GLOBALFOUNDRIES®

2070 Route 52
Hopewell Junction, NY 12533
USA
www.globalfoundries.com

January 17, 2019

VIA ELECTRONIC MAIL

Ms. Jessica LaClair
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7015

Subject: **Closure of Solid Waste Management Units (Tanks 204-207 and B/312B Vault)**
GLOBALFOUNDRIES U.S. 2 LLC – Fab 10
Former IBM East Fishkill Facility, Hopewell Junction, New York
Reference: **NYSDEC Site No. 314054, EPA ID No. NYD000707901**

Dear Ms. LaClair:

In accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved Work Plans for Decontamination of Various Solid Waste Management Units (SWMUs) dated November 2009 and July 2018, GLOBALFOUNDRIES U.S. 2, LLC (GLOBALFOUNDRIES) is pleased to submit the attached documentation that the decontamination procedures have been completed for the following SWMUS at the GLOBALFOUNDRIES – FAB 10 facility located in Hopewell Junction, New York:

UNIT ID #	LOCATION	CONTENTS	VOLUME (gal)	Date Completed
204	B/312B Vault	Mixed Solvent Waste	5,000	June 2010
205	B/312B Vault	n-Butyl Acetate Waste	5,000	June 2010
206	B/312B Vault	Isopropyl Alcohol Waste	5,000	June 2010
207	B/312B Vault	N-Methyl-2-Pyrrolidone Waste	5,000	June 2010
B/312B Vault	B/312B	Various Solvents (see above)	--	October 2018

The attached file contains a report that summarizes the procedures used to complete the decontamination process for the B/312B vault, including a certification signed and stamped by a professional engineer, a copy of the analytical summary tables, laboratory Chains of Custody forms, a memorandum regarding data validation and Category B analytical results. Also, included as Appendix A to the attached report is the June 2010 report that documents the decontamination of Tanks 204 through 207 that were contained within the vault.

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Following confirmation that the decontamination activities were complete, based on analytical results from the rinse water samples, GLOBALFOUNDRIES proceeded to demolish/close each SWMU, as follows:

- Tanks 204 through 207 were disconnected from the piping, cut into pieces and disposed of as scrap metal.
- All piping for the tanks identified above was decontaminated and "air gapped" or "blind flanged" to prevent unintended usage.
- The walls of the secondary containment vault were demolished in-place to below grade level and backfilled to grade level.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

We hope that you find that the attached documentation satisfies the requirements for decontamination of these SWMUs. If you have any questions or need further information regarding the enclosed document, please contact Tracy Williams of my staff at (845) 892-9855.

Sincerely,

GLOBALFOUNDRIES U.S. 2 LLC

By: ______________________
Andrew Lacourciere, Manager
N.E. Regional Environmental Engineering

Enclosure
cc: T. Williams (GLOBALFOUNDRIES)
D. Chartrand (IBM)
W. Palomino, USEPA, Region 2 (w/o enclosure)
M. O'Connor, NYSDEC Region 3 (w/o enclosure)

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Decontamination of B/312B Solvent Vault Solid Waste Management Unit (SWMU)

GLOBALFOUNDRIES U.S. 2 LLC - FAB 10

Hopewell Junction, New York

October 2018

D&B Engineers and Architects, P.C.

DECONTAMINATION OF B/312B SOLVENT VAULT
SOLID WASTE MANAGEMENT UNIT (SWMU)

Prepared for:

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
HOPEWELL JUNCTION, NEW YORK

Prepared by:

D&B ENGINEERS AND ARCHITECTS, P.C.
330 CROSSWAYS PARK DRIVE
WOODBURY, NEW YORK

OCTOBER 2018

DECONTAMINATION OF B/312B SOLVENT VAULT
SOLID WASTE MANAGEMENT UNIT (SWMU)
GLOBALFOUNDRIES U.S. 2 LLC – FAB 10

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1.0 INTRODUCTION

1.1 Project Background

The GLOBALFOUNDRIES U.S. 2 LLC – FAB 10 (GLOBALFOUNDRIES), formerly known as International Business Machines Corporation (IBM) East Fishkill facility, is located on State Route 52 in Hopewell Junction, Dutchess County, New York. The facility is bordered on the north by State Route 52 and on the south by U.S. Interstate 84, and is located approximately 10 miles east of the Hudson River. The site currently houses various facilities and operations primarily involved in the manufacture of semiconductors and electronic computing equipment.

As a result of the manufacturing operations conducted at the facility, both hazardous and nonhazardous waste are generated. In order to properly manage hazardous waste at the facility, IBM had previously obtained a 6 NYCRR Part 373 Permit from the New York State Department of Environmental Conservation (NYSDEC) for the storage of hazardous waste in containers within Building 309 (Permit No. 3-1323-0025/00249-0). As part of the permit application process, IBM was required to identify all solid waste management units (SWMUs) located at the facility.

In July 2015, GLOBALFOUNDRIES U.S. 2 LLC took ownership of the East Fishkill facility from IBM. Prior to the transfer of ownership, the container storage rooms in Building 309 were closed and reopened as less-than-90-day hazardous waste container storage areas. Following transfer of ownership of the facility from IBM to GLOBALFOUNDRIES, IBM retained the corrective action portions of the permit, and GLOBALFOUNDRIES began to operate the facility with unpermitted less-than-90-day hazardous waste container storage areas in Building 309. While IBM is still responsible for the facility's Corrective Action Program, it is our understanding that GLOBALFOUNDRIES is responsible for ensuring that the facility's SWMUs are operated (and closed) in accordance with applicable laws and regulations.

SWMUs are defined as any discernible unit in which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of hazardous or solid wastes. These SWMUs were incorporated into the permit for the facility and evaluated on the potential for the release of hazardous waste or hazardous constituents from the unit to the environment. In evaluating each SWMU, several factors were considered to determine the "release potential" of each unit, including history of releases, design characteristics, secondary containment, location and proximity to contaminated environmental media.

Based on the above factors regarding release potential, each unit was placed into one of the following three subcategories:

- Category A - No Further Action (no release)
- Category B - Sampling Required (possible release)
- Category C - RCRA Facility Investigation and/or Corrective Measure Study required (documented release)

The SWMUs shown on **Table 1-1**, located at the B/312B Solvent Vault would require decontamination and closure prior to their removal. These SWMUs include four less-than-90-day mixed solvent hazardous waste storage tanks, associated piping and the secondary containment vault. The location of the B/312B Solvent Vault is shown on **Figure 1-1**.

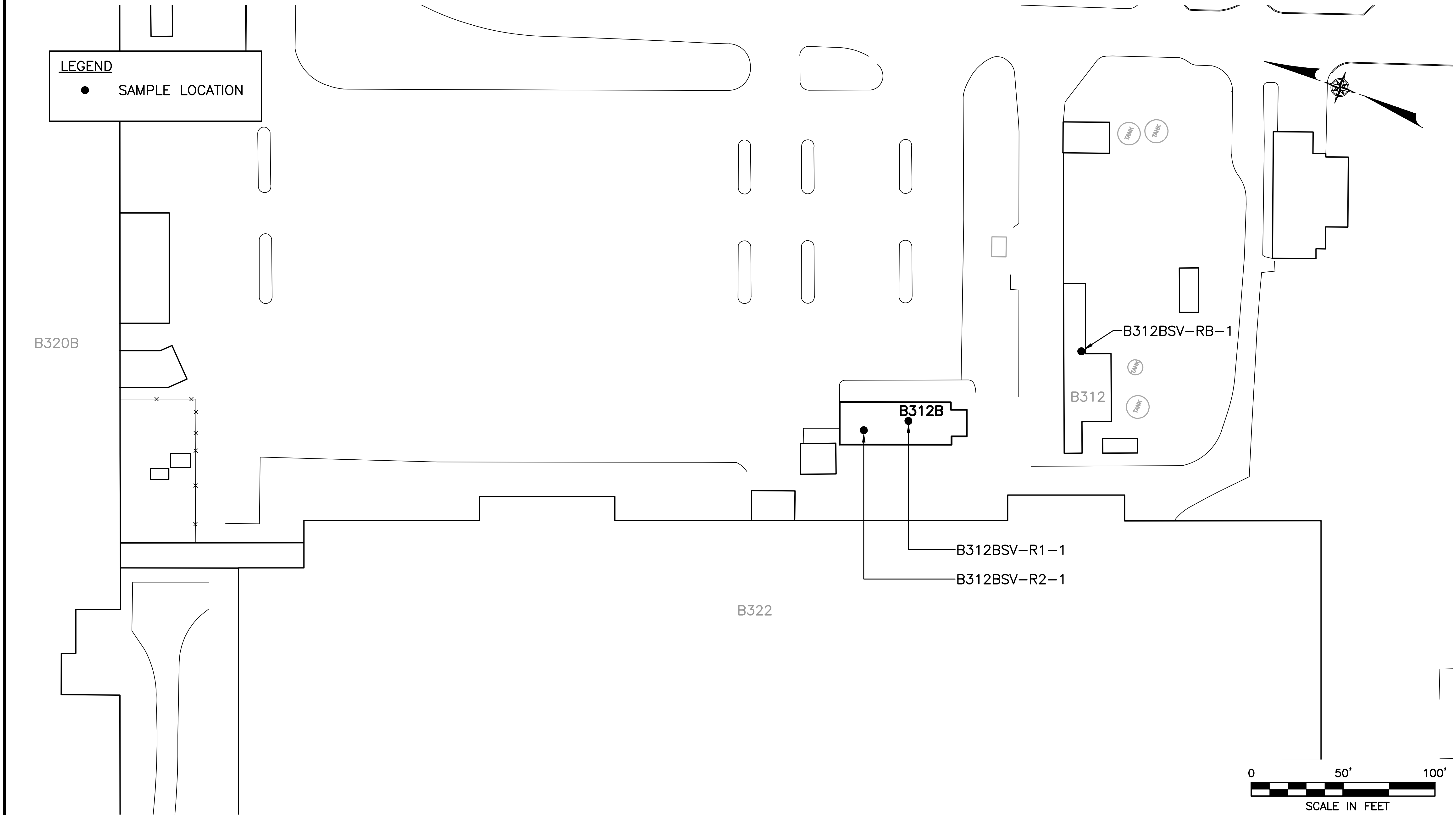
It should be noted that Tanks 204-207 previously located within the B/312B Solvent Vault were decontaminated and closed by IBM in 2010. However, the B/312B Solvent Vault was not decontaminated as part of the 2010 closure activities. A copy of IBM's 2010 report for the Decontamination of B/312B SWMUs 204-207 is provided in **Appendix A**.

Tanks 204-207 and associated piping were removed and disposed as scrap metal in June 2018. In August 2018, the B/312B Solvent Vault was decontaminated to allow for the proper closure of Tanks 204-207 and the B/312B Solvent Vault.

Table 1-1

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B
SOLID WASTE MANAGEMENT UNITS (SWMUs)

Unit #	Capacity (gallons)	Location	Material	Orientation	Tank Contents
204	5,000	B/312B Vault	Steel	Horizontal	Mixed Solvent Waste (Closed in 2010)
205	5,000	B/312B Vault	Steel	Horizontal	n-Butyl Acetate Waste (Closed in 2010)
206	5,000	B/312B Vault	Steel	Horizontal	Isopropyl Alcohol Waste (Closed in 2010)
207	5,000	B/312B Vault	Steel	Horizontal	N-Methyl-2-Pyrrolidone Waste (Closed in 2010)
Vault for 204-207	--	B/312B Vault	Concrete	--	Solvents (Closed in 2018)



D&B ENGINEERS AND ARCHITECTS, P.C.

GLOBALFOUNDRIES U.S. 2 LLC - FAB 10
HUDSON VALLEY RESEARCH PARK
HOPEWELL JUNCTION, NEW YORK

BUILDING 312B SOLVENT VAULT SOLID WASTE MANAGEMENT UNIT LOCATION MAP

FIGURE 1-1

F:\3932-07\dwg\3932-07-FIG1-1.dwg, FIG 1-1-312B, 9/25/2018 2:58:15 PM, kalesius

1.2 Project Scope and Objective

The objective of this decontamination report is to ensure that the B/312B Solvent Vault SWMU has been properly decontaminated and that the decontamination process is documented and certified as having been completed in accordance with the Work Plan that is provided as **Appendix B**, along with the 2010 closure report for Tanks 204-207, to allow the proper closure of the tanks and the Solvent Vault. GLOBALFOUNDRIES has decontaminated these SWMUs in accordance with the closure performance standard at 6 NYCRR Part 373-3.7(b) and (e) and general policy guidelines obtained from the NYSDEC. GLOBALFOUNDRIES retained D&B Engineers and Architects, P.C. (D&B) to provide engineering oversight of the project, sample collection and to prepare a written report to document the decontamination activities. Techtron Environmental, Inc. (Techtron), conducted the decontamination activities for GLOBALFOUNDRIES. This report provides a Professional Engineer's certification that the SWMUs were decontaminated in accordance with the Work Plan as further detailed in this report.

2.0 SUMMARY OF DECONTAMINATION ACTIVITIES

This section of the report provides a summary of the field activities associated with the decontamination of the B/312B Solvent Vault SWMU. During the course of the project, D&B provided engineering oversight to ensure that the decontamination and sampling activities undertaken at B/312B were conducted in accordance with the Work Plan. The following section provides excerpts from the work plan for each step of the decontamination project (shown in italics), followed by a brief description of the onsite decontamination activities. **Appendix C** of this report, entitled "Daily Field Activity Reports," contains a detailed description of the daily activities conducted by D&B and Techtron during the course of the project. In addition, photographs of the work conducted are provided in the photographic log provided in **Appendix D**.

1. *The unit will be pumped as low as possible, with all residual waste removed from the unit either by utilizing a vacuum truck or a portable pump. The liquid will be transferred to B/309 for classification and management in accordance with standard procedures under the GLOBALFOUNDRIES 6 NYCRR 373 Permit. Any remaining sludge/solids will be removed from the unit by hand, placed in a drum and labeled in accordance with USDOT regulations before being transferred to B/309 for proper classification and management.*

   Tanks 204-207 and associated piping which were decontaminated and closed in 2010, were removed and disposed as scrap metal in June 2018. A tanker truck was used to collect any accumulated liquids within the B/312B Solvent Vault and the wastewater was characterized prior to proper off-site disposal. A non-potable water source was utilized to decontaminate the interior of B/312B Solvent Vault. The tanker truck used to collect the decontamination wastewater and the wastewater was characterized prior to proper off-site disposal.

2. *The SWMU interior will be decontaminated with a water and suitable surfactant solution in accordance with procedures approved by GLOBALFOUNDRIES. Decontamination water will be removed from the unit utilizing the same method as was used to remove residual liquid in Step 1 above.*

   A mixture of ZEP Z-Green detergent and water was used to clean the interior of B/312B Solvent Vault. After cleaning, the B/312B Solvent Vault was rinsed with water to remove any residual surfactant solution and the contents of the Solvent Vault were pumped into the tanker truck.

3. *Rinse water samples will be collected in accordance with the Rinsate Sample Collection Protocol provided in Section 1.7.3 on page 1-13 of the Quality Assurance Project Plan (QAPP)*

Rinse water samples were collected in accordance with the procedures found in Section 1.7.3 of the QAPP. A rinse blank sample was first collected from the source water utilized to decontaminate the B/312B Solvent Vault. A non-potable water source from a B/312 water spigot (312-1-NA-HB-3154-ASR) was utilized as rinse water. The rinse water was poured into new 5-gallon buckets with the bottoms removed with weather stripping and allowed to collect within the buckets placed at two separate locations on the B/312B Solvent Vault floor. The rinse water was allowed to remain in each bucket for approximately 10 minutes before a sample was collected from each. In addition, a blind duplicate sample was collected. Disposable sampling equipment was placed into 55-gallon drums for proper characterization and off-site disposal.

4. *Rinse water samples will be analyzed for volatile organic compounds by a NYSDOH ELAP certified laboratory.*

In addition to the analysis for volatile organic compounds, the B/312B Solvent Vault samples were analyzed for additional compounds that were previously stored within Tanks 204-207 including n-Butyl Acetate, N-methyl-2-pyrrolidone, isopropyl alcohol and total phenols. Rinse water samples, blanks and duplicates were labeled, placed in a cooler with ice and transported via Chain of Custody to EnviroTest Laboratories, Inc. in Newburgh, New York for analysis. A copy of the Chain of Custody form is provided in **Appendix E**.

5. *Rinse water sample analytical results will be compared to the Class GA Groundwater Standards and Guidance Values listed in the NYSDEC Division of Water's Technical and Operational Guidance Series (TOGS) 1.1.1-"Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations." If the rinse water sample results exceed the Class GA Groundwater Standards, the decontamination process will be repeated until the results are below the Class GA Standards at which time the decontamination will be deemed complete.*

Section 3.0 of this report provides a discussion of the results of the rinse water sample analysis. The rinse blank sample, the rinse water samples and the blind duplicate sample exceeded Class GA Groundwater Standards for chloroform and dichlorobromomethane. It should be noted that the elevated concentrations of chloroform and dichlorobromomethane were detected in the rinse blank sample (source water) at higher concentrations than the two rinse water samples. Therefore, the source of these compounds is attributed to the water source and not to contamination within the B/312B Solvent Vault. As a result, the decontamination of B/312B Solvent Vault has been deemed complete.

3.0 DISCUSSION OF ANALYTICAL RESULTS

This section of the report presents the results of the laboratory analyses conducted on the rinse water, rinse water blank and blind duplicate samples collected during the decontamination of the B/312B Solvent Vault SWMU. As discussed in **Section 2.0** of this report, two rinse water samples were collected from the B/312B Solvent Vault SWMU after decontamination activities were completed. In addition, a rinse water blank sample was collected daily from the same water source used to decontaminate the SWMU. A blind duplicate sample was collected as well. A copy of the laboratory Chain of Custody form used to transfer the samples to the EnviroTest Laboratories, Inc. (EnviroTest) for analysis is provided in **Appendix E**. Copies of the Category B deliverables from EnviroTest are provided in **Appendix F**. **Appendix G** provides documentation of the data validation process conducted by D&B.

3.1 B/312B Solvent Vault

The rinse water samples collected from B/312B Solvent Vault were analyzed for volatile organic compounds (VOCs) to verify the effectiveness of the decontamination activities. In addition to the analysis for VOCs, the samples were analyzed for additional compounds previously stored within Tanks 204-207 such as n-Butyl Acetate for Tanks 204 and 205, N-methyl-2-pyrrolidone for Tank 207, isopropyl alcohol for Tanks 204 and 206 and total phenols for Tank 204. **Table 3-1** summarizes and compares the analytical results to the Class GA Groundwater Standards and Guidance Values listed in the NYSDEC's Technical and Operational Guidance Series (TOGS) 1.1.1 – "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations."

It should be noted that chloroform and dichlorobromomethane were detected at concentrations exceeding the Class GA Groundwater Standards in the two rinse water samples (B312BSV-R1-1 and B312BSV-R2-1) and in the blind duplicate sample (DUP083018). However, since elevated concentrations were detected in the rinse blank sample (B312BSV-RB-1) collected directly from the source water, the source of chloroform and dichlorobromomethane

TABLE 3-1
GLOBALFOUNDRIES U.S. 2 LLC - FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SOLID WASTE MANAGEMENT UNIT (SWMU)
RINSE WATER SAMPLING ANALYTICAL RESULTS FOR
VOLATILE ORGANIC COMPOUNDS (VOCs) AND ADDITIONAL COMPOUNDS

Sample ID	B312BSV-RB-1	B312BSV-R1-1	B312BSV-R2-1	DUP083018		NYSDEC
Sample Type	RINSE BLANK	RINSE	RINSE	DUPLICATE R2	Reporting	Class GA
Sampling Date	8/30/2018	8/30/2018	8/30/2018	8/30/2018	Limit	Standard or
Dilution Factor	1/2	1	1/2	1/2		Guidance Value
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS						
1,1,1,2-Tetrachloroethane	U	U	U	U	1	5
1,1,1-Trichloroethane	U	U	U	U	1	5
1,1,2,2-Tetrachloroethane	U	U	U	U	1	5
1,1,2-Trichloroethane	U	U	U	U	1	1
1,1-Dichloroethane	U	U	U	U	1	5
1,1-Dichloroethene	U	U	U	U	1	5
1,1-Dichloropropene	U	U	U	U	1	5
1,2,3-Trichlorobenzene	U	U	U	U	1	5
1,2,3-Trichloropropane	U	U	U	U	1	0.04
1,2,4-Trichlorobenzene	U	U	U	U	1	5
1,2,4-Trimethylbenzene	U	U	U	U	1	5
1,2-Dibromo-3-chloropropane	U	U	U	U	5	0.04
1,2-Dibromoethane	U	U	U	U	1	0.0006
1,2-Dichlorobenzene	U	U	U	U	1	3
1,2-Dichloroethane	U	U	U	U	1	0.6
1,2-Dichloropropane	U	U	U	U	1	1
1,3,5-Trimethylbenzene	U	U	U	U	1	5
1,3-Dichlorobenzene	U	U	U	U	1	3
1,3-Dichloropropane	U	U	U	U	1	5
1,4-Dichlorobenzene	U	U	U	U	1	3
2,2-Dichloropropane	U	U	U	U	1	5
2-Butanone	U	U	U	U	1	50
2-Chlorotoluene	U	U	U	U	1	5
2-Hexanone	U	U	U	U	5	50
4-Chlorotoluene	U	U	U	U	1	5
4-Isopropyltoluene	U	U	U	U	1	5
4-Methyl-2-pentanone	U	U	U	U	5	--
Acetone	U	U	U	U	5	50
Benzene	U	U	U	U	1	1
Bromobenzene	U	U	U	U	1	5
Bromochloromethane	U	U	U	U	1	5
Bromoform	U	U	U	U	1	50
Bromomethane	U	U	U	U	1	5
Carbon Disulfide	U	U	U	U	1	60
Carbon Tetrachloride	U	U	U	U	1	5
Chlorobenzene	U	U	U	U	1	5
Chloroethane	U	U	U	U	1	5
Chloroform	***55 D***	*48 UB*	*44 UBD*	*43 UBD*	1	7
Chloromethane	U	U	U	U	1	5
cis-1,2-Dichloroethene	U	U	U	U	1	5
cis-1,3-Dichloropropene	U	U	U	U	1	0.4 *
Dibromochloromethane	6.6	4.2 UB	5.2 UB	4.9 UB	1	50
Dibromomethane	U	U	U	U	1	5
Dichlorobromomethane	***16***	*12 UB*	*14 UB*	*14 UB*	1	5
Dichlorodifluoromethane	U	U	U	U	1	5
Ethylbenzene	U	U	U	U	1	5
Hexachlorobutadiene	U	U	U	U	1	0.5

See next page for footnotes/qualifiers.

TABLE 3-1
GLOBALFOUNDRIES U.S. 2 LLC - FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SOLID WASTE MANAGEMENT UNIT (SWMU)
RINSE WATER SAMPLING ANALYTICAL RESULTS FOR
VOLATILE ORGANIC COMPOUNDS (VOCs) AND ADDITIONAL COMPOUNDS

Sample ID	B312BSV-RB-1	B312BSV-R1-1	B312BSV-R2-1	DUP083018		NYSDEC
Sample Type	RINSE BLANK	RINSE	RINSE	DUPLICATE R2	Reporting	Class GA
Sampling Date	8/30/2018	8/30/2018	8/30/2018	8/30/2018	Limit	Standard or
Dilution Factor	1/2	1	1/2	1/2		Guidance Value
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
COMPOUNDS CONTINUED						
Iodomethane	U	U	U	U	1	--
Isopropylbenzene	U	U	U	U	1	5
m,p-Xylene	U	U	U	U	2	5
Methyl tert-Butyl Ether	U	U	U	U	1	10
Methylene Chloride	U	U	U	U	1	5
Naphthalene	U	U	U	U	5	10
n-Butylbenzene	U	U	U	U	1	5
n-Propylbenzene	U	U	U	U	1	5
o-Xylene	U	U	U	U	1	5
sec-Butylbenzene	U	U	U	U	1	5
Styrene	U	U	U	U	1	5
tert-Butylbenzene	U	U	U	U	1	5
Tetrachloroethene	U	U	U	U	1	5
Toluene	U	U	U	U	1	5
trans-1,2-Dichloroethene	U	U	U	U	1	5
trans-1,3-Dichloropropene	U	U	U	U	1	0.4 *
Trichloroethene	U	U	U	U	1	5
Trichlorofluoromethane	U	U	U	U	1	5
Vinyl Acetate	U	U	U	U	1	--
Vinyl Chloride	U	U	U	U	1	2
Xylene (total)	U	U	U	U	1	5
Isopropyl Alcohol	U	U	U	U	10	--
n-Butyl Acetate	ND	ND	ND	ND	--	--
N-methyl-2-pyrrolidone	UJ	UJ	UJ	UJ	1	--
Total phenols	U	U	U	U	1	1
Total	77.6	0	0	0	--	--

Footnotes/Qualifiers:

ug/l: Micrograms per liter

Exceeds Class GA Standard or Guidance Value

--: No standard

U: Analyzed for but not detected

B: Qualified as non-detect based on blank results

D: Result reported from a secondary dilution

J: Estimated detection limit

ND: Not detected analyzed as a tentatively identified compound

*: Sum of both isomers

D&B ENGINEERS AND ARCHITECTS, P.C.

was not attributed to contamination within the B/312B Solvent Vault. Since no additional compounds exceeded the Class GA Groundwater Standards, the decontamination of the B/312B Solvent Vault was determined to be complete. As a result, it is recommended that Tanks 204-207 and the B/312B Solvent Vault be considered properly closed in accordance with applicable laws and regulations.

4.0 CERTIFICATION OF DECONTAMINATION

I certify under penalty of law that the Solid Waste Management Units B/312B Solvent Vault located at the GLOBALFOUNDRIES U.S. 2 LLC – FAB 10 in Hopewell Junction, New York, included in this report has been decontaminated in accordance with the specifications contained in the Work Plan as described in this report. It is recommended that Tanks 204-207 and the B/312B Solvent Vault considered closed in accordance with applicable laws and regulations and that no further action be required.

OWNER/OPERATOR:

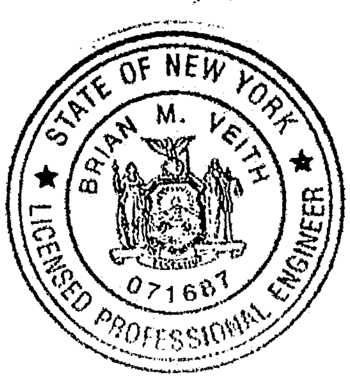
Signature: [signature]

Name: ANDREW LACOURCIERE

Title: Northeast Regional Environmental Mgr

Date: 11/20/2018

INDEPENDENT PROFESSIONAL ENGINEER:



Signature: Brian Veith

Name: Brian M. Veith

Title: Senior Vice President

Date: 10/25/2018

APPENDIX A

DECONTAMINATION OF B/312B
SOLID WASTE MANAGEMENT UNITS (SWMUS) 204-207 REPORT

IBM

International Business Machines Corporation

EAST FISHKILL FACILITY
HUDSON VALLEY
RESEARCH PARK
HOPEWELL JUNCTION, NY

pizzagalli
construction company

Decontamination of B/312B Solid Waste Management Units (SWMUs) 204-207

Prepared By

WFC

William F. Cosulich Associates, P.C.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS

June 2010

2515/IBM/Jobs/HW(06/14/10)RLA

DECONTAMINATION OF B/312B
SOLID WASTE MANAGEMENT UNITS (SWMUS) 204-207
INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL FACILITY

Prepared for:

PIZZAGALLI CONSTRUCTION COMPANY
WAPPINGERS FALLS, NEW YORK
AND
INTERNATIONAL BUSINESS MACHINES CORPORATION
HOPEWELL JUNCTION, NEW YORK

Prepared by:

WILLIAM F. COSULICH ASSOCIATES, P.C.
330 CROSSWAYS PARK DRIVE
WOODBURY, NEW YORK

JUNE 2010

DECONTAMINATION OF B/312B
SOLID WASTE MANAGEMENT UNITS (SWMUS) 204-207
INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL FACILITY

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1.0 INTRODUCTION

1.1 Project Background

The International Business Machines Corporation (IBM) East Fishkill facility is located at the Hudson Valley Research Park (HVRP) on State Route 52 in Hopewell Junction, Dutchess County, New York. The facility is bordered on the north by State Route 52 and on the south by U.S. Interstate 84, and is located approximately 10 miles east of the Hudson River. IBM initiated manufacturing operations at the East Fishkill facility in April 1963. The site currently houses various facilities and operations primarily involved in the manufacture of semiconductors and electronic computing equipment.

As a result of the manufacturing operations conducted at the facility, both hazardous and nonhazardous waste are generated. In order to properly manage hazardous waste at the facility, IBM obtained a 6 NYCRR Part 373 Permit from the New York State Department of Environmental Conservation (NYSDEC) for the storage of hazardous waste in containers within Building 309 (Permit No. 3-1323-0025/00249-0). As part of the permit application process, IBM was required to identify all solid waste management units (SWMUs) located at the facility. SWMUs are defined as any discernible unit in which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of hazardous or solid wastes. These SWMUs were incorporated into the permit for the facility and evaluated on the potential for the release of hazardous waste or hazardous constituents from the unit to the environment. In evaluating each SWMU, several factors were considered to determine the "release potential" of each unit, including history of releases, design characteristics, secondary containment, location and proximity to contaminated environmental media.

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- Category B - Sampling Required (possible release)

- Category C - RCRA Facility Investigation and/or Corrective Measure Study required (documented release)

Due to the fact that B/312B is considered to be a part of the IBM East Fishkill facility, the SWMUs located at B/312B vault are incorporated into the 6 NYCRR Part 373 Permit. However, it should be noted Table II-1 included in the 6 NYCRR Part 373 Permit lists the location of SMUs 204-207 as B/322 E (east of Building 322) where B/312B is currently located. All of the SWMUs located at B/312B are grouped in Category A on the permit.

In June 2000, MiCRUS, a tenant of the HVRP, was purchased by the Philips Semiconductor Manufacturing, Inc. and took over ownership of the division. In 2006, NXP Semiconductors USA, Inc. (NXP) took over ownership of the Philip's Semiconductor division and operated the spaces previously occupied by Philips until 2009, when NXP ceased manufacturing operations at the HVRP. This resulted in the termination of the lease agreement and turning over to IBM control, the operation of the spaces in B/310, B/320B and B/322 formerly occupied by NXP. IBM determined that the SWMUs listed on Table 1-1 required decontamination before the final turnover of the leased space was completed. These SWMUs include less-than-90-day mixed solvent hazardous waste storage tanks and associated piping. The locations of these SWMUs are provided on the site location map in Figure 1-1.

It should be noted that although the B/312B SWMUs listed on Table 1-1 have been decontaminated, they will remain a part of the 6 NYCRR Part 373 Permit for the IBM East Fishkill facility.

