along with plots of the corresponding data. Note that Appendix E shows plots and descriptions for other COPCs with measured inlet or outlet concentrations or DLs between 2% and 10% of their corresponding OELs.

[10] Inlet concentrations for furan using the Carbotrap 300 TDU results were significantly higher than documented in this report although breakthrough was not observed on either cartridge. The inlet maximum using the volatile organic analyte method was 203.9% of the OEL for the 7422-SD1 cartridge and 180.0% for the 7422-SC1 cartridge. Furans measured on the effluent were all below DL indicating no breakthrough for either cartridge during the testing period. All inlet and effluent Carbotrap 300 TDU results for 2,5-dihydrofuran and 2-methylfuran were below the DLs. The re-evaluation of the furan, 2,5-dihydrofuran and 2-methylfuran using the Carbotrap 300 TDU is discussed in Freeman et al.[19]

Ammonia *(see Figure 1)* – The DL for ammonia corresponds to ~2.5% of its OEL. The inlet concentrations for both cartridges stayed relatively constant, 90% to 106% of the OEL, but each cartridge had decreased values for their corresponding 12-hour samples (42% and 56% of the OEL, respectively). For the SCOTT 7422-SD1 cartridge, the initial outlet ammonia concentrations were below the DL and gradually increased by the end of testing. However, these concentrations still remained <10% of the OEL through the end of the test period. For the SCOTT 7422-SC1 cartridge, concentrations were also below the DL at the beginning of the test but increased above the DL toward the end of the test, and >10% of the OEL after 12 hours.

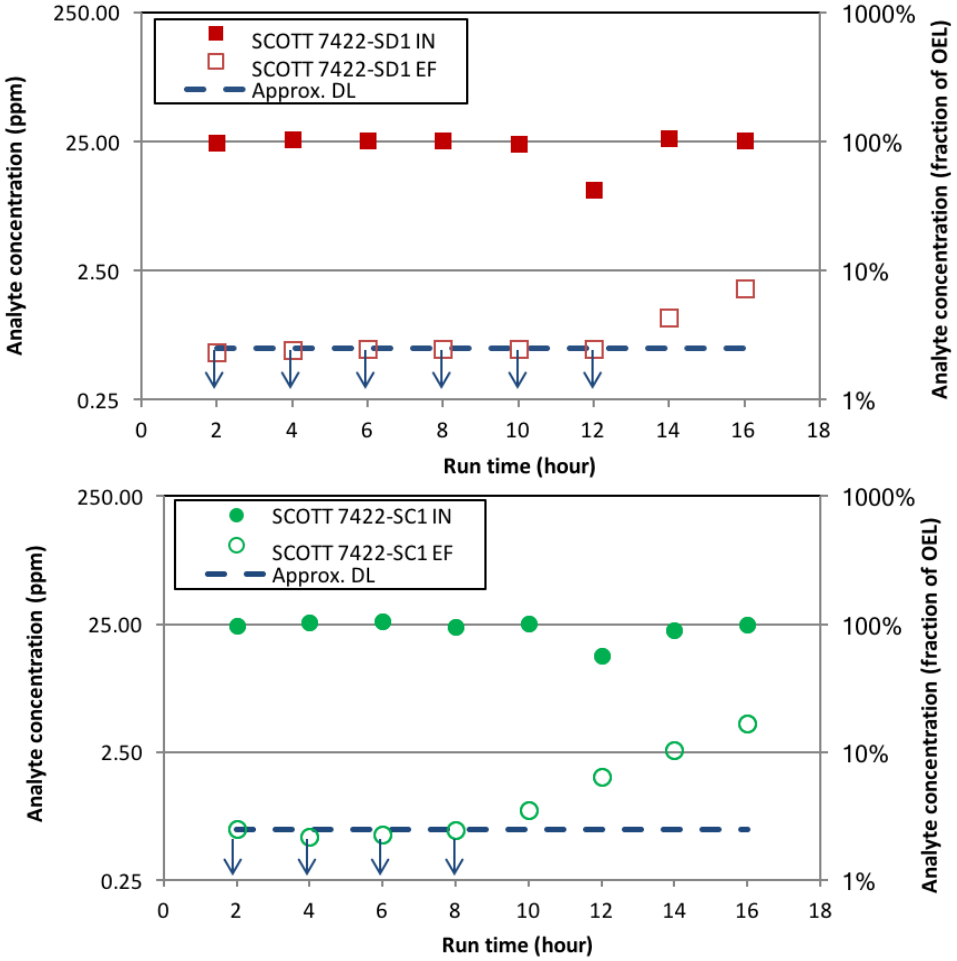


Figure 1. Plot of Measured Ammonia Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1**)**. Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosodimethylamine (*see Figure 2****)*** – The DL for NDMA corresponds to ~11% of its OEL. All inlet measurements for both cartridge tests were significantly greater than the DL. Except for one inlet concentration of 576% of OEL after 4-hours for SCOTT 7422-SC1, all other inlet concentrations for both cartridges were relatively constant throughout testing, ranging from 1284% to 1638% of the OEL. All of the outlet measurements were below the analytical DL for both respirator cartridges. Thus, there is no evidence of breakthrough over the measured time period for either cartridge tested.

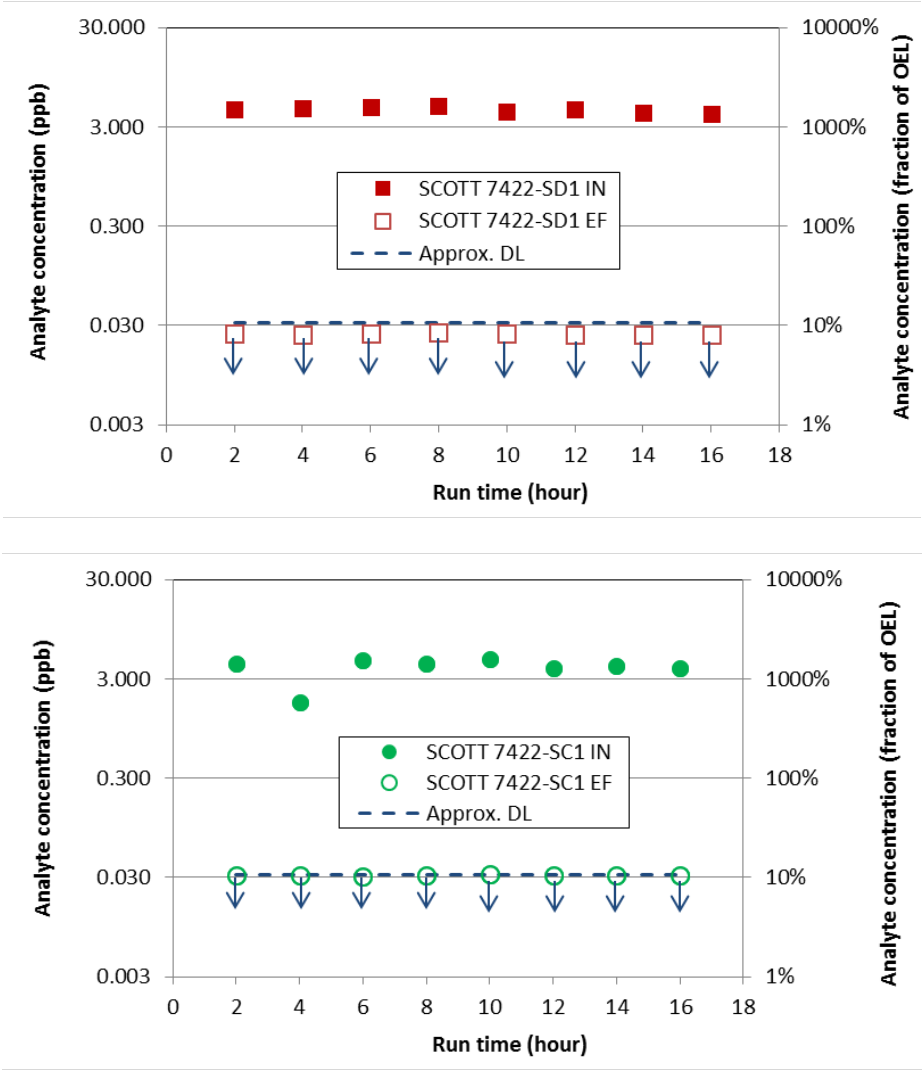


Figure 2. Plot of Measured N-Nitrosodimethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosodiethylamine *(see Figure 3)* – The DL for NDEA corresponds to ~24% of its OEL. All inlet measurements for both respirator cartridges were less than the DL. All of the respirator outlet measurements also were below detection limits. Even though the DL is >10% of the OEL, the outlet measurements do not indicate breakthrough over the measured time period for either cartridge tested.

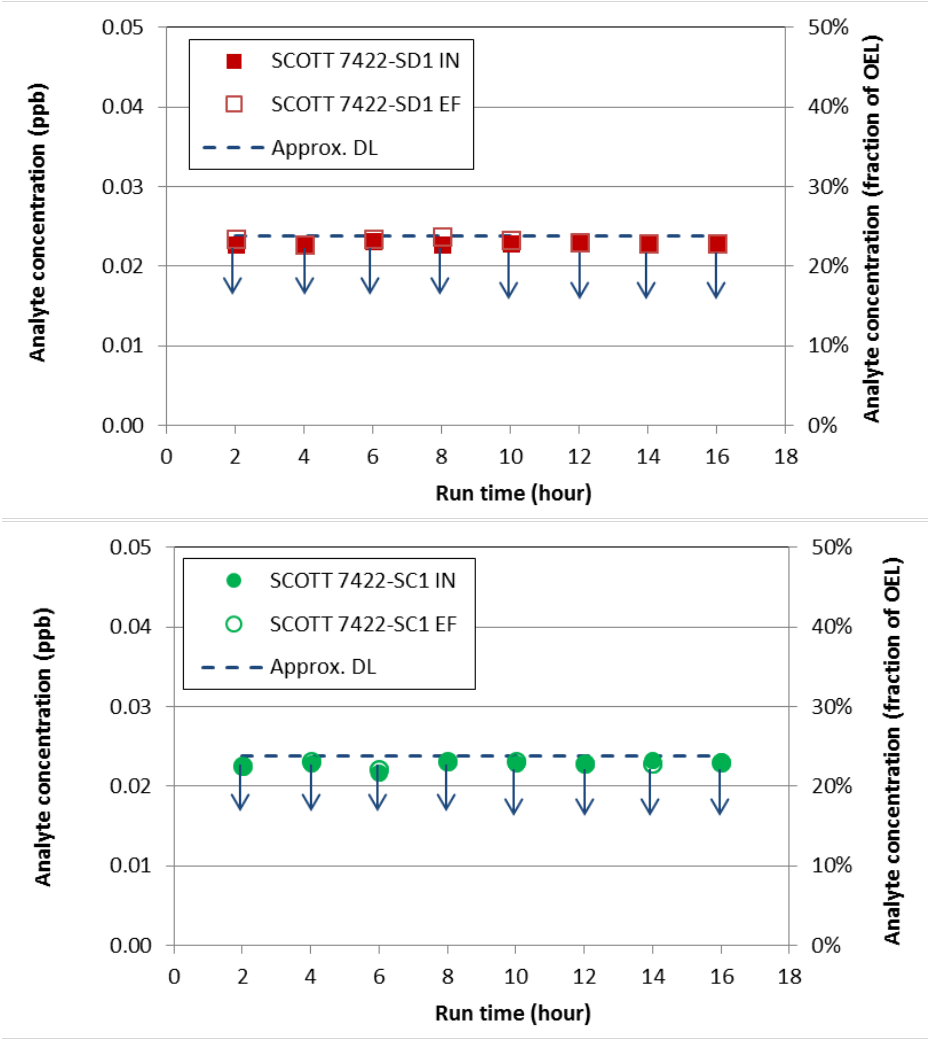


Figure 3. Plot of Measured N-Nitrosodiethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

N-Nitrosomethylethylamine *(see Figure 4)* – The DL for NMEA corresponds to ~9.2% of its OEL. All inlet measurements for both respirator cartridges were higher than the DL, with most measurements exceeding 10% of the OEL. All of the respirator outlet measurements were below the DL. Therefore, there is no evidence of breakthrough over the measured time period for either cartridge tested.

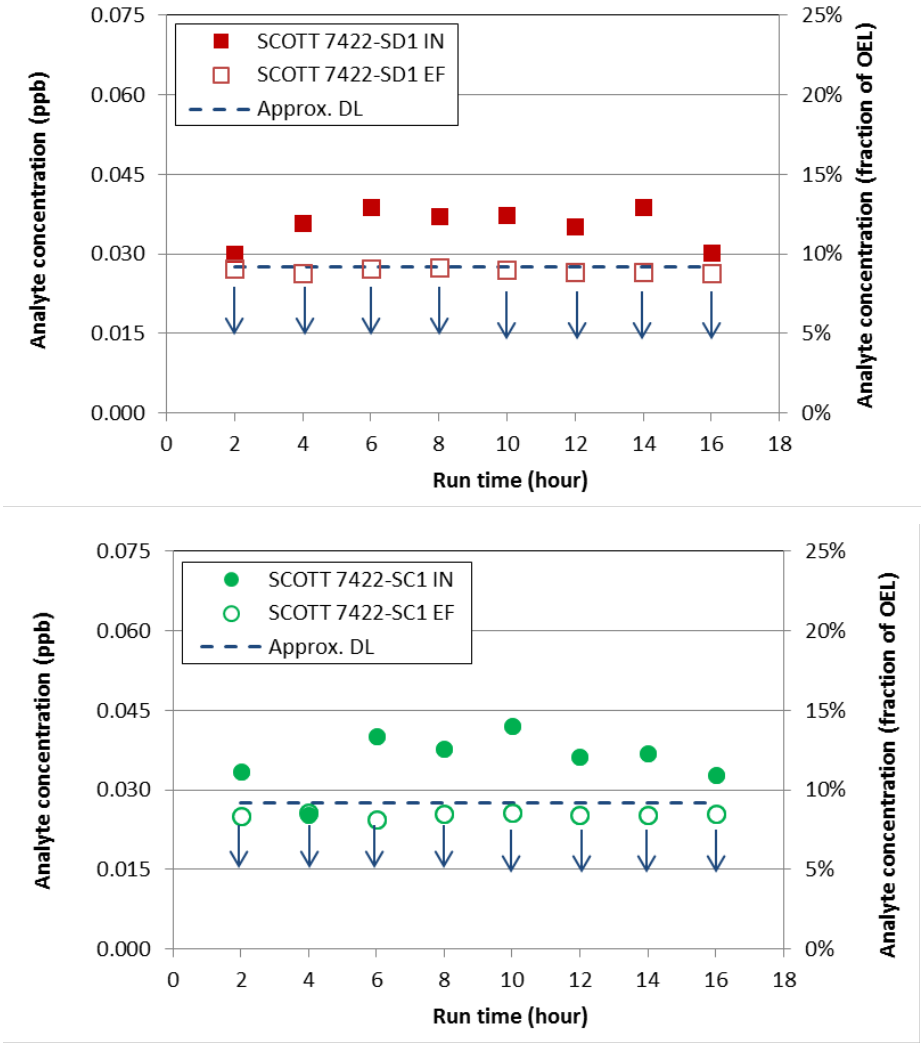


Figure 4. Plot of Measured N-Nitrosomethylethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

6.0 Factoring in Historical Concentration Data

To fully assess respirator performance for COPC removal, historical data were reviewed to determine if the recent inlet measurements were representative of typical values. Historical AW exhauster data from TWINS and the Site-Wide Industrial Hygiene Database were used for this assessment.

A complete table with historical and measured results for all 59 COPCs and their boiling point data is shown in Appendix F, along with a description of the historic source data that were used. Table 2 shows a subset of data for COPCs with boiling points below 70°C because a low boiling point can be a general indicator of poor adsorption on solid media.

In total, 10 COPCs have been previously measured in the AW exhauster stack at concentrations above 10% of their respective OELs and above analytical RLs. These COPCs include ammonia, nitrous oxide, mercury, furan, 2,5-dihydrofuran, ethylamine, NDMA, NDEA, NMEA, and N-nitrosomorpholine. Of these 10 COPCs:

- Ammonia and NDMA average inlet concentrations measured in this cartridge study were generally consistent[11] with historic exhauster stack measurements. The average inlet concentration for ammonia was ~ 40% less than the historic average, while the NDMA average inlet concentration was 45% higher than historic average. The NDMA maximum inlet concentration (1638% of its OEL) was 24% less than the maximum historic concentration. However, maximum ammonia inlet concentrations were 84% lower (26.5 ppm) compared to the historic AW exhauster stack maxima of 161 ppm.
- The maximum mercury inlet concentration measured in this study (7.3% of the OEL) was substantially lower than both average and maximum historic concentrations of 117% and 1184% of its OEL, respectively.
- Furan and 2,5-dihydrofuran average inlet concentrations[12] from cartridge testing were consistently less than their DLs (~6% and 4% of OEL), while historic concentrations averaged 127% and 58%, respectively. In addition, ethylamine average and maximum cartridge inlet concentrations were less than their RLs (~0.1% of OEL) compared to historic average and maxims of 1.3% and 12%, respectively.

Although NDMA concentrations were generally consistent with historic measurements, average inlet concentrations for other nitrosamines including NDEA, NMEA, and N-nitrosomorpholine were substantially lower than historic average concentrations. NDEA inlet concentrations were consistently less than the DL (~24% of the OEL), and both NMEA and N-Nitrosomorpholine average inlet concentrations were approximately 70% lower than historic averages.

[11] Inlet concentrations were considered generally consistent if they were within a factor of 2 (-50% to +100%) of historic maximum or average exhauster stack measurements.

[12] Inlet concentrations for furan using the Carbotrap 300 TDU results were significantly higher than documented in this report though breakthrough was not observed on either cartridge. The inlet maximum using the Carbotrap 300 TDU method was 203.9% of the OEL for the 7422-SD1 cartridge and 180.0% for the 7422-SC1 cartridge. Furans measured on the effluent were all below DL indicating no breakthrough for either cartridge during the testing period. All inlet and effluent Carbotrap 300 TDU results for 2,5-dihydrofuran and 2-methylfuran were below the DL. The re-evaluation of the furans 2,5-dihydrofuran and 2-methylfuran using the Carbotrap 300 TDU is discussed in Freeman et.al. [19].

Table 2. Historical AW Exhauster Data for COPCs with Boiling Points less than 70°C (158°F)

					Historical Measurements[1]				Measurements in this Study	
COPC Number and Name	CAS Number	Boiling Point (°F)	Occupational Exposure Limit (OEL)	# of Values	Max. Value	Average Value	Max. Value (% OEL)	Average Value (% OEL)	Max Inlet Value (% OEL)	Highest Value from Respirator Outlet (% OEL)
2 Nitrous Oxide	10024-97-2	-127	50 ppm	2 *4*	11.3 *<RL*	8 *29**	23% *<RL*	16% *58%**	Not Measured	
1 Ammonia	7664-41-7	-28	25 ppm	25	161	39.5	644%	158%	106%	16.6%
50 2-Fluoropropene	1184-60-7	-11	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	
14 Formaldehyde	50-00-0	-6	0.3 ppm	32	<RL	0.0215*	<RL	7.2%*	2.6%	0.95%
53 Methyl nitrite	624-91-9	10	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	
4 1,3-Butadiene	106-99-0	24	1 ppm	27	<RL	0.0846	<RL	8.5%	2.0% (RL)	2.0 (RL)[2]
42 Ethylamine	75-04-7	62	5 ppm	17	0.609	0.0644*	12%	1.3%*	0.098% (RL)	0.099% (RL)
15 Acetaldehyde	75-07-0	69	25 ppm	17	<RL	0.0774*	<RL	0%*	0.068%	0.047%
19 Furan	110-00-9	88	1 ppb	22	<RL	1.27	<RL	127%	5.7% (DL)	3.9% (DL)
59 Methyl Isocyanate	624-83-9	103	0.02 ppm	1	<RL	<RL	<RL	<RL	Not Detected - TIC	
20 2,3-Dihydrofuran	1191-99-7	130	1 ppb	9	<RL	<RL	<RL	<RL	2.5%	2.1% (DL)
22 2-Methylfuran	534-22-5	147	1 ppb	22	<RL	<RL	<RL	<RL	3.6% (DL)	2.4% (DL)
8 Methanol	67-56-1	148	200 ppm	17	<RL	0.829*	<RL	0.41%*	Not Measured	
21 2,5-Dihydrofuran	1708-29-8	152	1 ppb	22	<RL	0.576*	<RL	58%*	4.3% (DL)	2.9% (DL)

[1] Historical data from TWINS industrial hygiene vapor database and SWIH database; see text for links and dates of queries. Values in italics include those data plus data from the TWINS headspace database, all samples earlier than May 2005.

** indicates that the value of the average would differ by a factor of 2 or more (in either direction) if non-reports were excluded.*

"< RL" indicates that all pertinent measurements of the analyte were less than the reporting level

Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene) were included.

Italics mean that the pre-2006 TWINS headspace data were also included.

"n/a" indicates no historical data was found in the databases

[2] "(DL)" indicates value represents approximate detection limit (DL), which is calculated using the reported detection limit (or reporting limit - RL, where noted) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube.

7.0 Conclusions

Testing was conducted during the September 23–25, 2016 period using a slipstream from the exhauster in the Hanford AW tank farm under static conditions. The vapors were fed to a respirator cartridge test stand developed by WRPS in collaboration with HiLine Engineering (Richland, Washington). Multipurpose respirator cartridges SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina) were each assessed with the tank farm exhauster vapors in tests conducted on separate days. Sorbent tubes were used to collect samples of the vapor stream entering and exiting the respirator cartridge, and were subsequently analyzed for COPC concentrations. PNNL was tasked to conduct independent analysis of the analytical results, and make recommendations based on the results for respiratory cartridge performance and change-out frequency.

The AW exhauster data are expected to provide conservatively high COPC concentrations compared to the ambient concentrations inside and outside the tank farm. Further, the flow rate through each respirator cartridge was maintained conservatively high compared to normal human breathing rates. The average temperatures of the sample slipstream during testing ranged from 57 to 76°F, and the average relative humidity ranged from 55 to 89%. The inlet concentrations measured are shown in Table 1. Thus, any conclusions on respirator cartridge performance pertain to the above-stated conditions.

The following are the key conclusions from the assessment of the 59 COPCs in the current analysis:

- Based on measured cartridge inlet vapor concentrations from the AW exhauster, only two measured COPCs exceeded their corresponding OELs, [13,14] ammonia and NDMA. One COPC, NMEA, had one or more inlet concentration measurements greater than 10% of its OEL, but <100%. N-Nitrosodiethylamine had a DL of ~24% of the OEL, but all inlet and outlet measurements were less than the DL. All other COPCs' inlet and outlet measurements did not exceed 10% of their OELs.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 106% of its OEL (26.5 ppm) during testing, which was lower than average (158%) and maximum (644%) historical measurements from the exhauster. The lowest concentration observed was 41.8% of the OEL for the SCOTT 7422-SD1 cartridge for the 12-hour measurement. For the SCOTT 7422-SC1 cartridge, ammonia appeared to break through the cartridge above 10% of the OEL after 12 hours. For the SCOTT 7422-SD1 cartridge, the outlet concentrations were less than the DL initially, began increasing gradually after 12 hours, but remained <10% of the OEL through the end of the test.

[13] Inlet concentrations for furan using the Carbotrap 300 TDU results were significantly higher than documented in this report though breakthrough was not observed on either cartridge. The inlet maximum using the Carbotrap 300 TDU method was 203.9% of the OEL for the 7422-SD1 cartridge and 180.0% for the 7422-SC1 cartridge. Furans measured in the effluent were all below the DL, indicating no breakthrough for either cartridge during the testing period. All inlet and effluent Carbotrap 300 TDU results for 2,5-dihydrofuran and 2-methylfuran were below the DL.

[14] Occupational Exposure Limits accepted for Hanford tank farm use are based on OELs established by a U.S. governmental agency or national professional organization (e.g., OSHA, National Institute for Occupational Safety and Health, American Conference of Governmental Industrial Hygienists), or if no U.S. OEL exists, standard toxicological practices are applied to develop OELs based on the best available science. The OEL for NDMA was established in 2005 based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

- Cartridge inlet concentration measurements for NDMA reached 1638% of its OEL (4.9 ppb), which was higher than the average (963%) and slightly lower than the maximum (2163%) historical concentration measurements from the exhauster. However, all outlet concentrations were less than the analytical RL of ~11% of the OEL, indicating no breakthrough for either cartridge.
- Cartridge inlet concentration measurements for NMEA reached a maximum of 14% of its OEL (0.04 ppb) and average concentration of ~12% of OEL. The average concentration was slightly lower than average historical measurements from the exhauster. All outlet concentrations were less than the analytical RL of ~9.2% of the OEL, indicating no breakthrough for either cartridge.
- All inlet and outlet concentrations for NDEA were less than the analytical RL of ~24% of the OEL, indicating no breakthrough for either cartridge.

8.0 Recommendations

- Based on the measurements taken for this study, ammonia breakthrough, above 10% of its OEL, occurred after 12 hours for SCOTT 7422-SC1 cartridge. The average inlet concentration of ammonia was 94% of the OEL. While breakthrough above 10% OEL was not observed for the SCOTT 7422-SD1 cartridge, its outlet concentration measurement were increasing by the end of the test. This experimental result supports a 12-hour service life for the use of SCOTT 7422-SC1 and 7422-SD1 cartridges in APRs employed to protect workers at the Hanford AW tank farm, under the same conditions as those tested. Additional respirator cartridge and respirator selection evaluations by Industrial Hygiene professionals are recommended to determine proper respiratory protection requirements. Variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact the experiment-derived cartridge service life, especially if OEL thresholds are exceeded. These factors, along with the measured breakthrough, should be used to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule for adequate worker protection.
- Additional recommendations related to NDMA and NDEA DLs, TICs, further data assessments, and future testing documented in PNNL-25860[15] for respirator cartridge testing on a slipstream from the Hanford AP tank exhauster are also relevant to the AW exhauster. Future testing and multi-tank analysis of cartridge performance with a wider range of COPC concentrations and test conditions should help improve understanding of overall cartridge performance.

[15] Nune, SK, J Liu, CJ Freeman, and TM Brouns. 2020. *Analysis of Respirator Cartridge Performance Testing on a Hanford AP Tank Farm Primary Exhauster Slipstream*. PNNL-25860 Rev. 1, Pacific Northwest National Laboratory, Richland, Washington.

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Appendix A

Description of Respirator Cartridge Testing Setup

Appendix A

Description of Respirator Cartridge Testing Setup

The respirator cartridge-testing system was developed by Washington River Protection Solutions and HiLine Engineering (Richland, Washington) as a means to comprehensively test respirator cartridge performance with actual Hanford tank headspace or exhauster slip stream gases. Tank headspace or exhauster slip stream vapors are pulled direct from the source through a flexible hose connecting the tank or exhauster sampling port within the tank farm/exhauster fence line to the respirator cartridge-testing system outside the farm.[13,14] Multiple in-line particulate filters are installed in the line between the tank/exhauster and test system to remove potential radioactive particulates. Each filter unit contains a hydrophobic Fluoropore™ polytetrafluoroethylene filter (Millipore Sigma, Billerica, Massachusetts) that is required pursuant to the radiological work permit. This polytetrafluoroethylene filter medium is the same material used for routine tank vapor area monitoring and for sampling and analysis of sources (headspace and exhausters). It was selected because of its broad chemical compatibility that minimizes sorption of, or reactions with, chemical compounds. The filter medium is not expected to adversely impact the test objectives because all tank farm vapor sampling uses this type of filter medium.

The test equipment allows for sampling the vapor stream both before and after the cartridge so performance for a given COPC can be quantified. Sorbent media tubes were used to capture the COPCs and other hazardous contaminants. After a given test segment, the sorbent tubes were removed and analyzed. Sampling of the exhaust gas was performed every 2 hours, but this timing can be modified as necessary.

Figure A.1 provides a general schematic diagram for the respirator cartridge test apparatus, and Figure A.2 shows photographs of the actual equipment. The test system operates using vacuum to draw tank gases/vapors into the unit so that the potential for leakage to atmosphere is minimized until the gases/vapors are under positive pressure downstream of the vacuum pumps. By the time gases reach the vacuum pump, COPCs are essentially captured or removed by either the sorbent tubes or the respirator cartridge.[13,14]

Flows through the respirator cartridge and through each sorbent tube are set and controlled/maintained using manual flow control valves on the outlet of each rotameter, and rotameters were calibrated against DryCal primary flow calibrators before and after testing. DryCal flow meters also were used downstream of the sorbent tubes to measure the flow through each sorbent tube. All equipment connections were leak tested prior to initiation of the test. Temperature, relative humidity, and pressure of the inlet gas/vapor stream are monitored by calibrated instrumentation.

Using Industrial Hygiene-approved materials, cartridge test equipment was constructed so that it would not influence/interfere with vapor analysis. Stainless steel or Teflon™ tubing and fittings are used where possible because of their relatively inert nature to the vapors being analyzed. Limited portions of the assembly used acrylic, Viton™, glass, and Masterflex C-flex tubing, which are commonly used for various vapor-sampling applications.

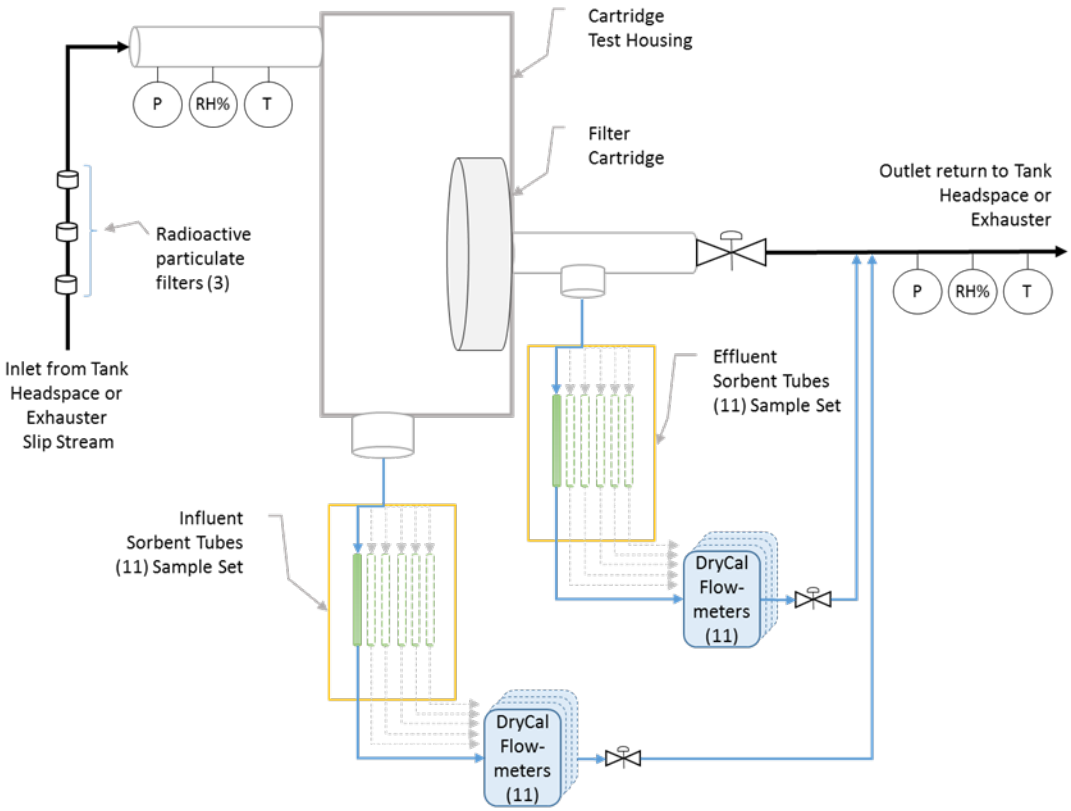


Figure A.1. General Schematic of Respirator Cartridge Test Apparatus

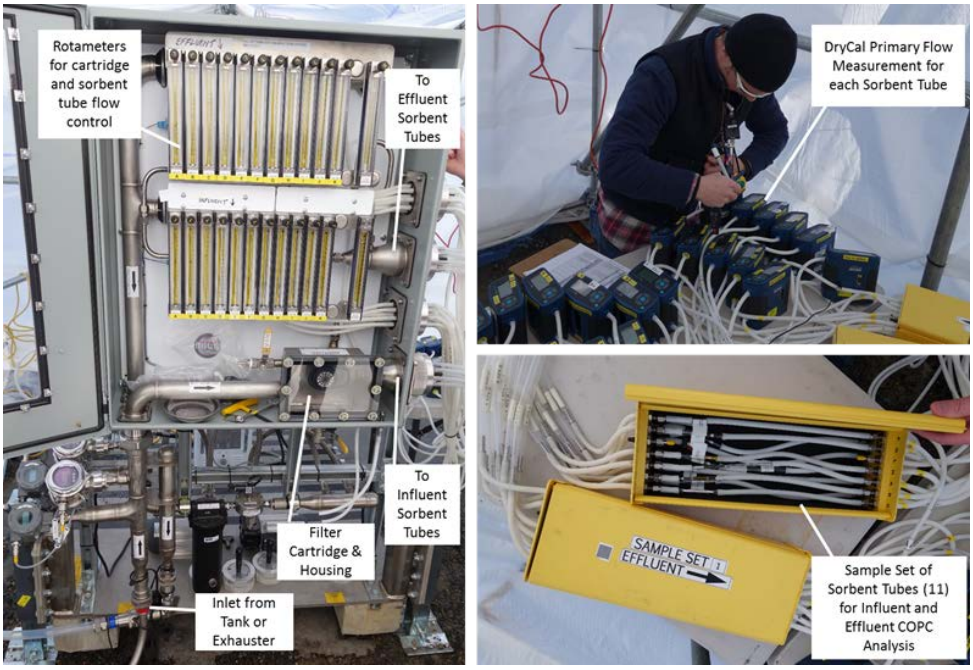


Figure A.2. Photographs of the Respirator Cartridge Test Equipment

Appendix B

Analytical Testing

Appendix B

Analytical Testing

The Sampling and Analysis Plan was developed under the direction and oversight of the Industrial Hygienist in conjunction with the Tank Farms Operations Contractor Retrieval and Closure, and Tank Farms Project and/or Production Operations Project Management Team.

Chemical compounds in the tank samples were analyzed using approved industrial hygiene methods or National Institute of Occupational Safety and Health-approved methods for quantifying hazardous airborne contaminants in the tank farm vapors. Methods including gas chromatography/mass spectrometry were used as the primary analytical techniques for identifying hazardous airborne contaminants (see Table B.1).

Table B.1. Information on Sorbent Media used to Capture Contaminants, Flow Rates Used, Analytical Methods to Extract Analyte from Sorbent Media, and Method Analysis to Quantify or Estimate the Concentrations of Hazardous Contaminant

Analyte	Media	Flow Rate (mL/min)	Analytical Method[a]	Instrument Used[b]	Analysis Location[c]
Acetonitrile	Charcoal Tube, SKC-226-09	100	NIOSH 1606	GC–FID	ALS
Acetonitrile	Carbotrap 300 TDU Tube	33	EPA TO-17 Modified	GC/MS	WRPS
Furans	TDU Tenax TA	33	EPA TO-17 Modified	GC/MS	WRPS
Semivolatile Organic Compounds	Carbotrap 150 TDU Tube	33	EPA TO-17 Modified	GC/MS	WRPS
Volatile Organic Compounds	Carbotrap 300 TDU tube	33	EPA TO-17 Modified	GC/MS	WRPS
Mercury	Anasorb C300, SKC-226-17-1A	250	NIOSH-6009	CVAA	WHL
Ammonia	Anasorb 747 (sulfuric acid), SKC-226-29	200	OSHA-ID-188	IC	WHL
1,3-butadiene	Charcoal, SKC-226-37, (Parts A and B)	200	NIOSH-1024	GC–FID	ALS
Aldehyde	DNPH Treated Silica Gel, SKC-226-119	200	EPA TO-11A	HPLC	ALS
Pyridine	Coconut Shell Charcoal, SKC-226-01offsite	1000	NIOSH-1613	GC–FID	ALS

Analyte	Media	Flow Rate (mL/min)	Analytical Method[a]	Instrument Used[b]	Analysis Location[c]
Nitrosamines	Thermosorb/N	2000	NIOSH-2522 Modified	GC–TEA	CBAL
Ethylamine	XAD-7 (NBD) Chloride), SKC 226-96	200	OSHA-ID-34, 36, 40,and 41	HPLC–UV	ALS

[a] Analytical Method
NIOSH: National Institute of Occupation Safety and Health
EPA: U.S. Environmental Protection Agency
OSHA: Occupational Safety and Health Administration

[b] Instrument Used
GC–FID: Gas Chromatography–Flame Ionization Detector
GC/MS: Gas Chromatography–Mass Spectrometry
CVAA: Cold Vapor Atomic Absorption
IC: Ion Chromatography
HPLC: High Performance Liquid Chromatography
GC–TEA: Gas Chromatography–Thermal Energy Analyzer
HPLC–UV: High Performance Liquid Chromatography–Ultraviolet Detector

[c] Analysis Location
ALS: ALS Environmental Salt Lake City
WRPS-222S: Washington River Protection Solutions, Organic Studies Group
WHL-222S: Wastren Hanford Laboratory
CBAL: Columbia Basin Analytical Laboratory, part of the RJ Lee Group

Appendix C

Raw Analytical Data

Appendix C

Raw Analytical Data

C.1 Description

This appendix includes raw data of flow rate, temperature, pressure, and humidity, and analytical data for the AW data set. Calculations using this data are given in Appendix D.

The raw analytical data is given only in this appendix. Washington River Protection Solutions (WRPS) converted these data into Excel data spreadsheets that were transmitted to Pacific Northwest National Laboratory. Comments on that conversion are provided below.

The analytical measurement results listed in results spreadsheet columns were transferred from entries labeled ‘result’ in the raw analytical .pdf files. The results were transferred into three rows in the spreadsheets. The first row contained the relevant information with the appropriate units. Where an entry was given as ‘ND’ in the .pdf, a ‘<’ symbol was used. Where a detection limit (DL)/reporting limit (RL) was listed as ‘n/a,’ the result entry in the spreadsheet was given as ‘0.0.’

The use of the RL or DL varied among analytical laboratories. The term RL (equivalent to a limit of quantification) was used instead of a DL by ALS Environmental Salt Lake City, Columbia Basin Analytical Laboratory, and 222S–Wastren Hanford Laboratory (see Table F.1 in Appendix F for a complete correlation of which Chemicals of Potential Concern used an RL or a DL). The WRPS laboratory provided a DL, in contrast to an RL. Neither RLs nor DLs were provided for tentatively identified compounds (TICs).

Chain of custody information is provided clearly in the raw analytical data .pdf files, including analyte name, sample numbers, and laboratory-assigned numbers. Chemical Abstract Service numbers were not provided.

The nomenclature of the sample identification (ID) is the same for every set of chemicals. It is generally composed of a survey number, tank farm ID, test location, sample line, and tube bundle ID. Descriptions of these nomenclatures are given as follows:

‘BLANK’ means measurements obtained from sorbent tubes that have not had any vapor stream passed through them. ‘BASE’ means measurements obtained for ambient air (fresh air vs. tank vapor) running through the test system before initiation of tank vapor testing.

‘8635’ designations correspond to testing with the SCOTT 7422-SD1 respirator cartridge, whereas ‘8636’ designations correspond to testing with the SCOTT 7422-SC1 respirator cartridge.

Position designations ‘IN-A’ and ‘EFF-A’ correspond to the respirator cartridge inlet and outlet measurements, respectively, at the 0- to 2-hour time intervals. Position designations ‘B’ through ‘H’ correspond to the subsequent 2-hour measurements for inlet (IN) and outlet (EFF): IN-B/EFF-B (2 to 4 hours), IN-C/ EFF-C (4 to 6 hours), IN-D/ EFF-D (6 to 8 hours), IN-E/ EFF-E (8 to 10 hours), IN-F/ EFF-F (10 to 12 hours), IN-G/ EFF-G (12 to 14 hours), and IN-H/ EFF-H (14 to 16 hours).

The sample IDs embed the information given above. For example, sample ID 16-08635-5-IN-A corresponds to the first cartridge survey (16-08635), sample line 5, and the first (0 to 2 hours) influent sample bundle (IN-A).

The flow rate passing through the respirator cartridge was approximately 30 L/min, while the sampling flow rates through the sorption tubes ranged between 30 and 200 mL/min for different chemicals that were being collected. WRPS provided these flow rates in files 'AW Exhauster Flow Rate 9-23-2016.xlsx' for the first survey with SCOTT 7422-SD1 and 'AW Exhauster Flow Rate 9-24-2016.xlsx' for the second survey with SCOTT 7422-SC1. The information is shown in the tables below. Columns labeled Mach. Base 1 and Mach. Base 2 refer to the 'BASE' baseline samples for influent and effluent, respectively, to verify machine cleanliness prior to experimental measurements.

WRPS provided the temperature and humidity information in files 'AW Exhauster DRI 9-23-2016.xls' and 'AW Exhauster DRI 9-24-2016.xls.' The information is shown in the tables provided in this appendix. Several terms used in the DRI files are described below.

- 'Pre' and 'Post' indicate the general time signature when the direct read instrument measurements were taken. 'Pre' refers to the beginning of the 2-hour sample duration, and 'Post' refers to the end of the 2-hour sample duration.
- 'Influent' and 'Effluent' indicate the location of the measurement within the test system. 'Influent' measurements are taken at the inlet of the system upstream of the respirator cartridge. 'Effluent' measurements are taken downstream of the respirator cartridge. The pressure, temperature, and humidity effluent sensors are located at the end of the test system near the vacuum pump, whereas the DRI measurements for ammonia and volatile organic compounds are from a sampling location between the respirator cartridge and the effluent sorbent tube samples.
- The DRI measurements for ammonia and volatile organic compounds could not be taken while the test system sample pumps were operational. 'After Sample Taken' refers to the time signature for these direct read results (e.g., Sample A DRI measurements were taken immediately after the Sample A sorbent tubes were taken and replaced with Sample B sorbent tubes).
- Prior to testing with the waste tank vapors, a 2 hour "baseline" sample is collected by running ambient outside air through the sampling system before each cartridge is installed for testing. 'BASE' means measurements obtained for ambient air (fresh air vs. tank vapor) running through the test system before initiation of tank vapor testing.
- Columns labeled "Mach. Base 1" and "Mach. Base 2" refer to the 'BASE' baseline samples for influent and effluent, respectively, to verify machine cleanliness prior to experimental measurements.

The raw analytical data for chemicals in each category are summarized together. Examples of chemicals in each category follow:

- SVOC: Biphenyl, Diethylphthalate, Tributyl phosphate, Dibutyl butylphosphonate, Dodecane, Hexadecane
- SVOCTIC: Undecane, Cyclotetrasiloxane, octamethyl, Decamethlycyclopentasiloxane, Dodecane,4,6-dimethyl
- VOC: Acetone, Acetonitrile, Acetophenone, Benzene, Butanal,1-Butanol, Butanenitrile, 3-Buten-2-one, Cyclohexane, Decane, Ethanol, Ethylbenzene, Furan, Hexane, Hexanone, Methylene Chloride, Propanenitrile, Styrene, Tetrachloroethene, Toluene, Trichlorofluoromethane
- VOCTIC: 2,6-Dimethyldecane, Decane, 2,3,5,8-tetramethyl-, Decane, 3,7-dimethyl-, Methenamine, Undecane, 2,6-dimethyl-

- Furans: 2,3-Dihydrofuran, 2-Pentyfuran, Furan, Tetrafuran
- Ethylamine (amines): Dimethylamine, Ethylamine, Methylamine
- Acetonitrile: Acetonitrile
- Mercury: Mercury
- Ammonia: Ammonia
- Aldehyde: Acetaldehyde, Acetone, Butyraldehyde. Formaldehyde, Hexanal, Propionaldehyde, Valeraldehyde
- 1,3 Butadiene: 1,3-Butadiene
- Pyridines: 2,4-Dimethylpyridine, Pyridine
- Nitrosamines: N-Nitrosodimethylamine.

C.2 Experimental Parameters

C.2.1 Flow Rates

SCOTT 7422-SD1 Cartridge (9/23/16 to 9/24/16) AW Exhauster

Volumes Air Collected (L)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	3.92	4.07	4.03	4.07	3.88	4.01	3.96	4.00	3.97	3.95	3.85	4.00	3.85	2.32	4.22	4.51	4.12	4.22
VOC	B	4.12	3.92	4.23	3.99	4.24	4.11	3.80	3.80	3.86	3.55	3.85	3.79	3.85	3.85	4.04	3.81	4.01	3.82
Furans	C	4.11	6.22	4.11	6.43	4.21	6.63	4.03	6.40	4.10	6.26	3.92	6.02	3.86	5.80	3.99	6.31	4.01	6.24
Ethylamine	D	12.4	12.8	12.4	13.1	12.6	12.2	12.5	12.5	12.3	12.2	12.0	11.9	11.8	11.6	11.7	12.0	11.7	12.0
Acetonitrile	E	11.7	12.9	11.8	13.0	12.1	12.3	12.1	12.3	12.2	12.3	11.9	11.6	11.6	12.2	11.9	11.9	11.8	12.0
Mercury	F	29.6	30.9	30.6	31.1	29.5	30.6	29.8	30.0	30.1	30.5	29.9	29.3	30.1	30.0	30.1	30.3	29.4	30.0
Ammonia	G	24.6	25.0	24.7	25.5	24.9	24.8	24.3	24.2	24.0	24.0	23.6	23.9	24.4	23.5	24.3	24.5	24.2	24.9
Aldehyde	H	25.0	24.9	25.1	25.3	24.9	24.6	23.8	23.6	24.1	23.5	23.8	24.2	24.0	24.1	23.9	24.6	23.9	23.9
1,3-Butadiene	I	24.8	23.1	24.3	24.1	24.1	24.2	24.3	24.4	24.3	24.5	23.8	23.7	23.6	23.6	23.8	24.1	23.7	23.9
Pyridine	J	123	124	122	125	124	125	124	125	122	126	124	127	122	127	122	125	122	127
Nitrosamines	K	239	241	242	236	244	245	241	239	244	235	240	238	235	238	234	238	235	238

Flow Rates (ml/min)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	32.6	33.9	33.6	34.0	32.3	33.4	33.0	33.3	33.0	32.9	32.1	33.3	32.1	19.4	35.2	37.6	34.3	35.2
VOC	B	34.3	32.7	35.2	33.3	35.3	34.3	31.7	31.7	32.2	29.6	32.1	31.6	32.1	32.1	33.7	31.8	33.4	31.8
Furans	C	34.3	51.9	34.3	53.6	35.1	55.3	33.6	53.3	34.1	52.2	32.7	50.1	32.2	48.4	33.3	52.6	33.4	52.0
Ethylamine	D	103	107	104	109	105	102	104	104	102	102	99.7	99.3	98.7	96.6	97.7	100	97.7	99.7
Acetonitrile	E	97.6	107	98	108	101	103	101	102	102	103	99.2	96.9	96.4	101	99.2	99.3	98.3	99.9
Mercury	F	247	258	255	259	246	255	249	250	251	254	249	245	251	250	251	253	245	250
Ammonia	G	205	209	206	213	208	207	202	201	200	200	197	199	203	196	202	204	201	208
Aldehyde	H	208	208	209	211	207	205	198	197	201	196	198	201	200	201	199	205	199	199
1, 3-Butadiene	I	207	192	202	201	201	202	202	203	203	204	198	197	196	197	198	201	198	200
Pyridine	J	1025	1035	1020	1040	1036	1043	1035	1040	1020	1050	1030	1055	1020	1055	1020	1045	1015	1060
Nitrosamines	K	1995	2005	2015	1970	2031	2045	2005	1990	2030	1960	2000	1980	1960	1980	1950	1980	1955	1980

Data points highlighted in yellow were identified by the test operator as being low/ suspect due to media tube issues.

SCOTT 7422-SC1 Cartridge (9/24/16) AW Exhauster

Volumes Air Collected (L)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	**Line**	Base 1	Base 2																
SVOC	A	3.85	3.82	4.07	3.79	4.22	3.83	4.17	4.13	3.84	3.80	3.81	4.15	4.03	4.27	4.11	4.24	4.09	4.22
VOC	B	3.84	3.86	3.74	4.03	4.04	4.12	4.19	4.34	3.77	3.91	3.94	3.75	3.86	3.89	4.00	4.05	3.86	4.04
Furans	C	3.83	6.57	3.95	6.53	4.10	5.84	4.41	6.28	3.94	5.68	3.83	5.52	3.71	5.59	3.97	6.27	4.15	5.97
Ethylamine	D	12.8	12.7	12.5	12.3	12.9	12.6	12.9	13.5	11.4	12.2	11.3	11.8	11.1	11.4	11.9	11.1	11.8	11.9
Acetonitrile	E	12.9	12.8	12.9	12.6	12.4	12.9	13.3	13.8	12.0	12.4	11.6	11.5	11.3	11.2	11.6	11.6	11.6	11.3
Mercury	F	29.4	31.6	31.0	30.1	29.7	21.1	31.3	31.5	29.3	30.4	29.2	29.5	28.5	28.5	29.6	29.1	29.7	29.2
Ammonia	G	24.1	25.0	24.6	23.9	24.9	27.5	26.5	26.6	24.3	24.2	23.9	23.6	23.5	22.7	23.6	22.3	23.5	23.3
Aldehyde	H	24.2	24.6	24.6	24.3	24.0	24.6	25.9	26.6	23.3	24.2	22.5	24.0	22.5	23.6	24.1	23.1	24.3	23.1
1,3-Butadiene	I	23.4	24.3	24.0	24.6	24.3	24.5	26.1	26.2	23.6	23.3	23.1	23.0	22.7	23.2	23.3	22.6	23.4	24.0
Pyridine	J	125	124	127	122	125	124	136	130	123	119	122	119	121	117	122	118	122	120
Nitrosamines	K	243	243	244	245	241	239	255	253	238	240	238	236	236	239	230	238	232	236

Flow Rates (ml/min)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	**Line**	Base 1	Base 2																
SVOC	A	32.1	31.8	34.0	31.5	35.2	31.9	32.1	31.8	32.0	31.7	31.8	34.6	33.6	35.6	34.2	35.3	34.1	35.2
VOC	B	32.0	32.1	31.1	33.6	33.6	34.4	32.2	33.4	31.4	32.5	32.9	31.2	32.2	32.4	33.4	33.8	32.1	33.7
Furans	C	32.0	54.8	32.9	54.5	34.1	48.6	33.9	48.3	32.8	47.3	31.9	46.0	31.0	46.6	33.1	52.2	34.6	49.8
Ethylamine	D	106	106	104	102	108	105	99	104	95.3	102	94.0	98.4	92.4	95.3	99.1	92.4	98.4	99.4
Acetonitrile	E	108	107	108	105	104	108	103	106	100	103	97.0	95.8	94.6	93	96.7	96.6	96.5	93.8
Mercury	F	245	263	258	250	248	176	241	242	244	253	243	246	238	238	247	243	248	243
Ammonia	G	200	208	205	199	207	229	204	205	203	202	199	196	196	189	196	185	195	194
Aldehyde	H	201	205	205	202	200	205	199	205	194	202	187	200	187	197	201	192	203	192
1, 3-Butadiene	I	195	202	200	205	202	204	201	201	197	194	193	192	189	193	194	189	195	200
Pyridine	J	1045	1035	1055	1015	1045	1030	1045	1000	1025	995	1020	988	1010	975	1020	985	1020	1000
Nitrosamines	K	2025	2025	2030	2045	2005	1995	1960	1945	1980	2000	1985	1970	1965	1990	1920	1980	1935	1965

C.2.2 Temperature, Pressure, and Relative Humidity

SCOTT 7422-SD1 Cartridge (9/23/16 to 9/24/16) AW Exhauster

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	57.9	83.5	69.4	67.2	64.9	68.5	82.2	84.8	79.5
Temperature	F	57.8	64	70.2	71.2	72.9	69.8	61.4	59.5	58.2
Pressure	Torr	737	733	733	733	733	734	735	736	737
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	53.4	69.1	65.5	63.4	65.8	80	83.8	79.6	75.4
Temperature	F	62.8	70.9	71.9	73.6	69.8	62.9	59.9	58	58.7
Pressure	Torr	737	733	733	733	734	734	736	737	738
NH3	ppm		24.0	18.0	24.0					
VOC	ppm		0.50	0.00	0.08					

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	30.0	33.7	32.7	33.0	32.4	31.0	37.7	40.0	38.0
Temperature	F	58.6	63.9	70.6	71	73.5	71.7	63.2	60.7	59.7
Pressure	Torr	421.4	426	434	435	436	429	435	439	436
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	29.5	34.1	32.6	33.2	31	36.6	40.3	39.4	38.7
Temperature	F	63.5	71.2	72.1	73.4	71.7	65.9	62	60.0	59.6
Pressure	Torr	431	437	438	441	429	441	440	439	441
NH3	ppm		0.00	0.00	0.00					
VOC	ppm		0.00	0.00	0.00					

SCOTT 7422-SC1 Cartridge (9/24/16) AW Exhauster

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	64.2	83.5	76.7	57.8	60.4	74.7	79.5	85.4	89.4
Temperature	F	66.1	70.1	74.4	76.2	73.3	65.8	63.0	60.7	56.6
Pressure	Torr	743	739	739	738	736	736	738	736	736
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	61.5	73.4	54.9	59.9	72.1	81.1	83.9	85.4	82.5
Temperature	F	68.2	75.6	70.0	74.9	66.4	63.1	61.0	56.5	58.5
Pressure	Torr	744	739	738	738	737	737	738	737	737
NH3	ppm		21.0	28.0	21.0				2.00	2.00
VOC	ppm		0.81	0.89	0.00				1.60	1.60

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	31.3	33.8	33.4	27.3	28.6	31.0	36.1	39.1	42.5
Temperature	F	65.2	70.8	75.5	78.5	73.9	69.7	64.6	61.8	58.3
Pressure	Torr	453	448	439	455	458	453	444	447	435
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	28.7	33.7	28.1	28.3	30.8	37.1	39.9	41.6	42.2
Temperature	F	68.9	78.1	79.1	77.9	71.1	65.4	62.6	59.5	59.9
Pressure	Torr	456	457	459	460	457	456	456	455	454
NH3	ppm		0.00	0.00	1.00				0.00	0.00
VOC	ppm		0.00	0.00	0.12				0.35	0.35

C.3 Raw Analytical Data

C.3.1 SVOC and SVOCTIC

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-A
Customer Sample ID: 16-08635-1-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034222			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034222			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034222			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034222			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034222			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034222			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034222			112-40-3	Dodecane	NGS	96	<0.60	13	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034222			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034222			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034222			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034222			629-50-5	Tridecane	NGS	96	<1.6	6.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034222			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034222			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

- Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-B
Customer Sample ID: 16-08635-1-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034223			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034223			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034223			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034223			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034223			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034223			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034223			112-40-3	Dodecane	NGS	96	<0.60	18	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034223			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034223			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034223			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034223			629-50-5	Tridecane	NGS	96	<1.6	8.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034223			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034223			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-C
Customer Sample ID: 16-08635-1-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034224			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034224			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034224			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034224			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034224			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034224			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034224			112-40-3	Dodecane	NGS	96	<0.60	21	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034224			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034224			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034224			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034224			629-50-5	Tridecane	NGS	96	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034224			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034224			629-62-9	Pentadecane	NGS	120	<3.0	3.3	n/a	n/a	n/a	n/a	3.0	n/a	J

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-D
Customer Sample ID: 16-08635-1-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034225			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034225			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034225			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034225			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034225			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034225			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034225			112-40-3	Dodecane	NGS	96	<0.60	10	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034225			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034225			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034225			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034225			629-50-5	Tridecane	NGS	96	<1.6	6.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034225			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034225			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-E
Customer Sample ID: 16-08635-1-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034226			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034226			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034226			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034226			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034226			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034226			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034226			112-40-3	Dodecane	NGS	96	<0.60	9.8	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034226			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034226			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034226			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034226			629-50-5	Tridecane	NGS	96	<1.6	5.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034226			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034226			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-F
Customer Sample ID: 16-08635-1-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034227			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034227			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034227			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034227			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034227			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034227			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034227			112-40-3	Dodecane	NGS	96	<0.60	7.5	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034227			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034227			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034227			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034227			629-50-5	Tridecane	NGS	96	<1.6	3.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034227			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034227			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-G
Customer Sample ID: 16-08635-1-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034228			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034228			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034228			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034228			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034228			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034228			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034228			112-40-3	Dodecane	NGS	96	<0.60	33	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034228			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034228			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034228			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034228			629-50-5	Tridecane	NGS	96	<1.6	5.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034228			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034228			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-H
Customer Sample ID: 16-08635-1-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034229			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034229			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034229			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034229			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034229			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034229			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034229			112-40-3	Dodecane	NGS	96	<0.60	11	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034229			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034229			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034229			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034229			629-50-5	Tridecane	NGS	96	<1.6	5.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034229			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034229			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-IN-A
Customer Sample ID: 16-08635-1-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034230			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034230			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034230			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034230			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034230			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034230			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034230			112-40-3	Dodecane	NGS	96	<0.60	10	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034230			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034230			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034230			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034230			629-50-5	Tridecane	NGS	96	<1.6	6.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034230			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034230			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-IN-H
Customer Sample ID: 16-08635-1-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034231			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034231			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034231			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034231			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034231			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034231			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034231			112-40-3	Dodecane	NGS	96	<0.60	15	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034231			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034231			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034231			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034231			629-50-5	Tridecane	NGS	96	<1.6	9.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034231			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034231			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

11/8/16

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-A
Customer Sample ID: 16-08635-1-EFF-A

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034222			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	55	JNT
S16T034222			Undecane	1120-21-4	5.09	NGS	5.0	JNT
S16T034222			Decane, 2,4,6-trimethyl-	62108-27-4	5.44	NGS	24	JNT
S16T034222			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	52	JNT
S16T034222			1,2-Benzisothiazole	272-16-2	6.59	NGS	30	JNT
S16T034222			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	17	JNT
S16T034222			Undecane, 2-methyl-	7045-71-8	7.25	NGS	18	JNT
S16T034222		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034222		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-B
Customer Sample ID: 16-08635-1-EFF-B

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034223				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	51	JNT
S16T034223				Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	17	JNT
S16T034223				Acetophenone	98-86-2	5.18	NGS	5.3	JNT
S16T034223				Undecane	1120-21-4	5.44	NGS	30	JNT
S16T034223				Undecane, 2,6-dimethyl-	17301-23-4	5.50	NGS	18	JNT
S16T034223				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	55	JNT
S16T034223				1,2-Benzisothiazole	272-16-2	6.59	NGS	34	JNT
S16T034223				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	20	JNT
S16T034223				Undecane, 2-methyl-	7045-71-8	7.25	NGS	21	JNT
S16T034223			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034223			BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-C
Customer Sample ID: 16-08635-1-EFF-C

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034224				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	45	JNT
S16T034224				Acetophenone	98-86-2	5.18	NGS	5.0	JNT
S16T034224				Undecane	1120-21-4	5.45	NGS	26	JNT
S16T034224				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	59	JNT
S16T034224				1,2-Benzisothiazole	272-16-2	6.59	NGS	36	JNT
S16T034224				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.90	NGS	22	JNT
S16T034224				Decane, 2,4,6-trimethyl-	62108-27-4	7.33	NGS	7.7	JNT
S16T034224				Propanoic acid, 2-methyl-, 1-(	74381-40-1	9.18	NGS	33	JNT
S16T034224			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034224			BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

T - Tentatively Identified Compound
U - Less Than Detection Limit
N - Named TIC
NA = Not Analyzed, ND = Not Detected
J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-D
Customer Sample ID: 16-08635-1-EFF-D

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034225				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	38	JNT
S16T034225				Undecane	1120-21-4	5.44	NGS	17	JNT
S16T034225				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	58	JNT
S16T034225				1,2-Benzisothiazole	272-16-2	6.59	NGS	32	JNT
S16T034225				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	17	JNT
S16T034225			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034225			BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

T - Tentatively Identified Compound
U - Less Than Detection Limit
N - Named TIC
NA = Not Analyzed, ND = Not Detected
J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-E
Customer Sample ID: 16-08635-1-EFF-E

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034226			Cyclotrisiloxane, hexamethyl-	541-05-9	2.85	NGS	35	JNT
S16T034226			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	52	JNT
S16T034226			Decane, 2,4,6-trimethyl-	62108-27-4	5.44	NGS	15	JNT
S16T034226			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	46	JNT
S16T034226			Undecane, 2,6-dimethyl-	17301-23-4	6.29	NGS	9.9	JNT
S16T034226			1,2-Benzisothiazole	272-16-2	6.59	NGS	27	JNT
S16T034226			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	14	JNT
S16T034226			Undecane, 2-methyl-	7045-71-8	7.25	NGS	15	JNT
S16T034226		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034226		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-F
Customer Sample ID: 16-08635-1-EFF-F

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034227			Undecane	1120-21-4	5.44	NGS	15	JNT
S16T034227			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	27	JNT
S16T034227			Decane, 2,4,6-trimethyl-	62108-27-4	6.89	NGS	7.1	JNT
S16T034227		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034227		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-G
Customer Sample ID: 16-08635-1-EFF-G

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034228			Cyclotetrasiloxane, octamethyl	556-67-2	4.36	NGS	120	JNT
S16T034228			D-Limonene	5989-27-5	4.86	NGS	26	JNT
S16T034228			Undecane	1120-21-4	5.06	NGS	120	JNT
S16T034228			Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	54	JNT
S16T034228			Undecane, 2,6-dimethyl-	17301-23-4	5.14	NGS	16	JNT
S16T034228			Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.24	NGS	26	JNT
S16T034228			2,3-Dimethyldecane	17312-44-6	5.39	NGS	34	JNT
S16T034228			Undecane, 4,7-dimethyl-	17301-32-5	5.46	NGS	160	JNT
S16T034228			Undecane, 4,6-dimethyl-	17312-82-2	5.50	NGS	42	JNT
S16T034228			Decamethlycyclopentasiloxane	541-02-6	5.72	NGS	75	JNT
S16T034228			Undecane, 3-methyl-	1002-43-3	6.05	NGS	9.1	JNT
S16T034228			Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	34	JNT
S16T034228			Tridecane, 2-methyl-	1560-96-9	7.07	NGS	16	JNT
S16T034228			Undecane, 3,7-dimethyl-	17301-29-0	7.26	NGS	20	JNT
S16T034228			Undecane, 2-methyl-	7045-71-8	7.33	NGS	13	JNT
S16T034228		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034228		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-EFF-H
Customer Sample ID: 16-08635-1-EFF-H

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034229				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	34	JNT
S16T034229				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	11	JNT
S16T034229				Undecane	1120-21-4	5.44	NGS	22	JNT
S16T034229				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	36	JNT
S16T034229				Undecane, 2-methyl-	7045-71-8	7.25	NGS	13	JNT
S16T034229			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034229			BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC NA = Not Analyzed, ND = Not Detected J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-IN-A
Customer Sample ID: 16-08635-1-IN-A

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034230			2-Butoxyethanol	111-76-2	3.70	NGS	21	JNT
S16T034230			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	93	JNT
S16T034230			2,2,7,7-Tetramethyloctane	1071-31-4	4.49	NGS	110	JNT
S16T034230			Decane, 2,5,9-trimethyl-	62108-22-9	4.76	NGS	31	JNT
S16T034230			2,2,4,4-Tetramethyloctane	62183-79-3	4.82	NGS	36	JNT
S16T034230			3,3-Dimethylhexane	563-16-6	4.88	NGS	120	JNT
S16T034230			Decane, 2,4,6-trimethyl-	62108-27-4	5.00	NGS	12	JNT
S16T034230			Heptane, 5-ethyl-2,2,3-trimeth	62199-06-8	5.14	NGS	57	JNT
S16T034230			Undecane	1120-21-4	5.44	NGS	43	JNT
S16T034230			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	57	JNT
S16T034230			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	15	JNT
S16T034230			Undecane, 2-methyl-	7045-71-8	7.26	NGS	12	JNT
S16T034230		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034230		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound U - Less Than Detection Limit N - Named TIC J - Estimated

Cartridge Evaluation
Data Summary Report

Sample Group: 20162992
SDG Number:
Customer Sample ID: 16-08635-1-IN-H
Customer Sample ID: 16-08635-1-IN-H

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034231			2-Butoxyethanol	111-76-2	3.71	NGS	26	JNT
S16T034231			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	47	JNT
S16T034231			Undecane	1120-21-4	5.45	NGS	21	JNT
S16T034231			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	42	JNT
S16T034231			1,2-Benzisothiazole	272-16-2	6.59	NGS	25	JNT
S16T034231			Decane, 2,4,6-trimethyl-	62108-27-4	6.89	NGS	11	JNT
S16T034231			Propanoic acid, 2-methyl-, 1-(	74381-40-1	9.18	NGS	31	JNT
S16T034231		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034231		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

T - Tentatively Identified Compound
U - Less Than Detection Limit
N - Named TIC
NA = Not Analyzed, ND = Not Detected
J - Estimated