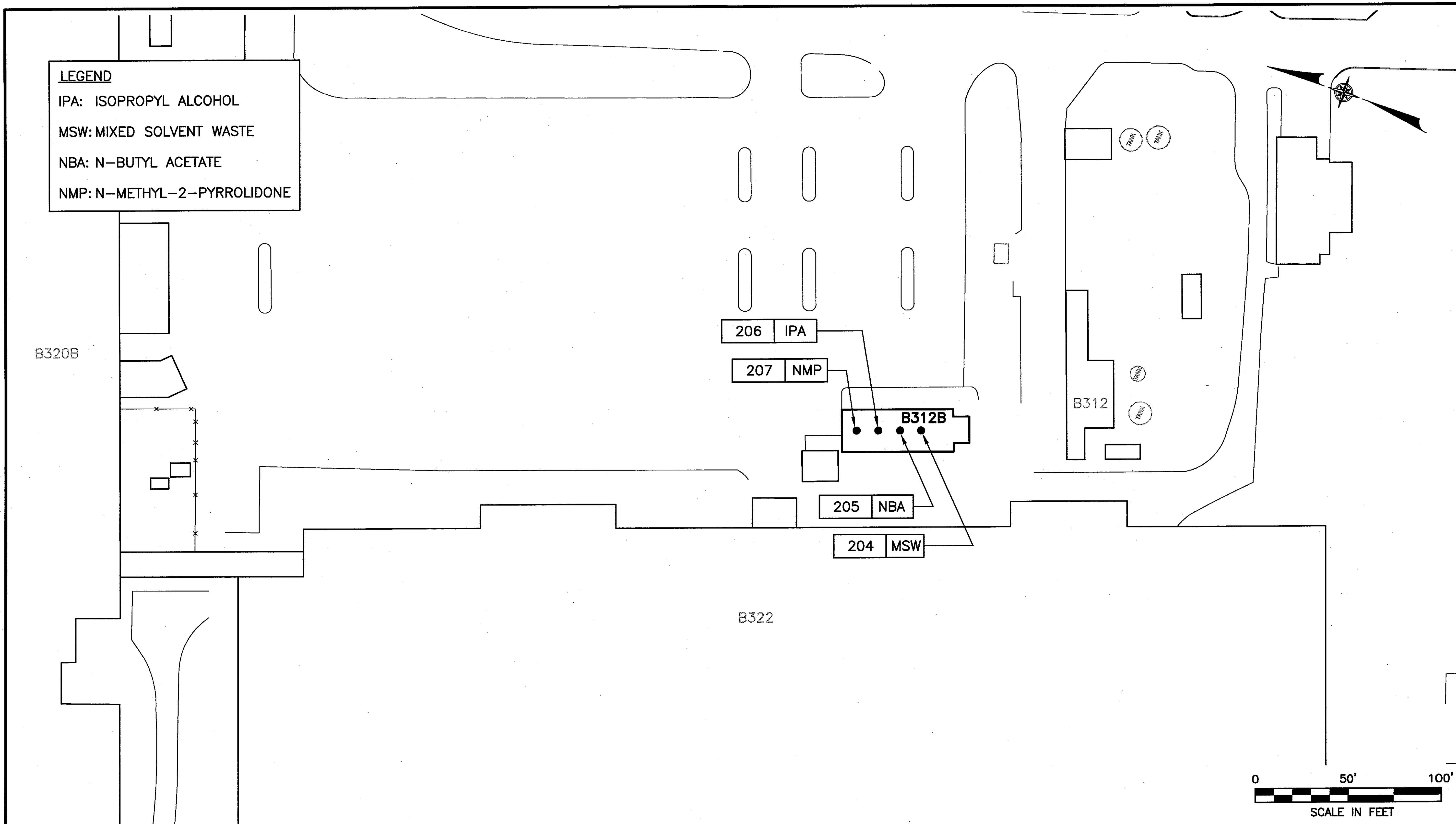
1.2 Project Scope and Objective

The objective of this decontamination report is to ensure that the SWMUs located at B/312B have been properly decontaminated and that the decontamination process is documented and certified as having been completed in accordance with the Work Plan that is provided as Appendix A. IBM has decontaminated these SWMUs in accordance with the closure performance standard at 6 NYCRR Part 373-3.7(b) and (e) and general policy guidelines

Table 1-1

IBM EAST FISHKILL FACILITY
DECONTAMINATION OF B/312B
SOLID WASTE MANAGEMENT UNITS (SWMUs) 204-207
IDENTIFICATION OF SWMUs UNDERGOING DECONTAMINATION

Tank #	Capacity (gallons)	Location	Material	Orientation	Tank Contents
204	5,000	B/312B Vault	Steel	Horizontal	Mixed Solvent Waste
205	5,000	B/312B Vault	Steel	Horizontal	n-Butyl Acetate Waste
206	5,000	B/312B Vault	Steel	Horizontal	Isopropyl Alcohol Waste
207	5,000	B/312B Vault	Steel	Horizontal	N-Methyl-2-Pyrrolidone Waste



INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL FACILITY - HUDSON VALLEY RESEARCH PARK
HOPEWELL JUNCTION, NEW YORK

BUILDING 312B VAULT SOLID WASTE MANAGEMENT UNITS LOCATION MAP

FIGURE 1-1

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

F:\2515\dwg\2515-FIG1-1.dwg, FIG 1-1-312B, 6/14/2010 2:08:31 PM, AStrauss obtained from the NYSDEC. Techtron Environmental, Inc. (Techtron), stationed at the IBM East Fishkill facility, conducted the decontamination activities for the Pizzagalli Construction Company (Pizzagalli). Pizzagalli retained William F. Cosulich Associates, P.C. (WFC) to provide engineering oversight of the project and to prepare a written report to document the decontamination activities. This report provides a Professional Engineer's certification that the SWMUs were decontaminated in accordance with the Work Plan as further detailed in this report.

2.0 SUMMARY OF DECONTAMINATION ACTIVITIES

This section of the report provides a summary of the field activities associated with the decontamination of the B/312B SWMUs identified in Section 1.0. During the course of the project, WFC provided engineering oversight to ensure that the decontamination and sampling activities undertaken at B/312B were conducted in accordance with the Work Plan. The following section provides excerpts from the work plan for each step of the decontamination project (shown in italics), followed by a brief description of the onsite decontamination activities. Appendix B of this report, entitled "Daily Field Activity Reports," contains a detailed description of the daily activities conducted by WFC and Techtron during the course of the project. In addition, photographs of the work conducted are provided in the photographic log provided in Appendix C.

1. *The unit will be pumped as low as possible, with all residual waste removed from the unit either by utilizing a vacuum truck or a portable pump. The liquid will be transferred to B/309 for classification and management in accordance with standard procedures under the IBM East Fishkill 6 NYCRR 373 Permit. Any remaining sludge/solids will be removed from the unit by hand, placed in a drum and labeled in accordance with USDOT regulations before being transferred to B/309 for proper classification and management.*

   Tanks 204 and 205 were found to be free of liquids, but residue was noted within the interior of the tanks and was removed during the cleaning process. In addition, Tank 205 had a minor amount of sludge located within the tank that was pumped into the tanker truck. Tanks 206 and 207 were found to be free of liquids with minor amount of residue noted on the interior tank shells. Any solid waste material such as PPE and used rags and other debris were placed in 55-gallon drums for proper off-site disposal. A non-potable water source was utilized to decontaminate the interior of the units. The tanker truck used to collect the decontamination wastewater was transported to B/309 for characterization prior to proper off-site disposal of the wastewater.

2. *The SWMU interior will be decontaminated with a water and suitable surfactant solution in accordance with procedures approved by IBM. Decontamination water will be removed from the unit utilizing the same method as was used to remove residual liquid in Step 1 above.*

   A mixture of ZEP Z-Green detergent and water was used to clean the interiors of the units. After cleaning, the tanks were rinsed with water to

remove any residual surfactant solution and the contents of the tanks were pumped into the tanker truck.

3. *Rinse water samples will collected in accordance with the Rinsate Sample Collection Protocol provided in Section 1.7.3 on page 1-13 of the Quality Assurance Project Plan (QAPP)*

   Rinse water samples were collected in accordance with the procedures found in Section 1.7.3 of the QAPP. A rinse blank sample was first collected from the source water utilized to decontaminate the units. Organic-free distilled water supplied by the laboratory was utilized as rinse water. The rinse water was poured into the tanks and allowed to collect in the bottom of each of the units. Plastic bags filled with sand were used as a berm to create a pool of water. The rinse water was allowed to remain in each unit for approximately 10 minutes before a sample was collected. In addition, a blind duplicate sample was collected each day. Disposable sampling equipment was placed into 55-gallon drums for proper off-site disposal.

4. *Rinse water samples will be analyzed for volatile organic compounds by a NYSDOH ELAP certified laboratory.*

   In addition to the analysis for volatile organic compounds, certain samples were analyzed for additional compounds such as n-Butyl Acetate for Tanks 204 and 205, N-methyl-2-pyrrolidone for Tank 207, isopropyl alcohol for Tanks 204 and 206 and total phenols for Tank 204. Rinse water samples, blanks and duplicates were labeled, placed in a cooler on ice and transported via Chain of Custody to EnviroTest Laboratories, Inc. in Newburgh, New York for analysis. Copies of the Chain of Custody forms are provided in Appendix D.

5. *Rinse water sample analytical results will be compared to the Class GA Groundwater Standards and Guidance Values listed in the NYSDEC Division of Water's Technical and Operational Guidance Series (TOGS) 1.1.1-"Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations." If the rinse water sample results exceed the Class GA Groundwater Standards, the decontamination process will be repeated until the results are below the Class GA Standards at which time the decontamination will be deemed complete.*

   Section 3.0 of this report provides a discussion of the results of the rinse water sample analysis. Tank 205 exceeded Class GA Groundwater Standards for Acetone. Tank 205 was, therefore, recleaned and resampled.

3.0 DISCUSSION OF ANALYTICAL RESULTS

This section of the report presents the results of the laboratory analyses conducted on the rinse water, rinse water blank and blind duplicate samples collected during the decontamination of the B/312B SWMUs. As discussed in Section 2.0 of this report, a rinse water sample was collected from each of the B/312B SWMUs after decontamination activities were completed. In addition, a rinse water blank sample was collected daily from the same water source used to decontaminate the SWMUs. A blind duplicate sample was collected daily. Copies of the laboratory Chain of Custody forms used to transfer the samples to the laboratory for analysis are provided in Appendix D. Copies of the Category B deliverables from EnviroTest Laboratories, Inc. are provided in Appendix E. Appendix F provides documentation of the data validation process conducted by WFC.

3.1 Tanks 204 through 207

The rinse water samples collected from Tanks 204 through 207 were analyzed for volatile organic compounds (VOCs) to verify the effectiveness of the decontamination activities. In addition, certain samples were analyzed for additional compounds such as n-Butyl Acetate for Tanks 204 and 205, N-methyl-2-pyrrolidone for Tank 207, isopropyl alcohol for Tanks 204 and 206 and total phenols for Tank 204. Table 3-1 summarizes and compares the analytical results to the Class GA Groundwater Standards and Guidance Values listed in the NYSDEC's Technical and Operational Guidance Series (TOGS) 1.1.1 – "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations."

It should be noted that, for Tank 204, total phenols were detected at a concentration exceeding the Class GA Groundwater Standards in samples MWS-204-R-1 and B312-RB-1. However, since elevated concentrations were detected in the rinse water blank samples as well as the rinse water sample, the source of total phenols cannot be attributed to contamination within the tank. As a result, the decontamination of Tank 204 was determined to be complete. In addition, chloroform and bromodichloromethane were detected at concentrations exceeding the Class GA Groundwater Standard in sample B312-RB-1 the rinse blank sample.

TABLE 3-1
IBM EAST FISHKILL FACILITY
DECONTAMINATION OF B/312B SOLID WASTE MANAGEMENT UNITS (SWMUs) 204-207
RINSE WATER SAMPLING ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs) AND ADDITIONAL COMPOUNDS

SAMPLE ID	**MWS-204-R-1**	**NBA-205-R-1**	**IPA-206-R-1**	**DUP012910**	**NMP-207-R-1**	**B312-RB-1**		**NYSDEC CLASS GA**
SAMPLE TYPE	RINSE	RINSE	RINSE	DUPLICATE	RINSE	RINSE BLANK		**GROUNDWATER**
DATE OF COLLECTION	1/29/2010	1/29/2010	1/29/2010	1/29/2010	1/29/2010	1/29/2010	**REPORTING**	**STANDARDS/**
DILUTION FACTOR	1.0	1/10	1.0	1.0	1.0	1.0	**LIMITS**	**GUIDANCE VALUES**
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Dichlorodifluoromethane	U	U	U	U	U	U	1	5 ST
Chloromethane	U	U	U	U	U	U	1	5 ST
Vinyl Chloride	U	U	U	U	U	U	1	2 ST
Bromomethane	U	U	U	U	U	U	1	5 ST
Chloroethane	U	U	U	U	U	U	1	5 ST
Trichlorofluoromethane	U	U	U	U	U	U	1	5 ST
1,1-Dichloroethene	U	U	U	U	U	U	1	5 ST
Acetone	U	**190 DJ**	U	U	U	2.8 J	1	50GV
Iodomethane	U	U	U	U	U	U	1	----
Carbon Disulfide	U	U	U	U	U	U	1	60GV
Methylene Chloride	U	U	U	U	U	U	1	5 ST
trans-1,2-Dichloroethene	U	U	U	U	U	U	1	5 ST
Methyl tert-Butyl Ether	U	U	U	U	U	U	1	10GV
1,1-Dichloroethane	U	U	U	U	U	U	1	5 ST
Vinyl Acetate	U	U	U	U	U	U	1	----
2-Butanone	U	U	U	U	U	U	1	50GV
cis-1,2-Dichloroethene	U	U	U	U	U	U	1	5 ST
2,2-Dichloropropane	U	U	U	U	U	U	1	5 ST
Bromochloromethane	U	U	U	U	U	U	1	5 ST
Chloroform	U	U	U	U	U	**17**	1	7 ST
1,1,1-Trichloroethane	U	U	U	U	U	U	1	5 ST
1,1-Dichloropropene	U	U	U	U	U	U	1	5 ST
Carbon Tetrachloride	U	U	U	U	U	U	1	5 ST
1,2-Dichloroethane	U	U	U	U	U	U	1	0.6 ST
Benzene	U	U	U	U	U	U	1	1 ST
Trichloroethene	U	U	U	U	U	U	1	5 ST
1,2-Dichloropropane	U	U	U	U	U	U	1	1 ST
Dibromomethane	U	U	U	U	U	U	1	5 ST
Bromodichloromethane	U	U	U	U	U	**5.3**	1	5 ST
cis-1,3-Dichloropropene	U	U	U	U	U	U	1	0.4 ST *
4-Methyl-2-pentanone	U	U	U	U	U	U	1	----
Toluene	U	U	U	U	U	U	1	5 ST
trans-1,3-Dichloropropene	U	U	U	U	U	U	1	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	U	U	1	1 ST
1,3-Dichloropropane	U	U	U	U	U	U	1	5 ST

TABLE 3-1 (Continued)
IBM EAST FISHKILL FACILITY
DECONTAMINATION OF B/312B SOLID WASTE MANAGEMENT UNITS (SWMUs) 204-207
RINSE WATER SAMPLING ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCs) AND ADDITIONAL COMPOUNDS

SAMPLE ID SAMPLE TYPE DATE OF COLLECTION DILUTION FACTOR UNITS	**MWS-204-R-1** RINSE 1/29/2010 1.0 ug/l	**NBA-205-R-1** RINSE 1/29/2010 1/10 ug/l	**IPA-206-R-1** RINSE 1/29/2010 1.0 ug/l	**DUP012910** DUPLICATE 1/29/2010 1.0 ug/l	**NMP-207-R-1** RINSE 1/29/2010 1.0 ug/l	**B312-RB-1** RINSE BLANK 1/29/2010 1.0 ug/l	**REPORTING LIMITS** ug/l	**NYSDEC CLASS GA GROUNDWATER STANDARDS/ GUIDANCE VALUES** ug/l
Tetrachloroethene	U	U	U	U	U	U	1	5 ST
2-Hexanone	U	U	U	U	U	U	1	50GV
Dibromochloromethane	U	U	U	U	U	U	1	50GV
1,2-Dibromoethane	U	U	U	U	U	U	1	----
Chlorobenzene	U	U	U	U	U	U	1	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	1	5 ST
Ethylbenzene	U	U	U	U	U	U	1	5 ST
m,p-Xylene	U	U	U	U	U	U	1	5 ST
o-Xylene	U	U	U	U	U	U	1	5 ST
Xylene (total)	U	U	U	U	U	U	1	5 ST
Styrene	U	U	U	U	U	U	1	5 ST
Bromoform	U	U	U	U	U	U	1	50GV
Isopropylbenzene	U	U	U	U	U	U	1	5 ST
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	1	5 ST
Bromobenzene	U	U	U	U	U	U	1	5 ST
1,2,3-Trichloropropane	U	U	U	U	U	U	1	0.04 ST
n-Propylbenzene	U	U	U	U	U	U	1	5 ST
2-Chlorotoluene	U	U	U	U	U	U	1	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	U	U	1	5 ST
4-Chlorotoluene	U	U	U	U	U	U	1	5 ST
tert-Butylbenzene	U	U	U	U	U	U	1	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	U	U	1	5 ST
sec-Butylbenzene	U	U	U	U	U	U	1	5 ST
4-Isopropyltoluene	U	U	U	U	U	U	1	5 ST
1,3-Dichlorobenzene	U	U	U	U	U	U	1	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	U	1	3 ST
n-Butylbenzene	U	U	U	U	U	U	1	5 ST
1,2-Dichlorobenzene	U	U	U	U	U	U	1	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	1	0.04 ST
1,2,4-Trichlorobenzene	U	U	U	U	U	U	1	5 ST
Hexachlorobutadiene	U	U	U	U	U	U	1	0.5 ST
Naphthalene	U	U	U	U	U	U	1	10 GV
1,2,3-Trichlorobenzene	U	U	U	U	U	U	1	5 ST
Isopropyl Alcohol	U	NA	190 J	200 J	NA	U	10	----
n-Butyl Acetate	U	U	NA	NA	NA	U	1	----
N-methyl-2-pyrrolidone	NA	NA	NA	NA	14	U	1,000	----
Total phenols	U	NA	NA	NA	NA	$\boxed{\textbf{12}}$	10	1 ST
Totals	0.0	190.0	190.0	200.0	14.0	37.1		

Qualifiers:
U: Constituent analyzed for but not detected.
D: Analysis reported from secondary dilution
J: Estimated.

Notes:
*: Value pertains to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established
$\boxed{}$: Result exceeds NYSDEC Class GA Standards/Guidance Values
DUP: Blind duplicate sample
IPA: Isopropyl Alcohol
MWS: Mixed waste solvent
NA: Not analyzed
NBA: n-Butyl Acetate
NMP: N-methyl-2-pyrrolidone
R: Rinse sample
RB: Rinse blank sample

Acetone was detected at a concentration of 190 ug/l, exceeding the Class GA Groundwater Standards of 50 ug/l in sample NBA-205-R-1. As a result, Tank 205 was recleaned in accordance with the Work Plan and resampled and analyzed for acetone.

The analytical results from the second cleaning of Tank 205 for acetone are summarized on Table 3-2. Elevated concentrations were detected in all three samples collected; the rinse blank sample, the rinse water sample and the blind duplicate samples for Tank 205. Due to the concentration of acetone detected in the rinse blank (59 ug/l) being comparable to that detected in the samples, the source of acetone is attributed to the water source and not the SWMU. As a result, the decontamination of SWMU 205 was determined to be complete.

The rinse water samples for Tanks 206 and 207 did not have any analytical results that exceeded Class GA Groundwater Standards and Guidance Values; therefore, Tanks 206 and 207 have been deemed successfully decontaminated.

TABLE 3-2
IBM EAST FISHKILL FACILITY
DECONTAMINATION OF B/312B SOLID WASTE MANAGEMENT UNITS (SWMUs) 204-207
TANK 205 - SECOND ROUND OF RINSE WATER SAMPLING ANALYTICAL RESULTS FOR ACETONE

SAMPLE ID SAMPLE TYPE DATE OF COLLECTION DILUTION FACTOR UNITS	**NBA-205-R-2** RINSE 3/12/2010 5.0 ug/l	**DUP031210** DUPLICATE 3/12/2010 5.0 ug/l	**B312-RB-2** RINSE BLANK 3/12/2010 5.0 ug/l	**REPORTING LIMITS** ug/l	**NYSDEC CLASS GA GROUNDWATER STANDARDS/ GUIDANCE VALUES** ug/l
Acetone	UJ	UJ	**59 DJ**	1	50GV

Qualifiers:
D: Analyzed at secondary dilution.
J: Estimated.
U: Constituent analyzed for but not detected.

Notes:
GV: Guidance Value
: Result exceeds NYSDEC Class GA Standards/Guidance Values
DUP: Blind duplicate sample
NBA: n-Butyl Acetate
R: Rinse sample
RB: Rinse blank sample

4.0 CERTIFICATION OF DECONTAMINATION

I certify under penalty of law that the Solid Waste Management Units 204-207 located at Building 312B Vault at the International Business Machines Corporation East Fishkill facility in Hopewell Junction, New York, included in this report have been decontaminated in accordance with the specifications contained in the Work Plan as described in this report.

OWNER/OPERATOR:

Signature:

Name: Steve Hawkins

Title: Mgr. Env. Eng.

Date: 3/21/13

INDEPENDENT PROFESSIONAL ENGINEER:

Signature:

Name: Brian M. Veith

Title: Vice President

Date: 6/15/2010

APPENDIX A

WORK PLAN AND QUALITY ASSURANCE PROJECT PLAN

INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL FACILITY
PROCEDURES FOR DECONTAMINATION OF NXP AND RELATED SOLID WASTE MANAGEMENT UNITS (SWMUs)

Mixed Solvent Waste Tanks

This procedure is intended to be used to collect samples for analysis from the solvent storage tanks listed below.

UNIT ID #	LOCATION	TANK CONTENTS	PURPOSE
204	312 B Vault	Solvent Waste - Mixed	< 90 Day HW Storage Tank
205	312 B Vault	Solvent Waste - Mixed	< 90 Day HW Storage Tank
206	312 B Vault	Solvent Waste - Mixed	< 90 Day HW Storage Tank
207	312 B Vault	Solvent Waste - Mixed	< 90 Day HW Storage Tank
208	322 West Truck Spill	Solvent Waste - Mixed	Spill Tank
3109	OMF	Solvent Waste - Mixed	< 90 Day HW Storage Tank
3110	330D South Outside	Solvent Waste - Mixed	< 90 Day HW Storage Tank
285	309 Outside	Solvent Waste - Mixed	< 90 Day HW Storage Tank
3158	310 Column J8	Solvent Waste - Mixed	< 90 Day HW Storage Tank

1. *The unit will be pumped as low as possible, with all residual waste removed from the unit either by utilizing a vacuum truck or a portable pump. The liquid will be transferred to B/309 for classification and management in accordance with standard procedures under the IBM East Fishkill 6 NYCRR 373 Permit. Any remaining sludge/solids will be removed from the unit by hand, placed in a drum and labeled in accordance with USDOT regulations before being transferred to B/309 for proper classification and management.*

INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL FACILITY
DECONTAMINATION OF NXP AND RELATED
SOLID WASTE MANAGEMENT UNITS (SWMUs)

CERTIFICATION OF COMPARISON OF RINSE WATER SAMPLES TO CLASS GA GROUNDWATER STANDARDS

2. *The SWMU interior will be decontaminated with a water and suitable surfactant solution in accordance with procedures approved by IBM. Decontamination water will be removed from the unit utilizing the same method as was used to remove residual liquid in Step 1 above.*

3. *Rinse water samples will collected in accordance with the Rinsate Sample Collection Protocol provided in Section 1.7.3 on page 1-13 of the attached Quality Assurance Project Plan (QAPP)*

4. *Rinse water samples will be analyzed for volatile organic compounds by a NYSDOH ELAP certified laboratory.*

5. *Rinse water sample analytical results will be compared to the Class GA Groundwater Standards and Guidance Values listed in the NYSDEC Division of Water's Technical and Operational Guidance Series (TOGS) 1.1.1-"Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations." If the rinse water sample results exceed the Class GA Groundwater Standards, the decontamination process will be repeated until the results are below the Class GA Standards at which time the decontamination will be deemed complete.*

INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL, NEW YORK

QUALITY ASSURANCE PROJECT PLAN FOR DECONTAMINATION OF NXP AND RELATED SOLID WASTE MANAGEMENT UNITS (SWMUs)

Prepared for:

INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL, NEW YORK

Prepared by:

WILLIAM F. COSULICH ASSOCIATES, P.C.
WOODBURY, NEW YORK

NOVEMBER 2009

INTERNATIONAL BUSINESS MACHINES CORPORATION
EAST FISHKILL, NEW YORK
QUALITY ASSURANCE PROJECT PLAN FOR
DECONTAMINATION OF NXP AND RELATED
SOLID WASTE MANAGEMENT UNITS

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1.0 QUALITY ASSURANCE PROJECT PLAN

1.1 Project Identification

<u>Facility Name</u>:	International Business Machines Corporation (IBM)
	East Fishkill, New York
<u>Project Name</u>:	Decontamination of NXP and Related Solid Waste Management Units (SWMUs)
<u>Project Managers</u>:	Linda N. Daubert
	Ellen R. DeOrsay *(William F. Cosulich Associates, P.C.)*
<u>Quality Assurance Officer</u>:	Robbin A. Petrella *(William F. Cosulich Associates, P.C.)*
<u>Field Operations Manager</u>:	Michael Williams *(William F. Cosulich Associates, P.C.)*

1.2 Objective and Scope

The objective of this program is to decontaminate the NXP and related Solid Waste Management Units (SWMUs) located of the IBM East Fishkill facility. As part of the decontamination activities, rinse water and rinse water blank samples will be collected to verify the effectiveness of the decontamination procedures. The purpose of this Quality Assurance Project Plan (QAPP) is to develop and describe the detailed sample collection and analytical procedures that will ensure high quality data.

1.3 Data Usage

The data generated from the field sampling will be used to verify the effectiveness of the decontamination activities performed on the SWMUs and associated piping. Specifically, the samples will be used to determine whether the decontamination activities were successful in removing any contamination present in the SWMUs and associated piping. If the samples indicate that contamination remains present, then additional decontamination may be required before the unit can be considered decontaminated.

1.4 Sampling Program Design and Rationale

The following presents a general discussion of the sampling to be conducted during the sampling portion of the program.

- Rinse Water Samples: Rinse water samples will be collected from certain SWMUs being decontaminated during this project. In addition, one blind duplicate will be collected each day a rinse water sample is collected.
- Rinse Water Blank Sample: One rinse water blank sample will be collected each day a rinse water sample is collected during this decontamination project directly from the water supply utilized to decontaminate the SWMUs.

1.5 Analytical Methods

Laboratory analysis of the rinse water and rinse water blank samples will consist of analyzing for pH, fluoride, and/or volatile organic compounds (VOCs) as identified in the 2005 NYSDEC Analytical Services Protocol (ASP), depending on sample location.

Table 1-1 presents a summary of the parameters/sample fractions to be analyzed. The table also lists the sample location, type of sample, sample matrix, number of samples and frequency of sample collection, type of sample container, method of preservation, holding time and analytical method.

Table 1-1

INTERNATIONAL BUSINESS MACHINES CORPORATION
DECONTAMINATION OF NXP AND RELATED SWMUs
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples*	Frequency**	Container Type/Size/No.	Sample Preservation	Maximum Holding Time***	Analytical Method
Fluoride Wastewater SWMUs	Grab	Water	Fluoride	3	2	Plastic/50 ml/1 ICHEM 300 series or equivalent	Cool to 4°C	26 days for analysis	7/05 NYSDEC ASP, Method 9214
Fluoride Wastewater and Acid SWMUs			pH	3	3	Plastic/50 ml/1 ICHEM 300 series or equivalent	Cool to 4°C	analyze immediately	7/05 NYSDEC ASP, Method 9040

*Number of samples includes a rinse water, rinse water blank and duplicate.

**Frequency equals number of SWMUs to be decontaminated.

***Holding times based upon Verified Time of Sample Receipt at the laboratory.

Table 1-1 (continued)

INTERNATIONAL BUSINESS MACHINES CORPORATION
DECONTAMINATION OF NXP AND RELATED SWMUs
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples*	Frequency**	Container Type/Size/No.	Sample Preservation	Maximum Holding Time***	Analytical Method
Mixed Solvent Tanks	Grab	Water	Volatile Organics	3	9	Glass/40 ml/3 ICHEM 300 series or equivalent	Cool to 4°C	10 days	7/05 NYSDEC ASP, Method 8260B

*Number of samples includes a rinse water, rinse water blank and duplicate.

**Frequency equals number of SWMUs to be decontaminated.

***Holding times based upon Verified Time of Sample Receipt at the laboratory.

Trip Blanks will be submitted each day samples are shipped to the laboratory. Provision for 6 trip blanks has been made.

1.6 Data Quality Requirements and Assessment

Data quality requirements and assessments are provided in the 2005 NYSDEC ASP, which includes the detection limit for each parameter and sample matrix (see Exhibit A). Note that quantification limits, estimated accuracy, accuracy protocol, estimated precision and precision protocol are determined by the laboratory and will be in conformance with the requirements of the 2005 NYSDEC ASP, where applicable. Table 1-2 presents a summary of the data quality requirements.

In addition to meeting the requirements provided in the 2005 NYSDEC ASP, the data must also be useful in evaluating the nature and extent of contamination. Data obtained during the field program will be compared to specific Standards, Criteria and Guidelines (SCGs). The SCGs to be utilized include:

<u>**Matrix**</u>	<u>**SCG**</u>
Rinse Water and Rinse Water Blank Samples	NYSDEC Class GA Groundwater Standards found at Division of Water Technical and Operational Guidance Series (1.1.1) dated June 1998.

1.6.1 <u>Data Representativeness</u>

Representative samples will be collected as follows:

- <u>Rinse Water</u> – Samples will be collected utilizing hose (deionized) water. Hose water will be poured into the SWMU, allowed to stand for approximately 10 minutes and then collected utilizing sterile plastic pipettes or similar equipment.
- <u>Rinse Water Blank</u> – Samples will be collected of the water utilized to decontaminate the area directly from the water source (e.g., hose, etc.) and passed through a sterile plastic pipette into the sample container.
- <u>Equipment Decontamination</u> – Non-sterile sampling equipment will be decontaminated prior to use at each location according to the NYSDEC-approved procedures described in Section 1.8 of this QAPP.

Table 1-2

INTERNATIONAL BUSINESS MACHINES CORPORATION
DECONTAMINATION OF NXP AND RELATED SWMUs
DATA QUALITY REQUIREMENTS

Parameter	Sample Matrix	CRDL* (ug/l)	Estimated Accuracy	Accuracy Protocol	Estimated Precision	Precision Protocol
Volatile Organics	Liquid	5-10 5-10	0.87 - 2.48 ug/l	Vol. IB, Chapter 4, Method 8260B, Table 7	0.11 - 4.00 ug/l	Vol. IB, Chapter 4, Method 8260B, Table 7

*Contract Required Detection Limits.

Table 1-2 (continued)

INTERNATIONAL BUSINESS MACHINES CORPORATION
DECONTAMINATION OF NXP AND RELATED SWMUs
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION, ACCURACY, AND COMPLETENESS

Matrix/Parameter	Precision (%)	Accuracy (%)
Rinse Water		
VOCs(a)	See Table 1-2a	See Table 1-2a

Notes:

(a) Accuracy will be determined as percent recovery of surrogate spike compounds and matrix spike compounds. Surrogate and matrix spike compounds for VOCs are listed in Table 1-2a. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

(b) Accuracy will be determined as percent recovery of matrix spikes when appropriate or the percent recovery of a QC sample if spiking is inappropriate. Precision will be determined as relative percent difference of matrix spike duplicate samples, or duplicate samples if spiking is inappropriate.

(c) Precision will be determined as the average percent difference for replicate samples. Accuracy will be determined as the percent recovery of matrix spike samples or laboratory control samples, as appropriate.

Source: NYSDEC ASP

Table 1-2 (continued)

INTERNATIONAL BUSINESS MACHINES CORPORATION
DECONTAMINATION OF SNXP AND RELATED WMUs
DATA QUALITY REQUIREMENTS
ACCURACY REQUIREMENTS FOR VOC

	Spike Recovery Limits (%)
	Water
Surrogate Compound	
Toluene-d8	88-110
4-Bromofluorobenzene	86-115
1,2-Dichloroethane-d4	76-114
Matrix Spike Compound	
1,1-Dichloroethene	61-145
Trichloroethane	71-120
Chlorobenzene	75-130
Toluene	76-125
Benzene	76-127

Source: NYSDEC ASP

1.6.2 Data Comparability

All data will be presented in the units designated by the methods specified by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory, and the 2005 NYSDEC ASP. In addition, sample locations, collection procedures and analytical methods from earlier studies will be evaluated for comparability with current procedures/methods.

1.6.3 Data Completeness

The acceptability of 100% of the data is desired as a goal for this project. The acceptability of less than 100% complete data, meeting all laboratory Quality Assurance/Quality Control (QA/QC) protocols/standards, will be evaluated on a case-by-case basis.

The laboratory utilized to perform the analyses on the rinse water, rinse water blank and duplicate samples will provide NYSDEC ASP Category B data deliverables.

1.7 Detailed Sampling Procedures

Rinse water, rinse water blank and duplicate samples will be collected following the decontamination activities in order to verify the effectiveness of the decontamination activities. One rinse water sample, one rinse water blank sample and one duplicate sample will be collected from certain SWMUs which are decontaminated as part of this program. Sampling procedures and equipment to be utilized are described in this QAPP. Sample collection will be performed in conformance with the procedures outlined in this QAPP.

When collecting the samples, care will be taken to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. First, the equipment utilized to collect the samples must be new and sterile or properly decontaminated. An appropriate piece of sampling equipment (e.g., disposable pipette) will be utilized to collect the sample and transfer it to the laboratory-supplied sample container. The sample should reflect and contain a good representation of the area from which it was collected. The sample will be transferred into the sample container as quickly as possible.

There are several steps performed after the transfer of the sample into the sample container that are necessary to properly complete the collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove any grime. A clean paper towel moistened with distilled/deionized water will be used for this purpose.

Prior to sample collection, the sample container will be properly labeled. Information such as the sample identification number, location, collection time and sample description will be recorded in the field log book. Associated paper work (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature to be maintained during transportation to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

Proper personal protective equipment and monitoring equipment (if determined to be necessary) will be used at all times during sample collection to further maintain sample integrity and protection of worker health and safety.

1.7.1 Sample Identification

All samples collected during the field activities undertaken at NXP and Related SWMUs will be labeled with a sample identification code. The code will identify the sample location, sample type (sample matrix) and series numbers for the sample locations. Samples will be labeled according to the following system:

Location Identification: - The sample location will be assigned an identifier based on the SWMU from which the sample was collected. Samples collected from the first Fluoride/Heavy Metal Tank will be denoted "FHM (SWMU number)" (e.g., FHM 5072).

Sample Type: - "R" for rinse water and duplicate samples and "RB" for rinse water blank sample.

Sample Number: - In the field, each sample location will be designated with a number. The number will correspond with the number of the sample collected. Therefore, the first blank collected from an SWMU will be denoted "1." If the SWMU requires further decontamination, the second rinse blank will be denoted "2" and so on.

Based on the above sample identification procedures, an example of a sample label may be:

Sample Type Sample Number

FHM 5072-R-1

Location Identification

1.7.2 Sample Handling, Packaging and Shipping

All analytical samples will be placed in the appropriate sample containers as specified in the NYSDEC July2005 ASP. The holding time criteria identified in the ASP will be followed, as specified in Table 1-1.

Prior to packaging any samples for transportation to the laboratory, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be wrapped with a cushioning material (e.g., bubble wrap) and placed in a cooler (or laboratory shuttle) with a sufficient quantity of bagged ice or "blue ice" packs to maintain the samples at 4°C until arrival at the laboratory.

All necessary documentation required to accompany the samples during transportation will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will then be sealed with fiber (duct) tape, and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be shipped to ensure receipt at the laboratory within 48 hours of sample collection in accordance with ASP requirements.

1.7.3 Rinse Water/Blind Duplicate Samples

The following protocol will be adhered to for the collection of rinse water samples and the blind duplicate sample:

1. Be certain that the sample location is noted on a sample location sketch (see Section 1.10).

2. Be certain that the sampling equipment is either new or has been decontaminated utilizing the procedures outlined in Section 1.8.

3. Select a sample location within the area. One rinse water sample and one duplicate will be collected from each SWMU.

4. Remove a set of laboratory-supplied, precleaned sample containers from the sample cooler, label containers with an indelible marker and fill out a Chain of Custody form (refer to Section 1.10.2).

5. Don a new pair of disposable laboratory gloves (nitrile).

6. Slowly pour water into the SWMU from hose. The minimum amount of water necessary to properly fill all of the sample containers should be utilized. Note: Since it is not possible to extract all of the water poured into the SWMU, the volume of the sample containers plus additional water will have to be poured into the SWMU in order to properly fill all of the sample containers. Record the approximate volume of water utilized in the field log book.

   Note: If water will not pool within the SWMU, construct a berm to ensure pooling. Absorbent material or similar means should be used to construct berm.

7. Allow the water to remain within the tank or vault for approximately 10 minutes.

8. Collect the rinse water duplicate samples from the SWMU utilizing a new or decontaminated pipette. If the liquid level is of sufficient depth, containers may be filled by dunking the unpreserved container into the pooled liquid, or utilizing a dedicated unpreserved container to then fill the preserved sample container.

9. Once each sample container has been filled, replace the sample container cap.

10. Return the sample containers to the cooler.

11. Measure the wetted area of SWMU in each sample location and record in the field log book.

12. Record notes in field log book as described in Section 1.10.3.

13. If reusable sampling equipment was utilized, decontaminate the sampling equipment according to the procedures described in Section 1.8.

14. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

1.7.4 Rinse Water Blank Sample

The following protocol will be adhered to for the collection of the rinse water blank sample:

1. Be certain that the sample location is noted on a sample location sketch (see Section 1.10).

2. Be certain that the sampling equipment is either new or has been decontaminated utilizing the procedures outlined in Section 1.8.

3. Remove a set of laboratory-supplied, precleaned sample containers from the sample cooler, label containers with an indelible marker and fill out a Chain of Custody form (refer to Section 1.10.2).

4. Don a new pair of disposable laboratory gloves (nitrile).

5. Collect the rinse water blank sample by filling each container directly from the hose or other source utilized to supply water to the area for the decontamination activities. The hose water should be passed from the hose through a sterile disposable syringe/pipette (the same type utilized for collecting the rinse water samples) into the sample container.

6. Once each sample container has been filled, replace the sample container cap.

7. Return the sample containers to the cooler.

8. Record notes in field log book as described in Section 1.10.3.

9. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

1.8 Decontamination Procedures

Whenever feasible, all field sampling equipment should be dedicated to a particular sampling location. In instances where this is not possible, a field cleaning (decontamination) procedure will be used in order to reduce the risk of cross-contamination between sample locations. A decontamination station will be established for all field activities if field decontamination is necessary. This will be an area located at some distance from the sampling locations so as not to adversely impact the decontamination procedure while still allowing the sampling team to keep equipment handling to a minimum.

1.8.1 Field Decontamination Procedures

All nondisposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to moving to a new sampling interval or location, and prior to leaving the site). Different decontamination procedures are used for the various types of equipment utilized to perform the field activities. When designing a field decontamination program, it is advisable to initiate environmental sampling in the area of the site with the lowest contaminant probability and proceed through to the areas of highest suspected contamination.

1.8.2 Decontamination Procedure for Sampling Equipment

All Teflon, polyvinyl chloride (PVC), high density polyethylene (HDPE) and stainless steel sampling equipment will be decontaminated utilizing the following procedure:

- Wash thoroughly with nonresidual detergent (e.g., alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly utilizing distilled or deionized water.
- Wrap completely in clean aluminum foil with dull side against the equipment.

The first step, a soap and water wash, is designed to remove all visible particulate matter and residual oil and grease. The distilled/deionized water rinse ensures complete removal of residual cleaning products and the aluminum wrap protects the equipment from contamination and keeps it clean for use at another sampling location.

1.9 Laboratory Sample Custody Procedures

A NYSDOH ELAP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical equipment, will be used. The Standard Operating Procedures of the laboratory selected to undertake the analysis of environmental samples for this program will be available upon request.

1.10 Field Management Documentation

Proper management and documentation of field activities is essential to ensure that all necessary work is conducted in accordance with this Quality Assurance Project Plan in an efficient and high quality manner. Field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are split (if required), completing Chain of Custody forms and maintaining a daily field log book. Proper completion of the Chain of Custody and the field log book are necessary to support the future actions that may result from the sample analysis. This documentation will support that the samples were properly collected and handled.

1.10.1 Location Sketch

Each sampling point shall have its own location sketch with measurements and permanent references if possible. This sketch will be recorded in the field log book.

1.10.2 Chain of Custody

A Chain of Custody (COC) form is initiated at the laboratory with container preparation and transportation to the site. The COC must remain with the samples at all times and bear the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and proper handling of the containers and samples. When the form is complete, it should indicate that there were no lapses in sample accountability.

A sample is considered to be in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession, or
- It is in the individual's view after being in his or her physical possession, or
- It is secured by the individual so that no one can tamper with it, or
- The individual puts it in a designated and identified secure area.

In general, Chain of Custody forms are provided by the laboratory contracted to perform the analytical services. At a minimum, the following information shall be provided on these forms:

- Project name and address
- Project number
- Sample identification number of each sample contained in the sample cooler
- Date of sample collection
- Time of sample collection
- Sample location
- Sample type/matrix
- Analyses requested
- Number of containers and volume collected
- Remarks (e.g., preservation, special handling, etc.)
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

For this particular study, Chain of Custody forms provided by the laboratory will be utilized.

The Chain of Custody form is completed and signed by the person performing the sampling activities. The original form travels with the samples and is signed and dated each time the samples are relinquished to another party, until it reaches the laboratory or analysis is completed. The field sampler maintains a copy of the Chain of Custody form and a copy is retained for the project file. Each sample container must also be labeled with an indelible marker with a minimum of the following information:

- Sample identification number
- Project name/location
- Analysis to be performed
- Date and time of collection
- Sampler's initials

A copy of the completed Chain of Custody form is returned by the laboratory with the analytical results.

1.10.3 Field Log Book

Field log books must be bound and should have consecutively numbered, water resistant pages. All pertinent information regarding the site, project and sampling procedures must be documented. Notations should be made in log book fashion, noting the time and date of all entries. Information recorded in the log book should include, but is not necessarily be limited to, the following:

The first page of the log contains the following information:

- Project name and address
- Name, address and phone number of field contact
- Name, address and phone number of subcontractors and contact persons

Daily entries are made for the following information:

- Purpose of sampling
- Sampling location
- Number and volume(s) of sample(s) collected
- Description of sample location and sampling methodology
- Date and time of sample collection and personnel arrival and departure
- Geologic description of each sample interval, if applicable
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sample location or photographs of sample collection with dimensions
- Field observations such as weather conditions, visual signs of staining and/or stressed vegetation
- Signature of personnel responsible for completing log entries

1.11 Calibration Procedures and Preventive Maintenance

The following information regarding equipment will be maintained at the project site if monitoring is deemed necessary for health and safety purposes:

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the

calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be completed daily at the sampling site so that any background contamination can be taken into consideration and the instrument calibrated accordingly.

2. A schedule of preventive maintenance tasks, consistent with the instrument manufacturer's specific operation manuals, that will be carried out to minimize down time of the equipment.

3. Critical spare parts, necessary tools and manuals will be on hand to facilitate equipment maintenance and repair.

1.12 Performance of Field Audits

During field activities, if determined to be necessary, the QA/QC Officer will accompany sampling personnel into the field, verify that the site sampling program is being properly implemented and detect and define problems so that resolutions can be determined and implemented. All findings will be documented and provided to the Field Operations Manager.

1.13 Control and Disposal of Contaminated Material

Contaminated materials generated during this field program will primarily be limited to spent protective clothing, spent disposable sampling equipment and wastes generated as a result of equipment decontamination.

Any contaminated materials generated as a result of the field program will be contained in U.S. Department of Transportation (DOT) 55-gallon drums and staged in a designated area for subsequent waste characterization. Each drum will be identified by the type of material contained.

Decisions regarding the disposal of drummed material will be made, at least in part, based on the analytical results of the samples collected during this program. At the present time, there is no provision for separate analysis of contained material.

Decontamination water and sediment, if any, will be contained in 55-gallon drums. A decision regarding disposal of this material will be made following receipt of the sample results. Analysis of decontamination water/sediment may be required for proper management.

DOT-approved 55-gallon drums will be available for disposal of spent protective clothing and disposable sampling equipment, if any. These drums will be marked and labeled as containing personnel protective and sampling equipment. These drums will not be sampled. All drums will be sealed and staged on site to await proper off-site disposal.

1.14 Data Validation

Data validation will be performed in order to define and document analytical data quality in accordance with NYSDEC requirements that project data must be of known and acceptable quality. The analytical and validation processes will be conducted in conformance with the July 2005 NYSDEC ASP and USEPA CLP Statements of Work (SOW) dated June 1999 and January 2000. The validation will be performed by an individual meeting the qualification requirements for a data validator for the NYSDEC.

The USEPA Functional Guidelines for Evaluating Organics and Inorganics Analyses for the CLP will be used for the data validation process. The data validation process will ensure that all analytical requirements specific to this sampling program, including this Quality Assurance Project Plan, are followed. Procedures will address validation of routine analytical services (RAS) results based on the NYSDEC Target Compound List (TCL) for standard sample matrices.

The data validation process will provide an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The report generated as a result of the data validation process will provide a base upon which the usefulness of the data can be evaluated by the end user of the analytical results. The overall level of effort and specific data validation procedure to be used will be equivalent to a "20% validation" of all analytical data in any given data package.

During the review process, it will be determined whether the contractually-required laboratory submittals for sample results are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of data. Each data package will be checked for completeness and technical adequacy of the data. Upon completion of the review, the reviewer will develop a QA/QC data validation report for each analytical data package.

"Qualified" analytical results for any one field sample are established and presented based on the results of specific QC samples and procedures associated with its sample analysis group or batch. Precision and accuracy criteria (i.e., QC acceptance limits) are used in determining the need for qualifying data. Where test data have been reduced by the laboratory, the method of reduction will be described in the report. Reduction of laboratory measurements and laboratory reporting of analytical parameters shall be verified in accordance with the procedures specified in the NYSDEC program documents for each analytical method (i.e., recreate laboratory calculations and data reporting in accordance with the method specific procedure). The standard operating guideline manuals and any special analytical methodology required are expected to specify documentation needs and technical criteria and will be taken into consideration in the validation process. Copies of the complete ASP Category B deliverables will be submitted to the NYSDEC for review. Copies of the validation report, including the laboratory result data report sheets, with any qualifiers deemed appropriate by the data reviewer, and a supplementary field QC sample result summary statement, will be submitted to the NYSDEC, if requested.

Examples of standard organic and inorganic data validation reporting formats and completeness inventory lists which are proposed for use on this project are contained in Exhibit B. These report forms will be modified as necessary and made appropriate for any project specific or NYSDEC requirements.

The following is a description of the two-phased approach to data validation planned to be used on this project. The first phase is called "checklisting" and the second phase is the analytical quality review, with the former being a subset of the latter.

- Checklisting - The data package is checked for correct submission of the contract required deliverables, correct transcription from the raw data to the required deliverable summary forms and proper calculation of a number of parameters.

- Analytical Quality Review - The data package is closely examined to recreate the analytical process and verify that proper and acceptable analytical techniques have been performed. Additionally, overall data quality and laboratory performance is evaluated by applying the appropriate data quality criteria to the data to reflect conformance with the specified, accepted QA/QC standards and contractual requirements.

At the completion of the data validation, a Summary Data Validation/Usability Report will be prepared and submitted to the NYSDEC, if requested.

1.15 Performance and System Audits

A NYSDOH ELAP certified laboratory, which has satisfactorily completed performance audits and performance evaluation samples, shall be used on this project.

1.16 Corrective Action

A NYSDOH ELAP certified laboratory shall meet the requirements for corrective action protocols, including sample "cleanup" to attempt to eliminate/mitigate "matrix interference." Sample "cleanup" is not required for samples to be analyzed for volatile organic compounds or RCRA metals. However, sample "cleanup" is required for samples to be analyzed for semivolatile organic compounds.

1.17 Duplicate

The primary purpose of a duplicate sample is to determine the analytical precision of the laboratory contracted to perform the sample analyses. A duplicate sample is collected in the same manner as one of the environmental samples and analyzed for the same constituents. In this manner, the precision of the laboratory can be checked. One duplicate of a rinse water sample will be collected and analyzed during decontamination of each SWMU identified in this decontamination program.

1.18 Trip Blanks (Travel Blanks)

The primary purpose of this type of blank is to detect additional sources of contamination that might potentially influence contaminant values reported in actual samples both quantitatively and qualitatively. The following have been identified as potential sources of contamination:

- Laboratory reagent water
- Sample containers
- Cross contamination in shipment
- Ambient air or contact with analytical instrumentation during preparation and analysis at the laboratory
- Laboratory reagents used in analytical procedures

A trip blank consists of a set of 40 ml sample vials filled at the laboratory with laboratory demonstrated analyte free water. Trip blanks should be handled, transported and analyzed in the same manner as the samples acquired that day, except that the sample containers themselves are not opened in the field. Rather, they just travel with the sample cooler. Trip blanks must accompany samples at a rate of one per shipment. The temperature of the trip blanks must be maintained at 4°C while on-site and during shipment. Trip blanks must return to the laboratory with the same set of bottles they accompanied in the field.

The purpose of a trip blank is to control sample bottle preparation and blank water quality as well as sample handling. Thus, the trip blank travels to the site with the empty sample bottles and back from the site with the collected samples in an effort to simulate sample handling conditions. Contaminated trip blanks may indicate inadequate bottle cleaning or blank water of questionable quality. Trip blanks are implemented only when collecting water samples, and analyzed for volatile organic compounds only.

EXHIBIT A

DETECTION LIMITS

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples

	Volatile Analyte	CAS Number	Trace Water By SIM (µg/L)	Trace Level Water (µg/L)	Low Level Water (µg/L)
1.	Dichlorodifluoromethane	75-71-8		0.50	5.0
2.	Chloromethane	74-87-3		0.50	5.0
3.	Vinyl Chloride	75-01-4		0.50	5.0
4.	Bromomethane	74-83-9		0.50	5.0
5.	Chloroethane	75-00-3		0.50	5.0
6.	Trichlorofluoromethane	75-69-4		0.50	5.0
7.	1,1-Dichloroethene	75-35-4		0.50	5.0
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		0.50	5.0
9.	Acetone	67-64-1		5.0	10.0
10.	Carbon Disulfide	75-15-0		0.50	5.0
11.	Methyl Acetate	79-20-9		0.50	5.0
12.	Methylene chloride	75-09-2		0.50	5.0
13.	trans-1,2-Dichloroethene	156-60-5		0.50	5.0
14.	Methyl tert-Butyl Ether	1634-04-4		0.50	5.0
15.	1,1-Dichloroethane	75-34-3		0.50	5.0
16.	cis-1,2-Dichloroethene	156-59-2		0.50	5.0
17.	2-Butanone	78-93-3		5.0	10.0
18.	Bromochloromethane	74-97-5		0.50	5.0
19.	Chloroform	67-66-3		0.50	5.0
20.	1,1,1-Trichloroethane	71-55-6		0.50	5.0
21.	Cyclohexane	110-82-7		0.50	5.0
22.	Carbon tetrachloride	56-23-5		0.50	5.0
23.	Benzene	71-43-2		0.50	5.0
24.	1,2-Dichloroethane	107-06-2		0.50	5.0
25.	1,4-Dioxane	123-91-1	1.0	25	125
26.	Trichloroethane	79-01-6		0.50	5.0

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples (Continued)

	Volatile Analyte	CAS Number	Trace Water By SIM (µg/L)	Trace Level Water (µg/L)	Low Level Water (µg/L)
27.	Methylcyclohexane	108-87-2		0.50	5.0
28.	1,2-Dichloropropane	78-87-5		0.50	5.0
29.	Bromodichloromethane	75-27-4		0.50	5.0
30.	cis-1,3-Dichloropropene	10061-01-5		0.50	5.0
31.	4-methyl-2-pentanone	108-10-1		5.0	10.0
32.	Toluene	108-88-3		0.50	5.0
33.	Trans-1,3-Dichloropropene	10061-02-6		0.50	5.0
34.	1,1,2-Trichloroethane	79-00-5		0.50	5.0
35.	Tetrachloroethene	127-18-4		0.50	5.0
36.	2-Hexanone	591-78-6		5.0	10.0
37.	Dibromochloromethane	124-48-1		0.50	5.0
38.	1,2-Dibromoethane	106-93-4	0.05	0.50	5.0
39.	Chlorobenzene	108-90-7		0.50	5.0
40.	Ethylbenzene	100-41-4		0.50	5.0
41.	Xylenes (Total)	1330-20-7		0.50	5.0
42.	Styrene	100-42-5		0.50	5.0
43.	Bromoform	75-25-2		0.50	5.0
44.	Isopropylbenzene	98-82-8		0.50	5.0
45.	1,1,2,2-Tetrachloroethane	79-34-5		0.50	5.0
46.	1,3-Dichlorobenzene	541-73-1		0.50	5.0
47.	1,4-Dichlorobenzene	106-46-7		0.50	5.0
48.	1,2-Dichlorobenzene	95-50-1		0.50	5.0
49.	1,2-Dibromo-3-chloropropane	96-12-8	0.05	0.50	5.0
50.	1,2,4-Trichlorobenzene	120-82-1		0.50	5.0
51.	1,2,3-Trichlorobenzene	87-61-6		0.50	5.0

EXHIBIT B

DATA VALIDATION FORMS

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

I. Data Deliverable Requirements

A. Legible	Yes	No
B. Paginated	Yes	No
C. Arranged in order	Yes	No
D. Consistent dates	Yes	No
E. Case Narrative	Yes	No
F. Chain-of-Custody Record	Yes	No
G. Sample Data Complete	Yes	No
H. Standard Date Complete	Yes	No
I. Raw QC Data Complete	Yes	No

Comments: ____

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DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

II. Holding Times

Sample I.D.	Date Received	Date Extracted	Date Analyzed	Holding Time Exceeded?

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

Fraction: ______________________

III. Tune Summary

Tune File I.D. Number	Acceptable ?	Comments
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ____________________

Reviewer: ______________________ Date of Review: ____________________

Fraction: ______________________

IV. Initial Calibration Summary (GC/MS)

Date of Calibration: ______________

A. Standard Data Files

Standard 1 ID: ____________________ Conc: __________________

Standard 2 ID: ____________________ Conc: __________________

Standard 3 ID: ____________________ Conc: __________________

Standard 4 ID: ____________________ Conc: __________________

Standard 5 ID: ____________________ Conc: __________________

B. 1. All SPCC met Criteria ?

Yes No

2. Calculate a SPCC average RRF

Comments: ____

____

____

____

____

____

____

____

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

Fraction: ______________________ Date of Calibration: ______________________

IV. Initial Calibration Summary (continued)

2. All CCC met Criteria ?

Yes No

Comments: ____

____

Calculate a CCC % RSD

C. 1. Was the tune for the initial calibration acceptable ?

Yes No

2. Was the calibration conducted within 12 hours of the tune

Yes No

Comments: ____

____

____

D. Overall assessment of the initial calibration:
(list the associated samples)

____

____

____

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ____________________

Reviewer: ______________________ Date of Review: ____________________

Fraction: ______________________

VI. Continuing Calibration Summary (GC/MS)

Date of Initial Calibration: ____________________________

Date of Continuing Calibration: ________________________ File ID: ___________

A. 1. All SPCC met criteria ?

Yes No

Calculate a SPCC RRF

Comments: ____

____

2. All CCC met criteria ?

Yes No

Calculate a CCC % D

Comments: ____

____

B. Overall assessment of Continuing Calibration
(list associated samples)

____

____

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

Fraction: ______________________

VIII. Internal Standard Area Summary (GC/MS)

Were all internal standard peak areas within the contract limits ?

Yes No

If No, please note below

Sample	Internal Standard Outside Limits	Amount Above Contract Requirement	Comments

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

Fraction: ______________________

IX. Blank Summary

Date/Time of Analysis: ______________________ File ID: ______________________

Compound	Concentration	≤ CROL	Comments

List the samples associated with this method blank.

____

____

____

____

DATA VALIDATION – ORGANICS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

Fraction: ______________________

X. Surrogate Recovery Summary

Were all surrogate recoveries within the contract limits ?

Yes No

If No, please note below.

Sample	Surrogate Compound Outside Recovery Limits	Amount Above Contract Requirement	Comments

DATA VALIDATION – ORGANICS

Site Name: ____________________ Laboratory Name: ____________________

Reviewer: ____________________ Date of Review: ____________________

Fraction: ____________________

XI. Matrix Spike/Matrix Spike Duplication Summary

Sample ID: ____________________ Matrix: ____________________

Did the MS/MSD recovery data meet the contract recommended requirements ?

Yes No

If No, please note below.

____

____

____

____

DATA VALIDATION – METALS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

I. Holding times

Sample	Date Received	Date Digested	Date Analyzed	Holding Time Exceeded?

DATA VALIDATION – METALS

Site Name: ____________________ Laboratory Name: ____________________

Reviewer: ____________________ Date of Review: ____________________

Associated Samples: ____

II. Initial Calibration

1. Were all initial instrument calibrations performed?

   Yes No

   Comments:

   ____

   ____

   ____

2. Were the initial calibration verification standards analyzed at the contract specified frequency?

   Yes No

   Comments:

   ____

   ____

   ____

3. Were the initial calibration results within the control limits listed below?

   For tin and mercury: 80-120% of the true value
   For all other metals: 90-110% of the true value

   Yes No

   If "No", note analytes ____________________

DATA VALIDATION – METALS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

Associated Samples: ____

III. Continuing Calibration

1. Were the continuing calibration verification standards analyzed at the contract specified frequency?

   Yes No

Comments:

____

____

____

2. Were the continuing calibration results within the control limits listed below?

   For tin and mercury: 80-120% of the true value
   For all other metals: 90-110% of the true value

   Yes No

If "No", note analytes ____

DATA VALIDATION – METALS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

IV. Blank Summary

A. Method Blanks

1. Was a method blank prepared and analyzed at the contract specified frequency?

   Yes No

2. Were all the analytes below the CRDL in the method blank?

   Yes No

Comments:

____

____

____

B. Calibration Blanks

1. Were all initial and continuing calibration blanks analyzed at the contract specified frequency/

   Yes No

2. Were all the analytes below the CRDL in all the calibration blanks?

   Yes No

Comments:

____

____

____

DATA VALIDATION – METALS

Site Name: ____________________ Laboratory Name: ____________________

Reviewer: ____________________ Date of Review: ____________________

V. Duplicate Analysis

1. Was a duplicate prepared and analyzed at the contract specified frequency?

   Yes No

   Comments:

   ____

   ____

   ____

2. Were control limits for the relative percent differences (RPD) met for each analyte?

   Yes No

   Comments:

   ____

   ____

   ____

   For sample values >5 times the CRDL, the RPD control limit is ±20%.

   For sample values ≤ 5 times the CRDL, the RPD control limit is ±CRDL.

   If sample results were outside of the control limits, all data associated with that duplicate sample should have been flagged with a "*".

DATA VALIDATION – METALS

Site Name: ____________________ Laboratory Name: ____________________

Reviewer: ____________________ Date of Review: ____________________

VI. Matrix Spike Analysis

1. Was a matrix spike prepared and analyzed at the contract specified frequency?

   Yes No

Comments:

____

____

____

2. Were the matrix spike recoveries within the contract specified control limits (75-125%)?

   Yes No

If "No", note analytes ____________________

Data should have been flagged with "N" for analytes out of control limits. If the sample concentration exceeds the spike concentration by a factor of four or more, no flag is required.

DATA VALIDATION – METALS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

VII. ICP Interference Check Sample Summary

1. Was the ICP serial dilution analyzed at the contract specified frequency?

   Yes No

Comments:

____

____

____

2. Were the serial dilution differences within the contract specified limits of ±w 10%?

   Yes No

Comments:

____

____

____

3. Was the ICP CRDL check standard analyzed at the contract specified frequency for the analytes required?

   Yes No

Comments:

____

____

____

DATA VALIDATION – METALS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

VII. ICP Interference Check Sample Summary (continued):

4. Was the ICP interference check sample analyzed at the contract specified frequency:

   Yes No

Comments:

____

____

____

5. Were the ICP interference check sample results within the control limit of $\pm$ 20% of the mean value?

   Yes No

If "No", not analytes ____

DATA VALIDATION – METALS

Site Name: ______________________ Laboratory Name: ______________________

Reviewer: ______________________ Date of Review: ______________________

VIII. Laboratory Control Sample Analysis

1. Was a laboratory control sample analyzed at the contract required frequency?

   Yes No

   Comments:

   ____

   ____

   ____

2. Were the percent recoveries within the control limits of 80-120% (except for Ag and Sb) for each analyte?

   Yes No

   Comments:

   ____

   ____

   ____

APPENDIX B

DAILY FIELD ACTIVITY REPORTS

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/19/10

DAILY FIELD ACTIVITY REPORT

Report Number: ____________ Project Number: 2515-I

Field Log Book Page Number: ____________

Project: IBM EFK Decontamination of SWMUs 204-207 in B/312B

Address: Lime Kiln Road, Hopewell Junction, New York

Weather: (AM) Cloudy, raining Rainfall: (AM) - Inches
(PM) - (PM) - Inches

Temperature: (AM) 30s °F Wind Speed: (AM) - MPH Wind Direction: (AM) -
(PM) - °F (PM) - MPH (PM) -

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	WFC	8:30	11:45
Supervisor	Techtron	7:30	--
Laborer	Techtron	7:30	--
Laborer	Techtron	7:30	--
Laborer	Techtron	7:30	--

Subcontractor Work Commencement: (AM) - (PM) -

Subcontractor Work Completion: (AM) - (PM) -

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/19/10

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
Brian W. from WFC on-site at 8:30 and checked in with security. WFC provided oversight for the decontamination of the SWMUs located at B/312B. Work activities initiated on 1/18/10. Pizzagalli retained Techtron to decontaminate the four SWMUs at B/312B, Tanks 204-207. Brian W. spoke with Steve C. from Pizzagalli. In order to access the vault you need to conduct a confined space entry from the roof through roof hatches and another confined space entry to enter each of the tanks. Tanks 204 and 205 manways were opened to confirm the contents. Each of the tanks had been previously pumped out and requires cleaning and sampling. WFC spoke with Techtron and Pizzagalli the discharge piping will be pumped and flushed. Samples from the lines would not be collected due to the transfer area. According to Techtron personnel, residue was noted within Tanks 204 and 205 and pitting in areas. Techtron had to utilize a blower which forced in fresh air since there was an oxygen deficiency within the tanks. Techtron would enter the tanks utilizing supplied air. The four 5,000 gallon SWMUs were located within the same vault and were all horizontal. WFC took some measurements of the exterior of the building. Information was taken from the signage on the exterior of the vault. Tank 204 Mixed Solvent Waste T45, 5,000-gallon, steel, tank pressure 0. The warning sign for Tank 204 indicated the contents of the tank may contain n-butyl acetate, isopropyl alcohol, xylene, phenol, o-dichlorobenzene. Tank 205 NBA Waste T-34, 5,000-gallons, steel, Waste N-Butyl Acetate. Tank 206 IPA Waste T-31, 5,000-gallons, steel, Waste Isopropyl Alcohol. Tank 207 Waste N.M.P., total 5,000-gallons, working 4,000-gallons, steel, tank pressure 0, Waste N-Methyl-2-Pyrrolidone. Steve C. indicated Techtron was already on-site, just on a break and they had to wait a certain amount of time to let the let the oxygen deficient atmosphere clear before proceeding with work. Steve C. indicated that IBM EMS would be on-site shortly to screen the tanks. Manways are present on the top of each of the tanks. The transfer area has 4 pipes going into the transfer area from each of the tanks. A spill pallet is located on top of the grating. As discussed with Pizzagalli and Techtron the discharge lines will be flushed and pumped out with the pump truck. WFC planned to run the samples for a 5-day turnaround and expedite samples if further cleaning was necessary. Techtron utilized a regular hose pressure to rinse the interior of Tanks 204 and 205 and the residue within the tank was coming off. Techtron used ZEP Z-Green as a surfactant to clean the interior of the SWMUs. B/312B is located along the east side of B/322. Techtron crew on-site at 10:00. Techtron has a four person crew plus a pump truck. Techtron tested the areas with the 4-gas meter 20.9% for oxygen and zeros for LEL, CO and H2S in the vault and within Tank 204. Techtron took photos of the interior of the vault and took measurements; the tank was approximately 14' long and 8' in diameter. Techtron locked out and tagged out flanges associated with the tanks. Techtron has non sparking tools such as plastic brushes and plastic scrappers. Techtron set up supplied air bottles to use when entering the tanks for cleaning purposes. Techtron utilized the water source from B/312 the non-potable water line in the FDA Pump Room. Techtron indicated no spills were noted within the containment area. At 11:06 IBM EMS on-site and cleared Techtron to proceed with a confined space entry. Techtron indicated they would use at first the regular hose pressure to rinse the interior of the tanks since using a power washer would cause an issue with the exhaust. Initially Techtron would use hose pressure to decontaminate the interior of the tank and if needed would change to use a power washer. EMS wanted a tripod on the roof as part of the retrieval method. Techtron indicated it would take some time to clean each of the tanks due to the double confined space. After the tanks have been cleaned WFC will come back to the site to conduct rinse sampling from the cleaned tanks and sample the four tanks on one day. Techtron dropped off 55 gallon drums to drum solid material and used PPE. Techtron

Date: 1/19/10

DAILY FIELD ACTIVITY REPORT

indicated they would enter Tank 204 today and finish cleaning Tank 204 by Wednesday and then move onto the next tank. Techtron estimated the cleaning would most likely go into next week. WFC would call Steve C. to be updated on the status of the cleaning. WFC went Techtron over work practices with Techtron personnel. Brian W. left site at 11:45.

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/19/10

DAILY FIELD ACTIVITY REPORT

General work performed today by WFC Engineers:
See the attached work description.

List specific inspection(s) performed and results (include problems and corrective actions):
See the attached work description.

List type and location of tests performed and results (include equipment used and monitoring results):
See the attached work description.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
See the attached work description.

Prepared by: Brian Werner Reviewed by: ____________

2515/B312BSWMUs204_207/DFAR/011910 DFAR

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/20/10

DAILY FIELD ACTIVITY REPORT

Report Number: ______ Project Number: 2515-I

Field Log Book Page Number: ______

Project: IBM EFK Decontamination of SWMUs 204-207 in B/312B

Address: Lime Kiln Road, Hopewell Junction, New York

Weather: (AM) - Rainfall: (AM) - Inches
(PM) - (PM) - Inches

Temperature: (AM) - °F Wind Speed: (AM) - MPH Wind Direction: (AM) -
(PM) - °F (PM) - MPH (PM) -

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	WFC	-	-

Subcontractor Work Commencement: (AM) - (PM) -

Subcontractor Work Completion: (AM) - (PM) -

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/20/10

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
Below you will find a summarized description of the work activities completed by Techtron personnel pertaining to the decontamination of the SWMUs at B/312B. WFC was not on-site during the decontamination process, but was informed daily on the work activities through conversions with Pizzagalli personnel.