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-BASE-EFF
Customer Sample ID: 16-08635-1-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034232			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034232			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034232			108-39-4M	Cresol (m & p)	NGS	90	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034232			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034232			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034232			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034232			112-40-3	Dodecane	NGS	96	<0.60	14	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034232			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034232			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034232			126-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034232			629-50-5	Tridecane	NGS	96	<1.6	8.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034232			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034232			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-BASE-IN
Customer Sample ID: 16-08635-1-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034233			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034233			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034233			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034233			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034233			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034233			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034233			112-40-3	Dodecane	NGS	100	<0.60	5.9	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034233			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034233			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034233			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034233			629-50-5	Tridecane	NGS	100	<1.6	4.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034233			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034233			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-BLANK1
Customer Sample ID: 16-08635-1-BLANK1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034234			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034234			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034234			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034234			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034234			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034234			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034234			112-40-3	Dodecane	NGS	100	<0.60	1.1	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034234			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034234			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034234			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034234			629-50-5	Tridecane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034234			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034234			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-BLANK2
Customer Sample ID: 16-08635-1-BLANK2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034235			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034235			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034235			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034235			92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034235			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034235			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034235			112-40-3	Dodecane	NGS	100	<0.60	0.80	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034235			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034235			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034235			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034235			629-50-5	Tridecane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034235			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034235			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-IN-C
Customer Sample ID: 16-08635-1-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034237			3891-98-3	2,6,10-Trimethyldodecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034237			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034237			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034237			92-52-4	Biphenyl	NGS	90	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034237			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034237			84-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034237			112-40-3	Dodecane	NGS	100	<0.60	20	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034237			544-76-3	Hexadecane-	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034237			629-59-4	Tetradecane	NGS	94	<3.9	8.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034237			126-73-8	Tributyl phosphate	NGS	78	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034237			629-50-5	Tridecane	NGS	98	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034237			629-78-7	Heptadecane	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034237			629-62-9	Pentadecane	NGS	95	<3.0	3.2	n/a	n/a	n/a	n/a	3.0	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-IN-D
Customer Sample ID: 16-08635-1-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034238			3891-98-3	2,6,10-Trimethyldodecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034238			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034238			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034238			92-52-4	Biphenyl	NGS	90	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034238			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034238			84-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034238			112-40-3	Dodecane	NGS	100	<0.60	30	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034238			544-76-3	Hexadecane-	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034238			629-59-4	Tetradecane	NGS	94	<3.9	4.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034238			126-73-8	Tributyl phosphate	NGS	78	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034238			629-50-5	Tridecane	NGS	98	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034238			629-78-7	Heptadecane	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034238			629-62-9	Pentadecane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-IN-E
Customer Sample ID: 16-08635-1-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034239			3891-98-3	2,6,10-Trimethyldodecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034239			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034239			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034239			92-52-4	Biphenyl	NGS	90	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034239			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034239			84-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034239			112-40-3	Dodecane	NGS	100	<0.60	9.7	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034239			544-76-3	Hexadecane-	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034239			629-59-4	Tetradecane	NGS	94	<3.9	6.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034239			126-73-8	Tributyl phosphate	NGS	78	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034239			629-50-5	Tridecane	NGS	98	<1.6	4.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034239			629-78-7	Heptadecane	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034239			629-62-9	Pentadecane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-IN-F
Customer Sample ID: 16-08635-1-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034240			3891-98-3	2,6,10-Trimethyldodecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034240			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034240			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034240			92-52-4	Biphenyl	NGS	90	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034240			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034240			84-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034240			112-40-3	Dodecane	NGS	100	<0.60	29	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034240			544-76-3	Hexadecane-	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034240			629-59-4	Tetradecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034240			126-73-8	Tributyl phosphate	NGS	78	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034240			629-50-5	Tridecane	NGS	98	<1.6	6.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034240			629-78-7	Heptadecane	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034240			629-62-9	Pentadecane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-IN-G
Customer Sample ID: 16-08635-1-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034241			3891-98-3	2,6,10-Trimethyldodecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034241			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034241			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034241			92-52-4	Biphenyl	NGS	90	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034241			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034241			84-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034241			112-40-3	Dodecane	NGS	100	<0.60	18	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034241			544-76-3	Hexadecane-	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034241			629-59-4	Tetradecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034241			126-73-8	Tributyl phosphate	NGS	78	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034241			629-50-5	Tridecane	NGS	98	<1.6	5.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034241			629-78-7	Heptadecane	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034241			629-62-9	Pentadecane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Jason McLuge 11/22/16

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-A
Customer Sample ID: 16-08636-1-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034242			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034242			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034242			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034242			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034242			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034242			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034242			112-40-3	Dodecane	NGS	100	<0.60	12	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034242			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034242			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034242			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034242			629-50-5	Tridecane	NGS	97	<1.6	6.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034242			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034242			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated N - Named TIC T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-B
Customer Sample ID: 16-08636-1-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034243			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034243			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034243			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034243			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034243			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034243			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034243			112-40-3	Dodecane	NGS	100	<0.60	19	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034243			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034243			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034243			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034243			629-50-5	Tridecane	NGS	97	<1.6	9.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034243			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034243			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-C
Customer Sample ID: 16-08636-1-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034244			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	4.7	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034244			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034244			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034244			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034244			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034244			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034244			112-40-3	Dodecane	NGS	100	<0.60	19	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034244			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034244			629-59-4	Tetradecane	NGS	120	<3.9	8.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034244			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034244			629-50-5	Tridecane	NGS	97	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034244			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034244			629-62-9	Pentadecane	NGS	120	<3.0	3.0	n/a	n/a	n/a	n/a	3.0	n/a	J

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated N - Named TIC T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-D
Customer Sample ID: 16-08636-1-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034245			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034245			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034245			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034245			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034245			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034245			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034245			112-40-3	Dodecane	NGS	100	<0.60	11	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034245			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034245			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034245			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034245			629-50-5	Tridecane	NGS	97	<1.6	6.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034245			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034245			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-E
Customer Sample ID: 16-08636-1-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034246			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034246			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034246			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034246			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034246			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034246			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034246			112-40-3	Dodecane	NGS	100	<0.60	9.3	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034246			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034246			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034246			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034246			629-50-5	Tridecane	NGS	97	<1.6	5.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034246			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034246			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-F
Customer Sample ID: 16-08636-1-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034247			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034247			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034247			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034247			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034247			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034247			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034247			112-40-3	Dodecane	NGS	100	<0.60	18	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034247			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034247			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034247			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034247			629-50-5	Tridecane	NGS	97	<1.6	8.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034247			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034247			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated N - Named TIC T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-G
Customer Sample ID: 16-08636-1-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034248			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034248			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034248			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034248			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034248			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034248			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034248			112-40-3	Dodecane	NGS	100	<0.60	30	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034248			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034248			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034248			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034248			629-50-5	Tridecane	NGS	97	<1.6	4.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034248			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034248			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-H
Customer Sample ID: 16-08636-1-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034249			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034249			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034249			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034249			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034249			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034249			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034249			112-40-3	Dodecane	NGS	100	<0.60	12	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034249			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034249			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034249			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034249			629-50-5	Tridecane	NGS	97	<1.6	5.5	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034249			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034249			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-IN-A
Customer Sample ID: 16-08636-1-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034250			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034250			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034250			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034250			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034250			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034250			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034250			112-40-3	Dodecane	NGS	100	<0.60	13	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034250			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034250			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034250			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034250			629-50-5	Tridecane	NGS	97	<1.6	8.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034250			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034250			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-IN-H
Customer Sample ID: 16-08636-1-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034251			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034251			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034251			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034251			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034251			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034251			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034251			112-40-3	Dodecane	NGS	100	<0.60	16	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034251			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034251			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034251			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034251			629-50-5	Tridecane	NGS	97	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034251			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034251			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-A
Customer Sample ID: 16-08636-1-EFF-A

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034242				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	29	JNT
S16T034242				Undecane	1120-21-4	5.44	NGS	18	JNT
S16T034242				Undecane, 2,6-dimethyl-	17301-23-4	5.49	NGS	11	JNT
S16T034242				Decamethlycyclopentasiloxane	541-02-6	5.70	NGS	40	JNT
S16T034242				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	15	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-B
Customer Sample ID: 16-08636-1-EFF-B

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034243				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	34	JNT
S16T034243				Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	16	JNT
S16T034243				Acetophenone	98-86-2	5.18	NGS	9.6	JNT
S16T034243				Undecane	1120-21-4	5.44	NGS	29	JNT
S16T034243				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	40	JNT
S16T034243				Benzothiazole	95-16-9	6.59	NGS	27	JNT
S16T034243				Undecane, 2-methyl-	7045-71-8	7.25	NGS	19	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-C
Customer Sample ID: 16-08636-1-EFF-C

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034244			1-Hexene, 4-ethyl-	16746-85-3	3.65	NGS	45	JNT
S16T034244			2-Butoxyethanol	111-76-2	3.71	NGS	87	JNT
S16T034244			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	57	JNT
S16T034244			Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	6.9	JNT
S16T034244			Acetophenone	98-86-2	5.18	NGS	19	JNT
S16T034244			Benzene, 1-ethenyl-3-ethyl-	7525-62-4	5.34	NGS	34	JNT
S16T034244			Benzenemethanol, ?,?-dimethyl-	617-94-7	5.36	NGS	32	JNT
S16T034244			Undecane	1120-21-4	5.44	NGS	60	JNT
S16T034244			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	53	JNT
S16T034244			Benzothiazole	95-16-9	6.59	NGS	35	JNT
S16T034244			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	25	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated N - Named TIC T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-D
Customer Sample ID: 16-08636-1-EFF-D

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034245				Cyclotrisiloxane, hexamethyl-	541-05-9	2.84	NGS	29	JNT
S16T034245				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	29	JNT
S16T034245				Acetophenone	98-86-2	5.18	NGS	6.4	JNT
S16T034245				Undecane	1120-21-4	5.44	NGS	17	JNT
S16T034245				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	44	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-E
Customer Sample ID: 16-08636-1-EFF-E

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034246			Undecane	1120-21-4	5.44	NGS	14	JNT
S16T034246			Decamethlycyclopentasiloxane	541-02-6	5.70	NGS	32	JNT
S16T034246			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	13	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-F
Customer Sample ID: 16-08636-1-EFF-F

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034247				Cyclotrisiloxane, hexamethyl-	541-05-9	2.85	NGS	30	JNT
S16T034247				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	33	JNT
S16T034247				Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	5.1	JNT
S16T034247				Undecane	1120-21-4	5.44	NGS	30	JNT
S16T034247				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	39	JNT
S16T034247				Benzothiazole	95-16-9	6.59	NGS	27	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated N - Named TIC T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-G
Customer Sample ID: 16-08636-1-EFF-G

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034248				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	63	JNT
S16T034248				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	92	JNT
S16T034248				Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	43	JNT
S16T034248				Undecane	1120-21-4	5.45	NGS	110	JNT
S16T034248				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	44	JNT
S16T034248				Undecane, 2,6-dimethyl-	17301-23-4	5.91	NGS	10	JNT
S16T034248				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	20	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-H
Customer Sample ID: 16-08636-1-EFF-H

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S16T034249			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	25	JNT
S16T034249			Undecane	1120-21-4	5.44	NGS	20	JNT
S16T034249			Undecane, 2,6-dimethyl-	17301-23-4	5.49	NGS	11	JNT
S16T034249			Decamethlycyclopentasiloxane	541-02-6	5.70	NGS	27	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated N - Named TIC T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-IN-A
Customer Sample ID: 16-08636-1-IN-A

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034250				Cyclotrisiloxane, hexamethyl-	541-05-9	2.84	NGS	25	JNT
S16T034250				Unknown-1	--	3.27	NGS	40	JT
S16T034250				Heptanal	111-71-7	3.65	NGS	32	JNT
S16T034250				2-Butoxyethanol	111-76-2	3.71	NGS	34	JNT
S16T034250				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	57	JNT
S16T034250				Acetophenone	98-86-2	5.18	NGS	7.8	JNT
S16T034250				Undecane	1120-21-4	5.44	NGS	29	JNT
S16T034250				Decamethlycyclopentasiloxane	541-02-6	5.70	NGS	44	JNT
S16T034250				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	14	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-IN-H
Customer Sample ID: 16-08636-1-IN-H

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T034251				2-Butoxyethanol	111-76-2	3.71	NGS	26	JNT
S16T034251				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	35	JNT
S16T034251				Decane, 2,4,6-trimethyl-	62108-27-4	5.27	NGS	8.4	JNT
S16T034251				Undecane, 2,6-dimethyl-	17301-23-4	5.32	NGS	14	JNT
S16T034251				Undecane	1120-21-4	5.44	NGS	35	JNT
S16T034251				Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	32	JNT

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-BASE-EFF
Customer Sample ID: 16-08636-1-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034252			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034252			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034252			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034252			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034252			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034252			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034252			112-40-3	Dodecane	NGS	100	<0.60	13	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034252			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034252			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034252			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034252			629-50-5	Tridecane	NGS	97	<1.6	8.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034252			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034252			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-BASE-IN
Customer Sample ID: 16-08636-1-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034253			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034253			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034253			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034253			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034253			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034253			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034253			112-40-3	Dodecane	NGS	100	<0.60	5.2	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034253			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034253			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034253			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034253			629-50-5	Tridecane	NGS	97	<1.6	3.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034253			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034253			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-BLANK-EFF
Customer Sample ID: 16-08636-1-BLANK-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034254			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034254			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034254			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034254			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034254			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034254			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034254			112-40-3	Dodecane	NGS	100	<0.60	0.60	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034254			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034254			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034254			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034254			629-50-5	Tridecane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034254			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034254			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-BLANK-IN
Customer Sample ID: 16-08636-1-BLANK-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034255			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034255			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034255			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034255			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034255			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034255			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034255			112-40-3	Dodecane	NGS	100	<0.60	0.80	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T034255			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034255			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034255			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034255			629-50-5	Tridecane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034255			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034255			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-IN-B
Customer Sample ID: 16-08636-1-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034256			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034256			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034256			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034256			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034256			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034256			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034256			112-40-3	Dodecane	NGS	100	<0.60	31	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034256			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034256			629-59-4	Tetradecane	NGS	120	<3.9	5.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034256			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034256			629-50-5	Tridecane	NGS	97	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034256			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034256			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected
T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-IN-C
Customer Sample ID: 16-08636-1-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034257			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034257			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034257			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034257			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034257			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034257			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034257			112-40-3	Dodecane	NGS	100	<0.60	22	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034257			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034257			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034257			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034257			629-50-5	Tridecane	NGS	97	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034257			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034257			629-62-9	Pentadecane	NGS	120	<3.0	3.4	n/a	n/a	n/a	n/a	3.0	n/a	J

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-IN-D
Customer Sample ID: 16-08636-1-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034258			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034258			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034258			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034258			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034258			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034258			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034258			112-40-3	Dodecane	NGS	100	<0.60	26	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034258			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034258			629-59-4	Tetradecane	NGS	120	<3.9	3.9	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034258			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034258			629-50-5	Tridecane	NGS	97	<1.6	9.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034258			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034258			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-IN-E
Customer Sample ID: 16-08636-1-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034259			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034259			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034259			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034259			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034259			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034259			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034259			112-40-3	Dodecane	NGS	100	<0.60	10	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034259			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034259			629-59-4	Tetradecane	NGS	120	<3.9	6.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T034259			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034259			629-50-5	Tridecane	NGS	97	<1.6	4.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034259			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034259			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

Cartridge Evaluation
Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-IN-F
Customer Sample ID: 16-08636-1-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T034260			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034260			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T034260			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034260			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T034260			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T034260			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T034260			112-40-3	Dodecane	NGS	100	<0.60	31	n/a	n/a	n/a	n/a	0.55	n/a	
S16T034260			544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034260			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T034260			126-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T034260			629-50-5	Tridecane	NGS	97	<1.6	6.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034260			629-78-7	Heptadecane	NGS	97	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034260			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit J - Estimated N - Named TIC NA = Not Analyzed, ND = Not Detected
T - Tentatively Identified Compound

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-A
Customer Sample ID: 16-08635-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034182			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034182			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034182			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034182			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034182			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034182			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034182			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034182			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034182			71-23-8	1-Propanol	NGS	120	7.2	4.8	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034182			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034182			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034182			78-93-3	2-Butanone	NGS	110	<1.9	2.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034182			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034182			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034182			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034182			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034182			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034182			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034182			67-64-1	Acetone	NGS	97	<4.3	6.1	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034182			75-05-8	Acetonitrile	NGS	91	<1.8	8.6	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034182			98-86-2	Acetophenone	NGS	100	<2.6	3.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034182			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034182			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

NA = Not Analyzed, ND = Not Detected

Y - Comment
T - Tentatively Identified Compound
L - LLS Outside Range
B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-A
Customer Sample ID: 16-08635-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034182			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034182			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034182			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034182			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034182			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034182			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034182			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034182			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034182			64-17-5	Ethanol	NGS	100	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T034182			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034182			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034182			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034182			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034182			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034182			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034182			100-42-5	Styrene	NGS	110	<1.6	1.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034182			127-18-4	Tetrachloroethene	NGS	120	<1.6	51	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034182			108-88-3	Toluene	NGS	110	<1.5	3.1	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-A
Customer Sample ID: 16-08635-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034182			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034182			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034182			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034182			123-86-4	n-Butyl acetate	NGS	98	<1.4	1.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034182			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034182			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-B
Customer Sample ID: 16-08635-2-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034183			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034183			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034183			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034183			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034183			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034183			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034183			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034183			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034183			71-23-8	1-Propanol	NGS	120	7.2	6.0	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034183			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034183			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034183			78-93-3	2-Butanone	NGS	110	<1.9	2.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034183			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034183			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034183			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034183			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034183			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034183			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034183			67-64-1	Acetone	NGS	97	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034183			75-05-8	Acetonitrile	NGS	91	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034183			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034183			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034183			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-B
Customer Sample ID: 16-08635-2-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034183			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034183			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034183			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034183			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034183			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034183			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034183			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034183			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034183			64-17-5	Ethanol	NGS	100	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T034183			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034183			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			75-09-2	Methylene Chloride	NGS	100	<2.7	2.8	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034183			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034183			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034183			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034183			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034183			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			127-18-4	Tetrachloroethene	NGS	120	<1.6	37	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034183			108-88-3	Toluene	NGS	110	<1.5	2.0	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-B
Customer Sample ID: 16-08635-2-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034183			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034183			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034183			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034183			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034183			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034183			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-C
Customer Sample ID: 16-08635-2-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034184			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034184			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034184			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034184			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034184			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034184			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034184			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034184			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034184			71-23-8	1-Propanol	NGS	120	7.2	7.5	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034184			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034184			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034184			78-93-3	2-Butanone	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034184			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034184			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034184			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034184			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034184			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034184			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034184			67-64-1	Acetone	NGS	97	<4.3	11	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034184			75-05-8	Acetonitrile	NGS	91	<1.8	20	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034184			98-86-2	Acetophenone	NGS	100	<2.6	2.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034184			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034184			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

NA = Not Analyzed, ND = Not Detected

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T - Tentatively Identified Compound
L - LLS Outside Range
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E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-C
Customer Sample ID: 16-08635-2-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034184			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034184			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034184			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034184			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034184			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034184			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034184			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034184			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034184			64-17-5	Ethanol	NGS	100	<7.4	21	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T034184			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034184			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034184			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034184			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034184			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034184			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034184			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			127-18-4	Tetrachloroethene	NGS	120	<1.6	27	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034184			108-88-3	Toluene	NGS	110	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-C
Customer Sample ID: 16-08635-2-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034184			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034184			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034184			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034184			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034184			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034184			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-D
Customer Sample ID: 16-08635-2-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034185			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034185			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034185			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034185			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034185			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034185			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034185			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034185			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034185			71-23-8	1-Propanol	NGS	120	7.2	6.6	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034185			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034185			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034185			78-93-3	2-Butanone	NGS	110	<1.9	2.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034185			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034185			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034185			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034185			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034185			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034185			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034185			67-64-1	Acetone	NGS	97	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034185			75-05-8	Acetonitrile	NGS	91	<1.8	6.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034185			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034185			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034185			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-D
Customer Sample ID: 16-08635-2-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034185			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034185			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034185			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034185			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034185			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034185			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034185			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034185			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034185			64-17-5	Ethanol	NGS	100	<7.4	38	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034185			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034185			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034185			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034185			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034185			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034185			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034185			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034185			127-18-4	Tetrachloroethene	NGS	120	<1.6	30	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034185			108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-D
Customer Sample ID: 16-08635-2-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034185			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034185			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034185			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034185			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034185			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034185			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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NA = Not Analyzed, ND = Not Detected
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U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-E
Customer Sample ID: 16-08635-2-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034186			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034186			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034186			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034186			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034186			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034186			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034186			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034186			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034186			71-23-8	1-Propanol	NGS	120	7.2	7.8	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034186			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034186			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034186			78-93-3	2-Butanone	NGS	110	<1.9	2.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034186			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034186			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034186			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034186			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034186			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034186			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034186			67-64-1	Acetone	NGS	97	<4.3	8.0	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034186			75-05-8	Acetonitrile	NGS	91	<1.8	7.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034186			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034186			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034186			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-E
Customer Sample ID: 16-08635-2-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034186			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034186			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034186			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034186			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034186			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034186			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034186			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034186			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034186			64-17-5	Ethanol	NGS	100	<7.4	56	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034186			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034186			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034186			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034186			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034186			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034186			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034186			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034186			127-18-4	Tetrachloroethene	NGS	120	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034186			108-88-3	Toluene	NGS	110	<1.5	2.1	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-E
Customer Sample ID: 16-08635-2-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034186			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034186			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	3.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034186			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034186			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034186			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034186			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-F
Customer Sample ID: 16-08635-2-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034187			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034187			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034187			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034187			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034187			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034187			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034187			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034187			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034187			71-23-8	1-Propanol	NGS	120	7.2	8.2	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034187			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034187			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034187			78-93-3	2-Butanone	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034187			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034187			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034187			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034187			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034187			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034187			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034187			67-64-1	Acetone	NGS	97	<4.3	5.7	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034187			75-05-8	Acetonitrile	NGS	91	<1.8	5.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034187			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034187			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034187			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-F
Customer Sample ID: 16-08635-2-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034187			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034187			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034187			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034187			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034187			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034187			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034187			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034187			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034187			64-17-5	Ethanol	NGS	100	<7.4	80	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034187			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034187			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034187			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034187			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034187			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034187			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034187			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034187			127-18-4	Tetrachloroethene	NGS	120	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034187			108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-F
Customer Sample ID: 16-08635-2-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034187			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034187			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034187			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034187			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034187			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034187			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-G
Customer Sample ID: 16-08635-2-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034188			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034188			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034188			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034188			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034188			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034188			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034188			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034188			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034188			71-23-8	1-Propanol	NGS	120	7.2	7.4	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034188			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034188			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034188			78-93-3	2-Butanone	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034188			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034188			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034188			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034188			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034188			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034188			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034188			67-64-1	Acetone	NGS	97	<4.3	12	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034188			75-05-8	Acetonitrile	NGS	91	<1.8	5.3	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034188			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034188			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034188			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-G
Customer Sample ID: 16-08635-2-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034188			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034188			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034188			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034188			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034188			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034188			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034188			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034188			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034188			64-17-5	Ethanol	NGS	100	<7.4	110	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034188			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034188			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034188			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034188			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034188			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034188			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034188			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034188			127-18-4	Tetrachloroethene	NGS	120	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034188			108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-G
Customer Sample ID: 16-08635-2-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034188			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034188			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	28	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034188			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034188			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034188			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034188			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-H
Customer Sample ID: 16-08635-2-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034189			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034189			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034189			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034189			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034189			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034189			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034189			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034189			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034189			71-23-8	1-Propanol	NGS	120	7.2	8.7	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034189			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034189			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034189			78-93-3	2-Butanone	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034189			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034189			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034189			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034189			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034189			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034189			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034189			67-64-1	Acetone	NGS	97	<4.3	18	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034189			75-05-8	Acetonitrile	NGS	91	<1.8	5.7	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034189			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034189			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034189			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-H
Customer Sample ID: 16-08635-2-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034189			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034189			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034189			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034189			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034189			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034189			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034189			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034189			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034189			64-17-5	Ethanol	NGS	100	<7.4	110	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034189			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034189			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034189			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034189			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034189			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034189			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034189			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034189			127-18-4	Tetrachloroethene	NGS	120	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034189			108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-H
Customer Sample ID: 16-08635-2-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034189			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034189			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034189			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034189			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034189			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034189			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-A
Customer Sample ID: 16-08635-2-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034190			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034190			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034190			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034190			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034190			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034190			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034190			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034190			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034190			71-36-3	1-Butanol	NGS	120	<8.9	2.5E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034190			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034190			71-23-8	1-Propanol	NGS	120	7.2	93	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034190			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034190			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034190			78-93-3	2-Butanone	NGS	110	<1.9	11	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034190			110-43-0	2-Heptanone	NGS	99	<1.6	4.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034190			591-78-6	2-Hexanone	NGS	98	<1.2	3.2	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034190			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034190			78-94-4	3-Buten-2-one	NGS	100	<1.7	6.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034190			106-35-4	3-Heptanone	NGS	100	<1.5	7.0	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034190			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034190			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034190			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	7.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034190			67-64-1	Acetone	NGS	97	<4.3	470	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034190			75-05-8	Acetonitrile	NGS	91	<1.8	44	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034190			98-86-2	Acetophenone	NGS	100	<2.6	2.9	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034190			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034190			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-A
Customer Sample ID: 16-08635-2-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034190			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034190			71-43-2	Benzene	NGS	110	<1.2	1.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034190			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034190			123-72-8	Butanal	NGS	110	<2.1	15	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034190			109-74-0	Butanenitrile	NGS	100	<1.2	1.9	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034190			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034190			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034190			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034190			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034190			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034190			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034190			64-17-5	Ethanol	NGS	100	<7.4	200	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034190			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034190			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034190			110-00-9	Furan	NGS	100	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034190			110-54-3	Hexane	NGS	100	<1.7	13	n/a	n/a	n/a	n/a	1.7	n/a	
S16T034190			628-73-9	Hexanenitrile	NGS	100	<1.5	1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034190			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034190			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034190			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034190			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034190			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034190			107-12-0	Propanenitrile	NGS	100	<1.4	3.0	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034190			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034190			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034190			127-18-4	Tetrachloroethene	NGS	120	<1.6	81	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034190			108-88-3	Toluene	NGS	110	<1.5	10	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-A
Customer Sample ID: 16-08635-2-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034190			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034190			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	23	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034190			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034190			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034190			142-82-5	n-Heptane	NGS	100	<1.4	15	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034190			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-H
Customer Sample ID: 16-08635-2-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034191			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034191			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034191			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034191			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034191			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034191			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034191			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034191			71-36-3	1-Butanol	NGS	120	<8.9	2.4E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034191			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034191			71-23-8	1-Propanol	NGS	120	7.2	86	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034191			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034191			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034191			78-93-3	2-Butanone	NGS	110	<1.9	6.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034191			110-43-0	2-Heptanone	NGS	99	<1.6	5.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034191			591-78-6	2-Hexanone	NGS	98	<1.2	3.1	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034191			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034191			78-94-4	3-Buten-2-one	NGS	100	<1.7	4.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034191			106-35-4	3-Heptanone	NGS	100	<1.5	4.7	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034191			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034191			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034191			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034191			67-64-1	Acetone	NGS	97	<4.3	310	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034191			75-05-8	Acetonitrile	NGS	91	<1.8	16	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034191			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034191			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034191			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-H
Customer Sample ID: 16-08635-2-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034191			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034191			71-43-2	Benzene	NGS	110	<1.2	1.6	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034191			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034191			123-72-8	Butanal	NGS	110	<2.1	12	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T034191			109-74-0	Butanenitrile	NGS	100	<1.2	1.7	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034191			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034191			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034191			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034191			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034191			64-17-5	Ethanol	NGS	100	<7.4	170	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034191			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			110-00-9	Furan	NGS	100	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034191			110-54-3	Hexane	NGS	100	<1.7	9.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034191			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034191			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034191			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034191			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034191			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034191			107-12-0	Propanenitrile	NGS	100	<1.4	2.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034191			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034191			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034191			127-18-4	Tetrachloroethene	NGS	120	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034191			108-88-3	Toluene	NGS	110	<1.5	3.1	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-H
Customer Sample ID: 16-08635-2-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034191			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034191			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034191			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034191			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034191			142-82-5	n-Heptane	NGS	100	<1.4	12	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034191			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

Y - Comment
T - Tentatively Identified Compound
L - LLS Outside Range

B - Blank Contamination
E - Outside Calibration Range

J - Estimated
N - Named TIC

NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range
U - Less Than Detection Limit

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-A
Customer Sample ID: 16-08635-2-EFF-A

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034182			Methyl formate	107-31-3	4.73	NGS	26	JNT
S16T034182			Unknown-1	--	8.30	NGS	140	BJT
S16T034182			Cyclotetrasiloxane, octamethyl	556-67-2	20.44	NGS	37	JNT
S16T034182			Decane, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	7.5	JNT
S16T034182			Undecane	1120214	23.71	NGS	7.2	JNT
S16T034182			Nonanal	124-19-6	23.95	NGS	26	JNT
S16T034182			Unknown-3	--	24.22	NGS	140	JT
S16T034182			Dodecane	112-40-3	25.26	NGS	14	JNT
S16T034182			Methenamine	100-97-0	26.22	NGS	9.9	JNT
S16T034182			Benzothiazole	95-16-9	26.34	NGS	62	JNT
S16T034182			Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	16	JNT
S16T034182			Tetradecane	629594	27.01	NGS	11	JNT
S16T034182		BLNK	Unknown-1	--	8.25	NGS	39	
S16T034182		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034182		BLNK	Unknown-2	--	27.44	NGS	350	
S16T034182		BLNK	Unknown-3	--	27.51	NGS	860	

NA = Not Analyzed, ND = Not Detected

Y - Comment
T - Tentatively Identified Compound
B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-B
Customer Sample ID: 16-08635-2-EFF-B

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034183				Methyl formate	107-31-3	4.72	NGS	36	JNT
S16T034183				Unknown-1	--	8.32	NGS	200	BJT
S16T034183				Cyclotetrasiloxane, octamethyl	556-67-2	20.44	NGS	25	JNT
S16T034183				Decane, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	8.0	JNT
S16T034183				Undecane	1120214	23.71	NGS	5.7	JNT
S16T034183				Unknown-3	--	24.23	NGS	100	JT
S16T034183				Dodecane	112-40-3	25.26	NGS	14	JNT
S16T034183				Unknown-4	--	26.01	NGS	35	JT
S16T034183				Methenamine	100-97-0	26.23	NGS	34	JNT
S16T034183				Benzothiazole	95-16-9	26.35	NGS	49	JNT
S16T034183				Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	16	JNT
S16T034183				Unknown-5	--	26.57	NGS	51	JT
S16T034183				Tetradecane	629594	27.01	NGS	9.0	JNT
S16T034183			BLNK	Unknown-1	--	8.25	NGS	39	
S16T034183			BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034183			BLNK	Unknown-2	--	27.44	NGS	350	
S16T034183			BLNK	Unknown-3	--	27.51	NGS	860	

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T - Tentatively Identified Compound
B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-C
Customer Sample ID: 16-08635-2-EFF-C

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034184			Methyl formate	107-31-3	4.73	NGS	64	JNT
S16T034184			Methyl Acetate	79-20-9	7.46	NGS	30	JNT
S16T034184			Unknown-1	--	8.32	NGS	240	BJT
S16T034184			Decane, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	7.6	JNT
S16T034184			Undecane	1120214	23.72	NGS	10	JNT
S16T034184			Undecane, 2,6-dimethyl-	17301-23-4	23.83	NGS	11	JNT
S16T034184			Unknown-3	--	24.23	NGS	130	JT
S16T034184			Dodecane	112-40-3	25.26	NGS	21	JNT
S16T034184			Methenamine	100-97-0	26.22	NGS	28	JNT
S16T034184			Benzothiazole	95-16-9	26.34	NGS	63	JNT
S16T034184			Dodecane, 4,6-dimethyl-	61141728	26.42	NGS	19	JNT
S16T034184			Tridecane	629505	26.57	NGS	24	JNT
S16T034184			Tetradecane	629594	27.01	NGS	12	JNT
S16T034184		BLNK	Unknown-1	--	8.25	NGS	39	
S16T034184		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034184		BLNK	Unknown-2	--	27.44	NGS	350	
S16T034184		BLNK	Unknown-3	--	27.51	NGS	860	

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B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
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U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-D
Customer Sample ID: 16-08635-2-EFF-D

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034185				Methyl formate	107-31-3	4.73	NGS	52	JNT
S16T034185				Unknown-1	--	8.32	NGS	240	BJT
S16T034185				Unknown-2	--	24.22	NGS	77	JT
S16T034185				Dodecane	112-40-3	25.26	NGS	5.6	JNT
S16T034185				Unknown-3	--	25.89	NGS	39	JT
S16T034185				Methenamine	100-97-0	26.24	NGS	22	JNT
S16T034185				Benzothiazole	95-16-9	26.35	NGS	29	JNT
S16T034185				Dodecane, 4,6-dimethyl-	61141728	26.45	NGS	11	JNT
S16T034185				Propanoic acid, 2-methyl-, 1-(	74381-40-1	26.58	NGS	32	JNT
S16T034185				Tetradecane	629594	27.03	NGS	7.0	JNT
S16T034185			BLNK	Unknown-1	--	8.25	NGS	39	
S16T034185			BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034185			BLNK	Unknown-2	--	27.44	NGS	350	
S16T034185			BLNK	Unknown-3	--	27.51	NGS	860	

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E - Outside Calibration Range
J - Estimated
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Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-E
Customer Sample ID: 16-08635-2-EFF-E

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034186			Methyl formate	107-31-3	4.73	NGS	65	JNT
S16T034186			Unknown-1	--	8.32	NGS	280	BJT
S16T034186			2,2,7,7-Tetramethyloctane	1071-31-4	21.50	NGS	62	JNT
S16T034186			Octane, 2,3,6,7-tetramethyl-	52670-34-5	22.70	NGS	35	JNT
S16T034186			Decane, 2,4,6-trimethyl-	62108-27-4	22.99	NGS	7.2	JNT
S16T034186			Undecane, 3-methyl-	1002-43-3	23.53	NGS	14	JNT
S16T034186			Undecane	1120214	23.71	NGS	5.0	JNT
S16T034186			Unknown-2	--	24.22	NGS	61	JT
S16T034186			Dodecane	112-40-3	25.26	NGS	8.3	JNT
S16T034186			Methenamine	100-97-0	26.23	NGS	39	JNT
S16T034186			Benzothiazole	95-16-9	26.34	NGS	41	JNT
S16T034186			Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	12	JNT
S16T034186			Unknown-3	--	26.58	NGS	120	JT
S16T034186			Tetradecane	629594	27.01	NGS	5.7	JNT
S16T034186		BLNK	Unknown-1	--	8.25	NGS	39	
S16T034186		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034186		BLNK	Unknown-2	--	27.44	NGS	350	
S16T034186		BLNK	Unknown-3	--	27.51	NGS	860	

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J - Estimated
N - Named TIC
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U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-F
Customer Sample ID: 16-08635-2-EFF-F

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034187			Methyl formate	107-31-3	4.73	NGS	69	JNT
S16T034187			Unknown-1	--	8.33	NGS	290	BJT
S16T034187			Decane, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	7.0	JNT
S16T034187			Undecane	1120214	23.72	NGS	7.8	JNT
S16T034187			Undecane, 2,6-dimethyl-	17301-23-4	23.83	NGS	11	JNT
S16T034187			Unknown-2	--	24.23	NGS	90	JT
S16T034187			Dodecane	112-40-3	25.26	NGS	15	JNT
S16T034187			Methenamine	100-97-0	26.22	NGS	39	JNT
S16T034187			Benzothiazole	95-16-9	26.34	NGS	51	JNT
S16T034187			Dodecane, 4,6-dimethyl-	61141728	26.42	NGS	14	JNT
S16T034187			Tetradecane	629594	27.00	NGS	6.2	JNT
S16T034187		BLNK	Unknown-1	--	8.25	NGS	39	
S16T034187		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034187		BLNK	Unknown-2	--	27.44	NGS	350	
S16T034187		BLNK	Unknown-3	--	27.51	NGS	860	

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Y - Comment
T - Tentatively Identified Compound
B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-G
Customer Sample ID: 16-08635-2-EFF-G

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034188			Methyl formate	107-31-3	4.73	NGS	67	JNT
S16T034188			Unknown-1	--	8.33	NGS	250	BJT
S16T034188			Cyclotetrasiloxane, octamethyl	556-67-2	20.44	NGS	91	JNT
S16T034188			3-Ethyl-3-methylheptane	17302-01-1	22.99	NGS	100	JNT
S16T034188			Decane, 2,4,6-trimethyl-	62108-27-4	23.12	NGS	38	JNT
S16T034188			Undecane	1120-21-4	23.72	NGS	27	JNT
S16T034188			Undecane, 4,7-dimethyl-	17301-32-5	23.83	NGS	77	JNT
S16T034188			Undecane, 4,6-dimethyl-	17312-82-2	23.93	NGS	50	JNT
S16T034188			Unknown-2	--	24.23	NGS	110	JT
S16T034188			Undecane, 3-methyl-	1002-43-3	24.89	NGS	6.2	JNT
S16T034188			Dodecane	112-40-3	25.26	NGS	21	JNT
S16T034188			Methenamine	100-97-0	26.24	NGS	68	JNT
S16T034188			Dodecane, 4,6-dimethyl-	61141728	26.44	NGS	17	JNT
S16T034188			Tetradecane	629594	27.02	NGS	6.1	JNT
S16T034188		BLNK	Unknown-1	--	8.25	NGS	39	
S16T034188		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034188		BLNK	Unknown-2	--	27.44	NGS	350	
S16T034188		BLNK	Unknown-3	--	27.51	NGS	860	

Y - Comment
T - Tentatively Identified Compound
B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
NA = Not Analyzed, ND = Not Detected
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U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-H
Customer Sample ID: 16-08635-2-EFF-H

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034189				Methyl formate	107-31-3	4.72	NGS	53	JNT
S16T034189				Unknown-1	--	8.32	NGS	280	BJT
S16T034189				Unknown-2	--	24.22	NGS	48	JT
S16T034189				Dodecane	112403	25.26	NGS	6.5	JNT
S16T034189				Methenamine	100-97-0	26.22	NGS	58	JNT
S16T034189				Benzothiazole	95-16-9	26.35	NGS	28	JNT
S16T034189				Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	6.7	JNT
S16T034189			BLNK	Unknown-1	--	8.25	NGS	39	
S16T034189			BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034189			BLNK	Unknown-2	--	27.44	NGS	350	
S16T034189			BLNK	Unknown-3	--	27.51	NGS	860	

NA = Not Analyzed, ND = Not Detected

Y - Comment
T - Tentatively Identified Compound
B - Blank Contamination
E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-A
Customer Sample ID: 16-08635-2-IN-A

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034190				Methyl trifluoroacetate	431-47-0	4.72	NGS	130	JNT
S16T034190				Unknown-1	--	8.30	NGS	150	BJT
S16T034190				Methoxytrimethylsilane	1825-61-2	8.70	NGS	83	JNT
S16T034190				Tetrahydrofuran	109-99-9	11.97	NGS	82	JNT
S16T034190				N-Nitrosodimethylamine	62-75-9	15.69	NGS	8.2	JNT
S16T034190				Hexanal	66-25-1	16.82	NGS	29	JNT
S16T034190				Cyclotetrasiloxane, octamethyl	556-67-2	20.44	NGS	59	JNT
S16T034190				Decane, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	11	JNT
S16T034190				Undecane, 2,6-dimethyl-	17301-23-4	23.83	NGS	13	JNT
S16T034190				Unknown-2	--	24.23	NGS	120	JT
S16T034190				Dodecane	112403	25.26	NGS	10	JNT
S16T034190				Methenamine	100-97-0	26.21	NGS	350	JNT
S16T034190				Dodecane, 4,6-dimethyl-	61141728	26.42	NGS	14	JNT
S16T034190				Tetradecane	629594	27.00	NGS	10	JNT
S16T034190			BLNK	Unknown-1	--	8.25	NGS	39	
S16T034190			BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034190			BLNK	Unknown-2	--	27.44	NGS	350	
S16T034190			BLNK	Unknown-3	--	27.51	NGS	860	

NA = Not Analyzed, ND = Not Detected

Y - Comment
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J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

Cartridge Evaluation
Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-IN-H
Customer Sample ID: 16-08635-2-IN-H

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034191				Methyl formate	107-31-3	4.73	NGS	76	JNT
S16T034191				Unknown-1	--	8.30	NGS	140	BJT
S16T034191				Methoxytrimethylsilane	1825-61-2	8.70	NGS	47	JNT
S16T034191				Tetrahydrofuran	109-99-9	11.98	NGS	76	JNT
S16T034191				Undecane	1120214	23.71	NGS	6.1	JNT
S16T034191				Unknown-2	--	24.23	NGS	53	JT
S16T034191				Dodecane	112-40-3	25.26	NGS	9.8	JNT
S16T034191				Methenamine	100-97-0	26.22	NGS	270	JNT
S16T034191				Benzothiazole	95-16-9	26.35	NGS	25	JNT
S16T034191				Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	8.2	JNT
S16T034191				Propanoic acid, 2-methyl-, 1-(	74381-40-1	26.57	NGS	130	JNT
S16T034191				Tetradecane	629594	27.01	NGS	5.0	JNT
S16T034191			BLNK	Unknown-1	--	8.25	NGS	39	
S16T034191			BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034191			BLNK	Unknown-2	--	27.44	NGS	350	
S16T034191			BLNK	Unknown-3	--	27.51	NGS	860	

NA = Not Analyzed, ND = Not Detected

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T - Tentatively Identified Compound
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E - Outside Calibration Range
J - Estimated
N - Named TIC
c - RPD Outside Range
U - Less Than Detection Limit

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-EFF
Customer Sample ID: 16-08635-2-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034192			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034192			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034192			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034192			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034192			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034192			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034192			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034192			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034192			71-23-8	1-Propanol	NGS	120	7.2	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	BU
S16T034192			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034192			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034192			78-93-3	2-Butanone	NGS	110	<1.9	2.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034192			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034192			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034192			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034192			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034192			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034192			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034192			67-64-1	Acetone	NGS	97	<4.3	9.0	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034192			75-05-8	Acetonitrile	NGS	91	<1.8	14	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034192			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034192			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034192			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-EFF
Customer Sample ID: 16-08635-2-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034192			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034192			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034192			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034192			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034192			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034192			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034192			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034192			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034192			64-17-5	Ethanol	NGS	100	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T034192			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034192			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034192			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034192			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034192			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034192			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034192			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			127-18-4	Tetrachloroethene	NGS	120	<1.6	43	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034192			108-88-3	Toluene	NGS	110	<1.5	3.2	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-EFF
Customer Sample ID: 16-08635-2-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034192			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034192			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034192			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034192			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034192			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034192			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-IN
Customer Sample ID: 16-08635-2-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034193			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034193			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034193			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034193			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034193			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034193			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034193			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034193			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034193			71-36-3	1-Butanol	NGS	120	<8.9	36	n/a	n/a	n/a	n/a	8.9	n/a	LY
S16T034193			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034193			71-23-8	1-Propanol	NGS	120	7.2	8.0	n/a	n/a	n/a	n/a	3.0	n/a	BJ
S16T034193			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034193			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034193			78-93-3	2-Butanone	NGS	110	<1.9	4.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034193			110-43-0	2-Heptanone	NGS	99	<1.6	1.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034193			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034193			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034193			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034193			106-35-4	3-Heptanone	NGS	100	<1.5	4.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034193			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034193			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034193			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	12	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034193			67-64-1	Acetone	NGS	97	<4.3	49	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034193			75-05-8	Acetonitrile	NGS	91	<1.8	26	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034193			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034193			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034193			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-IN
Customer Sample ID: 16-08635-2-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034193			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034193			71-43-2	Benzene	NGS	110	<1.2	2.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034193			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034193			123-72-8	Butanal	NGS	110	<2.1	3.1	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T034193			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034193			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034193			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034193			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034193			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034193			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034193			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034193			64-17-5	Ethanol	NGS	100	<7.4	24	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T034193			141-78-6	Ethyl acetate	NGS	100	<1.5	1.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034193			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034193			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034193			110-54-3	Hexane	NGS	100	<1.7	1.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034193			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034193			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034193			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034193			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034193			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034193			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034193			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034193			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034193			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034193			127-18-4	Tetrachloroethene	NGS	120	<1.6	78	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034193			108-88-3	Toluene	NGS	110	<1.5	13	n/a	n/a	n/a	n/a	1.5	n/a	

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-IN
Customer Sample ID: 16-08635-2-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034193			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034193			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	5.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034193			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034193			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034193			142-82-5	n-Heptane	NGS	100	<1.4	3.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034193			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK1
Customer Sample ID: 16-08635-2-BLANK1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034194			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034194			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034194			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034194			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034194			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034194			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034194			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034194			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034194			71-23-8	1-Propanol	NGS	120	7.2	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	BU
S16T034194			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034194			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034194			78-93-3	2-Butanone	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034194			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034194			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034194			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034194			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034194			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034194			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034194			67-64-1	Acetone	NGS	97	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034194			75-05-8	Acetonitrile	NGS	91	<1.8	2.3	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034194			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034194			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034194			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Y - Comment
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B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK1
Customer Sample ID: 16-08635-2-BLANK1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034194			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034194			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034194			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034194			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034194			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034194			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034194			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034194			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034194			64-17-5	Ethanol	NGS	100	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T034194			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034194			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034194			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034194			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034194			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034194			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034194			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			127-18-4	Tetrachloroethene	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK1
Customer Sample ID: 16-08635-2-BLANK1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034194			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034194			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034194			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034194			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034194			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034194			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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J - Estimated
L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK2
Customer Sample ID: 16-08635-2-BLANK2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034195			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034195			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034195			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034195			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034195			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034195			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034195			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	LUY
S16T034195			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034195			71-23-8	1-Propanol	NGS	120	7.2	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034195			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034195			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034195			78-93-3	2-Butanone	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034195			110-43-0	2-Heptanone	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034195			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034195			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034195			106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034195			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034195			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034195			67-64-1	Acetone	NGS	97	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034195			75-05-8	Acetonitrile	NGS	91	<1.8	6.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034195			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034195			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034195			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK2
Customer Sample ID: 16-08635-2-BLANK2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034195			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034195			71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034195			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034195			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034195			109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034195			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034195			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034195			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034195			64-17-5	Ethanol	NGS	100	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T034195			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			110-00-9	Furan	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034195			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034195			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034195			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034195			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			107-12-0	Propanenitrile	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034195			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034195			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			127-18-4	Tetrachloroethene	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK2
Customer Sample ID: 16-08635-2-BLANK2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034195			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034195			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034195			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034195			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034195			142-82-5	n-Heptane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034195			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-B
Customer Sample ID: 16-08635-2-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034196			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034196			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034196			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034196			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034196			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034196			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034196			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034196			71-36-3	1-Butanol	NGS	120	<8.9	2.4E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034196			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034196			71-23-8	1-Propanol	NGS	120	7.2	94	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034196			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034196			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034196			78-93-3	2-Butanone	NGS	110	<1.9	7.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034196			110-43-0	2-Heptanone	NGS	99	<1.6	5.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034196			591-78-6	2-Hexanone	NGS	98	<1.2	3.7	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034196			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034196			78-94-4	3-Buten-2-one	NGS	100	<1.7	6.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034196			106-35-4	3-Heptanone	NGS	100	<1.5	6.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034196			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034196			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034196			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	4.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034196			67-64-1	Acetone	NGS	97	<4.3	300	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034196			75-05-8	Acetonitrile	NGS	91	<1.8	30	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034196			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034196			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034196			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Y - Comment
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U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-B
Customer Sample ID: 16-08635-2-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034196			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034196			71-43-2	Benzene	NGS	110	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034196			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034196			123-72-8	Butanal	NGS	110	<2.1	17	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034196			109-74-0	Butanenitrile	NGS	100	<1.2	1.7	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034196			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034196			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034196			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034196			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034196			64-17-5	Ethanol	NGS	100	<7.4	200	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034196			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			110-00-9	Furan	NGS	100	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034196			110-54-3	Hexane	NGS	100	<1.7	15	n/a	n/a	n/a	n/a	1.7	n/a	
S16T034196			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034196			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034196			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034196			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034196			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034196			107-12-0	Propanenitrile	NGS	100	<1.4	2.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034196			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034196			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034196			127-18-4	Tetrachloroethene	NGS	120	<1.6	49	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034196			108-88-3	Toluene	NGS	110	<1.5	7.4	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-B
Customer Sample ID: 16-08635-2-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034196			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034196			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	23	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034196			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034196			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034196			142-82-5	n-Heptane	NGS	100	<1.4	16	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034196			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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J - Estimated
L - LLS Outside Range
NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-C
Customer Sample ID: 16-08635-2-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034197			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034197			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034197			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034197			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034197			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034197			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034197			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034197			71-36-3	1-Butanol	NGS	120	<8.9	2.2E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034197			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034197			71-23-8	1-Propanol	NGS	120	7.2	93	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034197			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034197			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034197			78-93-3	2-Butanone	NGS	110	<1.9	8.5	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034197			110-43-0	2-Heptanone	NGS	99	<1.6	7.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034197			591-78-6	2-Hexanone	NGS	98	<1.2	3.6	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034197			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034197			78-94-4	3-Buten-2-one	NGS	100	<1.7	6.5	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034197			106-35-4	3-Heptanone	NGS	100	<1.5	7.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034197			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034197			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034197			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	3.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034197			67-64-1	Acetone	NGS	97	<4.3	300	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034197			75-05-8	Acetonitrile	NGS	91	<1.8	29	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034197			98-86-2	Acetophenone	NGS	100	<2.6	3.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034197			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034197			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-C
Customer Sample ID: 16-08635-2-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034197			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034197			71-43-2	Benzene	NGS	110	<1.2	1.3	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034197			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034197			123-72-8	Butanal	NGS	110	<2.1	23	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034197			109-74-0	Butanenitrile	NGS	100	<1.2	1.9	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034197			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034197			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034197			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034197			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034197			64-17-5	Ethanol	NGS	100	<7.4	190	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034197			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			110-00-9	Furan	NGS	100	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034197			110-54-3	Hexane	NGS	100	<1.7	16	n/a	n/a	n/a	n/a	1.7	n/a	
S16T034197			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034197			75-09-2	Methylene Chloride	NGS	100	<2.7	2.8	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034197			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034197			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034197			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034197			107-12-0	Propanenitrile	NGS	100	<1.4	2.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034197			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034197			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034197			127-18-4	Tetrachloroethene	NGS	120	<1.6	36	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034197			108-88-3	Toluene	NGS	110	<1.5	5.4	n/a	n/a	n/a	n/a	1.5	n/a	J

NA = Not Analyzed, ND = Not Detected

Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-C
Customer Sample ID: 16-08635-2-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034197			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034197			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	21	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034197			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034197			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034197			142-82-5	n-Heptane	NGS	100	<1.4	16	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034197			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-D
Customer Sample ID: 16-08635-2-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034198			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034198			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034198			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034198			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034198			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034198			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034198			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034198			71-36-3	1-Butanol	NGS	120	<8.9	2.3E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034198			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034198			71-23-8	1-Propanol	NGS	120	7.2	87	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034198			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034198			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034198			78-93-3	2-Butanone	NGS	110	<1.9	6.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034198			110-43-0	2-Heptanone	NGS	99	<1.6	5.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034198			591-78-6	2-Hexanone	NGS	98	<1.2	3.0	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034198			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034198			78-94-4	3-Buten-2-one	NGS	100	<1.7	6.5	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034198			106-35-4	3-Heptanone	NGS	100	<1.5	5.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034198			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034198			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034198			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	3.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034198			67-64-1	Acetone	NGS	97	<4.3	300	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034198			75-05-8	Acetonitrile	NGS	91	<1.8	43	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034198			98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034198			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034198			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-D
Customer Sample ID: 16-08635-2-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034198			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034198			71-43-2	Benzene	NGS	110	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034198			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034198			123-72-8	Butanal	NGS	110	<2.1	14	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034198			109-74-0	Butanenitrile	NGS	100	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034198			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034198			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034198			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034198			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034198			64-17-5	Ethanol	NGS	100	<7.4	170	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034198			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			110-00-9	Furan	NGS	100	<1.6	21	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034198			110-54-3	Hexane	NGS	100	<1.7	15	n/a	n/a	n/a	n/a	1.7	n/a	
S16T034198			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034198			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034198			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034198			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034198			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034198			107-12-0	Propanenitrile	NGS	100	<1.4	2.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034198			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034198			100-42-5	Styrene	NGS	110	<1.6	1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034198			127-18-4	Tetrachloroethene	NGS	120	<1.6	29	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034198			108-88-3	Toluene	NGS	110	<1.5	4.6	n/a	n/a	n/a	n/a	1.5	n/a	J

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L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-D
Customer Sample ID: 16-08635-2-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034198			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034198			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034198			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034198			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034198			142-82-5	n-Heptane	NGS	100	<1.4	16	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034198			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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E - Outside Calibration Range
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U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-E
Customer Sample ID: 16-08635-2-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034199			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034199			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034199			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034199			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034199			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034199			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034199			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034199			71-36-3	1-Butanol	NGS	120	<8.9	2.4E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034199			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034199			71-23-8	1-Propanol	NGS	120	7.2	83	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034199			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034199			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034199			78-93-3	2-Butanone	NGS	110	<1.9	6.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034199			110-43-0	2-Heptanone	NGS	99	<1.6	5.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034199			591-78-6	2-Hexanone	NGS	98	<1.2	3.0	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034199			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034199			78-94-4	3-Buten-2-one	NGS	100	<1.7	5.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034199			106-35-4	3-Heptanone	NGS	100	<1.5	5.3	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034199			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034199			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034199			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	2.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034199			67-64-1	Acetone	NGS	97	<4.3	240	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034199			75-05-8	Acetonitrile	NGS	91	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034199			98-86-2	Acetophenone	NGS	100	<2.6	3.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034199			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034199			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-E
Customer Sample ID: 16-08635-2-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034199			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034199			71-43-2	Benzene	NGS	110	<1.2	1.6	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034199			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034199			123-72-8	Butanal	NGS	110	<2.1	14	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034199			109-74-0	Butanenitrile	NGS	100	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034199			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034199			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034199			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034199			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034199			64-17-5	Ethanol	NGS	100	<7.4	170	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034199			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			110-00-9	Furan	NGS	100	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034199			110-54-3	Hexane	NGS	100	<1.7	14	n/a	n/a	n/a	n/a	1.7	n/a	
S16T034199			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034199			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034199			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034199			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034199			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034199			107-12-0	Propanenitrile	NGS	100	<1.4	2.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034199			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034199			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034199			127-18-4	Tetrachloroethene	NGS	120	<1.6	22	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034199			108-88-3	Toluene	NGS	110	<1.5	5.2	n/a	n/a	n/a	n/a	1.5	n/a	J

NA = Not Analyzed, ND = Not Detected

Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-E
Customer Sample ID: 16-08635-2-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034199			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034199			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034199			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034199			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034199			142-82-5	n-Heptane	NGS	100	<1.4	14	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034199			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-F
Customer Sample ID: 16-08635-2-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034200			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034200			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034200			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034200			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034200			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034200			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034200			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034200			71-36-3	1-Butanol	NGS	120	<8.9	2.3E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034200			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034200			71-23-8	1-Propanol	NGS	120	7.2	85	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034200			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034200			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034200			78-93-3	2-Butanone	NGS	110	<1.9	6.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034200			110-43-0	2-Heptanone	NGS	99	<1.6	4.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034200			591-78-6	2-Hexanone	NGS	98	<1.2	2.9	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034200			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034200			78-94-4	3-Buten-2-one	NGS	100	<1.7	5.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034200			106-35-4	3-Heptanone	NGS	100	<1.5	4.7	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034200			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034200			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034200			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034200			67-64-1	Acetone	NGS	97	<4.3	230	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034200			75-05-8	Acetonitrile	NGS	91	<1.8	9.1	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034200			98-86-2	Acetophenone	NGS	100	<2.6	5.2	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034200			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034200			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-F
Customer Sample ID: 16-08635-2-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034200			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034200			71-43-2	Benzene	NGS	110	<1.2	1.4	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034200			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034200			123-72-8	Butanal	NGS	110	<2.1	15	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034200			109-74-0	Butanenitrile	NGS	100	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034200			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034200			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034200			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034200			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034200			64-17-5	Ethanol	NGS	100	<7.4	160	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034200			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			110-00-9	Furan	NGS	100	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034200			110-54-3	Hexane	NGS	100	<1.7	14	n/a	n/a	n/a	n/a	1.7	n/a	
S16T034200			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034200			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034200			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034200			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034200			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034200			107-12-0	Propanenitrile	NGS	100	<1.4	2.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034200			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034200			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034200			127-18-4	Tetrachloroethene	NGS	120	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034200			108-88-3	Toluene	NGS	110	<1.5	4.1	n/a	n/a	n/a	n/a	1.5	n/a	J

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J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-F
Customer Sample ID: 16-08635-2-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034200			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034200			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034200			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034200			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034200			142-82-5	n-Heptane	NGS	100	<1.4	13	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034200			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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J - Estimated
L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-G
Customer Sample ID: 16-08635-2-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034201			79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034201			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034201			75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034201			107-06-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034201			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T034201			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034201			123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034201			71-36-3	1-Butanol	NGS	120	<8.9	2.5E+03	n/a	n/a	n/a	n/a	8.9	n/a	ELY
S16T034201			111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T034201			71-23-8	1-Propanol	NGS	120	7.2	100	n/a	n/a	n/a	n/a	3.0	n/a	B
S16T034201			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034201			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	Uc
S16T034201			78-93-3	2-Butanone	NGS	110	<1.9	6.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034201			110-43-0	2-Heptanone	NGS	99	<1.6	5.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034201			591-78-6	2-Hexanone	NGS	98	<1.2	3.1	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034201			534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034201			78-94-4	3-Buten-2-one	NGS	100	<1.7	5.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034201			106-35-4	3-Heptanone	NGS	100	<1.5	5.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034201			106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034201			105-42-0	4-Methyl-2-hexanone	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034201			108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034201			67-64-1	Acetone	NGS	97	<4.3	310	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034201			75-05-8	Acetonitrile	NGS	91	<1.8	17	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034201			98-86-2	Acetophenone	NGS	100	<2.6	3.8	n/a	n/a	n/a	n/a	2.6	n/a	
S16T034201			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034201			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	Uc

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U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-G
Customer Sample ID: 16-08635-2-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034201			107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034201			71-43-2	Benzene	NGS	110	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034201			100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034201			123-72-8	Butanal	NGS	110	<2.1	13	n/a	n/a	n/a	n/a	2.1	n/a	
S16T034201			109-74-0	Butanenitrile	NGS	100	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T034201			56-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034201			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034201			67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034201			124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034201			64-17-5	Ethanol	NGS	100	<7.4	180	n/a	n/a	n/a	n/a	7.4	n/a	
S16T034201			141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			110-00-9	Furan	NGS	100	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034201			110-54-3	Hexane	NGS	100	<1.7	11	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T034201			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034201			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034201			91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T034201			98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034201			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034201			107-12-0	Propanenitrile	NGS	100	<1.4	2.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T034201			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T034201			100-42-5	Styrene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034201			127-18-4	Tetrachloroethene	NGS	120	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034201			108-88-3	Toluene	NGS	110	<1.5	3.1	n/a	n/a	n/a	n/a	1.5	n/a	J

NA = Not Analyzed, ND = Not Detected

Y - Comment
E - Outside Calibration Range
B - Blank Contamination
U - Less Than Detection Limit
J - Estimated
L - LLS Outside Range
c - RPD Outside Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-G
Customer Sample ID: 16-08635-2-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034201			79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034201			75-69-4	Trichlorofluoromethane	NGS	110	<1.6	21	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034201			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034201			123-86-4	n-Butyl acetate	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034201			142-82-5	n-Heptane	NGS	100	<1.4	13	n/a	n/a	n/a	n/a	1.4	n/a	
S16T034201			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

Y - Comment
E - Outside Calibration Range

B - Blank Contamination
U - Less Than Detection Limit

J - Estimated
L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected
c - RPD Outside Range

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-A
Customer Sample ID: 16-08636-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034202			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034202			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034202			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034202			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034202			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034202			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034202			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034202			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034202			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034202			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034202			71-23-8	1-Propanol	NGS	120	<8.9	27	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034202			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034202			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034202			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034202			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034202			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034202			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034202			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034202			106-35-4	3-Heptanone	NGS	94	<2.7	2.8	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034202			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034202			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034202			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034202			67-64-1	Acetone	NGS	91	4.4	5.2	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034202			75-05-8	Acetonitrile	NGS	98	<1.6	190	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034202			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034202			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034202			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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J - Estimated
U - Less Than Detection Limit
E - Outside Calibration Range
B - Blank Contamination

Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-A
Customer Sample ID: 16-08636-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034202			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034202			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034202			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034202			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034202			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034202			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034202			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034202			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034202			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034202			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034202			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034202			64-17-5	Ethanol	NGS	120	6.6	38	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034202			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034202			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034202			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034202			110-54-3	Hexane	NGS	100	1.5	1.6	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034202			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034202			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034202			75-09-2	Methylene Chloride	NGS	110	4.2	4.1	n/a	n/a	n/a	n/a	4.1	n/a	BJ
S16T034202			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034202			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034202			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034202			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034202			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034202			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034202			127-18-4	Tetrachloroethene	NGS	99	<1.8	28	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034202			108-88-3	Toluene	NGS	98	<2.2	5.0	n/a	n/a	n/a	n/a	2.2	n/a	J

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B - Blank Contamination

Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-A
Customer Sample ID: 16-08636-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034202			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034202			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034202			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034202			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034202			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034202			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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N - Named TIC
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U - Less Than Detection Limit
E - Outside Calibration Range
B - Blank Contamination

Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-B
Customer Sample ID: 16-08636-2-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034203			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034203			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034203			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034203			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034203			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034203			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034203			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034203			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034203			71-36-3	1-Butanol	NGS	120	<4.3	17	n/a	n/a	n/a	n/a	4.3	n/a	J
S16T034203			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034203			71-23-8	1-Propanol	NGS	120	<8.9	19	n/a	n/a	n/a	n/a	8.9	n/a	J
S16T034203			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034203			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034203			78-93-3	2-Butanone	NGS	93	<3.1	3.2	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034203			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034203			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034203			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034203			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034203			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034203			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034203			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034203			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034203			67-64-1	Acetone	NGS	91	4.4	6.7	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034203			75-05-8	Acetonitrile	NGS	98	<1.6	280	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034203			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034203			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034203			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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U - Less Than Detection Limit
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B - Blank Contamination

Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-B
Customer Sample ID: 16-08636-2-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034203			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034203			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034203			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034203			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034203			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034203			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034203			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034203			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034203			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034203			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034203			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034203			64-17-5	Ethanol	NGS	120	6.6	37	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034203			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034203			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034203			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034203			110-54-3	Hexane	NGS	100	1.5	1.9	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034203			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034203			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034203			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034203			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034203			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034203			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034203			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034203			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034203			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034203			127-18-4	Tetrachloroethene	NGS	99	<1.8	31	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034203			108-88-3	Toluene	NGS	98	<2.2	6.8	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-B
Customer Sample ID: 16-08636-2-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034203			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034203			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034203			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034203			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034203			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034203			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-C
Customer Sample ID: 16-08636-2-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034204			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034204			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034204			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034204			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034204			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034204			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034204			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034204			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034204			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034204			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034204			71-23-8	1-Propanol	NGS	120	<8.9	27	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034204			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034204			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034204			78-93-3	2-Butanone	NGS	93	<3.1	3.6	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034204			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034204			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034204			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034204			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034204			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034204			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034204			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034204			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034204			67-64-1	Acetone	NGS	91	4.4	18	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034204			75-05-8	Acetonitrile	NGS	98	<1.6	230	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034204			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034204			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034204			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-C
Customer Sample ID: 16-08636-2-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034204			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034204			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034204			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034204			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034204			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034204			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034204			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034204			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034204			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034204			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034204			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034204			64-17-5	Ethanol	NGS	120	6.6	50	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034204			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034204			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034204			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034204			110-54-3	Hexane	NGS	100	1.5	1.4	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034204			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034204			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034204			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034204			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034204			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034204			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034204			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034204			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034204			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034204			127-18-4	Tetrachloroethene	NGS	99	<1.8	35	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034204			108-88-3	Toluene	NGS	98	<2.2	3.7	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-C
Customer Sample ID: 16-08636-2-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034204			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034204			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034204			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034204			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034204			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034204			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-D
Customer Sample ID: 16-08636-2-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034205			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034205			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034205			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034205			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034205			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034205			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034205			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034205			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034205			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034205			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034205			71-23-8	1-Propanol	NGS	120	<8.9	43	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034205			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034205			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034205			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034205			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034205			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034205			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034205			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034205			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034205			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034205			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034205			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034205			67-64-1	Acetone	NGS	91	4.4	13	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034205			75-05-8	Acetonitrile	NGS	98	<1.6	43	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034205			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034205			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034205			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-D
Customer Sample ID: 16-08636-2-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034205			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034205			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034205			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034205			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034205			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034205			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034205			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034205			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034205			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034205			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034205			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034205			64-17-5	Ethanol	NGS	120	6.6	95	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034205			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034205			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034205			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034205			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034205			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034205			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034205			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034205			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034205			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034205			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034205			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034205			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034205			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034205			127-18-4	Tetrachloroethene	NGS	99	<1.8	27	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034205			108-88-3	Toluene	NGS	98	<2.2	2.7	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-D
Customer Sample ID: 16-08636-2-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034205			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034205			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034205			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034205			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034205			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034205			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-E
Customer Sample ID: 16-08636-2-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034206			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034206			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034206			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034206			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034206			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034206			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034206			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034206			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034206			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034206			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034206			71-23-8	1-Propanol	NGS	120	<8.9	25	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034206			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034206			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034206			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034206			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034206			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034206			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034206			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034206			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034206			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034206			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034206			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034206			67-64-1	Acetone	NGS	91	4.4	5.7	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034206			75-05-8	Acetonitrile	NGS	98	<1.6	310	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034206			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034206			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034206			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-E
Customer Sample ID: 16-08636-2-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034206			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034206			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034206			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034206			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034206			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034206			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034206			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034206			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034206			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034206			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034206			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034206			64-17-5	Ethanol	NGS	120	6.6	94	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034206			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034206			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034206			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034206			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034206			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034206			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034206			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034206			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034206			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034206			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034206			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034206			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034206			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034206			127-18-4	Tetrachloroethene	NGS	99	<1.8	17	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034206			108-88-3	Toluene	NGS	98	<2.2	2.2	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-E
Customer Sample ID: 16-08636-2-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034206			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034206			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	3.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034206			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034206			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034206			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034206			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-F
Customer Sample ID: 16-08636-2-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034207			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034207			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034207			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034207			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034207			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034207			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034207			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034207			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034207			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034207			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034207			71-23-8	1-Propanol	NGS	120	<8.9	21	n/a	n/a	n/a	n/a	8.9	n/a	J
S16T034207			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034207			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034207			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034207			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034207			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034207			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034207			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034207			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034207			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034207			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034207			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034207			67-64-1	Acetone	NGS	91	4.4	9.8	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034207			75-05-8	Acetonitrile	NGS	98	<1.6	390	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034207			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034207			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034207			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-F
Customer Sample ID: 16-08636-2-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034207			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034207			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034207			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034207			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034207			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034207			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034207			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034207			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034207			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034207			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034207			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034207			64-17-5	Ethanol	NGS	120	6.6	150	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034207			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034207			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034207			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034207			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034207			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034207			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034207			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034207			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034207			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034207			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034207			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034207			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034207			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034207			127-18-4	Tetrachloroethene	NGS	99	<1.8	15	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034207			108-88-3	Toluene	NGS	98	<2.2	2.2	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-F
Customer Sample ID: 16-08636-2-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034207			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034207			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	13	n/a	n/a	n/a	n/a	1.9	n/a	
S16T034207			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034207			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034207			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034207			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-G
Customer Sample ID: 16-08636-2-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034208			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034208			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034208			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034208			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034208			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034208			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034208			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034208			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034208			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034208			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034208			71-23-8	1-Propanol	NGS	120	<8.9	33	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034208			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034208			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034208			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034208			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034208			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034208			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034208			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034208			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034208			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034208			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034208			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034208			67-64-1	Acetone	NGS	91	4.4	33	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034208			75-05-8	Acetonitrile	NGS	98	<1.6	30	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034208			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034208			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034208			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-G
Customer Sample ID: 16-08636-2-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034208			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034208			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034208			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034208			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034208			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034208			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034208			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034208			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034208			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034208			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034208			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034208			64-17-5	Ethanol	NGS	120	6.6	230	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034208			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034208			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034208			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034208			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034208			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034208			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034208			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034208			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034208			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034208			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034208			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034208			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034208			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034208			127-18-4	Tetrachloroethene	NGS	99	<1.8	13	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034208			108-88-3	Toluene	NGS	98	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-G
Customer Sample ID: 16-08636-2-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034208			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034208			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	23	n/a	n/a	n/a	n/a	1.9	n/a	
S16T034208			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034208			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034208			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034208			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-H
Customer Sample ID: 16-08636-2-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034209			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034209			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034209			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034209			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034209			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034209			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034209			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034209			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034209			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034209			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034209			71-23-8	1-Propanol	NGS	120	<8.9	29	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034209			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034209			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034209			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034209			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034209			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034209			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034209			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034209			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034209			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034209			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034209			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034209			67-64-1	Acetone	NGS	91	4.4	65	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034209			75-05-8	Acetonitrile	NGS	98	<1.6	1.7E+03	n/a	n/a	n/a	n/a	1.6	n/a	E
S16T034209			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034209			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034209			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-H
Customer Sample ID: 16-08636-2-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034209			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034209			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034209			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034209			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034209			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034209			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034209			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034209			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034209			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034209			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034209			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034209			64-17-5	Ethanol	NGS	120	6.6	260	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034209			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034209			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034209			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034209			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034209			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034209			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034209			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034209			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034209			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034209			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034209			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034209			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034209			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034209			127-18-4	Tetrachloroethene	NGS	99	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034209			108-88-3	Toluene	NGS	98	<2.2	2.5	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-H
Customer Sample ID: 16-08636-2-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034209			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034209			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	22	n/a	n/a	n/a	n/a	1.9	n/a	
S16T034209			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034209			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034209			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034209			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-A
Customer Sample ID: 16-08636-2-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034210			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034210			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034210			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034210			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034210			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034210			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034210			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034210			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034210			71-36-3	1-Butanol	NGS	120	<4.3	1.4E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034210			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034210			71-23-8	1-Propanol	NGS	120	<8.9	170	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034210			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034210			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034210			78-93-3	2-Butanone	NGS	93	<3.1	7.2	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034210			110-43-0	2-Heptanone	NGS	94	<2.6	4.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034210			591-78-6	2-Hexanone	NGS	96	<2.5	2.7	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034210			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034210			78-94-4	3-Buten-2-one	NGS	91	<1.9	4.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034210			106-35-4	3-Heptanone	NGS	94	<2.7	4.5	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034210			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034210			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034210			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034210			67-64-1	Acetone	NGS	91	4.4	340	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034210			75-05-8	Acetonitrile	NGS	98	<1.6	240	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034210			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034210			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034210			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-A
Customer Sample ID: 16-08636-2-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034210			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034210			71-43-2	Benzene	NGS	98	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034210			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034210			123-72-8	Butanal	NGS	100	<3.0	11	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034210			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034210			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034210			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034210			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034210			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034210			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034210			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034210			64-17-5	Ethanol	NGS	120	6.6	270	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034210			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034210			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034210			110-00-9	Furan	NGS	90	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034210			110-54-3	Hexane	NGS	100	1.5	7.3	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034210			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034210			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034210			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034210			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034210			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034210			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034210			107-12-0	Propanenitrile	NGS	100	<1.8	2.3	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034210			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034210			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034210			127-18-4	Tetrachloroethene	NGS	99	<1.8	16	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034210			108-88-3	Toluene	NGS	98	<2.2	4.8	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-A
Customer Sample ID: 16-08636-2-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034210			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034210			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	9.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034210			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034210			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034210			142-82-5	n-Heptane	NGS	100	<1.6	9.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034210			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-H
Customer Sample ID: 16-08636-2-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034211			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034211			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034211			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034211			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034211			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034211			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	13	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034211			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034211			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034211			71-36-3	1-Butanol	NGS	120	<4.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034211			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034211			71-23-8	1-Propanol	NGS	120	<8.9	130	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034211			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034211			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034211			78-93-3	2-Butanone	NGS	93	<3.1	6.9	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034211			110-43-0	2-Heptanone	NGS	94	<2.6	5.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034211			591-78-6	2-Hexanone	NGS	96	<2.5	3.3	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034211			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034211			78-94-4	3-Buten-2-one	NGS	91	<1.9	5.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034211			106-35-4	3-Heptanone	NGS	94	<2.7	4.2	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034211			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034211			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034211			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034211			67-64-1	Acetone	NGS	91	4.4	230	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034211			75-05-8	Acetonitrile	NGS	98	<1.6	640	n/a	n/a	n/a	n/a	1.6	n/a	E
S16T034211			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034211			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034211			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-H
Customer Sample ID: 16-08636-2-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034211			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034211			71-43-2	Benzene	NGS	98	<1.5	2.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034211			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034211			123-72-8	Butanal	NGS	100	<3.0	13	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034211			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034211			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034211			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034211			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034211			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034211			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034211			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034211			64-17-5	Ethanol	NGS	120	6.6	220	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034211			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034211			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034211			110-00-9	Furan	NGS	90	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034211			110-54-3	Hexane	NGS	100	1.5	10	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034211			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034211			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034211			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034211			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034211			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034211			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034211			107-12-0	Propanenitrile	NGS	100	<1.8	2.6	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034211			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034211			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034211			127-18-4	Tetrachloroethene	NGS	99	<1.8	5.2	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034211			108-88-3	Toluene	NGS	98	<2.2	5.1	n/a	n/a	n/a	n/a	2.2	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-H
Customer Sample ID: 16-08636-2-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034211			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034211			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	12	n/a	n/a	n/a	n/a	1.9	n/a	
S16T034211			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	8.1	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034211			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034211			142-82-5	n-Heptane	NGS	100	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034211			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	4.7	n/a	n/a	n/a	n/a	2.1	n/a	J

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-A
Customer Sample ID: 16-08636-2-EFF-A

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034202				Unknown-1	--	7.85	NGS	110	JT
S16T034202				Decane, 2,6,7-trimethyl-	62108-25-2	23.20	NGS	26	JNT
S16T034202				Decane, 2,4,6-trimethyl-	62108-27-4	23.24	NGS	8.5	JNT
S16T034202				Undecane	1120214	23.36	NGS	16	JNT
S16T034202				Undecane, 2,6-dimethyl-	17301-23-4	23.60	NGS	11	JNT
S16T034202				Unknown-2	--	23.78	NGS	85	JT
S16T034202				Dodecane	112403	24.83	NGS	14	JNT
S16T034202				Methenamine	100-97-0	25.74	NGS	18	JNT
S16T034202				Benzothiazole	95-16-9	25.84	NGS	44	JNT
S16T034202				Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	12	JNT
S16T034202				Tetradecane	629594	26.49	NGS	6.3	JNT
S16T034202				Unknown-3	--	27.76	NGS	26	JT
S16T034202				Unknown-4	--	27.83	NGS	26	JT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-B
Customer Sample ID: 16-08636-2-EFF-B

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034203				Unknown-1	--	7.84	NGS	120	JT
S16T034203				Decane, 2,4,6-trimethyl-	62108-27-4	23.24	NGS	6.7	JNT
S16T034203				Undecane	1120214	23.36	NGS	16	JNT
S16T034203				Unknown-2	--	23.78	NGS	92	JT
S16T034203				Undecane, 2,6-dimethyl-	17301-23-4	24.83	NGS	15	JNT
S16T034203				Methenamine	100-97-0	25.74	NGS	20	JNT
S16T034203				Benzothiazole	95-16-9	25.85	NGS	49	JNT
S16T034203				Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	17	JNT
S16T034203				Tetradecane	629594	26.49	NGS	10	JNT
S16T034203				Unknown-3	--	27.77	NGS	34	JT
S16T034203				Unknown-4	--	27.84	NGS	36	JT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-C
Customer Sample ID: 16-08636-2-EFF-C

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034204				Unknown-1	--	7.84	NGS	130	JT
S16T034204				Cyclotetrasiloxane, octamethyl	556-67-2	19.86	NGS	30	JNT
S16T034204				Decane, 2,4,6-trimethyl-	62108-27-4	23.36	NGS	12	JNT
S16T034204				Unknown-2	--	23.78	NGS	110	JT
S16T034204				Dodecane	112403	24.83	NGS	22	JNT
S16T034204				Methenamine	100-97-0	25.73	NGS	71	JNT
S16T034204				Benzothiazole	95-16-9	25.85	NGS	70	JNT
S16T034204				Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	15	JNT
S16T034204				Tetradecane	629594	26.49	NGS	9.7	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-D
Customer Sample ID: 16-08636-2-EFF-D

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034205			Unknown-1	--	7.82	NGS	97	JT
S16T034205			Undecane	1120214	23.37	NGS	5.3	JNT
S16T034205			Unknown-2	--	23.79	NGS	70	JT
S16T034205			Dodecane	112-40-3	24.84	NGS	8.5	JNT
S16T034205			Methenamine	100-97-0	25.74	NGS	77	JNT
S16T034205			Benzothiazole	95-16-9	25.86	NGS	30	JNT
S16T034205			Dodecane, 4,6-dimethyl-	61141728	25.95	NGS	13	JNT
S16T034205			Tetradecane	629594	26.49	NGS	9.8	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-E
Customer Sample ID: 16-08636-2-EFF-E

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034206				Unknown-1	--	7.84	NGS	160	JT
S16T034206				Unknown-2	--	23.78	NGS	55	JT
S16T034206				Dodecane	112403	24.83	NGS	11	JNT
S16T034206				Unknown-3	--	25.60	NGS	33	JT
S16T034206				Methenamine	100-97-0	25.73	NGS	42	JNT
S16T034206				Benzothiazole	95-16-9	25.84	NGS	46	JNT
S16T034206				Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	11	JNT
S16T034206				Tetradecane	629594	26.49	NGS	8.3	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-F
Customer Sample ID: 16-08636-2-EFF-F

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034207				Unknown-1	--	7.84	NGS	140	JT
S16T034207				Decane, 2,4,6-trimethyl-	62108-27-4	23.24	NGS	6.2	JNT
S16T034207				Undecane	1120214	23.36	NGS	11	JNT
S16T034207				Unknown-2	--	23.78	NGS	71	JT
S16T034207				Dodecane	112403	24.83	NGS	16	JNT
S16T034207				Methenamine	100-97-0	25.73	NGS	74	JNT
S16T034207				Benzothiazole	95-16-9	25.84	NGS	49	JNT
S16T034207				Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	11	JNT
S16T034207				Tetradecane	629505	26.49	NGS	6.5	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-G
Customer Sample ID: 16-08636-2-EFF-G

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034208				Unknown-1	--	7.86	NGS	180	JT
S16T034208				Cyclotetrasiloxane, octamethyl	556-67-2	19.86	NGS	63	JNT
S16T034208				Decane, 3,7-dimethyl-	17312-54-8	22.42	NGS	120	JNT
S16T034208				Decane, 2,4-dimethyl-	2801-84-5	22.58	NGS	45	JNT
S16T034208				Undecane	1120-21-4	23.24	NGS	24	JNT
S16T034208				Decane, 2,4,6-trimethyl-	62108-27-4	23.36	NGS	95	JNT
S16T034208				Undecane, 4-methyl-	2980-69-0	23.47	NGS	50	JNT
S16T034208				Undecane, 2-methyl-	7045718	23.60	NGS	19	JNT
S16T034208				Unknown-2	--	23.78	NGS	98	JT
S16T034208				Undecane, 3-methyl-	1002-43-3	24.47	NGS	9.7	JNT
S16T034208				Dodecane	112-40-3	24.83	NGS	32	JNT
S16T034208				Methenamine	100-97-0	25.73	NGS	120	JNT
S16T034208				Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	12	JNT
S16T034208				Tridecane	629505	26.49	NGS	9.9	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-H
Customer Sample ID: 16-08636-2-EFF-H

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S16T034209			Unknown-1	--	7.84	NGS	150	JT
S16T034209			Decane, 2,6,7-trimethyl-	62108-25-2	23.21	NGS	33	JNT
S16T034209			Undecane	1120-21-4	23.36	NGS	22	JNT
S16T034209			Undecane, 2,6-dimethyl-	17301-23-4	23.60	NGS	17	JNT
S16T034209			Unknown-2	--	23.78	NGS	57	JT
S16T034209			Decane, 2,4,6-trimethyl-	62108-27-4	23.93	NGS	24	JNT
S16T034209			Dodecane	112403	24.84	NGS	12	JNT
S16T034209			Methenamine	100-97-0	25.74	NGS	180	JNT
S16T034209			Benzothiazole	95-16-9	25.85	NGS	43	JNT
S16T034209			Dodecane, 4,6-dimethyl-	61141728	25.95	NGS	8.8	JNT
S16T034209			Tridecane	629505	26.49	NGS	5.8	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-A
Customer Sample ID: 16-08636-2-IN-A

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034210				Unknown-1	--	7.90	NGS	51	JT
S16T034210				Allyl(methoxy)dimethylsilane	30535-30-9	8.32	NGS	38	JNT
S16T034210				Tetrahydrofuran	109-99-9	11.60	NGS	74	JNT
S16T034210				Cyclotetrasiloxane, octamethyl	556-67-2	19.86	NGS	39	JNT
S16T034210				Undecane	1120214	23.36	NGS	12	JNT
S16T034210				Unknown-2	--	23.78	NGS	76	JT
S16T034210				Dodecane	112403	24.83	NGS	8.9	JNT
S16T034210				Methenamine	100-97-0	25.74	NGS	100	JNT
S16T034210				Benzothiazole	95-16-9	25.85	NGS	36	JNT
S16T034210				Dodecane, 2,6,11-trimethyl-	31295564	25.94	NGS	9.9	JNT
S16T034210				Dodecane, 4,6-dimethyl-	61141728	26.49	NGS	5.6	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-IN-H
Customer Sample ID: 16-08636-2-IN-H

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T034211				Unknown-1	--	7.84	NGS	76	JT
S16T034211				Methoxytrimethylsilane	1825-61-2	8.34	NGS	36	JNT
S16T034211				Tetrahydrofuran	109-99-9	11.60	NGS	83	JNT
S16T034211				N-Nitrosodimethylamine	62-75-9	15.36	NGS	9.2	JNT
S16T034211				Unknown-2	--	23.78	NGS	40	JT
S16T034211				Dodecane	112-40-3	24.83	NGS	8.7	JNT
S16T034211				Unknown-3	--	25.60	NGS	35	JT
S16T034211				Methenamine	100-97-0	25.73	NGS	300	JNT
S16T034211				Dodecane, 2,6,10-trimethyl-	3891983	25.95	NGS	9.7	JNT

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11/17/16

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BASE-EFF
Customer Sample ID: 16-08636-2-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034212			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034212			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034212			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034212			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034212			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034212			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034212			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034212			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034212			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034212			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034212			71-23-8	1-Propanol	NGS	120	<8.9	20	n/a	n/a	n/a	n/a	8.9	n/a	J
S16T034212			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034212			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034212			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034212			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034212			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034212			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034212			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034212			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034212			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034212			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034212			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034212			67-64-1	Acetone	NGS	91	4.4	9.2	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034212			75-05-8	Acetonitrile	NGS	98	<1.6	240	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034212			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034212			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034212			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034212			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BASE-EFF
Customer Sample ID: 16-08636-2-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034212			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034212			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034212			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034212			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034212			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034212			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034212			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034212			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034212			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034212			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034212			64-17-5	Ethanol	NGS	120	6.6	120	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034212			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034212			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034212			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034212			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034212			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034212			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034212			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034212			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034212			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034212			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034212			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034212			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034212			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034212			127-18-4	Tetrachloroethene	NGS	99	<1.8	35	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034212			108-88-3	Toluene	NGS	98	<2.2	3.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034212			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034212			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BASE-EFF
Customer Sample ID: 16-08636-2-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034212			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034212			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034212			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034212			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BASE-IN
Customer Sample ID: 16-08636-2-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034213			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034213			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034213			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034213			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034213			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034213			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034213			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034213			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034213			71-36-3	1-Butanol	NGS	120	<4.3	170	n/a	n/a	n/a	n/a	4.3	n/a	
S16T034213			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034213			71-23-8	1-Propanol	NGS	120	<8.9	17	n/a	n/a	n/a	n/a	8.9	n/a	J
S16T034213			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034213			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034213			78-93-3	2-Butanone	NGS	93	<3.1	3.6	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034213			110-43-0	2-Heptanone	NGS	94	<2.6	4.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034213			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034213			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034213			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034213			106-35-4	3-Heptanone	NGS	94	<2.7	4.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034213			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034213			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034213			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034213			67-64-1	Acetone	NGS	91	4.4	23	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034213			75-05-8	Acetonitrile	NGS	98	<1.6	250	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034213			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034213			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034213			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034213			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BASE-IN
Customer Sample ID: 16-08636-2-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034213			71-43-2	Benzene	NGS	98	<1.5	2.1	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034213			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034213			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034213			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034213			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034213			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034213			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034213			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034213			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034213			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034213			64-17-5	Ethanol	NGS	120	6.6	83	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034213			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034213			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034213			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034213			110-54-3	Hexane	NGS	100	1.5	2.6	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034213			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034213			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034213			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034213			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034213			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034213			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034213			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034213			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034213			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034213			127-18-4	Tetrachloroethene	NGS	99	<1.8	21	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034213			108-88-3	Toluene	NGS	98	<2.2	6.8	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034213			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034213			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	4.3	n/a	n/a	n/a	n/a	1.9	n/a	J

NA = Not Analyzed, ND = Not Detected

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B - Blank Contamination
J - Estimated
U - Less Than Detection Limit
E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BASE-IN
Customer Sample ID: 16-08636-2-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034213			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034213			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034213			142-82-5	n-Heptane	NGS	100	<1.6	4.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034213			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-EFF
Customer Sample ID: 16-08636-2-BLANK-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034214			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034214			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034214			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034214			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034214			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034214			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034214			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034214			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034214			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034214			71-23-8	1-Propanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S16T034214			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034214			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034214			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034214			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034214			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034214			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034214			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034214			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034214			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034214			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034214			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034214			67-64-1	Acetone	NGS	91	4.4	3.7	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034214			75-05-8	Acetonitrile	NGS	98	<1.6	32	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034214			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034214			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034214			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034214			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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U - Less Than Detection Limit
E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-EFF
Customer Sample ID: 16-08636-2-BLANK-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034214			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034214			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034214			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034214			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034214			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034214			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034214			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034214			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034214			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034214			64-17-5	Ethanol	NGS	120	6.6	35	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034214			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034214			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034214			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034214			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034214			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034214			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034214			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034214			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034214			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034214			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034214			127-18-4	Tetrachloroethene	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			108-88-3	Toluene	NGS	98	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034214			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034214			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-EFF
Customer Sample ID: 16-08636-2-BLANK-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034214			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034214			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034214			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034214			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-IN
Customer Sample ID: 16-08636-2-BLANK-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034215			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034215			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034215			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034215			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034215			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034215			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034215			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034215			71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T034215			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034215			71-23-8	1-Propanol	NGS	120	<8.9	33	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034215			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034215			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034215			78-93-3	2-Butanone	NGS	93	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S16T034215			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034215			591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034215			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034215			78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T034215			106-35-4	3-Heptanone	NGS	94	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034215			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034215			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034215			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034215			67-64-1	Acetone	NGS	91	4.4	5.9	n/a	n/a	n/a	n/a	2.8	n/a	BJ
S16T034215			75-05-8	Acetonitrile	NGS	98	<1.6	99	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034215			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034215			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034215			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034215			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-IN
Customer Sample ID: 16-08636-2-BLANK-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034215			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034215			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034215			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034215			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034215			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034215			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034215			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034215			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034215			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034215			64-17-5	Ethanol	NGS	120	6.6	69	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034215			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034215			110-00-9	Furan	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034215			110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034215			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034215			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034215			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034215			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034215			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034215			107-12-0	Propanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034215			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034215			127-18-4	Tetrachloroethene	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			108-88-3	Toluene	NGS	98	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034215			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034215			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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B - Blank Contamination
J - Estimated
U - Less Than Detection Limit
E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-IN
Customer Sample ID: 16-08636-2-BLANK-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034215			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034215			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034215			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034215			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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NA = Not Analyzed, ND = Not Detected
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-B
Customer Sample ID: 16-08636-2-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034216			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034216			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034216			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034216			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034216			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034216			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034216			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034216			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034216			71-36-3	1-Butanol	NGS	120	<4.3	1.6E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034216			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034216			71-23-8	1-Propanol	NGS	120	<8.9	150	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034216			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034216			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034216			78-93-3	2-Butanone	NGS	93	<3.1	8.4	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034216			110-43-0	2-Heptanone	NGS	94	<2.6	7.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034216			591-78-6	2-Hexanone	NGS	96	<2.5	4.0	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034216			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034216			78-94-4	3-Buten-2-one	NGS	91	<1.9	6.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034216			106-35-4	3-Heptanone	NGS	94	<2.7	6.1	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034216			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034216			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034216			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	2.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034216			67-64-1	Acetone	NGS	91	4.4	390	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034216			75-05-8	Acetonitrile	NGS	98	<1.6	190	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034216			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034216			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034216			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034216			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-B
Customer Sample ID: 16-08636-2-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034216			71-43-2	Benzene	NGS	98	<1.5	1.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034216			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034216			123-72-8	Butanal	NGS	100	<3.0	15	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034216			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034216			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034216			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034216			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034216			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034216			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034216			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034216			64-17-5	Ethanol	NGS	120	6.6	220	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034216			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034216			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034216			110-00-9	Furan	NGS	90	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034216			110-54-3	Hexane	NGS	100	1.5	9.4	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034216			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034216			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034216			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034216			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034216			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034216			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034216			107-12-0	Propanenitrile	NGS	100	<1.8	3.1	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034216			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034216			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034216			127-18-4	Tetrachloroethene	NGS	99	<1.8	15	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034216			108-88-3	Toluene	NGS	98	<2.2	5.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034216			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034216			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	12	n/a	n/a	n/a	n/a	1.9	n/a	

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-B
Customer Sample ID: 16-08636-2-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034216			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034216			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034216			142-82-5	n-Heptane	NGS	100	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034216			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-C
Customer Sample ID: 16-08636-2-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034217			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034217			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034217			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034217			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034217			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034217			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034217			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034217			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034217			71-36-3	1-Butanol	NGS	120	<4.3	1.6E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034217			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034217			71-23-8	1-Propanol	NGS	120	<8.9	97	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034217			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034217			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034217			78-93-3	2-Butanone	NGS	93	<3.1	8.2	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034217			110-43-0	2-Heptanone	NGS	94	<2.6	8.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034217			591-78-6	2-Hexanone	NGS	96	<2.5	4.2	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034217			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034217			78-94-4	3-Buten-2-one	NGS	91	<1.9	6.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034217			106-35-4	3-Heptanone	NGS	94	<2.7	6.9	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034217			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034217			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034217			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	2.4	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034217			67-64-1	Acetone	NGS	91	4.4	340	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034217			75-05-8	Acetonitrile	NGS	98	<1.6	94	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034217			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034217			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034217			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034217			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-C
Customer Sample ID: 16-08636-2-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034217			71-43-2	Benzene	NGS	98	<1.5	1.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034217			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034217			123-72-8	Butanal	NGS	100	<3.0	19	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034217			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034217			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034217			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034217			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034217			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034217			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034217			124-18-5	Decane	NGS	99	<3.3	5.3	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T034217			64-17-5	Ethanol	NGS	120	6.6	190	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034217			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034217			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034217			110-00-9	Furan	NGS	90	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034217			110-54-3	Hexane	NGS	100	1.5	11	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034217			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034217			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034217			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034217			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034217			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034217			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034217			107-12-0	Propanenitrile	NGS	100	<1.8	3.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034217			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034217			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034217			127-18-4	Tetrachloroethene	NGS	99	<1.8	15	n/a	n/a	n/a	n/a	1.8	n/a	
S16T034217			108-88-3	Toluene	NGS	98	<2.2	5.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034217			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034217			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	12	n/a	n/a	n/a	n/a	1.9	n/a	J

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T - Tentatively Identified Compound
B - Blank Contamination
J - Estimated
U - Less Than Detection Limit
E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-C
Customer Sample ID: 16-08636-2-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034217			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034217			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034217			142-82-5	n-Heptane	NGS	100	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034217			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

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J - Estimated
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N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-D
Customer Sample ID: 16-08636-2-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034218			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034218			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034218			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034218			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034218			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034218			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034218			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034218			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034218			71-36-3	1-Butanol	NGS	120	<4.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034218			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034218			71-23-8	1-Propanol	NGS	120	<8.9	98	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034218			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034218			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034218			78-93-3	2-Butanone	NGS	93	<3.1	7.6	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034218			110-43-0	2-Heptanone	NGS	94	<2.6	4.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034218			591-78-6	2-Hexanone	NGS	96	<2.5	3.4	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034218			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034218			78-94-4	3-Buten-2-one	NGS	91	<1.9	5.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034218			106-35-4	3-Heptanone	NGS	94	<2.7	5.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034218			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034218			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034218			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	4.7	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034218			67-64-1	Acetone	NGS	91	4.4	270	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034218			75-05-8	Acetonitrile	NGS	98	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034218			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034218			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034218			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034218			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-D
Customer Sample ID: 16-08636-2-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034218			71-43-2	Benzene	NGS	98	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034218			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034218			123-72-8	Butanal	NGS	100	<3.0	14	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034218			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034218			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034218			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034218			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034218			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034218			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034218			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034218			64-17-5	Ethanol	NGS	120	6.6	170	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034218			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034218			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034218			110-00-9	Furan	NGS	90	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034218			110-54-3	Hexane	NGS	100	1.5	9.8	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034218			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034218			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034218			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034218			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034218			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034218			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034218			107-12-0	Propanenitrile	NGS	100	<1.8	2.6	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034218			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034218			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034218			127-18-4	Tetrachloroethene	NGS	99	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034218			108-88-3	Toluene	NGS	98	<2.2	4.5	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034218			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034218			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	11	n/a	n/a	n/a	n/a	1.9	n/a	J

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-D
Customer Sample ID: 16-08636-2-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034218			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034218			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034218			142-82-5	n-Heptane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034218			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-E
Customer Sample ID: 16-08636-2-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034219			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034219			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034219			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034219			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034219			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034219			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034219			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034219			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034219			71-36-3	1-Butanol	NGS	120	<4.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034219			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034219			71-23-8	1-Propanol	NGS	120	<8.9	110	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034219			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034219			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034219			78-93-3	2-Butanone	NGS	93	<3.1	6.3	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034219			110-43-0	2-Heptanone	NGS	94	<2.6	5.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034219			591-78-6	2-Hexanone	NGS	96	<2.5	3.3	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034219			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034219			78-94-4	3-Buten-2-one	NGS	91	<1.9	5.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034219			106-35-4	3-Heptanone	NGS	94	<2.7	5.8	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034219			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034219			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034219			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034219			67-64-1	Acetone	NGS	91	4.4	240	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034219			75-05-8	Acetonitrile	NGS	98	<1.6	33	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034219			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034219			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034219			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034219			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-E
Customer Sample ID: 16-08636-2-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034219			71-43-2	Benzene	NGS	98	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034219			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034219			123-72-8	Butanal	NGS	100	<3.0	14	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034219			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034219			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034219			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034219			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034219			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034219			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034219			124-18-5	Decane	NGS	99	<3.3	3.5	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T034219			64-17-5	Ethanol	NGS	120	6.6	180	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034219			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034219			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034219			110-00-9	Furan	NGS	90	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034219			110-54-3	Hexane	NGS	100	1.5	10	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034219			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034219			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034219			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034219			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034219			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034219			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034219			107-12-0	Propanenitrile	NGS	100	<1.8	2.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034219			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034219			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034219			127-18-4	Tetrachloroethene	NGS	99	<1.8	8.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034219			108-88-3	Toluene	NGS	98	<2.2	4.4	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034219			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034219			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	11	n/a	n/a	n/a	n/a	1.9	n/a	J

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-E
Customer Sample ID: 16-08636-2-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034219			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034219			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034219			142-82-5	n-Heptane	NGS	100	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034219			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-F
Customer Sample ID: 16-08636-2-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034220			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034220			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034220			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034220			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034220			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034220			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	2.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034220			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034220			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034220			71-36-3	1-Butanol	NGS	120	<4.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034220			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034220			71-23-8	1-Propanol	NGS	120	<8.9	98	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034220			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034220			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034220			78-93-3	2-Butanone	NGS	93	<3.1	8.9	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034220			110-43-0	2-Heptanone	NGS	94	<2.6	4.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034220			591-78-6	2-Hexanone	NGS	96	<2.5	2.9	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034220			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034220			78-94-4	3-Buten-2-one	NGS	91	<1.9	5.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034220			106-35-4	3-Heptanone	NGS	94	<2.7	4.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034220			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034220			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034220			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034220			67-64-1	Acetone	NGS	91	4.4	360	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034220			75-05-8	Acetonitrile	NGS	98	<1.6	36	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034220			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034220			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034220			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034220			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-F
Customer Sample ID: 16-08636-2-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034220			71-43-2	Benzene	NGS	98	<1.5	2.0	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034220			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034220			123-72-8	Butanal	NGS	100	<3.0	10	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034220			109-74-0	Butanenitrile	NGS	100	<2.1	2.2	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T034220			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034220			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034220			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034220			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034220			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034220			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034220			64-17-5	Ethanol	NGS	120	6.6	190	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034220			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034220			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034220			110-00-9	Furan	NGS	90	<1.6	19	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034220			110-54-3	Hexane	NGS	100	1.5	11	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034220			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034220			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034220			75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034220			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034220			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034220			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034220			107-12-0	Propanenitrile	NGS	100	<1.8	2.9	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034220			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034220			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034220			127-18-4	Tetrachloroethene	NGS	99	<1.8	7.2	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034220			108-88-3	Toluene	NGS	98	<2.2	4.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034220			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034220			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	11	n/a	n/a	n/a	n/a	1.9	n/a	J

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-F
Customer Sample ID: 16-08636-2-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034220			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	2.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034220			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034220			142-82-5	n-Heptane	NGS	100	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034220			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-G
Customer Sample ID: 16-08636-2-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034221			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T034221			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034221			75-34-3	1,1-Dichloroethane	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034221			75-35-4	1,1-Dichloroethene	NGS	99	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034221			107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T034221			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	8.3	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034221			106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034221			123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T034221			71-36-3	1-Butanol	NGS	120	<4.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T034221			111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S16T034221			71-23-8	1-Propanol	NGS	120	<8.9	110	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034221			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S16T034221			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034221			78-93-3	2-Butanone	NGS	93	<3.1	6.2	n/a	n/a	n/a	n/a	3.1	n/a	J
S16T034221			110-43-0	2-Heptanone	NGS	94	<2.6	4.5	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T034221			591-78-6	2-Hexanone	NGS	96	<2.5	2.7	n/a	n/a	n/a	n/a	2.5	n/a	J
S16T034221			534-22-5	2-Methylfuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T034221			78-94-4	3-Buten-2-one	NGS	91	<1.9	5.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T034221			106-35-4	3-Heptanone	NGS	94	<2.7	3.7	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T034221			106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034221			105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034221			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S16T034221			67-64-1	Acetone	NGS	91	4.4	180	n/a	n/a	n/a	n/a	2.8	n/a	B
S16T034221			75-05-8	Acetonitrile	NGS	98	<1.6	30	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034221			98-86-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S16T034221			107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034221			107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S16T034221			107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-G
Customer Sample ID: 16-08636-2-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034221			71-43-2	Benzene	NGS	98	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T034221			100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S16T034221			123-72-8	Butanal	NGS	100	<3.0	14	n/a	n/a	n/a	n/a	3.0	n/a	
S16T034221			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T034221			56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T034221			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S16T034221			75-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034221			67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034221			110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T034221			124-18-5	Decane	NGS	99	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T034221			64-17-5	Ethanol	NGS	120	6.6	200	n/a	n/a	n/a	n/a	3.7	n/a	B
S16T034221			141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034221			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034221			110-00-9	Furan	NGS	90	<1.6	8.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034221			110-54-3	Hexane	NGS	100	1.5	9.8	n/a	n/a	n/a	n/a	1.3	n/a	BJ
S16T034221			628-73-9	Hexanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034221			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T034221			75-09-2	Methylene Chloride	NGS	110	4.2	13	n/a	n/a	n/a	n/a	4.1	n/a	B
S16T034221			91-20-3	Naphthalene	NGS	95	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S16T034221			98-95-3	Nitrobenzene	NGS	94	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S16T034221			110-59-8	Pentanenitrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T034221			107-12-0	Propanenitrile	NGS	100	<1.8	2.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034221			110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T034221			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T034221			127-18-4	Tetrachloroethene	NGS	99	<1.8	5.1	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034221			108-88-3	Toluene	NGS	98	<2.2	5.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S16T034221			79-01-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T034221			75-69-4	Trichlorofluoromethane	NGS	89	<1.9	9.8	n/a	n/a	n/a	n/a	1.9	n/a	J

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound
B - Blank Contamination
J - Estimated
U - Less Than Detection Limit
E - Outside Calibration Range
N - Named TIC

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-IN-G
Customer Sample ID: 16-08636-2-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T034221			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	5.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T034221			123-86-4	n-Butyl acetate	NGS	83	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T034221			142-82-5	n-Heptane	NGS	100	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T034221			10061-02-6	trans-1,3-Dichloropropene	NGS	94	<2.1	2.9	n/a	n/a	n/a	n/a	2.1	n/a	J

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J - Estimated
U - Less Than Detection Limit
E - Outside Calibration Range
NA = Not Analyzed, ND = Not Detected
N - Named TIC

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Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-BASE-EFF
Customer Sample ID: 16-08635-3-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034142			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034142			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034142			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034142			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034142			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034142			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034142			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034142			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034142			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-BASE-IN
Customer Sample ID: 16-08635-3-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034143			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034143			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034143			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034143			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034143			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034143			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034143			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034143			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034143			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-BLANK1
Customer Sample ID: 16-08635-3-BLANK1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034144			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034144			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034144			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034144			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034144			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034144			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034144			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034144			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034144			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-BLANK2
Customer Sample ID: 16-08635-3-BLANK2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034145			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034145			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034145			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034145			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034145			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034145			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034145			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034145			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034145			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-A
Customer Sample ID: 16-08635-3-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034146			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034146			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034146			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034146			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034146			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034146			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034146			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034146			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034146			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-B
Customer Sample ID: 16-08635-3-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034147			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034147			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034147			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034147			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034147			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034147			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034147			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034147			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034147			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-C
Customer Sample ID: 16-08635-3-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034148			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034148			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034148			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034148			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034148			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034148			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034148			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034148			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034148			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-D
Customer Sample ID: 16-08635-3-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034149			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034149			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034149			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034149			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034149			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034149			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034149			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034149			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034149			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-E
Customer Sample ID: 16-08635-3-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034150			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034150			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034150			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034150			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034150			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034150			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034150			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034150			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034150			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-F
Customer Sample ID: 16-08635-3-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034151			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034151			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034151			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034151			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034151			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034151			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034151			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034151			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034151			109-99-9	Tetrahydrofuran	NGS	89	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-G
Customer Sample ID: 16-08635-3-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034152			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034152			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034152			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034152			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034152			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034152			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034152			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034152			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034152			109-99-9	Tetrahydrofuran	NGS	89	<0.23	0.74	n/a	n/a	n/a	n/a	0.23	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated U - Less Than Detection Limit E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-H
Customer Sample ID: 16-08635-3-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034153			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034153			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034153			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034153			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034153			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034153			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034153			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034153			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034153			109-99-9	Tetrahydrofuran	NGS	89	<0.23	1.6	n/a	n/a	n/a	n/a	0.23	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-A
Customer Sample ID: 16-08635-3-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034154			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	0.29	n/a	n/a	n/a	n/a	0.23	n/a	J
S16T034154			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034154			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034154			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034154			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034154			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034154			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034154			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034154			109-99-9	Tetrahydrofuran	NGS	89	<0.23	130	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-B
Customer Sample ID: 16-08635-3-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034155			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034155			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034155			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034155			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034155			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034155			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034155			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034155			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034155			109-99-9	Tetrahydrofuran	NGS	89	<0.23	97	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-C
Customer Sample ID: 16-08635-3-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034156			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034156			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034156			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034156			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034156			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034156			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034156			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034156			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034156			109-99-9	Tetrahydrofuran	NGS	89	<0.23	98	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-D
Customer Sample ID: 16-08635-3-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034157			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034157			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034157			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034157			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034157			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034157			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034157			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034157			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034157			109-99-9	Tetrahydrofuran	NGS	89	<0.23	110	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-E
Customer Sample ID: 16-08635-3-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034158			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034158			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034158			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034158			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034158			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034158			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034158			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034158			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034158			109-99-9	Tetrahydrofuran	NGS	89	<0.23	110	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-F
Customer Sample ID: 16-08635-3-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034159			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034159			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034159			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034159			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034159			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034159			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034159			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034159			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034159			109-99-9	Tetrahydrofuran	NGS	89	<0.23	120	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-G
Customer Sample ID: 16-08635-3-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034160			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034160			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034160			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034160			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034160			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034160			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034160			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034160			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034160			109-99-9	Tetrahydrofuran	NGS	89	<0.23	140	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary of All Results

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-IN-H
Customer Sample ID: 16-08635-3-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034161			1191-99-7	2,3-Dihydrofuran	NGS	66	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S16T034161			1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T034161			625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T034161			3777-71-7	2-Heptylfuran	NGS	92	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T034161			534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T034161			3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T034161			4229-91-8	2-Propylfuran	NGS	86	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T034161			110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T034161			109-99-9	Tetrahydrofuran	NGS	89	<0.23	130	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

12/1/16

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-BASE-EFF
Customer Sample ID: 16-08636-3-BASE-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034162			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034162			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034162			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034162			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034162			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034162			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034162			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034162			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034162			109-99-9	Tetrahydrofuran	NGS	100	<0.31	0.39	n/a	n/a	n/a	n/a	0.31	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-BASE-IN
Customer Sample ID: 16-08636-3-BASE-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034163			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034163			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034163			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034163			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034163			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034163			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034163			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034163			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034163			109-99-9	Tetrahydrofuran	NGS	100	<0.31	5.1	n/a	n/a	n/a	n/a	0.31	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987

SDG Number:

Customer Sample ID: 16-08636-3-BLANK-EFF

Customer Sample ID: 16-08636-3-BLANK-EFF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034164			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034164			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034164			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034164			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034164			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034164			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034164			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034164			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034164			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-BLANK-IN
Customer Sample ID: 16-08636-3-BLANK-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034165			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034165			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034165			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034165			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034165			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034165			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034165			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034165			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034165			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-A
Customer Sample ID: 16-08636-3-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034174			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034174			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034174			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034174			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034174			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034174			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034174			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034174			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034174			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-B
Customer Sample ID: 16-08636-3-EFF-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034175			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034175			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034175			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034175			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034175			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034175			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034175			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034175			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034175			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-C
Customer Sample ID: 16-08636-3-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034176			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034176			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034176			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034176			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034176			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034176			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034176			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034176			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034176			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-D
Customer Sample ID: 16-08636-3-EFF-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034177			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034177			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034177			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034177			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034177			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034177			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034177			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034177			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034177			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-E
Customer Sample ID: 16-08636-3-EFF-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034178			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034178			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034178			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034178			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034178			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034178			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034178			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034178			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034178			109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	n/a	n/a	n/a	0.31	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-F
Customer Sample ID: 16-08636-3-EFF-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034179			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034179			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034179			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034179			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034179			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034179			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034179			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034179			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034179			109-99-9	Tetrahydrofuran	NGS	100	<0.31	0.67	n/a	n/a	n/a	n/a	0.31	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-G
Customer Sample ID: 16-08636-3-EFF-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034180			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034180			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034180			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034180			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034180			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034180			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034180			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034180			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034180			109-99-9	Tetrahydrofuran	NGS	100	<0.31	2.1	n/a	n/a	n/a	n/a	0.31	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-H
Customer Sample ID: 16-08636-3-EFF-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034181			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034181			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034181			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034181			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034181			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034181			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034181			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034181			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034181			109-99-9	Tetrahydrofuran	NGS	100	<0.31	6.2	n/a	n/a	n/a	n/a	0.31	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-A
Customer Sample ID: 16-08636-3-IN-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034166			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034166			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034166			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034166			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034166			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034166			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034166			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034166			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034166			109-99-9	Tetrahydrofuran	NGS	100	<0.31	87	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-B
Customer Sample ID: 16-08636-3-IN-B

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034167			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034167			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034167			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034167			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034167			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034167			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034167			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034167			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034167			109-99-9	Tetrahydrofuran	NGS	100	<0.31	95	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-C
Customer Sample ID: 16-08636-3-IN-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034168			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034168			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034168			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034168			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034168			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034168			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034168			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034168			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034168			109-99-9	Tetrahydrofuran	NGS	100	<0.31	98	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-D
Customer Sample ID: 16-08636-3-IN-D

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034169			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034169			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034169			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034169			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034169			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034169			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034169			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034169			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034169			109-99-9	Tetrahydrofuran	NGS	100	<0.31	100	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-E
Customer Sample ID: 16-08636-3-IN-E

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034170			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034170			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034170			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034170			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034170			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034170			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034170			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034170			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034170			109-99-9	Tetrahydrofuran	NGS	100	<0.31	110	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-F
Customer Sample ID: 16-08636-3-IN-F

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034171			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034171			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034171			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034171			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034171			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034171			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034171			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034171			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034171			109-99-9	Tetrahydrofuran	NGS	100	<0.31	98	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation
Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-G
Customer Sample ID: 16-08636-3-IN-G

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T034172			1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a	U
S16T034172			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a	U
S16T034172			625-86-5	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	n/a	n/a	n/a	n/a	0.26	n/a	U
S16T034172			3777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	n/a	U
S16T034172			534-22-5	2-Methylfuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/a	U
S16T034172			3777-69-3	2-Pentylfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	U
S16T034172			4229-91-8	2-Propylfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a	U
S16T034172			110-00-9	Furan	NGS	110	<0.58	<0.58	n/a	n/a	n/a	n/a	0.58	n/a	U
S16T034172			109-99-9	Tetrahydrofuran	NGS	100	<0.31	110	n/a	n/a	n/a	n/a	0.31	n/a	E

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

C.3.4 Amines

ANALYTICAL REPORT

Report Date: October 05, 2016

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162970
Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033565** Collected: 09/23/2016
Lab ID: 1627302001 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033566** Collected: 09/23/2016
Lab ID: 1627302002 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033567** Collected: 09/23/2016
Lab ID: 1627302003 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033567** Collected: 09/23/2016
Lab ID: 1627302003 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033568** Collected: 09/23/2016
Lab ID: 1627302004 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033569** Collected: 09/23/2016
Lab ID: 1627302005 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033570** Collected: 09/23/2016
Lab ID: 1627302006 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033571** Collected: 09/23/2016
Lab ID: 1627302007 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033572** Collected: 09/23/2016
Lab ID: 1627302008 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033573** Collected: 09/23/2016
Lab ID: 1627302009 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033574** Collected: 09/23/2016
Lab ID: 1627302010 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033575** Collected: 09/23/2016
Lab ID: 1627302011 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033576** Collected: 09/23/2016
Lab ID: 1627302012 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033577** Collected: 09/23/2016
Lab ID: 1627302013 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033578** Collected: 09/23/2016
Lab ID: 1627302014 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.27**	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033579** Collected: 09/23/2016
Lab ID: 1627302015 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.40**	NA	NA	0.10

Sample ID: **S16T033580** Collected: 09/23/2016
Lab ID: 1627302016 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.64**	NA	NA	0.10

Sample ID: **S16T033581** Collected: 09/23/2016
Lab ID: 1627302017 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.57**	NA	NA	0.10

Sample ID: **S16T033582** Collected: 09/23/2016
Lab ID: 1627302018 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.57**	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033583** Collected: 09/23/2016
Lab ID: 1627302019 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.49**	NA	NA	0.10

Sample ID: **S16T033584** Collected: 09/23/2016
Lab ID: 1627302020 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.49**	NA	NA	0.10

Sample ID: **S16T033585** Collected: 09/24/2016
Lab ID: 1627302021 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033586** Collected: 09/24/2016
Lab ID: 1627302022 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033587** Collected: 09/24/2016
Lab ID: 1627302023 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033588** Collected: 09/24/2016
Lab ID: 1627302024 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033589** Collected: 09/24/2016
Lab ID: 1627302025 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033590** Collected: 09/24/2016
Lab ID: 1627302026 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033591** Collected: 09/24/2016
Lab ID: 1627302027 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033592** Collected: 09/24/2016
Lab ID: 1627302028 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033593** Collected: 09/24/2016
Lab ID: 1627302029 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033594** Collected: 09/24/2016
Lab ID: 1627302030 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033595** Collected: 09/24/2016
Lab ID: 1627302031 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033596** Collected: 09/24/2016
Lab ID: 1627302032 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033597** Collected: 09/24/2016
Lab ID: 1627302033 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S16T033598** Collected: 09/24/2016
Lab ID: 1627302034 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**1.0**	NA	NA	0.10

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033599** Collected: 09/24/2016
Lab ID: 1627302035 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**1.4**	NA	NA	0.10

Sample ID: **S16T033600** Collected: 09/24/2016
Lab ID: 1627302036 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**1.0**	NA	NA	0.10

Sample ID: **S16T033601** Collected: 09/24/2016
Lab ID: 1627302037 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.92**	NA	NA	0.10

Sample ID: **S16T033602** Collected: 09/24/2016
Lab ID: 1627302038 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.74**	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1627302**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033603** Collected: 09/24/2016
Lab ID: 1627302039 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.49**	NA	NA	0.10

Sample ID: **S16T033604** Collected: 09/24/2016
Lab ID: 1627302040 Received: 09/28/2016

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 10/05/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**0.42**	NA	NA	0.10

Comments

Quality Control: **Amines-VOA Aliphatic VAA-1 - (HBN: 177811)**

LMB/LCS/LCSD 521154/521155/521156 batched with samples 001-020.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Christopher Winter 10/05/2016 14:44	/S/ Thomas Bosch 10/05/2016 16:03

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1627302
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627302

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** IH Aliphatic Amines
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/12777 (HBN: 177811)
	Prepared By: NA	**Analyzed By:** Christopher Winter

Blank

LMB: 521154
Analyzed: 10/04/2016 15:01

Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 521155
Analyzed: 10/04/2016 15:47
Dilution: 1
Units: ug/sample

LCSD: 521156
Analyzed: 10/04/2016 15:32
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Dimethylamine	3.84	4.00	96.0	60.4	134.6	3.89	97.1	1.06	0.0	20.0
Ethylamine	4.52	4.00	113	40.0	160.0	4.34	109	3.97	0.0	20.0
Methylamine	4.10	4.00	102	40.0	160.0	4.10	102	0.0488	0.0	20.0

Comments

LMB/LCS/LCSD 521154/521155/521156 batched with samples 001-020.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Christopher Winter	/S/ Thomas Bosch
10/05/2016 13:37	10/05/2016 15:59

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627302

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** IH Aliphatic Amines
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/12778 (HBN: 177812)
	Prepared By: NA	**Analyzed By:** Christopher Winter

Blank

LMB: 521157
Analyzed: 10/04/2016 21:41
Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 521158
Analyzed: 10/05/2016 11:07
Dilution: 1
Units: ug/sample

LCSD: 521159
Analyzed: 10/04/2016 22:11
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Dimethylamine	3.87	4.00	96.6	60.4	134.6	4.02	100	3.81	0.0	20.0
Ethylamine	3.95	4.00	98.8	40.0	160.0	4.77	119	18.8	0.0	20.0
Methylamine	3.99	4.00	99.8	40.0	160.0	4.23	106	5.91	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Christopher Winter	/S/ Thomas Bosch
10/05/2016 14:44	10/05/2016 16:03

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1627302

Asst N/A W 1627302

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162970

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013 Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033565	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-BASE-EFF	N/A
	S16T033566	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-BASE-IN	N/A
	S16T033567	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-BLANK1	N/A
	S16T033568	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-BLANK2	N/A
	S16T033569	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-A	N/A
	S16T033570	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-B	N/A
	S16T033571	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-C	N/A
	S16T033572	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-D	N/A
	S16T033573	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-E	N/A
	S16T033574	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 9

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dianne Turner	Dianne Turner	9/27/16 0930	JA Gradisher WRPS		Julie Gradisher	9/27/16 0930
JA Gradisher WRPS		Julie Gradisher	9/27/16 1400	FEDEX			
					Marianne Schmidt	Marianne Schmidt	9/28/2016 1214

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	cre	Consumed	10/4/16 10:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162970
		Page 2 of 4

Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No. N/A	Sample Origin CARTRIDGE EVALUATION	Purchase Order/Charge Code 203003/CB20	
Project Title CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. WTS-013	Temp. on Ice
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No.	8009 0227 8403
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No.	41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033575	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-G	N/A
	S16T033576	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-EFF-H	N/A
	S16T033577	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-A	N/A
	S16T033578	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-B	N/A
	S16T033579	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-C	N/A
	S16T033580	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-D	N/A
	S16T033581	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-E	N/A
	S16T033582	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-F	N/A
	S16T033583	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-G	N/A
	S16T033584	VA	9/23/16		XAD-7-NBD	AMINES 16-08635-4-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 9

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dianne Turner	Dianne Turner	9/27/16 0930	JA Gradisher WRPS		Julie Gradisher	9/27/16 0930
JA Gradisher WRPS		Julie Gradisher	9/27/16 1400	FEDEX			
					Marianne Silversmith		9/28/2016 12:14

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	20	Consumed	10/4/16 1050

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162970
		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013	Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033585	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-BASE-EFF	N/A
	S16T033586	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-BASE-IN	N/A
	S16T033587	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-BLANK-EFF	N/A
	S16T033588	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-BLANK-IN	N/A
	S16T033589	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-A	N/A
	S16T033590	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-B	N/A
	S16T033591	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-C	N/A
	S16T033592	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-D	N/A
	S16T033593	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-E	N/A
	S16T033594	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 9

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dianne Turner	Dianne Turner	9/27/16 0930	JA Gradisher WRPS	Julie Gradisher	Julie Gradisher	9/27/16 0930
JA Gradisher WRPS	Julie Gradisher	Julie Gradisher	9/27/16 1900				

Relinquished By	Date/Time	Received By	Date/Time
		FEDEX	
		Mariann Schmidt	9/28/2016 1258

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Consumed	10/4/16 10:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162970
		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013	Temp.: ON Ice
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 9403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033595	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-G	N/A
	S16T033596	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-EFF-H	N/A
	S16T033597	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-A	N/A
	S16T033598	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-B	N/A
	S16T033599	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-C	N/A
	S16T033600	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-D	N/A
	S16T033601	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-E	N/A
	S16T033602	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-F	N/A
	S16T033603	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-G	N/A
	S16T033604	VA	9/24/16		XAD-7-NBD	AMINES 16-08636-4-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 9

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner / Dianne Turner	9/27/16 0930	JA Gradisher WRPS / Julie Gradisher	9/27/16 0930
JA Gradisher WRPS / Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Smith / Marianne Smith	9/28/2016 1145

Matrix*

S = Soil	SE = Sediment	SO = Solid	SL = Sludge
W = Water	O = Oil	A = Air	DS = Drum Solids
DL = Drum Liquids	T = Tissue	WI = Wipe	L = Liquid
V = Vegetation	VA = Vapor	X = Other	

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Consume — Date/Time: 10/4/16 10:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

C.3.5 Acetonitrile

ANALYTICAL REPORT

Report Date: October 05, 2016

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162972

Workorder: **34-1627294**

Client Project ID: Washington River Protection So

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033645** Collected: 09/23/2016
Lab ID: 1627294001 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033646** Collected: 09/23/2016
Lab ID: 1627294002 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033647** Collected: 09/23/2016
Lab ID: 1627294003 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033648** Collected: 09/23/2016
Lab ID: 1627294004 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033649** Collected: 09/23/2016
Lab ID: 1627294005 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033650** Collected: 09/23/2016
Lab ID: 1627294006 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033651** Collected: 09/23/2016
Lab ID: 1627294007 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033652** Collected: 09/23/2016
Lab ID: 1627294008 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033653** Collected: 09/23/2016
Lab ID: 1627294009 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033654** Collected: 09/23/2016
Lab ID: 1627294010 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033655** Collected: 09/23/2016
Lab ID: 1627294011 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033656**					Collected: 09/23/2016
Lab ID: 1627294012					Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg			Analyzed: 09/30/2016
		Sampling Parameter: **Air Volume Not Provided**			
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: **S16T033657**					Collected: 09/23/2016
Lab ID: 1627294013					Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg			Analyzed: 09/30/2016
		Sampling Parameter: **Air Volume Not Provided**			
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: **S16T033658**					Collected: 09/23/2016
Lab ID: 1627294014					Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg			Analyzed: 09/30/2016
		Sampling Parameter: **Air Volume Not Provided**			
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: **S16T033659**					Collected: 09/23/2016
Lab ID: 1627294015					Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg			Analyzed: 09/30/2016
		Sampling Parameter: **Air Volume Not Provided**			
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**	
Acetonitrile	<0.010	NA	NA	0.010	

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033660** Collected: 09/23/2016
Lab ID: 1627294016 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033661** Collected: 09/23/2016
Lab ID: 1627294017 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033662** Collected: 09/23/2016
Lab ID: 1627294018 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033663** Collected: 09/23/2016
Lab ID: 1627294019 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033664** Collected: 09/23/2016
Lab ID: 1627294020 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033665** Collected: 09/24/2016
Lab ID: 1627294021 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033666** Collected: 09/24/2016
Lab ID: 1627294022 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033667** Collected: 09/24/2016
Lab ID: 1627294023 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033668** Collected: 09/24/2016
Lab ID: 1627294024 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033669** Collected: 09/24/2016
Lab ID: 1627294025 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033670** Collected: 09/24/2016
Lab ID: 1627294026 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033671** Collected: 09/24/2016
Lab ID: 1627294027 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033672** Collected: 09/24/2016
Lab ID: 1627294028 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033673** Collected: 09/24/2016
Lab ID: 1627294029 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033674** Collected: 09/24/2016
Lab ID: 1627294030 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	**0.047**	NA	NA	0.010

Sample ID: **S16T033675** Collected: 09/24/2016
Lab ID: 1627294031 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033676** Collected: 09/24/2016
Lab ID: 1627294032 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033677** Collected: 09/24/2016
Lab ID: 1627294033 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033678** Collected: 09/24/2016
Lab ID: 1627294034 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033679** Collected: 09/24/2016
Lab ID: 1627294035 Received: 09/28/2016

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 10/01/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033680**				Collected: 09/24/2016
Lab ID: 1627294036				Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		**Analyzed:** 10/01/2016
		Sampling Parameter: Air Volume Not Provided		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033681**				Collected: 09/24/2016
Lab ID: 1627294037				Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		**Analyzed:** 10/01/2016
		Sampling Parameter: Air Volume Not Provided		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	**0.092**	NA	NA	0.010

Sample ID: **S16T033682**				Collected: 09/24/2016
Lab ID: 1627294038				Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		**Analyzed:** 10/01/2016
		Sampling Parameter: Air Volume Not Provided		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S16T033683**				Collected: 09/24/2016
Lab ID: 1627294039				Received: 09/28/2016
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		**Analyzed:** 10/01/2016
		Sampling Parameter: Air Volume Not Provided		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1627294**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033684** Collected: 09/24/2016
Lab ID: 1627294040 Received: 09/28/2016

Method: NIOSH 1606 **Media:** SKC 226-09, Charcoal Tube 400/200mg **Analyzed:** 10/01/2016
Sampling Parameter: Air Volume Not Provided

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1606	/S/ Young Hee Yoon 10/04/2016 14:15	/S/ Thomas J. Masoian 10/05/2016 08:37

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1627294
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627294

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** IH GC-FID QC
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/7795 (HBN: 177533)
	Prepared By: NA	**Analyzed By:** Young Hee Yoon

Blank

MB: 520569
Analyzed: 09/30/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

MB: 520572
Analyzed: 09/30/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520570
Analyzed: 09/30/2016 00:00
Dilution: 1
Units: mg/sample

LCSD: 520571
Analyzed: 09/30/2016 00:00
Dilution: 1
Units: mg/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Acetonitrile	0.332	0.312	106	86.6	115.3	0.323	104	2.75	0.0	20.0

LCS: 520573
Analyzed: 09/30/2016 00:00
Dilution: 1
Units: mg/sample

LCSD: 520574
Analyzed: 09/30/2016 00:00
Dilution: 1
Units: mg/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Acetonitrile	0.272	0.281	96.9	86.6	115.3	0.260	92.6	4.51	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Young Hee Yoon	/S/ Thomas J. Masoian
10/04/2016 14:15	10/05/2016 08:36

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1627294

1627294

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162972

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861 MSIN: T6-02 FAX: 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013 Temp.: ONICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033645	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-BASE-EFF	N/A
	S16T033646	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-BASE-IN	N/A
	S16T033647	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-BLANK1	N/A
	S16T033648	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-BLANK2	N/A
	S16T033649	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-A	N/A
	S16T033650	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-B	N/A
	S16T033651	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-C	N/A
	S16T033652	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-D	N/A
	S16T033653	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-E	N/A
	S16T033654	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov for email

RELEASE 9
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	9/27/16 0930	Julie Gradisher Julie Gradisher	9/27/16 0930
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		Marianna Schmidt Marianna Schmidt	9/28/2016 10:48

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Young Chon Date/Time: Oct 1, 2016 1:00 PM

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

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C.275

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162972
		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033655	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-G	N/A
	S16T033656	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-EFF-H	N/A
	S16T033657	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-A	N/A
	S16T033658	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-B	N/A
	S16T033659	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-C	N/A
	S16T033660	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-D	N/A
	S16T033661	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-E	N/A
	S16T033662	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-F	N/A
	S16T033663	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-G	N/A
	S16T033664	VA	9/23/16		CHARCOAL TUBE	Acetonitrile 16-08635-5-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov for email

RELEASE 9
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner / Dianne Turner	9/27/16 0930	Julie Gradishar / Julie Gradishar	9/27/16 0930
Relinquished By: JA Gradishar WRPS / Julie Gradishar	9/27/16 1400	Received By: FEDEX	Date/Time
Relinquished By	Date/Time	Received By: Marrianne Schmidt	9/28/2016 1215
Relinquished By	Date/Time	Received By	Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Young Lee Yon	Oct 1, 2016 1:00 pm

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162972
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. W-S-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033665	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-BASE-EFF	N/A
	S16T033666	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-BASE-IN	N/A
	S16T033667	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-BLANK-EFF	N/A
	S16T033668	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-BLANK-IN	N/A
	S16T033669	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-A	N/A
	S16T033670	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-B	N/A
	S16T033671	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-C	N/A
	S16T033672	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-D	N/A
	S16T033673	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-E	N/A
	S16T033674	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov for email

RELEASE 9
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	9/27/16 0930	Julie Gadsby Julie Gadsby	9/27/16 0930
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Schmidt Marianne Schmidt	9/28/2016 12:48

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time Oct 1, 2016 1:00 PM

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162972
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 6227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033675	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-G	N/A
	S16T033676	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-EFF-H	N/A
	S16T033677	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-A	N/A
	S16T033678	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-B	N/A
	S16T033679	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-C	N/A
	S16T033680	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-D	N/A
	S16T033681	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-E	N/A
	S16T033682	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-F	N/A
	S16T033683	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-G	N/A
	S16T033684	VA	9/24/16		CHARCOAL TUBE	Acetonitrile 16-08636-5-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
GregOry_L_Scanlan@rl.gov for email

RELEASE 9
Reference Contract # 55502

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dianne Turner	Dianne Turner	9/27/16 0930		Jackie Gradisher	Jackie Gradisher	9/27/16 0930
Relinquished By	JA Gradisher WRPS	Jackie Gradisher	9/27/16 1400	Received By	FEDEX		Date/Time
Relinquished By			Date/Time	Received By			Date/Time
					Madonna Schmidt		9/28/2016 12:14P
Relinquished By			Date/Time	Received By			Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
			Oct 1, 2018 1:00 pm

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

C.3.6 Mercury

FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 - 24, 2016

Document No.: 20162958 Rev. 0

Michael A. Purcell
WAI Hanford Laboratory

Date Published
October 26, 2016

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 184777

Prepared for:

washington river protection solutions

Joyce A. Caldwell
Washington River Protection
Solutions, Inc.
P.O. Box 850
Richland, WA 99352
509-376-0737

Prepared by:

WAI HANFORD LABORATORY

WAI Hanford Laboratory
1955 Jadwin Ave, Suite 330
Richland, WA 99354
509-373-3240

October 26, 2016
Michael A. Purcell, WHL Project Coordinator

NARRATIVE

FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 -- 24, 2016

This final report presents the results of forty mercury vapor tubes received at the 222-S Laboratory on September 26, 2016, in good condition and with adequate paperwork. The mercury vapor tubes were logged into sample delivery group 20162958.

DISCLAIMERS

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

PROCEDURES

Method	Preparation Procedure	Analysis Procedure
Mercury by OSHA ID-140	LA-325-109, Rev. 2-4	LA-325-109, Rev. 2-4

ANALYTICAL SUMMARY

The vapor tubes were tested for mercury, as specified on the chain of custody. Standard laboratory procedures for digestions and cold vapor atomic absorption for mercury were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory* (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control standards (LCS). For mercury, the results of 178 LCS determinations indicate a mean recovery of 98% with a standard deviation of 6%. Statistical process control limits for the LCS are 81 – 115%, with no significant bias. The overall estimate of uncertainty is 12%, with coverage factor (k) = 2.

Background levels of mercury or interfering compounds can be present in the sorbent tube media used for collecting vapor samples. OSHA ID-140 recommends that the laboratory determine the average background for each lot of media and subtract it from the sample results prior to reporting. However, per agreement with the client, this background is being determined by the client using blank media submitted as blind samples to the laboratory. Any blank subtraction from the sample results will be performed by the client. The laboratory is using the same media

for QC samples. These QC samples may not match the lot numbers of the samples being submitted and the background for this QC sample media has not been determined. Over the past several years the results from preparation blanks, field blanks, and the vast majority of samples have been below the laboratory's method detection limit, which is an order of magnitude below the reporting limit. In general, the laboratory believes there is no need for background subtraction using the current sample media (Hydrar, SKC 226-17-1A).

For the mercury analysis, the blank results for tube lot number 9473 were below the detection limit; therefore, no blank correction was required. All mercury results for this sample group were below the reporting limit of 0.05 µg/sample, except for sample 16-08635-6-IN-G. For this sample, both the resin and glass wool portions were below the reporting limit, but the total of the two was above the reporting limit (see Attachment 1).