January 20, 2010
WFC was not on-site during the cleaning of the SWMUs. Steve C. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Techtron was still in the process of decontaminating Tank 204, Techtron wanted to rinse the interior of Tank 204 on Thursday a few more times before sampling the Tanks. After finishing Tank 204 on Thursday Techtron would start to decontaminate Tank 205. Steve C. indicated that there was small amount of sludge at the bottom of Tank 205 that would need to be pumped out. Techtron continuing to use the ZEP Z-Green detergent to decontaminate the interior of the SWMUs. Techtron had to continue to use the air blower to force in fresh air at the request of IBM EMS personnel prior to entering the SWMUs due to oxygen levels. Steve C. indicated he wanted to have Techtron set up the blower first thing when they arrive on-site so by 8:00 am IBM EMS can screen the tanks so Techtron can continue with the decontamination of the SWMUs. There seems to lag in the work due to exhausting the tank with the air blower and then waiting for IBM EMS to arrive to screen the tanks before Techtron can enter the tanks to decontaminate the tanks. Steve C. estimated the tank cleaning will most likely go into next week.

January 21, 2010
WFC was not on-site during the cleaning of the SWMUs. Steve C. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Tank 204 was rinsed additional times and was ready to be sampled. Techtron used a mixture of water and ZEP Z-Green to decontaminate the interior of the tank. Tank 205 had a small amount of sludge located within the tank that was pumped out using a pump truck. The interior of the tank was scraped clean. Techtron would rinse the interior of Tank 205 on Friday. Techtron continued to use the air blower to force in fresh air. Planned to open Tanks 206 and 207 on Friday to confirm the contents of the tank.

January 22, 2010
WFC was not on-site during the cleaning of the SWMUs. Steve C. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Tank 205 was cleaned using water and ZEP Z-Green to decontaminate the interior of the tank. Rinse water was pumped into a pump truck. Tank 205 was ready to be sampled. Techtron opened the manways of Tanks 206 and 207. Techtron LOTO the tanks. Tank 206 had minor residue noted within the tank. Tank 207 appeared to be fairly clean. Techtron would continue with the cleaning of Tank 206 on Monday. Techtron continued to use the air blower on the roof to force in fresh air. Potentially would be finished cleaning the tanks by the middle of next week.

January 25, 2010
WFC was not on-site during the cleaning of the SWMUs. Steve C. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Techtron scrapped and scrubbed the

Date: 1/20/10

DAILY FIELD ACTIVITY REPORT

interior of Tank 206 using ZEP Z-Green and water mixture. Rinse water was pumped into pump truck. Steve C. indicated additional rinsing would take place on Tuesday and mobilize to Tank 207 in the afternoon and start the decontamination process. Techtron indicated Tank 207 appeared to be fairly clean.

January 26, 2010
WFC was not on-site during the cleaning of the SWMUs. Steve C. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Steve C. indicated that the discharge piping for each of the tanks were flushed and pumped out through the use of the pump truck. Techtron finished cleaning the interior of Tank 206. Techtron started to decontaminate the interior of Tank 207. Techtron used ZEP Z-Green and a water mixture to clean the interior of Tank 207. Techtron would continue with the cleaning of the interior of Tank 207 on Wednesday.

January 27, 2010
WFC was not on-site during the cleaning of the SWMUs. Bill V. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Techtron finished scrubbing the interior of Tank 207. Techtron would finish rinsing the interior of Tank 207 on Thursday. Friday WFC would be able to sample the tanks.

January 28, 2010
WFC was not on-site during the cleaning of the SWMUs. Steve C. from Pizzagalli spoke with Brian W. from WFC and was updated on the work associated with the tank cleaning. Techtron had finished decontaminating the SWMUs and were ready to be sampled on Friday morning. Techtron has flushed the discharge lines of each of the tanks. Techtron has not had to utilize the blower unit since the oxygen levels were within the appropriate levels. Brian W. informed Steve C. that he would be on-site after 8:30 since he had to pickup supplies from the lab and then head to the site. The tanks will be sampled on Friday.

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/20/10

DAILY FIELD ACTIVITY REPORT

General work performed today by WFC Engineers:
See the attached work description.

List specific inspection(s) performed and results (include problems and corrective actions):
See the attached work description.

List type and location of tests performed and results (include equipment used and monitoring results):
See the attached work description.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
See the attached work description.

Prepared by: Brian Werner Reviewed by: ____________

2515/B312BSWMUs204_207/DFAR/0120_012810 DFAR

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/29/10

DAILY FIELD ACTIVITY REPORT

Report Number: ______ Project Number: 2515-I

Field Log Book Page Number: ______

Project: IBM EFK Decontamination of SWMUs 204-207 in B/312B

Address: Lime Kiln Road, Hopewell Junction, New York

Weather: (AM)	Sunny	Rainfall: (AM)	-	Inches
(PM)	Sunny	(PM)	-	Inches

Temperature: (AM)	0 °F	Wind Speed: (AM)	13	MPH	Wind Direction: (AM)	WNW
(PM)	3 °F	(PM)	16	MPH	(PM)	NW

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	WFC	8:30	12:45
Technician	Techtron	7:00	--
Technician	Techtron	7:00	--
Technician	Techtron	7:00	--

Subcontractor Work Commencement:	(AM)	-	(PM)	-
Subcontractor Work Completion:	(AM)	-	(PM)	-

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/29/10

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
Brian W. from WFC arrived at EnviroTest Laboratory at 7:50 to pickup sampling supplies to avoid any delays. EnviroTest personnel gave WFC organic free distilled water to collect the rinse samples. Brian W. picked up ice for the samples and checked in with security. Brian W. arrived at B/312B at 8:30. Techtron already on-site and IBM EMS on-site screening the tanks and cleared Techtron for confined space entry. Techtron had a 3 person crew on-site. The four SWMUs had been decontaminated and were ready to be sampled. Techtron took photos of the interior of the decontaminated SWMUs. WFC went over sampling activities with Techtron personnel. The levels within the SWMUs were within the appropriate ranges and personnel entering the SWMUs were utilizing full-face APRs, tyveks, gloves and chicken boots. Techtron indicated the discharge piping of the SWMUs had been flushed and the pump truck was hooked up to pump out the discharge piping. Techtron took a break and WFC collected a rinse blank sample from the water source used to decontaminate the SWMUs from the non-potable line in B/312 FDA Pump Room from the green hose connected to the water source. WFC collected a rinse blank sample, B312-RB-1, from B/312 hose at 9:15 filling an unpreserved container and transferring into the appropriate sample containers and the rinse blank sample was analyzed for VOCs, total phenols, NMP, IPA, NBA. The samples were labeled and placed in the cooler on ice. Trip blanks were placed within the cooler. WFC made up sand bags to utilize as berm when collecting a sample from the interior of the tank. The method utilized to collect a rinse sample was accomplished by Techtron utilizing new PPE for each sample and putting on new gloves after the entrant was in the tank to avoid any contamination potentially located on the ladders. The entrant placed the sand bags along the west side of the tank away from the discharge piping. Techtron poured approximately 2 gallons of organic free distilled water supplied by the lab into the bermed area and let sit for approximately 10 minutes. After 10 minutes Techtron utilized an unpreserved small container to scoop up a sample which was transferred into a larger unpreserved container. Then WFC transferred the sample into the appropriate sample containers. Personnel drummed all used sampling equipment and PPE equipment. The process was repeated for the four SWMUs. Techtron used SPC Universal Gray Pads to wipe down the interior of the SWMUs to remove any stagnant water left in the area prior to sampling. Techtron started at Tank 204 mixed solvent waste and added 2 gallons of DI to the bermed at 10:16 and let sit for 10 minutes and collected a sample. The rinse sample for Tank 204 was collected at 10:30, MWS-204-R-1, and analyzed for VOCs, IPA, NBA and total phenols. The sample had yellowish tint due to the rust, and small fragments were noted within the sample from the pads used to wipe the interior of Tank 204. The samples were labeled and placed on ice within the cooler. Techtron used new PPE and mobilized to Tank 205 NBA. Techtron placed two gallons of DI water within the bermed area at 10:41 and let sit for 10 minutes and collected the sample. The rinse sample from Tank 205 was collected at 10:55, NBA-205-R-1, and was analyzed for VOCs and NBA. The sample was brownish due to the rust, and small fragments were noted within the sample from the pads used to wipe the interior of Tank 205. The samples were labeled and placed on ice within the cooler. Techtron had to go back to the field office to grab additional PPE for sampling activities. Techtron mobilized to Tank 206. Techtron placed two gallons of DI water within the bermed area at 11:32 and let sit for 10 minutes and collected the sample. The rinse sample from Tank 206 was collected at 11:45, IPA-206-R-1, and was analyzed for VOCs and IPA. A blind duplicate was also collected from Tank 206, DUP012910. The sample was clear, and small fragments were noted within the sample from the pads used to wipe the interior of Tank 206. The samples were labeled and placed on ice within the cooler. Mobilized to Tank 207 NMP. Techtron placed

Date: 1/29/10

DAILY FIELD ACTIVITY REPORT

two gallons of DI water within the bermed area at 12:00 and let sit for 10 minutes and collected the sample. The rinse sample from Tank 207 was collected at 12:15, NMP-207-R-1, and was analyzed for VOCs and NMP. The sample was clear, and small fragments were noted within the sample from the pads used to wipe the interior of Tank 207. The samples were labeled and placed on ice within the cooler. Techtron informed Steve C. from Pizzagalli that the samples from B/312B have been collected. All used sampling equipment and PPE was drummed within a 55-gallon drum. Techtron took a lunch break and would clean up the area after lunch. WFC packed up the cooler of samples and completed the chain of custody. WFC left the site at 12:45 and headed to the lab to drop off the samples. Brian W. arrived at the lab at 13:02 and relinquished the samples and returned the unused sample sampling equipment and coolers. Brian W. left the lab at 13:13.

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 1/29/10

DAILY FIELD ACTIVITY REPORT

General work performed today by WFC Engineers:
See the attached work description.

List specific inspection(s) performed and results (include problems and corrective actions):
See the attached work description.

List type and location of tests performed and results (include equipment used and monitoring results):
See the attached work description.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
See the attached work description.

Prepared by: Brian Werner

Reviewed by:

2515/B312BSWMUs204_207/DFAR/012910 DFAR

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 3/12/10

DAILY FIELD ACTIVITY REPORT

Report Number: ______ Project Number: 2515-I

Field Log Book Page Number: ______

Project: IBM EFK Decontamination of SWMU 205 in B/312B and SWMU 3109 in B/330C OMF

Address: Lime Kiln Road, Hopewell Junction, New York

Weather: (AM) Cloudy Rainfall: (AM) - Inches
(PM) - (PM) - Inches

Temperature: (AM) 40s °F Wind Speed: (AM) 4 MPH Wind Direction: (AM) E
(PM) - °F (PM) - MPH (PM) -

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	WFC	8:45	11:40
Technician	Techtron	--	--
Technician	Techtron	--	--

Subcontractor Work Commencement: (AM) - (PM) -

Subcontractor Work Completion: (AM) - (PM) -

2515/B312BSWMUs204_207/DFAR/031210 DFAR

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 3/12/10

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
Brian W. from WFC arrived at the EnviroTest Laboratory at 7:45 and picked up ice for the samples. The objective of today was to resample Tanks 205 and analyze for acetone due to an exceedance from the previous sampling event. In addition, sample Tank 3109 for total phenols due to exceedance from the previous sampling event. At 8:26 picked up sampling supplies from the laboratory. At 8:45 checked in with security and called Steve C. to confirm WFC was on-site and heading to Tank 205. As per conversions with lab personnel at EnviroTest they indicated distilled water was sufficient to use for the Tank 3109 since we would only be analyzing for total phenols. WFC was not on-site during the recleaning of SWMU 205. Brian W. from WFC spoke with Steve C. from Pizzagalli and was updated on the work associated with the tank cleaning. Techtron had recleaned Tank 205 using ZEP Z-Green and water mixture. To further assist with the cleaning activities after Tank 205 was recleaned Techtron pumped water into the tank with the ZEP Z-Green mixture and let sit for a few days. After a few days the mixture was pumped out. Tank 205 was rinsed thoroughly to remove any surfactant and pumped dry. Techtron had equipment set up at Tank 205 to conduct a confined space entry. Techtron utilized the same water source to decontaminate Tank 205 from B/312 FDA Pump Room from the spigot with the green hose. A rinse blank was collected from B/312, B312-RB-2 at 9:26. The sample was labeled and placed in the cooler on ice. The trip blanks were placed within the cooler on ice. WFC made up sand bags to use as a berm within the tank to collect samples. Techtron entered Tank 205 and placed the sand bags along the back side of the tank and added approximately 2 gallons of organic free distilled water provided by the lab at 10:00. The water in Tank 205 was allowed to sit for 10 minutes. After 10 minutes Techtron personnel scooped up the sample using an unpreserved plastic container and transferred into a larger unpreserved plastic container. WFC transferred the sample into the appropriate containers. The rinse sample for Tank 205, NBA-205-R-2, was collected at 10:15. A blind duplicate sample was also collected from Tank 205, DUP031210. The samples were labeled and placed on ice. The chain of custody was completed. The crew packed up and mobilized to Tank 3109 at B/330C OMF. WFC was not on-site during the recleaning of SWMU 3109. Brian W. from WFC spoke with Steve C. from Pizzagalli and was updated on the work associated with the tank cleaning. Techtron recleaned Tank 3109 by power washing the interior of the tank from the opening on the top of the tank. Techtron used approximately 500 gallons of water and 10 gallons of ZEP Z-Green. The rinse water was pumped into the pump truck. It should be noted Techtron did not conduct a confined space entry associated with Tank 3109 due to access. Techtron utilized the same water source previously used to decontaminate Tank 3109. WFC collected a rinse blank sample from the treated water line adjacent to the eye wash, B330C-RB-2 at 10:50. The sample was labeled and placed on ice within the cooler. Pizzagalli personnel indicated the samples from Tank 3109 should be retrieved using a bailer instead of from the discharge piping located below the tank. Techtron poured in 6 gallons of distilled water into the tank from the top at 10:58 and let sit for 10 minutes. Then Techtron retrieved a sample from Tank 3109 using a one foot sterile bailer. The sample was poured into an unpreserved plastic container. WFC transferred the sample into the appropriate sample containers. The rinse sample from Tank 3109, MWS-3109-R-2, was collected at 11:10. A blind duplicate sample, DUP031210A was collected from Tank 3109. The samples were labeled and placed on ice. The crew packed up. Techtron would pump out the remaining water within Tank 3109 after lunch. The chain of custody was completed and the samples for Tank 3109 were sent for a 3-day turn at the request of Pizzagalli personnel. WFC left the site at 11:40 and headed to the lab to drop off the samples. WFC left the lab at 12:06.

William F. Cosulich Associates, P.C.
Environmental Engineers and Scientists

Date: 3/12/10

DAILY FIELD ACTIVITY REPORT

General work performed today by WFC Engineers:
See the attached work description.

List specific inspection(s) performed and results (include problems and corrective actions):
See the attached work description.

List type and location of tests performed and results (include equipment used and monitoring results):
See the attached work description.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
See the attached work description.

Prepared by: Brian Werner

Reviewed by:

APPENDIX C

PHOTOGRAPHIC LOG

B/312B

B/312B transfer area

B/312B roof with access to the tanks through the roof hatches.

B/312B discharge piping located at the transfer area.

Tank 204 with the air blower to force in fresh air.

The interior of Tank 204

Tank 204 sign located on the exterior of the vault

The interior of Tank 204

The interior of Tank 204

The interior of Tank 205

Tank 205

The interior of Tank 205

A view of Tank 206 from the catwalk.

Tank 204 discharge piping was LOTO.

A view of Tank 207 from the catwalk.

The water source from the non-potable water line of B/312 used to decontaminate the SWMUs.

After Tank 204 was decontaminated.

After Tank 204 was decontaminated.

After Tank 204 was decontaminated.

After Tank 205 was decontaminated.

After Tank 205 was decontaminated.

After Tank 206 was decontaminated.

After Tank 205 was decontaminated.

After Tank 206 was decontaminated.

After Tank 206 was decontaminated.

After Tank 207 was decontaminated.

After Tank 207 was decontaminated.

After Tank 207 was decontaminated.

After Tank 205 was decontaminated a second time.

After Tank 205 was decontaminated a second time.

APPENDIX D

CHAIN OF CUSTODY FORMS

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
TEL (845) 562-0890
FAX (845) 562-0841

CHAIN OF CUSTODY

02/09/2010

CUSTOMER NAME	William F. Coswlich
ADDRESS	330 Crossways Park Drive
CITY, STATE, ZIP	Woodbury, NY 11797
NAME OF CONTACT / PHONE NO.	Robbin Petrella 516-364-9890 Ext 3049
PROJECT LOCATION	IBM B/312B
PROJECT NUMBER / PO NO.	2515-I

REPORT TYPE
STANDARD ☐ ISRA ☐
NJ REG ☐
NYASP A ☐ B ☐ CLP ☐
OTHER ____

TURNAROUND
☐ NORMAL ____
☒ QUICK 5-Day
☐ VERBAL ____

REPORT # (Lab Use Only) 33004
SAMPLE TEMP. 2.1 C
SAMPLE REC'D ON ICE ☑ Y ☐ N
ph CHECK ☐ Y ☑ N
CHLORINE (RESIDUAL) ☐ Y ☑ N
REVIEWED BY: ____

NY PUBLIC WATER SUPPLIES
SOURCE ID ____
ELAP TYPE ____
FEDERAL ID ____

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER
RW = Rinse Water

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4° ± 2°C.

ETL #	SAMPLING DATE	TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber HCL	250ml Amber Sulfuric	Liter Amber Organic Washed	250ml Plastic Nitric Acid	250ml Plastic Sodium Hydroxide	Liter Plastic	Liter Plastic Sulfuric Acid	250ml Plastic.	125ml Plastic Sterile	8 oz. Soil	2 oz. Qorpak	250ml Plastic NAOH / ZN ACC	40ml Ekks	ANALYSIS REQUESTED
	1/29	9:15		X	RW	B312-RB-1	6	3		1											2	VOCs, IPA, NBA, NMP, total phenols
DQ 1/25	1/29	11:26				Trip Blank	2	2														
	1/29	10:30		X	RW	MWS-204-R-1	4	3		1												VOCs, IPA, NBA, total phenols
	1/29	10:55		X	RW	NBA-205-R-1	3	3														VOCs, NBA
	1/29	11:45		X	RW	IPA-206-R-1	3	3														VOCs, IPA
	1/29	—		X	RW	DUP012910	3	3														VOCs, IPA
	1/29	12:15		X	RW	NMP-207-R-1	5	3													2	VOCs, NMP

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ETL TERMS AND CONDITIONS OF SALE UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

	COMPANY	DATE	TIME		COMPANY	DATE	TIME
RELINQUISHED BY: Brian Warner	WFC	1/29/10	1310	RECEIVED BY:			
SAMPLED BY: Brian Warner	WFC	1/29/10		RECEIVED BY:			
RELINQUISHED BY:				RECEIVED BY: D. Olegario	ETL	1/29/10	13:10

COMMENTS Trip Blanks were collected 1/25/10 @ 11:26. DQ

NYSDOH 10142 NJDEP NY015 CTDOPH PH-0554 EPA NY00049

EnviroTest Laboratories Inc.

CHAIN OF CUSTODY

315 Fullerton Avenue
Newburgh, NY 12550
TEL (845) 562-0890
FAX (845) 562-0841

CUSTOMER NAME: William F. Cosulich
ADDRESS: 330 Crossways Park Drive
CITY, STATE, ZIP: Woodbury, NY 11797
NAME OF CONTACT: Robbin Petrella PHONE NO. 516-364-9890 Ext 3049
PROJECT LOCATION: IBM EFK B/312B
PROJECT NUMBER / PO NO.: 2515-I

REPORT TYPE
STANDARD ☑ ISRA ☐
NJ REG ☐
NYASP A☐ B☐ CLP☐
OTHER ____

TURNAROUND
☐ NORMAL ____
☒ QUICK 5-Day
☐ VERBAL ____

REPORT # (Lab Use Only) 33873
SAMPLE TEMP. 8.0 C
SAMPLE REC'D ON ICE ☑ Y ☐ N
ph CHECK ☐ Y ☑ N
CHLORINE (RESIDUAL) ☐ Y ☑ N
REVIEWED BY: ____

NY PUBLIC WATER SUPPLIES
SOURCE ID ____
ELAP TYPE ____
FEDERAL ID ____

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER
RW = Rinse Water

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4° ± 2°C.

ETL #	SAMPLING DATE	TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber HCL	250ml Amber Sulfuric	Liter Amber Organic Washed	250ml Plastic Nitric Acid	250ml Plastic Sodium Hydroxide	Liter Plastic	Liter Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	8 oz. Soil	2 oz. Qorpak	250ml Plastic NAOH / ZN ACC	ANALYSIS REQUESTED
	3/12/10	10:15		X	RW	NBA-205-R-2	3	3													Acetone 8260
	3/12/10	9:26		X	RW	B312-RB-2	3	3													Acetone 8260
	3/12/10	—		X	RW	DUP031210	3	3													Acetone 8260
						Trip Blank	2	2													

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ETL TERMS AND CONDITIONS OF SALE UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

	COMPANY	DATE	TIME		COMPANY	DATE	TIME
RELINQUISHED BY: Brian Warner	WFC	3/12/10	12:00	RECEIVED BY			
SAMPLED BY: Brian Warner	WFC	3/12/10		RECEIVED BY			
RELINQUISHED BY				RECEIVED BY: Dan Jain	ETL	3/12/10	1200

COMMENTS Just analyze for acetone

NYSDOH 10142 NJDEP NY015 CTDOPH PH-0554 EPA NY00049

APPENDIX E

LABORATORY ANALYTICAL RESULTS

ANALYTICAL REPORT

Job Number: 420-33004-1

SDG Number: IBM B/312B 2515-I

Job Description: William F. Cosulich

For:
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Attention: Robbin A. Petrella

Alicia M Labare
Senior Customer Service Representative
alabare@envirotestlaboratories.com
06/14/2010

cc: Brian Werner

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NELAP Accredited, NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554, EPA NY00049.

Job Narrative
420-J33004-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA

N-Butyl Acetate (NBA)

Please note that NBA was screened for as a (TIC) tentatively identified compound during the 8260 analysis. The following samples were screened for NBA and it was not detected:

420-33004-1
420-33004-3
420-33004-4

Method 8260B: The laboratory control standard (LCS) for batch 37053 exceeded control limits for the analytes indicated by an asterisk (*) on the results form. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported with confidence of no false negatives.

No other analytical or quality issues were noted.

GC VOA
No analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

EXECUTIVE SUMMARY - Detections

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
420-33004-1	**B312-RB-1**					
Acetone		2.8		1.0	ug/L	8260B
Chloroform		17		1.0	ug/L	8260B
Dichlorobromomethane		5.3		1.0	ug/L	8260B
Phenolics, Total Recoverable		0.012		0.010	mg/L	10-210-00-1-A
420-33004-3	**MWS-204-R-1**					
Phenolics, Total Recoverable		0.010		0.010	mg/L	10-210-00-1-A
420-33004-4	**NBA-205-R-1**					
Acetone		170	E	1.0	ug/L	8260B
420-33004-5	**IPA-206-R-1**					
Acetone		17		1.0	ug/L	8260B
Isopropyl alcohol		190		10	ug/L	8260B
420-33004-6	**DUP012910**					
Acetone		21		1.0	ug/L	8260B
Isopropyl alcohol		200		10	ug/L	8260B
420-33004-7	**NMP-207-R-1**					
Acetone		4.9		1.0	ug/L	8260B
1-Methyl-2-pyrrilidinone		14		1.0	mg/L	8015B

METHOD SUMMARY

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Phenols (Lachat)	EnvTest	QuickChem 10-210-00-1-A	
Distillation/Phenolics	EnvTest		Distill/Phenol
Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)	EnvTest	SW846 8015B	
Volatile Organic Compounds by GC/MS	EnvTest	SW846 8260B	
Purge-and-Trap	EnvTest		SW846 5030B

Lab References:

EnvTest = EnviroTest

Method References:

QuickChem = Lachat QuickChem Manual

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Method	Analyst	Analyst ID
SW846 8260B	Andersen, Eric C	ECA
SW846 8015B	Miller, Kyle A	KAM
QuickChem 10-210-00-1-A	Edwards, Yolanda	YE

SAMPLE SUMMARY

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-33004-1	B312-RB-1	Water	01/29/2010 0915	01/29/2010 1310
420-33004-2	TRIP BLANK	Water	01/25/2010 1126	01/29/2010 1310
420-33004-3	MWS-204-R-1	Water	01/29/2010 1030	01/29/2010 1310
420-33004-4	NBA-205-R-1	Water	01/29/2010 1055	01/29/2010 1310
420-33004-5	IPA-206-R-1	Water	01/29/2010 1145	01/29/2010 1310
420-33004-6	DUP012910	Water	01/29/2010 0000	01/29/2010 1310
420-33004-7	NMP-207-R-1	Water	01/29/2010 1215	01/29/2010 1310

SAMPLE RESULTS

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: B312-RB-1
Lab Sample ID: 420-33004-1

Date Sampled: 01/29/2010 0915
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:	02/01/2010 1645		
Prep Method: 5030B			Date Prepared:	02/01/2010 1645		
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	2.8		ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	17		ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: B312-RB-1
Lab Sample ID: 420-33004-1

Date Sampled: 01/29/2010 0915
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	5.3		ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropyl alcohol	10	U	ug/L	10	10	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0

Surrogate			Acceptance Limits
4-Bromofluorobenzene	82	%	74 - 118
Toluene-d8 (Surr)	108	%	74 - 129
1,2-Dichloroethane-d4 (Surr)	91	%	77 - 115

Method: 8015B Date Analyzed: 02/01/2010 1202

1-Methyl-2-pyrrilidinone	1.0	U	mg/L	1.0	1.0	2.0

Method: 10-210-00-1-A Date Analyzed: 02/02/2010 1300

Phenolics, Total Recoverable	0.012		mg/L	0.010	0.010	1.0

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: TRIP BLANK
Lab Sample ID: 420-33004-2

Date Sampled: 01/25/2010 1126
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:	02/01/2010 1358		
Prep Method: 5030B			Date Prepared:	02/01/2010 1358		
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	1.0	U	ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	1.0	U	ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: TRIP BLANK
Lab Sample ID: 420-33004-2

Date Sampled: 01/25/2010 1126
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result	Qualifier	Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropyl alcohol	10	U	ug/L	10	10	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0

Surrogate			Acceptance Limits
4-Bromofluorobenzene	84	%	74 - 118
Toluene-d8 (Surr)	100	%	74 - 129
1,2-Dichloroethane-d4 (Surr)	82	%	77 - 115

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: MWS-204-R-1
Lab Sample ID: 420-33004-3

Date Sampled: 01/29/2010 1030
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:	02/01/2010 1426		
Prep Method: 5030B			Date Prepared:	02/01/2010 1426		
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	1.0	U	ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	1.0	U	ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: MWS-204-R-1
Lab Sample ID: 420-33004-3

Date Sampled: 01/29/2010 1030
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropyl alcohol	10	U	ug/L	10	10	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0

Surrogate			Acceptance Limits
4-Bromofluorobenzene	92	%	74 - 118
Toluene-d8 (Surr)	101	%	74 - 129
1,2-Dichloroethane-d4 (Surr)	84	%	77 - 115

Method: 10-210-00-1-A Date Analyzed: 02/02/2010 1300

Phenolics, Total Recoverable	0.010	mg/L	0.010	0.010	1.0

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: NBA-205-R-1
Lab Sample ID: 420-33004-4

Date Sampled: 01/29/2010 1055
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		02/01/2010 1453	
Prep Method: 5030B			Date Prepared:		02/01/2010 1453	
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	170	E	ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	1.0	U	ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: NBA-205-R-1
Lab Sample ID: 420-33004-4

Date Sampled: 01/29/2010 1055
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0

Method: 8260B Date Analyzed: 02/01/2010 1713
Prep Method: 5030B Date Prepared: 02/01/2010 1713

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Acetone	190	D	ug/L	10	10	10

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: IPA-206-R-1
Lab Sample ID: 420-33004-5

Date Sampled: 01/29/2010 1145
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		02/01/2010 1521	
Prep Method: 5030B			Date Prepared:		02/01/2010 1521	
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	17		ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	1.0	U	ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: IPA-206-R-1
Lab Sample ID: 420-33004-5

Date Sampled: 01/29/2010 1145
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropyl alcohol	190		ug/L	10	10	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0

Surrogate			Acceptance Limits
4-Bromofluorobenzene	86	%	74 - 118
Toluene-d8 (Surr)	101	%	74 - 129
1,2-Dichloroethane-d4 (Surr)	87	%	77 - 115

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: DUP012910
Lab Sample ID: 420-33004-6

Date Sampled: 01/29/2010 0000
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		02/01/2010 1549	
Prep Method: 5030B			Date Prepared:		02/01/2010 1549	
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	21		ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	1.0	U	ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: DUP012910
Lab Sample ID: 420-33004-6

Date Sampled: 01/29/2010 0000
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropyl alcohol	200		ug/L	10	10	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0

Surrogate			Acceptance Limits
4-Bromofluorobenzene	84	%	74 - 118
Toluene-d8 (Surr)	103	%	74 - 129
1,2-Dichloroethane-d4 (Surr)	83	%	77 - 115

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: NMP-207-R-1
Lab Sample ID: 420-33004-7

Date Sampled: 01/29/2010 1215
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:	02/01/2010 1616		
Prep Method: 5030B			Date Prepared:	02/01/2010 1616		
1,1,1,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,1-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1,2-Trichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,1-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,3-Trichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloroethane	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
1,3-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
1,4-Dichlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
2,2-Dichloropropane	1.0	U	ug/L	1.0	1.0	1.0
2-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
2-Hexanone	1.0	U	ug/L	1.0	1.0	1.0
4-Chlorotoluene	1.0	U	ug/L	1.0	1.0	1.0
4-Isopropyltoluene	1.0	U	ug/L	1.0	1.0	1.0
Acetone	4.9		ug/L	1.0	1.0	1.0
Benzene	1.0	U	ug/L	1.0	1.0	1.0
Bromobenzene	1.0	U	ug/L	1.0	1.0	1.0
Bromoform	1.0	U	ug/L	1.0	1.0	1.0
Bromomethane	1.0	U	ug/L	1.0	1.0	1.0
Carbon disulfide	1.0	U	ug/L	1.0	1.0	1.0
Carbon tetrachloride	1.0	U	ug/L	1.0	1.0	1.0
Chlorobenzene	1.0	U	ug/L	1.0	1.0	1.0
Chlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dibromochloromethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroethane	1.0	U	ug/L	1.0	1.0	1.0
Chloroform	1.0	U	ug/L	1.0	1.0	1.0
Chloromethane	1.0	U	ug/L	1.0	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0

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Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Client Sample ID: NMP-207-R-1
Lab Sample ID: 420-33004-7

Date Sampled: 01/29/2010 1215
Date Received: 01/29/2010 1310
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Dibromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorobromomethane	1.0	U	ug/L	1.0	1.0	1.0
Dichlorodifluoromethane	1.0	U *	ug/L	1.0	1.0	1.0
Ethylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Hexachlorobutadiene	1.0	U	ug/L	1.0	1.0	1.0
Iodomethane	1.0	U	ug/L	1.0	1.0	1.0
Isopropylbenzene	1.0	U	ug/L	1.0	1.0	1.0
m-Xylene & p-Xylene	1.0	U	ug/L	1.0	1.0	1.0
2-Butanone	1.0	U	ug/L	1.0	1.0	1.0
4-Methyl-2-pentanone	1.0	U	ug/L	1.0	1.0	1.0
Methyl tert-butyl ether	1.0	U	ug/L	1.0	1.0	1.0
Methylene Chloride	1.0	U	ug/L	1.0	1.0	1.0
n-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
N-Propylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Naphthalene	1.0	U	ug/L	1.0	1.0	1.0
o-Xylene	1.0	U	ug/L	1.0	1.0	1.0
sec-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Styrene	1.0	U	ug/L	1.0	1.0	1.0
tert-Butylbenzene	1.0	U	ug/L	1.0	1.0	1.0
Xylenes, Total	1.0	U	ug/L	1.0	1.0	1.0
Vinyl chloride	1.0	U	ug/L	1.0	1.0	1.0
Vinyl acetate	1.0	U	ug/L	1.0	1.0	1.0
Trichlorofluoromethane	1.0	U	ug/L	1.0	1.0	1.0
Trichloroethene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	ug/L	1.0	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	ug/L	1.0	1.0	1.0
Toluene	1.0	U	ug/L	1.0	1.0	1.0
Tetrachloroethene	1.0	U	ug/L	1.0	1.0	1.0
1,2-Dibromoethane	1.0	U	ug/L	1.0	1.0	1.0
Method: 8015B			Date Analyzed:		02/01/2010 1222	
1-Methyl-2-pyrrilidinone	14		mg/L	1.0	1.0	2.0

DATA REPORTING QUALIFIERS

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Lab Section	Qualifier	Description
GC/MS VOA		
	*	LCS or LCSD exceeds the control limits
	F	MS or MSD exceeds the control limits
	E	Result exceeded calibration range, secondary dilution required.
	F	RPD of the MS and MSD exceeds the control limits
	D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
	U	The analyte was analyzed for but not detected at or above the stated limit.
GC VOA		
	U	The analyte was analyzed for but not detected at or above the stated limit.
General Chemistry		
	U	The analyte was analyzed for but not detected at or above the stated limit.

QUALITY CONTROL RESULTS

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:420-37053					
LCS 420-37053/1	Lab Control Spike	T	Water	8260B	
MB 420-37053/2	Method Blank	T	Water	8260B	
420-33004-1	B312-RB-1	T	Water	8260B	
420-33004-2	TRIP BLANK	T	Water	8260B	
420-33004-3	MWS-204-R-1	T	Water	8260B	
420-33004-3MS	Matrix Spike	T	Water	8260B	
420-33004-3MSD	Matrix Spike Duplicate	T	Water	8260B	
420-33004-4	NBA-205-R-1	T	Water	8260B	
420-33004-5	IPA-206-R-1	T	Water	8260B	
420-33004-6	DUP012910	T	Water	8260B	
420-33004-7	NMP-207-R-1	T	Water	8260B	

Report Basis
T = Total

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC VOA					
Analysis Batch:420-37054					
LCS 420-37054/1	Lab Control Spike	T	Water	8015B	
MB 420-37054/2	Method Blank	T	Water	8015B	
420-33004-1	B312-RB-1	T	Water	8015B	
420-33004-7	NMP-207-R-1	T	Water	8015B	
420-33004-7MS	Matrix Spike	T	Water	8015B	
420-33004-7MSD	Matrix Spike Duplicate	T	Water	8015B	

Report Basis
T = Total

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:420-37091					
LCS 420-37091/4	Lab Control Spike	T	Water	10-210-00-1-A	
MB 420-37091/3	Method Blank	T	Water	10-210-00-1-A	
420-33004-1	B312-RB-1	T	Water	10-210-00-1-A	
420-33004-1DU	Duplicate	T	Water	10-210-00-1-A	
420-33004-1MS	Matrix Spike	T	Water	10-210-00-1-A	
420-33004-3	MWS-204-R-1	T	Water	10-210-00-1-A	

Report Basis
T = Total

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Surrogate Recovery Report

8260B Volatile Organic Compounds by GC/MS

Client Matrix: Water

Lab Sample ID	Client Sample ID	12DCE %Rec	BFB %Rec	TOL %Rec
420-33004-3 MS	MWS-204-R-1	88	99	97
420-33004-3 MSD	MWS-204-R-1	90	97	98
LCS 420-37053/1		87	95	99
MB 420-37053/2		80	80	102
420-33004-1	B312-RB-1	91	82	108
420-33004-2	TRIP BLANK	82	84	100
420-33004-3	MWS-204-R-1	84	92	101
420-33004-5	IPA-206-R-1	87	86	101
420-33004-6	DUP012910	83	84	103

Surrogate		Acceptance Limits
12DCE	1,2-Dichloroethane-d4 (Surr)	77 - 115
BFB	4-Bromofluorobenzene	74 - 118
TOL	Toluene-d8 (Surr)	74 - 129

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Method Blank - Batch: 420-37053

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 420-37053/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1231
Date Prepared: 02/01/2010 1231

Analysis Batch: 420-37053
Prep Batch: N/A
Units: ug/L

Instrument ID: Agilent 7890A/5975C GC-M
Lab File ID: X020104.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL	RL
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
1,1,1-Trichloroethane	1.0	U	1.0	1.0
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
1,1,2-Trichloroethane	1.0	U	1.0	1.0
1,1-Dichloroethane	1.0	U	1.0	1.0
1,1-Dichloroethene	1.0	U	1.0	1.0
1,1-Dichloropropene	1.0	U	1.0	1.0
1,2,3-Trichlorobenzene	1.0	U	1.0	1.0
1,2,3-Trichloropropane	1.0	U	1.0	1.0
1,2,4-Trichlorobenzene	1.0	U	1.0	1.0
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	1.0
1,2-Dichlorobenzene	1.0	U	1.0	1.0
1,2-Dichloroethane	1.0	U	1.0	1.0
1,2-Dichloropropane	1.0	U	1.0	1.0
1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
1,3-Dichlorobenzene	1.0	U	1.0	1.0
1,3-Dichloropropane	1.0	U	1.0	1.0
1,4-Dichlorobenzene	1.0	U	1.0	1.0
2,2-Dichloropropane	1.0	U	1.0	1.0
2-Chlorotoluene	1.0	U	1.0	1.0
2-Hexanone	1.0	U	1.0	1.0
4-Chlorotoluene	1.0	U	1.0	1.0
4-Isopropyltoluene	1.0	U	1.0	1.0
Acetone	1.0	U	1.0	1.0
Benzene	1.0	U	1.0	1.0
Bromobenzene	1.0	U	1.0	1.0
Bromoform	1.0	U	1.0	1.0
Bromomethane	1.0	U	1.0	1.0
Carbon disulfide	1.0	U	1.0	1.0
Carbon tetrachloride	1.0	U	1.0	1.0
Chlorobenzene	1.0	U	1.0	1.0
Chlorobromomethane	1.0	U	1.0	1.0
Dibromochloromethane	1.0	U	1.0	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	1.0	U	1.0	1.0
Chloromethane	1.0	U	1.0	1.0
cis-1,2-Dichloroethene	1.0	U	1.0	1.0
cis-1,3-Dichloropropene	1.0	U	1.0	1.0
Dibromomethane	1.0	U	1.0	1.0
Dichlorobromomethane	1.0	U	1.0	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Method Blank - Batch: 420-37053

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 420-37053/2	Analysis Batch:	420-37053	Instrument ID:	Agilent 7890A/5975C GC-M
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	X020104.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	02/01/2010 1231			Final Weight/Volume:	5 mL
Date Prepared:	02/01/2010 1231				

Analyte	Result	Qual	RL	RL
Dichlorodifluoromethane	1.0	U	1.0	1.0
Ethylbenzene	1.0	U	1.0	1.0
Hexachlorobutadiene	1.0	U	1.0	1.0
Iodomethane	1.0	U	1.0	1.0
Isopropyl alcohol	10	U	10	10
Isopropylbenzene	1.0	U	1.0	1.0
m-Xylene & p-Xylene	1.0	U	1.0	1.0
2-Butanone	1.0	U	1.0	1.0
4-Methyl-2-pentanone	1.0	U	1.0	1.0
Methyl tert-butyl ether	1.0	U	1.0	1.0
Methylene Chloride	1.0	U	1.0	1.0
n-Butylbenzene	1.0	U	1.0	1.0
N-Propylbenzene	1.0	U	1.0	1.0
Naphthalene	1.0	U	1.0	1.0
o-Xylene	1.0	U	1.0	1.0
sec-Butylbenzene	1.0	U	1.0	1.0
Styrene	1.0	U	1.0	1.0
tert-Butylbenzene	1.0	U	1.0	1.0
Xylenes, Total	1.0	U	1.0	1.0
Vinyl chloride	1.0	U	1.0	1.0
Vinyl acetate	1.0	U	1.0	1.0
Trichlorofluoromethane	1.0	U	1.0	1.0
Trichloroethene	1.0	U	1.0	1.0
trans-1,3-Dichloropropene	1.0	U	1.0	1.0
trans-1,2-Dichloroethene	1.0	U	1.0	1.0
Toluene	1.0	U	1.0	1.0
Tetrachloroethene	1.0	U	1.0	1.0
1,2-Dibromoethane	1.0	U	1.0	1.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	80	74 - 118
Toluene-d8 (Surr)	102	74 - 129
1,2-Dichloroethane-d4 (Surr)	80	77 - 115

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Lab Control Spike - Batch: 420-37053

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 420-37053/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1903
Date Prepared: 02/01/2010 1903

Analysis Batch: 420-37053
Prep Batch: N/A
Units: ug/L

Instrument ID: Agilent 7890A/5975C GC-M
Lab File ID: X020118.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
1,1,1,2-Tetrachloroethane	20.0	21.9	109	70 - 130	
1,1,1-Trichloroethane	20.0	22.1	110	70 - 130	
1,1,2,2-Tetrachloroethane	20.0	19.6	98	70 - 130	
1,1,2-Trichloroethane	20.0	20.8	104	70 - 130	
1,1-Dichloroethane	20.0	21.8	109	70 - 130	
1,1-Dichloroethene	20.0	22.8	114	70 - 130	
1,1-Dichloropropene	20.0	21.8	109	70 - 130	
1,2,3-Trichlorobenzene	20.0	22.3	111	70 - 130	
1,2,3-Trichloropropane	20.0	20.0	100	70 - 130	
1,2,4-Trichlorobenzene	20.0	22.1	110	70 - 130	
1,2,4-Trimethylbenzene	20.0	21.6	108	70 - 130	
1,2-Dibromo-3-Chloropropane	20.0	20.7	104	70 - 130	
1,2-Dichlorobenzene	20.0	23.0	115	70 - 130	
1,2-Dichloroethane	20.0	20.9	105	70 - 130	
1,2-Dichloropropane	20.0	21.1	106	70 - 130	
1,3,5-Trimethylbenzene	20.0	21.4	107	70 - 130	
1,3-Dichlorobenzene	20.0	21.1	105	70 - 130	
1,3-Dichloropropane	20.0	21.8	109	70 - 130	
1,4-Dichlorobenzene	20.0	21.6	108	70 - 130	
2,2-Dichloropropane	20.0	23.3	116	70 - 130	
2-Chlorotoluene	20.0	23.2	116	70 - 130	
2-Hexanone	20.0	21.3	106	70 - 130	
4-Chlorotoluene	20.0	22.3	112	70 - 130	
4-Isopropyltoluene	20.0	21.5	107	70 - 130	
Acetone	20.0	20.0	100	70 - 130	
Benzene	20.0	22.3	111	70 - 130	
Bromobenzene	20.0	21.9	109	70 - 130	
Bromoform	20.0	17.9	89	70 - 130	
Bromomethane	20.0	20.1	101	70 - 130	
Carbon disulfide	20.0	21.5	108	70 - 130	
Carbon tetrachloride	20.0	21.7	108	70 - 130	
Chlorobenzene	20.0	20.6	103	70 - 130	
Chlorobromomethane	20.0	20.4	102	70 - 130	
Dibromochloromethane	20.0	19.3	96	70 - 130	
Chloroethane	20.0	20.0	100	70 - 130	
Chloroform	20.0	21.3	106	70 - 130	
Chloromethane	20.0	23.6	118	70 - 130	
cis-1,2-Dichloroethene	20.0	21.8	109	70 - 130	
cis-1,3-Dichloropropene	20.0	19.2	96	70 - 130	
Dibromomethane	20.0	20.9	104	70 - 130	
Dichlorobromomethane	20.0	21.2	106	70 - 130	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Lab Control Spike - Batch: 420-37053

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 420-37053/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1903
Date Prepared: 02/01/2010 1903

Analysis Batch: 420-37053
Prep Batch: N/A
Units: ug/L

Instrument ID: Agilent 7890A/5975C GC-M
Lab File ID: X020118.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Dichlorodifluoromethane	20.0	26.4	132	70 - 130	*
Ethylbenzene	20.0	21.7	109	70 - 130	
Hexachlorobutadiene	20.0	22.7	114	70 - 130	
Iodomethane	20.0	22.3	111	70 - 130	
Isopropyl alcohol	200	169	84	70 - 130	
Isopropylbenzene	20.0	21.7	109	70 - 130	
m-Xylene & p-Xylene	40.0	45.6	114	70 - 130	
2-Butanone	20.0	19.5	97	70 - 130	
4-Methyl-2-pentanone	20.0	21.0	105	70 - 130	
Methyl tert-butyl ether	20.0	21.9	110	70 - 130	
Methylene Chloride	20.0	20.4	102	70 - 130	
n-Butylbenzene	20.0	21.3	106	70 - 130	
N-Propylbenzene	20.0	21.5	108	70 - 130	
Naphthalene	20.0	21.0	105	70 - 130	
o-Xylene	20.0	21.3	106	70 - 130	
sec-Butylbenzene	20.0	21.0	105	70 - 130	
Styrene	20.0	21.2	106	70 - 130	
tert-Butylbenzene	20.0	21.7	108	70 - 130	
Vinyl chloride	20.0	22.6	113	70 - 130	
Vinyl acetate	20.0	19.8	99	70 - 130	
Trichlorofluoromethane	20.0	20.6	103	70 - 130	
Trichloroethene	20.0	22.5	112	70 - 130	
trans-1,3-Dichloropropene	20.0	19.3	97	70 - 130	
trans-1,2-Dichloroethene	20.0	21.3	106	70 - 130	
Toluene	20.0	23.3	117	70 - 130	
Tetrachloroethene	20.0	23.1	115	70 - 130	
1,2-Dibromoethane	20.0	20.7	104	70 - 130	

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	95	74 - 118
Toluene-d8 (Surr)	99	74 - 129
1,2-Dichloroethane-d4 (Surr)	87	77 - 115

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 420-37053

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	420-33004-3	Analysis Batch:	420-37053	Instrument ID:	Agilent 7890A/5975C GC-
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	X020116.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	02/01/2010 1808			Final Weight/Volume:	5 mL
Date Prepared:	02/01/2010 1808				

MSD Lab Sample ID:	420-33004-3	Analysis Batch:	420-37053	Instrument ID:	Agilent 7890A/5975C GC-M
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	X020117.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	02/01/2010 1836			Final Weight/Volume:	5 mL
Date Prepared:	02/01/2010 1836				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
1,1,1,2-Tetrachloroethane	115	114	70 - 130	1	20		
1,1,1-Trichloroethane	132	126	70 - 130	5	20	F	
1,1,2,2-Tetrachloroethane	108	104	70 - 130	4	20		
1,1,2-Trichloroethane	108	110	70 - 130	2	20		
1,1-Dichloroethane	128	124	70 - 130	3	20		
1,1-Dichloroethene	139	134	70 - 130	4	20	F	F
1,1-Dichloropropene	129	127	70 - 130	2	20		
1,2,3-Trichlorobenzene	126	111	70 - 130	13	20		
1,2,3-Trichloropropane	105	103	70 - 130	3	20		
1,2,4-Trichlorobenzene	126	110	70 - 130	13	20		
1,2,4-Trimethylbenzene	123	114	70 - 130	7	20		
1,2-Dibromo-3-Chloropropane	115	109	70 - 130	5	20		
1,2-Dichlorobenzene	128	120	70 - 130	7	20		
1,2-Dichloroethane	117	115	70 - 130	2	20		
1,2-Dichloropropane	121	112	70 - 130	7	20		
1,3,5-Trimethylbenzene	122	115	70 - 130	6	20		
1,3-Dichlorobenzene	120	112	70 - 130	7	20		
1,3-Dichloropropane	115	113	70 - 130	2	20		
1,4-Dichlorobenzene	124	117	70 - 130	5	20		
2,2-Dichloropropane	138	135	70 - 130	3	20	F	F
2-Chlorotoluene	134	124	70 - 130	8	20	F	
2-Hexanone	102	100	70 - 130	3	20		
4-Chlorotoluene	125	118	70 - 130	6	20		
4-Isopropyltoluene	126	116	70 - 130	8	20		
Acetone	117	92	70 - 130	24	20		F
Benzene	129	124	70 - 130	4	20		
Bromobenzene	121	118	70 - 130	3	20		
Bromoform	93	97	70 - 130	4	20		
Bromomethane	121	112	70 - 130	8	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 420-37053

Method: 8260B
Preparation: 5030B

MS Lab Sample ID: 420-33004-3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1808
Date Prepared: 02/01/2010 1808

Analysis Batch: 420-37053
Prep Batch: N/A

Instrument ID: Agilent 7890A/5975C GC-
Lab File ID: X020116.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

MSD Lab Sample ID: 420-33004-3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1836
Date Prepared: 02/01/2010 1836

Analysis Batch: 420-37053
Prep Batch: N/A

Instrument ID: Agilent 7890A/5975C GC-M
Lab File ID: X020117.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Carbon disulfide	129	125	70 - 130	3	20		
Carbon tetrachloride	127	125	70 - 130	2	20		
Chlorobenzene	110	108	70 - 130	2	20		
Chlorobromomethane	123	119	70 - 130	3	20		
Dibromochloromethane	100	106	70 - 130	5	20		
Chloroethane	121	116	70 - 130	4	20		
Chloroform	119	123	70 - 130	3	20		
Chloromethane	139	135	70 - 130	3	20	F	F
cis-1,2-Dichloroethene	127	127	70 - 130	0	20		
cis-1,3-Dichloropropene	101	98	70 - 130	2	20		
Dibromomethane	110	109	70 - 130	1	20		
Dichlorobromomethane	120	115	70 - 130	4	20		
Dichlorodifluoromethane	162	161	70 - 130	1	20	F	F
Ethylbenzene	120	113	70 - 130	6	20		
Hexachlorobutadiene	137	120	70 - 130	14	20	F	
Iodomethane	132	130	70 - 130	2	20	F	
Isopropyl alcohol	128	90	70 - 130	35	20		F
Isopropylbenzene	125	119	70 - 130	5	20		
m-Xylene & p-Xylene	128	122	70 - 130	5	20		
2-Butanone	96	86	70 - 130	11	20		
4-Methyl-2-pentanone	102	105	70 - 130	3	20		
Methyl tert-butyl ether	118	124	70 - 130	5	20		
Methylene Chloride	120	122	70 - 130	2	20		
n-Butylbenzene	128	115	70 - 130	10	20		
N-Propylbenzene	122	115	70 - 130	6	20		
Naphthalene	116	111	70 - 130	4	20		
o-Xylene	120	114	70 - 130	5	20		
sec-Butylbenzene	123	113	70 - 130	9	20		
Styrene	116	111	70 - 130	5	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 420-37053

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	420-33004-3	Analysis Batch:	420-37053	Instrument ID:	Agilent 7890A/5975C GC-
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	X020116.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	02/01/2010 1808			Final Weight/Volume:	5 mL
Date Prepared:	02/01/2010 1808				

MSD Lab Sample ID:	420-33004-3	Analysis Batch:	420-37053	Instrument ID:	Agilent 7890A/5975C GC-M
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	X020117.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	02/01/2010 1836			Final Weight/Volume:	5 mL
Date Prepared:	02/01/2010 1836				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
tert-Butylbenzene	125	117	70 - 130	6	20		
Vinyl chloride	144	120	70 - 130	18	20	F	
Vinyl acetate	106	109	70 - 130	3	20		
Trichlorofluoromethane	99	81	70 - 130	19	20		
Trichloroethene	126	118	70 - 130	6	20		
trans-1,3-Dichloropropene	96	102	70 - 130	5	20		
trans-1,2-Dichloroethene	132	124	70 - 130	6	20	F	
Toluene	126	122	70 - 130	3	20		
Tetrachloroethene	106	105	70 - 130	1	20		
1,2-Dibromoethane	112	109	70 - 130	3	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	99	97	74 - 118
Toluene-d8 (Surr)	97	98	74 - 129
1,2-Dichloroethane-d4 (Surr)	88	90	77 - 115

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Method Blank - Batch: 420-37054

Method: 8015B
Preparation: N/A

Lab Sample ID: MB 420-37054/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1143
Date Prepared: N/A

Analysis Batch: 420-37054
Prep Batch: N/A
Units: mg/L

Instrument ID: Hewlett Packard 5890II
Lab File ID: A020105.D
Initial Weight/Volume:
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL	RL
1-Methyl-2-pyrrilidinone	1.0	U	1.0	1.0

Lab Control Spike - Batch: 420-37054

Method: 8015B
Preparation: N/A

Lab Sample ID: LCS 420-37054/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/01/2010 1043
Date Prepared: N/A

Analysis Batch: 420-37054
Prep Batch: N/A
Units: mg/L

Instrument ID: Hewlett Packard 5890II
Lab File ID: A020103.D
Initial Weight/Volume:
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
1-Methyl-2-pyrrilidinone	100	99.1	99	70 - 130	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 420-37054

Method: 8015B
Preparation: N/A

MS Lab Sample ID: 420-33004-7
Client Matrix: Water
Dilution: 2.0
Date Analyzed: 02/01/2010 1323
Date Prepared: N/A

Analysis Batch: 420-37054
Prep Batch: N/A

Instrument ID: Hewlett Packard 5890II
Lab File ID: A020110.D
Initial Weight/Volume:
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

MSD Lab Sample ID: 420-33004-7
Client Matrix: Water
Dilution: 2.0
Date Analyzed: 02/01/2010 1343
Date Prepared: N/A

Analysis Batch: 420-37054
Prep Batch: N/A

Instrument ID: Hewlett Packard 5890II
Lab File ID: A020111.D
Initial Weight/Volume:
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
1-Methyl-2-pyrrilidinone	104	107	70 - 130	2	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Method Blank - Batch: 420-37091

Method: 10-210-00-1-A
Preparation: N/A

Lab Sample ID: MB 420-37091/3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/02/2010 1300
Date Prepared: N/A

Analysis Batch: 420-37091
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume: 50 mL

Analyte	Result	Qual	RL	RL
Phenolics, Total Recoverable	0.010	U	0.010	0.010

Lab Control Spike - Batch: 420-37091

Method: 10-210-00-1-A
Preparation: N/A

Lab Sample ID: LCS 420-37091/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/02/2010 1300
Date Prepared: N/A

Analysis Batch: 420-37091
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Phenolics, Total Recoverable	0.0620	0.0588	95	56 - 144	

Matrix Spike - Batch: 420-37091

Method: 10-210-00-1-A
Preparation: N/A

Lab Sample ID: 420-33004-1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/02/2010 1300
Date Prepared: N/A

Analysis Batch: 420-37091
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Phenolics, Total Recoverable	0.012	0.0300	0.0468	117	55 - 143	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Duplicate - Batch: 420-37091

Method: 10-210-00-1-A
Preparation: N/A

Lab Sample ID: 420-33004-1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 02/02/2010 1300
Date Prepared: N/A

Analysis Batch: 420-37091
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Phenolics, Total Recoverable	0.012	0.0108	9	15	

Calculations are performed before rounding to avoid round-off errors in calculated results.

LOGIN SAMPLE RECEIPT CHECK LIST

Client: William F. Cosulich Associates

Job Number: 420-33004-1
Sdg Number: IBM B/312B 2515-I

Login Number: 33004

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

EnviroTest Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-33873-1

SDG Number: IBM EFK B/312B 2515-I

Job Description: William F. Cosulich

For:
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Attention: Robbin A. Petrella

Alicia M. Labare

Alicia M Labare
Senior Customer Service Representative
alabare@envirotestlaboratories.com
06/14/2010

cc: Brian Werner

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NELAP Accredited, NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554, EPA NY00049.

ACCREDITED IN ACCORDANCE WITH nelac

EXECUTIVE SUMMARY - Detections

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
420-33873-1	**NBA-205-R-2**					
Acetone		58	E	1.0	ug/L	8260B
420-33873-2	**B312-RB-2**					
Acetone		63	E	1.0	ug/L	8260B
420-33873-3	**DUP031210**					
Acetone		60	E	1.0	ug/L	8260B

METHOD SUMMARY

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS	EnvTest	SW846 8260B	
Purge-and-Trap	EnvTest		SW846 5030B

Lab References:

EnvTest = EnviroTest

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Method	Analyst	Analyst ID
SW846 8260B	Andersen, Eric C	ECA

SAMPLE SUMMARY

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-33873-1	NBA-205-R-2	Water	03/12/2010 1015	03/12/2010 1200
420-33873-2	B312-RB-2	Water	03/12/2010 0926	03/12/2010 1200
420-33873-3	DUP031210	Water	03/12/2010 0000	03/12/2010 1200
420-33873-4	Trip Blank	Water	03/11/2010 0000	03/12/2010 1200

SAMPLE RESULTS

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Client Sample ID: NBA-205-R-2
Lab Sample ID: 420-33873-1

Date Sampled: 03/12/2010 1015
Date Received: 03/12/2010 1200
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		03/16/2010 1149	
Prep Method: 5030B			Date Prepared:		03/16/2010 1149	
Acetone	58	E	ug/L	1.0	1.0	1.0
Surrogate					Acceptance Limits	
4-Bromofluorobenzene	87		%		74 - 118	
Toluene-d8 (Surr)	103		%		74 - 129	
1,2-Dichloroethane-d4 (Surr)	92		%		77 - 115	
Method: 8260B Run Type: DL			Date Analyzed:		03/16/2010 1340	
Prep Method: 5030B			Date Prepared:		03/16/2010 1340	
Acetone	65	D	ug/L	5.0	5.0	5.0

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Client Sample ID: B312-RB-2
Lab Sample ID: 420-33873-2

Date Sampled: 03/12/2010 0926
Date Received: 03/12/2010 1200
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		03/16/2010 1217	
Prep Method: 5030B			Date Prepared:		03/16/2010 1217	
Acetone	63	E	ug/L	1.0	1.0	1.0
Surrogate					Acceptance Limits	
4-Bromofluorobenzene	86		%		74 - 118	
Toluene-d8 (Surr)	103		%		74 - 129	
1,2-Dichloroethane-d4 (Surr)	93		%		77 - 115	
Method: 8260B Run Type: DL			Date Analyzed:		03/16/2010 1408	
Prep Method: 5030B			Date Prepared:		03/16/2010 1408	
Acetone	59	D	ug/L	5.0	5.0	5.0

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Client Sample ID: DUP031210
Lab Sample ID: 420-33873-3

Date Sampled: 03/12/2010 0000
Date Received: 03/12/2010 1200
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		03/16/2010 1245	
Prep Method: 5030B			Date Prepared:		03/16/2010 1245	
Acetone	60	E	ug/L	1.0	1.0	1.0
Surrogate					Acceptance Limits	
4-Bromofluorobenzene	86		%		74 - 118	
Toluene-d8 (Surr)	104		%		74 - 129	
1,2-Dichloroethane-d4 (Surr)	95		%		77 - 115	
Method: 8260B Run Type: DL			Date Analyzed:		03/16/2010 1436	
Prep Method: 5030B			Date Prepared:		03/16/2010 1436	
Acetone	52	D	ug/L	5.0	5.0	5.0

Robbin A. Petrella
William F. Cosulich Associates
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Client Sample ID: Trip Blank
Lab Sample ID: 420-33873-4

Date Sampled: 03/11/2010 0000
Date Received: 03/12/2010 1200
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 8260B			Date Analyzed:		03/16/2010 1313	
Prep Method: 5030B			Date Prepared:		03/16/2010 1313	
Acetone	1.0	U	ug/L	1.0	1.0	1.0

Surrogate			Acceptance Limits
4-Bromofluorobenzene	88	%	74 - 118
Toluene-d8 (Surr)	103	%	74 - 129
1,2-Dichloroethane-d4 (Surr)	96	%	77 - 115

DATA REPORTING QUALIFIERS

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Lab Section	Qualifier	Description
GC/MS VOA		
	F	MS or MSD exceeds the control limits
	E	Result exceeded calibration range, secondary dilution required.
	D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
	U	The analyte was analyzed for but not detected at or above the stated limit.

QUALITY CONTROL RESULTS

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:420-37983					
LCS 420-37983/1	Lab Control Spike	T	Water	8260B	
MB 420-37983/2	Method Blank	T	Water	8260B	
420-33873-1	NBA-205-R-2	T	Water	8260B	
420-33873-1DL	NBA-205-R-2	T	Water	8260B	
420-33873-2	B312-RB-2	T	Water	8260B	
420-33873-2DL	B312-RB-2	T	Water	8260B	
420-33873-3	DUP031210	T	Water	8260B	
420-33873-3DL	DUP031210	T	Water	8260B	
420-33873-4	Trip Blank	T	Water	8260B	
420-33937-A-1 MS	Matrix Spike	T	Water	8260B	
420-33937-A-1 MSD	Matrix Spike Duplicate	T	Water	8260B	

Report Basis
T = Total

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Surrogate Recovery Report

8260B Volatile Organic Compounds by GC/MS

Client Matrix: Water

Lab Sample ID	Client Sample ID	12DCE %Rec	BFB %Rec	TOL %Rec
420-33937-A-1 MS		92	90	94
420-33937-A-1 MSD		94	95	95
LCS 420-37983/1		92	92	98
MB 420-37983/2		95	84	100
420-33873-1	NBA-205-R-2	92	87	103
420-33873-2	B312-RB-2	93	86	103
420-33873-3	DUP031210	95	86	104
420-33873-4	Trip Blank	96	88	103

Surrogate		Acceptance Limits
12DCE	1,2-Dichloroethane-d4 (Surr)	77 - 115
BFB	4-Bromofluorobenzene	74 - 118
TOL	Toluene-d8 (Surr)	74 - 129

Quality Control Results

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Method Blank - Batch: 420-37983

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 420-37983/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 03/16/2010 1121
Date Prepared: 03/16/2010 1121

Analysis Batch: 420-37983
Prep Batch: N/A
Units: ug/L

Instrument ID: Agilent 7890A/5975C GC-M
Lab File ID: X031608.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL	RL
Acetone	1.0	U	1.0	1.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	84	74 - 118
Toluene-d8 (Surr)	100	74 - 129
1,2-Dichloroethane-d4 (Surr)	95	77 - 115

Lab Control Spike - Batch: 420-37983

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 420-37983/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 03/16/2010 1026
Date Prepared: 03/16/2010 1026

Analysis Batch: 420-37983
Prep Batch: N/A
Units: ug/L

Instrument ID: Agilent 7890A/5975C GC-M
Lab File ID: X031606.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	20.0	16.2	81	70 - 130	

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	92	74 - 118
Toluene-d8 (Surr)	98	74 - 129
1,2-Dichloroethane-d4 (Surr)	92	77 - 115

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 420-37983

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	420-33937-A-1 MS	Analysis Batch: 420-37983	Instrument ID: Agilent 7890A/5975C GC-
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: X031624.D
Dilution:	1.0		Initial Weight/Volume: 5 mL
Date Analyzed:	03/16/2010 1846		Final Weight/Volume: 5 mL
Date Prepared:	03/16/2010 1846		

MSD Lab Sample ID:	420-33937-A-1 MSD	Analysis Batch: 420-37983	Instrument ID: Agilent 7890A/5975C GC-M
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: X031625.D
Dilution:	1.0		Initial Weight/Volume: 5 mL
Date Analyzed:	03/16/2010 1914		Final Weight/Volume: 5 mL
Date Prepared:	03/16/2010 1914		

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acetone	72	67	70 - 130	7	20		F

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	90	95	74 - 118
Toluene-d8 (Surr)	94	95	74 - 129
1,2-Dichloroethane-d4 (Surr)	92	94	77 - 115

Calculations are performed before rounding to avoid round-off errors in calculated results.

LOGIN SAMPLE RECEIPT CHECK LIST

Client: William F. Cosulich Associates

Job Number: 420-33873-1
Sdg Number: IBM EFK B/312B 2515-I

Login Number: 33873

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

APPENDIX F

DATA VALIDATION

DATA VALIDATION CHECKLIST

Project Name:	IBM East Fishkill Facility
Project Number:	2515-I
Sample Date(s):	January 29, 2010
Sample Team:	B. Werner
Matrix/Number of Samples:	Water/ 4 Field Duplicates/ 1 Trip Blanks / 1 Rinse Blanks/ 1 Field Blanks/ 0
Analyzing Laboratory:	EnviroTest Laboratories Inc, Newburgh, NY
Analyses:	Volatile Organic Compounds (VOCs): by SW846 8260B in addition to n-methyl-2-pyrrilidinone by SW846 8015B and total recoverable phenols by method 10-210-00-1-A.
Laboratory Report No:	420-33004-1 Date:6/14/2010

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample analysis date		X		X	
7. Copy of chain-of-custody form signed by Lab sample custodian		X		X	
8. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:
A validation was conducted on the data package and any applicable qualification of the data was determined using the USEPA National Functional Guidelines of Organic Data Review, June, 2008, method performance criteria, and Dvirka and Bartilucci Consulting Engineers, a Division of William F. Cosulich Associates, P.C. professional judgment. The qualification of data discussed within this data validation checklist did not impact the usability of the sample results.

ORGANIC ANALYSES
VOCS

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times		X		X	
2. Blanks		X	X		
3. Matrix spike (MS) %R		X	X		
4. Matrix spike duplicate (MSD) %R		X	X		
5. MS/MSD precision (RPD)		X	X		
6. Laboratory Control Sample %R		X	X		
7. Surrogate spike recoveries		X		X	
8. Field duplicates RPD		X		X	

VOCs - volatile organic compounds %R - percent recovery RPD - relative percent difference

Comments:
Performance was acceptable with the following exceptions:

Acetone exceeded the calibrations range in NBA-205-R-1 and was reanalyzed at a secondary dilution. The secondary dilution result was reported for acetone in NBA-205-R-1.