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162598

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08635-6-BASE-EFF	Total	S16T033316	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-BASE-EFF	Resin	S16T033317	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BASE-EFF	Glass Wool	S16T033318	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BASE-IN	Total	S16T033320	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-BASE-IN	Resin	S16T033322	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BASE-IN	Glass Wool	S16T033325	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BLANK1	Total	S16T033328	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-BLANK1	Resin	S16T033329	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BLANK1	Glass Wool	S16T033330	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BLANK2	Total	S16T033331	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-BLANK2	Resin	S16T033332	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-BLANK2	Glass Wool	S16T033333	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-A	Total	S16T033334	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-A	Resin	S16T033335	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-A	Glass Wool	S16T033336	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-B	Total	S16T033337	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-B	Resin	S16T033338	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-B	Glass Wool	S16T033339	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-C	Total	S16T033344	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-C	Resin	S16T033345	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-C	Glass Wool	S16T033346	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-D	Total	S16T033347	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-D	Resin	S16T033348	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-D	Glass Wool	S16T033349	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-E	Total	S16T033350	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-E	Resin	S16T033351	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-E	Glass Wool	S16T033352	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-F	Total	S16T033353	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-F	Resin	S16T033354	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-F	Glass Wool	S16T033355	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-G	Total	S16T033356	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-G	Resin	S16T033357	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-G	Glass Wool	S16T033358	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-H	Total	S16T033359	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-EFF-H	Resin	S16T033360	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-EFF-H	Glass Wool	S16T033361	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-A	Total	S16T033362	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-A	Resin	S16T033363	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-A	Glass Wool	S16T033364	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-B	Total	S16T033365	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-B	Resin	S16T033366	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-B	Glass Wool	S16T033367	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-C	Total	S16T033368	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-C	Resin	S16T033369	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-C	Glass Wool	S16T033370	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-D	Total	S16T033371	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-D	Resin	S16T033372	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-D	Glass Wool	S16T033373	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162598

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08635-6-IN-E	Total	S16T033374	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-E	Resin	S16T033375	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-E	Glass Wool	S16T033376	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-F	Total	S16T033377	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-F	Resin	S16T033378	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-F	Glass Wool	S16T033379	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-G	Total	S16T033380	Mercury	µg/sample	n/a	<0.0500	0.0543	0.0500
16-08635-6-IN-G	Resin	S16T033381	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-G	Glass Wool	S16T033382	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-H	Total	S16T033383	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-H	Resin	S16T033384	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-H	Glass Wool	S16T033385	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08636-6-BASE-EFF	Total	S16T033386	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-BASE-EFF	Resin	S16T033387	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BASE-EFF	Glass Wool	S16T033388	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BASE-IN	Total	S16T033389	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-BASE-IN	Resin	S16T033390	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BASE-IN	Glass Wool	S16T033391	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BLANK-EFF	Total	S16T033392	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-BLANK-EFF	Resin	S16T033393	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BLANK-EFF	Glass Wool	S16T033394	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BLANK-IN	Total	S16T033395	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-BLANK-IN	Resin	S16T033397	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-BLANK-IN	Glass Wool	S16T033398	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-A	Total	S16T033401	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-A	Resin	S16T033403	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-A	Glass Wool	S16T033404	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-B	Total	S16T033407	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-B	Resin	S16T033409	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-B	Glass Wool	S16T033410	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-C	Total	S16T033411	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-C	Resin	S16T033412	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-C	Glass Wool	S16T033413	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-D	Total	S16T033414	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-D	Resin	S16T033415	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-D	Glass Wool	S16T033416	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-E	Total	S16T033417	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-E	Resin	S16T033420	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-E	Glass Wool	S16T033421	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-F	Total	S16T033423	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-F	Resin	S16T033427	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-F	Glass Wool	S16T033428	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
16-08636-6-EFF-G	Total	S16T033434	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-G	Resin	S16T033436	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-EFF-G	Glass Wool	S16T033437	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-EFF-H	Total	S16T033440	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-EFF-H	Resin	S16T033442	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-EFF-H	Glass Wool	S16T033443	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162598

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08636-6-IN-A	Total	S16T033446	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-A	Resin	S16T033448	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-A	Glass Wool	S16T033449	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-B	Total	S16T033452	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-B	Resin	S16T033456	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-B	Glass Wool	S16T033457	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-C	Total	S16T033459	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-C	Resin	S16T033460	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-C	Glass Wool	S16T033461	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-D	Total	S16T033464	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-D	Resin	S16T033466	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-D	Glass Wool	S16T033467	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-E	Total	S16T033470	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-E	Resin	S16T033472	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-E	Glass Wool	S16T033473	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-F	Total	S16T033476	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-F	Resin	S16T033477	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-F	Glass Wool	S16T033478	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-G	Total	S16T033479	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-G	Resin	S16T033480	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-G	Glass Wool	S16T033488	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-H	Total	S16T033522	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08636-6-IN-H	Resin	S16T033523	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500
16-08636-6-IN-H	Glass Wool	S16T033524	Mercury	µg/sample	90.9	<0.0500	<0.0500	0.0500

Attachment 2

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162958

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033317	16-08635-6-BASE-EFF	Mercury	09/30/2016 08:00	09/30/2016 17:26
S16T033318	16-08635-6-BASE-EFF	Mercury	09/30/2016 08:00	09/30/2016 17:28
S16T033322	16-08635-6-BASE-IN	Mercury	09/30/2016 08:00	09/30/2016 17:30
S16T033325	16-08635-6-BASE-IN	Mercury	09/30/2016 08:00	09/30/2016 17:32
S16T033329	16-08635-6-BLANK1	Mercury	09/30/2016 08:00	09/30/2016 17:33
S16T033330	16-08635-6-BLANK1	Mercury	09/30/2016 08:00	09/30/2016 17:35
S16T033332	16-08635-6-BLANK2	Mercury	09/30/2016 08:00	09/30/2016 17:40
S16T033333	16-08635-6-BLANK2	Mercury	09/30/2016 08:00	09/30/2016 17:41
S16T033335	16-08635-6-EFF-A	Mercury	09/30/2016 08:00	09/30/2016 17:43
S16T033336	16-08635-6-EFF-A	Mercury	09/30/2016 08:00	09/30/2016 17:45
S16T033338	16-08635-6-EFF-B	Mercury	09/30/2016 08:00	09/30/2016 17:46
S16T033339	16-08635-6-EFF-B	Mercury	09/30/2016 08:00	09/30/2016 17:48
S16T033345	16-08635-6-EFF-C	Mercury	09/30/2016 08:00	09/30/2016 17:50
S16T033346	16-08635-6-EFF-C	Mercury	09/30/2016 08:00	09/30/2016 17:51
S16T033348	16-08635-6-EFF-D	Mercury	09/30/2016 08:00	09/30/2016 17:53
S16T033349	16-08635-6-EFF-D	Mercury	09/30/2016 08:00	09/30/2016 17:55
S16T033351	16-08635-6-EFF-E	Mercury	09/30/2016 08:00	09/30/2016 17:59
S16T033352	16-08635-6-EFF-E	Mercury	09/30/2016 08:00	09/30/2016 18:01
S16T033354	16-08635-6-EFF-F	Mercury	09/30/2016 08:00	09/30/2016 18:03
S16T033355	16-08635-6-EFF-F	Mercury	09/30/2016 08:00	09/30/2016 18:04
S16T033357	16-08635-6-EFF-G	Mercury	09/30/2016 08:00	09/30/2016 18:12
S16T033358	16-08635-6-EFF-G	Mercury	09/30/2016 08:00	09/30/2016 18:13
S16T033360	16-08635-6-EFF-H	Mercury	09/30/2016 08:00	09/30/2016 18:19
S16T033361	16-08635-6-EFF-H	Mercury	09/30/2016 08:00	09/30/2016 18:21
S16T033363	16-08635-6-IN-A	Mercury	09/30/2016 08:00	09/30/2016 18:22
S16T033364	16-08635-6-IN-A	Mercury	09/30/2016 08:00	09/30/2016 18:24
S16T033366	16-08635-6-IN-B	Mercury	09/30/2016 08:00	09/30/2016 18:26
S16T033367	16-08635-6-IN-B	Mercury	09/30/2016 08:00	09/30/2016 18:27
S16T033369	16-08635-6-IN-C	Mercury	09/30/2016 08:00	09/30/2016 18:29
S16T033370	16-08635-6-IN-C	Mercury	09/30/2016 08:00	09/30/2016 18:31
S16T033372	16-08635-6-IN-D	Mercury	09/30/2016 08:00	09/30/2016 18:32
S16T033373	16-08635-6-IN-D	Mercury	09/30/2016 08:00	09/30/2016 18:34
S16T033375	16-08635-6-IN-E	Mercury	09/30/2016 08:00	09/30/2016 18:40
S16T033376	16-08635-6-IN-E	Mercury	09/30/2016 08:00	09/30/2016 18:42
S16T033378	16-08635-6-IN-F	Mercury	09/30/2016 08:00	09/30/2016 18:43
S16T033379	16-08635-6-IN-F	Mercury	09/30/2016 08:00	09/30/2016 18:45
S16T033381	16-08635-6-IN-G	Mercury	09/30/2016 08:00	09/30/2016 18:46
S16T033382	16-08635-6-IN-G	Mercury	09/30/2016 08:00	09/30/2016 18:48
S16T033384	16-08635-6-IN-H	Mercury	09/30/2016 08:00	09/30/2016 18:50
S16T033385	16-08635-6-IN-H	Mercury	09/30/2016 08:00	09/30/2016 18:52
S16T033387	16-08636-6-BASE-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:23
S16T033388	16-08636-6-BASE-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:24
S16T033390	16-08636-6-BASE-IN	Mercury	09/30/2016 19:00	10/03/2016 13:26
S16T033391	16-08636-6-BASE-IN	Mercury	09/30/2016 19:00	10/03/2016 13:28
S16T033393	16-08636-6-BLANK-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:29
S16T033394	16-08636-6-BLANK-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:31

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162958

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033397	16-08636-6-BLANK-IN	Mercury	09/30/2016 19:00	10/03/2016 13:36
S16T033398	16-08636-6-BLANK-IN	Mercury	09/30/2016 19:00	10/03/2016 13:37
S16T033403	16-08636-6-EFF-A	Mercury	09/30/2016 19:00	10/03/2016 13:39
S16T033404	16-08636-6-EFF-A	Mercury	09/30/2016 19:00	10/03/2016 13:41
S16T033409	16-08636-6-EFF-B	Mercury	09/30/2016 19:00	10/03/2016 13:42
S16T033410	16-08636-6-EFF-B	Mercury	09/30/2016 19:00	10/03/2016 13:44
S16T033412	16-08636-6-EFF-C	Mercury	09/30/2016 19:00	10/03/2016 13:45
S16T033413	16-08636-6-EFF-C	Mercury	09/30/2016 19:00	10/03/2016 13:47
S16T033415	16-08636-6-EFF-D	Mercury	09/30/2016 19:00	10/03/2016 13:49
S16T033416	16-08636-6-EFF-D	Mercury	09/30/2016 19:00	10/03/2016 13:50
S16T033420	16-08636-6-EFF-E	Mercury	09/30/2016 19:00	10/03/2016 13:55
S16T033421	16-08636-6-EFF-E	Mercury	09/30/2016 19:00	10/03/2016 13:57
S16T033427	16-08636-6-EFF-F	Mercury	09/30/2016 19:00	10/03/2016 13:58
S16T033428	16-08636-6-EFF-F	Mercury	09/30/2016 19:00	10/03/2016 14:00
S16T033436	16-08636-6-EFF-G	Mercury	09/30/2016 19:00	10/03/2016 14:06
S16T033437	16-08636-6-EFF-G	Mercury	09/30/2016 19:00	10/03/2016 14:08
S16T033442	16-08636-6-EFF-H	Mercury	09/30/2016 19:00	10/03/2016 14:13
S16T033443	16-08636-6-EFF-H	Mercury	09/30/2016 19:00	10/03/2016 14:15
S16T033448	16-08636-6-IN-A	Mercury	09/30/2016 19:00	10/03/2016 14:16
S16T033449	16-08636-6-IN-A	Mercury	09/30/2016 19:00	10/03/2016 14:18
S16T033456	16-08636-6-IN-B	Mercury	09/30/2016 19:00	10/03/2016 14:20
S16T033457	16-08636-6-IN-B	Mercury	09/30/2016 19:00	10/03/2016 14:22
S16T033460	16-08636-6-IN-C	Mercury	09/30/2016 19:00	10/03/2016 14:23
S16T033461	16-08636-6-IN-C	Mercury	09/30/2016 19:00	10/03/2016 14:25
S16T033466	16-08636-6-IN-D	Mercury	09/30/2016 19:00	10/03/2016 14:27
S16T033467	16-08636-6-IN-D	Mercury	09/30/2016 19:00	10/03/2016 14:29
S16T033472	16-08636-6-IN-E	Mercury	09/30/2016 19:00	10/03/2016 14:34
S16T033473	16-08636-6-IN-E	Mercury	09/30/2016 19:00	10/03/2016 14:36
S16T033477	16-08636-6-IN-F	Mercury	09/30/2016 19:00	10/03/2016 14:37
S16T033478	16-08636-6-IN-F	Mercury	09/30/2016 19:00	10/03/2016 14:39
S16T033480	16-08636-6-IN-G	Mercury	09/30/2016 19:00	10/03/2016 14:41
S16T033488	16-08636-6-IN-G	Mercury	09/30/2016 19:00	10/03/2016 14:43
S16T033523	16-08636-6-IN-H	Mercury	09/30/2016 19:00	10/03/2016 14:44
S16T033524	16-08636-6-IN-H	Mercury	09/30/2016 19:00	10/03/2016 14:46

Attachment 3

RECEIPT PAPERWORK

Cartridge Testing & Cartridge Testing MW

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST	ATS-LO-090-101 Rev DG-1

Date Samples Received: 9-26-16 Total Number of Samples: 480 Group #: 20162958-HG

Sample Custodian: Dianne Turner IH Technician: Dell Spaulding 9-26-16

Sample Custodian to Complete:

Action	Yes	No	N/A	Comments
RSR provided?			✓	
Verify GKI is complete			✓	☐ In Project File
Received from an alpha facility?		✓		☐ Contact PC for approval to release
Check that outer custody seal is intact, if present			✓	
Record cooler temperature in centigrade, as appropriate	✓ 6°C			☐ Check if no cooler and/or no ice
Samples are intact and in good condition	✓			If No, provide comments below
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	✓			
• Date and time of sampling	✓			
• Sampling location or origin	✓			
• Container type, size, and number	✓			
• Preservatives (if used) noted on the COC/RSA and sample bottles			✓	
• Analysis request is clear	✓			
• Signature of persons relinquishing and receiving samples	✓			
• Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the COC and/or RSA	✓			
Samples stored properly (e.g., refrigeration)	✓			

Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.

Samples acceptable for release? yes PC/SC Initials dlr Date 9/26/16

If No, comment on communication and resolution:

WRPS SHIP-280
Run-120
WHL Run-(80) 40 NH_3 40 Hg
Acetronitrile 40

Number of IH Samples Received:

Aldehyde Screen:	40	Amines:	40	Ammonia:	40	Aromatic HC:		Asbestos:	
Beryllium:		Be-Bulk:		Be-Filter:		Be-Wipe		1,3-Butadiene:	80
Formaldehyde:		Furans:	40	Mercury:	40	Methanol:		Nitrosamines:	40
Nitrous Oxide:		Pyridines:	40	SVOA:	40	VOA:	40	Other-IH:	

A-6005-302 (REV 4)

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/23/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08635 - Cartridge Testing	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis	
S1670333 16	16-08635-6-BASE-EFF / Hydrar (SKC 226-17-1A) S1670333 17 S1670333 18	Hg-Elemental Source	1
S1670333 20	16-08635-6-BASE-IN / Hydrar (SKC 226-17-1A) S1670333 22 S1670333 25	Hg-Elemental Source	2
S1670333 28	16-08635-6-BLANK1 / Hydrar (SKC 226-17-1A) S1670333 29 S1670333 30	Hg-Elemental Source	3
S1670333 31	16-08635-6-BLANK2 / Hydrar (SKC 226-17-1A) S1670333 32 S1670333 33	Hg-Elemental Source	4
S1670333 34	16-08635-6-EFF-A / Hydrar (SKC 226-17-1A) S1670333 35 S1670333 36	Hg-Elemental Source	5
S1670333 37	16-08635-6-EFF-B / Hydrar (SKC 226-17-1A) S1670333 38 S1670333 39	Hg-Elemental Source	6
S1670333 44	16-08635-6-EFF-C / Hydrar (SKC 226-17-1A) S1670333 45 S1670333 46	Hg-Elemental Source	7
S1670333 47	16-08635-6-EFF-D / Hydrar (SKC 226-17-1A) S1670333 48 S1670333 49	Hg-Elemental Source	8

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV H1104	09-24-16	0500
Retrieved from Storage:	CMoon	Christe Moon		9/26/16	0745

	Signature	Printed Name	Date	Time
Relinquished By:	CMoon	Christe Moon	9-26-16	1200
Received By:	Dianne Turner	Dianne Turner	9-26-16	12:50
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/23/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08635 - Cartridge Testing	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis	
S16T033350 a	16-08635-6-EFF-E / Hydrar (SKC 226-17-1A) S16T033351 S16T033352	Hg-Elemental Source	9
S16T033353 b	16-08635-6-EFF-F / Hydrar (SKC 226-17-1A) S16T033354 S16T033355	Hg-Elemental Source	10
S16T033356 c	16-08635-6-EFF-G / Hydrar (SKC 226-17-1A) S16T033357 S16T033358	Hg-Elemental Source	11
S16T033359 d	16-08635-6-EFF-H / Hydrar (SKC 226-17-1A) S16T033360 S16T033361	Hg-Elemental Source	12
S16T033362 a	16-08635-6-IN-A / Hydrar (SKC 226-17-1A) S16T033363 S16T033364	Hg-Elemental Source	13
S16T033365 b	16-08635-6-IN-B / Hydrar (SKC 226-17-1A) S16T033366 S16T033367	Hg-Elemental Source	14
S16T033368 c	16-08635-6-IN-C / Hydrar (SKC 226-17-1A) S16T033369 S16T033370	Hg-Elemental Source	15
S16T033371 d	16-08635-6-IN-D / Hydrar (SKC 226-17-1A) S16T033372 S16T033373	Hg-Elemental Source	16

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica J Wheeler	Erica Wheeler	2704 HV +1104	09-24-16	0500
Retrieved from Storage:	CMoon	Chrshie Moon		9/26/16	0745

	Signature	Printed Name	Date	Time
Relinquished By:	CMoon	Chrshie Moon	9/26/16	1200
Received By:	Dianne Turner	Dianne Turner	9/26/16	13:00
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/23/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08635 - Cartridge Testing	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S16T033374	16-08635-6-IN-E / Hydrar (SKC 226-17-1A) S16T033375 S16T033376	Hg-Elemental Source 17
S16T033377	16-08635-6-IN-F / Hydrar (SKC 226-17-1A) S16T033378 S16T033379	Hg-Elemental Source 18
S16T033380	16-08635-6-IN-G / Hydrar (SKC 226-17-1A) S16T033381 S16T033382	Hg-Elemental Source 19
S16T033383	16-08635-6-IN-H / Hydrar (SKC 226-17-1A) S16T033384 S16T033385	Hg-Elemental Source 20
	16-08635-7-BASE-EFF / CISA (SKC 226-29)	NH3 Source
	16-08635-7-BASE-IN / CISA (SKC 226-29)	NH3 Source
	16-08635-7-BLANK1 / CISA (SKC 226-29)	NH3 Source
	16-08635-7-BLANK2 / CISA (SKC 226-29)	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV H104	09-24-16	0500
Retrieved from Storage:	CMOON	Christe Moon		9/26/16	0745

	Signature	Printed Name	Date	Time
Relinquished By:	CMOON	Christe Moon	9-26-16	1200
Received By:	Dianne Turner	Dianne Turner	9-26-16	12:00
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/24/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08636 - Cartridge Testing AW Stack - A Train	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis	
S16T033386	16-08636-6-BASE-EFF / Hydrar (SKC 226-17-1A) · S16T033387 S16T033388	Hg-Elemental Source	21
S16T033389	16-08636-6-BASE-IN / Hydrar (SKC 226-17-1A) · S16T033390 S16T033391	Hg-Elemental Source	22
S16T033392	16-08636-6-BLANK-EFF / Hydrar (SKC 226-17-1A) · S16T033393 S16T033394	Hg-Elemental Source	23
S16T033395	16-08636-6-BLANK-IN / Hydrar (SKC 226-17-1A) · S16T033397 S16T033398	Hg-Elemental Source	24
S16T033401	16-08636-6-EFF-A / Hydrar (SKC 226-17-1A) · S16T033403 S16T033404	Hg-Elemental Source	25
S16T033407	16-08636-6-EFF-B / Hydrar (SKC 226-17-1A) · S16T033409 S16T033410	Hg-Elemental Source	26
S16T033411	16-08636-6-EFF-C / Hydrar (SKC 226-17-1A) · S16T033412 S16T033413	Hg-Elemental Source	27
S16T033414	16-08636-6-EFF-D / Hydrar (SKC 226-17-1A) · S16T033415 S16T033416	Hg-Elemental Source	28

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704HV/HH04	9/25/16	0500
Retrieved from Storage:	Dell Spaulding	Dell Spaulding		9-26-16	0705

	Signature	Printed Name	Date	Time
Relinquished By:	Dell Spaulding	Dell Spaulding	9-26-16	1200
Received By:	Dianne Turner	Dianne Turner	9-26-16	12:00
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/24/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08636 - Cartridge Testing AW Stack - A Train	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis	
S16T033417	16-08636-6-EFF-E / Hydrar (SKC 226-17-1A) • S16T033420 S16T033421	Hg-Elemental Source	29
S16T033423	16-08636-6-EFF-F / Hydrar (SKC 226-17-1A) • S16T033427 S16T033428	Hg-Elemental Source	30
S16T033434	16-08636-6-EFF-G / Hydrar (SKC 226-17-1A) • S16T033436 S16T033437	Hg-Elemental Source	31
S16T033440	16-08636-6-EFF-H / Hydrar (SKC 226-17-1A) • ~~S16T033436 S16T033437~~ S16T033442 S16T033443	Hg-Elemental Source	32
S16T033446	16-08636-6-IN-A / Hydrar (SKC 226-17-1A) • S16T033448 S16T033449	Hg-Elemental Source	33
S16T033452	16-08636-6-IN-B / Hydrar (SKC 226-17-1A) • S16T033456 S16T033457	Hg-Elemental Source	34
S16T033459	16-08636-6-IN-C / Hydrar (SKC 226-17-1A) • S16T033460 S16T033461	Hg-Elemental Source	35
S16T033464	16-08636-6-IN-D / Hydrar (SKC 226-17-1A) • S16T033466 S16T033467	Hg-Elemental Source	36

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704HV/1H104	9/25/16	0500
Retrieved from Storage:	Dell Spaulding	Dell Spaulding		9-26-16	0705

	Signature	Printed Name	Date	Time
Relinquished By:	Dell Spaulding	Dell Spaulding	9-26-16	1200
Received By:	Dianne Turner	Dianne Turner	9-26-16	12:00
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/24/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08636 - Cartridge Testing AW Stack - A Train	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis	
S16T033470	16-08636-6-IN-E / Hydrar (SKC 226-17-1A) S16T033472 S16T033473	Hg-Elemental Source	37
S16T033476	16-08636-6-IN-F / Hydrar (SKC 226-17-1A) S16T033477 S16T033478	Hg-Elemental Source	38
S16T033479	16-08636-6-IN-G / Hydrar (SKC 226-17-1A) S16T033480 S16T033488	Hg-Elemental Source	39
S16T033522	16-08636-6-IN-H / Hydrar (SKC 226-17-1A) S16T033523 S16T033524	Hg-Elemental Source	40
	16-08636-7-BASE-EFF / CISA (SKC 226-29)	NH3 Source	
	16-08636-7-BASE-IN / CISA (SKC 226-29) JW 9/25/16	NH3 Source	
	16-08636-7-BLANK-EFF / CISA (SKC 226-29)	NH3 Source	
	16-08636-7-BLANK-IN / CISA (SKC 226-29)	NH3 Source	

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HV/H104	9/25/16	0500
Retrieved from Storage:	Dell Spaulding	Dell Spaulding		9-26-16	0705

	Signature	Printed Name	Date	Time
Relinquished By:	Dell Spaulding	Dell Spaulding	9-26-16	1200
Received By:	Dianne Turner	Dianne Turner	9/26/16	13:00
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

C.3.7 Ammonia

FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 - 24, 2016

Document No.: 20162957 Rev. 0

Michael A. Purcell
WAI Hanford Laboratory

Date Published
October 26, 2016

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 184777

Prepared for:

washington river protection solutions

Joyce A. Caldwell
Washington River Protection Solutions, Inc.
P.O. Box 850
Richland, WA 99352
509-376-0737

Prepared by:

WAI HANFORD LABORATORY

WAI Hanford Laboratory
1955 Jadwin Ave, Suite 330
Richland, WA 99354
509-373-3240

October 26, 2016
Michael A. Purcell, WHL Project Coordinator

NARRATIVE

FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 – 24, 2016

This final report presents the results of forty ammonia vapor tubes received at the 222-S Laboratory on September 26, 2016, in good condition and with adequate paperwork. The samples were logged into sample delivery group 20162957.

DISCLAIMERS

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

PROCEDURES

Method	Preparation Procedure	Analysis Procedure
Ammonia by OSHA ID-188	LA-533-117, Rev. 3-1	LA-533-117, Rev. 3-1 LA-503-157, Rev. 2-6

ANALYTICAL SUMMARY

The vapor tubes were tested for ammonia, as specified on the chain of custody. Standard laboratory procedures for ion chromatography were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory* (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control samples (LCS). The results of 373 LCS determinations indicate a mean recovery of 98% with a standard deviation of 3.3%. Statistical process control limits for the LCS are 89 - 111% for LA-533-117, instrument IC-9; 80 – 120% for LA-503-157, instrument IC-10; and 88 – 107% for LA-503-157, instrument IC-13, with no significant bias. The overall estimate of uncertainty is 6.7%, with coverage factor (k) = 2.

Due to background levels of ammonium (or interfering compounds) that are typically present in the media used in the sorbent tubes for collecting the vapor samples, positive results are obtained for the preparation blank. Laboratories typically correct the LCS and all field samples for these background levels, when detected. However, per agreement with the customer, no blank

subtraction was performed. The client-requested reporting limit is 10 µg per sample, which makes the analysis of additional blanks and subsequent blank subtraction unnecessary. It is the laboratory's opinion that including the media contribution, which is well below the client's requested reporting limit, provides results that are more conservative than when blank subtractions are performed. Twenty-three of the forty ammonia results for sample group 20162957 were above the reporting limit of 10 µg per sample. For these samples, the total result includes the contribution from the back resin portion even though the back resin portion result is lower than the reporting limit (see Attachment 1).

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162957

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08635-7-BASE-EFF	Total	S16T033396	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BASE-EFF	Front Resin	S16T033399	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-EFF	Back Resin	S16T033400	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Total	S16T033402	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Front Resin	S16T033405	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Back Resin	S16T033406	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Total	S16T033408	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BLANK1	Front Resin	S16T033418	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BLANK1	Back Resin	S16T033419	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BLANK2	Total	S16T033422	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BLANK2	Front Resin	S16T033424	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BLANK2	Back Resin	S16T033425	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-A	Total	S16T033426	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-A	Front Resin	S16T033429	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-A	Back Resin	S16T033430	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-B	Total	S16T033431	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-B	Front Resin	S16T033432	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-B	Back Resin	S16T033433	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-C	Total	S16T033435	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-C	Front Resin	S16T033438	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-C	Back Resin	S16T033439	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-D	Total	S16T033441	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-D	Front Resin	S16T033444	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-D	Back Resin	S16T033445	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-E	Total	S16T033447	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-E	Front Resin	S16T033450	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-E	Back Resin	S16T033451	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-F	Total	S16T033453	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-F	Front Resin	S16T033454	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-F	Back Resin	S16T033455	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-G	Total	S16T033458	Ammonia	µg/sample	n/a	<10.0	18.2	10.0
16-08635-7-EFF-G	Front Resin	S16T033462	Ammonia	µg/sample	101	<10.0	17.8	10.0
16-08635-7-EFF-G	Back Resin	S16T033463	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-EFF-H	Total	S16T033465	Ammonia	µg/sample	n/a	<10.0	31.5	10.0
16-08635-7-EFF-H	Front Resin	S16T033468	Ammonia	µg/sample	101	<10.0	30.8	10.0
16-08635-7-EFF-H	Back Resin	S16T033469	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-A	Total	S16T033471	Ammonia	µg/sample	n/a	<10.0	412	100
16-08635-7-IN-A	Front Resin	S16T033474	Ammonia	µg/sample	101	<10.0	412	100
16-08635-7-IN-A	Back Resin	S16T033475	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-B	Total	S16T033765	Ammonia	µg/sample	n/a	<10.0	437	100
16-08635-7-IN-B	Front Resin	S16T033766	Ammonia	µg/sample	101	<10.0	436	100
16-08635-7-IN-B	Back Resin	S16T033767	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-C	Total	S16T033768	Ammonia	µg/sample	n/a	<10.0	419	100
16-08635-7-IN-C	Front Resin	S16T033769	Ammonia	µg/sample	101	<10.0	418	100
16-08635-7-IN-C	Back Resin	S16T033770	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-D	Total	S16T033771	Ammonia	µg/sample	n/a	<10.0	413	100
16-08635-7-IN-D	Front Resin	S16T033772	Ammonia	µg/sample	101	<10.0	411	100
16-08635-7-IN-D	Back Resin	S16T033773	Ammonia	µg/sample	101	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162957

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08635-7-IN-E	Total	S16T033774	Ammonia	µg/sample	n/a	<10.0	388	100
16-08635-7-IN-E	Front Resin	S16T033775	Ammonia	µg/sample	101	<10.0	387	100
16-08635-7-IN-E	Back Resin	S16T033776	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-F	Total	S16T033777	Ammonia	µg/sample	n/a	<10.0	176	50.0
16-08635-7-IN-F	Front Resin	S16T033778	Ammonia	µg/sample	101	<10.0	176	50.0
16-08635-7-IN-F	Back Resin	S16T033779	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-G	Total	S16T033780	Ammonia	µg/sample	n/a	<10.0	446	100
16-08635-7-IN-G	Front Resin	S16T033781	Ammonia	µg/sample	101	<10.0	446	100
16-08635-7-IN-G	Back Resin	S16T033782	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-H	Total	S16T033783	Ammonia	µg/sample	n/a	<10.0	430	100
16-08635-7-IN-H	Front Resin	S16T033784	Ammonia	µg/sample	102	<10.0	429	100
16-08635-7-IN-H	Back Resin	S16T033785	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BASE-EFF	Total	S16T033786	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-BASE-EFF	Front Resin	S16T033787	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BASE-EFF	Back Resin	S16T033788	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BASE-IN	Total	S16T033789	Ammonia	µg/sample	n/a	<10.0	15.7	10.0
16-08636-7-BASE-IN	Front Resin	S16T033790	Ammonia	µg/sample	102	<10.0	15.2	10.0
16-08636-7-BASE-IN	Back Resin	S16T033791	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-EFF	Total	S16T033792	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-BLANK-EFF	Front Resin	S16T033793	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-EFF	Back Resin	S16T033794	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-IN	Total	S16T033795	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-BLANK-IN	Front Resin	S16T033796	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-IN	Back Resin	S16T033797	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-A	Total	S16T033798	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-A	Front Resin	S16T033809	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-A	Back Resin	S16T033810	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-B	Total	S16T033811	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-B	Front Resin	S16T033812	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-B	Back Resin	S16T033813	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-C	Total	S16T033814	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-C	Front Resin	S16T033815	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-C	Back Resin	S16T033816	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-D	Total	S16T033817	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-D	Front Resin	S16T033818	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-D	Back Resin	S16T033819	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-E	Total	S16T033820	Ammonia	µg/sample	n/a	<10.0	14.1	10.0
16-08636-7-EFF-E	Front Resin	S16T033821	Ammonia	µg/sample	102	<10.0	13.5	10.0
16-08636-7-EFF-E	Back Resin	S16T033822	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-F	Total	S16T033823	Ammonia	µg/sample	n/a	<10.0	25.0	10.0
16-08636-7-EFF-F	Front Resin	S16T033824	Ammonia	µg/sample	104	<10.0	24.1	10.0
16-08636-7-EFF-F	Back Resin	S16T033825	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-EFF-G	Total	S16T033826	Ammonia	µg/sample	n/a	<10.0	39.9	10.0
16-08636-7-EFF-G	Front Resin	S16T033827	Ammonia	µg/sample	104	<10.0	39.4	10.0
16-08636-7-EFF-G	Back Resin	S16T033828	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-EFF-H	Total	S16T033829	Ammonia	µg/sample	n/a	<10.0	66.9	10.0
16-08636-7-EFF-H	Front Resin	S16T033830	Ammonia	µg/sample	104	<10.0	66.4	10.0
16-08636-7-EFF-H	Back Resin	S16T033831	Ammonia	µg/sample	104	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162957

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08636-7-IN-A	Total	S16T033832	Ammonia	µg/sample	n/a	<10.0	409	100
16-08636-7-IN-A	Front Resin	S16T033833	Ammonia	µg/sample	104	<10.0	408	100
16-08636-7-IN-A	Back Resin	S16T033834	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-B	Total	S16T033835	Ammonia	µg/sample	n/a	<10.0	438	100
16-08636-7-IN-B	Front Resin	S16T033836	Ammonia	µg/sample	104	<10.0	437	100
16-08636-7-IN-B	Back Resin	S16T033837	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-C	Total	S16T033838	Ammonia	µg/sample	n/a	<10.0	475	100
16-08636-7-IN-C	Front Resin	S16T033839	Ammonia	µg/sample	104	<10.0	474	100
16-08636-7-IN-C	Back Resin	S16T033840	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-D	Total	S16T033841	Ammonia	µg/sample	n/a	<10.0	393	100
16-08636-7-IN-D	Front Resin	S16T033842	Ammonia	µg/sample	104	<10.0	392	100
16-08636-7-IN-D	Back Resin	S16T033843	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-E	Total	S16T033844	Ammonia	µg/sample	n/a	<10.0	411	100
16-08636-7-IN-E	Front Resin	S16T033845	Ammonia	µg/sample	104	<10.0	410	100
16-08636-7-IN-E	Back Resin	S16T033846	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-F	Total	S16T033847	Ammonia	µg/sample	n/a	<10.0	229	100
16-08636-7-IN-F	Front Resin	S16T033848	Ammonia	µg/sample	104	<10.0	229	100
16-08636-7-IN-F	Back Resin	S16T033849	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-G	Total	S16T033850	Ammonia	µg/sample	n/a	<10.0	367	100
16-08636-7-IN-G	Front Resin	S16T033851	Ammonia	µg/sample	102	<10.0	366	100
16-08636-7-IN-G	Back Resin	S16T033852	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-IN-H	Total	S16T033853	Ammonia	µg/sample	n/a	<10.0	401	100
16-08636-7-IN-H	Front Resin	S16T033854	Ammonia	µg/sample	102	<10.0	401	100
16-08636-7-IN-H	Back Resin	S16T033855	Ammonia	µg/sample	102	<10.0	<10.0	10.0

Attachment 2

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162957

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033399	16-08635-7-BASE-EFF	Ammonia	10/03/2016 13:40	10/03/2016 16:38
S16T033400	16-08635-7-BASE-EFF	Ammonia	10/03/2016 13:40	10/03/2016 16:56
S16T033405	16-08635-7-BASE-IN	Ammonia	10/03/2016 13:40	10/03/2016 17:14
S16T033406	16-08635-7-BASE-IN	Ammonia	10/03/2016 13:40	10/03/2016 17:32
S16T033418	16-08635-7-BLANK1	Ammonia	10/03/2016 13:40	10/03/2016 17:50
S16T033419	16-08635-7-BLANK1	Ammonia	10/03/2016 13:40	10/03/2016 18:08
S16T033424	16-08635-7-BLANK2	Ammonia	10/03/2016 13:40	10/03/2016 19:21
S16T033425	16-08635-7-BLANK2	Ammonia	10/03/2016 13:40	10/03/2016 19:39
S16T033429	16-08635-7-EFF-A	Ammonia	10/03/2016 13:40	10/03/2016 19:57
S16T033430	16-08635-7-EFF-A	Ammonia	10/03/2016 13:40	10/03/2016 20:15
S16T033432	16-08635-7-EFF-B	Ammonia	10/03/2016 13:40	10/03/2016 20:33
S16T033433	16-08635-7-EFF-B	Ammonia	10/03/2016 13:40	10/03/2016 20:51
S16T033438	16-08635-7-EFF-C	Ammonia	10/03/2016 13:40	10/03/2016 21:09
S16T033439	16-08635-7-EFF-C	Ammonia	10/03/2016 13:40	10/03/2016 21:27
S16T033444	16-08635-7-EFF-D	Ammonia	10/03/2016 13:40	10/03/2016 21:45
S16T033445	16-08635-7-EFF-D	Ammonia	10/03/2016 13:40	10/03/2016 22:03
S16T033450	16-08635-7-EFF-E	Ammonia	10/03/2016 13:40	10/03/2016 23:16
S16T033451	16-08635-7-EFF-E	Ammonia	10/03/2016 13:40	10/03/2016 23:34
S16T033454	16-08635-7-EFF-F	Ammonia	10/03/2016 13:40	10/03/2016 23:52
S16T033455	16-08635-7-EFF-F	Ammonia	10/03/2016 13:40	10/04/2016 00:10
S16T033462	16-08635-7-EFF-G	Ammonia	10/03/2016 13:40	10/04/2016 02:35
S16T033463	16-08635-7-EFF-G	Ammonia	10/03/2016 13:40	10/04/2016 02:53
S16T033468	16-08635-7-EFF-H	Ammonia	10/03/2016 13:40	10/04/2016 03:11
S16T033469	16-08635-7-EFF-H	Ammonia	10/03/2016 13:40	10/04/2016 03:29
S16T033474	16-08635-7-IN-A	Ammonia	10/03/2016 13:40	10/04/2016 09:49
S16T033475	16-08635-7-IN-A	Ammonia	10/03/2016 13:40	10/04/2016 04:05
S16T033766	16-08635-7-IN-B	Ammonia	10/03/2016 13:40	10/04/2016 10:07
S16T033767	16-08635-7-IN-B	Ammonia	10/03/2016 13:40	10/04/2016 05:36
S16T033769	16-08635-7-IN-C	Ammonia	10/03/2016 13:40	10/04/2016 10:25
S16T033770	16-08635-7-IN-C	Ammonia	10/03/2016 13:40	10/04/2016 06:12
S16T033772	16-08635-7-IN-D	Ammonia	10/03/2016 13:40	10/04/2016 10:43
S16T033773	16-08635-7-IN-D	Ammonia	10/03/2016 13:40	10/04/2016 06:48
S16T033775	16-08635-7-IN-E	Ammonia	10/03/2016 13:40	10/04/2016 11:01
S16T033776	16-08635-7-IN-E	Ammonia	10/03/2016 13:40	10/04/2016 07:24
S16T033778	16-08635-7-IN-F	Ammonia	10/03/2016 13:40	10/04/2016 11:19
S16T033779	16-08635-7-IN-F	Ammonia	10/03/2016 13:40	10/04/2016 08:00
S16T033781	16-08635-7-IN-G	Ammonia	10/03/2016 13:40	10/04/2016 11:37
S16T033782	16-08635-7-IN-G	Ammonia	10/03/2016 13:40	10/04/2016 09:31
S16T033784	16-08635-7-IN-H	Ammonia	10/11/2016 16:55	10/17/2016 12:14
S16T033785	16-08635-7-IN-H	Ammonia	10/11/2016 16:55	10/14/2016 17:00
S16T033787	16-08636-7-BASE-EFF	Ammonia	10/11/2016 16:55	10/14/2016 17:17
S16T033788	16-08636-7-BASE-EFF	Ammonia	10/11/2016 16:55	10/14/2016 17:34
S16T033790	16-08636-7-BASE-IN	Ammonia	10/11/2016 16:55	10/14/2016 17:51
S16T033791	16-08636-7-BASE-IN	Ammonia	10/11/2016 16:55	10/14/2016 18:08
S16T033793	16-08636-7-BLANK-EFF	Ammonia	10/11/2016 16:55	10/14/2016 19:15
S16T033794	16-08636-7-BLANK-EFF	Ammonia	10/11/2016 16:55	10/14/2016 19:32

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162957

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033796	16-08636-7-BLANK-IN	Ammonia	10/11/2016 16:55	10/14/2016 19:49
S16T033797	16-08636-7-BLANK-IN	Ammonia	10/11/2016 16:55	10/14/2016 20:06
S16T033809	16-08636-7-EFF-A	Ammonia	10/11/2016 16:55	10/14/2016 20:23
S16T033810	16-08636-7-EFF-A	Ammonia	10/11/2016 16:55	10/14/2016 20:40
S16T033812	16-08636-7-EFF-B	Ammonia	10/11/2016 16:55	10/14/2016 20:57
S16T033813	16-08636-7-EFF-B	Ammonia	10/11/2016 16:55	10/14/2016 21:14
S16T033815	16-08636-7-EFF-C	Ammonia	10/11/2016 16:55	10/14/2016 21:30
S16T033816	16-08636-7-EFF-C	Ammonia	10/11/2016 16:55	10/14/2016 21:47
S16T033818	16-08636-7-EFF-D	Ammonia	10/11/2016 16:55	10/14/2016 22:55
S16T033819	16-08636-7-EFF-D	Ammonia	10/11/2016 16:55	10/14/2016 23:12
S16T033821	16-08636-7-EFF-E	Ammonia	10/11/2016 16:55	10/14/2016 23:29
S16T033822	16-08636-7-EFF-E	Ammonia	10/11/2016 16:55	10/14/2016 23:46
S16T033824	16-08636-7-EFF-F	Ammonia	10/11/2016 16:55	10/15/2016 02:01
S16T033825	16-08636-7-EFF-F	Ammonia	10/11/2016 16:55	10/15/2016 02:17
S16T033827	16-08636-7-EFF-G	Ammonia	10/11/2016 16:55	10/15/2016 02:34
S16T033828	16-08636-7-EFF-G	Ammonia	10/11/2016 16:55	10/15/2016 02:51
S16T033830	16-08636-7-EFF-H	Ammonia	10/11/2016 16:55	10/15/2016 03:08
S16T033831	16-08636-7-EFF-H	Ammonia	10/11/2016 16:55	10/15/2016 03:25
S16T033833	16-08636-7-IN-A	Ammonia	10/11/2016 16:55	10/17/2016 12:31
S16T033834	16-08636-7-IN-A	Ammonia	10/11/2016 16:55	10/15/2016 04:49
S16T033836	16-08636-7-IN-B	Ammonia	10/11/2016 16:55	10/17/2016 12:48
S16T033837	16-08636-7-IN-B	Ammonia	10/11/2016 16:55	10/15/2016 05:23
S16T033839	16-08636-7-IN-C	Ammonia	10/11/2016 16:55	10/17/2016 13:05
S16T033840	16-08636-7-IN-C	Ammonia	10/11/2016 16:55	10/15/2016 05:57
S16T033842	16-08636-7-IN-D	Ammonia	10/11/2016 16:55	10/17/2016 13:22
S16T033843	16-08636-7-IN-D	Ammonia	10/11/2016 16:55	10/15/2016 06:31
S16T033845	16-08636-7-IN-E	Ammonia	10/11/2016 16:55	10/17/2016 13:38
S16T033846	16-08636-7-IN-E	Ammonia	10/11/2016 16:55	10/15/2016 07:04
S16T033848	16-08636-7-IN-F	Ammonia	10/11/2016 16:55	10/17/2016 13:55
S16T033849	16-08636-7-IN-F	Ammonia	10/11/2016 16:55	10/15/2016 08:29
S16T033851	16-08636-7-IN-G	Ammonia	10/06/2016 17:00	10/10/2016 11:33
S16T033852	16-08636-7-IN-G	Ammonia	10/06/2016 17:00	10/06/2016 23:28
S16T033854	16-08636-7-IN-H	Ammonia	10/06/2016 17:00	10/10/2016 11:57
S16T033855	16-08636-7-IN-H	Ammonia	10/06/2016 17:00	10/07/2016 00:14

Attachment 3

RECEIPT PAPERWORK

Cartridge Testing & Cartridge Testing NW

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST	ATS-LO-090-101 Rev DG-1

Date Samples Received: 9-26-16 Total Number of Samples: 480 Group #: 20162957 - NH3

Sample Custodian: Dianne Turner IH Technician: Dell Spaulding 9-26-16

Sample Custodian to Complete:

Action	Yes	No	N/A	Comments
RSR provided?			✓	
Verify GKI is complete			✓	☐ In Project File
Received from an alpha facility?		✓		☐ Contact PC for approval to release
Check that outer custody seal is intact, if present			✓	
Record cooler temperature in centigrade, as appropriate	4° C			☐ Check if no cooler and/or no ice
Samples are intact and in good condition	✓			If No, provide comments below
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	✓			
• Date and time of sampling	✓			
• Sampling location or origin	✓			
• Container type, size, and number	✓			
• Preservatives (if used) noted on the COC/RSA and sample bottles			✓	
• Analysis request is clear	✓			
• Signature of persons relinquishing and receiving samples	✓			
• Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the COC and/or RSA	✓			
Samples stored properly (e.g., refrigeration)	✓			

Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.

Samples acceptable for release? yes PC(SC) Initials dlt Date 9/26/16

If No, comment on communication and resolution:

WRPS SHIP-280
Run-120
WHL Run-(80) 40 NH_3 40 Hg
Acetonitrile 40

Number of IH Samples Received:

Aldehyde Screen:	40	Amines:	40	Ammonia:	40	Aromatic HC:		Asbestos:	
Beryllium:		Be-Bulk:		Be-Filter:		Be-Wipe		1,3-Butadiene:	80
Formaldehyde:		Furans:	40	Mercury:	40	Methanol:		Nitrosamines:	40
Nitrous Oxide:		Pyridines:	40	SVOA:	40	VOA:	40	Other-IH:	

A-6005-302 (REV 4)

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/23/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08635 - Cartridge Testing	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
	16-08635-6-IN-E / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	16-08635-6-IN-F / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	16-08635-6-IN-G / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	16-08635-6-IN-H / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
S16T033396	16-08635-7-BASE-EFF / CISA (SKC 226-29) S16TO 33399 33400	NH3 Source
S16T033402	16-08635-7-BASE-IN / CISA (SKC 226-29) S16TO33405 33406	NH3 Source
S16T033408	16-08635-7-BLANK1 / CISA (SKC 226-29) S16TO33418 33419	NH3 Source
S16T033422	16-08635-7-BLANK2 / CISA (SKC 226-29). S16TO 33 424 33 425	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704HV / H104	9/24/16	0455
Retrieved from Storage:	CMOON	ChasheMOON		9/26/16	0745

	Signature	Printed Name	Date	Time
Relinquished By:	CMOON	ChasheMOON	9-26-16	1200
Received By:	Teresa Forrester	TERESA FORRESTER	9-26-16	1200
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/23/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08635 - Cartridge Testing	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description		Required Analysis
S16T033426	16-08635-7-EFF-A / CISA (SKC 226-29)	S16T033429 33430	NH3 Source
S16T033431	16-08635-7-EFF-B / CISA (SKC 226-29)	S16T033432 33433	NH3 Source
S16T033435	16-08635-7-EFF-C / CISA (SKC 226-29)	S16T033438 33439	NH3 Source
S16T033441	16-08635-7-EFF-D / CISA (SKC 226-29)	S16T033444 33445	NH3 Source
S16T033447	16-08635-7-EFF-E / CISA (SKC 226-29)	S16T033450 33451	NH3 Source
S16T033453	16-08635-7-EFF-F / CISA (SKC 226-29)	S16T033454 33455	NH3 Source
S16T033458	16-08635-7-EFF-G / CISA (SKC 226-29)	S16T033462 33463	NH3 Source
S16T033465	16-08635-7-EFF-H / CISA (SKC 226-29)	S16T033468 33469	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HV/H104	9/24/2016	0455
Retrieved from Storage:	CMOON	ChrisheMOON		9/26/16	0745

	Signature	Printed Name	Date	Time
Relinquished By:	CMOON	ChrisheMOON	9-26-16	1200
Received By:	Teresa Forrester	TERESA FORRESTER	9-26-16	1200
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/23/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08635 - Cartridge Testing	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description		Required Analysis
S16T033471	16-08635-7-IN-A / CISA (SKC 226-29)	S16T033474 33475	NH3 Source
S16T033765	16-08635-7-IN-B / CISA (SKC 226-29)	S16T033766 33767	NH3 Source
S16T033768	16-08635-7-IN-C / CISA (SKC 226-29)	S16T033769 33770	NH3 Source
S16T033771	16-08635-7-IN-D / CISA (SKC 226-29)	S16T033772 33773	NH3 Source
S16T033774	16-08635-7-IN-E / CISA (SKC 226-29)	S16T033775 33776	NH3 Source
S16T033777	16-08635-7-IN-F / CISA (SKC 226-29)	S16T033778 33779	NH3 Source
S16T033780	16-08635-7-IN-G / CISA (SKC 226-29)	S16T033781 33782	NH3 Source
S16T033783	16-08635-7-IN-H / CISA (SKC 226-29)	S16T033784 33785	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HV/H104	9/24/2016	0455
Retrieved from Storage:	CMoon	ChristieMoon		9/26/16	0745

	Signature	Printed Name	Date	Time
Relinquished By:	CMoon	ChristieMoon	9-26-16	1200
Received By:	Teresa Forrester	TERESA FORRESTER	9-26-16	1200
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/24/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08636 - Cartridge Testing AW Stack - A Train	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
	16-08636-6-IN-E / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	16-08636-6-IN-F / Hydrar (SKC 226-17-1A) JW 9/25/16	Hg-Elemental Source
	16-08636-6-IN-G / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	16-08636-6-IN-H / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
S16T033786	16-08636-7-BASE-EFF / CISA (SKC 226-29) S16T033787 33788	NH3 Source
S16T033789	16-08636-7-BASE-IN / CISA (SKC 226-29) S16T033790 33791	NH3 Source
S16T033792	16-08636-7-BLANK-EFF / CISA (SKC 226-29) S16T033793 33794	NH3 Source
S16T033795	16-08636-7-BLANK-IN / CISA (SKC 226-29) S16T033796 33797	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HV/H104	9/25/16	0500
Retrieved from Storage:	Dell Spaulding	Dell Spaulding		9-26-16	0715

	Signature	Printed Name	Date	Time
Relinquished By:	Dell Spaulding	Dell Spaulding	9-26-16	1200
Received By:	Leslie Diaz	Leslie Diaz	9/26/16	1200
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/24/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08636 - Cartridge Testing AW Stack - A Train	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S16T033798	16-08636-7-EFF-A / CISA (SKC 226-29) S16T033809 33810	NH3 Source
S16T033811	16-08636-7-EFF-B / CISA (SKC 226-29) S16T033812 33813	NH3 Source
S16T033814	16-08636-7-EFF-C / CISA (SKC 226-29) S16T033815 33816	NH3 Source
S16T033817	16-08636-7-EFF-D / CISA (SKC 226-29) S16T033818 33819	NH3 Source
S16T033820	16-08636-7-EFF-E / CISA (SKC 226-29) S16T033821 33822	NH3 Source
S16T033823	16-08636-7-EFF-F / CISA (SKC 226-29) S16T033824 33825	NH3 Source
S16T033826	16-08636-7-EFF-G / CISA (SKC 226-29) S16T033827 33828	NH3 Source
S16T033829	16-08636-7-EFF-H / CISA (SKC 226-29) S16T033830 33831	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HV/H104	9/25/16	0500
Retrieved from Storage:	Dell Spaulding	Dell Spaulding		9-26-16	0715

	Signature	Printed Name	Date	Time
Relinquished By:	Dell Spaulding	Dell Spaulding	9-26-16	1200
Received By:	Leslie Diaz	Leslie Diaz	9/26/16	1200
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

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SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 09/24/2016
CACN: 202367	**COA:** CB20	**Survey No.:** 16-08636 - Cartridge Testing AW Stack - A Train	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Caldwell, Joyce A	**MSIN:** R1-06	**Phone:** (509)376-0737	

Laboratory Log No.	Sample ID/Type/Description		Required Analysis
S16T033832	16-08636-7-IN-A / CISA (SKC 226-29)	S16T033833 33834	NH3 Source
S16T033835	16-08636-7-IN-B / CISA (SKC 226-29)	S16T033836 33837	NH3 Source
S16T033838	16-08636-7-IN-C / CISA (SKC 226-29)	S16T033839 33840	NH3 Source
S16T033841	16-08636-7-IN-D / CISA (SKC 226-29)	S16T033842 33843	NH3 Source
S16T033844 S16T033844 dlw 9/27/16	16-08636-7-IN-E / CISA (SKC 226-29)	S16T033845 33846	NH3 Source
S16T033847	16-08636-7-IN-F / CISA (SKC 226-29)	S16T033848 33849	NH3 Source
S16T033850	16-08636-7-IN-G / CISA (SKC 226-29)	S16T033851 33852	NH3 Source
S16T033853	16-08636-7-IN-H / CISA (SKC 226-29)	S16T033854 33855	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704HV / H104	9/25/16	0500
Retrieved from Storage:	Dell Spaulding	Dell Spaulding		9-26-16	0715

	Signature	Printed Name	Date	Time
Relinquished By:	Dell Spaulding	Dell Spaulding	9-26-16	1200
Received By:	Leslie Diaz	Leslie Diaz	9/26/16	1200
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

C.3.8 Aldehydes

ANALYTICAL REPORT

Report Date: October 06, 2016

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162971
Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033605** Collected: 09/23/2016
Lab ID: 1627297001 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.48**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033606** Collected: 09/23/2016
Lab ID: 1627297002 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.071**	NA	NA	0.050
Acetaldehyde	**0.085**	NA	NA	0.050

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033606** Collected: 09/23/2016
Lab ID: 1627297002 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acetone	**0.83**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.12**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033607** Collected: 09/23/2016
Lab ID: 1627297003 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.14**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033608** Collected: 09/23/2016
Lab ID: 1627297004 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.15**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033609** Collected: 09/23/2016
Lab ID: 1627297005 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.28**	NA	NA	0.050
Acetone	**0.068**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033609** Collected: 09/23/2016
Lab ID: 1627297005 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033610** Collected: 09/23/2016
Lab ID: 1627297006 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.42**	NA	NA	0.050
Acetone	**0.061**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033611** Collected: 09/23/2016
Lab ID: 1627297007 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.40**	NA	NA	0.050
Acetone	**0.31**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033611** Collected: 09/23/2016
Lab ID: 1627297007 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033612** Collected: 09/23/2016
Lab ID: 1627297008 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.41**	NA	NA	0.050
Acetone	**0.26**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033613** Collected: 09/23/2016
Lab ID: 1627297009 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.42**	NA	NA	0.050
Acetone	**0.12**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033614** Collected: 09/23/2016
Lab ID: 1627297010 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.42**	NA	NA	0.050
Acetone	**0.35**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033614** Collected: 09/23/2016
Lab ID: 1627297010 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033615** Collected: 09/23/2016
Lab ID: 1627297011 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.45**	NA	NA	0.050
Acetone	**0.48**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033616** Collected: 09/23/2016
Lab ID: 1627297012 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.41**	NA	NA	0.050
Acetone	**0.70**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033616** Collected: 09/23/2016
Lab ID: 1627297012 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033617** Collected: 09/23/2016
Lab ID: 1627297013 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.20**	NA	NA	0.050
Acetaldehyde	**0.73**	NA	NA	0.050
Acetone	**3.2**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.20**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.26**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.052**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.17**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033618** Collected: 09/23/2016
Lab ID: 1627297014 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.054**	NA	NA	0.050
Acetaldehyde	**0.73**	NA	NA	0.050
Acetone	**4.7**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.21**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.26**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.080**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.11**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033619** Collected: 09/23/2016
Lab ID: 1627297015 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.67**	NA	NA	0.050
Acetone	**4.7**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.19**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.27**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033619** Collected: 09/23/2016
Lab ID: 1627297015 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	**0.14**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033620** Collected: 09/23/2016
Lab ID: 1627297016 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.059**	NA	NA	0.050
Acetaldehyde	**0.66**	NA	NA	0.050
Acetone	**3.9**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.16**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.22**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.060**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.10**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033621** Collected: 09/23/2016
Lab ID: 1627297017 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.090**	NA	NA	0.050
Acetaldehyde	**0.66**	NA	NA	0.050
Acetone	**3.4**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033621** Collected: 09/23/2016
Lab ID: 1627297017 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.20**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.23**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.070**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.12**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033622** Collected: 09/23/2016
Lab ID: 1627297018 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.086**	NA	NA	0.050
Acetaldehyde	**0.65**	NA	NA	0.050
Acetone	**3.5**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.24**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.052**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.10**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033623** Collected: 09/23/2016
Lab ID: 1627297019 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.064**	NA	NA	0.050
Acetaldehyde	**0.66**	NA	NA	0.050
Acetone	**3.6**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.21**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.091**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033624** Collected: 09/23/2016
Lab ID: 1627297020 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.67**	NA	NA	0.050
Acetone	**3.5**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.20**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.25**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033624** Collected: 09/23/2016
Lab ID: 1627297020 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	**0.078**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033625** Collected: 09/24/2016
Lab ID: 1627297021 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.059**	NA	NA	0.050
Acetaldehyde	**0.053**	NA	NA	0.050
Acetone	**0.43**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033626** Collected: 09/24/2016
Lab ID: 1627297022 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.080**	NA	NA	0.050
Acetaldehyde	**0.10**	NA	NA	0.050
Acetone	**0.49**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033626** Collected: 09/24/2016
Lab ID: 1627297022 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033627** Collected: 09/24/2016
Lab ID: 1627297023 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.49**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033628** Collected: 09/24/2016
Lab ID: 1627297024 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033629** Collected: 09/24/2016
Lab ID: 1627297025 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.057**	NA	NA	0.050
Acetaldehyde	**0.34**	NA	NA	0.050
Acetone	**0.18**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033629** Collected: 09/24/2016
Lab ID: 1627297025 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033630** Collected: 09/24/2016
Lab ID: 1627297026 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.36**	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033631** Collected: 09/24/2016
Lab ID: 1627297027 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.47**	NA	NA	0.050
Acetone	**0.23**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033631** Collected: 09/24/2016
Lab ID: 1627297027 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033632** Collected: 09/24/2016
Lab ID: 1627297028 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.42**	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033633** Collected: 09/24/2016
Lab ID: 1627297029 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.081**	NA	NA	0.050
Acetaldehyde	**0.49**	NA	NA	0.050
Acetone	**0.71**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033634** Collected: 09/24/2016
Lab ID: 1627297030 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.47**	NA	NA	0.050
Acetone	**0.65**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033634** Collected: 09/24/2016
Lab ID: 1627297030 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033635** Collected: 09/24/2016
Lab ID: 1627297031 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.45**	NA	NA	0.050
Acetone	**0.94**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033636** Collected: 09/24/2016
Lab ID: 1627297032 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.43**	NA	NA	0.050
Acetone	**1.3**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033636** Collected: 09/24/2016
Lab ID: 1627297032 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033637** Collected: 09/24/2016
Lab ID: 1627297033 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.23**	NA	NA	0.050
Acetaldehyde	**0.71**	NA	NA	0.050
Acetone	**1.6**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.16**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.24**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.058**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.17**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033638** Collected: 09/24/2016
Lab ID: 1627297034 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.073**	NA	NA	0.050
Acetaldehyde	**0.67**	NA	NA	0.050
Acetone	**3.9**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.18**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.29**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.17**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033639** Collected: 09/24/2016
Lab ID: 1627297035 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.74**	NA	NA	0.050
Acetone	**5.1**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.21**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.27**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033639** Collected: 09/24/2016
Lab ID: 1627297035 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	**0.14**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033640** Collected: 09/24/2016
Lab ID: 1627297036 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.061**	NA	NA	0.050
Acetaldehyde	**0.63**	NA	NA	0.050
Acetone	**4.1**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.23**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	**0.11**	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033641** Collected: 09/24/2016
Lab ID: 1627297037 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.088**	NA	NA	0.050
Acetaldehyde	**0.63**	NA	NA	0.050
Acetone	**3.2**	NA	NA	0.050

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033641** Collected: 09/24/2016
Lab ID: 1627297037 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.24**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033642** Collected: 09/24/2016
Lab ID: 1627297038 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.084**	NA	NA	0.050
Acetaldehyde	**0.60**	NA	NA	0.050
Acetone	**3.0**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.22**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033643** Collected: 09/24/2016
Lab ID: 1627297039 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.074**	NA	NA	0.050
Acetaldehyde	**0.52**	NA	NA	0.050
Acetone	**3.1**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.24**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S16T033644** Collected: 09/24/2016
Lab ID: 1627297040 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.078**	NA	NA	0.050
Acetaldehyde	**0.63**	NA	NA	0.050
Acetone	**2.8**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.16**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.20**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: **34-1627297**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033644** Collected: 09/24/2016
Lab ID: 1627297040 Received: 09/28/2016

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 10/03/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Comments

Quality Control: **EPA TO-11A - (HBN: 177647)**

LMB 520823 was used to media correct LCS 520824, LCSD 520825 and field samples for Acetone only.

520824 LCS/520825 LCSD: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken. Historical limits have been submitted for review.

Quality Control: **EPA TO-11A - (HBN: 177648)**

LMB 520826 was used to media correct LCS 520827, LCSD 520828 and field samples 021-040 for Acetone only.

LCS 520827/LCSD 520828: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken. Historical limits have been submitted for review.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Emilie Pratt 10/06/2016 15:57	/S/ Christopher Winter 10/06/2016 16:53

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1627297
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627297

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/12748 (HBN: 177647)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Blank

LMB: 520823
Analyzed: 10/03/2016 00:00
Units: ug/sample

Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.0740	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520824
Analyzed: 10/03/2016 00:00
Dilution: 1
Units: ug/sample

LCSD: 520825
Analyzed: 10/03/2016 00:00
Dilution: 1
Units: ug/sample

Analyte	LCS Result	LCS Target	LCS %Rec	LCS QC Limits		LCSD Result	LCSD %Rec	RPD	RPD QC Limits	
Formaldehyde	2.90	3.00	96.5	87.8	116.8	2.97	99.0	2.52	0.0	20.0
Acetaldehyde	2.90	3.00	96.7	94.7	110.5	2.98	99.2	2.59	0.0	20.0
Acetone	3.02	3.00	101	69.2	119.9	3.18	106	5.23	0.0	20.0
Acrolein	2.86	3.00	95.3	83.5	120.2	2.96	98.6	3.41	0.0	20.0
Propionaldehyde	2.82	3.00	93.9	92.2	117.2	2.90	96.6	2.90	0.0	20.0
Crotonaldehyde	2.88	3.00	96.0	93.1	114.8	2.86	95.4	0.557	0.0	20.0
Butyraldehyde	2.74	3.00	91.2	86.6	120.8	2.87	95.6	4.75	0.0	20.0
Benzaldehyde	2.86	3.00	* 95.5	96.0	112.3	2.92	97.4	1.97	0.0	20.0
Isovaleraldehyde	2.96	3.00	98.6	95.4	121.6	3.10	103	4.82	0.0	20.0
Valeraldehyde	3.06	3.00	102	85.3	120.4	3.20	107	4.60	0.0	20.0
m-Tolualdehyde	2.80	3.00	93.4	80.9	118.6	2.88	95.9	2.64	0.0	20.0
p-Tolualdehyde	2.78	3.00	92.8	83.5	122.2	2.80	93.2	0.466	0.0	20.0
o-Tolualdehyde	2.82	3.00	93.9	91.6	111.4	2.93	97.6	3.83	0.0	20.0
Hexanal	3.09	3.00	103	85.4	127.6	3.14	105	1.64	0.0	20.0
2,5-Dimethylbenzaldehyde	2.87	3.00	* 95.5	99.6	118.7	2.82	* 94.1	1.48	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627297

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/12748 (HBN: 177647)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Comments

LMB 520823 was used to media correct LCS 520824, LCSD 520825 and field samples for Acetone only.

520824 LCS/520825 LCSD: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken. Historical limits have been submitted for review.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Emilie Pratt	/S/ Christopher Winter
10/05/2016 15:42	10/06/2016 10:34

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627297

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/12749 (HBN: 177648)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Blank

LMB: 520826
Analyzed: 10/03/2016 00:00
Units: ug/sample

Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.124	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520827
Analyzed: 10/03/2016 00:00
Dilution: 1
Units: ug/sample

LCSD: 520828
Analyzed: 10/03/2016 00:00
Dilution: 1
Units: ug/sample

Analyte	LCS Result	Target		LCS %Rec	QC Limits		LCSD Result		LCSD %Rec	RPD	QC Limits	
Formaldehyde	2.82	3.00		94.1	87.8	116.8	2.95		98.2	4.26	0.0	20.0
Acetaldehyde	2.90	3.00		96.8	94.7	110.5	2.98		99.4	2.68	0.0	20.0
Acetone	3.03	3.00		101	69.2	119.9	3.20		107	5.42	0.0	20.0
Acrolein	2.82	3.00		94.0	83.5	120.2	2.92		97.3	3.45	0.0	20.0
Propionaldehyde	2.84	3.00		94.5	92.2	117.2	2.92		97.2	2.75	0.0	20.0
Crotonaldehyde	2.86	3.00		95.3	93.1	114.8	2.91		97.1	1.84	0.0	20.0
Butyraldehyde	2.74	3.00		91.4	86.6	120.8	2.89		96.5	5.39	0.0	20.0
Benzaldehyde	2.82	3.00	*	94.1	96.0	112.3	2.91		96.9	3.00	0.0	20.0
Isovaleraldehyde	3.00	3.00		99.9	95.4	121.6	3.02		101	0.731	0.0	20.0
Valeraldehyde	3.14	3.00		105	85.3	120.4	3.19		106	1.42	0.0	20.0
m-Tolualdehyde	2.77	3.00		92.3	80.9	118.6	2.80		93.4	1.26	0.0	20.0
p-Tolualdehyde	2.80	3.00		93.3	83.5	122.2	2.89		96.3	3.16	0.0	20.0
o-Tolualdehyde	2.91	3.00		97.0	91.6	111.4	3.01		100	3.48	0.0	20.0
Hexanal	3.08	3.00		103	85.4	127.6	3.14		105	1.93	0.0	20.0
2,5-Dimethylbenzaldehyde	2.74	3.00	*	91.4	99.6	118.7	2.76	*	92.1	0.763	0.0	20.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1627297

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/12749 (HBN: 177648)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Comments

LMB 520826 was used to media correct LCS 520827, LCSD 520828 and field samples 021-040 for Acetone only.

LCS 520827/LCSD 520828: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken. Historical limits have been submitted for review.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Emilie Pratt	/S/ Christopher Winter
10/06/2016 15:57	10/06/2016 16:53

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1627297

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162971

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CA20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013	Temp.: AMBIENT
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0221 8403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
1	S16T033605	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-BASE-EFF	25C or low
2	S16T033606	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-BASE-IN	25C or low
3	S16T033607	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-BLANK1	25C or low
4	S16T033608	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-BLANK2	25C or low
5	S16T033609	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-A	25C or low
6	S16T033610	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-B	25C or low
7	S16T033611	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-C	25C or low
8	S16T033612	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-D	25C or low
9	S16T033613	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-E	25C or low
10	S16T033614	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-F	25C or low

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

EPA TO-11A

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_N_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 9
Reference Contract # 55502
NIOSH 2016 MOD

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	9/27/16 0930	JA Gradisher WRPS Julie Gradisher	9/27/16 0930
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Stumbo	9/28/16 12:48

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Date/Time: 10/3/16 12:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162971
N/A		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861	MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203903/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WIS-013	Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
11	S16T033615	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-G	25C or low
12	S16T033616	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-EFF-H	25C or low
13	S16T033617	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-A	25C or low
14	S16T033618	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-B	25C or low
15	S16T033619	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-C	25C or low
16	S16T033620	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-D	25C or low
17	S16T033621	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-E	25C or low
18	S16T033622	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-F	25C or low
19	S16T033623	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-G	25C or low
20	S16T033624	VA	09/23/16		SILICA GEL	Aldehyde 16-08635-8-IN-H	25C or low

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

EPA TO-11A

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 9
Reference Contract # 55502
NIOSH 2016 MOD

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dianne Turner	Dianne Turner	9/27/16 0930	JA Gradisher WRPS		Julie Gradisher	9/27/16 0930
Relinquished By	JA Gradisher WRPS	Julie Gradisher	9/27/16 1400	Received By	FEDEX		Date/Time
Relinquished By			Date/Time	Received By	Marianne Schmidt		9/28/16 1214
Relinquished By			Date/Time	Received By			Date/Time

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Emilie K Pratt	10/3/16 12:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162971
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN 26-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013	Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 800902278403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
21	S16T033625	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-BASE-EFF	25C or low
22	S16T033626	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-BASE-IN	25C or low
23	S16T033627	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-BLANK-EFF	25C or low
24	S16T033628	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-BLANK-IN	25C or low
25	S16T033629	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-A	25C or low
26	S16T033630	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-B	25C or low
27	S16T033631	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-C	25C or low
28	S16T033632	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-D	25C or low
29	S16T033633	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-E	25C or low
30	S16T033634	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-F	25C or low

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

EPA TO-11A

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 9
Reference Contract # 55502
NIOSH 2016 MOD

	Print	Sign	Date/Time
Relinquished By	Dianne Turner	Dianne Turner	9/27/16 0930
Relinquished By	JA Gradisher WRPS	Julie Gradisher	9/27/16 1400
Relinquished By			Date/Time
Relinquished By			Date/Time

	Print	Sign	Date/Time
Received By	JA Gradisher WRPS	Julie Gradisher	9/27/16 0930
Received By	FEDEX		Date/Time
Received By	Marianne Schmidt	Marianne Schmidt	9/28/2016 12:48
Received By			Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Emily Pratt — Date/Time: 10/3/16 15:20

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162971
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013	Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.	8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.	413607

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
31	S16T033635	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-G	25C or low
32	S16T033636	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-EFF-H	25C or low
33	S16T033637	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-A	25C or low
34	S16T033638	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-B	25C or low
35	S16T033639	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-C	25C or low
36	S16T033640	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-D	25C or low
37	S16T033641	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-E	25C or low
38	S16T033642	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-F	25C or low
39	S16T033643	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-G	25C or low
40	S16T033644	VA	09/24/16		SILICA GEL	Aldehyde 16-08636-8-IN-H	25C or low

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

EPA TO-11A

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 9
Reference Contract # 55502
NIOSH 2016 MOD

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	9/27/16 0930	JA Gradisher WRPS Julie Gradisher	9/27/16 0930
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		M. Schmidt Marianne Schmidt	9/28/16 12:48

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Emilie Pratt	10/3/16 15:20

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

C.3.9 1, 3-Butadiene

ANALYTICAL REPORT

Report Date: October 05, 2016

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162973
Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033685				Collected: 09/23/2016
Lab ID: 1627295001				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided		Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033686				Collected: 09/23/2016
Lab ID: 1627295002				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided		Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033687				Collected: 09/23/2016
Lab ID: 1627295003				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided		Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033688				Collected: 09/23/2016
Lab ID: 1627295004				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033689				Collected: 09/23/2016
Lab ID: 1627295005				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033690				Collected: 09/23/2016
Lab ID: 1627295006				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033691				Collected: 09/23/2016
Lab ID: 1627295007				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033692				Collected: 09/23/2016
Lab ID: 1627295008				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033693				Collected: 09/23/2016
Lab ID: 1627295009				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033694				Collected: 09/23/2016
Lab ID: 1627295010				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033695				Collected: 09/23/2016
Lab ID: 1627295011				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033696				Collected: 09/23/2016
Lab ID: 1627295012				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033697				Collected: 09/23/2016
Lab ID: 1627295013				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033698				Collected: 09/23/2016
Lab ID: 1627295014				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033699				Collected: 09/23/2016
Lab ID: 1627295015				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033700				Collected: 09/23/2016
Lab ID: 1627295016				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033701				Collected: 09/23/2016
Lab ID: 1627295017				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033702				Collected: 09/23/2016
Lab ID: 1627295018				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627295**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033703**				Collected: 09/23/2016
Lab ID: 1627295019				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033704**				Collected: 09/23/2016
Lab ID: 1627295020				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033705**				Collected: 09/23/2016
Lab ID: 1627295021				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033706**				Collected: 09/23/2016
Lab ID: 1627295022				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033707**				Collected: 09/23/2016
Lab ID: 1627295023				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033708				Collected: 09/23/2016
Lab ID: 1627295024				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033709				Collected: 09/23/2016
Lab ID: 1627295025				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033710				Collected: 09/23/2016
Lab ID: 1627295026				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033711				Collected: 09/23/2016
Lab ID: 1627295027				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033712				Collected: 09/23/2016
Lab ID: 1627295028				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033713				Collected: 09/23/2016
Lab ID: 1627295029				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033714				Collected: 09/23/2016
Lab ID: 1627295030				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033715				Collected: 09/23/2016
Lab ID: 1627295031				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033716				Collected: 09/23/2016
Lab ID: 1627295032				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033717				Collected: 09/23/2016
Lab ID: 1627295033				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033718				Collected: 09/23/2016
Lab ID: 1627295034				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033719				Collected: 09/23/2016
Lab ID: 1627295035				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033720				Collected: 09/23/2016
Lab ID: 1627295036				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033721				Collected: 09/23/2016
Lab ID: 1627295037				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033722				Collected: 09/23/2016
Lab ID: 1627295038				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627295**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033723** Collected: 09/23/2016
Lab ID: 1627295039 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033724** Collected: 09/23/2016
Lab ID: 1627295040 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1024	/S/ Fred Rejali 10/04/2016 20:14	/S/ Thomas J. Masoian 10/05/2016 08:22

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1627295
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627295

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/7808 (HBN: 177676)
	Prepared By: NA	**Analyzed By:** Fred Rejali

Blank

MB: 520884
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520887
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520890
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520893
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520896
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 521241
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520885
Analyzed: 10/04/2016 00:00
Dilution: 1
Units: mg/sample

LCSD: 520886
Analyzed: 10/04/2016 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	LCS %Rec	QC Limits		LCSD Result	LCSD %Rec	RPD	QC Limits	
1,3-Butadiene	0.0315	0.0342	92.1	78.0	117.6	0.0315	92.1	0.00	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627295

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/7808 (HBN: 177676)
	Prepared By: NA	**Analyzed By:** Fred Rejali

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520888 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520889 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0285	0.0274	104	78.0	117.6	0.0286	105	0.350	0.0	20.0

LCS: 520891 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520892 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0291	0.0274	106	78.0	117.6	0.0285	104	2.08	0.0	20.0

LCS: 520894 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520895 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0276	0.0274	101	78.0	117.6	0.0262	95.8	5.20	0.0	20.0

LCS: 520897 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520898 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0267	0.0274	97.6	78.0	117.6	0.0273	99.8	2.22	0.0	20.0

LCS: 521242 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 521243 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0267	0.0274	97.6	78.0	117.6	0.0263	96.1	1.51	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali	/S/ Thomas J. Masoian
10/04/2016 20:14	10/05/2016 08:20

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1627295

Assi N/A W

1627295

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162973

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033685	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-G-PRT-A	CHILL -4C
	S16T033686	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-G-PRT-B	CHILL -4C
	S16T033687	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-H-PRT-A	CHILL -4C
	S16T033688	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-H-PRT-B	CHILL -4C
	S16T033689	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EFF-BASE-A	CHILL -4C
	S16T033690	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EFF-BASE-B	CHILL -4C
	S16T033691	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-A-PRT-A	CHILL -4C
	S16T033692	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-A-PRT-B	CHILL -4C
	S16T033693	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-C-PRT-A	CHILL -4C
	S16T033694	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-C-PRT-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon L Holder	92716 0930	JA Gradisher WRPS	9/27/16 0930
JA Gradisher WRPS	9/27/16 1400	FEDEX	
		Marianne Schmith	9/28/2016 12:45

Matrix*: S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, VA = Vapor, X = Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Fred Rajala 10/04/16 Date/Time: 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162973
N/A		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 91367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033695	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-D-PRT-A	CHILL -4C
	S16T033696	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-D-PRT-B	CHILL -4C
	S16T033697	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-E-PRT-A	CHILL -4C
	S16T033698	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-E-PRT-B	CHILL -4C
	S16T033699	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-F-PRT-A	CHILL -4C
	S16T033700	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-F-PRT-B	CHILL -4C
	S16T033701	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-B-PRT-A	CHILL -4C
	S16T033702	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-B-PRT-B	CHILL -4C
	S16T033703	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-BASE-A	CHILL -4C
	S16T033704	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-BASE-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan,
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon Walden	9-27-16 0930	JA Gradisher WRPS Julie Gradisher	9/27/16 0930
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Schmidt	9/28/2016 1214

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Rajah — Date/Time: 10/04/16 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162973
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033705	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-C-PRT-A	CHILL -4C
	S16T033706	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-C-PRT-B	CHILL -4C
	S16T033707	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-D-PRT-A	CHILL -4C
	S16T033708	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-D-PRT-B	CHILL -4C
	S16T033709	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-E-PRT-A	CHILL -4C
	S16T033710	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-E-PRT-B	CHILL -4C
	S16T033711	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-F-PRT-A	CHILL -4C
	S16T033712	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-F-PRT-B	CHILL -4C
	S16T033713	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-G-PRT-A	CHILL -4C
	S16T033714	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-G-PRT-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan,
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
			9-27-16 0930	JA Gradisher	JA Gradisher		9/27/16 0930
Relinquished By	JA Gradisher		Date/Time	Received By			Date/Time
	WRPS		9/27/16 1400		FEDEX		
Relinquished By			Date/Time	Received By			Date/Time
						7/28/2016	1234
Relinquished By			Date/Time	Received By			Date/Time

Matrix*

S = Soil	DL = Drum Liquids	SE = Sediment	T = Tissue
SO = Solid	WI = Wipe	SL = Sludge	L = Liquid
W = Water	V = Vegetation	O = Oil	VA = Vapor
A = Air	X = Other	DS = Drum Solids	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Fred Rajah	10/04/16 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162973
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN P6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033715	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-IN-H-PRT-A	CHILL -4C
	S16T033716	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-IN-H-PRT-B	CHILL -4C
	S16T033717	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-BLANK1	CHILL -4C
	S16T033718	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-BLANK1	CHILL -4C
	S16T033719	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-BLANK2	CHILL -4C
	S16T033720	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-BLANK2	CHILL -4C
	S16T033721	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-A-PRT-A	CHILL -4C
	S16T033722	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-A-PRT-B	CHILL -4C
	S16T033723	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-9-EF-B-PRT-A	CHILL -4C
	S16T033724	VA	09/23/16		CHARCOAL TUBE	1,3-Butadiene 16-08635-10-EF-B-PRT-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon Hodn	9-27-16 0930	JA Gradisher WRPS Julie Gradisher	9/27/16 0930
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Schmidt	9/28/2016 12:48

Matrix*: S = Soil; SE = Sediment; SO = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solids; DL = Drum Liquids; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; VA = Vapor; X = Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Rajabi 10/04/16 — Date/Time: 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

ANALYTICAL REPORT

Report Date: October 05, 2016

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162974

Workorder: **34-1627348**

Client Project ID: Washington River Protection So

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033725** Collected: 09/24/2016
Lab ID: 1627348001 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033726** Collected: 09/24/2016
Lab ID: 1627348002 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033727** Collected: 09/24/2016
Lab ID: 1627348003 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627348
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033728				Collected: 09/24/2016
Lab ID: 1627348004				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033729				Collected: 09/24/2016
Lab ID: 1627348005				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033730				Collected: 09/24/2016
Lab ID: 1627348006				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033731				Collected: 09/24/2016
Lab ID: 1627348007				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033732				Collected: 09/24/2016
Lab ID: 1627348008				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627348**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033733**				Collected: 09/24/2016
Lab ID: 1627348009				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033734**				Collected: 09/24/2016
Lab ID: 1627348010				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033735**				Collected: 09/24/2016
Lab ID: 1627348011				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033736**				Collected: 09/24/2016
Lab ID: 1627348012				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033737**				Collected: 09/24/2016
Lab ID: 1627348013				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627348**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033738**				Collected: 09/24/2016
Lab ID: 1627348014				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033739**				Collected: 09/24/2016
Lab ID: 1627348015				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033740**				Collected: 09/24/2016
Lab ID: 1627348016				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033741**				Collected: 09/24/2016
Lab ID: 1627348017				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033742**				Collected: 09/24/2016
Lab ID: 1627348018				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627348
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033743** Collected: 09/24/2016
Lab ID: 1627348019 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033744** Collected: 09/24/2016
Lab ID: 1627348020 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033745** Collected: 09/24/2016
Lab ID: 1627348021 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033746** Collected: 09/24/2016
Lab ID: 1627348022 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033747** Collected: 09/24/2016
Lab ID: 1627348023 Received: 09/28/2016

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627348**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033749**				Collected: 09/24/2016
Lab ID: 1627348024				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033750**				Collected: 09/24/2016
Lab ID: 1627348025				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033751**				Collected: 09/24/2016
Lab ID: 1627348026				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033752**				Collected: 09/24/2016
Lab ID: 1627348027				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033753**				Collected: 09/24/2016
Lab ID: 1627348028				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: 34-1627348
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033754				Collected: 09/24/2016
Lab ID: 1627348029				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033755				Collected: 09/24/2016
Lab ID: 1627348030				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033756				Collected: 09/24/2016
Lab ID: 1627348031				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033757				Collected: 09/24/2016
Lab ID: 1627348032				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033758				Collected: 09/24/2016
Lab ID: 1627348033				Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627348**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033759**				Collected: 09/24/2016
Lab ID: 1627348034				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033760**				Collected: 09/24/2016
Lab ID: 1627348035				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033761**				Collected: 09/24/2016
Lab ID: 1627348036				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033762**				Collected: 09/24/2016
Lab ID: 1627348037				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S16T033763**				Collected: 09/24/2016
Lab ID: 1627348038				Received: 09/28/2016
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		**Analyzed:** 10/04/2016
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1627348**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033764** Collected: 09/24/2016
Lab ID: 1627348039 Received: 09/28/2016

Method: NIOSH 1024 **Media: SKC 226-37 Sorbent Tube** **Analyzed: 10/04/2016**
Sampling Parameter: Air Volume Not Provided

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1024	/S/ Fred Rejali 10/04/2016 20:14	/S/ Thomas J. Masoian 10/05/2016 08:22

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1627348
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627348

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/7808 (HBN: 177676)
	Prepared By: NA	**Analyzed By:** Fred Rejali

Blank

MB: 520884
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520887
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520890
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520893
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 520896
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 521241
Analyzed: 10/04/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520885
Analyzed: 10/04/2016 00:00
Dilution: 1
Units: mg/sample

LCSD: 520886
Analyzed: 10/04/2016 00:00
Dilution: 1
Units: mg/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0315	0.0342	92.1	78.0	117.6	0.0315	92.1	0.00	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627348

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/7808 (HBN: 177676)
	Prepared By: NA	**Analyzed By:** Fred Rejali

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520888 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520889 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0285	0.0274	104	78.0	117.6	0.0286	105	0.350	0.0	20.0

LCS: 520891 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520892 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0291	0.0274	106	78.0	117.6	0.0285	104	2.08	0.0	20.0

LCS: 520894 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520895 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0276	0.0274	101	78.0	117.6	0.0262	95.8	5.20	0.0	20.0

LCS: 520897 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 520898 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0267	0.0274	97.6	78.0	117.6	0.0273	99.8	2.22	0.0	20.0

LCS: 521242 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 521243 Analyzed: 10/04/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0267	0.0274	97.6	78.0	117.6	0.0263	96.1	1.51	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali	/S/ Thomas J. Masoian
10/04/2016 20:14	10/05/2016 08:20

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1627348

1627348

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162974
N/A		Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013	Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033725	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-BLANK-EF-A	CHILL -4C
	S16T033726	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-BLANK-EF-B	CHILL -4C
	S16T033727	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-BLANK-IN-A	CHILL -4C
	S16T033728	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-BLANK-IN-B	CHILL -4C
	S16T033729	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-A-PRT-A	CHILL -4C
	S16T033730	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-A-PRT-B	CHILL -4C
	S16T033731	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-B-PRT-A	CHILL -4C
	S16T033732	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-B-PRT-B	CHILL -4C
	S16T033733	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-C-PRT-A	CHILL -4C
	S16T033734	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-C-PRT-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan,
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By	Print	Sign	Date/Time
	Sharon L Holder		9-27-16 0930
	JA Gradisher WRPS		9/27/16 1400

Received By	Print	Sign	Date/Time
	JA Gradisher WRPS		9/27/16 0930
		FEDEX	
	Marianne Schmidt		9/28/2016 12:40

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Rajali — Date/Time: 10/04/16 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162974
N/A		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ONICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033735	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-D-PRT-A	CHILL -4C
	S16T033736	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-D-PRT-B	CHILL -4C
	S16T033737	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-E-PRT-A	CHILL -4C
	S16T033738	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-E-PRT-B	CHILL -4C
	S16T033739	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-F-PRT-A	CHILL -4C
	S16T033740	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-F-PRT-B	CHILL -4C
	S16T033741	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-G-PRT-A	CHILL -4C
	S16T033742	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-G-PRT-B	CHILL -4C
	S16T033743	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EF-H-PRT-A	CHILL -4C
	S16T033744	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EF-H-PRT-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon L Holder / [signature]	9.27.16 0930	JA Gradisher WRPS / Julie Gradisher	9/27/16 0930
JA Gradisher WRPS / Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Schmidt / [signature]	9/28/2016 12:48

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Fred Reich Date/Time: 10/04/16 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162974
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-013 Temp. ONICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41369

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033745	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-EFF-BASE-A	CHILL -4C
	S16T033746	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-EFF-BASE-B	CHILL -4C
	S16T033747	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-A-PRT-A	CHILL -4C
	S16T033749	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-B-PRT-A	CHILL -4C
	S16T033750	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-B-PRT-B	CHILL -4C
	S16T033751	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-BASE-A	CHILL -4C
	S16T033752	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-BASE-B	CHILL -4C
	S16T033753	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-C-PRT-A	CHILL -4C
	S16T033754	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-C-PRT-B	CHILL -4C
	S16T033755	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-D-PRT-A	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon Walker	9-27-16 0930	JA Gradisher WRPS	9/27/16 0930
JA Gradisher WRPS	9/27/16 1400	FEDEX	
		Marianne Schmitt	9/28/2016 12:48

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Rejali — Date/Time: 10/04/16 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162974
		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861 MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013 Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41369

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033756	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-D-PRT-B	CHILL -4C
	S16T033757	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-E-PRT-A	CHILL -4C
	S16T033758	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-E-PRT-B	CHILL -4C
	S16T033759	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-F-PRT-A	CHILL -4C
	S16T033760	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-F-PRT-B	CHILL -4C
	S16T033761	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-G-PRT-A	CHILL -4C
	S16T033762	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-G-PRT-B	CHILL -4C
	S16T033763	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-9-IN-H-PRT-A	CHILL -4C
	S16T033764	VA	09/24/16		CHARCOAL TUBE	1,3-Butadiene 16-08636-10-IN-H-PRT-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl W Howald IV,
Carl_W_Howald@rl.gov, and Greg Scanlan
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 9
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon Holder	9.27.16 0930	JA Gradisher WRPS	9/27/16 0930
JA Gradisher WRPS	9/27/16 1400	FEDEX	
		Marianne Schmith	9/28/16 1124

Matrix

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Fred Rejali Date/Time: 10/04/16 2100

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

C.3.10 Pyridines

ANALYTICAL REPORT

Report Date: October 05, 2016

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162969
Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033525** Collected: 09/23/2016
Lab ID: 1627303001 Received: 09/28/2016
Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033526** Collected: 09/23/2016
Lab ID: 1627303002 Received: 09/28/2016
Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033527** Collected: 09/23/2016
Lab ID: 1627303003 Received: 09/28/2016
Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033528** Collected: 09/23/2016
Lab ID: 1627303004 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033529** Collected: 09/23/2016
Lab ID: 1627303005 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033530** Collected: 09/23/2016
Lab ID: 1627303006 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033531** Collected: 09/23/2016
Lab ID: 1627303007 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033532** Collected: 09/23/2016
Lab ID: 1627303008 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033533** Collected: 09/23/2016
Lab ID: 1627303009 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033534** Collected: 09/23/2016
Lab ID: 1627303010 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033535** Collected: 09/23/2016
Lab ID: 1627303011 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033536** Collected: 09/23/2016
Lab ID: 1627303012 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033537** Collected: 09/23/2016
Lab ID: 1627303013 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033538** Collected: 09/23/2016
Lab ID: 1627303014 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033539** Collected: 09/23/2016
Lab ID: 1627303015 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033540** Collected: 09/23/2016
Lab ID: 1627303016 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033541** Collected: 09/23/2016
Lab ID: 1627303017 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033542** Collected: 09/23/2016
Lab ID: 1627303018 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033543** Collected: 09/23/2016
Lab ID: 1627303019 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033544** Collected: 09/23/2016
Lab ID: 1627303020 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 09/30/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033545** Collected: 09/24/2016
Lab ID: 1627303021 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033546** Collected: 09/24/2016
Lab ID: 1627303022 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033547** Collected: 09/24/2016
Lab ID: 1627303023 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033548** Collected: 09/24/2016
Lab ID: 1627303024 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033549** Collected: 09/24/2016
Lab ID: 1627303025 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033550** Collected: 09/24/2016
Lab ID: 1627303026 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033551** Collected: 09/24/2016
Lab ID: 1627303027 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033552** Collected: 09/24/2016
Lab ID: 1627303028 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033553** Collected: 09/24/2016
Lab ID: 1627303029 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033554** Collected: 09/24/2016
Lab ID: 1627303030 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033555** Collected: 09/24/2016
Lab ID: 1627303031 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033556** Collected: 09/24/2016
Lab ID: 1627303032 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033557** Collected: 09/24/2016
Lab ID: 1627303033 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033558** Collected: 09/24/2016
Lab ID: 1627303034 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033559** Collected: 09/24/2016
Lab ID: 1627303035 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033560** Collected: 09/24/2016
Lab ID: 1627303036 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033561** Collected: 09/24/2016
Lab ID: 1627303037 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033562** Collected: 09/24/2016
Lab ID: 1627303038 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S16T033563** Collected: 09/24/2016
Lab ID: 1627303039 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1627303**
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: **S16T033564** Collected: 09/24/2016
Lab ID: 1627303040 Received: 09/28/2016

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 10/04/2016
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Comments

Quality Control: **NIOSH 1613 Mod. - (HBN: 177599)**

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed. The ending CCV failed high for pyridine and 2,4-dimethylpyridine. Since all the samples were below the reporting limit for pyridine and 2,4-dimethylpyridine, the data is valid per IH-QA-009, Section 6.3.3.

Quality Control: **NIOSH 1613 Mod. - (HBN: 177738)**

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed. The back sorbent section of sample 1627303036 was lost during extraction and the front section was analyzed like normal with no positive hits being detected.

Report Authorization (*/S/* is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	*/S/* David Teynor 10/05/2016 11:12	*/S/* Thomas J. Masoian 10/05/2016 14:39

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1627303
Client Project ID: Washington River Protection So
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627303

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1613 Mod.
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ISVO/3162 (HBN: 177599)
	Prepared By: NA	**Analyzed By:** David Teynor

Blank

LMB: 520720
Analyzed: 09/30/2016 10:13
Units: ug/sample

Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

Laboratory Control Sample - Laboratory Control Sample Duplicate

	LCS: 520721 Analyzed: 09/30/2016 10:32 Dilution: 1 Units: ug/sample					LCSD: 520722 Analyzed: 09/30/2016 10:52 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	0.633	1.00	63.3	61.8	141.1	0.699	69.9	9.85	0.0	22.1
2,4-Dimethylpyridine	0.632	1.00	63.2	51.7	130.6	0.686	68.6	8.15	0.0	22.2

Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed. The ending CCV failed high for pyridine and 2,4-dimethylpyridine. Since all the samples were below the reporting limit for pyridine and 2,4-dimethylpyridine, the data is valid per IH-QA-009, Section 6.3.3.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ David Teynor	/S/ Thomas J. Masoian
10/05/2016 11:12	10/05/2016 14:16

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1627303

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1613 Mod.
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ISVO/3165 (HBN: 177738)
	Prepared By: NA	**Analyzed By:** David Teynor

Blank

LMB: 521043
Analyzed: 10/04/2016 09:24
Units: ug/sample

Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 521044
Analyzed: 10/04/2016 09:44
Dilution: 1
Units: ug/sample

LCSD: 521045
Analyzed: 10/04/2016 10:04
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	0.998	1.00	99.8	61.8	141.1	1.03	103	3.02	0.0	22.1
2,4-Dimethylpyridine	0.893	1.00	89.3	51.7	130.6	1.03	103	14.5	0.0	22.2

Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed. The back sorbent section of sample 1627303036 was lost during extraction and the front section was analyzed like normal with no positive hits being detected.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ David Teynor	/S/ Thomas J. Masoian
10/05/2016 11:07	10/05/2016 14:38

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1st Set

1627303

1627303

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162969

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861	MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013	Temp.: ON Ice
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033525	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-BASE-EFF	N/A
	S16T033526	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-BASE-IN	N/A
	S16T033527	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-BLANK1	N/A
	S16T033528	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-BLANK2	N/A
	S16T033529	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-A	N/A
	S16T033530	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-B	N/A
	S16T033531	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-C	N/A
	S16T033532	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-D	N/A
	S16T033533	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-E	N/A
	S16T033534	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 9
Reference Contract # 55502

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner / Dianne Turner	9/27/16 0930	Julie Gadsden / Julie Gadsden	9/27/16 0930
Julie Gadsden WRPS / Julie Gadsden	9/27/16 1400	FEDEX	
		M Schmidt / Mountaineer Schmidt	9/28/2016 7:21:48

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	Per Procedure	Dylan Dunn	9/29/16 14:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162969
N/A		Page 2 of 4

Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 373-6861	MSIN P6-05 FAX 372-1878
SAF No. N/A	Sample Origin CARTRIDGE EVALUATION	Purchase Order/Charge Code 203003/CB20	
Project Title CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. WTS-013	Temp. ON Ice
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403	
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033535	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-G	N/A
	S16T033536	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-EFF-H	N/A
	S16T033537	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-A	N/A
	S16T033538	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-B	N/A
	S16T033539	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-C	N/A
	S16T033540	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-D	N/A
	S16T033541	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-E	N/A
	S16T033542	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-F	N/A
	S16T033543	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-G	N/A
	S16T033544	VA	9/23/16		CHARCOAL TUBE	Pyridines 16-08635-11-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 9
Reference Contract # 55502

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	9/27/16 0930	Julie Gadsen Julie Gadsen	9/27/16 0935
JA Gradisher WRPS Julie Gradisher	9/27/16 1400	FEDEX	
		Marianne Schmith Marianne Schmith	9/28/2016 1548

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	Per Procedure	Dylan Barr	9/29/16 14:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

2nd Set

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162969
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-013	Temp: ON Ice
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 8009 0227 8403	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41367	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033545	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-BASE-EFF	N/A
	S16T033546	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-BASE-IN	N/A
	S16T033547	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-BLANK-EFF	N/A
	S16T033548	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-BLANK-IN	N/A
	S16T033549	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-A	N/A
	S16T033550	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-B	N/A
	S16T033551	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-C	N/A
	S16T033552	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-D	N/A
	S16T033553	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-E	N/A
	S16T033554	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE $
Reference Contract $ 55502

Hold Time

	Print	Sign	Date/Time
Relinquished By	Dianne Turner	Dianne Turner	9/27/16 0930
Relinquished By	JA Gradisher WRPS	Julie Gradisher	9/27/16 1400
Relinquished By			
Relinquished By			

	Print	Sign	Date/Time
Received By	Julie Gradisher	Julie Gradisher	9/27/16 0930
Received By	FEDEX		
Received By			
Received By	Marianne Schmidt	Marianne Schmidt	9/28/16 1248

Matrix*

S = Soil	SE = Sediment	SO = Solid	SL = Sludge
W = Water	O = Oil	A = Air	DS = Drum Solids
DL = Drum Liquids	T = Tissue	WI = Wipe	L = Liquid
V = Vegetation	VA = Vapor	X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process): Per Procedure

Disposed By: [signature] Date/Time: 10/4/16 13:50

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler N/A	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162969 Page 4 of 4
Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No. N/A	Sample Origin CARTRIDGE EVALUATION	Purchase Order/Charge Code 203003/CB20
Project Title CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. WTS-013 Temp. ON ICE
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 8009 0227 8403
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 41367

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033555	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-G	N/A
	S16T033556	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-EFF-H	N/A
	S16T033557	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-A	N/A
	S16T033558	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-B	N/A
	S16T033559	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-C	N/A
	S16T033560	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-D	N/A
	S16T033561	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-E	N/A
	S16T033562	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-F	N/A
	S16T033563	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-G	N/A
	S16T033564	VA	9/24/16		CHARCOAL TUBE	Pyridines 16-08636-11-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 9
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	9/27/16 0930	Jielli Gadison Jielli Gadison	9/27/16 0930
JA Gradisher WRPS Jielli Gadison	9/27/16 1400	FEDEX	
		Marianne Schmidt	9/28/2016 08:48

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Per Procedure — Disposed By: — Date/Time: 6/4/16 13:50

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

C.3.11 Nitrosamines

RJ LEE GROUP

RJ Lee*Group*, Inc. | Columbia Basin Analytical Laboratories
2710 North 20th Avenue, Pasco WA 99301
Tel: (509) 545-4989 | Fax: (509) 544-6010

Carl Howald IV

11/21/16

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

Contract No.: 55503 R5

Project: Cartridge Evaluation

Subject: Nitrosamines Analysis Report, Group Number 20162968

Enclosed is the final report for group 20162968 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20162968 has been assigned a Columbia Basin Analytical Laboratories login order number of W609129. This report consists of a summary report of the samples, a laboratory report of each nitrosamine, a single quality control report for the analysis batch, and a copy of the chain of custody.

General Set Comments

Columbia Basin Analytical Laboratories received 40 samples on 09/27/16 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodi-n-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine,and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

* Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.
X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.

Results

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

SampleName	Lab ID	Analyzed	Analyte	Results	RL	Units	Flags
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube	

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16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-A	S16T033485	10/21/16	N-Nitrosodimethylamine	3.171	**0.281**	µg/tube	D
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosomethylethylamine	0.025	**0.022**	µg/tube	
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosomorpholine	0.041	**0.022**	µg/tube	
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-B	S16T033486	10/21/16	N-Nitrosodimethylamine	3.267	**0.281**	µg/tube	D
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosomethylethylamine	0.030	**0.022**	µg/tube	
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosomorpholine	0.041	**0.022**	µg/tube	
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-C	S16T033487	10/21/16	N-Nitrosodimethylamine	3.239	**0.281**	µg/tube	D
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosomethylethylamine	0.032	**0.022**	µg/tube	
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosomorpholine	0.036	**0.022**	µg/tube	
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-D	S16T033489	10/21/16	N-Nitrosodimethylamine	3.446	**0.281**	µg/tube	D
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosomethylethylamine	0.031	**0.022**	µg/tube	
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosomorpholine	0.033	**0.022**	µg/tube	
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube	
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	

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16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube

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16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodimethylamine	<0.017	**0.017**	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosomethylethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-E	S16T033498	10/21/16	N-Nitrosodimethylamine	2.993	**0.281**	µg/tube	D
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosomethylethylamine	0.031	**0.022**	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosomorpholine	0.032	**0.022**	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-F	S16T033499	10/22/16	N-Nitrosodimethylamine	3.090	**0.281**	µg/tube	D
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosomethylethylamine	0.029	**0.022**	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-G	S16T033500	10/22/16	N-Nitrosodimethylamine	2.894	**0.281**	µg/tube	D
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosomethylethylamine	0.032	**0.022**	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-H	S16T033501	10/21/16	N-Nitrosodimethylamine	2.794	**0.281**	µg/tube	D
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosodi-n-butylamine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosodi-n-propylamine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosomethylethylamine	0.025	**0.022**	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosomorpholine	<0.022	**0.022**	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosopiperidine	<0.023	**0.023**	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	

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16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube
16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube

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16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodimethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-A	S16T033514	10/21/16	N-Nitrosodimethylamine	3.038	**0.280**	µg/tube	D
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	*
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosomethylethylamine	0.028	**0.021**	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosomorpholine	0.037	**0.021**	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-B	S16T033515	10/22/16	N-Nitrosodimethylamine	1.205	**0.224**	µg/tube	D
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosomethylethylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-C	S16T033516	10/21/16	N-Nitrosodimethylamine	3.394	**0.280**	µg/tube	D
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	*
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosomethylethylamine	0.035	**0.021**	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosomorpholine	0.032	**0.021**	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosopyrrolidine	0.027	**0.022**	µg/tube	X
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-D	S16T033517	10/21/16	N-Nitrosodimethylamine	2.978	**0.280**	µg/tube	D
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	

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16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosomethylethylamine	0.031	**0.021**	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosomorpholine	0.031	**0.021**	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-E	S16T033518	10/22/16	N-Nitrosodimethylamine	3.275	**0.280**	µg/tube	D
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosomethylethylamine	0.035	**0.021**	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosomorpholine	0.032	**0.021**	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-F	S16T033519	10/22/16	N-Nitrosodimethylamine	2.692	**0.280**	µg/tube	D
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosomethylethylamine	0.030	**0.021**	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosomorpholine	0.026	**0.021**	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-G	S16T033520	10/21/16	N-Nitrosodimethylamine	2.758	**0.280**	µg/tube	D
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosomethylethylamine	0.030	**0.021**	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosomorpholine	0.024	**0.021**	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosodiethylamine	<0.022	**0.022**	µg/tube	
16-08636-12-IN-H	S16T033521	10/22/16	N-Nitrosodimethylamine	2.656	**0.280**	µg/tube	D
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosodi-n-butylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosodi-n-propylamine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosomethylethylamine	0.027	**0.021**	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosomorpholine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosopiperidine	<0.021	**0.021**	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosopyrrolidine	<0.022	**0.022**	µg/tube	

Recovery Failures in the ICV, CCVs, LCSs, RL and MRL

There were no recovery failures in the CCVs, ICV, LCSs, MRL.

RSD Failures in the LCSs

There were no RSD failures between the laboratory control samples.

Measurable Blank Values

There were no measurable analytes in the blank samples.

Calibration Curves

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

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General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable conditions unless otherwise noted in the comments above. Samples have not been field blank corrected unless otherwise noted in the general set comments above. This test report shall not be reproduced, except in full, without written approval of Columbia Basin Analytical Laboratories.

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

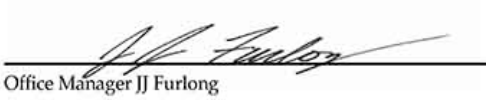


11/04/16

Scientist II DeNomy Dage

If you have any questions, please feel free to contact DeNomy Dage at ddage@rjlg.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:



11/21/16

Office Manager JJ Furlong

RJ LEE GROUP

Carl Howald IV
Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352
Client Project:
Cartridge Evaluation

Laboratory Report

NIOSH 2522
Air/Emissions on GC/TEA Analyzer
Summary Table

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-EFF-E | S16T033481	| W609129-01	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-F | S16T033482	| W609129-02	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-EFF-G | S16T033483	| W609129-03	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-H | S16T033484	| W609129-04	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-A | S16T033485	| W609129-05	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.173	0.021	
		09/23/16	10/21/16	N-Nitrosodimethylamine	2.998	0.281	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.025	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.041	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-B | S16T033486	| W609129-06	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	3.008	0.281	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.259	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.030	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.041	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-C | S16T033487	| W609129-07	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.202	0.021	
		09/23/16	10/21/16	N-Nitrosodimethylamine	3.037	0.281	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.032	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.036	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-D | S16T033489	| W609129-08	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	3.287	0.281	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.159	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.031	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.033	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-BASE-EFF | S16T033490	| W609129-09	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-BASE-IN | S16T033491	| W609129-10	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-BLANK1 | S16T033492	| W609129-11	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-BLANK2 | S16T033493	| W609129-12	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-A | S16T033494	| W609129-13	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-B | S16T033495	| W609129-14	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-EFF-C | S16T033496	| W609129-15	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-D | S16T033497	| W609129-16	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-E | S16T033498	| W609129-17	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	2.814	0.281	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.180	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.031	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.032	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-F | S16T033499	| W609129-18	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.132	0.021	
		09/23/16	10/22/16	N-Nitrosodimethylamine	2.958	0.281	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.029	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-G | S16T033500	| W609129-19	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.112	0.021	
		09/23/16	10/22/16	N-Nitrosodimethylamine	2.783	0.281	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.032	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-H | S16T033501	| W609129-20	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/22/16	N-Nitrosodimethylamine	2.666	0.281	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.128	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.025	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-BASE-EFF | S16T033502	| W609129-21	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-BASE-IN | S16T033503	| W609129-22	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-BLANK-EFF | S16T033504	| W609129-23	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-BLANK-IN | S16T033505	| W609129-24	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-A | S16T033506	| W609129-25	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-B | S16T033507	| W609129-26	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-EFF-C | S16T033508	| W609129-27	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-D | S16T033509	| W609129-28	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-E | S16T033510	| W609129-29	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-EFF-F | S16T033511	| W609129-30	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-G | S16T033512	| W609129-31	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-H | S16T033513	| W609129-32	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-IN-A | S16T033514	| W609129-33	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.904	0.280	D
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.134	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	*
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.028	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.037	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-IN-B | S16T033515	| W609129-34	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.065	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	1.140	0.224	D
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-IN-C | S16T033516	| W609129-35	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	3.249	0.280	D
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.145	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	*
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.035	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.032	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	0.027	0.022	X
16-08636-12-IN-D | S16T033517	| W609129-36	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.837	0.280	D
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.142	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.031	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.031	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-IN-E | S16T033518	| W609129-37	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.156	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	3.119	0.280	D
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.035	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.032	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-IN-F | S16T033519	| W609129-38	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.143	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.548	0.280	D
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.030	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.026	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-IN-G | S16T033520	| W609129-39	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.621	0.280	D
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.137	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.030	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.024	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-IN-H | S16T033521	| W609129-40	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.143	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.513	0.280	D
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.027	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Report Qualifiers:

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Q = Result out of method specific acceptance QC criteria
R = RPD (relative percent difference) outside accepted recovery limits
S = Spike Recovery outside accepted recovery limits
U = Analyte analyzed for but not detected
Z = Not ELAP accredited analyte
N/A = Not Applicable
ND = Not Detected



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RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodiethylamine**

CAS No.: **55-18-5**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-EFF | S16T0 | W609129-09	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-IN | S16T033 | W609129-10	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK1 | S16T033 | W609129-11	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK2 | S16T033 | W609129-12	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-A | S16T03349 | W609129-13	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/18/16	<0.022	0.022	
16-08636-12-BASE-EFF | S16T0 | W609129-21	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BLANK-EFF | S16T | W609129-23	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BLANK-IN | S16T03 | W609129-24	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-A | S16T03350 | W609129-25	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-B | S16T03350 | W609129-26	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-C | S16T03350 | W609129-27	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-D | S16T03350 | W609129-28	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-E | S16T03351 | W609129-29	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-F | S16T03351 | W609129-30	09/24/16	10/19/16	<0.022	0.022	

Report Qualifiers:

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N/A = Not Applicable
ND = Not Detected

Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodiethylamine**
CAS No.: **55-18-5**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-EFF-G | S16T03351 | W609129-31	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	<0.022	0.022	

Report Qualifiers:
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Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodimethylamine**

CAS No.: **62-75-9**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/21/16	0.173	0.021	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/21/16	3.00	0.281	D
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/21/16	0.259	0.021	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/21/16	3.01	0.281	D
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/21/16	3.04	0.281	D
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/21/16	0.202	0.021	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/21/16	0.159	0.021	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/21/16	3.29	0.281	D
16-08635-12-BASE-EFF | S16T0[illegible] | W609129-09	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-BASE-IN | S16T033[illegible] | W609129-10	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-BLANK1 | S16T033[illegible] | W609129-11	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-BLANK2 | S16T033[illegible] | W609129-12	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-A | S16T03349[illegible] | W609129-13	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.017	0.017	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/21/16	2.81	0.281	D
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/21/16	0.180	0.021	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/22/16	2.96	0.281	D
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/21/16	0.132	0.021	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/22/16	2.78	0.281	D
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/21/16	0.112	0.021	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/22/16	2.67	0.281	D
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/21/16	0.128	0.021	
16-08636-12-BASE-EFF | S16T0[illegible] | W609129-21	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.022	0.022	

Report Qualifiers:

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Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodimethylamine**
CAS No.: **62-75-9**

Sample Identification		Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-BLANK-EFF | S16T(	W609129-23	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BLANK-IN | S16T03	W609129-24	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-A | S16T03350	W609129-25	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-B | S16T03350	W609129-26	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-C | S16T03350	W609129-27	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-D | S16T03350	W609129-28	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-E | S16T03351	W609129-29	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-F | S16T03351	W609129-30	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-G | S16T03351	W609129-31	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-H | S16T03351	W609129-32	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-A | S16T033514	W609129-33	09/24/16	10/21/16	0.134	0.021	
16-08636-12-IN-A | S16T033514	W609129-33	09/24/16	10/22/16	2.90	0.280	D
16-08636-12-IN-B | S16T033515	W609129-34	09/24/16	10/21/16	0.065	0.021	
16-08636-12-IN-B | S16T033515	W609129-34	09/24/16	10/22/16	1.14	0.224	D
16-08636-12-IN-C | S16T033516	W609129-35	09/24/16	10/22/16	3.25	0.280	D
16-08636-12-IN-C | S16T033516	W609129-35	09/24/16	10/21/16	0.145	0.021	
16-08636-12-IN-D | S16T033517	W609129-36	09/24/16	10/22/16	2.84	0.280	D
16-08636-12-IN-D | S16T033517	W609129-36	09/24/16	10/21/16	0.142	0.021	
16-08636-12-IN-E | S16T033518	W609129-37	09/24/16	10/22/16	3.12	0.280	D
16-08636-12-IN-E | S16T033518	W609129-37	09/24/16	10/21/16	0.156	0.021	
16-08636-12-IN-F | S16T033519	W609129-38	09/24/16	10/21/16	0.143	0.021	
16-08636-12-IN-F | S16T033519	W609129-38	09/24/16	10/22/16	2.55	0.280	D
16-08636-12-IN-G | S16T033520	W609129-39	09/24/16	10/21/16	0.137	0.021	
16-08636-12-IN-G | S16T033520	W609129-39	09/24/16	10/22/16	2.62	0.280	D
16-08636-12-IN-H | S16T033521	W609129-40	09/24/16	10/21/16	0.143	0.021	
16-08636-12-IN-H | S16T033521	W609129-40	09/24/16	10/22/16	2.51	0.280	D

Report Qualifiers:
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ND = Not Detected

Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP



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RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodi-n-butylamine**

CAS No.: **924-16-3**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BASE-EFF | S16T0 | W609129-09	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BASE-IN | S16T033 | W609129-10	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BLANK1 | S16T033 | W609129-11	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BLANK2 | S16T033 | W609129-12	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-A | S16T03349 | W609129-13	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/18/16	<0.023	0.023	
16-08636-12-BASE-EFF | S16T0 | W609129-21	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-EFF | S16T | W609129-23	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-IN | S16T03 | W609129-24	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-A | S16T03350 | W609129-25	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-B | S16T03350 | W609129-26	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-C | S16T03350 | W609129-27	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D | S16T03350 | W609129-28	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E | S16T03351 | W609129-29	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-F | S16T03351 | W609129-30	09/24/16	10/19/16	<0.021	0.021	

Report Qualifiers:

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U = Analyte analyzed for but not detected
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N/A = Not Applicable
ND = Not Detected

Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodi-n-butylamine**

CAS No.: **924-16-3**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-EFF-G | S16T03351 | W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	<0.021	0.021	*
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	<0.021	0.021	*
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	<0.021	0.021	

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RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodi-n-propylamine**

CAS No.: **621-64-7**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-EFF | S16T0 | W609129-09	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-IN | S16T033 | W609129-10	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK1 | S16T033 | W609129-11	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK2 | S16T033 | W609129-12	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-A | S16T03349 | W609129-13	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/18/16	<0.022	0.022	
16-08636-12-BASE-EFF | S16T0 | W609129-21	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-EFF | S16T | W609129-23	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-IN | S16T03 | W609129-24	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-A | S16T03350 | W609129-25	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-B | S16T03350 | W609129-26	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-C | S16T03350 | W609129-27	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D | S16T03350 | W609129-28	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E | S16T03351 | W609129-29	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-F | S16T03351 | W609129-30	09/24/16	10/19/16	<0.021	0.021	

Report Qualifiers:

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Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosodi-n-propylamine**

CAS No.: **621-64-7**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-EFF-G | S16T03351 | W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	<0.021	0.021	

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RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosomethylethylamine**

CAS No.: **10595-95-6**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/18/16	0.025	0.022	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/18/16	0.030	0.022	
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/18/16	0.032	0.022	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/18/16	0.031	0.022	
16-08635-12-BASE-EFF | S16T0 | W609129-09	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-IN | S16T033 | W609129-10	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK1 | S16T033 | W609129-11	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK2 | S16T033 | W609129-12	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-A | S16T03349 | W609129-13	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/18/16	0.031	0.022	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/18/16	0.029	0.022	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/18/16	0.032	0.022	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/18/16	0.025	0.022	
16-08636-12-BASE-EFF | S16T0 | W609129-21	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-EFF | S16T | W609129-23	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-IN | S16T03 | W609129-24	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-A | S16T03350 | W609129-25	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-B | S16T03350 | W609129-26	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-C | S16T03350 | W609129-27	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D | S16T03350 | W609129-28	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E | S16T03351 | W609129-29	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-F | S16T03351 | W609129-30	09/24/16	10/19/16	<0.021	0.021	

Report Qualifiers:

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Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosomethylethylamine**

CAS No.: **10595-95-6**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-EFF-G | S16T03351 | W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	0.028	0.021	
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	0.035	0.021	
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	0.031	0.021	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	0.035	0.021	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	0.030	0.021	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	0.030	0.021	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	0.027	0.021	

Report Qualifiers:
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D = Analyte analyzed in a dilution
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E = Report concentration was above the instrument calibration range
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ND = Not Detected

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RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosomorpholine**

CAS No.: **59-89-2**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/18/16	0.041	0.022	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/18/16	0.041	0.022	
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/18/16	0.036	0.022	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/18/16	0.033	0.022	
16-08635-12-BASE-EFF | S16T0 | W609129-09	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-IN | S16T033 | W609129-10	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK1 | S16T033 | W609129-11	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK2 | S16T033 | W609129-12	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-A | S16T03349 | W609129-13	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/18/16	0.032	0.022	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/18/16	<0.022	0.022	
16-08636-12-BASE-EFF | S16T0 | W609129-21	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-EFF | S16T | W609129-23	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-IN | S16T03 | W609129-24	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-A | S16T03350 | W609129-25	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-B | S16T03350 | W609129-26	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-C | S16T03350 | W609129-27	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D | S16T03350 | W609129-28	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E | S16T03351 | W609129-29	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-F | S16T03351 | W609129-30	09/24/16	10/19/16	<0.021	0.021	

Report Qualifiers:

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Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosomorpholine**

CAS No.: **59-89-2**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-EFF-G | S16T03351 | W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	0.037	0.021	
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	0.032	0.021	
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	0.031	0.021	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	0.032	0.021	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	0.026	0.021	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	0.024	0.021	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	<0.021	0.021	

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Laboratory Report

NIOSH 2522

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Washington River Protection
Solutions, LLC
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RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosopiperidine**
CAS No.: **100-75-4**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E | S16T03348 | W609129-01	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-F | S16T03348 | W609129-02	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-G | S16T03348 | W609129-03	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-H | S16T03348 | W609129-04	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-A | S16T033485 | W609129-05	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-B | S16T033486 | W609129-06	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-C | S16T033487 | W609129-07	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-D | S16T033489 | W609129-08	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BASE-EFF | S16T0 | W609129-09	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BASE-IN | S16T033 | W609129-10	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BLANK1 | S16T033 | W609129-11	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BLANK2 | S16T033 | W609129-12	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-A | S16T03349 | W609129-13	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-B | S16T03349 | W609129-14	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-C | S16T03349 | W609129-15	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-D | S16T03349 | W609129-16	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-E | S16T033498 | W609129-17	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-F | S16T033499 | W609129-18	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-G | S16T033500 | W609129-19	09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-H | S16T033501 | W609129-20	09/23/16	10/18/16	<0.023	0.023	
16-08636-12-BASE-EFF | S16T0 | W609129-21	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BASE-IN | S16T033 | W609129-22	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-EFF | S16T | W609129-23	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-BLANK-IN | S16T03 | W609129-24	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-A | S16T03350 | W609129-25	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-B | S16T03350 | W609129-26	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-C | S16T03350 | W609129-27	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D | S16T03350 | W609129-28	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E | S16T03351 | W609129-29	09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-F | S16T03351 | W609129-30	09/24/16	10/19/16	<0.021	0.021	

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Report Template: WRPS_Nitrosamines 2.1.rpt

Approved: 11/4/16 19:26
Report Time Stamp: 11/21/16 17:34

RJ LEE GROUP

Laboratory Report

NIOSH 2522

Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

RJ Lee Group No.: W609129
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Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosopiperidine**
CAS No.: **100-75-4**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-EFF-G | S16T03351 | W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	<0.021	0.021	

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RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Client Project:
Cartridge Evaluation

Analyte: **N-Nitrosopyrrolidine**

CAS No.: **930-55-2**

Sample Identification Client Sample ID	RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E	S16T03348	W609129-01	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F	S16T03348	W609129-02	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-G	S16T03348	W609129-03	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-H	S16T03348	W609129-04	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-A	S16T033485	W609129-05	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-B	S16T033486	W609129-06	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-C	S16T033487	W609129-07	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-D	S16T033489	W609129-08	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-EFF	S16T0	W609129-09	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-IN	S16T033	W609129-10	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK1	S16T033	W609129-11	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BLANK2	S16T033	W609129-12	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-A	S16T03349	W609129-13	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-B	S16T03349	W609129-14	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-C	S16T03349	W609129-15	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-D	S16T03349	W609129-16	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E	S16T033498	W609129-17	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-F	S16T033499	W609129-18	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-G	S16T033500	W609129-19	09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-H	S16T033501	W609129-20	09/23/16	10/18/16	<0.022	0.022	
16-08636-12-BASE-EFF	S16T0	W609129-21	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BASE-IN	S16T033	W609129-22	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BLANK-EFF	S16T	W609129-23	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BLANK-IN	S16T03	W609129-24	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-A	S16T03350	W609129-25	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-B	S16T03350	W609129-26	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-C	S16T03350	W609129-27	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-D	S16T03350	W609129-28	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-E	S16T03351	W609129-29	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-F	S16T03351	W609129-30	09/24/16	10/19/16	<0.022	0.022	

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Approved: 11/4/16 19:26
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RJ Lee Group No.: W609129
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Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

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Cartridge Evaluation

Analyte: **N-Nitrosopyrrolidine**

CAS No.: **930-55-2**

Sample Identification Client Sample ID | RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
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16-08636-12-EFF-H | S16T03351 | W609129-32	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-A | S16T033514 | W609129-33	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-B | S16T033515 | W609129-34	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-C | S16T033516 | W609129-35	09/24/16	10/19/16	0.027	0.022	X
16-08636-12-IN-D | S16T033517 | W609129-36	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-E | S16T033518 | W609129-37	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-F | S16T033519 | W609129-38	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-G | S16T033520 | W609129-39	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-H | S16T033521 | W609129-40	09/24/16	10/19/16	<0.022	0.022	

Report Qualifiers:
A = Target Analyte media breakthrough suspect, see analytical report
B = Analyte detected in the associated blank
D = Analyte analyzed in a dilution
d = Data that exceeds the RSD criteria set by the SOP
E = Report concentration was above the instrument calibration range
H = Holding times for preparation or analysis exceeded
I = Analyte detected below quantitation limits, concentration is estimated
L = Sample condition at receipt out of compliance with method defined conditions
P = Library spectrum match, rsd >80% w RT match
Q = Result out of method specific acceptance QC criteria
R = RPD (relative percent difference) outside accepted recovery limits
S = Spike Recovery outside accepted recovery limits
U = Analyte analyzed for but not detected
Z = Not ELAP accredited analyte
N/A = Not Applicable
ND = Not Detected

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Carl Howald IV

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

Client Project:
Cartridge Evaluation

Quality Control

NIOSH 2522

RJ Lee Group No.: W609129
Samples Received: 09/27/16
Report Date: 11/21/16
COC No.: 20162968
Extraction Date: 09/30/16

Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	10/18/16	0.200	0.186	0.90	0.207	103	4.32	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/18/16	0.200	0.190	0.92	0.208	103	3.52	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/21/16	0.200	0.192	0.95	0.201	100	1.23	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/21/16	0.200	0.201	1.02	0.196	97.8	2.42	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/21/16	0.200	0.190	0.93	0.205	102	3.37	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/22/16	0.200	0.197	0.97	0.203	101	1.22	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/18/16	0.200	0.177	0.84	0.212	106	5.71	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/18/16	0.200	0.189	0.92	0.206	103	2.50	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/21/16	0.200	0.191	0.96	0.200	99.5	1.84	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/21/16	0.200	0.191	0.99	0.193	96.6	3.30	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/21/16	0.200	0.184	0.89	0.207	103	3.95	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/22/16	0.200	0.182	0.89	0.204	102	2.99	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/18/16	0.200	0.180	0.89	0.203	101	1.79	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/18/16	0.200	0.190	0.95	0.201	100	0.265	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/21/16	0.200	0.190	0.95	0.201	100	0.279	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/21/16	0.200	0.201	1.03	0.194	97.3	2.48	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/21/16	0.200	0.183	0.92	0.199	99.7	1.10	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/22/16	0.200	0.197	0.97	0.203	102	2.43	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/18/16	0.200	0.188	0.91	0.207	103	3.50	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/18/16	0.200	0.195	0.96	0.203	101	1.44	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/21/16	0.200	0.195	0.97	0.202	101	0.969	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/21/16	0.200	0.202	1.04	0.194	97.0	2.98	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/21/16	0.200	0.191	0.94	0.202	101	3.56	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/22/16	0.200	0.199	0.97	0.204	102	2.01	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/18/16	0.200	0.187	0.89	0.210	105	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/18/16	0.200	0.193	0.94	0.205	102	2.00	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/21/16	0.200	0.199	0.98	0.203	101	1.29	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/21/16	0.200	0.201	1.03	0.195	97.4	2.67	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/21/16	0.200	0.187	0.93	0.200	100	3.43	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/22/16	0.200	0.198	0.97	0.203	101	1.33	
N-Nitrosomorpholine	59-89-2	LCS-1	10/18/16	0.200	0.192	0.91	0.211	105	5.55	
N-Nitrosomorpholine	59-89-2	LCS-1	10/18/16	0.200	0.197	0.97	0.203	101	1.34	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosomorpholine	59-89-2	LCS-1	10/21/16	0.200	0.195	0.97	0.201	100	1.15	
N-Nitrosomorpholine	59-89-2	LCS-1	10/21/16	0.200	0.199	1.04	0.192	95.9	4.13	
N-Nitrosomorpholine	59-89-2	LCS-1	10/21/16	0.200	0.186	0.93	0.201	101	3.51	
N-Nitrosomorpholine	59-89-2	LCS-1	10/22/16	0.200	0.195	0.97	0.202	101	0.798	
N-Nitrosopiperidine	100-75-4	LCS-1	10/18/16	0.200	0.182	0.88	0.206	103	3.79	
N-Nitrosopiperidine	100-75-4	LCS-1	10/18/16	0.200	0.194	0.95	0.205	102	2.27	
N-Nitrosopiperidine	100-75-4	LCS-1	10/21/16	0.200	0.195	0.97	0.202	101	0.908	
N-Nitrosopiperidine	100-75-4	LCS-1	10/21/16	0.200	0.199	1.04	0.191	95.6	3.96	
N-Nitrosopiperidine	100-75-4	LCS-1	10/21/16	0.200	0.185	0.93	0.199	99.6	2.84	
N-Nitrosopiperidine	100-75-4	LCS-1	10/22/16	0.200	0.195	0.96	0.204	102	1.61	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/18/16	0.200	0.191	0.90	0.212	106	6.40	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/18/16	0.200	0.190	0.92	0.207	103	3.22	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/21/16	0.200	0.195	0.99	0.196	98.2	2.62	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/21/16	0.200	0.199	1.04	0.192	95.6	3.97	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/21/16	0.200	0.187	0.92	0.203	102	2.82	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/22/16	0.200	0.193	0.96	0.202	101	1.07	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/18/16	0.200	0.182	0.90	0.203	101	4.32	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/18/16	0.200	0.184	0.92	0.201	100	3.52	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/21/16	0.200	0.193	0.95	0.202	101	1.23	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/21/16	0.200	0.204	1.02	0.199	99.6	2.42	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/21/16	0.200	0.189	0.93	0.204	102	3.37	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/22/16	0.200	0.194	0.97	0.200	99.7	1.22	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/18/16	0.200	0.167	0.84	0.200	99.5	5.71	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/18/16	0.200	0.181	0.92	0.198	98.6	2.50	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/21/16	0.200	0.196	0.96	0.205	102	1.84	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/21/16	0.200	0.198	0.99	0.200	100	3.30	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/21/16	0.200	0.180	0.89	0.202	101	3.95	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/22/16	0.200	0.173	0.89	0.194	96.6	2.99	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/18/16	0.200	0.179	0.89	0.202	101	1.79	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/18/16	0.200	0.189	0.95	0.200	99.8	0.265	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/21/16	0.200	0.189	0.95	0.200	99.8	0.279	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/21/16	0.200	0.208	1.03	0.201	101	2.48	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/21/16	0.200	0.186	0.92	0.203	101	1.10	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/22/16	0.200	0.196	0.97	0.202	101	2.43	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/18/16	0.200	0.184	0.91	0.202	101	3.50	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/18/16	0.200	0.192	0.96	0.200	100	1.44	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/21/16	0.200	0.194	0.97	0.201	100	0.969	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/21/16	0.200	0.209	1.04	0.201	100.0	2.98	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/21/16	0.200	0.194	0.94	0.205	103	3.56	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/22/16	0.200	0.191	0.97	0.196	98.0	2.01	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/18/16	0.200	0.179	0.89	0.201	100	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/18/16	0.200	0.189	0.94	0.200	99.8	2.00	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/21/16	0.200	0.197	0.98	0.201	100	1.29	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/21/16	0.200	0.206	1.03	0.200	99.8	2.67	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/21/16	0.200	0.193	0.93	0.207	103	3.43	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/22/16	0.200	0.193	0.97	0.198	98.8	1.33	
N-Nitrosomorpholine	59-89-2	LCS-2	10/18/16	0.200	0.184	0.91	0.202	101	5.55	
N-Nitrosomorpholine	59-89-2	LCS-2	10/18/16	0.200	0.195	0.97	0.201	100	1.34	
N-Nitrosomorpholine	59-89-2	LCS-2	10/21/16	0.200	0.197	0.97	0.203	101	1.15	
N-Nitrosomorpholine	59-89-2	LCS-2	10/21/16	0.200	0.208	1.04	0.201	100	4.13	
N-Nitrosomorpholine	59-89-2	LCS-2	10/21/16	0.200	0.191	0.93	0.206	103	3.51	
N-Nitrosomorpholine	59-89-2	LCS-2	10/22/16	0.200	0.194	0.97	0.201	100	0.798	
N-Nitrosopiperidine	100-75-4	LCS-2	10/18/16	0.200	0.179	0.88	0.203	101	3.79	
N-Nitrosopiperidine	100-75-4	LCS-2	10/18/16	0.200	0.185	0.95	0.195	97.6	2.27	
N-Nitrosopiperidine	100-75-4	LCS-2	10/21/16	0.200	0.192	0.97	0.199	99.0	0.908	
N-Nitrosopiperidine	100-75-4	LCS-2	10/21/16	0.200	0.211	1.04	0.203	101	3.96	
N-Nitrosopiperidine	100-75-4	LCS-2	10/21/16	0.200	0.192	0.93	0.207	103	2.84	
N-Nitrosopiperidine	100-75-4	LCS-2	10/22/16	0.200	0.192	0.96	0.201	100.0	1.61	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/18/16	0.200	0.181	0.90	0.201	100	6.40	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/18/16	0.200	0.178	0.92	0.194	97.1	3.22	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/21/16	0.200	0.205	0.99	0.206	103	2.62	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/21/16	0.200	0.210	1.04	0.202	101	3.97	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/21/16	0.200	0.187	0.92	0.203	102	2.82	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/22/16	0.200	0.189	0.96	0.198	98.9	1.07	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/18/16	0.200	0.171	0.90	0.190	95.2	4.32	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/18/16	0.200	0.177	0.92	0.193	96.4	3.52	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/21/16	0.200	0.189	0.95	0.198	98.7	1.23	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/21/16	0.200	0.210	1.02	0.205	103	2.42	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/21/16	0.200	0.179	0.93	0.193	96.1	3.37	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/22/16	0.200	0.192	0.97	0.198	98.9	1.22	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/18/16	0.200	0.158	0.84	0.189	94.5	5.71	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/18/16	0.200	0.181	0.92	0.198	98.5	2.50	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/21/16	0.200	0.189	0.96	0.198	98.4	1.84	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/21/16	0.200	0.204	0.99	0.206	103	3.30	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/21/16	0.200	0.170	0.89	0.191	95.6	3.95	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/22/16	0.200	0.182	0.89	0.204	102	2.99	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/18/16	0.200	0.174	0.89	0.196	97.9	1.79	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/18/16	0.200	0.189	0.95	0.200	99.9	0.265	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/21/16	0.200	0.190	0.95	0.201	99.9	0.279	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/21/16	0.200	0.211	1.03	0.204	102	2.48	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/21/16	0.200	0.182	0.92	0.198	99.1	1.10	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/22/16	0.200	0.189	0.97	0.195	97.2	2.43	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/18/16	0.200	0.175	0.91	0.192	96.2	3.50	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/18/16	0.200	0.190	0.96	0.198	98.6	1.44	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/21/16	0.200	0.192	0.97	0.199	98.9	0.969	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/21/16	0.200	0.215	1.04	0.206	103	2.98	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/21/16	0.200	0.182	0.94	0.193	96.0	3.56	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/22/16	0.200	0.195	0.97	0.200	100.0	2.01	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/18/16	0.200	0.170	0.89	0.191	95.0	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/18/16	0.200	0.185	0.94	0.196	98.1	2.00	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/21/16	0.200	0.194	0.98	0.198	98.6	1.29	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/21/16	0.200	0.212	1.03	0.205	103	2.67	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/21/16	0.200	0.180	0.93	0.193	96.6	3.43	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/22/16	0.200	0.195	0.97	0.200	99.7	1.33	
N-Nitrosomorpholine	59-89-2	LCS-3	10/18/16	0.200	0.172	0.91	0.189	94.0	5.55	
N-Nitrosomorpholine	59-89-2	LCS-3	10/18/16	0.200	0.191	0.97	0.197	98.6	1.34	
N-Nitrosomorpholine	59-89-2	LCS-3	10/21/16	0.200	0.192	0.97	0.198	98.7	1.15	
N-Nitrosomorpholine	59-89-2	LCS-3	10/21/16	0.200	0.216	1.04	0.208	104	4.13	
N-Nitrosomorpholine	59-89-2	LCS-3	10/21/16	0.200	0.178	0.93	0.192	96.3	3.51	
N-Nitrosomorpholine	59-89-2	LCS-3	10/22/16	0.200	0.192	0.97	0.199	99.1	0.798	
N-Nitrosopiperidine	100-75-4	LCS-3	10/18/16	0.200	0.169	0.88	0.191	95.7	3.79	
N-Nitrosopiperidine	100-75-4	LCS-3	10/18/16	0.200	0.190	0.95	0.200	100	2.27	
N-Nitrosopiperidine	100-75-4	LCS-3	10/21/16	0.200	0.194	0.97	0.201	100	0.908	
N-Nitrosopiperidine	100-75-4	LCS-3	10/21/16	0.200	0.215	1.04	0.207	103	3.96	
N-Nitrosopiperidine	100-75-4	LCS-3	10/21/16	0.200	0.181	0.93	0.195	97.4	2.84	
N-Nitrosopiperidine	100-75-4	LCS-3	10/22/16	0.200	0.189	0.96	0.197	98.4	1.61	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/18/16	0.200	0.168	0.90	0.187	93.4	6.40	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/18/16	0.200	0.182	0.92	0.199	99.4	3.22	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/21/16	0.200	0.197	0.99	0.198	98.9	2.62	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/21/16	0.200	0.215	1.04	0.207	103	3.97	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/21/16	0.200	0.178	0.92	0.193	96.7	2.82	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/22/16	0.200	0.192	0.96	0.201	100	1.07	
N-Nitrosodiethylamine	55-18-5	MB	10/18/16		0.00	0.90	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/19/16		0.00	0.92	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/21/16		0.00	0.95	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/21/16		0.00	1.02	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/21/16		0.00	0.93	0.00			