2. Acetone, chloroform, dichlorobromomethane and phenols were detected in the rinsate blank. Acetone was detected at less than 10 times the blank results and was qualified as non-detect (U) in IPA-206-R-1, DUP012910 and NMP-207-R-1. Phenols were qualified as non-detect (U) in MWS-204-R-1.

3-5. 1,1,1-Trichloroethane, 1,1-dichloroethene, 2,2-dichloropropane, 2-chlorotoluene, chloromethane, dichlorodifluoromethane, hexachlorobutadiene, iodomethane, vinyl chloride and trans-1,2-dichloroethene had %Rs above QC limits in the MS and/or MSD. The RPDs were above QC limits in isopropyl alcohol and acetone. The following compounds were qualified as estimated (J): acetone in NBA-205-R-1 and B312-RB-1; and isopropyl alcohol in IPA-206-R-1 and DUP012910.

6. The %R was above QC limits for dichlorodifluoromethane in the laboratory control sample. It was not detected in the associated samples and qualification of the data was not necessary.

DATA VALIDATION AND QUALIFICATION SUMMARY **Laboratory Numbers:420-33004-1**

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOCs			
NBA-205-R-1	Acetone	D	Secondary dilution result was reported
IPA-206-R-1, DUP012910 and NMP-207-R-1.	Acetone	U	Detected in associated blank
MWS-204-R-1	Phenols	U	Detected in associated blank
NBA-205-R-1 and B312-RB-1	Acetone	J	The MS/MSD RPD was above QC limits
IPA-206-R-1 and DUP012910	Isopropyl alcohol	J	The MS/MSD RPD was above QC limits

VALIDATION PERFORMED BY & DATE:	Donna M. Brown 06/15/2010
VALIDATION PERFORMED BY SIGNATURE:	

DATA VALIDATION CHECKLIST

Project Name:	IBM East Fishkill Facility
Project Number:	2515-I
Sample Date(s):	March 16, 2010
Sample Team:	B. Werner
Matrix/Number of Samples:	Water/ 1 Field Duplicates/ 1 Trip Blanks / 1 Rinse Blanks/ 1 Field Blanks/ 0
Analyzing Laboratory:	EnviroTest Laboratories Inc, Newburgh, NY
Analyses:	Volatile Organic Compounds (VOCs): Acetone by SW846 8260B
Laboratory Report No:	420-33873-1 Date:6/14/2010

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample analysis date		X		X	
7. Copy of chain-of-custody form signed by Lab sample custodian		X		X	
8. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:
A validation was conducted on the data package and any applicable qualification of the data was determined using the USEPA National Functional Guidelines of Organic Data Review, June, 2008, method performance criteria, and Dvirka and Bartilucci Consulting Engineers, a Division of William F. Cosulich Associates, P.C. professional judgment. The qualification of data discussed within this data validation checklist did not impact the usability of the sample results.

ORGANIC ANALYSES
VOCS

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times		X		X	
2. Blanks		X	X		
3. Matrix spike (MS) %R		X		X	
4. Matrix spike duplicate (MSD) %R		X	X		
5. MS/MSD precision (RPD)		X		X	
6. Laboratory Control Sample %R		X		X	
7. Surrogate spike recoveries		X		X	
8. Field duplicates RPD		X		X	

VOCs - volatile organic compounds %R - percent recovery RPD - relative percent difference

Comments:
Performance was acceptable with the following exceptions:

Acetone exceeded the calibrations range in all samples and was reanalyzed at a secondary dilution. The secondary dilution result was reported for acetone in all samples.

2. Acetone was detected in the rinsate blank. Acetone was detected at less than 10 times the blank results and was qualified as non-detect (U) in NBA-205-R-2 and DUP031210.

4. Acetone had %Rs below QC limits in the MSD. Acetone was qualified as estimated (J/UJ) in all samples.

DATA VALIDATION AND QUALIFICATION SUMMARY

Laboratory Numbers:420-33873-1

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOCs			
All samples	Acetone	D	Secondary dilution result was reported
NBA-205-R-2 and DUP031210	Acetone	U	Detected in associated blank
All samples	Acetone	J/UJ	The MSD %R was below QC limits

VALIDATION PERFORMED BY & DATE:	Donna M. Brown 06/15/2010
VALIDATION PERFORMED BY SIGNATURE:	

APPENDIX B

WORK PLAN AND QUALITY ASSURANCE PROJECT PLAN

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
HUDSON VALLEY RESEARCH PARK
HOPEWELL JUNCTION, NEW YORK

QUALITY ASSURANCE PROJECT PLAN FOR DECONTAMINATION OF B/312B SOLVENT VAULT SOLID WASTE MANAGEMENT UNIT (SWMU)

Prepared for:

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
HOPEWELL JUNCTION, NEW YORK

Prepared by:

D&B ENGINEERS AND ARCHITECTS, P.C.
WOODBURY, NEW YORK

JULY 2018

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
HOPEWELL JUNCTION, NEW YORK
QUALITY ASSURANCE PROJECT PLAN FOR
DECONTAMINATION OF B/312B SOLVENT VAULT
SOLID WASTE MANAGEMENT UNIT

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1.0 QUALITY ASSURANCE PROJECT PLAN

1.1 Project Identification

Facility Name:	GLOBALFOUNDRIES U.S. 2 LLC – FAB 10 (GLOBALFOUNDRIES) Hudson Valley Research Park (HVRP) Hopewell Junction, New York
Project Name:	Decontamination of the B/312B Solvent Vault Solid Waste Management Unit (SWMU)
Project Managers:	Brian Veith *(D&B Engineers and Architects, P.C.)*
Quality Assurance Officer:	Robbin A. Petrella *(D&B Engineers and Architects, P.C.)*
Field Operations Manager:	Brian Werner *(D&B Engineers and Architects, P.C.)*

1.2 Objective and Scope

The objective of this program is to decontaminate the Solid Waste Management Unit (SWMU) located at Building 312B (B/312B) Vault at the GLOBALFOUNDRIES HVRP. As part of the decontamination activities, rinse water and rinse water blank samples will be collected to verify the effectiveness of the decontamination procedures. The purpose of this Quality Assurance Project Plan (QAPP) is to develop and describe the detailed sample collection and analytical procedures that will ensure high quality data.

1.3 Data Usage

The data generated from the field sampling will be used to verify the effectiveness of the decontamination activities performed on the SWMUs and associated piping. Specifically, the samples will be used to determine whether the decontamination activities were successful in removing any contamination present in the SWMUs and associated piping. If the samples indicate that contamination remains present, then additional decontamination may be required before the unit can be considered decontaminated.

1.4 Sampling Program Design and Rationale

The following presents a general discussion of the sampling to be conducted during the sampling portion of the program.

- Rinse Water Samples: Rinse water samples will be collected from certain SWMUs being decontaminated during this project. In addition, one blind duplicate will be collected each day a rinse water sample is collected.

- Rinse Water Blank Sample: One rinse water blank sample will be collected each day a rinse water sample is collected during this decontamination project directly from the water supply utilized to decontaminate the SWMUs.

1.5 Analytical Methods

Laboratory analysis of the rinse water and rinse water blank samples will consist of analyzing for volatile organic compounds (VOCs), n-butyl acetate (NBA), isopropyl alcohol (IPA), N-methyl-2-pyrolidone (NMP) and total phenols as identified in the 2005 NYSDEC Analytical Services Protocol (ASP), depending on sample location.

Table 1-1 presents a summary of the parameters/sample fractions to be analyzed. The table also lists the sample location, type of sample, sample matrix, number of samples and frequency of sample collection, type of sample container, method of preservation, holding time and analytical method.

Table 1-1

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SWMU
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples*	Frequency**	Container Type/Size/No.	Sample Preservation	Maximum Holding Time***	Analytical Method
Fluoride/Heavy Metal SWMUs	Grab	Water	Fluoride	3	3	Plastic/50 ml/1 ICHEM 300 series or equivalent	Cool to 4°C	26 days for analysis	7/05 NYSDEC ASP, Method 9214
			pH	3	3	Plastic/50 ml/1 ICHEM 300 series or equivalent	Cool to 4°C	analyze immediately	7/05 NYSDEC ASP, Method 9040
			Metals****	3	3	Plastic/500 ml/1 ICHEM 300 series or equivalent	HNO_3 to pH <2 Cool to 4°C	6 months for analysis	7/05 NYSDEC ASP Method 6010

*Number of samples includes a rinse water, rinse water blank and duplicate.

**Frequency equals number of SWMUs to be decontaminated.

***Holding times based upon Verified Time of Sample Receipt at the laboratory.

****Metals to include lead and nickel.

Table 1-1 (continued)

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SWMU
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples*	Frequency**	Container Type/Size/No.	Sample Preservation	Maximum Holding Time***	Analytical Method
Industrial Wastewater	Grab	Water	pH	3	1	Plastic/50 ml/1 ICHEM 300 series or equivalent	Cool to 4°C	analyze immediately	7/05 NYSDEC ASP, Method 9040

*Number of samples includes a rinse water, rinse water blank and duplicate.

**Frequency equals number of SWMUs to be decontaminated.

***Holding times based upon Verified Time of Sample Receipt at the laboratory.

Table 1-1 (continued)

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SWMU
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples*	Frequency**	Container Type/Size/No.	Sample Preservation	Maximum Holding Time***	Analytical Method
Less-Than-90-Day Hazardous Waste Storage Tanks and Vaults	Grab	Water	Volatile Organics	3	4	Glass/40 ml/3 ICHEM 300 series or equivalent	Cool to 4°C	10 days	7/05 NYSDEC ASP, Method 8260

*Number of samples includes a rinse water, rinse water blank and duplicate.

**Frequency equals number of SWMUs to be decontaminated.

***Holding times based upon Verified Time of Sample Receipt at the laboratory.

1.6 Data Quality Requirements and Assessment

Data quality requirements and assessments are provided in the 2005 NYSDEC ASP, which includes the detection limit for each parameter and sample matrix (see Exhibit A). Note that quantification limits, estimated accuracy, accuracy protocol, estimated precision and precision protocol are determined by the laboratory and will be in conformance with the requirements of the 2005 NYSDEC ASP, where applicable. Table 1-2 presents a summary of the data quality requirements.

In addition to meeting the requirements provided in the 2005 NYSDEC ASP, the data must also be useful in evaluating the nature and extent of contamination. Data obtained during the field program will be compared to specific Standards, Criteria and Guidelines (SCGs). The SCGs to be utilized include:

Matrix	**SCG**
Rinse Water and Blank Samples	NYSDEC Class GA Groundwater Standards found at Division of Water Technical and Operational Guidance Series (1.1.1) dated June 1998.

1.6.1 Data Representativeness

Representative samples will be collected as follows:

- Rinse Water – Samples will be collected utilizing hose water. Hose water will be poured into the SWMU, allowed to stand for approximately 10 minutes and then collected utilizing sterile plastic pipettes or similar equipment.
- Rinse Water Blank – Samples will be collected of the water utilized to decontaminate the area directly from the water source (e.g., hose, etc.) and passed through a sterile plastic pipette into the sample container.
- Equipment Decontamination – Non-sterile sampling equipment will be decontaminated prior to use at each location according to the NYSDEC-approved procedures described in Section 1.8 of this QAPP.

Table 1-2

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SWMU
DATA QUALITY REQUIREMENTS

Parameter	Sample Matrix	CRDL* (ug/l)	Estimated Accuracy	Accuracy Protocol	Estimated Precision	Precision Protocol
Volatile Organics	Liquid	5-10 5-10	0.87 - 2.48 ug/l	Vol. IB, Chapter 4, Method 8260B, Table 7	0.11 - 4.00 ug/l	Vol. IB, Chapter 4, Method 8260B, Table 7
Metals	Liquid	0.2-200	--	Vol. IA, Chapter 3, Method 6010, Table 4	--	Vol. IA, Chapter 3, Method 6010, Table 4

*Contract Required Detection Limits.

Table 1-2 (continued)

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SWMU
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION, ACCURACY, AND COMPLETENESS

Matrix/Parameter	Precision (%)	Accuracy (%)
Rinse Water		
VOCs(a)	See Table 1-2a	See Table 1-2a
Metals(b)	± 25%	75-125

Notes:

(a) Accuracy will be determined as percent recovery of surrogate spike compounds and matrix spike compounds. Surrogate and matrix spike compounds for VOCs are listed in Table 1-2a. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

(b) Accuracy will be determined as percent recovery of matrix spikes when appropriate or the percent recovery of a QC sample if spiking is inappropriate. Precision will be determined as relative percent difference of matrix spike duplicate samples, or duplicate samples if spiking is inappropriate.

(c) Precision will be determined as the average percent difference for replicate samples. Accuracy will be determined as the percent recovery of matrix spike samples or laboratory control samples, as appropriate.

Source: NYSDEC ASP

Table 1-2 (continued)

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
DECONTAMINATION OF B/312B SOLVENT VAULT SWMU
DATA QUALITY REQUIREMENTS
ACCURACY REQUIREMENTS FOR VOC

	Spike Recovery Limits (%)
	Water
Surrogate Compound	
Toluene-d8	88-110
4-Bromofluorobenzene	86-115
1,2-Dichloroethane-d4	76-114
Matrix Spike Compound	
1,1-Dichloroethene	61-145
Trichloroethane	71-120
Chlorobenzene	75-130
Toluene	76-125
Benzene	76-127

Source: NYSDEC ASP

1.6.2 Data Comparability

All data will be presented in the units designated by the methods specified by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory, and the 2005 NYSDEC ASP. In addition, sample locations, collection procedures and analytical methods from earlier studies will be evaluated for comparability with current procedures/methods.

1.6.3 Data Completeness

The acceptability of 100% of the data is desired as a goal for this project. The acceptability of less than 100% complete data, meeting all laboratory Quality Assurance/Quality Control (QA/QC) protocols/standards, will be evaluated on a case-by-case basis.

The laboratory utilized to perform the analyses on the rinse water, rinse water blank and duplicate samples will provide NYSDEC ASP Category B data deliverables.

1.7 Detailed Sampling Procedures

Rinse water, rinse water blank and duplicate samples will be collected following the decontamination activities in order to verify the effectiveness of the decontamination activities. One rinse water sample, one rinse water blank sample and one duplicate sample will be collected from certain SWMUs which are decontaminated as part of this program. Sampling procedures and equipment to be utilized are described in this QAPP. Sample collection will be performed in conformance with the procedures outlined in this QAPP.

When collecting the samples, care will be taken to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. First, the equipment utilized to collect the samples must be new and sterile or properly decontaminated. An appropriate piece of sampling equipment (e.g., disposable pipette) will be utilized to collect the sample and transfer it to the laboratory-supplied sample container. The sample should reflect and contain a good representation of the area from which it was collected. The sample will be transferred into the sample container as quickly as possible.

There are several steps performed after the transfer of the sample into the sample container that are necessary to properly complete the collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove any grime. A clean paper towel moistened with distilled water will be used for this purpose.

Prior to sample collection, the sample container will be properly labeled. Information such as the sample identification number, location, collection time and sample description will be recorded in the field log book. Associated paper work (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature to be maintained during transportation to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

Proper personal protective equipment and monitoring equipment (if determined to be necessary) will be used at all times during sample collection to further maintain sample integrity and protection of worker health and safety.

1.7.1 Sample Identification

All samples collected during the field activities undertaken at GLOBALFOUNDRIES HVRP B/312B Solvent Vault will be labeled with a sample identification code. The code will identify the sample location, sample type (sample matrix) and series numbers for the sample locations. Samples will be labeled according to the following system:

Location Identification: - The sample location will be assigned an identifier based on the SWMU from which the sample was collected. Samples collected from the B312B Solvent Vault will be denoted "B312B (SWMU number)" (e.g., B312BSV).

Sample Type: - "R" for rinse water and duplicate samples and "RB" for rinse water blank sample.

Sample Number: - In the field, each sample location will be designated with a number. The number will correspond with the number of the sample collected. Therefore, the first blank collected from an SWMU will be denoted "1." If the SWMU requires further decontamination, the second rinse blank will be denoted "2" and so on.

Based on the above sample identification procedures, an example of a sample label may be:

Sample Type Sample Number

B312BSV-R-1

Location Identification

1.7.2 Sample Handling, Packaging and Shipping

All analytical samples will be placed in the appropriate sample containers as specified in the NYSDEC July 2005 ASP. The holding time criteria identified in the ASP will be followed, as specified in Table 1-1.

Prior to packaging any samples for transportation to the laboratory, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be wrapped with a cushioning material (e.g., bubble wrap) and placed in a cooler (or laboratory shuttle) with a sufficient quantity of bagged ice or "blue ice" packs to maintain the samples at 4°C until arrival at the laboratory.

All necessary documentation required to accompany the samples during transportation will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will then be sealed with fiber (duct) tape, and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be shipped to ensure receipt at the laboratory within 48 hours of sample collection in accordance with ASP requirements.

1.7.3 Rinse Water/Blind Duplicate Samples

The following protocol will be adhered to for the collection of rinse water samples and the blind duplicate sample:

1. Be certain that the sample location is noted on a sample location sketch (see Section 1.10).
2. Be certain that the sampling equipment is either new or has been decontaminated utilizing the procedures outlined in Section 1.8.
3. Select a sample location within the area. One rinse water sample and one duplicate will be collected from each SWMU.
4. Remove a set of laboratory-supplied, precleaned sample containers from the sample cooler, label containers with an indelible marker and fill out a Chain of Custody form (refer to Section 1.10.2).
5. Don a new pair of disposable laboratory gloves (nitrile).
6. Slowly pour water into the SWMU from hose. The minimum amount of water necessary to properly fill all of the sample containers should be utilized. Note: Since it is not possible to extract all of the water poured into the SWMU, the volume of the sample containers plus additional water will have to be poured into the SWMU in order to properly fill all of the sample containers. Record the approximate volume of water utilized in the field log book.

   Note: If water will not pool within the SWMU, construct a berm to ensure pooling. Absorbent material or similar means should be used to construct berm.

7. Allow the water to remain within the tank or vault for approximately 10 minutes.
8. Collect the rinse water duplicate samples from the SWMU utilizing a new or decontaminated pipette. If the liquid level is of sufficient depth, containers may be filled by dunking the unpreserved container into the pooled liquid, or utilizing a dedicated unpreserved container to then fill the preserved sample container.
9. Once each sample container has been filled, replace the sample container cap.

10. Return the sample containers to the cooler.

11. Measure the wetted area of SWMU in each sample location and record in the field log book.

12. Record notes in field log book as described in Section 1.10.3.

13. If reusable sampling equipment was utilized, decontaminate the sampling equipment according to the procedures described in Section 1.8.

14. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

1.7.4 Rinse Water Blank Sample

The following protocol will be adhered to for the collection of the rinse water blank sample:

1. Be certain that the sample location is noted on a sample location sketch (see Section 1.10).

2. Be certain that the sampling equipment is either new or has been decontaminated utilizing the procedures outlined in Section 1.8.

3. Remove a set of laboratory-supplied, precleaned sample containers from the sample cooler, label containers with an indelible marker and fill out a Chain of Custody form (refer to Section 1.10.2).

4. Don a new pair of disposable laboratory gloves (nitrile).

5. Collect the rinse water blank sample by filling each container directly from the hose or other source utilized to supply water to the area for the decontamination activities. The hose water should be passed from the hose through a sterile disposable syringe/pipette (the same type utilized for collecting the rinse water samples) into the sample container.

6. Once each sample container has been filled, replace the sample container cap.

7. Return the sample containers to the cooler.

8. Record notes in field log book as described in Section 1.10.3.

9. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

1.8 Decontamination Procedures

Whenever feasible, all field sampling equipment should be dedicated to a particular sampling location. In instances where this is not possible, a field cleaning (decontamination) procedure will be used in order to reduce the risk of cross-contamination between sample locations. A decontamination station will be established for all field activities if field decontamination is necessary. This will be an area located at some distance from the sampling locations so as not to adversely impact the decontamination procedure while still allowing the sampling team to keep equipment handling to a minimum.

1.8.1 Field Decontamination Procedures

All nondisposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to moving to a new sampling interval or location, and prior to leaving the site). Different decontamination procedures are used for the various types of equipment utilized to perform the field activities. When designing a field decontamination program, it is advisable to initiate environmental sampling in the area of the site with the lowest contaminant probability and proceed through to the areas of highest suspected contamination.

1.8.2 Decontamination Procedure for Sampling Equipment

All non-disposable Teflon, polyvinyl chloride (PVC), high density polyethylene (HDPE) and stainless steel sampling equipment will be decontaminated utilizing the following procedure:

- Wash thoroughly with nonresidual detergent (e.g., alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly utilizing distilled water.
- Wrap completely in clean aluminum foil with dull side against the equipment.

The first step, a soap and water wash, is designed to remove all visible particulate matter and residual oil and grease. The distilled water rinse ensures complete removal of residual cleaning products and the aluminum wrap protects the equipment from contamination and keeps it clean for use at another sampling location.

1.9 Laboratory Sample Custody Procedures

A NYSDOH ELAP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical equipment, will be used. The Standard Operating Procedures of the laboratory selected to undertake the analysis of environmental samples for this program will be available upon request.

1.10 Field Management Documentation

Proper management and documentation of field activities is essential to ensure that all necessary work is conducted in accordance with this Quality Assurance Project Plan in an efficient and high quality manner. Field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are split (if required), completing Chain of Custody forms and maintaining a daily field log book. Proper completion of the Chain of Custody and the field log book are necessary to support the future actions that may result from the sample analysis. This documentation will support that the samples were properly collected and handled.

1.10.1 Location Sketch

Each sampling point shall have its own location sketch with measurements and permanent references if possible. This sketch will be recorded in the field log book.

1.10.2 Chain of Custody

A Chain of Custody (COC) form is initiated at the laboratory with container preparation and transportation to the site. The COC must remain with the samples at all times and bear the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and proper handling of the containers and samples. When the form is complete, it should indicate that there were no lapses in sample accountability.

A sample is considered to be in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession, or
- It is in the individual's view after being in his or her physical possession, or
- It is secured by the individual so that no one can tamper with it, or
- The individual puts it in a designated and identified secure area.

In general, Chain of Custody forms are provided by the laboratory contracted to perform the analytical services. At a minimum, the following information shall be provided on these forms:

- Project name and address
- Project number
- Sample identification number of each sample contained in the sample cooler
- Date of sample collection
- Time of sample collection
- Sample location
- Sample type/matrix
- Analyses requested
- Number of containers and volume collected
- Remarks (e.g., preservation, special handling, etc.)
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

For this particular study, Chain of Custody forms provided by the laboratory will be utilized.

The Chain of Custody form is completed and signed by the person performing the sampling activities. The original form travels with the samples and is signed and dated each time the samples are relinquished to another party, until it reaches the laboratory or analysis is completed. The field sampler maintains a copy of the Chain of Custody form and a copy is retained for the project file. Each sample container must also be labeled with an indelible marker with a minimum of the following information:

- Sample identification number
- Project name/location
- Analysis to be performed
- Date and time of collection
- Sampler's initials

A copy of the completed Chain of Custody form is returned by the laboratory with the analytical results.

1.10.3 Field Log Book

Field log books must be bound and should have consecutively numbered, water resistant pages. All pertinent information regarding the site, project and sampling procedures must be documented. Notations should be made in log book fashion, noting the time and date of all entries. Information recorded in the log book should include, but is not necessarily be limited to, the following:

The first page of the log contains the following information:

- Project name and address
- Name, address and phone number of field contact
- Name, address and phone number of subcontractors and contact persons

Daily entries are made for the following information:

- Purpose of sampling
- Sampling location
- Number and volume(s) of sample(s) collected
- Description of sample location and sampling methodology
- Date and time of sample collection and personnel arrival and departure
- Geologic description of each sample interval, if applicable
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sample location or photographs of sample collection with dimensions
- Field observations such as weather conditions, visual signs of staining and/or stressed vegetation
- Signature of personnel responsible for completing log entries

1.11 Calibration Procedures and Preventive Maintenance

The following information regarding equipment will be maintained at the project site if monitoring is deemed necessary for health and safety purposes:

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the

calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be completed daily at the sampling site so that any background contamination can be taken into consideration and the instrument calibrated accordingly.

2. A schedule of preventive maintenance tasks, consistent with the instrument manufacturer’s specific operation manuals, that will be carried out to minimize down time of the equipment.

3. Critical spare parts, necessary tools and manuals will be on hand to facilitate equipment maintenance and repair.

1.12 Performance of Field Audits

During field activities, if determined to be necessary, the QA/QC Officer will accompany sampling personnel into the field, verify that the site sampling program is being properly implemented and detect and define problems so that resolutions can be determined and implemented. All findings will be documented and provided to the Field Operations Manager.

1.13 Control and Disposal of Contaminated Material

Contaminated materials generated during this field program will primarily be limited to spent protective clothing, spent disposable sampling equipment and wastes generated as a result of equipment decontamination.

Any contaminated materials generated as a result of the field program will be contained in U.S. Department of Transportation (DOT) 55-gallon drums and staged in a designated area for subsequent waste characterization. Each drum will be identified by the type of material contained.

Decisions regarding the disposal of drummed material will be made, at least in part, based on the analytical results of the samples collected during this program. At the present time, there is no provision for separate analysis of contained material.

Decontamination water and sediment, if any, will be contained in 55-gallon drums. A decision regarding disposal of this material will be made following receipt of the sample results. Analysis of decontamination water/sediment may be required for proper management.

DOT-approved 55-gallon drums will be available for disposal of spent protective clothing and disposable sampling equipment, if any. These drums will be marked and labeled as containing personnel protective and sampling equipment. These drums will not be sampled. All drums will be sealed and staged on site to await proper off-site disposal.

1.14 Data Validation

Data validation will be performed in order to define and document analytical data quality in accordance with NYSDEC requirements that project data must be of known and acceptable quality. The analytical and validation processes will be conducted in conformance with the July 2005 NYSDEC ASP and USEPA CLP Statements of Work (SOW) dated June 1999 and January 2000. The validation will be performed by an individual meeting the qualification requirements for a data validator for the NYSDEC.

The USEPA Functional Guidelines for Evaluating Organics and Inorganics Analyses for the CLP will be used for the data validation process. The data validation process will ensure that all analytical requirements specific to this sampling program, including this Quality Assurance Project Plan, are followed. Procedures will address validation of routine analytical services (RAS) results based on the NYSDEC Target Compound List (TCL) for standard sample matrices.

The data validation process will provide an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The report generated as a result of the data validation process will provide a base upon which the usefulness of the data can be evaluated by the end user of the analytical results. The overall level of effort and specific data validation procedure to be used will be equivalent to a "20% validation" of all analytical data in any given data package.

During the review process, it will be determined whether the contractually-required laboratory submittals for sample results are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of data. Each data package will be checked for completeness and technical adequacy of the data. Upon completion of the review, the reviewer will develop a QA/QC data validation report for each analytical data package.

"Qualified" analytical results for any one field sample are established and presented based on the results of specific QC samples and procedures associated with its sample analysis group or batch. Precision and accuracy criteria (i.e., QC acceptance limits) are used in determining the need for qualifying data. Where test data have been reduced by the laboratory, the method of reduction will be described in the report. Reduction of laboratory measurements and laboratory reporting of analytical parameters shall be verified in accordance with the procedures specified in the NYSDEC program documents for each analytical method (i.e., recreate laboratory calculations and data reporting in accordance with the method specific procedure). The standard operating guideline manuals and any special analytical methodology required are expected to specify documentation needs and technical criteria and will be taken into consideration in the validation process. Copies of the complete ASP Category B deliverables will be submitted to the NYSDEC for review. Copies of the validation report, including the laboratory result data report sheets, with any qualifiers deemed appropriate by the data reviewer, and a supplementary field QC sample result summary statement, will be submitted to the NYSDEC, if requested.

Examples of standard organic and inorganic data validation reporting formats and completeness inventory lists which are proposed for use on this project are contained in Exhibit B. These report forms will be modified as necessary and made appropriate for any project specific or NYSDEC requirements.

The following is a description of the two-phased approach to data validation planned to be used on this project. The first phase is called "checklisting" and the second phase is the analytical quality review, with the former being a subset of the latter.

- Checklisting - The data package is checked for correct submission of the contract required deliverables, correct transcription from the raw data to the required deliverable summary forms and proper calculation of a number of parameters.

- Analytical Quality Review - The data package is closely examined to recreate the analytical process and verify that proper and acceptable analytical techniques have been performed. Additionally, overall data quality and laboratory performance is evaluated by applying the appropriate data quality criteria to the data to reflect conformance with the specified, accepted QA/QC standards and contractual requirements.

At the completion of the data validation, a Summary Data Validation/Usability Report will be prepared and submitted to the NYSDEC, if requested.

1.15 Performance and System Audits

A NYSDOH ELAP certified laboratory, which has satisfactorily completed performance audits and performance evaluation samples, shall be used on this project.

1.16 Corrective Action

A NYSDOH ELAP certified laboratory shall meet the requirements for corrective action protocols, including sample "cleanup" to attempt to eliminate/mitigate "matrix interference." Sample "cleanup" is not required for samples to be analyzed for volatile organic compounds or RCRA metals. However, sample "cleanup" is required for samples to be analyzed for semivolatile organic compounds.

1.17 Duplicate

The primary purpose of a duplicate sample is to determine the analytical precision of the laboratory contracted to perform the sample analyses. A duplicate sample is collected in the same manner as one of the environmental samples and analyzed for the same constituents. In this manner, the precision of the laboratory can be checked. One duplicate of a rinse water sample will be collected and analyzed during decontamination of each SWMU identified in this decontamination program.

EXHIBIT A

DETECTION LIMITS

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples

	Volatile Analyte	CAS Number	Trace Water By SIM (µg/L)	Trace Level Water (µg/L)	Low Level Water (µg/L)
1.	Dichlorodifluoromethane	75-71-8		0.50	5.0
2.	Chloromethane	74-87-3		0.50	5.0
3.	Vinyl Chloride	75-01-4		0.50	5.0
4.	Bromomethane	74-83-9		0.50	5.0
5.	Chloroethane	75-00-3		0.50	5.0
6.	Trichlorofluoromethane	75-69-4		0.50	5.0
7.	1,1-Dichloroethene	75-35-4		0.50	5.0
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		0.50	5.0
9.	Acetone	67-64-1		5.0	10.0
10.	Carbon Disulfide	75-15-0		0.50	5.0
11.	Methyl Acetate	79-20-9		0.50	5.0
12.	Methylene chloride	75-09-2		0.50	5.0
13.	trans-1,2-Dichloroethene	156-60-5		0.50	5.0
14.	Methyl tert-Butyl Ether	1634-04-4		0.50	5.0
15.	1,1-Dichloroethane	75-34-3		0.50	5.0
16.	cis-1,2-Dichloroethene	156-59-2		0.50	5.0
17.	2-Butanone	78-93-3		5.0	10.0
18.	Bromochloromethane	74-97-5		0.50	5.0
19.	Chloroform	67-66-3		0.50	5.0
20.	1,1,1-Trichloroethane	71-55-6		0.50	5.0
21.	Cyclohexane	110-82-7		0.50	5.0
22.	Carbon tetrachloride	56-23-5		0.50	5.0
23.	Benzene	71-43-2		0.50	5.0
24.	1,2-Dichloroethane	107-06-2		0.50	5.0
25.	1,4-Dioxane	123-91-1	1.0	25	125
26.	Trichloroethane	79-01-6		0.50	5.0

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples (Continued)

	Volatile Analyte	CAS Number	Trace Water By SIM (µg/L)	Trace Level Water (µg/L)	Low Level Water (µg/L)
27.	Methylcyclohexane	108-87-2		0.50	5.0
28.	1,2-Dichloropropane	78-87-5		0.50	5.0
29.	Bromodichloromethane	75-27-4		0.50	5.0
30.	cis-1,3-Dichloropropene	10061-01-5		0.50	5.0
31.	4-methyl-2-pentanone	108-10-1		5.0	10.0
32.	Toluene	108-88-3		0.50	5.0
33.	Trans-1,3-Dichloropropene	10061-02-6		0.50	5.0
34.	1,1,2-Trichloroethane	79-00-5		0.50	5.0
35.	Tetrachloroethene	127-18-4		0.50	5.0
36.	2-Hexanone	591-78-6		5.0	10.0
37.	Dibromochloromethane	124-48-1		0.50	5.0
38.	1,2-Dibromoethane	106-93-4	0.05	0.50	5.0
39.	Chlorobenzene	108-90-7		0.50	5.0
40.	Ethylbenzene	100-41-4		0.50	5.0
41.	Xylenes (Total)	1330-20-7		0.50	5.0
42.	Styrene	100-42-5		0.50	5.0
43.	Bromoform	75-25-2		0.50	5.0
44.	Isopropylbenzene	98-82-8		0.50	5.0
45.	1,1,2,2-Tetrachloroethane	79-34-5		0.50	5.0
46.	1,3-Dichlorobenzene	541-73-1		0.50	5.0
47.	1,4-Dichlorobenzene	106-46-7		0.50	5.0
48.	1,2-Dichlorobenzene	95-50-1		0.50	5.0
49.	1,2-Dibromo-3-chloropropane	96-12-8	0.05	0.50	5.0
50.	1,2,4-Trichlorobenzene	120-82-1		0.50	5.0
51.	1,2,3-Trichlorobenzene	87-61-6		0.50	5.0

Superfund Target Compound List (TCL)
and
Contract Required Quantitation Limits (CRQL)

Resource Conservation and Recovery Act (RCRA) Metals plus Nickel

Parameter	CAS Number	Quantitation Limits* Low Water (ug/l)	Quantitation Limits* Low Soil/Sediment (ug/kg)
1. Arsenic		15	3,000
2. Barium		200	40,000
3. Cadmium		5	1,000
4. Chromium		10	2,000
5. Lead		10	2,000
6. Mercury		0.2	100
7. Selenium		35	7,000
8. Silver		10	2,000
9. Nickel*		40	8,000

* Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the protocol, will be higher.