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/18/16		0.00	0.84	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/19/16		0.00	0.92	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/21/16		0.00	0.96	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/21/16		0.00	0.99	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/21/16		0.00	0.89	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/22/16		0.00	0.89	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/18/16		0.00	0.89	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/19/16		0.00	0.95	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/21/16		0.00	0.95	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/21/16		0.00	1.03	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/21/16		0.00	0.92	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/18/16		0.00	0.91	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/19/16		0.00	0.96	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/21/16		0.00	0.97	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/21/16		0.00	0.94	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/18/16		0.00	0.89	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/19/16		0.00	0.94	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/21/16		0.00	0.98	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/21/16		0.00	1.03	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/21/16		0.00	0.93	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/18/16		0.00	0.91	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/19/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/21/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/21/16		0.00	0.93	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/18/16		0.00	0.88	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/19/16		0.00	0.95	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/21/16		0.00	0.97	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/21/16		0.00	0.93	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/22/16		0.00	0.96	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/18/16		0.00	0.90	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/19/16		0.00	0.92	0.00			

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosopyrrolidine	930-55-2	MB	10/21/16		0.00	0.99	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/21/16		0.00	0.92	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/22/16		0.00	0.96	0.00			
N-Nitrosodiethylamine	55-18-5	MRL	10/18/16	0.020	0.020	0.90	0.022	109		
N-Nitrosodiethylamine	55-18-5	MRL	10/18/16	0.020	0.018	0.92	0.020	101		
N-Nitrosodiethylamine	55-18-5	MRL	10/21/16	0.020	0.017	0.95	0.018	91.8		
N-Nitrosodiethylamine	55-18-5	MRL	10/21/16	0.020	0.019	1.02	0.019	93.5		
N-Nitrosodiethylamine	55-18-5	MRL	10/21/16	0.020	0.022	0.93	0.024	119		
N-Nitrosodiethylamine	55-18-5	MRL	10/22/16	0.020	0.022	0.97	0.023	112		
N-Nitrosodimethylamine	62-75-9	MRL	10/18/16	0.020	0.022	0.84	0.026	132		
N-Nitrosodimethylamine	62-75-9	MRL	10/18/16	0.020	0.023	0.92	0.025	126		
N-Nitrosodimethylamine	62-75-9	MRL	10/21/16	0.020	0.017	0.96	0.018	92.2		
N-Nitrosodimethylamine	62-75-9	MRL	10/21/16	0.020	0.022	0.99	0.022	112		
N-Nitrosodimethylamine	62-75-9	MRL	10/21/16	0.020	0.021	0.89	0.024	119		
N-Nitrosodimethylamine	62-75-9	MRL	10/22/16	0.020	0.021	0.89	0.024	118		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/18/16	0.020	0.020	0.89	0.023	115		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/18/16	0.020	0.022	0.95	0.023	117		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/21/16	0.020	0.019	0.95	0.020	101		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/21/16	0.020	0.020	1.03	0.019	93.7		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/21/16	0.020	0.020	0.92	0.022	112		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/22/16	0.020	0.020	0.97	0.021	105		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/18/16	0.020	0.020	0.91	0.022	109		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/18/16	0.020	0.020	0.96	0.021	107		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/21/16	0.020	0.018	0.97	0.019	93.3		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/21/16	0.020	0.018	1.04	0.017	83.3		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/21/16	0.020	0.022	0.94	0.023	114		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/22/16	0.020	0.019	0.97	0.020	99.7		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/18/16	0.020	0.021	0.89	0.024	120		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/18/16	0.020	0.021	0.94	0.022	108		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/21/16	0.020	0.018	0.98	0.018	87.6		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/21/16	0.020	0.019	1.03	0.018	92.3		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/21/16	0.020	0.022	0.93	0.024	118		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/22/16	0.020	0.022	0.97	0.023	113		
N-Nitrosomorpholine	59-89-2	MRL	10/18/16	0.020	0.022	0.91	0.024	122		
N-Nitrosomorpholine	59-89-2	MRL	10/18/16	0.020	0.021	0.97	0.022	109		
N-Nitrosomorpholine	59-89-2	MRL	10/21/16	0.020	0.017	0.97	0.018	87.7		
N-Nitrosomorpholine	59-89-2	MRL	10/21/16	0.020	0.020	1.04	0.019	94.7		
N-Nitrosomorpholine	59-89-2	MRL	10/21/16	0.020	0.022	0.93	0.024	120		

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosomorpholine	59-89-2	MRL	10/22/16	0.020	0.021	0.97	0.022	111		
N-Nitrosopiperidine	100-75-4	MRL	10/18/16	0.020	0.018	0.88	0.020	102		
N-Nitrosopiperidine	100-75-4	MRL	10/18/16	0.020	0.024	0.95	0.025	123		
N-Nitrosopiperidine	100-75-4	MRL	10/21/16	0.020	0.019	0.97	0.020	97.9		
N-Nitrosopiperidine	100-75-4	MRL	10/21/16	0.020	0.019	1.04	0.018	89.6		
N-Nitrosopiperidine	100-75-4	MRL	10/21/16	0.020	0.020	0.93	0.022	108		
N-Nitrosopiperidine	100-75-4	MRL	10/22/16	0.020	0.022	0.96	0.023	114		
N-Nitrosopyrrolidine	930-55-2	MRL	10/18/16	0.020	0.021	0.90	0.023	114		
N-Nitrosopyrrolidine	930-55-2	MRL	10/18/16	0.020	0.021	0.92	0.023	115		
N-Nitrosopyrrolidine	930-55-2	MRL	10/21/16	0.020	0.018	0.99	0.018	92.2		
N-Nitrosopyrrolidine	930-55-2	MRL	10/21/16	0.020	0.020	1.04	0.019	93.0		
N-Nitrosopyrrolidine	930-55-2	MRL	10/21/16	0.020	0.021	0.92	0.023	113		
N-Nitrosopyrrolidine	930-55-2	MRL	10/22/16	0.020	0.021	0.96	0.022	110		

Report Qualifiers:
A = Target Analyte media breakthrough suspect, see analytical report
B = Analyte detected in the associated blank
D = Analyte analyzed in a dilution
d = Data that exceeds the RSD criteria set by the SOP
E = Report concentration was above the instrument calibration range
H = Holding times for preparation or analysis exceeded
I = Analyte detected below quantitation limits, concentration is estimated
L = Sample condition at receipt out of compliance with method defined conditions
P = Library spectrum match, rsd >80% w RT match
Q = Result out of method specific acceptance QC criteria
R = RPD (relative percent difference) outside accepted recovery limits
S = Spike Recovery outside accepted recovery limits
U = Analyte analyzed for but not detected
Z = Not ELAP accredited analyte
N/A = Not Applicable
ND = Not Detected



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These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any samples. Unless otherwise noted, samples were received in an acceptable condition. This laboratory operates in accordance with ISO 17025 guidelines, and holds limited scopes of accreditation under ORELAP Lab Code 4061 AIHA-LAP, LLC Lab ID 178656 EPA ID WA01195 and WA DOE Lab ID C858. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items tested or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162968
		Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV W609129	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20	
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.	Temp. 2.6.6
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033481	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-E	N/A
	S16T033482	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-F	N/A
	S16T033483	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-G	N/A
	S16T033484	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-H	N/A
	S16T033485	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-A	N/A
	S16T033486	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-B	N/A
	S16T033487	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-C	N/A
	S16T033489	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-D	N/A
	S16T033490	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-BASE-EFF	N/A
	S16T033491	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-BASE-IN	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 5

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon L Holder	9-27-16 0930	RE Rogers	9-27-16 0930
RE Rogers	9-27-16 1230	RJ Lee group Amber Puterbaugh	9-27-16 12:30

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Dennese Smith	11/02/16 10:25

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162968
		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. Temp. 26.9
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033492	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-BLANK1	N/A
	S16T033493	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-BLANK2	N/A
	S16T033494	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-A	N/A
	S16T033495	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-B	N/A
	S16T033496	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-C	N/A
	S16T033497	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-EFF-D	N/A
	S16T033498	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-E	N/A
	S16T033499	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-F	N/A
	S16T033500	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-G	N/A
	S16T033501	VA	9/23/16		Thermosorb-N	Nitrosamines 16-08635-12-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 5

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
SLaron Walden	9-27-16 0930	RE Rogers	9-27-16 0930
RE Rogers	9-27-16 1230	Amber Puterbaugh (RJ Lee Group)	9-27-16 12:30

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Denrese Smith	11/02/16 10:25

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20162968
		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. Temp. 26.1
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033502	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-BASE-EFF	N/A
	S16T033503	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-BASE-IN	N/A
	S16T033504	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-BLANK-EFF	N/A
	S16T033505	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-BLANK-IN	N/A
	S16T033506	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-A	N/A
	S16T033507	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-B	N/A
	S16T033508	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-C	N/A
	S16T033509	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-D	N/A
	S16T033510	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-E	N/A
	S16T033511	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 5

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Sharon Holbrook	9-27-16 0930	RE Rogers	9-27-16 0930
RE Rogers	9-27-16 1230	Amber Peterbaugh / RJ Lee Group	9-27-16 12:30

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Denrese Smith	11/02/16 10:25

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20162968
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203003/CB20
Project Title: CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. Temp. 27.3
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T033512	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-G	N/A
	S16T033513	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-EFF-H	N/A
	S16T033514	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-A	N/A
	S16T033515	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-B	N/A
	S16T033516	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-C	N/A
	S16T033517	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-D	N/A
	S16T033518	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-E	N/A
	S16T033519	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-F	N/A
	S16T033520	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-G	N/A
	S16T033521	VA	9/24/16		Thermosorb-N	Nitrosamines 16-08636-12-IN-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 5

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Shannon L Holden	9-27-16 0930	RE Rogers	9-27-16 0930
RE Rogers	9-27-16 1230	Amber Puterbaugh FOR LEE GRAUP	9-27-16 12:30

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Dennese Smith	11/02/16 10:25

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

Appendix D

Data Reduction Steps

Appendix D

Data Reduction Steps

1. Only chemicals in the current Chemicals of Potential Concern (COPC) list were included in the calculated data. Nitrous oxide and methanol were not measured in the study. Any other missing COPCs were analyzed as "Tentatively Identified Compounds."
2. The COPCs are ranked in the order of their COPC number. Within the data section for each COPC, data are ranked in the order of survey (1 and 2). Within every survey, data are ranked in the order of inlet and outlet and following the time sequence.
3. Except for mercury, COPC concentrations were converted into parts per million (ppm) using their molecular weights and corresponding flow rates after volume correction[16] as shown in the following equation:

$$C = 24.45 \frac{r}{M\,V}$$

   where *C* is the concentration of COPC in ppmv; *r* is the analytical result with units of µg/sample (if the analytical result unit is expressed in "mg/sample," the value of *C* needs to be multiplied by 1000; if the analytical result unit is in "ng/sample," the value of *C* needs to be divided by 1000); *V* is the collected volume in 2 hours expressed in liters; *M* is the molecular weight of COPC expressed as g/mol. When the ratio between concentration and the corresponding Occupational Exposure Limit (OEL) is larger than 10%, the fraction is shown in red.
4. The reported volume measurements in Appendix C were made via DryCal devices placed downstream of each sample media tube. This allowed precise volume measurements through each of the tubes. However, to perform the concentration conversion to ppm, the "actual" volumetric values required conversion to standard temperature and pressure conditions.

   Ideal gas behavior was assumed for these volume corrections, and standard temperatures and pressures were assumed to be 298 K ($T_{standard}$) and 760 Torr ($P_{standard}$), respectively. For temperatures, the reported upstream temperatures for each time period were used ($T_{upstream}$, in Kelvin), and the temperature correction factor (i.e., the factor multiplied by each reported volume) was simply $T_{standard}/T_{upstream}$.

   For the pressure corrections, additional pressure drop information was gathered so that the pressure at the point of the DryCal device could be calculated. Each time step had reported upstream pressures ($P_{upstream}$, or upstream of the respirator cartridges). Therefore, pressure drop measurements across the respirator cartridge and each sample media tube were performed offline to gather the additional information necessary for the correction.

   The average reported pressure drop reading for the respirator cartridge ($P_{cartridge}$) tested was 3.2 inches of water column (WC). The pressure drop measurements across the individual sample tubes are shown in the table below (all expressed as inches of WC).

   The average pressure drops were then used in a pressure correction factor for the reported volumes. Note that all pressure values were first converted to units of Torr. For measurements made at the inlet of the respirator cartridge the pressure correction factor is $(P_{upstream} - P_{tube}) \div P_{standard}$.

[16] Based on the standard conditions of P = 101,325 Pa, R = 8.314 J/(mol.K), and T = 298.15 K.

For measurements made at the outlet of the respirator cartridge the pressure correction factor is $(P_{upstream} - P_{cartridge} - P_{tube}) \div P_{standard}$.

Tube Location	First Measure (inches of WC, tube on cartridge inlet side)	Second Measure (inches of WC, tube on cartridge outlet side)	Average of Both Measurements (P_{tube}, inches of WC)
A	5.0	12.4	8.7
B	6.9	7.2	7.1
C	2.3	2.5	2.4
D	0.8	0.8	0.8
E	1.9	2.1	2.0
F	3.8	6.8	5.3
G	1.6	1.7	1.7
H	7.7	6.5	7.1
I	5.2	4.0	4.6
J	15.9	16.3	16.1
K	10.1	9.7	9.9

An example calculation of the correction factors follows. For a given time period, assume that the reported upstream pressure ($P_{upstream}$) was 734 Torr and the corresponding temperature ($T_{upstream}$) was 85.9ºF (or 302.9 K). Here, for tube location 'A' and upstream of the respirator cartridge, the corresponding temperature correction factor would be 0.984, and the pressure correction factor for the respirator cartridge outlet would be 0.944. When multiplied, these two factors equal 0.929, which would be the overall correction to the reported volume measurement.

5. The analytical detection limit—or reporting limit in some cases—for every COPC was obtained from the raw analytical data. Here, the average flow rate was used to calculate the approximate analytical detection limit as the percentage of the OEL for each COPC. Because the flow rates vary, the calculated concentrations were different for each point, even though some of the results are less than the detection limit (DL) in the original reading. The last column in the tables below indicate if the original readings were less than the DL or not.

    - For ammonia and mercury, only the results obtained from using method of total vapor of ammonia and mercury were used.
    - For furan, results from the furan tube instead of Carbotrap 300 TDU were used. For acetonitrile, results from the Carbotrap 300 TDU tube were used. For butanal, the results from the Carbotrap 300 TDU tube instead of the aldehydes tube were used. For pyridine and 2,4-dimethylpyridine, the results from the Carbotrap 300 TDU tube were used.
    - For N-nitrosodimethylamine and other nitrosamines, data values above analytical DLs for the same time and position were added together because the original sample was diluted into three samples for measurements. This same rule applies to 1,3-Butadiene. The results in the plots and tables reflect the sum of results.

6. Analytical results frequently have data qualifier flags documented for specific sample analyses. Depending on the data qualifier, specific data may be considered for deletion or removal from the analysis, or results described with appropriate clarifying language to indicate whether there are possible limitations to the data. The following flags were found to be associated with at least one of the COPC compounds analyzed through this effort. Here, key qualifier codes are given, along with their definitions and how they are being handled with the cartridge testing analysis. This list is not inclusive of all flags that the analytical team may assign, but is inclusive of the flags found associated with the data set compiled within this report.

Action	Flag	Flag Description
Retain (result is treated in the analysis as a valid data point)	J	The "J" flag is applied to results that are considered estimates. Some examples of when a "J" flag are applied include (but are not limited to): • Results with concentrations greater than or equal to the method detection limit but less than the RL. When results are reported based on the RL, the "J" is removed from the reported data. Raw data are left as received from the chemist. • Unknown constituents—tentatively identified compounds (TIC) or positively identified compounds.
	E	The "E" flag is applied to each analyte that exceeded the calibration range of the instrument.
	U	The "U" flag is applied to analytes that were analyzed for, but were not detected, or were detected below the method detection limit. If results are reported based on RL, this flag is removed from the reported data. Raw data are left as received from the chemist.
	D	The "D" flag is applied to all analytes in a sample that were diluted prior to analysis.
Retain/Evaluate (Result is treated in the analysis as a valid data point, but evaluated on a case-by-case basis to determine whether clarification is needed in the analysis report to document the uncertainty or potential limitations of the data)	L	The "L" flag is applied to analyte results (both detected and not detected) within a sample batch that included a low level standard with a percent recovery for that analyte that was outside the analytical method specified range.
	Y	The "Y" flag is a user-defined flag and is applied to results that require written descriptions or qualifying comments. This flag is used by the chemist, Project Coordinator, or other technical authority to identify data that is questionable or may be inaccurate because of interferences, sampling problems, sample collection media (e.g., tubes or summa canisters) certification failures, or instrumentation limitations.
Delete (result is seriously suspect and should be screened out and not reported)	N/A	

The following tables show the calculated concentrations for each of the COPC measurements conducted in this study. Red highlighted values reflect measurements that were above 10% of the respective OEL values. COPCs with these highlights are plotted and shown in Section 5.0. Orange highlighted values reflect measurements in the 2 to 10% of the OEL range. COPCs with these highlights (only) are plotted and shown in Appendix E.

The position numbers that start with 8635 are for the SCOTT 7422-SD1 model of cartridge, and the position numbers that start with 8636 are for the SCOTT 7422-SC1 model of cartridge.

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
1	Ammonia	2	8635-A1	24.49	25	98.0%		2.49%	
1	Ammonia	4	8635-B1	25.94	25	104%		2.49%	
1	Ammonia	6	8635-C1	25.62	25	102%		2.49%	
1	Ammonia	8	8635-D1	25.44	25	102%		2.49%	
1	Ammonia	10	8635-E1	24.05	25	96.2%		2.49%	
1	Ammonia	12	8635-F1	10.44	25	41.8%		2.49%	
1	Ammonia	14	8635-G1	26.42	25	106%		2.49%	
1	Ammonia	16	8635-H1	25.54	25	102%		2.49%	
1	Ammonia	2	8635-A2	0.58	25	2.32%	YES	2.49%	
1	Ammonia	4	8635-B2	0.60	25	2.40%	YES	2.49%	
1	Ammonia	6	8635-C2	0.62	25	2.47%	YES	2.49%	
1	Ammonia	8	8635-D2	0.62	25	2.49%	YES	2.49%	
1	Ammonia	10	8635-E2	0.62	25	2.47%	YES	2.49%	
1	Ammonia	12	8635-F2	0.62	25	2.48%	YES	2.49%	
1	Ammonia	14	8635-G2	1.08	25	4.32%		2.49%	
1	Ammonia	16	8635-H2	1.83	25	7.31%		2.49%	
1	Ammonia	2	8636-A1	24.45	25	97.8%		2.49%	
1	Ammonia	4	8636-B1	25.91	25	104%		2.49%	
1	Ammonia	6	8636-C1	26.52	25	106%		2.49%	
1	Ammonia	8	8636-D1	23.74	25	94.9%		2.49%	
1	Ammonia	10	8636-E1	25.03	25	100%		2.49%	
1	Ammonia	12	8636-F1	14.06	25	56.2%		2.49%	
1	Ammonia	14	8636-G1	22.38	25	89.5%		2.49%	
1	Ammonia	16	8636-H1	24.51	25	98.1%		2.49%	
1	Ammonia	2	8636-A2	0.62	25	2.48%	YES	2.49%	
1	Ammonia	4	8636-B2	0.54	25	2.16%	YES	2.49%	
1	Ammonia	6	8636-C2	0.56	25	2.24%	YES	2.49%	
1	Ammonia	8	8636-D2	0.61	25	2.45%	YES	2.49%	
1	Ammonia	10	8636-E2	0.88	25	3.51%		2.49%	
1	Ammonia	12	8636-F2	1.60	25	6.41%		2.49%	
1	Ammonia	14	8636-G2	2.60	25	10.4%		2.49%	
1	Ammonia	16	8636-H2	4.15	25	16.6%		2.49%	
3	Mercury	2	8635-A1	0.00021	0.003	6.74%	YES	9.89%	
3	Mercury	4	8635-B1	0.00021	0.003	7.04%	YES	9.89%	
3	Mercury	6	8635-C1	0.00021	0.003	6.99%	YES	9.89%	
3	Mercury	8	8635-D1	0.00021	0.003	6.91%	YES	9.89%	
3	Mercury	10	8635-E1	0.00021	0.003	6.87%	YES	9.89%	
3	Mercury	12	8635-F1	0.00021	0.003	6.75%	YES	9.89%	
3	Mercury	14	8635-G1	0.00022	0.003	7.29%		9.89%	
3	Mercury	16	8635-H1	0.00021	0.003	6.87%	YES	9.89%	
3	Mercury	2	8635-A2	0.00020	0.003	6.69%	YES	9.89%	
3	Mercury	4	8635-B2	0.00021	0.003	6.85%	YES	9.89%	
3	Mercury	6	8635-C2	0.00021	0.003	7.01%	YES	9.89%	
3	Mercury	8	8635-D2	0.00021	0.003	6.88%	YES	9.89%	
3	Mercury	10	8635-E2	0.00022	0.003	7.07%	YES	9.89%	
3	Mercury	12	8635-F2	0.00021	0.003	6.82%	YES	9.89%	
3	Mercury	14	8635-G2	0.00020	0.003	6.72%	YES	9.89%	
3	Mercury	16	8635-H2	0.00021	0.003	6.78%	YES	9.89%	
3	Mercury	2	8636-A1	0.00020	0.003	6.68%	YES	9.89%	
3	Mercury	4	8636-B1	0.00021	0.003	6.96%	YES	9.89%	
3	Mercury	6	8636-C1	0.00020	0.003	6.66%	YES	9.89%	
3	Mercury	8	8636-D1	0.00021	0.003	7.05%	YES	9.89%	
3	Mercury	10	8636-E1	0.00021	0.003	7.01%	YES	9.89%	
3	Mercury	12	8636-F1	0.00022	0.003	7.11%	YES	9.89%	
3	Mercury	14	8636-G1	0.00021	0.003	6.81%	YES	9.89%	
3	Mercury	16	8636-H1	0.00021	0.003	6.78%	YES	9.89%	
3	Mercury	2	8636-A2	0.00021	0.003	6.94%	YES	9.89%	
3	Mercury	4	8636-B2	0.00030	0.003	9.89%	YES	9.89%	
3	Mercury	6	8636-C2	0.00020	0.003	6.67%	YES	9.89%	
3	Mercury	8	8636-D2	0.00021	0.003	6.85%	YES	9.89%	
3	Mercury	10	8636-E2	0.00021	0.003	6.97%	YES	9.89%	
3	Mercury	12	8636-F2	0.00022	0.003	7.17%	YES	9.89%	

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
3	Mercury	14	8636-G2	0.00021	0.003	6.99%	YES	9.89%	
3	Mercury	16	8636-H2	0.00021	0.003	6.96%	YES	9.89%	
4	1,3-Butadiene	2	8635-A1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	4	8635-B1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	6	8635-C1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	8	8635-D1	0.019	1	1.93%	YES	2.03%	
4	1,3-Butadiene	10	8635-E1	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	12	8635-F1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	14	8635-G1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	16	8635-H1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	2	8635-A2	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	4	8635-B2	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	6	8635-C2	0.019	1	1.95%	YES	2.03%	
4	1,3-Butadiene	8	8635-D2	0.019	1	1.93%	YES	2.03%	
4	1,3-Butadiene	10	8635-E2	0.020	1	1.98%	YES	2.03%	
4	1,3-Butadiene	12	8635-F2	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	14	8635-G2	0.019	1	1.91%	YES	2.03%	
4	1,3-Butadiene	16	8635-H2	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	2	8636-A1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	4	8636-B1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	6	8636-C1	0.018	1	1.80%	YES	2.03%	
4	1,3-Butadiene	8	8636-D1	0.020	1	1.97%	YES	2.03%	
4	1,3-Butadiene	10	8636-E1	0.020	1	1.99%	YES	2.03%	
4	1,3-Butadiene	12	8636-F1	0.020	1	2.02%	YES	2.03%	
4	1,3-Butadiene	14	8636-G1	0.020	1	1.96%	YES	2.03%	
4	1,3-Butadiene	16	8636-H1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	2	8636-A2	0.019	1	1.91%	YES	2.03%	
4	1,3-Butadiene	4	8636-B2	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	6	8636-C2	0.018	1	1.81%	YES	2.03%	
4	1,3-Butadiene	8	8636-D2	0.020	1	2.02%	YES	2.03%	
4	1,3-Butadiene	10	8636-E2	0.020	1	2.02%	YES	2.03%	
4	1,3-Butadiene	12	8636-F2	0.020	1	1.99%	YES	2.03%	
4	1,3-Butadiene	14	8636-G2	0.020	1	2.03%	YES	2.03%	
4	1,3-Butadiene	16	8636-H2	0.019	1	1.91%	YES	2.03%	
5	Benzene	2	8635-A1	0.00014	0.5	0.028%		0.026%	J
5	Benzene	4	8635-B1	0.00012	0.5	0.023%		0.026%	J
5	Benzene	6	8635-C1	0.00011	0.5	0.022%		0.026%	J
5	Benzene	8	8635-D1	0.00013	0.5	0.025%		0.026%	J
5	Benzene	10	8635-E1	0.00013	0.5	0.027%		0.026%	J
5	Benzene	12	8635-F1	0.00012	0.5	0.023%		0.026%	J
5	Benzene	14	8635-G1	0.00012	0.5	0.024%		0.026%	J
5	Benzene	16	8635-H1	0.00013	0.5	0.025%		0.026%	J
5	Benzene	2	8635-A2	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	4	8635-B2	0.00010	0.5	0.019%	YES	0.026%	U
5	Benzene	6	8635-C2	0.00010	0.5	0.021%	YES	0.026%	U
5	Benzene	8	8635-D2	0.00011	0.5	0.022%	YES	0.026%	U
5	Benzene	10	8635-E2	0.00010	0.5	0.021%	YES	0.026%	U
5	Benzene	12	8635-F2	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	14	8635-G2	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	16	8635-H2	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	2	8636-A1	0.00016	0.5	0.031%		0.026%	J
5	Benzene	4	8636-B1	0.00015	0.5	0.031%		0.026%	J
5	Benzene	6	8636-C1	0.00015	0.5	0.030%		0.026%	J
5	Benzene	8	8636-D1	0.00016	0.5	0.031%		0.026%	J
5	Benzene	10	8636-E1	0.00015	0.5	0.029%		0.026%	J
5	Benzene	12	8636-F1	0.00017	0.5	0.033%		0.026%	J
5	Benzene	14	8636-G1	0.00022	0.5	0.044%		0.026%	J
5	Benzene	16	8636-H1	0.00020	0.5	0.039%		0.026%	J
5	Benzene	2	8636-A2	0.00012	0.5	0.024%	YES	0.026%	U
5	Benzene	4	8636-B2	0.00012	0.5	0.024%	YES	0.026%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
5	Benzene	6	8636-C2	0.00011	0.5	0.023%	YES	0.026%	U
5	Benzene	8	8636-D2	0.00013	0.5	0.025%	YES	0.026%	U
5	Benzene	10	8636-E2	0.00013	0.5	0.026%	YES	0.026%	U
5	Benzene	12	8636-F2	0.00012	0.5	0.025%	YES	0.026%	U
5	Benzene	14	8636-G2	0.00012	0.5	0.024%	YES	0.026%	U
5	Benzene	16	8636-H2	0.00012	0.5	0.024%	YES	0.026%	U
6	Biphenyl	2	8635-A1	0.00016	0.2	0.082%	YES	0.141%	U
6	Biphenyl	4						0.141%	
6	Biphenyl	6	8635-C1	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	8	8635-D1	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	10	8635-E1	0.00017	0.2	0.086%	YES	0.141%	U
6	Biphenyl	12	8635-F1	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	14	8635-G1	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	16	8635-H1	0.00016	0.2	0.078%	YES	0.141%	U
6	Biphenyl	2	8635-A2	0.00016	0.2	0.082%	YES	0.141%	U
6	Biphenyl	4	8635-B2	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	6	8635-C2	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	8	8635-D2	0.00017	0.2	0.085%	YES	0.141%	U
6	Biphenyl	10	8635-E2	0.00017	0.2	0.083%	YES	0.141%	U
6	Biphenyl	12	8635-F2	0.00028	0.2	0.141%	YES	0.141%	U
6	Biphenyl	14	8635-G2	0.00014	0.2	0.072%	YES	0.141%	U
6	Biphenyl	16	8635-H2	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	2	8636-A1	0.00016	0.2	0.081%	YES	0.141%	U
6	Biphenyl	4	8636-B1	0.00016	0.2	0.078%	YES	0.141%	U
6	Biphenyl	6	8636-C1	0.00016	0.2	0.080%	YES	0.141%	U
6	Biphenyl	8	8636-D1	0.00017	0.2	0.086%	YES	0.141%	U
6	Biphenyl	10	8636-E1	0.00017	0.2	0.086%	YES	0.141%	U
6	Biphenyl	12	8636-F1	0.00016	0.2	0.081%	YES	0.141%	U
6	Biphenyl	14						0.141%	
6	Biphenyl	16	8636-H1	0.00016	0.2	0.079%	YES	0.141%	U
6	Biphenyl	2	8636-A2	0.00018	0.2	0.088%	YES	0.141%	U
6	Biphenyl	4	8636-B2	0.00017	0.2	0.087%	YES	0.141%	U
6	Biphenyl	6	8636-C2	0.00016	0.2	0.081%	YES	0.141%	U
6	Biphenyl	8	8636-D2	0.00018	0.2	0.088%	YES	0.141%	U
6	Biphenyl	10	8636-E2	0.00016	0.2	0.079%	YES	0.141%	U
6	Biphenyl	12	8636-F2	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	14	8636-G2	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	16	8636-H2	0.00015	0.2	0.077%	YES	0.141%	U
7	1-Butanol	2	8635-A1	0.2022	20	1.011%		0.004%	ELY
7	1-Butanol	4	8635-B1	0.1949	20	0.974%		0.004%	ELY
7	1-Butanol	6	8635-C1	0.2000	20	1.000%		0.004%	ELY
7	1-Butanol	8	8635-D1	0.2051	20	1.025%		0.004%	ELY
7	1-Butanol	10	8635-E1	0.2127	20	1.064%		0.004%	ELY
7	1-Butanol	12	8635-F1	0.2010	20	1.005%		0.004%	ELY
7	1-Butanol	14	8635-G1	0.2071	20	1.035%		0.004%	ELY
7	1-Butanol	16	8635-H1	0.2001	20	1.000%		0.004%	ELY
7	1-Butanol	2	8635-A2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	4	8635-B2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	6	8635-C2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	8	8635-D2	0.0009	20	0.004%	YES	0.004%	LUY
7	1-Butanol	10	8635-E2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	12	8635-F2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	14	8635-G2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	16	8635-H2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	2	8636-A1	0.1284	20	0.642%		0.004%	E
7	1-Butanol	4	8636-B1	0.1358	20	0.679%		0.004%	E
7	1-Butanol	6	8636-C1	0.1319	20	0.659%		0.004%	E
7	1-Butanol	8	8636-D1	0.1361	20	0.681%		0.004%	E
7	1-Butanol	10	8636-E1	0.1288	20	0.644%		0.004%	E
7	1-Butanol	12	8636-F1	0.1305	20	0.653%		0.004%	E

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
7	1-Butanol	14	8636-G1	0.1254	20	0.627%		0.004%	E
7	1-Butanol	16	8636-H1	0.1300	20	0.650%		0.004%	E
7	1-Butanol	2	8636-A2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	4	8636-B2	0.0014	20	0.007%		0.004%	J
7	1-Butanol	6	8636-C2	0.0003	20	0.002%	YES	0.004%	U
7	1-Butanol	8	8636-D2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	10	8636-E2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	12	8636-F2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	14	8636-G2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	16	8636-H2	0.0004	20	0.002%	YES	0.004%	U
9	2-Hexanone	2	8635-A1	0.00019	5	0.0038%		0.0034%	J
9	2-Hexanone	4	8635-B1	0.00022	5	0.0044%		0.0034%	J
9	2-Hexanone	6	8635-C1	0.00024	5	0.0048%		0.0034%	J
9	2-Hexanone	8	8635-D1	0.00020	5	0.0040%		0.0034%	J
9	2-Hexanone	10	8635-E1	0.00020	5	0.0039%		0.0034%	J
9	2-Hexanone	12	8635-F1	0.00019	5	0.0038%		0.0034%	J
9	2-Hexanone	14	8635-G1	0.00019	5	0.0038%		0.0034%	J
9	2-Hexanone	16	8635-H1	0.00019	5	0.0038%		0.0034%	J
9	2-Hexanone	2	8635-A2	0.00008	5	0.0015%	YES	0.0034%	U
9	2-Hexanone	4	8635-B2	0.00008	5	0.0015%	YES	0.0034%	U
9	2-Hexanone	6	8635-C2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	8	8635-D2	0.00009	5	0.0017%	YES	0.0034%	U
9	2-Hexanone	10	8635-E2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	12	8635-F2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	14	8635-G2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	16	8635-H2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	2	8636-A1	0.00018	5	0.0037%		0.0034%	J
9	2-Hexanone	4	8636-B1	0.00025	5	0.0050%		0.0034%	J
9	2-Hexanone	6	8636-C1	0.00026	5	0.0051%		0.0034%	J
9	2-Hexanone	8	8636-D1	0.00023	5	0.0046%		0.0034%	J
9	2-Hexanone	10	8636-E1	0.00021	5	0.0042%		0.0034%	J
9	2-Hexanone	12	8636-F1	0.00019	5	0.0037%		0.0034%	J
9	2-Hexanone	14	8636-G1	0.00017	5	0.0033%		0.0034%	J
9	2-Hexanone	16	8636-H1	0.00021	5	0.0042%		0.0034%	J
9	2-Hexanone	2	8636-A2	0.00016	5	0.0032%	YES	0.0034%	U
9	2-Hexanone	4	8636-B2	0.00015	5	0.0031%	YES	0.0034%	U
9	2-Hexanone	6	8636-C2	0.00015	5	0.0030%	YES	0.0034%	U
9	2-Hexanone	8	8636-D2	0.00016	5	0.0033%	YES	0.0034%	U
9	2-Hexanone	10	8636-E2	0.00017	5	0.0034%	YES	0.0034%	U
9	2-Hexanone	12	8636-F2	0.00016	5	0.0032%	YES	0.0034%	U
9	2-Hexanone	14	8636-G2	0.00015	5	0.0031%	YES	0.0034%	U
9	2-Hexanone	16	8636-H2	0.00015	5	0.0031%	YES	0.0034%	U
11	4-Methyl-2-hexanone	2	8635-A1	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	4	8635-B1	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	6	8635-C1	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8635-D1	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8635-E1	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8635-F1	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8635-G1	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8635-H1	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	2	8635-A2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	4	8635-B2	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	6	8635-C2	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8635-D2	0.00008	0.5	0.017%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8635-E2	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8635-F2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8635-G2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8635-H2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	2	8636-A1	0.00015	0.5	0.031%	YES	0.031%	U
11	4-Methyl-2-hexanone	4	8636-B1	0.00014	0.5	0.029%	YES	0.031%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
11	4-Methyl-2-hexanone	6	8636-C1	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8636-D1	0.00015	0.5	0.031%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8636-E1	0.00014	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8636-F1	0.00015	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8636-G1	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8636-H1	0.00015	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	2	8636-A2	0.00014	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	4	8636-B2	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	6	8636-C2	0.00014	0.5	0.027%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8636-D2	0.00015	0.5	0.030%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8636-E2	0.00015	0.5	0.031%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8636-F2	0.00015	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8636-G2	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8636-H2	0.00014	0.5	0.028%	YES	0.031%	U
13	3-Buten-2-one	2	8635-A1	0.00058	0.2	0.29%		0.09%	J
13	3-Buten-2-one	4	8635-B1	0.00059	0.2	0.30%		0.09%	J
13	3-Buten-2-one	6	8635-C1	0.00062	0.2	0.31%		0.09%	J
13	3-Buten-2-one	8	8635-D1	0.00061	0.2	0.31%		0.09%	J
13	3-Buten-2-one	10	8635-E1	0.00051	0.2	0.25%		0.09%	J
13	3-Buten-2-one	12	8635-F1	0.00050	0.2	0.25%		0.09%	J
13	3-Buten-2-one	14	8635-G1	0.00045	0.2	0.22%		0.09%	J
13	3-Buten-2-one	16	8635-H1	0.00042	0.2	0.21%		0.09%	J
13	3-Buten-2-one	2	8635-A2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	4	8635-B2	0.00015	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	6	8635-C2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	8	8635-D2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	10	8635-E2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	12	8635-F2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	14	8635-G2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	16	8635-H2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	2	8636-A1	0.00046	0.2	0.23%		0.09%	J
13	3-Buten-2-one	4	8636-B1	0.00060	0.2	0.30%		0.09%	J
13	3-Buten-2-one	6	8636-C1	0.00059	0.2	0.30%		0.09%	J
13	3-Buten-2-one	8	8636-D1	0.00056	0.2	0.28%		0.09%	J
13	3-Buten-2-one	10	8636-E1	0.00052	0.2	0.26%		0.09%	J
13	3-Buten-2-one	12	8636-F1	0.00052	0.2	0.26%		0.09%	J
13	3-Buten-2-one	14	8636-G1	0.00045	0.2	0.23%		0.09%	J
13	3-Buten-2-one	16	8636-H1	0.00046	0.2	0.23%		0.09%	J
13	3-Buten-2-one	2	8636-A2	0.00017	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	4	8636-B2	0.00017	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	6	8636-C2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	8	8636-D2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	10	8636-E2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	12	8636-F2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	14	8636-G2	0.00017	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	16	8636-H2	0.00017	0.2	0.08%	YES	0.09%	U
14	Formaldehyde	2	8635-A1	0.0067	0.3	2.24%		0.61%	
14	Formaldehyde	4	8635-B1	0.0018	0.3	0.62%		0.61%	
14	Formaldehyde	6	8635-C1	0.0018	0.3	0.60%	YES	0.61%	
14	Formaldehyde	8	8635-D1	0.0021	0.3	0.70%		0.61%	
14	Formaldehyde	10	8635-E1	0.0032	0.3	1.06%		0.61%	
14	Formaldehyde	12	8635-F1	0.0030	0.3	0.99%		0.61%	
14	Formaldehyde	14	8635-G1	0.0022	0.3	0.74%		0.61%	
14	Formaldehyde	16	8635-H1	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	2	8635-A2	0.0017	0.3	0.56%	YES	0.61%	
14	Formaldehyde	4	8635-B2	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	6	8635-C2	0.0018	0.3	0.61%	YES	0.61%	
14	Formaldehyde	8	8635-D2	0.0018	0.3	0.61%	YES	0.61%	
14	Formaldehyde	10	8635-E2	0.0018	0.3	0.59%	YES	0.61%	
14	Formaldehyde	12	8635-F2	0.0017	0.3	0.58%	YES	0.61%	

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
14	Formaldehyde	14	8635-G2	0.0017	0.3	0.56%	YES	0.61%	
14	Formaldehyde	16	8635-H2	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	2	8636-A1	0.0079	0.3	2.64%		0.61%	
14	Formaldehyde	4	8636-B1	0.0026	0.3	0.86%		0.61%	
14	Formaldehyde	6	8636-C1	0.0016	0.3	0.55%	YES	0.61%	
14	Formaldehyde	8	8636-D1	0.0022	0.3	0.74%		0.61%	
14	Formaldehyde	10	8636-E1	0.0033	0.3	1.09%		0.61%	
14	Formaldehyde	12	8636-F1	0.0031	0.3	1.03%		0.61%	
14	Formaldehyde	14	8636-G1	0.0025	0.3	0.84%		0.61%	
14	Formaldehyde	16	8636-H1	0.0026	0.3	0.88%		0.61%	
14	Formaldehyde	2	8636-A2	0.0020	0.3	0.67%		0.61%	
14	Formaldehyde	4	8636-B2	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	6	8636-C2	0.0016	0.3	0.54%	YES	0.61%	
14	Formaldehyde	8	8636-D2	0.0018	0.3	0.59%	YES	0.61%	
14	Formaldehyde	10	8636-E2	0.0028	0.3	0.95%		0.61%	
14	Formaldehyde	12	8636-F2	0.0018	0.3	0.59%	YES	0.61%	
14	Formaldehyde	14	8636-G2	0.0018	0.3	0.60%	YES	0.61%	
14	Formaldehyde	16	8636-H2	0.0018	0.3	0.60%	YES	0.61%	
15	Acetaldehyde	2	8635-A1	0.017	25	0.067%		0.005%	
15	Acetaldehyde	4	8635-B1	0.017	25	0.068%		0.005%	
15	Acetaldehyde	6	8635-C1	0.016	25	0.065%		0.005%	
15	Acetaldehyde	8	8635-D1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	10	8635-E1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	12	8635-F1	0.015	25	0.061%		0.005%	
15	Acetaldehyde	14	8635-G1	0.016	25	0.062%		0.005%	
15	Acetaldehyde	16	8635-H1	0.016	25	0.063%		0.005%	
15	Acetaldehyde	2	8635-A2	0.006	25	0.026%		0.005%	
15	Acetaldehyde	4	8635-B2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	6	8635-C2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	8	8635-D2	0.010	25	0.041%		0.005%	
15	Acetaldehyde	10	8635-E2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	12	8635-F2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	14	8635-G2	0.010	25	0.042%		0.005%	
15	Acetaldehyde	16	8635-H2	0.010	25	0.039%		0.005%	
15	Acetaldehyde	2	8636-A1	0.017	25	0.067%		0.005%	
15	Acetaldehyde	4	8636-B1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	6	8636-C1	0.017	25	0.066%		0.005%	
15	Acetaldehyde	8	8636-D1	0.016	25	0.062%		0.005%	
15	Acetaldehyde	10	8636-E1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	12	8636-F1	0.015	25	0.060%		0.005%	
15	Acetaldehyde	14	8636-G1	0.012	25	0.049%		0.005%	
15	Acetaldehyde	16	8636-H1	0.015	25	0.058%		0.005%	
15	Acetaldehyde	2	8636-A2	0.008	25	0.033%		0.005%	
15	Acetaldehyde	4	8636-B2	0.008	25	0.034%		0.005%	
15	Acetaldehyde	6	8636-C2	0.010	25	0.041%		0.005%	
15	Acetaldehyde	8	8636-D2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	10	8636-E2	0.012	25	0.047%		0.005%	
15	Acetaldehyde	12	8636-F2	0.011	25	0.045%		0.005%	
15	Acetaldehyde	14	8636-G2	0.011	25	0.044%		0.005%	
15	Acetaldehyde	16	8636-H2	0.011	25	0.042%		0.005%	
16	Butanal	2	8635-A1	0.00125	25	0.0050%		0.0011%	
16	Butanal	4	8635-B1	0.00142	25	0.0057%		0.0011%	
16	Butanal	6	8635-C1	0.00215	25	0.0086%		0.0011%	
16	Butanal	8	8635-D1	0.00128	25	0.0051%		0.0011%	
16	Butanal	10	8635-E1	0.00128	25	0.0051%		0.0011%	
16	Butanal	12	8635-F1	0.00135	25	0.0054%		0.0011%	
16	Butanal	14	8635-G1	0.00111	25	0.0044%		0.0011%	
16	Butanal	16	8635-H1	0.00103	25	0.0041%		0.0011%	J
16	Butanal	2	8635-A2	0.00019	25	0.0007%	YES	0.0011%	U
16	Butanal	4	8635-B2	0.00018	25	0.0007%	YES	0.0011%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
16	Butanal	6	8635-C2	0.00020	25	0.0008%	YES	0.0011%	U
16	Butanal	8	8635-D2	0.00021	25	0.0008%	YES	0.0011%	U
16	Butanal	10	8635-E2	0.00020	25	0.0008%	YES	0.0011%	U
16	Butanal	12	8635-F2	0.00019	25	0.0008%	YES	0.0011%	U
16	Butanal	14	8635-G2	0.00019	25	0.0008%	YES	0.0011%	U
16	Butanal	16	8635-H2	0.00019	25	0.0008%	YES	0.0011%	U
16	Butanal	2	8636-A1	0.00104	25	0.0041%		0.0011%	
16	Butanal	4	8636-B1	0.00131	25	0.0052%		0.0011%	
16	Butanal	6	8636-C1	0.00161	25	0.0064%		0.0011%	
16	Butanal	8	8636-D1	0.00131	25	0.0052%		0.0011%	
16	Butanal	10	8636-E1	0.00124	25	0.0049%		0.0011%	
16	Butanal	12	8636-F1	0.00089	25	0.0036%		0.0011%	
16	Butanal	14	8636-G1	0.00120	25	0.0048%		0.0011%	
16	Butanal	16	8636-H1	0.00116	25	0.0046%		0.0011%	
16	Butanal	2	8636-A2	0.00026	25	0.0011%	YES	0.0011%	U
16	Butanal	4	8636-B2	0.00026	25	0.0010%	YES	0.0011%	U
16	Butanal	6	8636-C2	0.00025	25	0.0010%	YES	0.0011%	U
16	Butanal	8	8636-D2	0.00027	25	0.0011%	YES	0.0011%	U
16	Butanal	10	8636-E2	0.00028	25	0.0011%	YES	0.0011%	U
16	Butanal	12	8636-F2	0.00027	25	0.0011%	YES	0.0011%	U
16	Butanal	14	8636-G2	0.00026	25	0.0010%	YES	0.0011%	U
16	Butanal	16	8636-H2	0.00026	25	0.0010%	YES	0.0011%	U
19	Furan	2	8635-A1	0.000033	0.001	3.31%	YES	5.65%	U
19	Furan	4	8635-B1	0.000033	0.001	3.26%	YES	5.65%	U
19	Furan	6	8635-C1	0.000034	0.001	3.41%	YES	5.65%	U
19	Furan	8	8635-D1	0.000033	0.001	3.35%	YES	5.65%	U
19	Furan	10	8635-E1	0.000035	0.001	3.46%	YES	5.65%	U
19	Furan	12	8635-F1	0.000035	0.001	3.47%	YES	5.65%	U
19	Furan	14	8635-G1	0.000033	0.001	3.34%	YES	5.65%	U
19	Furan	16	8635-H1	0.000033	0.001	3.32%	YES	5.65%	U
19	Furan	2	8635-A2	0.000021	0.001	2.13%	YES	5.65%	U
19	Furan	4	8635-B2	0.000021	0.001	2.08%	YES	5.65%	U
19	Furan	6	8635-C2	0.000022	0.001	2.17%	YES	5.65%	U
19	Furan	8	8635-D2	0.000022	0.001	2.21%	YES	5.65%	U
19	Furan	10	8635-E2	0.000023	0.001	2.27%	YES	5.65%	U
19	Furan	12	8635-F2	0.000023	0.001	2.33%	YES	5.65%	U
19	Furan	14	8635-G2	0.000021	0.001	2.13%	YES	5.65%	U
19	Furan	16	8635-H2	0.000022	0.001	2.15%	YES	5.65%	U
19	Furan	2	8636-A1	0.000054	0.001	5.41%	YES	5.65%	U
19	Furan	4	8636-B1	0.000052	0.001	5.22%	YES	5.65%	U
19	Furan	6	8636-C1	0.000049	0.001	4.88%	YES	5.65%	U
19	Furan	8	8636-D1	0.000054	0.001	5.42%	YES	5.65%	U
19	Furan	10	8636-E1	0.000055	0.001	5.52%	YES	5.65%	U
19	Furan	12	8636-F1	0.000056	0.001	5.65%	YES	5.65%	U
19	Furan	14	8636-G1	0.000053	0.001	5.26%	YES	5.65%	U
19	Furan	16						5.65%	
19	Furan	2	8636-A2	0.000033	0.001	3.30%	YES	5.65%	U
19	Furan	4	8636-B2	0.000037	0.001	3.69%	YES	5.65%	U
19	Furan	6	8636-C2	0.000035	0.001	3.46%	YES	5.65%	U
19	Furan	8	8636-D2	0.000038	0.001	3.79%	YES	5.65%	U
19	Furan	10	8636-E2	0.000039	0.001	3.86%	YES	5.65%	U
19	Furan	12	8636-F2	0.000038	0.001	3.79%	YES	5.65%	U
19	Furan	14	8636-G2	0.000034	0.001	3.36%	YES	5.65%	U
19	Furan	16	8636-H2	0.000035	0.001	3.52%	YES	5.65%	U
20	2,3-Dihydrofuran	2	8635-A1	0.000025	0.001	2.52%		3.03%	J
20	2,3-Dihydrofuran	4	8635-B1	0.000020	0.001	1.97%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8635-C1	0.000021	0.001	2.06%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8635-D1	0.000020	0.001	2.02%	YES	3.03%	U
20	2,3-Dihydrofuran	10	8635-E1	0.000021	0.001	2.09%	YES	3.03%	U
20	2,3-Dihydrofuran	12	8635-F1	0.000021	0.001	2.10%	YES	3.03%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
20	2,3-Dihydrofuran	14	8635-G1	0.000020	0.001	2.02%	YES	3.03%	U
20	2,3-Dihydrofuran	16	8635-H1	0.000020	0.001	2.01%	YES	3.03%	U
20	2,3-Dihydrofuran	2	8635-A2	0.000013	0.001	1.29%	YES	3.03%	U
20	2,3-Dihydrofuran	4	8635-B2	0.000013	0.001	1.26%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8635-C2	0.000013	0.001	1.31%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8635-D2	0.000013	0.001	1.33%	YES	3.03%	U
20	2,3-Dihydrofuran	10	8635-E2	0.000014	0.001	1.37%	YES	3.03%	U
20	2,3-Dihydrofuran	12	8635-F2	0.000014	0.001	1.41%	YES	3.03%	U
20	2,3-Dihydrofuran	14	8635-G2	0.000013	0.001	1.29%	YES	3.03%	U
20	2,3-Dihydrofuran	16	8635-H2	0.000013	0.001	1.30%	YES	3.03%	U
20	2,3-Dihydrofuran	2	8636-A1	0.000029	0.001	2.90%	YES	3.03%	U
20	2,3-Dihydrofuran	4	8636-B1	0.000028	0.001	2.80%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8636-C1	0.000026	0.001	2.62%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8636-D1	0.000029	0.001	2.90%	YES	3.03%	U
20	2,3-Dihydrofuran	10	8636-E1	0.000030	0.001	2.96%	YES	3.03%	U
20	2,3-Dihydrofuran	12	8636-F1	0.000030	0.001	3.03%	YES	3.03%	U
20	2,3-Dihydrofuran	14	8636-G1	0.000028	0.001	2.82%	YES	3.03%	U
20	2,3-Dihydrofuran	16						3.03%	
20	2,3-Dihydrofuran	2	8636-A2	0.000018	0.001	1.77%	YES	3.03%	U
20	2,3-Dihydrofuran	4	8636-B2	0.000020	0.001	1.98%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8636-C2	0.000019	0.001	1.85%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8636-D2	0.000020	0.001	2.03%	YES	3.03%	U
20	2,3-Dihydrofuran	10	8636-E2	0.000021	0.001	2.07%	YES	3.03%	U
20	2,3-Dihydrofuran	12	8636-F2	0.000020	0.001	2.03%	YES	3.03%	U
20	2,3-Dihydrofuran	14	8636-G2	0.000018	0.001	1.80%	YES	3.03%	U
20	2,3-Dihydrofuran	16	8636-H2	0.000019	0.001	1.89%	YES	3.03%	U
21	2,5-Dihydrofuran	2	8635-A1	0.000029	0.001	2.87%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8635-B1	0.000028	0.001	2.82%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8635-C1	0.000030	0.001	2.95%	YES	4.26%	U
21	2,5-Dihydrofuran	8	8635-D1	0.000029	0.001	2.90%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8635-E1	0.000030	0.001	3.00%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8635-F1	0.000030	0.001	3.01%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8635-G1	0.000029	0.001	2.90%	YES	4.26%	U
21	2,5-Dihydrofuran	16	8635-H1	0.000029	0.001	2.88%	YES	4.26%	U
21	2,5-Dihydrofuran	2	8635-A2	0.000018	0.001	1.85%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8635-B2	0.000018	0.001	1.81%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8635-C2	0.000019	0.001	1.88%	YES	4.26%	U
21	2,5-Dihydrofuran	8	8635-D2	0.000019	0.001	1.91%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8635-E2	0.000020	0.001	1.97%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8635-F2	0.000020	0.001	2.02%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8635-G2	0.000018	0.001	1.85%	YES	4.26%	U
21	2,5-Dihydrofuran	16	8635-H2	0.000019	0.001	1.86%	YES	4.26%	U
21	2,5-Dihydrofuran	2	8636-A1	0.000041	0.001	4.08%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8636-B1	0.000039	0.001	3.93%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8636-C1	0.000037	0.001	3.68%	YES	4.26%	U
21	2,5-Dihydrofuran	8	8636-D1	0.000041	0.001	4.09%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8636-E1	0.000042	0.001	4.16%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8636-F1	0.000043	0.001	4.26%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8636-G1	0.000040	0.001	3.96%	YES	4.26%	U
21	2,5-Dihydrofuran	16						4.26%	
21	2,5-Dihydrofuran	2	8636-A2	0.000025	0.001	2.49%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8636-B2	0.000028	0.001	2.78%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8636-C2	0.000026	0.001	2.60%	YES	4.26%	U
21	2,5-Dihydrofuran	8	8636-D2	0.000029	0.001	2.85%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8636-E2	0.000029	0.001	2.91%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8636-F2	0.000029	0.001	2.85%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8636-G2	0.000025	0.001	2.53%	YES	4.26%	U
21	2,5-Dihydrofuran	16	8636-H2	0.000027	0.001	2.65%	YES	4.26%	U
22	2-Methylfuran	2	8635-A1	0.000034	0.001	3.42%	YES	3.58%	U
22	2-Methylfuran	4	8635-B1	0.000034	0.001	3.36%	YES	3.58%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
22	2-Methylfuran	6	8635-C1	0.000035	0.001	3.52%	YES	3.58%	U
22	2-Methylfuran	8	8635-D1	0.000035	0.001	3.45%	YES	3.58%	U
22	2-Methylfuran	10	8635-E1	0.000036	0.001	3.57%	YES	3.58%	U
22	2-Methylfuran	12	8635-F1	0.000036	0.001	3.58%	YES	3.58%	U
22	2-Methylfuran	14	8635-G1	0.000034	0.001	3.45%	YES	3.58%	U
22	2-Methylfuran	16	8635-H1	0.000034	0.001	3.43%	YES	3.58%	U
22	2-Methylfuran	2	8635-A2	0.000022	0.001	2.20%	YES	3.58%	U
22	2-Methylfuran	4	8635-B2	0.000021	0.001	2.15%	YES	3.58%	U
22	2-Methylfuran	6	8635-C2	0.000022	0.001	2.23%	YES	3.58%	U
22	2-Methylfuran	8	8635-D2	0.000023	0.001	2.28%	YES	3.58%	U
22	2-Methylfuran	10	8635-E2	0.000023	0.001	2.34%	YES	3.58%	U
22	2-Methylfuran	12	8635-F2	0.000024	0.001	2.40%	YES	3.58%	U
22	2-Methylfuran	14	8635-G2	0.000022	0.001	2.20%	YES	3.58%	U
22	2-Methylfuran	16	8635-H2	0.000022	0.001	2.22%	YES	3.58%	U
22	2-Methylfuran	2	8636-A1	0.000012	0.001	1.16%	YES	3.58%	U
22	2-Methylfuran	4	8636-B1	0.000011	0.001	1.12%	YES	3.58%	U
22	2-Methylfuran	6	8636-C1	0.000010	0.001	1.05%	YES	3.58%	U
22	2-Methylfuran	8	8636-D1	0.000012	0.001	1.16%	YES	3.58%	U
22	2-Methylfuran	10	8636-E1	0.000012	0.001	1.18%	YES	3.58%	U
22	2-Methylfuran	12	8636-F1	0.000012	0.001	1.21%	YES	3.58%	U
22	2-Methylfuran	14	8636-G1	0.000011	0.001	1.13%	YES	3.58%	U
22	2-Methylfuran	16						3.58%	
22	2-Methylfuran	2	8636-A2	0.000007	0.001	0.71%	YES	3.58%	U
22	2-Methylfuran	4	8636-B2	0.000008	0.001	0.79%	YES	3.58%	U
22	2-Methylfuran	6	8636-C2	0.000007	0.001	0.74%	YES	3.58%	U
22	2-Methylfuran	8	8636-D2	0.000008	0.001	0.81%	YES	3.58%	U
22	2-Methylfuran	10	8636-E2	0.000008	0.001	0.83%	YES	3.58%	U
22	2-Methylfuran	12	8636-F2	0.000008	0.001	0.81%	YES	3.58%	U
22	2-Methylfuran	14	8636-G2	0.000007	0.001	0.72%	YES	3.58%	U
22	2-Methylfuran	16	8636-H2	0.000008	0.001	0.75%	YES	3.58%	U
23	2,5-Dimethylfuran	2	8635-A1	0.000048	0.001	4.76%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8635-B1	0.000047	0.001	4.68%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8635-C1	0.000049	0.001	4.90%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8635-D1	0.000048	0.001	4.80%	YES	4.98%	U
23	2,5-Dimethylfuran	10	8635-E1	0.000050	0.001	4.97%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8635-F1	0.000050	0.001	4.98%	YES	4.98%	U
23	2,5-Dimethylfuran	14	8635-G1	0.000048	0.001	4.80%	YES	4.98%	U
23	2,5-Dimethylfuran	16	8635-H1	0.000048	0.001	4.77%	YES	4.98%	U
23	2,5-Dimethylfuran	2	8635-A2	0.000031	0.001	3.06%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8635-B2	0.000030	0.001	2.99%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8635-C2	0.000031	0.001	3.11%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8635-D2	0.000032	0.001	3.17%	YES	4.98%	U
23	2,5-Dimethylfuran	10	8635-E2	0.000033	0.001	3.27%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8635-F2	0.000033	0.001	3.34%	YES	4.98%	U
23	2,5-Dimethylfuran	14	8635-G2	0.000031	0.001	3.06%	YES	4.98%	U
23	2,5-Dimethylfuran	16	8635-H2	0.000031	0.001	3.09%	YES	4.98%	U
23	2,5-Dimethylfuran	2	8636-A1	0.000017	0.001	1.72%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8636-B1	0.000017	0.001	1.66%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8636-C1	0.000015	0.001	1.55%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8636-D1	0.000017	0.001	1.72%	YES	4.98%	U
23	2,5-Dimethylfuran	10	8636-E1	0.000018	0.001	1.75%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8636-F1	0.000018	0.001	1.79%	YES	4.98%	U
23	2,5-Dimethylfuran	14	8636-G1	0.000017	0.001	1.67%	YES	4.98%	U
23	2,5-Dimethylfuran	16						4.98%	
23	2,5-Dimethylfuran	2	8636-A2	0.000010	0.001	1.05%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8636-B2	0.000012	0.001	1.17%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8636-C2	0.000011	0.001	1.10%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8636-D2	0.000012	0.001	1.20%	YES	4.98%	U
23	2,5-Dimethylfuran	10	8636-E2	0.000012	0.001	1.22%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8636-F2	0.000012	0.001	1.20%	YES	4.98%	U
23	2,5-Dimethylfuran	14	8636-G2	0.000011	0.001	1.07%	YES	4.98%	U
23	2,5-Dimethylfuran	16	8636-H2	0.000011	0.001	1.12%	YES	4.98%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
27	2-Pentylfuran	2	8635-A1	0.000040	0.001	3.97%	YES	4.16%	U
27	2-Pentylfuran	4	8635-B1	0.000039	0.001	3.90%	YES	4.16%	U
27	2-Pentylfuran	6	8635-C1	0.000041	0.001	4.09%	YES	4.16%	U
27	2-Pentylfuran	8	8635-D1	0.000040	0.001	4.01%	YES	4.16%	U
27	2-Pentylfuran	10	8635-E1	0.000041	0.001	4.14%	YES	4.16%	U
27	2-Pentylfuran	12	8635-F1	0.000042	0.001	4.16%	YES	4.16%	U
27	2-Pentylfuran	14	8635-G1	0.000040	0.001	4.00%	YES	4.16%	U
27	2-Pentylfuran	16	8635-H1	0.000040	0.001	3.98%	YES	4.16%	U
27	2-Pentylfuran	2	8635-A2	0.000026	0.001	2.56%	YES	4.16%	U
27	2-Pentylfuran	4	8635-B2	0.000025	0.001	2.50%	YES	4.16%	U
27	2-Pentylfuran	6	8635-C2	0.000026	0.001	2.60%	YES	4.16%	U
27	2-Pentylfuran	8	8635-D2	0.000026	0.001	2.64%	YES	4.16%	U
27	2-Pentylfuran	10	8635-E2	0.000027	0.001	2.73%	YES	4.16%	U
27	2-Pentylfuran	12	8635-F2	0.000028	0.001	2.79%	YES	4.16%	U
27	2-Pentylfuran	14	8635-G2	0.000026	0.001	2.55%	YES	4.16%	U
27	2-Pentylfuran	16	8635-H2	0.000026	0.001	2.58%	YES	4.16%	U
27	2-Pentylfuran	2	8636-A1	0.000013	0.001	1.33%	YES	4.16%	U
27	2-Pentylfuran	4	8636-B1	0.000013	0.001	1.29%	YES	4.16%	U
27	2-Pentylfuran	6	8636-C1	0.000012	0.001	1.20%	YES	4.16%	U
27	2-Pentylfuran	8	8636-D1	0.000013	0.001	1.34%	YES	4.16%	U
27	2-Pentylfuran	10	8636-E1	0.000014	0.001	1.36%	YES	4.16%	U
27	2-Pentylfuran	12	8636-F1	0.000014	0.001	1.39%	YES	4.16%	U
27	2-Pentylfuran	14	8636-G1	0.000013	0.001	1.29%	YES	4.16%	U
27	2-Pentylfuran	16						4.16%	
27	2-Pentylfuran	2	8636-A2	0.000008	0.001	0.81%	YES	4.16%	U
27	2-Pentylfuran	4	8636-B2	0.000009	0.001	0.91%	YES	4.16%	U
27	2-Pentylfuran	6	8636-C2	0.000009	0.001	0.85%	YES	4.16%	U
27	2-Pentylfuran	8	8636-D2	0.000009	0.001	0.93%	YES	4.16%	U
27	2-Pentylfuran	10	8636-E2	0.000009	0.001	0.95%	YES	4.16%	U
27	2-Pentylfuran	12	8636-F2	0.000009	0.001	0.93%	YES	4.16%	U
27	2-Pentylfuran	14	8636-G2	0.000008	0.001	0.83%	YES	4.16%	U
27	2-Pentylfuran	16	8636-H2	0.000009	0.001	0.87%	YES	4.16%	U
28	2-Heptylfuran	2	8635-A1	0.000032	0.001	3.15%	YES	3.30%	U
28	2-Heptylfuran	4	8635-B1	0.000031	0.001	3.10%	YES	3.30%	U
28	2-Heptylfuran	6	8635-C1	0.000032	0.001	3.25%	YES	3.30%	U
28	2-Heptylfuran	8	8635-D1	0.000032	0.001	3.19%	YES	3.30%	U
28	2-Heptylfuran	10	8635-E1	0.000033	0.001	3.29%	YES	3.30%	U
28	2-Heptylfuran	12	8635-F1	0.000033	0.001	3.30%	YES	3.30%	U
28	2-Heptylfuran	14	8635-G1	0.000032	0.001	3.18%	YES	3.30%	U
28	2-Heptylfuran	16	8635-H1	0.000032	0.001	3.16%	YES	3.30%	U
28	2-Heptylfuran	2	8635-A2	0.000020	0.001	2.03%	YES	3.30%	U
28	2-Heptylfuran	4	8635-B2	0.000020	0.001	1.98%	YES	3.30%	U
28	2-Heptylfuran	6	8635-C2	0.000021	0.001	2.06%	YES	3.30%	U
28	2-Heptylfuran	8	8635-D2	0.000021	0.001	2.10%	YES	3.30%	U
28	2-Heptylfuran	10	8635-E2	0.000022	0.001	2.16%	YES	3.30%	U
28	2-Heptylfuran	12	8635-F2	0.000022	0.001	2.22%	YES	3.30%	U
28	2-Heptylfuran	14	8635-G2	0.000020	0.001	2.03%	YES	3.30%	U
28	2-Heptylfuran	16	8635-H2	0.000020	0.001	2.05%	YES	3.30%	U
28	2-Heptylfuran	2	8636-A1	0.000015	0.001	1.45%	YES	3.30%	U
28	2-Heptylfuran	4	8636-B1	0.000014	0.001	1.40%	YES	3.30%	U
28	2-Heptylfuran	6	8636-C1	0.000013	0.001	1.31%	YES	3.30%	U
28	2-Heptylfuran	8	8636-D1	0.000015	0.001	1.45%	YES	3.30%	U
28	2-Heptylfuran	10	8636-E1	0.000015	0.001	1.48%	YES	3.30%	U
28	2-Heptylfuran	12	8636-F1	0.000015	0.001	1.52%	YES	3.30%	U
28	2-Heptylfuran	14	8636-G1	0.000014	0.001	1.41%	YES	3.30%	U
28	2-Heptylfuran	16						3.30%	
28	2-Heptylfuran	2	8636-A2	0.000009	0.001	0.89%	YES	3.30%	U
28	2-Heptylfuran	4	8636-B2	0.000010	0.001	0.99%	YES	3.30%	U
28	2-Heptylfuran	6	8636-C2	0.000009	0.001	0.93%	YES	3.30%	U
28	2-Heptylfuran	8	8636-D2	0.000010	0.001	1.02%	YES	3.30%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
28	2-Heptylfuran	10	8636-E2	0.000010	0.001	1.03%	YES	3.30%	U
28	2-Heptylfuran	12	8636-F2	0.000010	0.001	1.02%	YES	3.30%	U
28	2-Heptylfuran	14	8636-G2	0.000009	0.001	0.90%	YES	3.30%	U
28	2-Heptylfuran	16	8636-H2	0.000009	0.001	0.94%	YES	3.30%	U
29	2-Propylfuran	2	8635-A1	0.000034	0.001	3.43%	YES	3.60%	U
29	2-Propylfuran	4	8635-B1	0.000034	0.001	3.37%	YES	3.60%	U
29	2-Propylfuran	6	8635-C1	0.000035	0.001	3.53%	YES	3.60%	U
29	2-Propylfuran	8	8635-D1	0.000035	0.001	3.47%	YES	3.60%	U
29	2-Propylfuran	10	8635-E1	0.000036	0.001	3.58%	YES	3.60%	U
29	2-Propylfuran	12	8635-F1	0.000036	0.001	3.60%	YES	3.60%	U
29	2-Propylfuran	14	8635-G1	0.000035	0.001	3.46%	YES	3.60%	U
29	2-Propylfuran	16	8635-H1	0.000034	0.001	3.44%	YES	3.60%	U
29	2-Propylfuran	2	8635-A2	0.000022	0.001	2.21%	YES	3.60%	U
29	2-Propylfuran	4	8635-B2	0.000022	0.001	2.16%	YES	3.60%	U
29	2-Propylfuran	6	8635-C2	0.000022	0.001	2.25%	YES	3.60%	U
29	2-Propylfuran	8	8635-D2	0.000023	0.001	2.29%	YES	3.60%	U
29	2-Propylfuran	10	8635-E2	0.000024	0.001	2.36%	YES	3.60%	U
29	2-Propylfuran	12	8635-F2	0.000024	0.001	2.41%	YES	3.60%	U
29	2-Propylfuran	14	8635-G2	0.000022	0.001	2.21%	YES	3.60%	U
29	2-Propylfuran	16	8635-H2	0.000022	0.001	2.23%	YES	3.60%	U
29	2-Propylfuran	2	8636-A1	0.000012	0.001	1.21%	YES	3.60%	U
29	2-Propylfuran	4	8636-B1	0.000012	0.001	1.17%	YES	3.60%	U
29	2-Propylfuran	6	8636-C1	0.000011	0.001	1.09%	YES	3.60%	U
29	2-Propylfuran	8	8636-D1	0.000012	0.001	1.21%	YES	3.60%	U
29	2-Propylfuran	10	8636-E1	0.000012	0.001	1.23%	YES	3.60%	U
29	2-Propylfuran	12	8636-F1	0.000013	0.001	1.26%	YES	3.60%	U
29	2-Propylfuran	14	8636-G1	0.000012	0.001	1.18%	YES	3.60%	U
29	2-Propylfuran	16						3.60%	
29	2-Propylfuran	2	8636-A2	0.000007	0.001	0.74%	YES	3.60%	U
29	2-Propylfuran	4	8636-B2	0.000008	0.001	0.83%	YES	3.60%	U
29	2-Propylfuran	6	8636-C2	0.000008	0.001	0.77%	YES	3.60%	U
29	2-Propylfuran	8	8636-D2	0.000008	0.001	0.85%	YES	3.60%	U
29	2-Propylfuran	10	8636-E2	0.000009	0.001	0.86%	YES	3.60%	U
29	2-Propylfuran	12	8636-F2	0.000008	0.001	0.85%	YES	3.60%	U
29	2-Propylfuran	14	8636-G2	0.000008	0.001	0.75%	YES	3.60%	U
29	2-Propylfuran	16	8636-H2	0.000008	0.001	0.79%	YES	3.60%	U
33	Diethylphthalate	2	8635-A1	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	4						0.062%	
33	Diethylphthalate	6	8635-C1	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	8	8635-D1	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	10	8635-E1	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	12	8635-F1	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	14	8635-G1	0.00019	0.550	0.034%	YES	0.062%	U
33	Diethylphthalate	16	8635-H1	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	2	8635-A2	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	4	8635-B2	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	6	8635-C2	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	8	8635-D2	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	10	8635-E2	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	12	8635-F2	0.00034	0.550	0.062%	YES	0.062%	U
33	Diethylphthalate	14	8635-G2	0.00018	0.550	0.032%	YES	0.062%	U
33	Diethylphthalate	16	8635-H2	0.00019	0.550	0.034%	YES	0.062%	U
33	Diethylphthalate	2	8636-A1	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	4	8636-B1	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	6	8636-C1	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	8	8636-D1	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	10	8636-E1	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	12	8636-F1	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	14						0.062%	
33	Diethylphthalate	16	8636-H1	0.00019	0.550	0.035%	YES	0.062%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
33	Diethylphthalate	2	8636-A2	0.00021	0.550	0.039%	YES	0.062%	U
33	Diethylphthalate	4	8636-B2	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	6	8636-C2	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	8	8636-D2	0.00021	0.550	0.039%	YES	0.062%	U
33	Diethylphthalate	10	8636-E2	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	12	8636-F2	0.00019	0.550	0.034%	YES	0.062%	U
33	Diethylphthalate	14	8636-G2	0.00019	0.550	0.034%	YES	0.062%	U
33	Diethylphthalate	16	8636-H2	0.00019	0.550	0.034%	YES	0.062%	U
34	Acetonitrile	2	8635-A1	0.0064	20	0.0321%		0.0015%	
34	Acetonitrile	4	8635-B1	0.0044	20	0.0220%		0.0015%	
34	Acetonitrile	6	8635-C1	0.0048	20	0.0238%		0.0015%	
34	Acetonitrile	8	8635-D1	0.0069	20	0.0346%		0.0015%	
34	Acetonitrile	10	8635-E1	0.0018	20	0.0088%		0.0015%	J
34	Acetonitrile	12	8635-F1	0.0014	20	0.0072%		0.0015%	J
34	Acetonitrile	14	8635-G1	0.0025	20	0.0127%		0.0015%	
34	Acetonitrile	16	8635-H1	0.0024	20	0.0120%		0.0015%	
34	Acetonitrile	2	8635-A2	0.0013	20	0.0067%		0.0015%	J
34	Acetonitrile	4	8635-B2	0.0017	20	0.0084%		0.0015%	J
34	Acetonitrile	6	8635-C2	0.0033	20	0.0165%		0.0015%	
34	Acetonitrile	8	8635-D2	0.0011	20	0.0057%		0.0015%	J
34	Acetonitrile	10	8635-E2	0.0012	20	0.0061%		0.0015%	J
34	Acetonitrile	12	8635-F2	0.0009	20	0.0046%		0.0015%	J
34	Acetonitrile	14	8635-G2	0.0008	20	0.0042%		0.0015%	J
34	Acetonitrile	16	8635-H2	0.0009	20	0.0045%		0.0015%	J
34	Acetonitrile	2	8636-A1	0.0397	20	0.1987%		0.0015%	
34	Acetonitrile	4	8636-B1	0.0291	20	0.1456%		0.0015%	
34	Acetonitrile	6	8636-C1	0.0140	20	0.0700%		0.0015%	
34	Acetonitrile	8	8636-D1	0.0197	20	0.0983%		0.0015%	
34	Acetonitrile	10	8636-E1	0.0051	20	0.0256%		0.0015%	
34	Acetonitrile	12	8636-F1	0.0057	20	0.0283%		0.0015%	
34	Acetonitrile	14	8636-G1	0.0045	20	0.0227%		0.0015%	
34	Acetonitrile	16	8636-H1	0.1001	20	0.5007%		0.0015%	E
34	Acetonitrile	2	8636-A2	0.0294	20	0.1471%		0.0015%	
34	Acetonitrile	4	8636-B2	0.0423	20	0.2117%		0.0015%	
34	Acetonitrile	6	8636-C2	0.0333	20	0.1666%		0.0015%	
34	Acetonitrile	8	8636-D2	0.0069	20	0.0343%		0.0015%	
34	Acetonitrile	10	8636-E2	0.0510	20	0.2550%		0.0015%	
34	Acetonitrile	12	8636-F2	0.0614	20	0.3068%		0.0015%	
34	Acetonitrile	14	8636-G2	0.0045	20	0.0226%		0.0015%	
34	Acetonitrile	16	8636-H2	0.2558	20	1.2792%		0.0015%	E
35	Propanenitrile	2	8635-A1	0.00033	6	0.0054%		0.0037%	J
35	Propanenitrile	4	8635-B1	0.00031	6	0.0051%		0.0037%	J
35	Propanenitrile	6	8635-C1	0.00033	6	0.0055%		0.0037%	J
35	Propanenitrile	8	8635-D1	0.00034	6	0.0056%		0.0037%	J
35	Propanenitrile	10	8635-E1	0.00029	6	0.0048%		0.0037%	J
35	Propanenitrile	12	8635-F1	0.00028	6	0.0047%		0.0037%	J
35	Propanenitrile	14	8635-G1	0.00032	6	0.0054%		0.0037%	J
35	Propanenitrile	16	8635-H1	0.00030	6	0.0050%		0.0037%	J
35	Propanenitrile	2	8635-A2	0.00016	6	0.0027%	YES	0.0037%	U
35	Propanenitrile	4	8635-B2	0.00016	6	0.0027%	YES	0.0037%	U
35	Propanenitrile	6	8635-C2	0.00017	6	0.0029%	YES	0.0037%	U
35	Propanenitrile	8	8635-D2	0.00018	6	0.0031%	YES	0.0037%	U
35	Propanenitrile	10	8635-E2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	12	8635-F2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	14	8635-G2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	16	8635-H2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	2	8636-A1	0.00028	6	0.0047%		0.0037%	J
35	Propanenitrile	4	8636-B1	0.00035	6	0.0059%		0.0037%	J
35	Propanenitrile	6	8636-C1	0.00033	6	0.0055%		0.0037%	J
35	Propanenitrile	8	8636-D1	0.00032	6	0.0053%		0.0037%	J