All quantitation limits are referenced from the 2005 NYSDEC ASP.

EXHIBIT B

DATA VALIDATION FORMS

DATA VALIDATION CHECKLIST

Project Name:	
Project Number:	
Sample Date(s):	
Sample Team:	
Matrix/Number of Samples:	
Analyzing Laboratory:	
Analyses:	
Laboratory Report No:	

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results					
2. Parameters analyzed					
3. Method of analysis					
4. Sample collection date					
5. Laboratory sample received date					
6. Sample analysis date					
7. Copy of chain-of-custody form signed by Lab sample custodian					
8. Narrative summary of QA or sample problems provided					

QA - quality assurance

Comments:

Laboratory Report: SAMPLE AND ANALYSIS LIST

Sample ID	Sample Collection Date	Matrix	Lab ID	Change or Parent ID	Analysis				
					VOC	SVOC	PCB	Pb	Hg

INORGANIC ANALYSES

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times					
2. Blanks					
A. Preparation and calibration blanks					
B. Field blanks					
3. Total verse dissolved results					
4. Field duplicates RPD					
5. Case Narrative results					
A. Initial calibration verification %R					
B. Continuing calibration verification %R					
C. Laboratory control sample %R					
D. Spike sample %R					
E. Duplicate RPD					
F. Serial dilution check %D		X	X		

%R - percent recovery %D - percent difference RPD - relative percent difference

Comments:

Sample ID/Duplicate ID	Metal	Sample Result	Duplicate Result

DATA VALIDATION AND QUALIFICATION SUMMARY

Laboratory Report: Z2792

Sample ID	Analyte(s)	Qualifier	Reason(s)

VALIDATION PERFORMED BY & DATE:	
VALIDATION PERFORMED BY SIGNATURE:	
PEER REVIEW BY & DATE:	

GLOBALFOUNDRIES U.S. 2 LLC – FAB 10
HUDSON VALLEY RESEARCH PARK
PROCEDURES FOR DECONTAMINATION OF B/312B SOLVENT VAULT
SOLID WASTE MANAGEMENT UNIT (SWMU)

Solvent Vault

This procedure is intended to be used to collect samples for analysis from the Solvent Vault listed below.

UNIT ID #	LOCATION	TANK CONTENTS	PURPOSE
B/312B Solvent Vault	B/312B Vault	Solvents	Solvent Vault

1. *The unit will be pumped as low as possible, with all residual waste removed from the unit either by utilizing a vacuum truck or a portable pump. The liquid will be transferred to B/309 for classification and management in accordance with standard procedures under the GLOBALFOUNDRIES HVRP 6 NYCRR 373 Permit. Any remaining sludge/solids will be removed from the unit by hand, placed in a drum and labeled in accordance with USDOT regulations before being transferred to B/309 for proper classification and management.*

2. *The SWMU interior will be decontaminated with a water and suitable surfactant solution in accordance with procedures approved by GLOBALFOUNDRIES. Decontamination water will be removed from the unit utilizing the same method as was used to remove residual liquid in Step 1 above.*

3. *Rinse water samples will be collected in accordance with the Rinsate Sample Collection Protocol provided in Section 1.7.3 on page 1-13 of the attached Quality Assurance Project Plan (QAPP)*

4. *Rinse water samples will be analyzed for volatile organic compounds by a NYSDOH ELAP certified laboratory.*

5. *Rinse water sample analytical results will be compared to the Class GA Groundwater Standards and Guidance Values listed in the NYSDEC Division of Water's Technical and Operational Guidance Series (TOGS) 1.1.1-"Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations." If the rinse water sample results exceed the Class GA Groundwater Standards, the decontamination process will be repeated until the results are below the Class GA Standards at which time the decontamination will be deemed complete.*

APPENDIX C

DAILY FIELD ACTIVITY REPORTS

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/29/2018

DAILY FIELD ACTIVITY REPORT

Report Number: 1   Project Number: 3932-07

Field Log Book Page Number: --

Project: GLOBALFOUNDRIES HVRP B/312B Solvent Vault SWMU Closure

Address: 2070 Route 52, Hopewell Junction, NY

Weather: (AM) -   Rainfall: (AM) - Inches
(PM) Sunny   (PM) - Inches

Temperature: (AM) - ºF   Wind Speed: (AM) - MPH   Wind Direction: (AM) -
(PM) 90 ºF   (PM) Calm MPH   (PM) -

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	D&B	11:38 AM	12:25 PM
Jesse Sutherland	Techtron	11:38 AM	12:00 PM

Subcontractor Work Commencement: (AM) - (PM) -

Subcontractor Work Completion: (AM) - (PM) -

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/29/2018

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
D&B inspected the work area and reviewed decontamination activities with Techtron personnel. Techtron personnel decontaminated the interior of the B/312B Solvent Vault on 8/29/2018 utilizing a gas-powered power washer, ZEP Z-Green (surfactant) and the water source from B/312 water spigot (312-1-NA-HB-3154-ASR). The wash water was pumped in Techtron's tanker truck and properly disposed. It should be noted that water infiltration was still coming into the vault from below the pipe penetration along the west middle wall of the Solvent Vault. It is presumed the water entering the vault is due to the shallow groundwater table in the surrounding area. D&B requested Techtron contain the water entering the vault using a drum or an equivalent method to avoid cross-contamination of the decontaminated vault, since D&B is scheduled to conduct the closure sampling activities on 8/30/2018. In addition, D&B requested that Techtron perform a final rinse and pump out of the Solvent Vault on 8/30/2018 prior to D&B's arrival on-site to remove any pooled water within the decontaminated Solvent Vault.

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/29/2018

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B Engineers:
See the attached work description.

List specific inspection(s) performed and results (include problems and corrective actions):
See the attached work description.

List type and location of tests performed and results (include equipment used and monitoring results):
See the attached work description.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
See the attached work description.

Prepared by: Brian Werner

Reviewed by:

3932/07/082918_DFAR_BW.docx

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/30/2018

DAILY FIELD ACTIVITY REPORT

Report Number: 2 Project Number: 3932-07

Field Log Book Page Number: --

Project: GLOBALFOUNDRIES HVRP B/312B Solvent Vault SWMU Closure

Address: 2070 Route 52, Hopewell Junction, NY

Weather: (AM) - Rainfall: (AM) - Inches
(PM) Sunny (PM) - Inches

Temperature: (AM) - ºF Wind Speed: (AM) - MPH Wind Direction: (AM) -
(PM) 87 ºF (PM) Calm MPH (PM) -

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	D&B	11:38 AM	12:25 PM
Supervisor	Techtron	--	--
Laborer	Techtron	--	--
Laborer	Techtron	--	--

Subcontractor Work Commencement: (AM) - (PM) -

Subcontractor Work Completion: (AM) - (PM) -

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/30/2018

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
D&B picked up the sampling bottles from the EnviroTest Laboratory in Newburgh, NY and drove to the site. While D&B was picking up the sampling bottles Techtron personnel conducted final rinse of the B/312B Solvent Vault utilizing the water source from B/312 water spigot (312-1-NA-HB-3154-ASR), non-potable water line. A 55-gallon polyethylene drum was placed below the trough along the west wall of the Solvent Vault to avoid cross-contaminating the decontaminated area of the Solvent Vault. The accumulated wash water was pumped into Techtron's tanker truck. With the assistance of Techtron personnel D&B collected one rinse blank sample from B/312 water spigot (312-1-NA-HB-3154-ASR), non-potable water line, which was utilized to decontaminate B/312B Solvent Vault and the same water source used for the rinse water samples. In addition, D&B collected 2 rinse water samples and one blind duplicate sample from the floor of the B/312B Solvent Vault utilizing new 5-gallon buckets, with weather stripping and approximately 2 gallons of water from B/312 water spigot (312-1-NA-HB-3154-ASR). The water within the sample area on the Solvent Vault floor was allowed to sit for 10 minutes and collected using an unpreserved sample container provided by the laboratory. The sample bottles were filled and placed in a cooler on ice. The samples were packaged and delivered to the EnviroTest Laboratory on 8/30/2018.

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/30/2018

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B Engineers:
D&B collected a rinse blank, a blind duplicate and two rinse water samples in accordance with the QAPP and sampling procedures.

List specific inspection(s) performed and results (include problems and corrective actions):
Samples were collected in accordance with the QAPP and sampling procedures.

List type and location of tests performed and results (include equipment used and monitoring results):
Samples were collected in accordance with the QAPP and sampling procedures.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
None.

Prepared by: Brian Werner

Reviewed by:

3932/07/083018_DFAR_BW.docx

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/31/2018

DAILY FIELD ACTIVITY REPORT

Report Number: 3 Project Number: 3932-07

Field Log Book Page Number: --

Project: GLOBALFOUNDRIES HVRP B/312B Solvent Vault SWMU Closure

Address: 2070 Route 52, Hopewell Junction, NY

Weather: (AM)	-	Rainfall: (AM)	- Inches
(PM)	-	(PM)	- Inches

Temperature: (AM) - ºF	Wind Speed: (AM) - MPH	Wind Direction: (AM)	-
(PM) - ºF	(PM) - MPH	(PM)	-

Site Condition: Secure

Personnel On Site:

Name	Affiliation	Arrival Time	Departure Time
Brian Werner	D&B	-	-

Subcontractor Work Commencement:	(AM)	-	(PM)	-
Subcontractor Work Completion:	(AM)	-	(PM)	-

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/31/2018

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):
Below you will find a summarized description of the work activities completed by Techtron personnel pertaining to the decontamination of B/312B Solvent Vault SWMU. D&B was not on-site during the dismantling and decontamination process, but was informed on the work activities through conversions with Techtron and GLOBALFOUNDRIES personnel.

May 29 - 30, 2018
D&B was not on-site for the dismantling process. The roof of the B/312B Solvent Vault was removed and properly disposed.

May 31 – June 21, 2018
D&B was not on-site for the dismantling process. Tanks 204-207 and associated piping were removed from the B/312B Solvent Vault and were properly disposed as scrap metal.

June 25, 2018
D&B was not on-site for the decontamination process. The walls and floors of B/312B Solvent Vault were power washed and the wash water was collected and properly disposed.

July 11, 2018
D&B was not on-site for the decontamination process. The accumulated groundwater within the B/312B Solvent Vault was pumped out and the walls and floors of the vault were power washed the wash water was collected and properly disposed.

August 29, 2018
D&B was not on-site for the decontamination process. Techtron scrubbed the floors and walls of B/312B Solvent Vault with ZEP Z-Green (surfactant) and pressure washed the interior of the vault. The wash water was collected and properly disposed.

August 29, 2018
According Edward Peppe, GLOBALFOUNDRIES, to date all the SWMU solvent piping within B/322 building footprint has been removed from the trenches and capped at the building wall.

1) All solvent SWMU drain piping within Building 322 was removed and capped at the foundation wall.
2) Remaining solvent SWMU drain piping from Building 322 foundation wall to B/312B Solvent Vault, will be abandoned in place per agreement with IBM.
3) B/312B Solvent Vault will be filled with crushed stone to grade level. The block walls will be removed from the foundation, and the vault will be capped off with a concrete topping slab.
4) Building 322 solvent system SWMU piping will be listed as partially closed on the building 322 NYSDEC closure plan.

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/31/2018

DAILY FIELD ACTIVITY REPORT

August 30, 2018

D&B was not on-site for the decontamination process. Techtron conducted a final rinse of B/312B Solvent Vault. The wash water was collected and properly disposed.

D&B ENGINEERS AND ARCHITECTS, P.C.

Date: 08/31/2018

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B Engineers:
See the attached work description.

List specific inspection(s) performed and results (include problems and corrective actions):
See the attached work description.

List type and location of tests performed and results (include equipment used and monitoring results):
See the attached work description.

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):
See the attached work description.

Prepared by: Brian Werner

Reviewed by:

APPENDIX D

PHOTOGRAPHIC LOG

A view of B/312B Solvent Vault.

After the Solvent Vault was decontaminated.

The water source from the non-potable water line in B/312 used to decontaminate the Solvent Vault and for the rinse water samples.

A view of the water infiltration from below the pipes along the west wall of the Solvent Vault.

A view of the new 5-gallon buckets with weather stripping to collect the rinse water samples.

A view of the decontaminated Solvent Vault.

A view of the 2 rinse water sample locations within the Solvent Vault.

A view of the decontaminated Solvent Vault.

A view of the decontaminated Solvent Vault.

APPENDIX E

CHAIN OF CUSTODY FORM

EnviroTest Laboratories, Inc.
315 Fullerton Avenue
Newburgh, NY 12550
Phone (845) 562-0890 Fax (845) 562-0841

Chain of Custody Record

EnviroTest Laboratories Inc.

Client Information	Sampler: Brian Werner	Lab PM: Meredith Ruthven	Deliverable Type: Level I, NYS ASP Cat B EDD (Specify): EQuIS	JOB #: 141881
Client Contact: Brian Werner	Phone: 516-364-9890 x3093	E-Mail: bwerner@db-eng.com		
Company: D&B Engineers and Architects, P.C.				Page: Page 1 of 1
Address: 330 Crossways Park Drive	Due Date Requested:			
City: Woodbury	TAT Requested (days): Level I = 5 day			
State, Zip: NY, 11797				
Phone: 516-364-9890 x3093	PO #:			
Email: LabData@db-eng.com	PWS #:			
Project Name: GLOBALFOUNDRIES B/312B Solvent Vault	Project #: 3932-07			
Site: GLOBALFOUNDRIES HVRP	Additional Contacts:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - H2SO4
F - MeOH
G - NH4CL
H - Ascorbic Acid
I - Ice
J - DI Water
K - Sodium Thiosulfate
L- EDA
M - Sodium Sulfite
N - None
O - MCAA
P - Other (specify)
Other: DO Pillows

Upon Receipt Preservation verified: *Y / N*

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (DW=drinking water, W=water, S=solid, O=waste/oil, A=Air)	Field Filtered Sample (Yes or No)		Phenols (Method 10-210-00-1-A)	n-Methyl-2-pyrrolidone [NMP] (Method 8015D)	8260C include Isopropyl alcohol + TIC (n-Butyl acetate [NBA])	Total Number of containers	Special Instructions/Note:
			Preservation Code:				E	N	A/N		
B312BSV-RB-1	8/30/18	9:30	G	W	N	N	2	3	2/2		
B312BSV-R1-1	8/30/18	9:54	G	W	N	N	2	3	2/2		
B312BSV-R2-1	8/30/18	10:20	G	W	N	N	2	3	2/2		
DUP083018	8/30/18	–	G	W	N	N	2	3	2/2		
Trip Blank (Do Not Open)			NA	W					2/2		

420-141881-A-1
B312BSV-RB-1
Date Sampled: 8/30/2018 420-1239822

Container Code: P=Plastic, A=Amber, V=Vial, G=Glass, B=Bacteria, C=Cube, O=Other, E=Encore, D=BOD Bottle	A	V	V	*Container Type*
Size Code: 1=Liter, 2=250 mL, 3=125 mL, 4=40 mL, 5=Gallon, 6=Half Gallon, 7=Other	2	4	4/4	*Container Size*

Preservation Added Upon Receipt: Manufacturer/Lot #:	Date:	Time:	Sample # (s):

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Brian Werner	8/30/18 / 12:09		[signature]	08/30/18 12:10	ETL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

ICE Present: Δ Yes Δ No	Custody Seal No.:	Custody Seals Intact: Δ Yes Δ No	Cooler Temperature(s) °C/ IR GUN #: 6.0°C IR#3

APPENDIX F

LABORATORY ANALYTICAL RESULTS

EnviroTest
Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-141881-1

SDG Number: GLOBALFOUNDRIES B/312B Solvent Vault

Job Description: D & B Engineers and Architects, P.C.

For:
D & B Engineers and Architects, P.C.
330 Crossways Park Drive
Woodbury, NY 11797

Attention: Brian Werner

Meredith Ruthven

Meredith W Ruthven
Customer Service Manager
mruthven@envirotestlaboratories.com
09/17/2018

Envirotest Laboratories, Inc.
315 Fullerton Avenue, Newburgh, NY 12550
Tel (845) 562-0890 Fax (845) 562-0841 www.envirotestlaboratories.com

ACCREDITED IN ACCORDANCE WITH nelac

Job Narrative
420-J141881-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
Please note that NBA was screened for as a (TIC) tentatively identified compound during the 8260 analysis. The following samples were screened for NBA and it was not detected:

420-141881-1
420-141881-2
420-141881-3
420-141881-4
420-141881-5

No analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Organic Prep
Method 8015D: The matrix spike (MS) recovery for this analytical batch did not meet the range of acceptable recoveries. The associated laboratory control standard (LCS) met acceptance criteria.

The RPD of the matrix spike/matrix spike duplicate is outside the acceptable range of recoveries.

Method 8015D: Surrogate recovery for sample 141881-4MS did not meet the range of acceptable recoveries.

Please note the matrix spike duplicate had acceptable recoveries of NMP and the surrogate. Therefore, the data is reported with confidence.

No other analytical or quality issues were noted.

SAMPLE SUMMARY

Client: D & B Engineers and Architects, P.C.

Job Number: 420-141881-1
SDG Number: GLOBALFOUNDRIES B/312B Solvent Vault

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-141881-1	B312BSV-RB-1	Water	08/30/2018 0930	08/30/2018 1100
420-141881-2	B312BSV-R1-1	Water	08/30/2018 0954	08/30/2018 1100
420-141881-3	B312BSV-R2-1	Water	08/30/2018 1020	08/30/2018 1100
420-141881-4	DUP083018	Water	08/30/2018 0000	08/30/2018 1100
420-141881-5	Trip Blank	Water	08/30/2018 0000	08/30/2018 1100

EnviroTest Laboratories, Inc.
315 Fullerton Avenue
Newburgh, NY 12550
Phone (845) 562-0890 Fax (845) 562-0841

Chain of Custody Record

EnviroTest Laboratories Inc.

Client Information	Sampler: Brian Werner	Lab PM: Meredith Ruthven	Deliverable Type: Level I, NYS ASP Cat B; EDD (Specify): EQuIS	JOB #: 141881
Client Contact: Brian Werner	Phone: 516-364-9890 x3093	E-Mail: bwerner@db-eng.com		
Company: D&B Engineers and Architects, P.C.				Page: Page 1 of 1
Address: 330 Crossways Park Drive	Due Date Requested:			
City: Woodbury	TAT Requested (days): Level I = 5 day			
State, Zip: NY, 11797				
Phone: 516-364-9890 x3093	PO #:			
Email: LabData@db-eng.com	PWS #:			
Project Name: GLOBALFOUNDRIES B/312B Solvent Vault	Project #: 3932-07			
Site: GLOBALFOUNDRIES HVRP	Additional Contacts:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - H2SO4, F - MeOH, G - NH4CL, H - Ascorbic Acid, I - Ice, J - DI Water, K - Sodium Thiosulfate, L - EDA, M - Sodium Sulfite, N - None, O - MCAA, P - Other (specify)
Other: DO Pillows

Upon Receipt Preservation verified: Y / N

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (DW=drinking water, W=water, S=solid, O=waste/oil, A=Air)	Field Filtered Sample (Yes or No)		Phenols (Method 10-210-00-1-A)	n-Methyl-2-pyrrolidone [NMP] (Method 8015D)	8260C include isopropyl alcohol + TIC (n-Butyl acetate [NBA])	Total Number of containers	Special Instructions/Note:
Preservation Code:					X	X	E	N	A/N	X	
B312BSV-RB-1	8/30/18	9:30	G	W	N	N	2	3	2/2		
B312BSV-R1-1	8/30/18	9:54	G	W	N	N	2	3	2/2		
B312BSV-R2-1	8/30/18	10:20	G	W	N	N	2	3	2/2		
DUP083018	8/30/18	—	G	W	N	N	2	3	2/2		
Trip Blank (Do Not Open)			NA	W					2/2		

420-141881-A-1
B312BSV-RB-1
Date Sampled: 8/30/2018 420-1239822

	Phenols	NMP	8260C	
Container Code: P=Plastic, A=Amber, V=Vial, G=Glass, B=Bacteria, C=Cube, O=Other, E=Encore, D=BOD Bottle	A	V	V	Container Type
Size Code: 1=Liter, 2=250 mL, 3=125 mL, 4=40 mL, 5=Gallon, 6=Half Gallon, 7=Other	2	4	4/4	Container Size

Preservation Added Upon Receipt: Manufacturer/Lot #: Date: Time: Sample # (s):

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Brian Werner	8/30/18 / 12:09		[signature]	08/30/18 12:10	ETL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

ICE Present: Δ Yes Δ No | Custody Seal No.: | Custody Seals Intact: Δ Yes Δ No | Cooler Temperature(s) °C/ IR GUN #: 6-0°C IR#3

METHOD SUMMARY

Client: D & B Engineers and Architects, P.C.

Job Number: 420-141881-1
SDG Number: GLOBALFOUNDRIES B/312B Solvent Vault

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Phenols (Lachat)	EnvTest	QuickChem 10-210-00-1-A	
Distillation/Phenolics	EnvTest		Distill/Phenol
Nonhalogenated Organics using GC/FID direct inject	EnvTest	SW846 8015D	
Volatile Organic Compounds by GC/MS	EnvTest	SW846 8260C	
Purge and Trap for Aqueous Samples	EnvTest		SW846 5030C

Lab References:

EnvTest = EnviroTest

Method References:

QuickChem = Lachat QuickChem Manual

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

DATA REPORTING QUALIFIERS

Client: D & B Engineers and Architects, P.C.

Job Number:

Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Lab Section	Qualifier	Description
GC/MS VOA		
	*	LCS or LCSD exceeds the control limits
	F	MS or MSD exceeds the control limits
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	F	RPD of the MS and MSD exceeds the control limits
	D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
	U	The analyte was analyzed for but not detected at or above the lowest stated limit.
GC VOA		
	F	MS or MSD exceeds the control limits
	F	RPD of the MS and MSD exceeds the control limits
	X	Surrogate exceeds the control limits
	U	The analyte was analyzed for but not detected at or above the lowest stated limit.
General Chemistry		
	U	The analyte was analyzed for but not detected at or above the lowest stated limit.

LOGIN SAMPLE RECEIPT CHECK LIST

Client: D & B Engineers and Architects, P.C.

Job Number: 420-141881-1
SDG Number: GLOBALFOUNDRIES B/312B Solvent Vault

Login Number: 141881

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	6.0 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
Based on above criteria cooler temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Volatile Data
QC Summary

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

	EPA SAMPLE NO.	SMC1 #	SMC2 #	SMC3 #	TOT OUT
01	MB	98	101	99	0
02	RB-1	105	101	101	0
03	R1-1	98	104	101	0
04	R2-1	100	103	98	0
05	DUP083018	102	100	99	0
06	ZZZZZMS	94	99	90	0
07	ZZZZZMSD	92	100	89	0
08	MB2	92	118	87	0
09	RB-1	90	118	85	0
10	R1-1	96	119	85	0
11	R2-1	92	117	85	0

			QC LIMITS
SMC1	=	1,2-Dichloroethane-d4	(77-117)
SMC2	=	Toluene-d8	(74-129)
SMC3	=	Bromofluorobenzene	(74-119)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

Lab Control Spike
Volatile Organic Compounds by GC/MS

Lab Name: EnviroTest Laboratories, Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water Level: Low

Lab Sample ID: LCS 420-124333/1

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC
Methylene Chloride	20.0	20	99	70-130
1,1-Dichloroethane	20.0	20	98	70-130
Chloroform	20.0	19	94	70-130
Carbon tetrachloride	20.0	18	90	70-130
1,2-Dichloropropane	20.0	20	102	70-130
Dibromochloromethane	20.0	17	85	70-130
1,1,2-Trichloroethane	20.0	19	96	70-130
Tetrachloroethene	20.0	19	97	70-130
Chlorobenzene	20.0	19	97	70-130
Trichlorofluoromethane	20.0	19	96	70-130
1,2-Dichloroethane	20.0	19	96	70-130
1,1,1-Trichloroethane	20.0	20	100	70-130
Dichlorobromomethane	20.0	18	90	70-130
trans-1,3-Dichloropropene	20.0	19	94	70-130
cis-1,3-Dichloropropene	20.0	19	95	70-130
1,1-Dichloropropene	20.0	20	101	70-130
Bromoform	20.0	17	87	70-130
1,1,2,2-Tetrachloroethane	20.0	19	95	70-130
Benzene	20.0	20	102	70-130
Toluene	20.0	22	109	70-130
Ethylbenzene	20.0	21	104	70-130
Chloromethane	20.0	19	94	70-130
Bromomethane	20.0	17	85	70-130
Vinyl chloride	20.0	19	93	70-130
Chloroethane	20.0	19	96	70-130
1,1-Dichloroethene	20.0	19	95	70-130
trans-1,2-Dichloroethene	20.0	20	100	70-130
Trichloroethene	20.0	20	99	70-130
1,2-Dichlorobenzene	20.0	21	103	70-130
1,3-Dichlorobenzene	20.0	20	102	70-130
1,4-Dichlorobenzene	20.0	19	96	70-130
Methyl tert-butyl ether	20.0	20	102	70-130
m-Xylene & p-Xylene	40.0	41	104	70-130
o-Xylene	20.0	21	103	70-130
cis-1,2-Dichloroethene	20.0	20	99	70-130
Dibromomethane	20.0	18	92	70-130
1,2,3-Trichloropropane	20.0	18	92	70-130
Acrylonitrile	20.0	20	100	70-130
Styrene	20.0	20	102	70-130
Dichlorodifluoromethane	20.0	20	99	70-130

FORM III 8260C

Lab Control Spike
Volatile Organic Compounds by GC/MS

Lab Name: EnviroTest Laboratories, Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water Level: Low

Lab Sample ID: LCS 420-124333/1

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC
Acetone	40.0	39	97	70-130
Carbon disulfide	20.0	18	91	70-130
Iodomethane	20.0	19	96	70-130
2-Butanone (MEK)	40.0	38	96	70-130
Vinyl acetate	20.0	21	105	70-130
4-Methyl-2-pentanone (MIBK)	40.0	42	105	70-130
2-Hexanone	40.0	43	107	70-130
Chlorobromomethane	20.0	20	101	70-130
2,2-Dichloropropane	20.0	20	102	70-130
1,2-Dibromoethane	20.0	19	94	70-130
1,3-Dichloropropane	20.0	19	97	70-130
1,1,1,2-Tetrachloroethane	20.0	19	94	70-130
Bromobenzene	20.0	20	100	70-130
n-Butylbenzene	20.0	22	112	70-130
sec-Butylbenzene	20.0	21	106	70-130
tert-Butylbenzene	20.0	22	108	70-130
2-Chlorotoluene	20.0	20	101	70-130
4-Chlorotoluene	20.0	20	99	70-130
1,2-Dibromo-3-Chloropropane	20.0	16	81	70-130
Hexachlorobutadiene	20.0	21	103	70-130
Isopropylbenzene	20.0	21	107	70-130
p-Isopropyltoluene	20.0	22	111	70-130
Naphthalene	20.0	19	95	70-130
N-Propylbenzene	20.0	21	104	70-130
1,2,3-Trichlorobenzene	20.0	23	113	70-130
1,2,4-Trichlorobenzene	20.0	23	114	70-130
1,3,5-Trimethylbenzene	20.0	21	104	70-130
1,2,4-Trimethylbenzene	20.0	21	105	70-130
trans-1,4-Dichloro-2-butene	20.0	19	95	70-130
Xylenes, Total	60.0	62	103	70-130

Calculations are performed before rounding

Column to be used to flag recovery and RPD values

3

Lab Control Spike
Volatile Organic Compounds by GC/MS

Lab Name: EnviroTest Laboratories, Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water Level: Low

Lab Sample ID: LCS 420-124409/1

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC
Methylene Chloride	20.0	16	82	70-130
1,1-Dichloroethane	20.0	18	92	70-130
Chloroform	20.0	18	92	70-130
Carbon tetrachloride	20.0	18	92	70-130
1,2-Dichloropropane	20.0	21	104	70-130
Dibromochloromethane	20.0	18	91	70-130
1,1,2-Trichloroethane	20.0	20	100	70-130
Tetrachloroethene	20.0	24	118	70-130
Chlorobenzene	20.0	20	98	70-130
Trichlorofluoromethane	20.0	18	90	70-130
1,2-Dichloroethane	20.0	19	94	70-130
1,1,1-Trichloroethane	20.0	19	97	70-130
Dichlorobromomethane	20.0	18	91	70-130
trans-1,3-Dichloropropene	20.0	21	105	70-130
cis-1,3-Dichloropropene	20.0	21	107	70-130
1,1-Dichloropropene	20.0	22	108	70-130
Bromoform	20.0	16	82	70-130
1,1,2,2-Tetrachloroethane	20.0	20	98	70-130
Benzene	20.0	20	102	70-130
Toluene	20.0	23	113	70-130
Ethylbenzene	20.0	21	103	70-130
Chloromethane	20.0	19	96	70-130
Bromomethane	20.0	17	85	70-130
Vinyl chloride	20.0	16	81	70-130
Chloroethane	20.0	18	88	70-130
1,1-Dichloroethene	20.0	18	88	70-130
trans-1,2-Dichloroethene	20.0	18	92	70-130
Trichloroethene	20.0	20	101	70-130
1,2-Dichlorobenzene	20.0	23	114	70-130
1,3-Dichlorobenzene	20.0	21	107	70-130
1,4-Dichlorobenzene	20.0	20	100	70-130
Methyl tert-butyl ether	20.0	19	94	70-130
m-Xylene & p-Xylene	40.0	41	102	70-130
o-Xylene	20.0	20	101	70-130
cis-1,2-Dichloroethene	20.0	18	90	70-130
Dibromomethane	20.0	19	96	70-130
1,2,3-Trichloropropane	20.0	19	93	70-130
Acrylonitrile	20.0	16	81	70-130
Styrene	20.0	20	98	70-130
Dichlorodifluoromethane	20.0	16	82	70-130

FORM III 8260C

Lab Control Spike
Volatile Organic Compounds by GC/MS

Lab Name: EnviroTest Laboratories, Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water Level: Low

Lab Sample ID: LCS 420-124409/1

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC
Acetone	40.0	38	96	70-130
Carbon disulfide	20.0	19	97	70-130
Iodomethane	20.0	18	90	70-130
2-Butanone (MEK)	40.0	41	103	70-130
Vinyl acetate	20.0	20	101	70-130
4-Methyl-2-pentanone (MIBK)	40.0	38	94	70-130
2-Hexanone	40.0	35	89	70-130
Chlorobromomethane	20.0	18	89	70-130
2,2-Dichloropropane	20.0	20	100	70-130
1,2-Dibromoethane	20.0	18	92	70-130
1,3-Dichloropropane	20.0	20	98	70-130
1,1,1,2-Tetrachloroethane	20.0	20	99	70-130
Bromobenzene	20.0	19	95	70-130
n-Butylbenzene	20.0	21	107	70-130
sec-Butylbenzene	20.0	20	98	70-130
tert-Butylbenzene	20.0	21	103	70-130
2-Chlorotoluene	20.0	19	94	70-130
4-Chlorotoluene	20.0	18	89	70-130
1,2-Dibromo-3-Chloropropane	20.0	21	104	70-130
Hexachlorobutadiene	20.0	23	114	70-130
Isopropylbenzene	20.0	20	101	70-130
p-Isopropyltoluene	20.0	23	113	70-130
Naphthalene	20.0	23	113	70-130
N-Propylbenzene	20.0	19	93	70-130
1,2,3-Trichlorobenzene	20.0	26	130	70-130
1,2,4-Trichlorobenzene	20.0	26	131 *	70-130
1,3,5-Trimethylbenzene	20.0	20	98	70-130
1,2,4-Trimethylbenzene	20.0	19	96	70-130
trans-1,4-Dichloro-2-butene	20.0	16	80	70-130
Xylenes, Total	60.0	61	102	70-130

Calculations are performed before rounding

Column to be used to flag recovery and RPD values

4A

EPA SAMPLE NO.