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
35	Propanenitrile	10	8636-E1	0.00032	6	0.0054%		0.0037%	J
35	Propanenitrile	12	8636-F1	0.00034	6	0.0057%		0.0037%	J
35	Propanenitrile	14	8636-G1	0.00027	6	0.0045%		0.0037%	J
35	Propanenitrile	16	8636-H1	0.00030	6	0.0051%		0.0037%	J
35	Propanenitrile	2	8636-A2	0.00021	6	0.0035%	YES	0.0037%	U
35	Propanenitrile	4	8636-B2	0.00020	6	0.0034%	YES	0.0037%	U
35	Propanenitrile	6	8636-C2	0.00019	6	0.0032%	YES	0.0037%	U
35	Propanenitrile	8	8636-D2	0.00021	6	0.0036%	YES	0.0037%	U
35	Propanenitrile	10	8636-E2	0.00022	6	0.0037%	YES	0.0037%	U
35	Propanenitrile	12	8636-F2	0.00021	6	0.0035%	YES	0.0037%	U
35	Propanenitrile	14	8636-G2	0.00020	6	0.0034%	YES	0.0037%	U
35	Propanenitrile	16	8636-H2	0.00020	6	0.0034%	YES	0.0037%	U
36	Butanenitrile	2	8635-A1	0.00016	8	0.0021%		0.0026%	J
36	Butanenitrile	4	8635-B1	0.00015	8	0.0019%		0.0026%	J
36	Butanenitrile	6	8635-C1	0.00019	8	0.0023%		0.0026%	J
36	Butanenitrile	8	8635-D1	0.00014	8	0.0018%		0.0026%	J
36	Butanenitrile	10	8635-E1	0.00014	8	0.0018%		0.0026%	J
36	Butanenitrile	12	8635-F1	0.00014	8	0.0018%		0.0026%	J
36	Butanenitrile	14	8635-G1	0.00013	8	0.0017%		0.0026%	J
36	Butanenitrile	16	8635-H1	0.00015	8	0.0019%		0.0026%	J
36	Butanenitrile	2	8635-A2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	4	8635-B2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	6	8635-C2	0.00012	8	0.0015%	YES	0.0026%	U
36	Butanenitrile	8	8635-D2	0.00013	8	0.0016%	YES	0.0026%	U
36	Butanenitrile	10	8635-E2	0.00012	8	0.0015%	YES	0.0026%	U
36	Butanenitrile	12	8635-F2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	14	8635-G2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	16	8635-H2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	2	8636-A1	0.00021	8	0.0026%	YES	0.0026%	U
36	Butanenitrile	4	8636-B1	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	6	8636-C1	0.00019	8	0.0023%	YES	0.0026%	U
36	Butanenitrile	8	8636-D1	0.00020	8	0.0026%	YES	0.0026%	U
36	Butanenitrile	10	8636-E1	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	12	8636-F1	0.00021	8	0.0026%		0.0026%	J
36	Butanenitrile	14	8636-G1	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	16	8636-H1	0.00020	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	2	8636-A2	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	4	8636-B2	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	6	8636-C2	0.00018	8	0.0023%	YES	0.0026%	U
36	Butanenitrile	8	8636-D2	0.00020	8	0.0025%	YES	0.0026%	U
36	Butanenitrile	10	8636-E2	0.00021	8	0.0026%	YES	0.0026%	U
36	Butanenitrile	12	8636-F2	0.00020	8	0.0025%	YES	0.0026%	U
36	Butanenitrile	14	8636-G2	0.00019	8	0.0023%	YES	0.0026%	U
36	Butanenitrile	16	8636-H2	0.00019	8	0.0023%	YES	0.0026%	U
37	Pentanenitrile	2	8635-A1	0.00012	6	0.0019%	YES	0.0035%	U
37	Pentanenitrile	4	8635-B1	0.00012	6	0.0019%	YES	0.0035%	U
37	Pentanenitrile	6	8635-C1	0.00013	6	0.0022%	YES	0.0035%	U
37	Pentanenitrile	8	8635-D1	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	10	8635-E1	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	12	8635-F1	0.00012	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	14	8635-G1	0.00012	6	0.0020%	YES	0.0035%	U
37	Pentanenitrile	16	8635-H1	0.00012	6	0.0020%	YES	0.0035%	U
37	Pentanenitrile	2	8635-A2	0.00012	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	4	8635-B2	0.00012	6	0.0020%	YES	0.0035%	U
37	Pentanenitrile	6	8635-C2	0.00013	6	0.0022%	YES	0.0035%	U
37	Pentanenitrile	8	8635-D2	0.00014	6	0.0023%	YES	0.0035%	U
37	Pentanenitrile	10	8635-E2	0.00013	6	0.0022%	YES	0.0035%	U
37	Pentanenitrile	12	8635-F2	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	14	8635-G2	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	16	8635-H2	0.00013	6	0.0021%	YES	0.0035%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
37	Pentanenitrile	2	8636-A1	0.00021	6	0.0035%	YES	0.0035%	U
37	Pentanenitrile	4	8636-B1	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	6	8636-C1	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	8	8636-D1	0.00021	6	0.0035%	YES	0.0035%	U
37	Pentanenitrile	10	8636-E1	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	12	8636-F1	0.00020	6	0.0034%	YES	0.0035%	U
37	Pentanenitrile	14	8636-G1	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	16	8636-H1	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	2	8636-A2	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	4	8636-B2	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	6	8636-C2	0.00019	6	0.0031%	YES	0.0035%	U
37	Pentanenitrile	8	8636-D2	0.00020	6	0.0034%	YES	0.0035%	U
37	Pentanenitrile	10	8636-E2	0.00021	6	0.0035%	YES	0.0035%	U
37	Pentanenitrile	12	8636-F2	0.00020	6	0.0034%	YES	0.0035%	U
37	Pentanenitrile	14	8636-G2	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	16	8636-H2	0.00019	6	0.0032%	YES	0.0035%	U
38	Hexanenitrile	2	8635-A1	0.00009	6	0.0015%		0.0030%	J
38	Hexanenitrile	4	8635-B1	0.00009	6	0.0015%	YES	0.0030%	U
38	Hexanenitrile	6	8635-C1	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	8	8635-D1	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	10	8635-E1	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	12	8635-F1	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	14	8635-G1	0.00009	6	0.0016%	YES	0.0030%	U
38	Hexanenitrile	16	8635-H1	0.00010	6	0.0016%	YES	0.0030%	U
38	Hexanenitrile	2	8635-A2	0.00010	6	0.0016%	YES	0.0030%	U
38	Hexanenitrile	4	8635-B2	0.00010	6	0.0016%	YES	0.0030%	U
38	Hexanenitrile	6	8635-C2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	8	8635-D2	0.00011	6	0.0019%	YES	0.0030%	U
38	Hexanenitrile	10	8635-E2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	12	8635-F2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	14	8635-G2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	16	8635-H2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	2	8636-A1	0.00018	6	0.0030%	YES	0.0030%	U
38	Hexanenitrile	4	8636-B1	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	6	8636-C1	0.00016	6	0.0027%	YES	0.0030%	U
38	Hexanenitrile	8	8636-D1	0.00018	6	0.0030%	YES	0.0030%	U
38	Hexanenitrile	10	8636-E1	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	12	8636-F1	0.00017	6	0.0029%	YES	0.0030%	U
38	Hexanenitrile	14	8636-G1	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	16	8636-H1	0.00017	6	0.0029%	YES	0.0030%	U
38	Hexanenitrile	2	8636-A2	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	4	8636-B2	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	6	8636-C2	0.00016	6	0.0027%	YES	0.0030%	U
38	Hexanenitrile	8	8636-D2	0.00018	6	0.0029%	YES	0.0030%	U
38	Hexanenitrile	10	8636-E2	0.00018	6	0.0030%	YES	0.0030%	U
38	Hexanenitrile	12	8636-F2	0.00017	6	0.0029%	YES	0.0030%	U
38	Hexanenitrile	14	8636-G2	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	16	8636-H2	0.00017	6	0.0028%	YES	0.0030%	U
42	Ethylamine	2	8635-A1	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	4	8635-B1	0.0044	5	0.09%	YES	0.10%	
42	Ethylamine	6	8635-C1	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	8	8635-D1	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	10	8635-E1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	12	8635-F1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	14	8635-G1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	16	8635-H1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	2	8635-A2	0.0043	5	0.09%	YES	0.10%	
42	Ethylamine	4	8635-B2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	6	8635-C2	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	8	8635-D2	0.0046	5	0.09%	YES	0.10%	

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
42	Ethylamine	10	8635-E2	0.0047	5	0.09%	YES	0.10%	
42	Ethylamine	12	8635-F2	0.0047	5	0.09%	YES	0.10%	
42	Ethylamine	14	8635-G2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	16	8635-H2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	2	8636-A1	0.0044	5	0.09%	YES	0.10%	
42	Ethylamine	4	8636-B1	0.0043	5	0.09%	YES	0.10%	
42	Ethylamine	6	8636-C1	0.0043	5	0.09%	YES	0.10%	
42	Ethylamine	8	8636-D1	0.0048	5	0.10%	YES	0.10%	
42	Ethylamine	10	8636-E1	0.0049	5	0.10%	YES	0.10%	
42	Ethylamine	12	8636-F1	0.0049	5	0.10%	YES	0.10%	
42	Ethylamine	14	8636-G1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	16	8636-H1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	2	8636-A2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	4	8636-B2	0.0044	5	0.09%	YES	0.10%	
42	Ethylamine	6	8636-C2	0.0042	5	0.08%	YES	0.10%	
42	Ethylamine	8	8636-D2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	10	8636-E2	0.0047	5	0.09%	YES	0.10%	
42	Ethylamine	12	8636-F2	0.0048	5	0.10%	YES	0.10%	
42	Ethylamine	14	8636-G2	0.0049	5	0.10%	YES	0.10%	
42	Ethylamine	16	8636-H2	0.0046	5	0.09%	YES	0.10%	
43	N-Nitrosodimethylamine	2	8635-A1	0.004522	0.0003	1507%		10.7%	D
43	N-Nitrosodimethylamine	4	8635-B1	0.004654	0.0003	1551%		10.7%	D
43	N-Nitrosodimethylamine	6	8635-C1	0.004689	0.0003	1563%		10.7%	D
43	N-Nitrosodimethylamine	8	8635-D1	0.004913	0.0003	1638%		10.7%	D
43	N-Nitrosodimethylamine	10	8635-E1	0.004285	0.0003	1428%		10.7%	D
43	N-Nitrosodimethylamine	12	8635-F1	0.004457	0.0003	1486%		10.7%	D
43	N-Nitrosodimethylamine	14	8635-G1	0.004176	0.0003	1392%		10.7%	D
43	N-Nitrosodimethylamine	16	8635-H1	0.004013	0.0003	1338%		10.7%	D
43	N-Nitrosodimethylamine	2	8635-A2	0.000025	0.0003	8.33%	YES	10.7%	
43	N-Nitrosodimethylamine	4	8635-B2	0.000024	0.0003	8.08%	YES	10.7%	
43	N-Nitrosodimethylamine	6	8635-C2	0.000025	0.0003	8.33%	YES	10.7%	
43	N-Nitrosodimethylamine	8	8635-D2	0.000025	0.0003	8.44%	YES	10.7%	
43	N-Nitrosodimethylamine	10	8635-E2	0.000025	0.0003	8.26%	YES	10.7%	
43	N-Nitrosodimethylamine	12	8635-F2	0.000024	0.0003	8.16%	YES	10.7%	
43	N-Nitrosodimethylamine	14	8635-G2	0.000024	0.0003	8.12%	YES	10.7%	
43	N-Nitrosodimethylamine	16	8635-H2	0.000024	0.0003	8.10%	YES	10.7%	
43	N-Nitrosodimethylamine	2	8636-A1	0.004309	0.0003	1436%		10.7%	D
43	N-Nitrosodimethylamine	4	8636-B1	0.001729	0.0003	576%		10.7%	D
43	N-Nitrosodimethylamine	6	8636-C1	0.004633	0.0003	1544%		10.7%	D
43	N-Nitrosodimethylamine	8	8636-D1	0.004320	0.0003	1440%		10.7%	D
43	N-Nitrosodimethylamine	10	8636-E1	0.004690	0.0003	1563%		10.7%	D
43	N-Nitrosodimethylamine	12	8636-F1	0.003869	0.0003	1290%		10.7%	D
43	N-Nitrosodimethylamine	14	8636-G1	0.004039	0.0003	1346%		10.7%	D
43	N-Nitrosodimethylamine	16	8636-H1	0.003852	0.0003	1284%		10.7%	D
43	N-Nitrosodimethylamine	2	8636-A2	0.000031	0.0003	10.4%	YES	10.7%	
43	N-Nitrosodimethylamine	4	8636-B2	0.000032	0.0003	10.7%	YES	10.7%	
43	N-Nitrosodimethylamine	6	8636-C2	0.000031	0.0003	10.2%	YES	10.7%	
43	N-Nitrosodimethylamine	8	8636-D2	0.000032	0.0003	10.6%	YES	10.7%	
43	N-Nitrosodimethylamine	10	8636-E2	0.000032	0.0003	10.7%	YES	10.7%	
43	N-Nitrosodimethylamine	12	8636-F2	0.000031	0.0003	10.5%	YES	10.7%	
43	N-Nitrosodimethylamine	14	8636-G2	0.000032	0.0003	10.5%	YES	10.7%	
43	N-Nitrosodimethylamine	16	8636-H2	0.000032	0.0003	10.6%	YES	10.7%	
44	N-Nitrosodiethylamine	2	8635-A1	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8635-B1	0.000023	0.0001	22.7%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8635-C1	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8635-D1	0.000023	0.0001	22.7%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8635-E1	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8635-F1	0.000023	0.0001	23.0%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8635-G1	0.000023	0.0001	23.0%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8635-H1	0.000023	0.0001	22.9%	YES	23.8%	

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
44	N-Nitrosodiethylamine	2	8635-A2	0.000023	0.0001	23.5%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8635-B2	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8635-C2	0.000023	0.0001	23.5%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8635-D2	0.000024	0.0001	23.8%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8635-E2	0.000023	0.0001	23.3%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8635-F2	0.000023	0.0001	23.0%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8635-G2	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8635-H2	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	2	8636-A1	0.000023	0.0001	22.6%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8636-B1	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8636-C1	0.000022	0.0001	21.8%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8636-D1	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8636-E1	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8636-F1	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8636-G1	0.000023	0.0001	23.4%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8636-H1	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	2	8636-A2	0.000023	0.0001	22.7%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8636-B2	0.000023	0.0001	23.2%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8636-C2	0.000022	0.0001	22.1%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8636-D2	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8636-E2	0.000023	0.0001	23.2%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8636-F2	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8636-G2	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8636-H2	0.000023	0.0001	23.0%	YES	23.8%	
45	N-Nitrosomethylethylamine	2	8635-A1	0.000030	0.0003	9.99%		9.18%	
45	N-Nitrosomethylethylamine	4	8635-B1	0.000036	0.0003	12.0%		9.18%	
45	N-Nitrosomethylethylamine	6	8635-C1	0.000039	0.0003	13.0%		9.18%	
45	N-Nitrosomethylethylamine	8	8635-D1	0.000037	0.0003	12.4%		9.18%	
45	N-Nitrosomethylethylamine	10	8635-E1	0.000037	0.0003	12.4%		9.18%	
45	N-Nitrosomethylethylamine	12	8635-F1	0.000035	0.0003	11.7%		9.18%	
45	N-Nitrosomethylethylamine	14	8635-G1	0.000039	0.0003	12.9%		9.18%	
45	N-Nitrosomethylethylamine	16	8635-H1	0.000030	0.0003	10.1%		9.18%	
45	N-Nitrosomethylethylamine	2	8635-A2	0.000027	0.0003	9.07%	YES	9.18%	
45	N-Nitrosomethylethylamine	4	8635-B2	0.000026	0.0003	8.79%	YES	9.18%	
45	N-Nitrosomethylethylamine	6	8635-C2	0.000027	0.0003	9.07%	YES	9.18%	
45	N-Nitrosomethylethylamine	8	8635-D2	0.000028	0.0003	9.18%	YES	9.18%	
45	N-Nitrosomethylethylamine	10	8635-E2	0.000027	0.0003	8.99%	YES	9.18%	
45	N-Nitrosomethylethylamine	12	8635-F2	0.000027	0.0003	8.88%	YES	9.18%	
45	N-Nitrosomethylethylamine	14	8635-G2	0.000027	0.0003	8.83%	YES	9.18%	
45	N-Nitrosomethylethylamine	16	8635-H2	0.000026	0.0003	8.81%	YES	9.18%	
45	N-Nitrosomethylethylamine	2	8636-A1	0.000033	0.0003	11.1%		9.18%	
45	N-Nitrosomethylethylamine	4	8636-B1	0.000025	0.0003	8.44%	YES	9.18%	
45	N-Nitrosomethylethylamine	6	8636-C1	0.000040	0.0003	13.4%		9.18%	
45	N-Nitrosomethylethylamine	8	8636-D1	0.000038	0.0003	12.6%		9.18%	
45	N-Nitrosomethylethylamine	10	8636-E1	0.000042	0.0003	14.0%		9.18%	
45	N-Nitrosomethylethylamine	12	8636-F1	0.000036	0.0003	12.1%		9.18%	
45	N-Nitrosomethylethylamine	14	8636-G1	0.000037	0.0003	12.3%		9.18%	
45	N-Nitrosomethylethylamine	16	8636-H1	0.000033	0.0003	11.0%		9.18%	
45	N-Nitrosomethylethylamine	2	8636-A2	0.000025	0.0003	8.35%	YES	9.18%	
45	N-Nitrosomethylethylamine	4	8636-B2	0.000026	0.0003	8.56%	YES	9.18%	
45	N-Nitrosomethylethylamine	6	8636-C2	0.000024	0.0003	8.16%	YES	9.18%	
45	N-Nitrosomethylethylamine	8	8636-D2	0.000026	0.0003	8.52%	YES	9.18%	
45	N-Nitrosomethylethylamine	10	8636-E2	0.000026	0.0003	8.56%	YES	9.18%	
45	N-Nitrosomethylethylamine	12	8636-F2	0.000025	0.0003	8.42%	YES	9.18%	
45	N-Nitrosomethylethylamine	14	8636-G2	0.000025	0.0003	8.43%	YES	9.18%	
45	N-Nitrosomethylethylamine	16	8636-H2	0.000025	0.0003	8.47%	YES	9.18%	
46	N-Nitrosomorpholine	2	8635-A1	0.000037	0.0006	6.22%		3.48%	
46	N-Nitrosomorpholine	4	8635-B1	0.000037	0.0006	6.21%		3.48%	
46	N-Nitrosomorpholine	6	8635-C1	0.000033	0.0006	5.54%		3.48%	
46	N-Nitrosomorpholine	8	8635-D1	0.000030	0.0006	5.00%		3.48%	

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
46	N-Nitrosomorpholine	10	8635-E1	0.000029	0.0006	4.87%		3.48%	
46	N-Nitrosomorpholine	12	8635-F1	0.000020	0.0006	3.37%	YES	3.48%	
46	N-Nitrosomorpholine	14	8635-G1	0.000020	0.0006	3.38%	YES	3.48%	
46	N-Nitrosomorpholine	16	8635-H1	0.000020	0.0006	3.36%	YES	3.48%	
46	N-Nitrosomorpholine	2	8635-A2	0.000021	0.0006	3.44%	YES	3.48%	
46	N-Nitrosomorpholine	4	8635-B2	0.000020	0.0006	3.34%	YES	3.48%	
46	N-Nitrosomorpholine	6	8635-C2	0.000021	0.0006	3.44%	YES	3.48%	
46	N-Nitrosomorpholine	8	8635-D2	0.000021	0.0006	3.48%	YES	3.48%	
46	N-Nitrosomorpholine	10	8635-E2	0.000020	0.0006	3.41%	YES	3.48%	
46	N-Nitrosomorpholine	12	8635-F2	0.000020	0.0006	3.37%	YES	3.48%	
46	N-Nitrosomorpholine	14	8635-G2	0.000020	0.0006	3.35%	YES	3.48%	
46	N-Nitrosomorpholine	16	8635-H2	0.000020	0.0006	3.34%	YES	3.48%	
46	N-Nitrosomorpholine	2	8636-A1	0.000033	0.0006	5.58%		3.48%	
46	N-Nitrosomorpholine	4	8636-B1	0.000019	0.0006	3.20%	YES	3.48%	
46	N-Nitrosomorpholine	6	8636-C1	0.000028	0.0006	4.64%		3.48%	
46	N-Nitrosomorpholine	8	8636-D1	0.000029	0.0006	4.78%		3.48%	
46	N-Nitrosomorpholine	10	8636-E1	0.000029	0.0006	4.87%		3.48%	
46	N-Nitrosomorpholine	12	8636-F1	0.000024	0.0006	3.97%		3.48%	
46	N-Nitrosomorpholine	14	8636-G1	0.000022	0.0006	3.74%		3.48%	
46	N-Nitrosomorpholine	16	8636-H1	0.000019	0.0006	3.24%	YES	3.48%	
46	N-Nitrosomorpholine	2	8636-A2	0.000019	0.0006	3.17%	YES	3.48%	
46	N-Nitrosomorpholine	4	8636-B2	0.000019	0.0006	3.25%	YES	3.48%	
46	N-Nitrosomorpholine	6	8636-C2	0.000019	0.0006	3.10%	YES	3.48%	
46	N-Nitrosomorpholine	8	8636-D2	0.000019	0.0006	3.23%	YES	3.48%	
46	N-Nitrosomorpholine	10	8636-E2	0.000019	0.0006	3.25%	YES	3.48%	
46	N-Nitrosomorpholine	12	8636-F2	0.000019	0.0006	3.20%	YES	3.48%	
46	N-Nitrosomorpholine	14	8636-G2	0.000019	0.0006	3.20%	YES	3.48%	
46	N-Nitrosomorpholine	16	8636-H2	0.000019	0.0006	3.22%	YES	3.48%	
47	Tributyl phosphate	2	8635-A1	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	4						0.114%	
47	Tributyl phosphate	6	8635-C1	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	8	8635-D1	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	10	8635-E1	0.00014	0.2	0.069%	YES	0.114%	U
47	Tributyl phosphate	12	8635-F1	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	14	8635-G1	0.00012	0.2	0.062%	YES	0.114%	U
47	Tributyl phosphate	16	8635-H1	0.00013	0.2	0.063%	YES	0.114%	U
47	Tributyl phosphate	2	8635-A2	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	4	8635-B2	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	6	8635-C2	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	8	8635-D2	0.00014	0.2	0.069%	YES	0.114%	U
47	Tributyl phosphate	10	8635-E2	0.00013	0.2	0.067%	YES	0.114%	U
47	Tributyl phosphate	12	8635-F2	0.00023	0.2	0.114%	YES	0.114%	U
47	Tributyl phosphate	14	8635-G2	0.00012	0.2	0.059%	YES	0.114%	U
47	Tributyl phosphate	16	8635-H2	0.00013	0.2	0.063%	YES	0.114%	U
47	Tributyl phosphate	2	8636-A1	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	4	8636-B1	0.00013	0.2	0.064%	YES	0.114%	U
47	Tributyl phosphate	6	8636-C1	0.00013	0.2	0.065%	YES	0.114%	U
47	Tributyl phosphate	8	8636-D1	0.00014	0.2	0.070%	YES	0.114%	U
47	Tributyl phosphate	10	8636-E1	0.00014	0.2	0.070%	YES	0.114%	U
47	Tributyl phosphate	12	8636-F1	0.00013	0.2	0.065%	YES	0.114%	U
47	Tributyl phosphate	14						0.114%	
47	Tributyl phosphate	16	8636-H1	0.00013	0.2	0.064%	YES	0.114%	U
47	Tributyl phosphate	2	8636-A2	0.00014	0.2	0.071%	YES	0.114%	U
47	Tributyl phosphate	4	8636-B2	0.00014	0.2	0.071%	YES	0.114%	U
47	Tributyl phosphate	6	8636-C2	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	8	8636-D2	0.00014	0.2	0.071%	YES	0.114%	U
47	Tributyl phosphate	10	8636-E2	0.00013	0.2	0.064%	YES	0.114%	U
47	Tributyl phosphate	12	8636-F2	0.00012	0.2	0.062%	YES	0.114%	U
47	Tributyl phosphate	14	8636-G2	0.00012	0.2	0.062%	YES	0.114%	U
47	Tributyl phosphate	16	8636-H2	0.00013	0.2	0.063%	YES	0.114%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
48	Dibutyl butylphosphonate	2	8635-A1	0.00009	0.007	1.30%	YES	2.23%	U
48	Dibutyl butylphosphonate	4						2.23%	
48	Dibutyl butylphosphonate	6	8635-C1	0.00009	0.007	1.33%	YES	2.23%	U
48	Dibutyl butylphosphonate	8	8635-D1	0.00009	0.007	1.33%	YES	2.23%	U
48	Dibutyl butylphosphonate	10	8635-E1	0.00009	0.007	1.36%	YES	2.23%	U
48	Dibutyl butylphosphonate	12	8635-F1	0.00009	0.007	1.34%	YES	2.23%	U
48	Dibutyl butylphosphonate	14	8635-G1	0.00008	0.007	1.21%	YES	2.23%	U
48	Dibutyl butylphosphonate	16	8635-H1	0.00009	0.007	1.24%	YES	2.23%	U
48	Dibutyl butylphosphonate	2	8635-A2	0.00009	0.007	1.30%	YES	2.23%	U
48	Dibutyl butylphosphonate	4	8635-B2	0.00009	0.007	1.32%	YES	2.23%	U
48	Dibutyl butylphosphonate	6	8635-C2	0.00009	0.007	1.33%	YES	2.23%	U
48	Dibutyl butylphosphonate	8	8635-D2	0.00009	0.007	1.35%	YES	2.23%	U
48	Dibutyl butylphosphonate	10	8635-E2	0.00009	0.007	1.31%	YES	2.23%	U
48	Dibutyl butylphosphonate	12	8635-F2	0.00016	0.007	2.23%	YES	2.23%	U
48	Dibutyl butylphosphonate	14	8635-G2	0.00008	0.007	1.15%	YES	2.23%	U
48	Dibutyl butylphosphonate	16	8635-H2	0.00009	0.007	1.22%	YES	2.23%	U
48	Dibutyl butylphosphonate	2	8636-A1	0.00009	0.007	1.29%	YES	2.23%	U
48	Dibutyl butylphosphonate	4	8636-B1	0.00009	0.007	1.24%	YES	2.23%	U
48	Dibutyl butylphosphonate	6	8636-C1	0.00009	0.007	1.27%	YES	2.23%	U
48	Dibutyl butylphosphonate	8	8636-D1	0.00010	0.007	1.36%	YES	2.23%	U
48	Dibutyl butylphosphonate	10	8636-E1	0.00010	0.007	1.36%	YES	2.23%	U
48	Dibutyl butylphosphonate	12	8636-F1	0.00009	0.007	1.28%	YES	2.23%	U
48	Dibutyl butylphosphonate	14						2.23%	
48	Dibutyl butylphosphonate	16	8636-H1	0.00009	0.007	1.25%	YES	2.23%	U
48	Dibutyl butylphosphonate	2	8636-A2	0.00010	0.007	1.40%	YES	2.23%	U
48	Dibutyl butylphosphonate	4	8636-B2	0.00010	0.007	1.38%	YES	2.23%	U
48	Dibutyl butylphosphonate	6	8636-C2	0.00009	0.007	1.29%	YES	2.23%	U
48	Dibutyl butylphosphonate	8	8636-D2	0.00010	0.007	1.39%	YES	2.23%	U
48	Dibutyl butylphosphonate	10	8636-E2	0.00009	0.007	1.26%	YES	2.23%	U
48	Dibutyl butylphosphonate	12	8636-F2	0.00008	0.007	1.21%	YES	2.23%	U
48	Dibutyl butylphosphonate	14	8636-G2	0.00009	0.007	1.22%	YES	2.23%	U
48	Dibutyl butylphosphonate	16	8636-H2	0.00009	0.007	1.22%	YES	2.23%	U
51	Pyridine	2	8635-A1	0.00029	1	0.029%	YES	0.035%	U
51	Pyridine	4	8635-B1	0.00029	1	0.029%	YES	0.035%	U
51	Pyridine	6	8635-C1	0.00032	1	0.032%	YES	0.035%	U
51	Pyridine	8	8635-D1	0.00032	1	0.032%	YES	0.035%	U
51	Pyridine	10	8635-E1	0.00032	1	0.032%	YES	0.035%	U
51	Pyridine	12	8635-F1	0.00031	1	0.031%	YES	0.035%	U
51	Pyridine	14	8635-G1	0.00029	1	0.029%	YES	0.035%	U
51	Pyridine	16	8635-H1	0.00030	1	0.030%	YES	0.035%	U
51	Pyridine	2	8635-A2	0.00031	1	0.031%	YES	0.035%	U
51	Pyridine	4	8635-B2	0.00030	1	0.030%	YES	0.035%	U
51	Pyridine	6	8635-C2	0.00033	1	0.033%	YES	0.035%	U
51	Pyridine	8	8635-D2	0.00035	1	0.035%	YES	0.035%	U
51	Pyridine	10	8635-E2	0.00032	1	0.032%	YES	0.035%	U
51	Pyridine	12	8635-F2	0.00031	1	0.031%	YES	0.035%	U
51	Pyridine	14	8635-G2	0.00032	1	0.032%	YES	0.035%	U
51	Pyridine	16	8635-H2	0.00031	1	0.031%	YES	0.035%	U
51	Pyridine	2	8636-A1	0.00024	1	0.024%	YES	0.035%	U
51	Pyridine	4	8636-B1	0.00022	1	0.022%	YES	0.035%	U
51	Pyridine	6	8636-C1	0.00022	1	0.022%	YES	0.035%	U
51	Pyridine	8	8636-D1	0.00024	1	0.024%	YES	0.035%	U
51	Pyridine	10	8636-E1	0.00023	1	0.023%	YES	0.035%	U
51	Pyridine	12	8636-F1	0.00023	1	0.023%	YES	0.035%	U
51	Pyridine	14	8636-G1	0.00022	1	0.022%	YES	0.035%	U
51	Pyridine	16	8636-H1	0.00023	1	0.023%	YES	0.035%	U
51	Pyridine	2	8636-A2	0.00023	1	0.023%	YES	0.035%	U
51	Pyridine	4	8636-B2	0.00022	1	0.022%	YES	0.035%	U
51	Pyridine	6	8636-C2	0.00021	1	0.021%	YES	0.035%	U
51	Pyridine	8	8636-D2	0.00023	1	0.023%	YES	0.035%	U
51	Pyridine	10	8636-E2	0.00024	1	0.024%	YES	0.035%	U
51	Pyridine	12	8636-F2	0.00023	1	0.023%	YES	0.035%	U

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
51	Pyridine	14	8636-G2	0.00022	1	0.022%	YES	0.035%	U
51	Pyridine	16	8636-H2	0.00022	1	0.022%	YES	0.035%	U
52	2,4-Dimethylpyridine	2	8635-A1	0.00018	0.5	0.037%	YES	0.052%	U
52	2,4-Dimethylpyridine	4	8635-B1	0.00019	0.5	0.037%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8635-C1	0.00021	0.5	0.042%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8635-D1	0.00020	0.5	0.041%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	8635-E1	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8635-F1	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8635-G1	0.00019	0.5	0.038%	YES	0.052%	U
52	2,4-Dimethylpyridine	16	8635-H1	0.00019	0.5	0.038%	YES	0.052%	U
52	2,4-Dimethylpyridine	2	8635-A2	0.00020	0.5	0.039%	YES	0.052%	U
52	2,4-Dimethylpyridine	4	8635-B2	0.00019	0.5	0.039%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8635-C2	0.00021	0.5	0.042%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8635-D2	0.00022	0.5	0.045%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	8635-E2	0.00021	0.5	0.041%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8635-F2	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8635-G2	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	16	8635-H2	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	2	8636-A1	0.00026	0.5	0.052%	YES	0.052%	U
52	2,4-Dimethylpyridine	4	8636-B1	0.00024	0.5	0.048%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8636-C1	0.00023	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8636-D1	0.00026	0.5	0.051%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	8636-E1	0.00024	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8636-F1	0.00025	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8636-G1	0.00024	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	16	8636-H1	0.00025	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	2	8636-A2	0.00024	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	4	8636-B2	0.00024	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8636-C2	0.00023	0.5	0.046%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8636-D2	0.00025	0.5	0.050%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	8636-E2	0.00026	0.5	0.052%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8636-F2	0.00025	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8636-G2	0.00024	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	16	8636-H2	0.00024	0.5	0.047%	YES	0.052%	U

Appendix E

Plots of Other COPCs with Significant (2–10% of the OEL) Detected Values

Appendix E

Plots of Other COPCs with Significant (2–10% of the OEL) Detected Values

Mercury *(see Figure E.1)* – The detection limit (DL) for mercury corresponds to ~ 9.9% of the OEL. All inlet concentrations measured throughout the testing period for both cartridges were less than the analytical DL. Correspondingly, all outlet concentrations were below the DL, indicating no evidence of breakthrough over the measured time period for either cartridge tested.

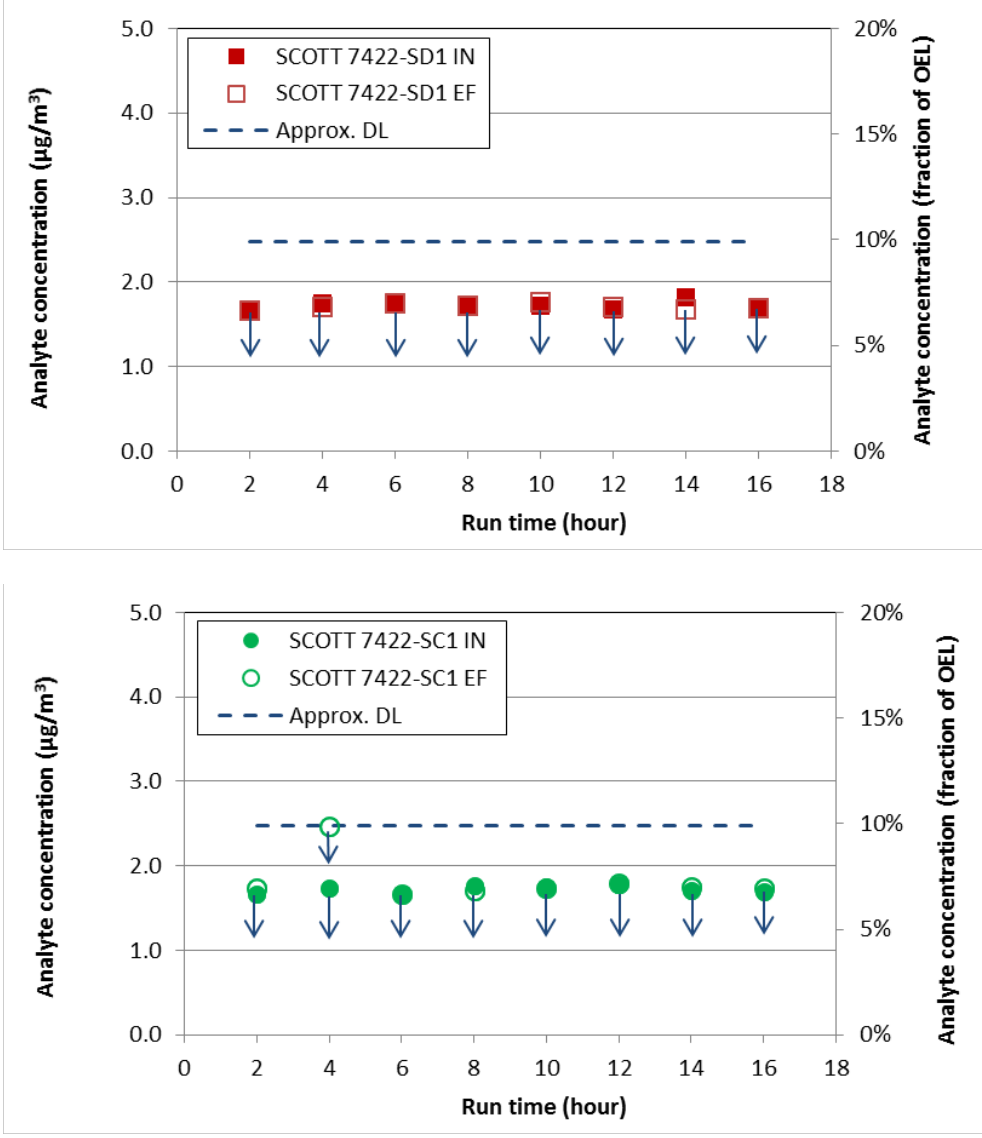


Figure E.1. Plot of Measured Mercury Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or reporting limit (RL). Outlet data points not visible are obscured by the inlet data points.

1,3-Butadiene *(see Figure E.2)* – The DL for 1,3-butadiene corresponds to ~2.0% of the OEL. All inlet and outlet concentration measurements were below the DL. Based on the data there is no evidence of breakthrough over the measured time period for either cartridge tested.

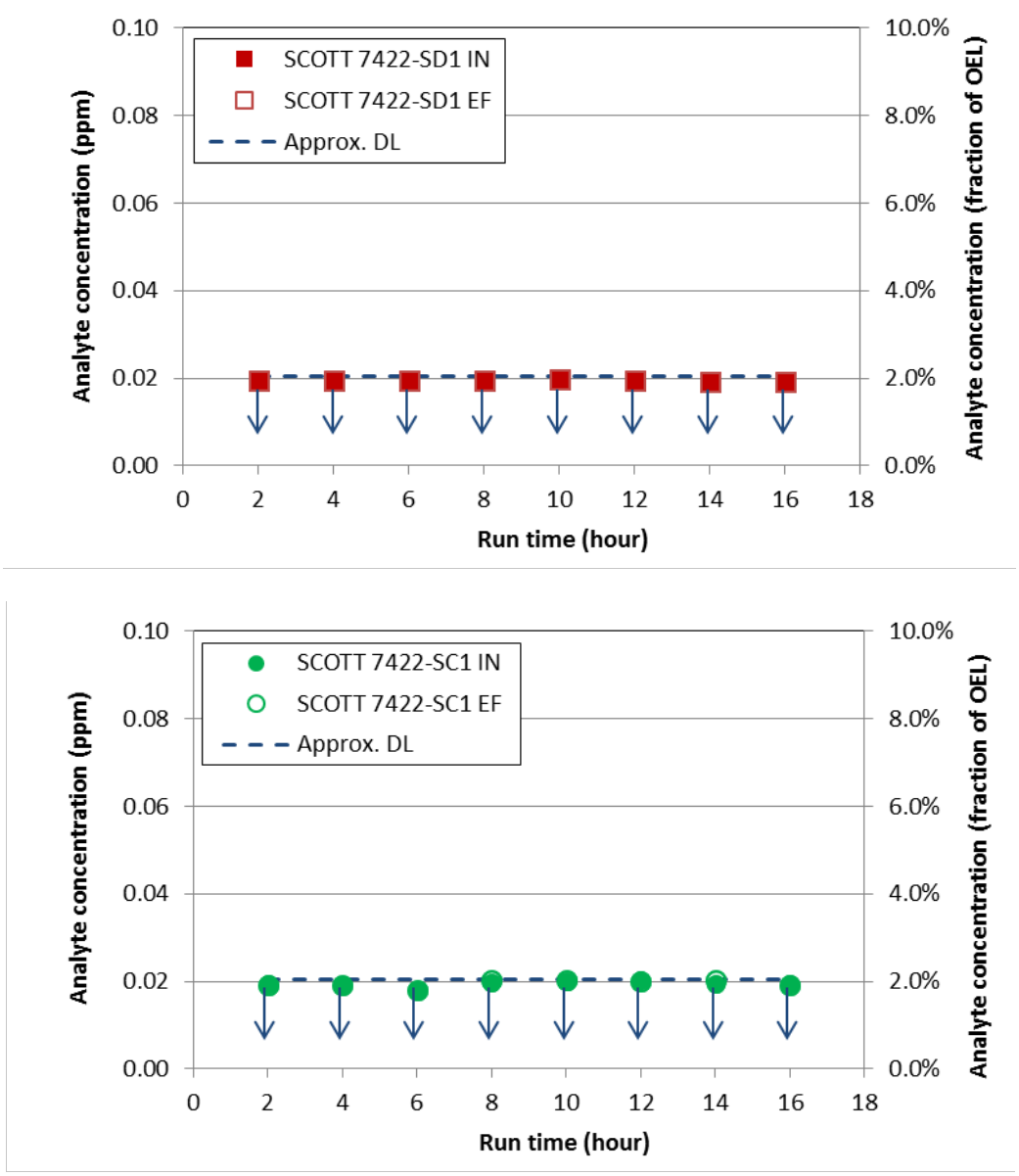


Figure E.2. Plot of Measured 1,3-Butadiene Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Formaldehyde *(see Figure E.3)* – The DL for formaldehyde corresponds to ~0.6% of its OEL. All inlet and outlet values measured for both respirator cartridges were <10% of the OEL; specifically <2.7% of the OEL. The initial inlet concentrations measured throughout the testing period for both cartridges were higher than the DL at the beginning of each cartridge test but decreased after the first inlet measurement. The latter outlet measurements for both cartridges were all less than the DL. This same trend was observed in prior tank analyses, suggesting possible environmental background interference, but this root cause still needs to be confirmed. Nevertheless, all outlet concentrations were <1% of the OEL, which is significantly lower than 10%. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

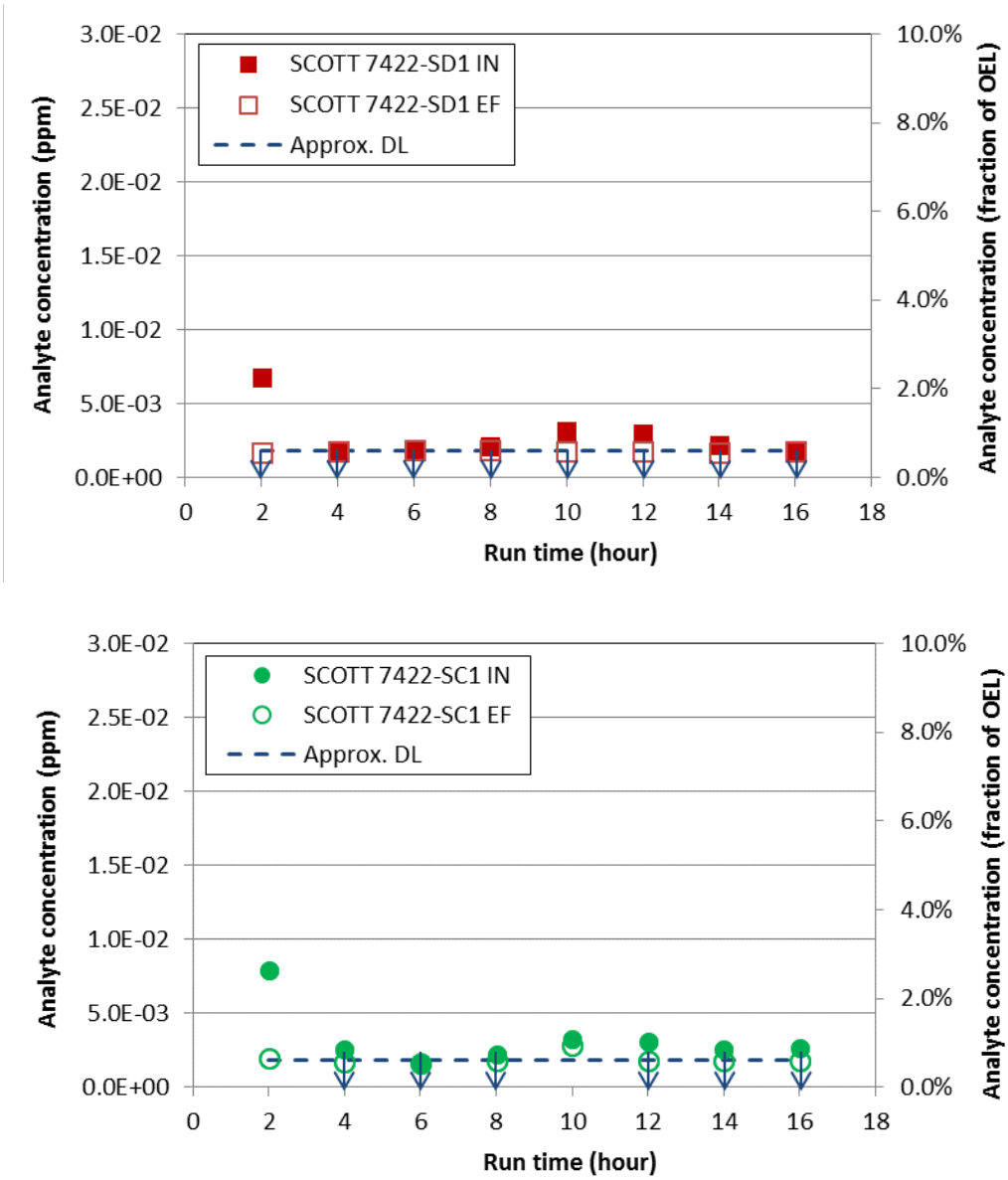


Figure E.3. Plot of Measured Formaldehyde Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

***Furan** (see Figure E.4)* – The DL for furan corresponds to ~5.7% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL;[17] specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

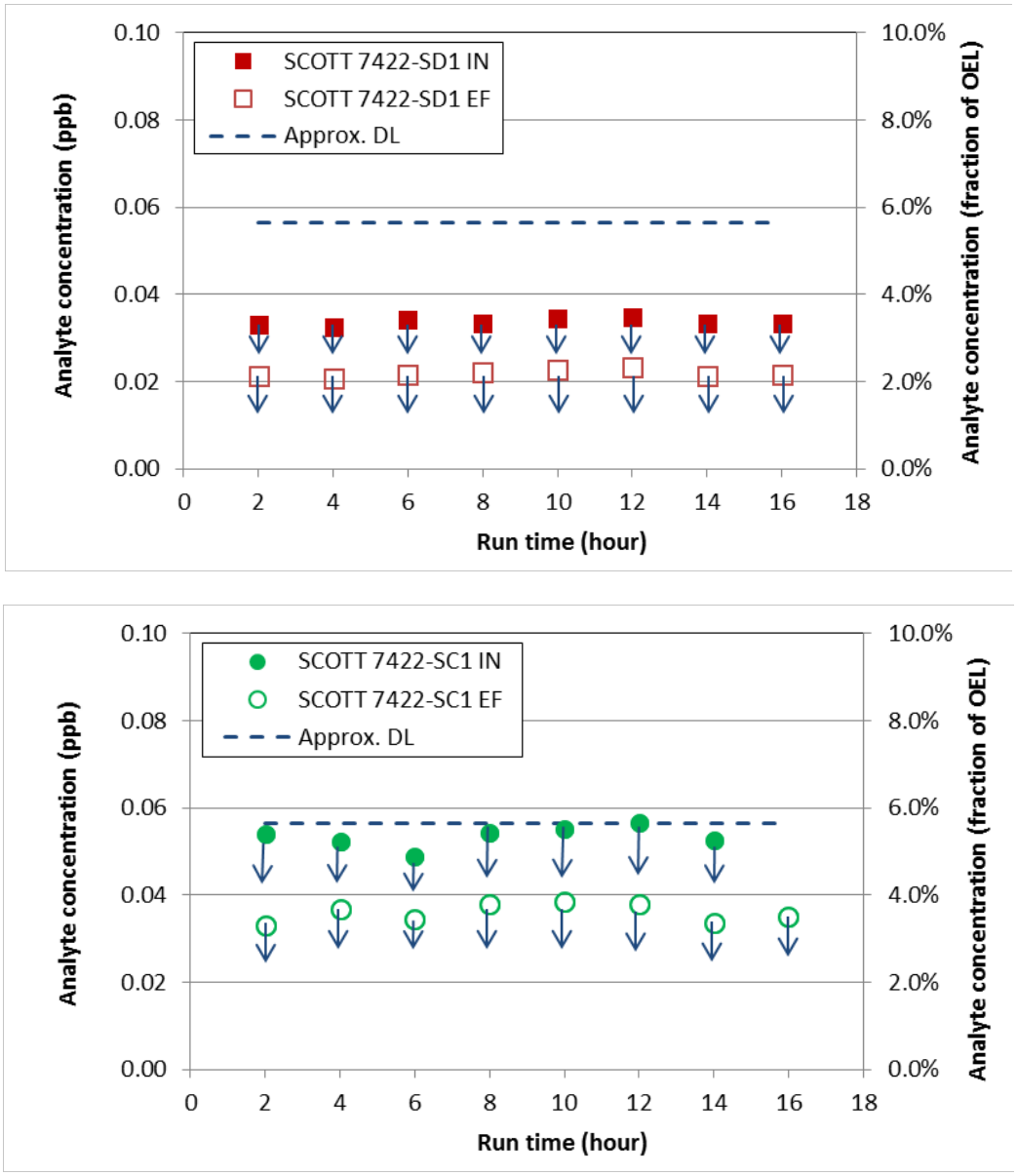


Figure E.4. Plot of Measured Furan Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

[17] Inlet concentration results for furan and all substituted furans for the 16-hour period (SCOTT 7422-SC1) were not recorded because of either a broken sorbent tube or analytical laboratory malfunction.

2,3-Dihydrofuran *(see Figure E.5)* – The DL for 2,3-dihydrofuran corresponds to ~3.0% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. One exception was the first inlet concentration (2 hour) for the SCOTT 7422-SD1 cartridge, which was greater than DL but still <3.0%. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

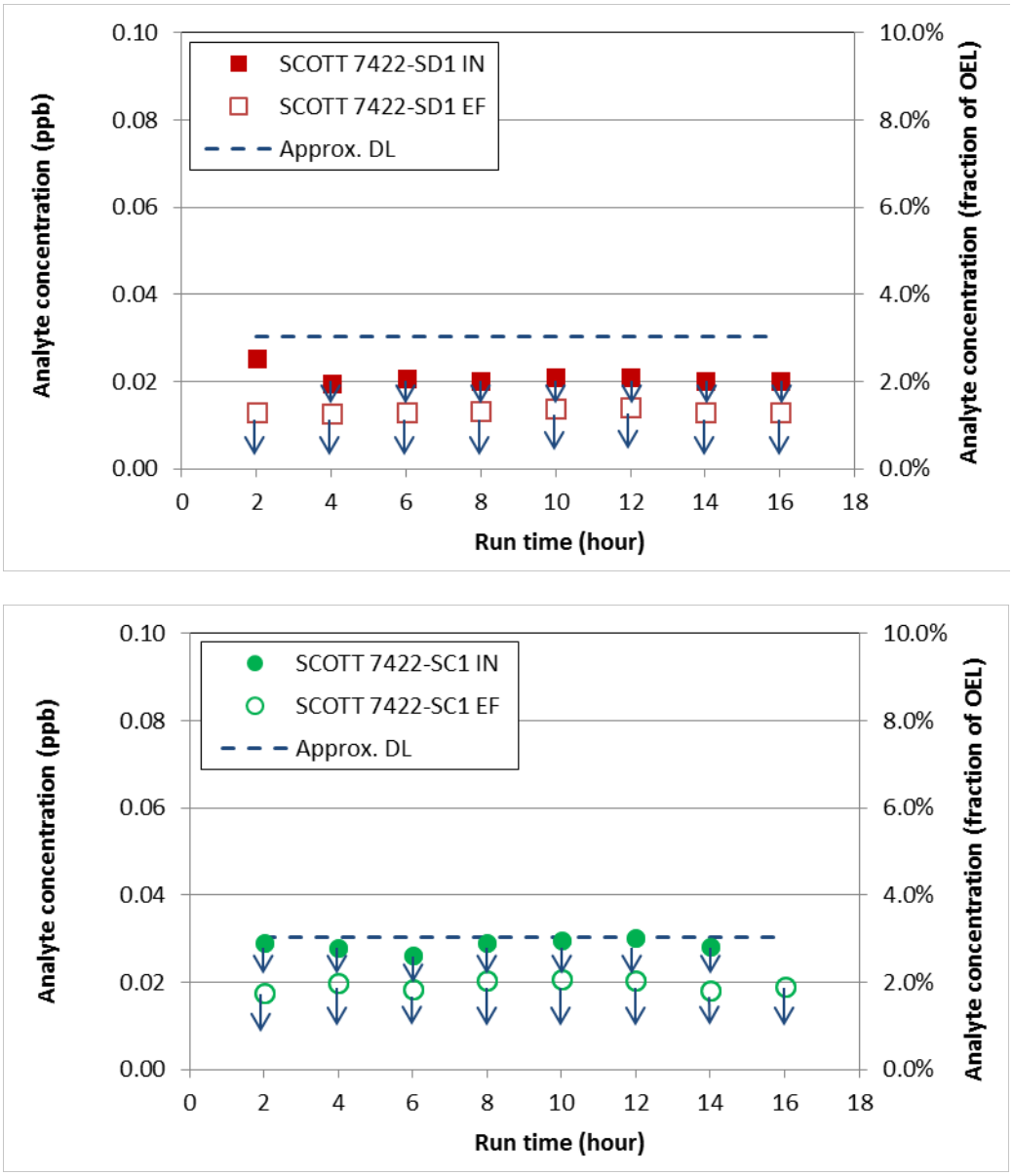


Figure E.5. Plot of Measured 2,3-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2,5-Dihydrofuran *(see Figure E.6)* – The DL for 2,5-dihydrofuran corresponds to ~4.3% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

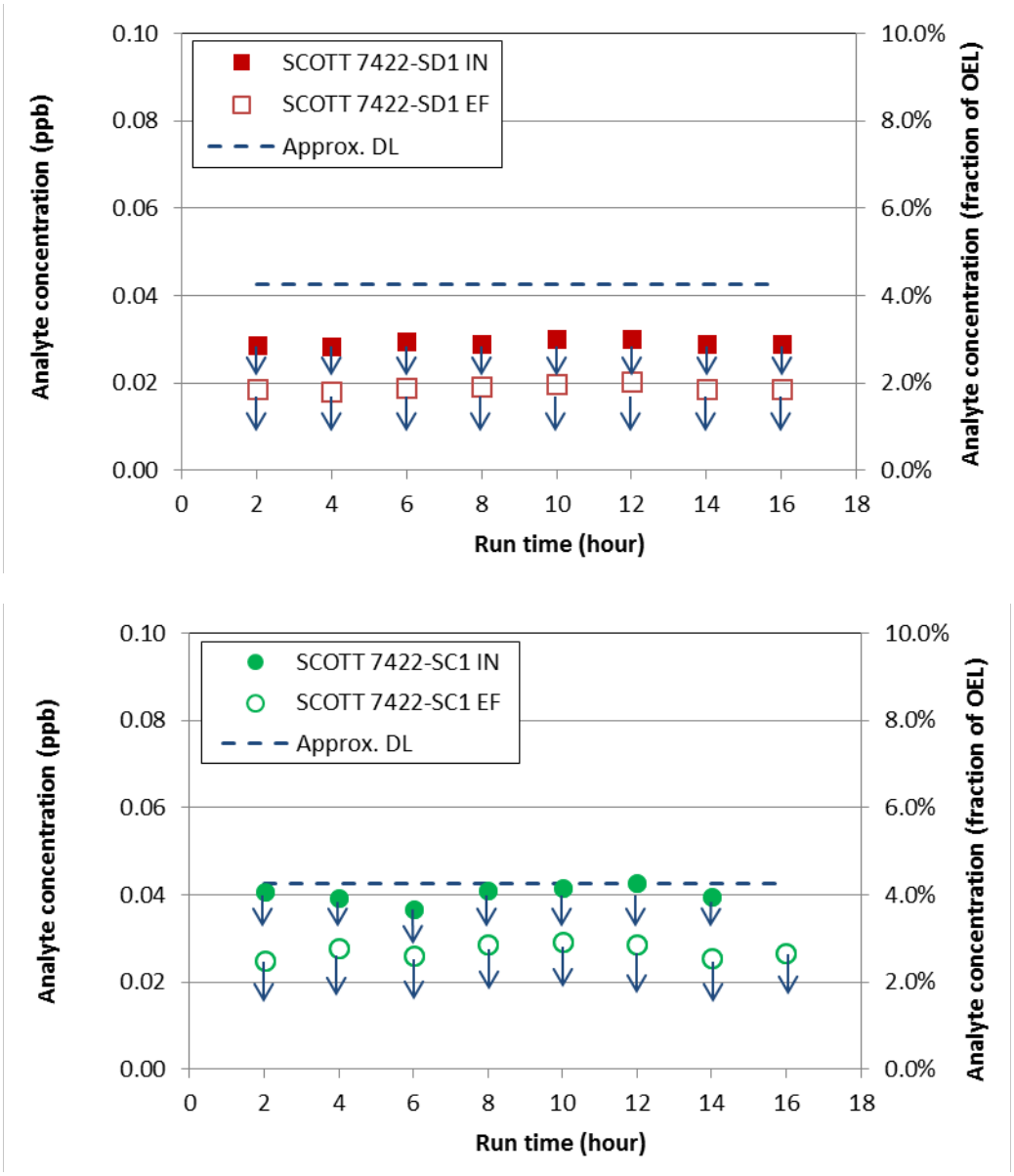


Figure E.6. Plot of Measured 2,5-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Methylfuran *(see Figure E.7)* – The DL for 2-methylfuran corresponds to ~3.6% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

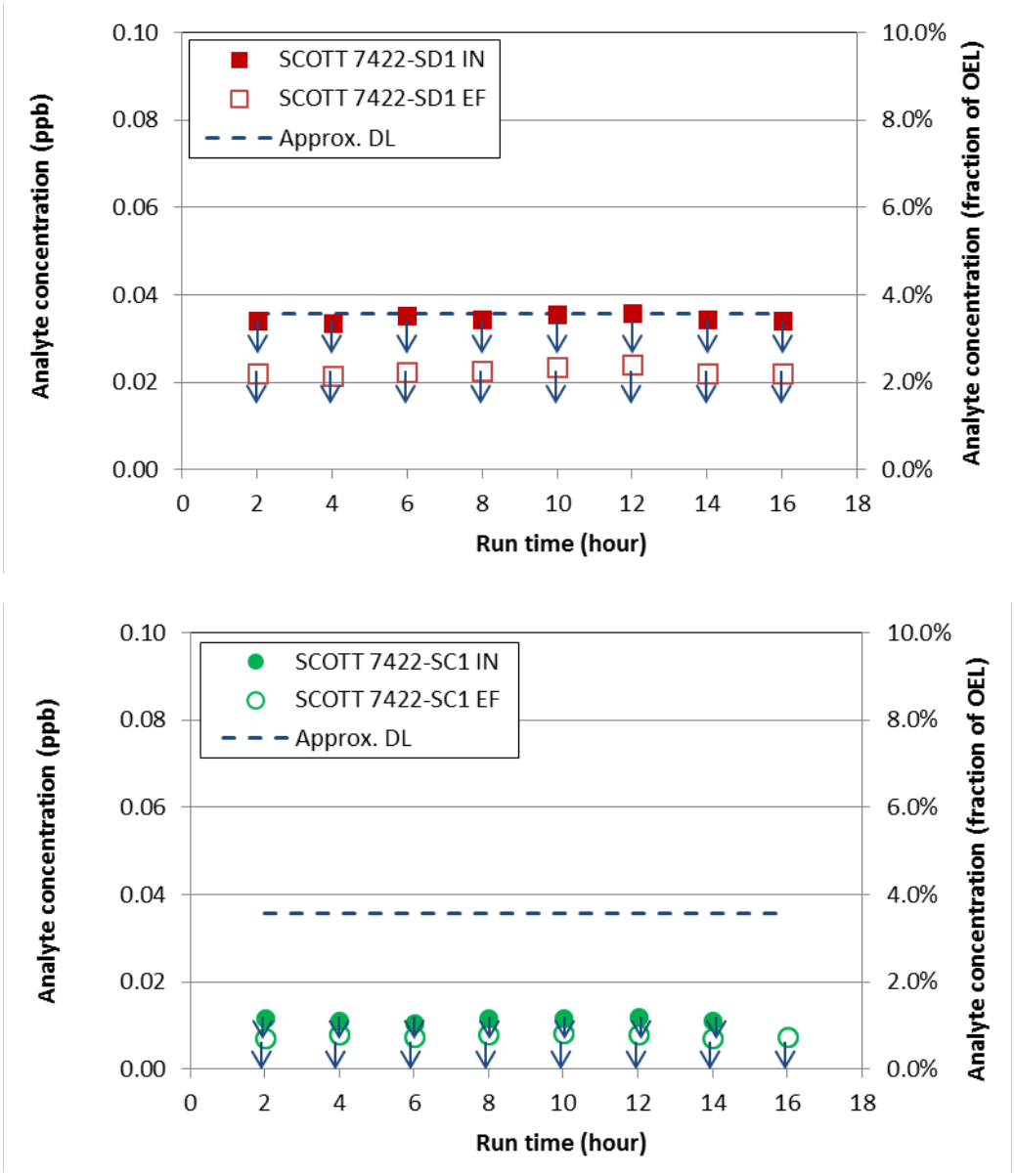


Figure E.7. Plot of Measured 2-Methylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2,5-Dimethylfuran *(see Figure E.8)* – The DL for 2,5-dimethylfuran corresponds to ~5.0% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

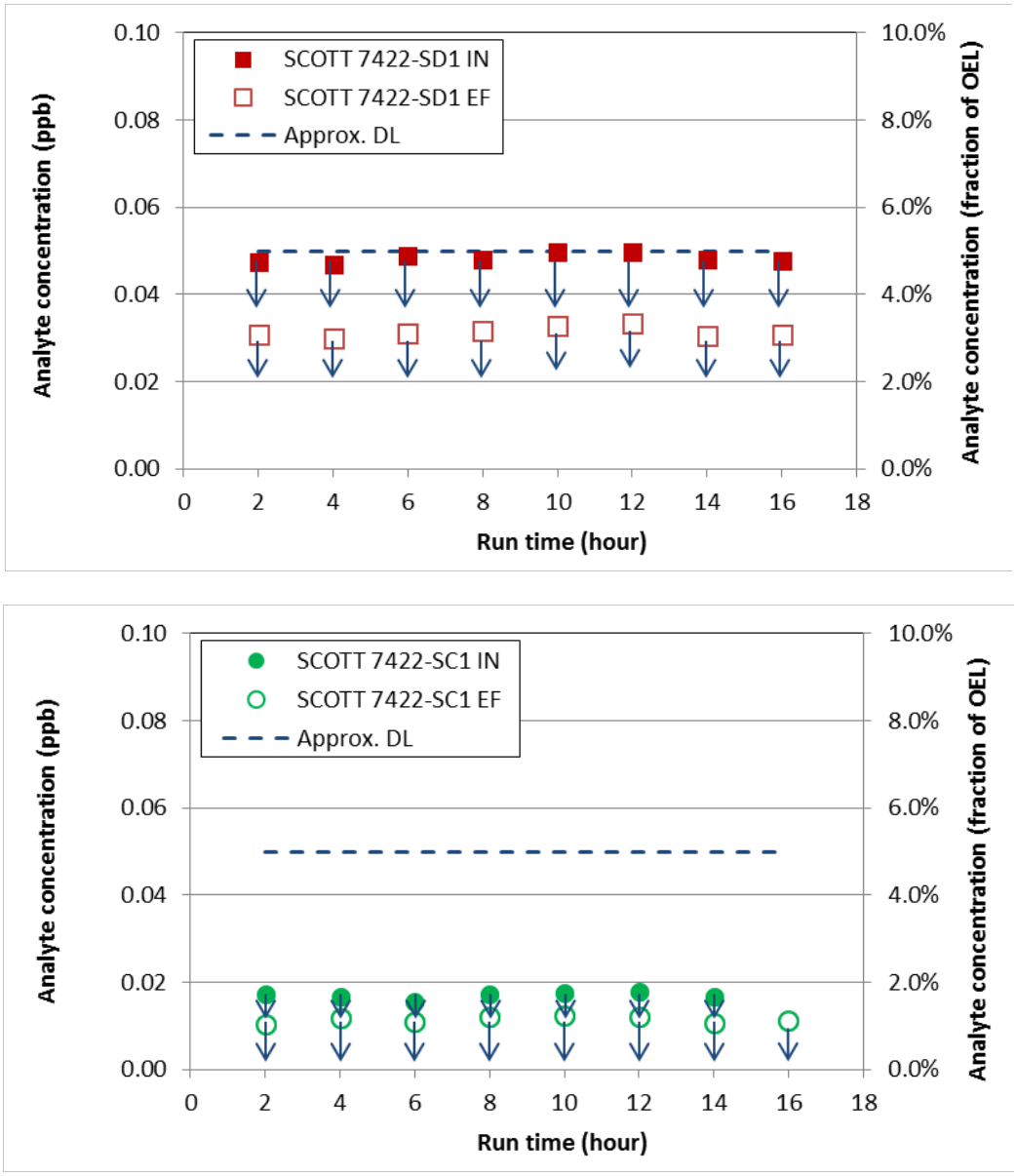


Figure E.8. Plot of Measured 2,5-Dimethylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Pentylfuran *(see Figure E.9)* – The DL for 2-pentylfuran corresponds to ~4.2% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

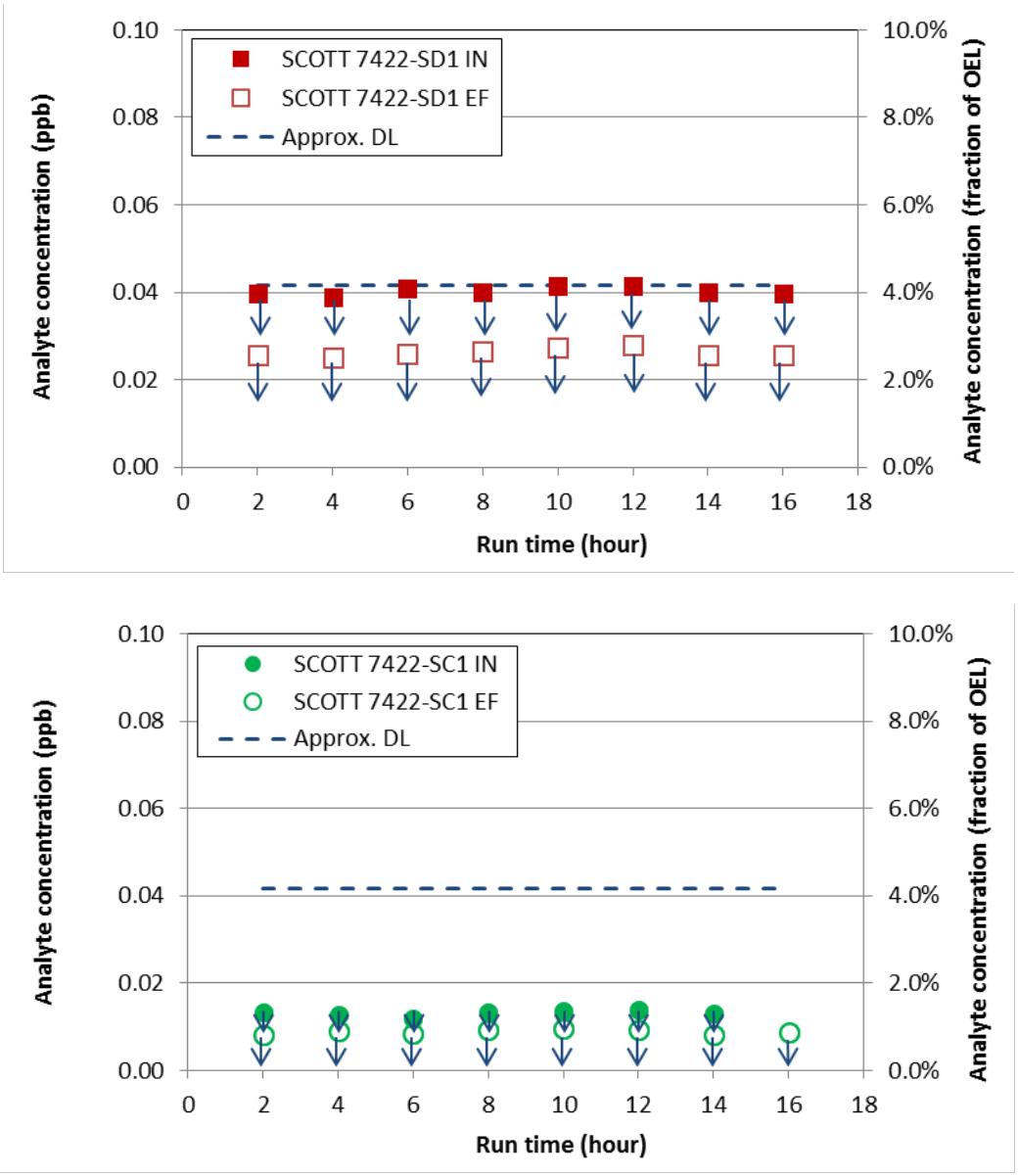


Figure E.9. Plot of Measured 2-Pentylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Heptylfuran *(see Figure E.10)* – The DL for 2-heptylfuran corresponds to ~3.3% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

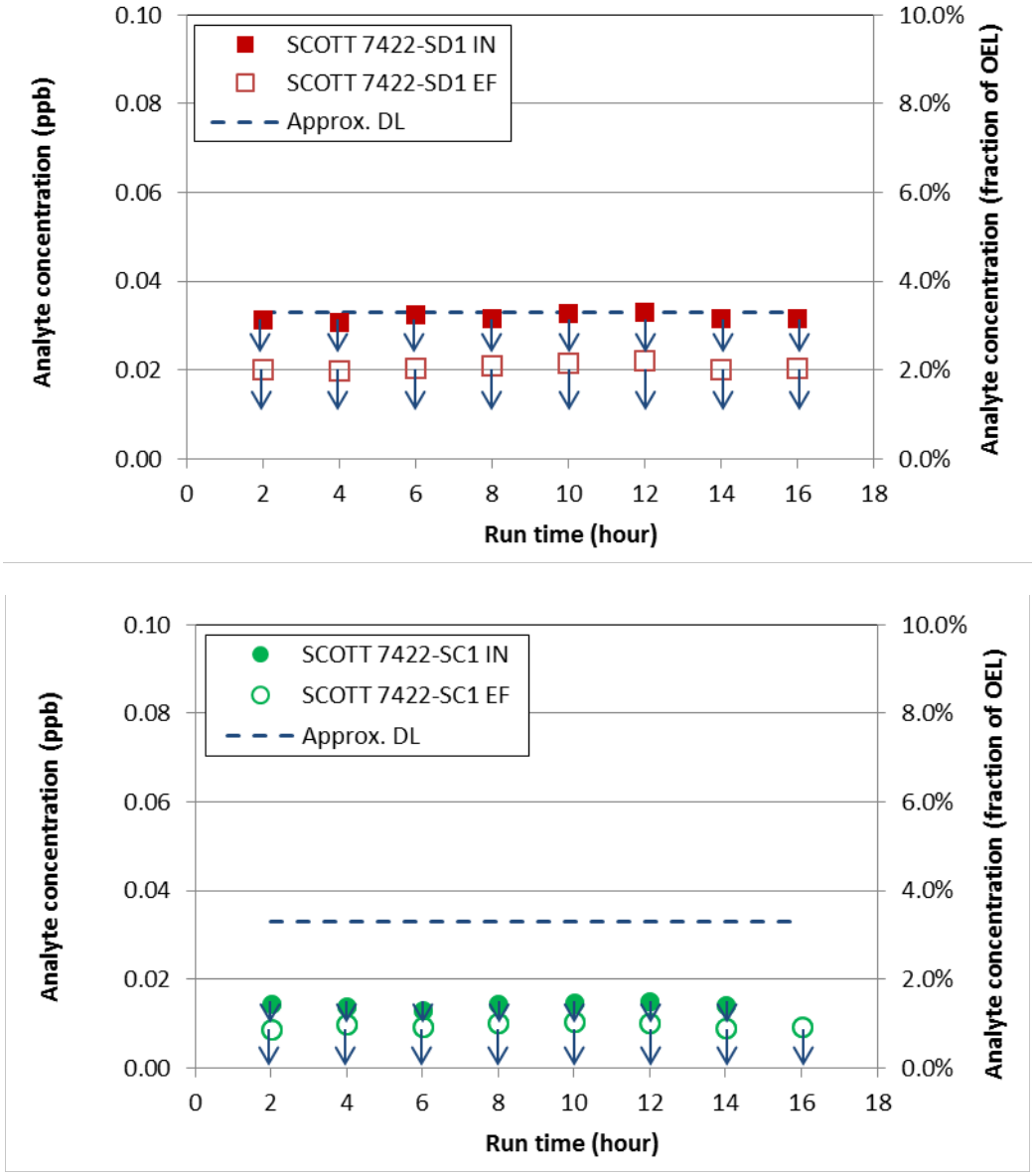


Figure E.10. Plot of Measured 2-Heptylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Propylfuran *(see Figure E.11)* – The DL for 2-propylfuran corresponds to ~3.6% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

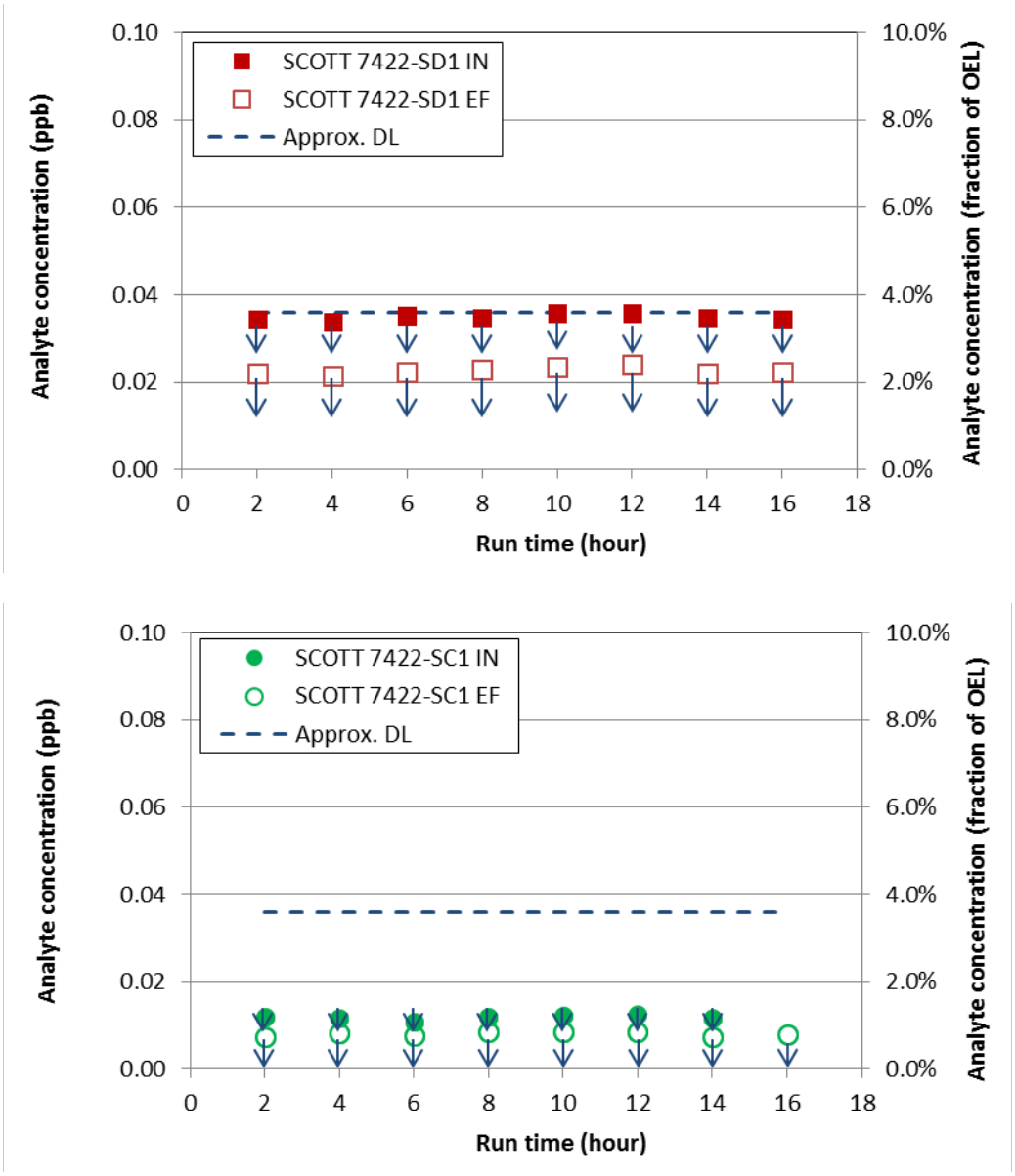
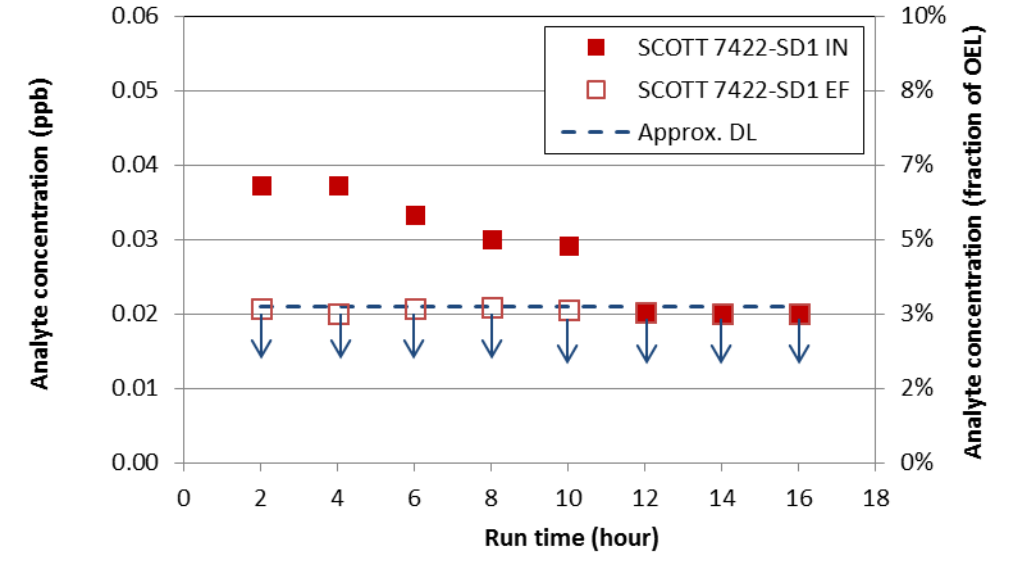


Figure E.11. Plot of Measured 2-Propylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosomorpholine (*see Figure E.12****)*** – The DL for N-nitrosomorpholine corresponds to ~3.5% of its OEL. The respirator cartridge inlet N-Nitrosomorpholine concentrations for both cartridges were as high 6.2% of the OEL at the beginning of testing and then decreased gradually, reaching the analytical DL by the end of testing for both cartridges. All outlet concentrations were less than the analytical reporting limit, indicating no breakthrough for either cartridge.



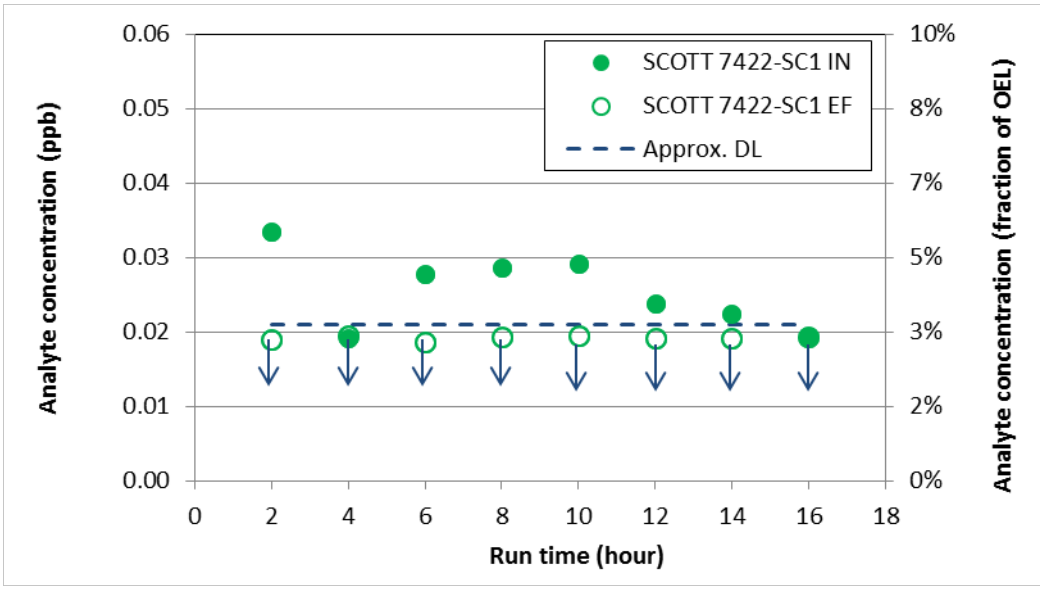


Figure E.12. Plot of Measured N-Nitrosomorpholine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Dibutyl butylphosphonate (*see Figure E.13****)*** – The DL for dibutyl butylphosphonate corresponds to ~2.2% of its OEL. All inlet and outlet values measured for the two respirator cartridges were <10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

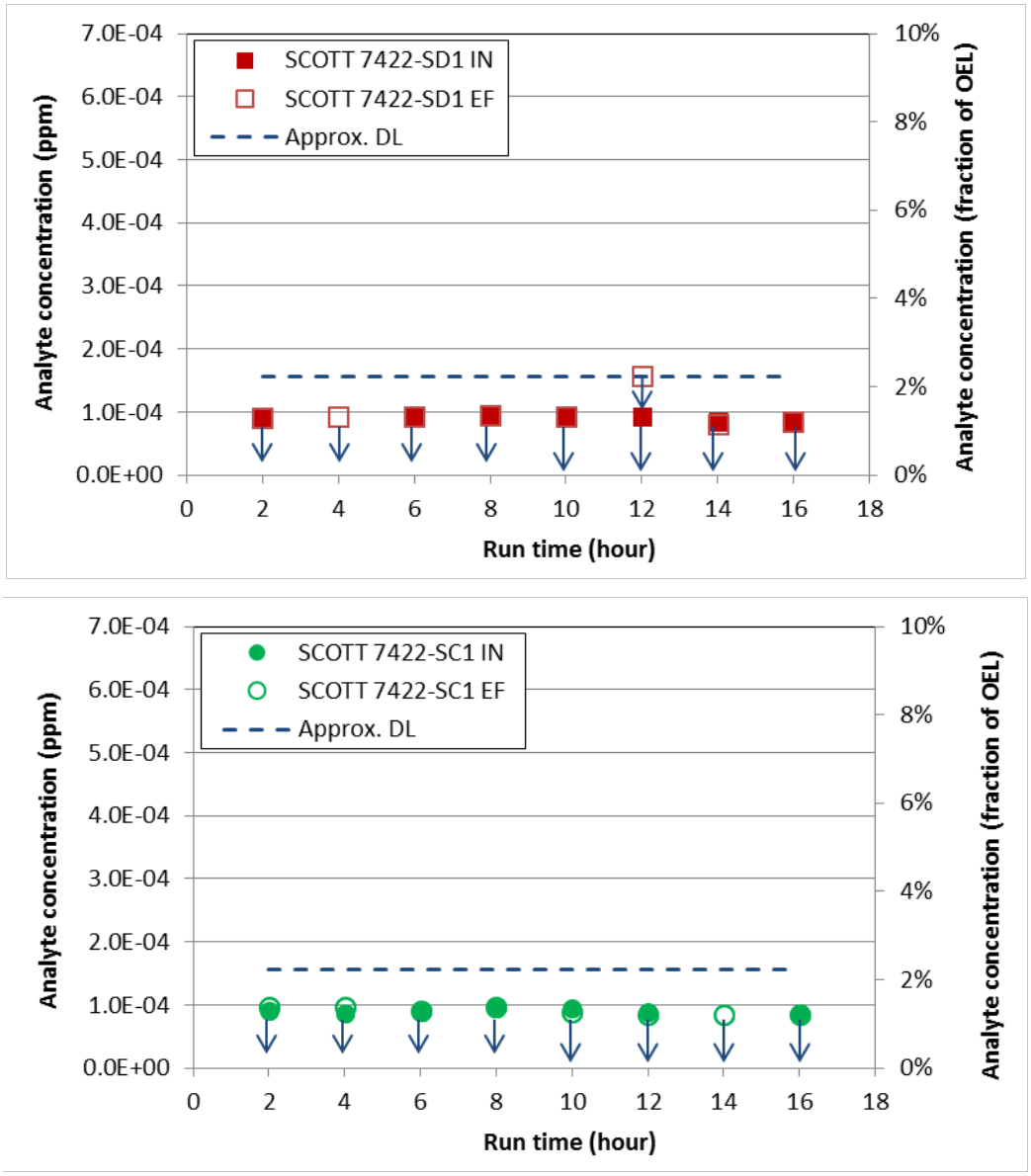


Figure E.13. Plot of Dibutyl butylphosphonate Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Appendix F

Historical Data Comparison

Appendix F

Historical Data Comparison

F.1 Data Sources

Headspace-characterization data and Industrial-Hygiene data—hereafter referred to as "TWINS HS" and "TWINS IH"—were obtained from the Tank Characterization Database via the Tank Waste Information Network System (TWINS). All vapor analysis results for the AW exhaust were obtained via a TWINS query on June 20, 2016, for TWINS HS,[18] and another query on December 21, 2016, for TWINS IH. More recent headspace data were also obtained from the Site-Wide Industrial Hygiene Database (SWIHD) by a query on December 21, 2016, that obtained all headspace data that were present as of that date, producing a set referred to as "SWIHD HS."

TWINS HS and TWINS IH data were eliminated from consideration if they were

- Quality Assurance samples (blanks, laboratory control samples, or spikes)
- Marked as suspect (Data Qualifier flag S)
- Associated with a contaminant in a blank, trip blank, or field blank (Data Qualifier flags B, T, or F)
- A laboratory control sample that was out of range (Data Qualifier flag a)
- An excessive relative percent difference (Data Qualifier flag c)
- Marked with a laboratory-defined flag whose meaning was not generically defined and might indicate a serious data-quality issue (Data Qualifier flags L or Y).

Flags a, c, and L were found only in the TWINS IH database, not in TWINS HS.

The exclusions for the SWIHD HS data set were similar:

- Having a laboratory control sample that was out of range (flag a)
- Associated with a contaminant in a blank (flags b or B)
- Having an excessive relative percent difference or relative standard deviation (flags c or d)
- Having an excessive difference between the sample result and its serial dilution (flag e)
- Having a failed mass spectrometer reading on the sample but not on its serial dilution (flag f)
- Marked with a laboratory-defined flag whose meaning was not generically defined and might indicate a serious data-quality issue (flags L or Y).

[18] No data have been added to TWINS HS since April 2005, so the June 2016 download does not require updating.

TWINS HS results associated with chemicals that were ambiguously identified (e.g., "alkane," "unknown," "C6 ketone") were deleted unless the molecular weight of one of the chemicals could be unambiguously specified (e.g., "octanenitrile and others" was kept). In these mixture cases, where the Chemical ID consisted of a Chemical Abstracts Service (CAS) number followed by M, the molecular weight of the identified chemical was added to the data record, the CAS number was used for the Chemical ID, and the concentration expressed in parts per million (absent from the downloaded database) was calculated from the concentration in milligrams per cubic meter at 25°C and the molecular weight.

A number of chemicals in the TWINS IH data set had "needs conversion" notes in the concentration (mg/m^3 and ppm) columns, rather than numbers, and required calculations to supply these concentrations. The calculations made use of values already in the database: the molecular weight, the Reported Value and its units, and the Sample Volume and its units. A temperature of 25°C and a pressure of 1 atm were assumed.

The method described above was consistent with that used in PNNL-25880, except that measurements that were non-reports – less than the reporting limit (RL) for the analyte – were excluded in PNNL-25880 and were not excluded in this study.

For comparison to cartridge tests that were made using a gas stream from AW Stack, only exhaust measurements were appropriate. The TWINS HS database contained data identified as having the location "AW Ventilation", which were included as part of this analysis. The SWIHD HS database contained no data for the AW stack. The TWINS IH database required sorting, as described below, so that only exhaust data were used.

The AW Farm data in the TWINS IH database that were used in analysis all had the location "Primary Exhauster" listed. Data where the location was an individual tank name, "CAM Cabinet", or "Inside Farm" were not used. Survey titles for the "Inside Farm" location included descriptors such as "evaporator pot dump", "motor housing", or "inlet filter AWxxx", none of which seemed relevant to in-stack concentrations. Of the data with location "Primary Exhauster", all were used except for those whose survey title included "fan motor housing sampling." The data that were used almost all had "stack" somewhere in the survey title.

Maximum and average[19,20] exhaust concentrations were found for each analyte for the combined TWINS IH and SWIHD HS databases.[21] These maxima and averages are given in Table F.1, together with Occupational Exposure Limits (OELs) and counts of the number of samples. The notation "n/a" is used where there were no measurements of the analyte.

Because the TWINS HS data were older, they were considered less representative of the vapors present during cartridge testing and the default was to omit them from calculations. However, in some cases the maximum and average for an analyte were considerably different if they were determined from a combination of all three databases. Whenever this was the case, the results for the three-database combination are tabulated along with those for the default two-database combination. That is, Table F.1 contains two rows for the chemical instead of one, with the upper row (the default two-database combination) in normal font and the lower row (the two-database combination) in italics. The two criteria for tabulating this extra information were (1) that at least one concentration for the chemical exceeded the

[19] Arithmetic average.

[20] All % OEL values were calculated from concentration data that had been rounded to a minimum of 3 significant figures.

[21] Because the SWIHD HS database contained no stack data, the TWINS IH data were the only concentrations present in the two-database combination.

OEL, and (2) that there was a significant difference between the value obtained from the two-database combination and that from the three-database combination. The significant difference could be either that there were data for the three-database set but no data for the two-database set (i.e., data only in TWINS HS), or that there was a difference of a factor of three or more, in either direction, between the value obtained from the two-database combination and that from the three-database combination.

Because the reporting limits on concentrations in the historical database were generally higher than the reporting limits or detection limits in the cartridge tests, it was necessary to analyze data in a way that would let the effect of < RL historical data be recognized. To do this, it was assumed that all of the non-reports in the databases had concentrations equal to the measurements' RLs. Then the following rules were applied:

1. If a maximum value was a non-report, it was marked as "< RL" in the table.

2. If all the data contributing to an average were non-reports, the average was marked as "< RL".

3. If the presence of non-reports in an average caused it to be more than a factor of two different, in either direction, from the value it would have had if only the reported concentrations were averaged, the average was marked with an asterisk ("*").

This section uses the thresholds from Appendix C in Freeman et.al. [19]. Discrepancies are discussed if the maximum historical concentration of a compound was >10% of the OEL and the maximum cartridge inlet concentration was <50% of the historical value. However, discrepancies are considered significant only if the maximum historical concentration was >10% of the OEL and the maximum cartridge inlet concentration is <20% of the historical value.

Table F.1. Chemical of Potential (COPC) Comparison to Historical AW Exhauster Measurements

COPC Number and Name		CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
						Number of Values	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[13] (%OEL)
Inorganic														
1	Ammonia	7664-41-7	-28	Poling et al., 2007[2]	25 ppm	25	161	39.5	644%	158%	106%	94%	16.6%	2.49% (RL)
2	Nitrous Oxide	10024-97-2	-127	Poling et al., 2007	50 ppm	2 *4*	11.3 *<RL*	8 *29**	23% *<RL*	16% *58%**	Not Measured			
3	Mercury	7439-97-6	674	Poling et al., 2007	0.025 mg/m^3	24	0.296	0.0292	1184%	117%	7.29%	6.91%	<RL	9.89% (RL)
Hydrocarbons														
4	1,3-Butadiene	106-99-0	24	Poling et al., 2007	1 ppm	27	<RL	0.0846	<RL	8.5%	<RL	<RL	<RL	2.03% (RL)
5	Benzene	71-43-2	176	Poling et al., 2007	0.5 ppm	22	<RL	0.0022*	<RL	0.44%*	0.044%	0.029%	<DL	0.026%
6	Biphenyl	92-52-4	491	Poling et al., 2007	0.2 ppm	19	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.14%
Alcohols														
7	1-Butanol	71-36-3	243	NIOSH	20 ppm	14	1.29	0.305	6.5%	1.5%	1.06%	0.83%	0.007%	0.004%
8	Methanol	67-56-1	148	Poling et al., 2007	200 ppm	17	<RL	0.829*	<RL	0.41%*	Not Measured			
Ketones														
9	2-Hexanone	591-78-6	262	NIOSH	5 ppm	22	<RL	0.00301	<RL	0.06%	0.005%	0.004%	<DL	0.003%
10	3-Methyl-3-butene-2-one	814-78-8	208	CRC Handbook 1989[4]	0.02 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC[12]			
11	4-Methyl-2-hexanone	105-42-0	282	Predicted ACD/Labs[5]	0.5 ppm	11	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.031%
12	6-Methyl-2-heptanone	928-68-7	333	Predicted ACD/Labs	8 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
13	3-Buten-2-one	78-94-4	179	CRC Handbook 1989	0.2 ppm	18	<RL	0.00257	<RL	1.3%	0.31%	0.26%	<DL	0.092%
Aldehydes														
14	Formaldehyde	50-00-0	-6	NIOSH	0.3 ppm	32	<RL	0.0215*	<RL	7.2%*	2.64%	1.01%	0.95%	0.61% (RL)
15	Acetaldehyde	75-07-0	69	NIOSH	25 ppm	17	<RL	0.0774*	<RL	0%*	0.068%	0.063%	0.047%	0.005% (RL)
16	Butanal	123-72-8	167	Oxford safety data[6]	25 ppm	30	<RL	0.0279*	<RL	0.11%*	0.009%	0.005%	<DL	0.001%
17	2-Methyl-2-butenal	1115-11-3	244	United Nations[7]	0.03 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
18	2-Ethyl-hex-2-enal	645-62-5	347	Predicted ACD/Labs	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			

Table F.1. (continued)

	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
						Number of Values	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[13] (%OEL)
Furans														
19	Furan	110-00-9	88	Poling et al., 2007	1 ppb	22	<RL	1.27	<RL	127%	<DL	<DL	<DL	5.65%
20	2,3-Dihydrofuran	1191-99-7	130	Alfa Aesar[8]	1 ppb	9	<RL	<RL	<RL	<RL	2.52%	<DL	<DL	3.03%
21	2,5-Dihydrofuran	1708-29-8	152	Aldrich[9]	1 ppb	22	<RL	0.576*	<RL	58%*	<DL	<DL	<DL	4.26%
22	2-Methylfuran	534-22-5	147	Oxford safety data	1 ppb	22	<RL	<RL	<RL	<RL	<DL	<DL	<DL	3.58%
23	2,5-Dimethylfuran	625-86-5	199	Alfa Aesar	1 ppb	8	<RL	<RL	<RL	<RL	<DL	<DL	<DL	4.99%
24	2-Ethyl-5-methylfuran	1703-52-2	246	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
25	4-(1-Methylpropyl)-2,3-dihydrofuran	34379-54-9	328	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
26	3-(1,1-Dimethylethyl)-2,3-dihydrofuran	34314-82-4	306	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
27	2-Pentylfuran	3777-69-3	333	Alfa Aesar	1 ppb	9	<RL	<RL	<RL	<RL	<DL	<DL	<DL	4.16%
28	2-Heptylfuran	3777-71-7	410	Alfa Aesar	1 ppb	8	<RL	<RL	<RL	<RL	<DL	<DL	<DL	3.31%
29	2-Propylfuran	4229-91-8	231	Alfa Aesar	1 ppb	9	<RL	<RL	<RL	<RL	<DL	<DL	<DL	3.60%
30	2-Octylfuran	4179-38-8	452	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
31	2-(3-Oxo-3-phenylprop-1-enyl)furan	717-21-5	605	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
32	2-(2-Methyl-6-oxoheptyl)furan	51595-87-0	Not available	Not available	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Phthalates														
33	Diethylphthalate	84-66-2	563	NIOSH	5 mg/m^3	17	0.0196	0.00251	0.39%	0.05%	<DL	<DL	<DL	0.062%

Table F.1. (continued)

	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
						Number of Values	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[13] (%OEL)
Nitriles														
34	Acetonitrile	75-05-8	179	NIOSH	20 ppm	18	0.385	0.0823	1.9%	0.41%	0.50%	0.078%	1.28%	0.001%
35	Propanenitrile	107-12-0	207	NIOSH	6 ppm	18	<RL	0.00219	<RL	0.04%	0.006%	0.005%	<DL	0.004%
36	Butanenitrile	109-74-0	244	NIOSH	8 ppm	17	<RL	0.00246	<RL	0.03%	0.003%	0.002%	<DL	0.003%
37	Pentanenitrile	110-59-8	284	Alfa Aesar	6 ppm	17	0.00495	0.000861*	0.08%	0.01%*	<DL	<DL	<DL	0.004%
38	Hexanenitrile	628-73-9	328	Predicted ACD/Labs	6 ppm	17	0.00757	0.00134*	0.13%	0.02%*	0.002%	0.002%	<DL	0.003%
39	Heptanenitrile	629-08-3	368	Alfa Aesar	6 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
40	2-Methylene butanenitrile	1647-11-6	Not available	Not available	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
41	2,4-Pentadienenitrile	1615-70-9	278	Predicted ACD/Labs	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Amines														
42	Ethylamine	75-04-7	62	Poling et al., 2007	5 ppm	17	0.609	0.0644*	12%	1.3%*	<RL	<RL	<RL	0.099% (RL)
Nitrosamines														
43	N-Nitrosodimethylamine	62-75-9	306	NIOSH	0.3 ppb	24	6.49	2.89	2163%	963%	1638%	1399%	<RL	10.7% (RL)
44	N-Nitrosodiethylamine	55-18-5	351	Oxford safety data	0.1 ppb	24	<RL	0.1*	<RL	100%*	<RL	<RL	<RL	23.8% (RL)
45	N-Nitrosomethylethylamine	10595-95-6	310	Predicted ACD/Labs	0.3 ppb	24	<RL	0.12*	<RL	40%*	14.0%	11.8%	<RL	9.18% (RL)
46	N-Nitrosomorpholine	59-89-2	435	Oxford safety data	0.6 ppb	24	<RL	0.0917*	<RL	15%*	6.22%	4.50%	<RL	3.48% (RL)
Organophospates														
47	Tributyl phosphate	126-73-8	552	NIOSH	0.2 ppm	19	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.11%
48	Dibutyl butylphosphonate	78-46-6	602	Predicted ACD/Labs	0.007 ppm	19	<RL	<RL	<RL	<RL	<DL	<DL	<DL	2.23%
Halogenated														
49	Chlorinated Biphenyls	Varies	Varies	Varies	1 mg/m^3	0	n/a	n/a	n/a	n/a		Not Detected - TIC		
50	2-Fluoropropene	1184-60-7	-11	SynQuest[11]	0.1 ppm	0	n/a	n/a	n/a	n/a		Not Detected - TIC		

Table F.1. (continued)

	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
						Number of Values	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[13] (%OEL)
Pyridines														
51	Pyridine	110-86-1	240	NIOSH	1 ppm	29	<RL	0.0125	<RL	1.3%	<RL	<RL	<RL	0.035% (RL)
52	2,4-Dimethylpyridine	108-47-4	318	Alfa Aesar	0.5 ppm	28	<RL	0.00887*	<RL	1.8%*	<RL	<RL	<RL	0.052% (RL)
Organonitrites														
53	Methyl nitrite	624-91-9	10	Oxford safety data	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
54	Butyl nitrite	544-16-1	172	Alfa Aesar	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Organonitrates														
55	Butyl nitrate	928-45-0	276	Predicted ACD/Labs	2.5 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
56	1,4-Butanediol, dinitrate	3457-91-8	499	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
57	2-Nitro-2-methylpropane	594-70-7	260	Alfa Aesar	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
58	1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	338	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Isocyanates														
59	Methyl Isocyanate	624-83-9	103	NIOSH	0.02 ppm	1	<RL	<RL	<RL	<RL	Not Detected - TIC			

[1] Historical data from TWINS industrial hygiene vapor database and SWIH database; see text for links and dates of queries. Values in italics include those data plus data from the TWINS headspace database, all samples earlier than May 2005.

** indicates that the value of the average would differ by a factor of 2 or more (in either direction) if non-reports were excluded.*

"< RL" indicates that all pertinent measurements of the analyte were less than the reporting limit

Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene) were included. Italics mean that the pre-2006 TWINS headspace data were also included.

"n/a" indicates no historical data was found in the databases

[2] Poling, B. E.; Prausnitz, J. M.; O'Connell, J. P. The Properties of Gases and Liquids. McGraw Hill, 2007.

[3] NIOSH: National Institute of Occupational Safety and Health

[4] CRC Handbook of Chemistry and Physics, CRC Press, 1989.

[5] ACD/Labs software http://www.acdlabs.com/products/percepta/predictors.php

[6] Oxford safety data from The Physical and Theoretical Chemistry Laboratory at Oxford University

[7] Food and Agriculture Organization of the United Nations

[8] Alfa Aesar: https://www.alfa.com/

[9] Aldrich: https://www.sigmaaldrich.com/

[10] OSHA: Occupational Safety and Health Administration

[11] SynQuest: http://synquestlabs.com/product/id/8330.html

[12] TIC: Tentatively Identified Compounds that were not observed in this study using the specified analytical methods.

[13] Approximate Detection Limit (DL) is calculated using the reported detection limit (or reporting limit) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube.

F.2 AW Exhaust (2016 Tests): Comparison with Historical Data

The maximum and average COPC concentrations measured during cartridge testing were compared to the maximum and average historical concentrations, and where differences were found, the historical data were examined for explanations in the type or circumstances of sampling. In 2016, tests were performed during a period when the waste was not being disturbed and had not been disturbed recently.

Generally speaking, with the exception of AW-101, the AW Farm tanks with headspaces upstream of the AW stack have been active over the whole period of record. A number of waste transfers, exchanges, or receipts from the 242-A evaporator occurred between 2000, when TWINS HS data were taken, and September 23, 2016, when the 2016 cartridge testing began. These changes in waste contents have included receipts from SY-101 and numerous interchanges within the A complex. The waste-disturbing activities that most closely preceded 2016 cartridge testing were in June 2016.

Therefore, the waste present in the AW tanks during cartridge testing could be different from that present during earlier stack sampling. However, activities in tanks affecting the AW stack will continue, and there is no way to say that historical data could not apply to future stack concentrations. So, in the case of the AW stack, the age of historical data will not be taken as a reason to consider the historical data irrelevant.

The larger discrepancies, or apparent discrepancies, between cartridge inlet and historical concentrations are discussed in the following sections. When possible, the 2016 cartridge-inlet maxima are compared only to historical maxima taken when there was no disturbance.

F.2.1 Ammonia

The maximum 2016 cartridge inlet concentration of 106% of the OEL is low compared to the historical maximum concentration of 161 ppm (644% of the OEL), although the average concentrations are similar for historical and cartridge data. The highest above-report historical data consist of the following, in decreasing order of concentration:

- 161 ppm, April 4, 2006, survey title is “Sampling Strategy for the 242-A Evaporator” – The Best Basis Inventory (BBI)[22] tank activity database indicates evaporator water transferred to AW-102 during April 1–30, 2006, which includes the survey date.
- 123 ppm, December 2, 2006, survey title includes “AW to AN Xfer” – The BBI database indicates waste transfer from AN-106 to AW-102 during December 1–8, 2006, which includes the survey date.
- 91 ppm, August 27, 2006, survey title includes “AW-evaporator circ.” – The BBI database indicates raw water added to AW-102 during August 10–18, 2006, (9 days before the survey date) and a waste transfer from AW-102 to the 242-A evaporator on August 31, 2006, (4 days after the survey date). It is not clear whether some kind of waste circulation between AW-102 and 242-A was occurring during the survey. The BBI database might not list recirculation operations that did not change the tank inventory.

[22] The BBI establishes the inventory of the underground waste storage tanks at Hanford by using sample data, process knowledge, surveillance data, and waste stream composition information from the Hanford Defined Waste (HDW) computer model (Agnew SF, J. Boyer, RA Corbin, TB Duran, JR FitzPatrick, KA Jurgensen, TP Ortiz, and BL Young. 1997. *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4*. LA-UR-96-3860, Los Alamos National Laboratory, Los Alamos, New Mexico).

- 48 ppm, July 6, 2005, survey title says nothing about activity – The BBI database indicates that the last preceding transfer was in March 2005, which was several months before the survey.

The highest concentration measured without disturbance being indicated was 48 ppm (192% of the OEL). This measurement was made in 2005. The cartridge maximum is low by comparison to this non-disturbance historical maximum but is within a factor of 2, which is considered an acceptable match.

F.2.2 Nitrous Oxide

Nitrous oxide was not measured in cartridge testing. There were two measurements in TWINS HS historical data on June 14, 2000, both below-reports with an RL of 50 ppm (<100% of the OEL). Two above-report concentrations (found in TWINS IH) were measured on April 4, 2006, (11.3 ppm) and July 19, 2005 (4.7 ppm). The first of these was measured during addition of 242-A evaporator water to AW-102, and the second during a time when AW Farm activity had not occurred for a few months. The July 19, 2005, concentration of 4.7 ppm (9.4% of the OEL) is considered to be during non-disturbance conditions.

F.2.3 Mercury

The maximum 2016 cartridge inlet concentration of 7% of the OEL is very low compared to the historical maximum concentration of 0.296 mg/m^3 (1184% of the OEL), and the average inlet concentration also is much lower than the historical average.

The highest above-report historical data consist of the following, in decreasing order of concentration from the maximum down:

- 0.296 mg/m^3, December 17, 2014, survey title says nothing about activity – The BBI database indicates a waste transfer from AP-104 to AW-102 during December 15–19, 2014, which includes the survey date.
- 0.274 mg/m^3, August 29, 2012, survey title says nothing about activity – The BBI database indicates a waste transfer from AP-104 to AW-106 during August 27–31, 2012, which includes the survey date.
- 0.0317 mg/m^3, December 2, 2006, survey title indicates a transfer – The BBI database indicates a waste transfer from AN-106 to AW-102 during December 1–8, 2006, which includes the survey date.
- 0.0255 mg/m^3, June 24, 2015, survey title says nothing about activity – The BBI database indicates a waste transfer from AZ-102 to AW-102 during June 22–28, 2015, which includes the survey date.
- 0.0206 mg/m^3, May 11, 2015, survey title includes “242-A campaign” – The BBI database indicates a waste transfer from AW-102 to the 242-A evaporator during May 5–11, 2015, which includes the survey date.
- 0.00934 mg/m^3, June 21, 2015, survey title says nothing about activity – The BBI database indicates raw water added to AW-102 during June 10–29, 2015, which includes the survey date, and a waste transfer from AW-102 to 242-A during June 12–19, 2015, (ending 2 days before the survey, possibly too soon for the headspace to be cleared of vapor from the waste disturbance.
- 0.00651 mg/m^3, July 16, 2015, survey title indicates a 242-A campaign – The BBI database indicates waste was transferred from AW-102 to 242-A during July 10–21, 2015, which includes the survey date.

- 0.00503 mg/m^3, July 31, 2014, survey title says nothing about activity – The BBI database indicates evaporator water was transferred to AW-102 during July 24–31, 2014, which includes the survey date.
- 0.00444 mg/m^3, September 16, 2014, survey title says nothing about activity – The BBI database indicates waste was transferred from AW-102 to 242-A during September 4–30, 2014, which includes the survey date.
- 0.00412 mg/m^3, September 15, 2015, survey title refers to a 242-A campaign – The BBI database indicates waste was transferred from AW-102 to 242-A during September 14–23, 2015, which includes the survey date.
- 0.00370 mg/m^3, July 24, 2013, survey title refers to a transfer – The BBI database indicates waste was transferred from AP-107 to AW-102 during July 22–25, 2013, which includes the survey date.
- 0.00316 mg/m^3, March 17, 2015, survey title indicates a 242-A campaign; however, the BBI database does not show any AW Farm waste transfer between the end of 2014 and the end of March 2015.

The highest non-disturbance concentration in historical data was 0.00316 mg/m^3 (13% of the OEL). The cartridge inlet maximum (7% of the OEL) is more than 20% of the non-disturbance historical maximum, and is considered acceptably close.

F.2.4 1,3-Butadiene

The maximum 2016 cartridge inlet concentration of <2.0% of the OEL, which is below the DL, is low compared to the historical maximum concentration, a below-report datum that had an RL of 1.03 ppm (<103% of the OEL), although the average concentrations are acceptably close for historical and cartridge data. The maximum historical measurement came from a butadiene sample with a volume of 0.88 L, which is a small volume compared to most of the AW samples in which butadiene was measured; this explains the high RL. Most of the historical RLs are 0.05 ppm (5% of the OEL) or less. There are two above-report historical measurements:

- 0.164 ppm, September 8, 2015, survey title says nothing about activity – The BBI database indicates evaporator water was transferred from AZ-102 to AW-102 during September 4–9, 2015, which includes the survey date.
- 0.085 ppm, August 14, 2012, survey title indicates a baseline – The BBI database indicates raw water was added to AW-106 during August 14–31, 2012, (began on the survey date) and a waste transfer from AW-106 to AP-101 during August 14–17, 2012, (began on survey date). It is not explicitly stated that the baseline was taken before activities began on August 14, 2012, although it seems likely.

The higher of the two measurements was taken during a waste transfer. The measurement taken as a baseline, and assumed to be before the start of transfer the same day, was 0.085 ppm (9% of the OEL). The cartridge test concentration was below its DL, which was >20% of the non-disturbance historical maximum.

F.2.5 Formaldehyde

The maximum 2016 cartridge inlet concentration of 2.6% of the OEL is low compared to the historical maximum concentration, a below-report with an RL of 0.0968 ppm (32% of the OEL). The maximum above-report concentration was 0.057 ppm (19% of the OEL), measured on August 29, 2012, during a waste transfer from AP-104 to AW-106 during August 27–31, 2012. All other historical concentrations, whether measured during a disturbance or not, were 0.01 ppm (3.3 % of the OEL) or less. The cartridge inlet maximum inlet concentration was comparable to those lower historical concentrations.

F.2.6 Furan

The maximum 2016 cartridge inlet concentration of 204% of the OEL (measured by the Carbotrap 300 TDU method) is very low compared to the historical maximum concentration, a below-report datum that had an RL of 15 ppb (<1500% of the OEL). This RL, based on a SUMMA canister measurement from July 6, 2005, was unusually high. The second-highest RL was 1.4 ppb (<140% of the OEL). The unusually high <RL maximum accounts for the high average furan concentration as well. There was only one above-report concentration, 1.8 ppb (181% of the OEL). The survey title for this sample, which was taken on December 17, 2014, gave no indication of disturbance. However, the BBI database indicates waste was transferred from AP-104 to AW-102 during December 15–19, 2014, which includes the survey date. The maximum cartridge-inlet concentration during undisturbed conditions is slightly higher than the single above-report historical concentration that was measured during disturbed conditions, where higher concentrations might be expected. Although these is only one above-report historical datum, the fact that it is about the same as the maximum cartridge-inlet concentration (even though the latter involved waste disturbance) suggests a conclusion that the cartridge-inlet concentrations were not inconsistent with historical data.

F.2.7 2,5-Dihydrofuran

The maximum 2016 cartridge inlet concentration of <27% of the OEL (the RL), is very low compared to the historical maximum concentration, a below-report datum with an RL of 1.82 ppb (<182% of the OEL). This was not an unusually high historical <RL in TWINS IH. A set of RLs almost as high as this account for much of the historical average. There was only one above-report concentration, 0.12 ppb (12% of the OEL), for which there was no indication of disturbance. The survey title for this sample, which was taken on September 16, 2014, gave no indication of disturbance. However, the BBI database indicates waste was transferred from AW-102 to the 242-A evaporator during September 4–30, 2014, which includes the survey date. There are no concentrations taken during non-disturbed conditions, so no conclusion can be drawn about where the cartridge inlet concentration lies with respect to historical data.

F.2.8 2,3-Dihydrofuran, 2-Methylfuran

Because these two furan chemicals have no above-report historical data, no conclusion can be drawn about where their cartridge inlet concentrations lie with respect to historical data.

F.2.9 Ethylamine

The maximum 2016 cartridge inlet concentration of <0.099% of the OEL, which is below the RL, is low compared to the historical maximum concentration of 0.609 ppm (12% of the OEL). The maximum in historical data, for which four values were above-report, was measured on November 7, 2005, with no indication either in the survey title or the BBI database that a disturbance was occurring. The cartridge inlet maximum inlet concentration is much less than 20% of the maximum historical above-report concentration under non-disturbed conditions.

F.2.10 N-Nitrosodiethylamine

The maximum 2016 cartridge inlet concentration of <24% of the OEL, which is below the RL, is low compared to the historical maximum concentration, a below-report with an RL of 0.194 ppb (<194% of the OEL). This historical RL was not unusually high: a number of RLs were above 0.15 ppb (150% of the OEL). There is only one above-report concentration in the historical data, 0.0105 ppm (11% of the OEL), which was measured on August 16, 2012, during a waste transfer from AW-106 to AP-101. The sole historical above-report datum was measured during a transfer. It was less than the RL given for the cartridge test. Because the disturbance was likely to give a relatively high historical concentration but the cartridge-test RL exceeded this historical datum, the cartridge test data are not considered out of line with historical data.

F.2.11 N-Nitrosomethylethylamine

The maximum 2016 cartridge inlet concentration of 14% of the OEL is low compared to the historical maximum concentration, a below-report with an RL of 0.216 ppb (<72% of the OEL). This historical RL was not unusually high; a number of RLs were above 0.17 ppb (57% of the OEL). There were four above-report concentrations in historical data. The highest concentration, which the survey title described as a baseline for a transfer, was 0.025 ppb (8.5% of the OEL) measured on August 14, 2012. However, the BBI tank activity database shows a waste transfer from AW-106 to AP-101 during August 14–17, 2012. There was no statement that the survey was taken before transfer started, although it seems likely. In either case, because the historical above-report maximum was less than the cartridge test maximum, the cartridge test data are not considered out of line with historical data.

F.2.12 N-Nitrosomorpholine

The maximum 2016 cartridge inlet concentration of 6.22% of the OEL is low compared to the historical maximum concentration, a below-report with an RL of 0.164 ppb (<27.3% of the OEL). The highest of the four above-report concentrations was 0.0339 ppb (5.65% of the OEL). Because the historical above-report maximum was less than the cartridge test maximum, the cartridge test data are not considered out of line with historical data.

F.2.13 Dibutyl butylphosphonate (DBBP)

The maximum 2016 cartridge inlet concentration of <2% of the OEL, which is below the DL, is low compared to the historical maximum concentration, a below-report datum with an RL of 0.000775 ppm (11% of the OEL). The maximum historical measurement came from a July 6, 2005, semi-volatile organic analysis sample with a volume of 1.26 L, which is a small volume compared to most of the TWINS IH samples in which DBBP was measured; this explains the high RL. All other historical RLs were less than or equal to 0.00016 ppm (2.3% of the OEL). The unusually high <RL maximum accounts for the high average concentration as well. There are no above-report historical data for this chemical, so no conclusion can be drawn about where its cartridge inlet concentration lies with respect to historical data.

F.2.14 Pyridine

The maximum 2016 cartridge inlet concentration of <0.035% of the OEL, which is its RL, is low compared to the historical maximum concentration, a below-report datum that had an RL of 0.129 ppm (<13% of the OEL). The historical maximum came from a July 18, 2013, pyridines sample with a volume of 24.0 L. It is not clear why a sample with this high volume had such a high RL. The second-highest RL was about the same, and all other RLs were less than 0.03 ppm (3% of the OEL). The unusually high <RL maximum accounts for the high average pyridine concentration as well.

The three above-report historical data consist of the following, in decreasing order of concentration from the maximum down:

- 0.021 ppm, April 4, 2006, survey title refers to the 242-A evaporator strategy – The BBI database indicates an evaporator water transfer to AW-102 during April 2006, which includes the survey date.
- 0.00054 ppm, July 16, 2015, survey title refers to a 242-A campaign – The BBI database indicates waste transferred from AW-102 to 242-A during July 10-21, 2015, which includes the survey date.
- 0.00038 ppm, December 17, 2014, survey title says nothing about activity – The BBI database indicates a waste transfer from AP-104 to AW-102 during December 15–19, 2014, which includes the survey date.

None of the historical data were for non-disturbed conditions. The lowest of them is 0.00038 ppm (0.038% of the OEL). Because this measurement under disturbed conditions is in the range of the cartridge inlet maximum, the cartridge test inlet concentrations are considered to be similar to the non-disturbance historical data.

F.2.15 2,4-Dimethylpyridine

The maximum and average historical concentrations are controlled by the RL from the same 2013 pyridines sample that produced the maximum RL for pyridine. There is one above-report historical measurement, 0.00029 ppm (0.06% of the OEL), which was taken on July 16, 2015, during an evaporator campaign. The sole historical above-report datum was measured during a transfer. It was about the same as the RL given for the cartridge test (0.05% of the OEL). Because the disturbance was likely to give a relatively high historical concentration but the cartridge-test RL exceeded this historical datum, the cartridge test data are not considered out of line with historical data.

F.2.16 Methyl isocyanate

This chemical was a tentatively identified compound at the inlet in cartridge testing. There is only one historical concentration, a below-report datum that had an RL of 0.00707 ppm (<35% of the OEL). Given the scarcity of data, no conclusion can be drawn about where this chemical's cartridge inlet concentration lies with respect to historical data.

F.2.17 Summary of Historical Data for the AW Exhaust (2016 Tests Without Disturbance)

In summary, cartridge inlet maxima for the AW exhaust that were substantially lower than historical maxima can be described as follows:

- Differences arose from using historical data taken during waste disturbance for the historical maximum and were resolved by using non-disturbance historical data: ammonia, mercury, 1,3-butadiene, formaldehyde.
- Differences arose from using the RLs of below-report data for the historical maximum: N-nitrosodiethylamine, N-nitrosomethylethylamine, N-nitrosomorpholine, pyridine, 2,4-dimethylpyridine.
- Differences arose from using data for vapor produced by a no-longer-existing inventory for the historical maximum: none.
- Differences could not be resolved because of the scarcity of non-disturbance above-report data: 2,3-dihydrofuran, 2,5-dihydrofuran, 2-methylfuran, dibutyl butylphosphonate, methyl isocyanate.
- Cartridge inlet concentrations were determined to be significantly lower than above-report historical concentrations: ethylamine.



Pacific Northwest
NATIONAL LABORATORY

www.pnnl.gov

902 Battelle Boulevard
P.O. Box 999
Richland, WA 99352
1-888-375-PNNL (7665)

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