VOLATILE METHOD BLANK SUMMARY

MB

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID: X083116.D Lab Sample ID: MB

Date Analyzed: 8/31/2018 Time Analyzed: 16:26

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: MS4

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	RB-1	141881-1	X083117.D	16:58
02	R1-1	141881-2	X083118.D	17:30
03	R2-1	141881-3	X083119.D	18:02
04	DUP083018	141881-4	X083120.D	18:34
05	ZZZZZMS	ZZZZZMS	X083131.D	0:26
06	ZZZZZMSD	ZZZZZMSD	X083132.D	0:58

COMMENTS

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB2

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID: X090506.D Lab Sample ID: MB

Date Analyzed: 9/5/2018 Time Analyzed: 11:15

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: MS4

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	RB-1	141881-1	X090507.D	11:47
02	R1-1	141881-3	X090508.D	12:19
03	R2-1	141881-4	X090509.D	12:51

COMMENTS

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID: X083101.D BFB Injection Date: 8/31/2018

Instrument ID: MS4 BFB Injection Time: 8:26

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15 - 40.0% of mass 95	21.6
75	30.0 - 60.0% of mass 95	51.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	88.0
175	5.0 - 9.0% of mass 174	6.4 (7.2)1
176	95.0 - 101.0% of mass 174	83.9 (95.3)1
177	5.0 - 9.0% of mass 176	5.5 (6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD001	VSTD001	X083103.D	8/31/2018	9:30
02	VSTD0025	VSTD0025	X083104.D	8/31/2018	10:02
03	VSTD005	VSTD005	X083105.D	8/31/2018	10:34
04	VSTD010	VSTD010	X083106.D	8/31/2018	11:06
05	VSTD020	VSTD020	X083107.D	8/31/2018	11:38
06	VSTD030	VSTD030	X083108.D	8/31/2018	12:10
07	VSTD040	VSTD040	X083109.D	8/31/2018	12:42
08	VSTD050	VSTD050	X083110.D	8/31/2018	13:14

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID: X083111.D BFB Injection Date: 8/31/2018

Instrument ID: MS4 BFB Injection Time: 13:46

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	51.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	88.0
175	5.0 - 9.0% of mass 174	6.6 (7.5)1
176	95.0 - 101.0% of mass 174	84.6 (96.2)1
177	5.0 - 9.0% of mass 176	6.0 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD020	VSTD020 LM=8260C	X083113.D	8/31/2018	14:50
02	MB	MB	X083116.D	8/31/2018	16:26
03	RB-1	141881-1	X083117.D	8/31/2018	16:58
04	R1-1	141881-2	X083118.D	8/31/2018	17:30
05	R2-1	141881-3	X083119.D	8/31/2018	18:02
06	DUP083018	141881-4	X083120.D	8/31/2018	18:34
07	ZZZZZMS	ZZZZZMS	X083131.D	9/1/2018	0:26
08	ZZZZZMSD	ZZZZZMSD	X083132.D	9/1/2018	0:58

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID: X090501.D BFB Injection Date: 9/5/2018

Instrument ID: MS4 BFB Injection Time: 8:35

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15 - 40.0% of mass 95	21.0
75	30.0 - 60.0% of mass 95	50.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.9
173	Less than 2.0% of mass 174	0.9 (1.0)1
174	50.0 - 100.0% of mass 95	88.6
175	5.0 - 9.0% of mass 174	6.6 (7.5)1
176	95.0 - 101.0% of mass 174	84.3 (95.2)1
177	5.0 - 9.0% of mass 176	5.7 (6.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD020	VSTD020	X090503.D	9/5/2018	9:39
02	MB2	MB	X090506.D	9/5/2018	11:15
03	RB-1	141881-1	X090507.D	9/5/2018	11:47
04	R1-1	141881-3	X090508.D	9/5/2018	12:19
05	R2-1	141881-4	X090509.D	9/5/2018	12:51

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID (Standard): X083113.D Date Analyzed: 8/31/2018

Instrument ID: MS4 Time Analyzed: 14:50

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR STD	1775652	6.64	866864	13.19	916920	16.46
	UPPER LIMIT	3551304	7.14	1733728	13.69	1833840	16.96
	LOWER LIMIT	887826	6.14	433432	12.69	458460	15.96
	EPA SAMPLE NO.						
01	MB	1632784	6.65	811534	13.20	926667	16.46
02	RB-1	1547952	6.64	788445	13.20	925615	16.46
03	R1-1	1574081	6.65	750336	13.20	896151	16.46
04	R2-1	1579352	6.64	733440	13.20	865007	16.46
05	DUP083018	1539791	6.65	742263	13.20	885795	16.46
06	ZZZZZMS	1847015	6.64	976844	13.20	987843	16.46
07	ZZZZZMSD	1901303	6.64	983652	13.20	958734	16.46

IS1 = Fluorobenzene
IS2 = Chlorobenzene-d5
IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EnviroTest Laboratories Inc. Contract: ####

Lab Code: 10142 Case No.: #### SAS No.: #### SDG No.: 141881

Lab File ID (Standard): X090503.D Date Analyzed: 9/5/2018

Instrument ID: MS4 Time Analyzed: 9:39

GC Column: DB-VRX ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR STD	2295136	6.65	1081236	13.19	1028131	16.46
	UPPER LIMIT	4590272	7.15	2162472	13.69	2056262	16.96
	LOWER LIMIT	1147568	6.15	540618	12.69	514066	15.96
	EPA SAMPLE NO.						
01	MB2	2233101	6.67	882934	13.20	940165	16.46
02	RB-1	2184587	6.66	870112	13.20	924607	16.46
03	R1-1	2102437	6.66	827801	13.20	902961	16.46
04	R2-1	2042376	6.66	824233	13.20	869917	16.46

IS1 = Fluorobenzene

IS2 = Chlorobenzene-d5

IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.

* Values outside of contract required QC limits

Volatile Data
Sample Data

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-RB-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-1
Analysis Method:	8260C	Lab File ID:	X083117.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:58
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	6.6		1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	16		1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-RB-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-1
Analysis Method:	8260C	Lab File ID:	X083117.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:58
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-RB-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-1
Analysis Method:	8260C	Lab File ID:	X083117.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:58
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083117.D
Acq On : 31 Aug 2018 4:58 pm
Operator : EA
Sample : 141881-J-1 LM=8260C BT=MS4083118A
Misc : B312BSV-RB-1
ALS Vial : 17 Sample Multiplier: 1

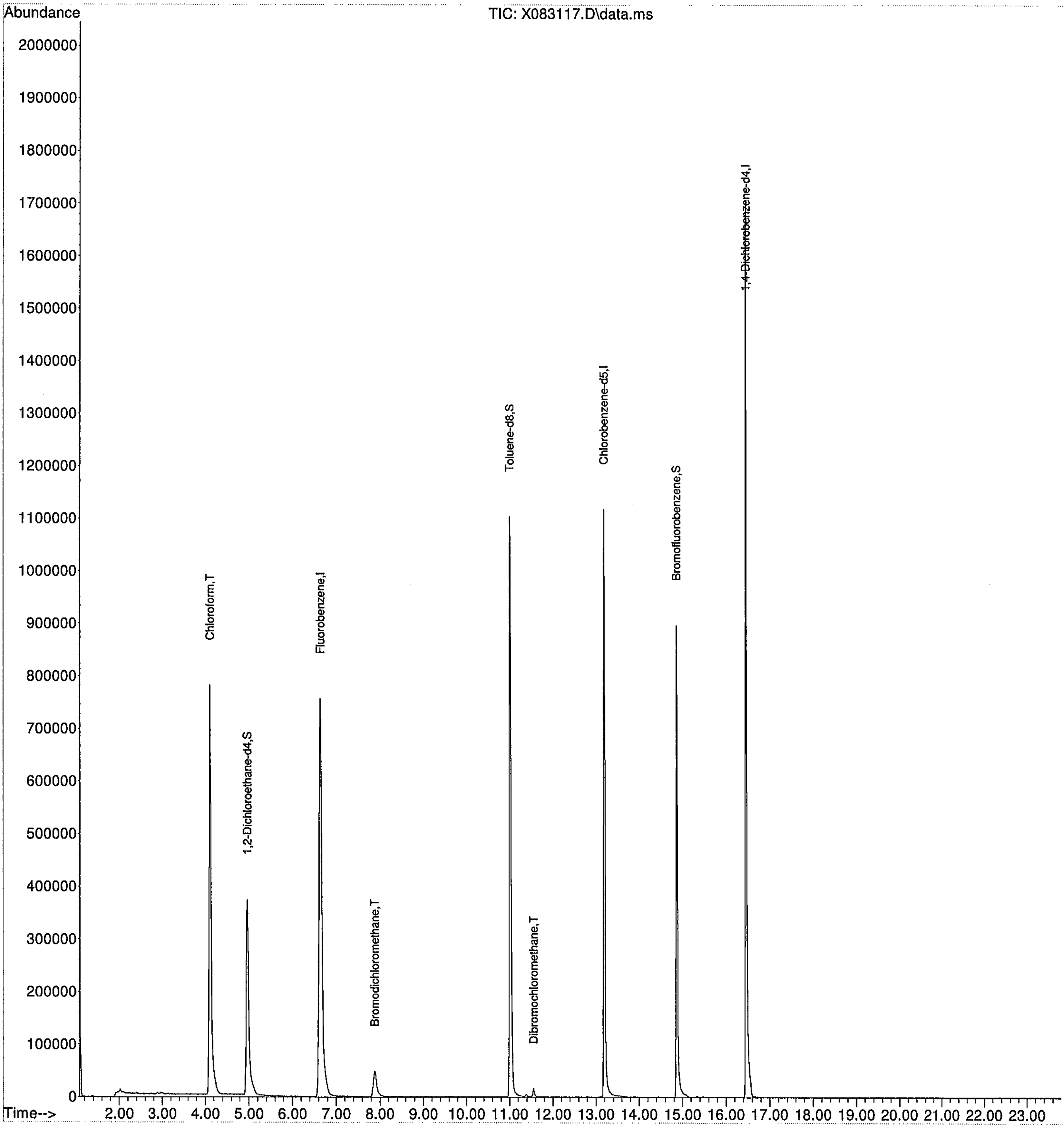
Quant Time: Aug 31 17:54:34 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

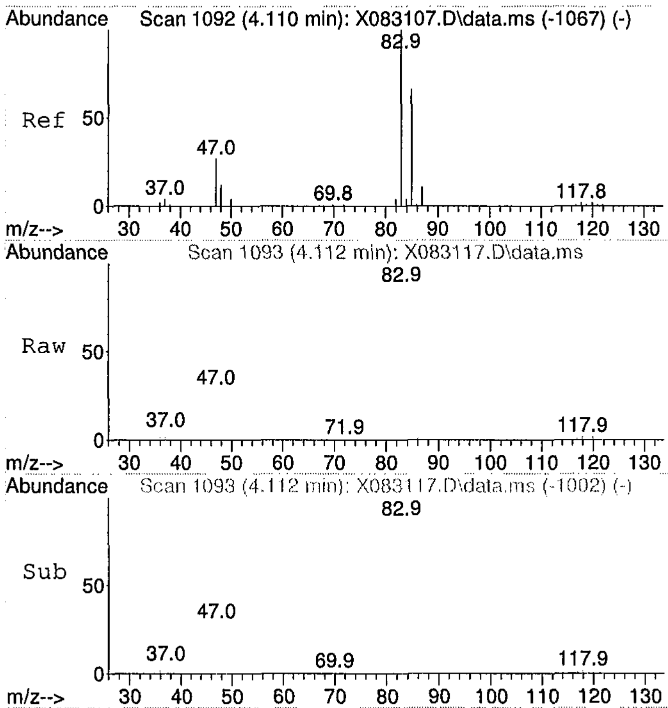
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.644	2001	1547952	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	788445	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	925615	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	521312	52.70	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	105.40%		
69) Toluene-d8	11.014	3568	1072248	50.42	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	100.84%		
82) Bromofluorobenzene	14.868	4950	361623	50.26	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	100.52%		
Target Compounds						Qvalue
35) Chloroform	4.112	1093	989026	65.77	ug/L	97
52) Bromodichloromethane	7.883	2445	77853	16.45	ug/L	92
62) Dibromochloromethane	11.555	3762	10774	6.57	ug/L	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\MS4\083118\
Data File : X083117.D
Acq On : 31 Aug 2018 4:58 pm
Operator : EA
Sample : 141881-J-1 LM=8260C BT=MS4083118A
Misc : B312BSV-RB-1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 31 17:54:34 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

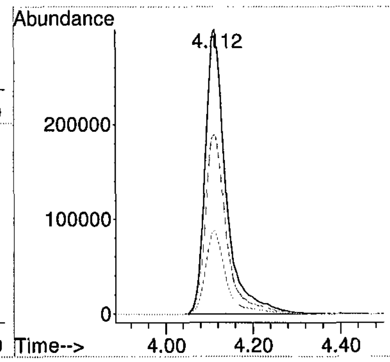


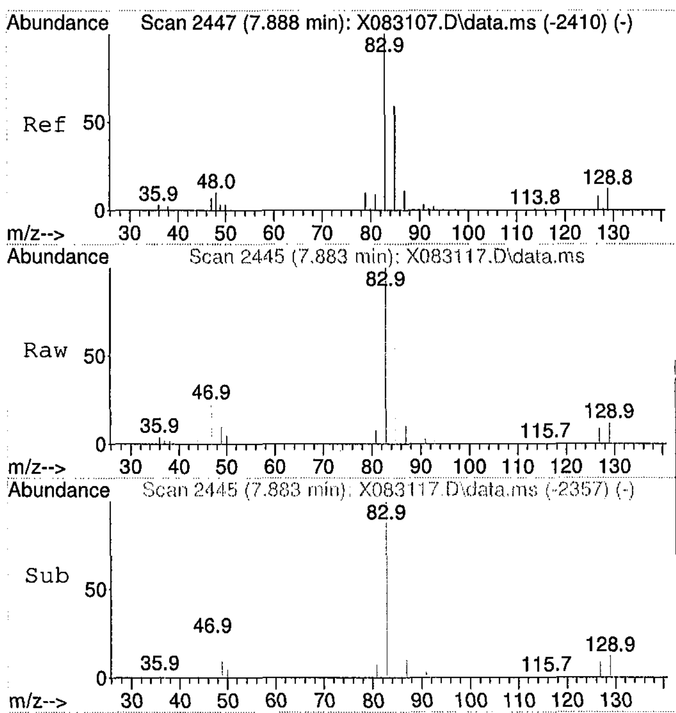


#35
Chloroform
Concen: 65.77 ug/L
RT: 4.112 min Scan# 1093
Delta R.T. 0.003 min
Lab File: X083117.D
Acq: 31 Aug 2018 4:58 pm

Tgt Ion: 83 Resp: 989026

Ion	Ratio	Lower	Upper
83	100		
85	63.1	52.9	79.3
47	29.2	24.6	36.8

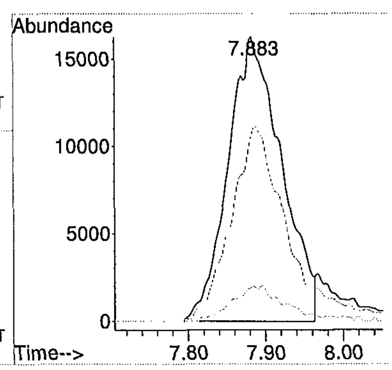


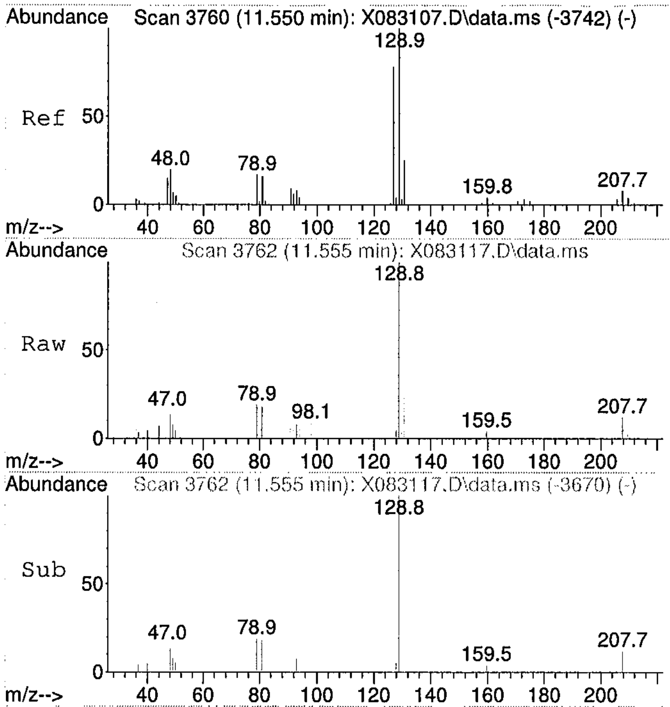


#52
Bromodichloromethane
Concen: 16.45 ug/L
RT: 7.883 min Scan# 2445
Delta R.T. -0.006 min
Lab File: X083117.D
Acq: 31 Aug 2018 4:58 pm

Tgt Ion: 83 Resp: 77853

Ion	Ratio	Lower	Upper
83	100		
85	66.1	47.0	70.6
129	12.0	9.9	14.9

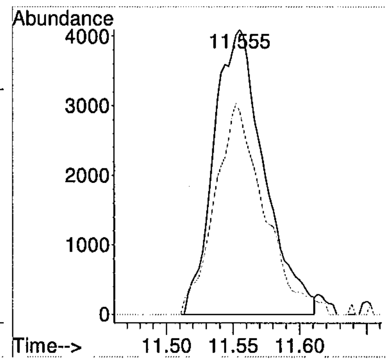




#62
Dibromochloromethane
Concen: 6.57 ug/L
RT: 11.555 min Scan# 3762
Delta R.T. 0.005 min
Lab File: X083117.D
Acq: 31 Aug 2018 4:58 pm

Tgt Ion:129 Resp: 10774

Ion	Ratio	Lower	Upper
129	100		
127	71.2	62.2	93.4



1

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample ID:	B312BSV-RB-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-1
Analysis Method:	8260C	Lab File ID:	X083117.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:58
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		
Number TICs Found:	0	TIC Total:	0

CAS No.	Compound Name	RT	Result	Q
	Tentatively Identified Compound	0.00	None	

FORM I-TIC 8260C

Data Path : C:\MS4\083118\
Data File : X083117.D
Acq On : 31 Aug 2018 4:58 pm
Operator : EA
Sample : 141881-J-1 LM=8260C BT=MS4083118A
Misc : B312BSV-RB-1
ALS Vial : 17 Sample Multiplier: 1

Integration Parameters: rteint.p
Integrator: RTE
Smoothing : ON
Sampling : 1
Start Thrs: 0.2
Stop Thrs : 0

Filtering: 5
Min Area: 3 % of largest Peak
Max Peaks: 100
Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters

Signal : TIC: X083117.D\data.ms

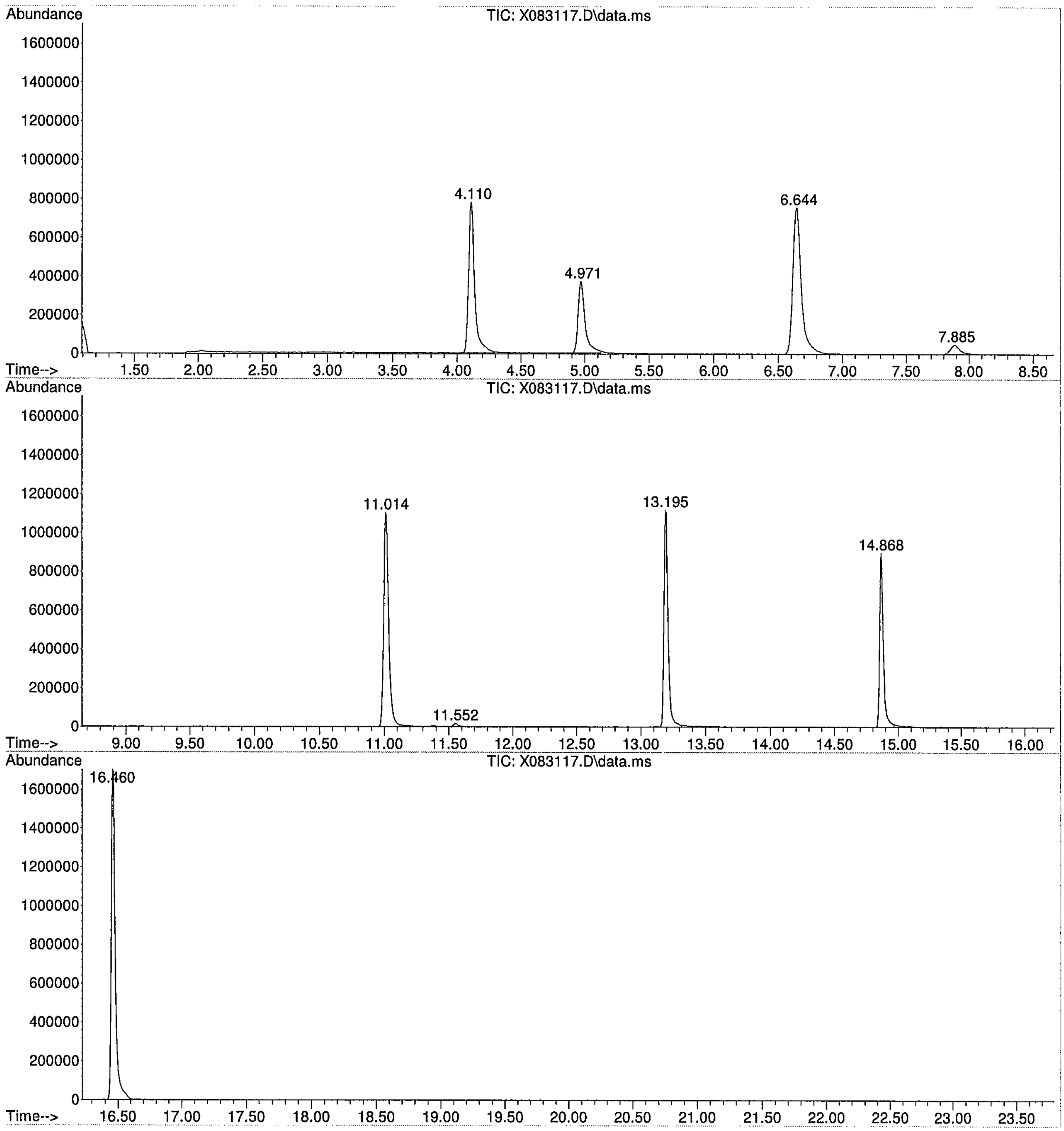
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.110	1069	1092	1158	rBV	777860	2574413	72.27%	13.940%
2	4.971	1376	1401	1456	rBV2	370418	1423874	39.97%	7.710%
3	6.644	1964	2001	2081	rBV3	756697	3469534	97.40%	18.787%
4	7.885	2417	2446	2483	rBV2	47269	232066	6.51%	1.257%
5	11.014	3545	3568	3606	rBV2	1103818	2899464	81.39%	15.700%
6	11.552	3744	3761	3774	rBV6	16131	38995	1.09%	0.211%
7	13.195	4330	4350	4393	rBV	1117549	2434902	68.35%	13.184%
8	14.868	4933	4950	4985	rBV	896608	1832465	51.44%	9.922%
9	16.460	5505	5521	5579	rBV	1703596	3562281	100.00%	19.289%

Sum of corrected areas: 18467994

Data Path : C:\MS4\083118\
Data File : X083117.D
Acq On : 31 Aug 2018 4:58 pm
Operator : EA
Sample : 141881-J-1 LM=8260C BT=MS4083118A
Misc : B312BSV-RB-1
ALS Vial : 17 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : C:\MS4\083118\
Data File : X083117.D
Acq On : 31 Aug 2018 4:58 pm
Operator : EA
Sample : 141881-J-1 LM=8260C BT=MS4083118A
Misc : B312BSV-RB-1
ALS Vial : 17 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

Data Path : C:\MS4\083118\
Data File : X083117.D
Acq On : 31 Aug 2018 4:58 pm
Operator : EA
Sample : 141881-J-1 LM=8260C BT=MS4083118A
Misc : B312BSV-RB-1
ALS Vial : 17 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	# (Internal Standard)	RT (Internal Standard)	Resp (Internal Standard)	Conc (Internal Standard)

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-RB-1 DL	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-1 DL
Analysis Method:	8260C	Lab File ID:	X090507.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/05/2018 11:47
% Moisture:		Dilution Factor:	2
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
67-66-3	Chloroform	55	D	2.0	2.0

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090507.D
Acq On : 5 Sep 2018 11:47 am
Operator : EA
Sample : 141881-I-1 DF=2 LM=8260C BT=MS4090518A
Misc : B312BSV-RB-1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Sep 05 12:22:53 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

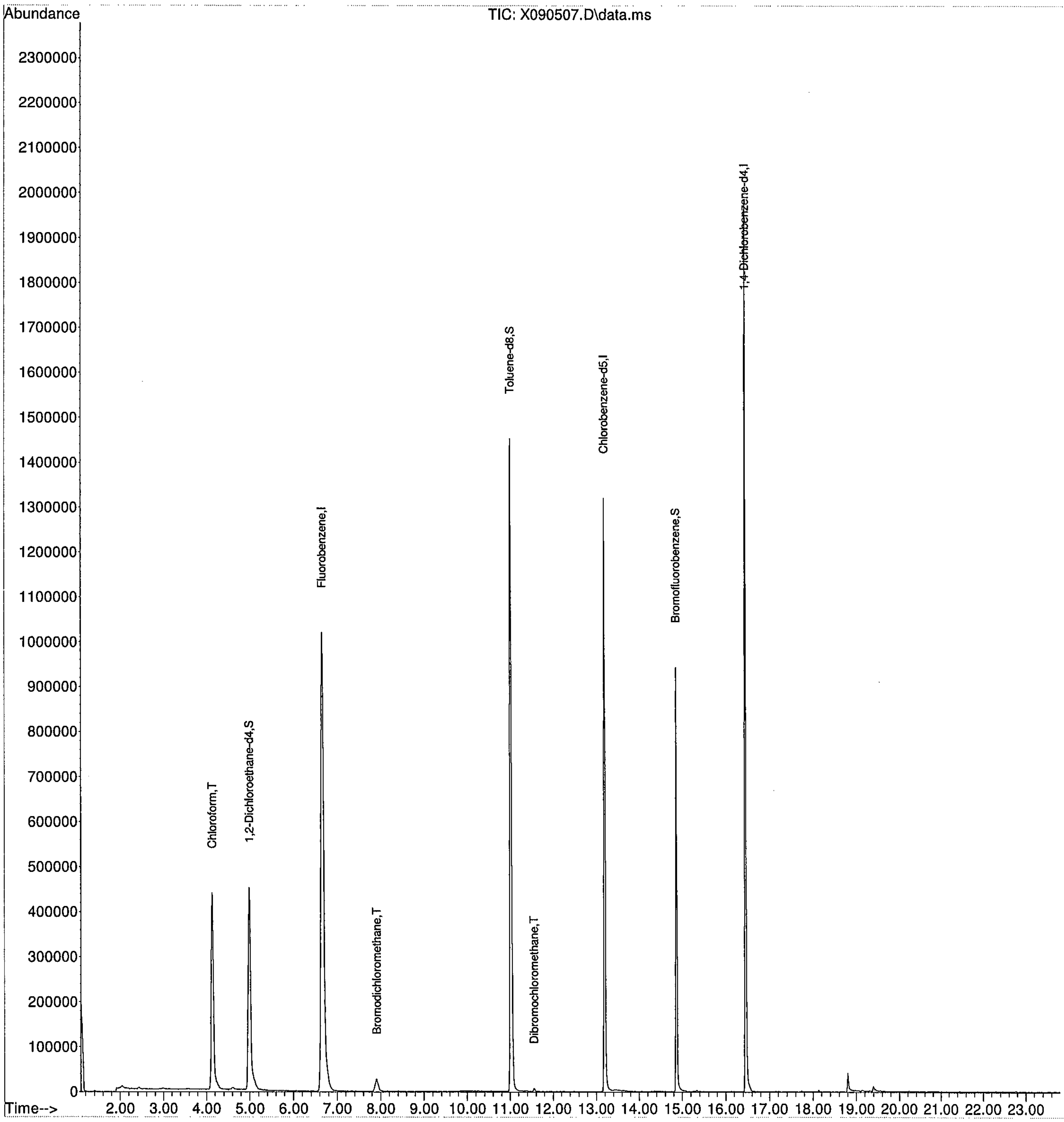
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.664	2008	2184587	50.00	ug/L	0.02
66) Chlorobenzene-d5	13.198	4351	870112	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	924607	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.996	1410	631477	45.23	ug/L	0.03
Spiked Amount 50.000	Range 77 - 117		Recovery =	90.46%		
69) Toluene-d8	11.020	3570	1385546	59.04	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	118.08%		
82) Bromofluorobenzene	14.868	4950	338701	42.66	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	85.32%		
Target Compounds						Qvalue
35) Chloroform	4.137	1102	584764	27.55	ug/L	98
52) Bromodichloromethane	7.913	2456	47954m	7.18	ug/L	
62) Dibromochloromethane	11.555	3762	5191	2.24	ug/L	93

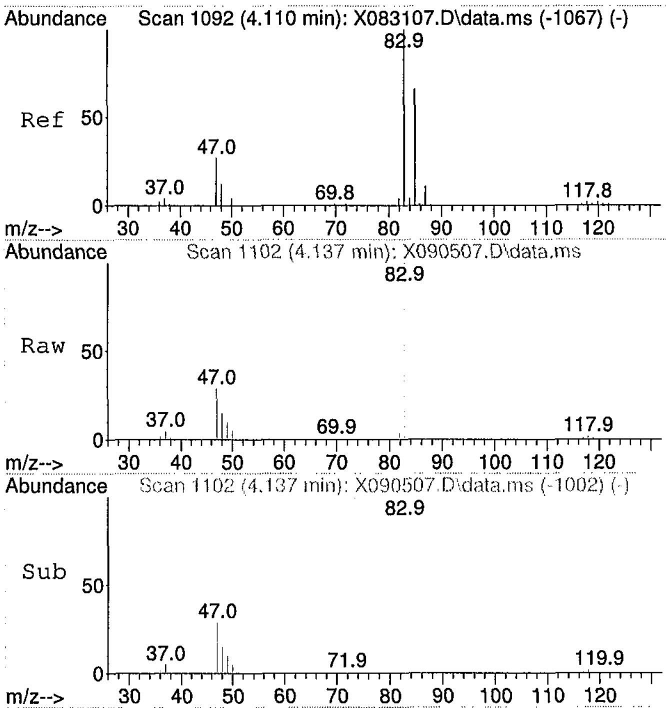
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090507.D
Acq On   : 5 Sep 2018 11:47 am
Operator : EA
Sample   : 141881-I-1 DF=2 LM=8260C BT=MS4090518A
Misc   : B312BSV-RB-1
ALS Vial : 7   Sample Multiplier: 1

Quant Time: Sep 05 12:22:53 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

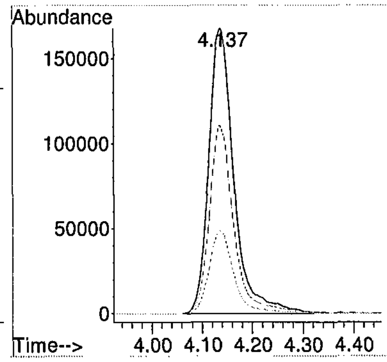


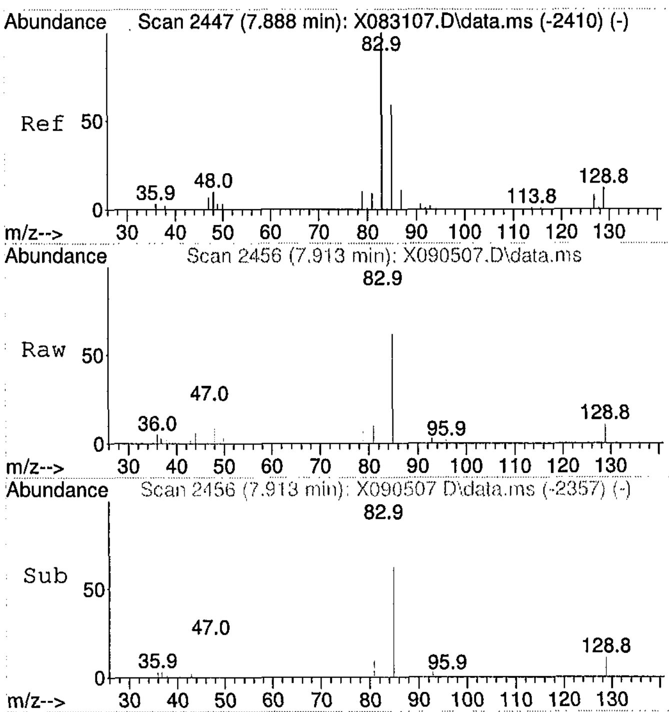


#35
Chloroform
Concen: 27.55 ug/L
RT: 4.137 min Scan# 1102
Delta R.T. 0.028 min
Lab File: X090507.D
Acq: 5 Sep 2018 11:47 am

Tgt Ion: 83 Resp: 584764

Ion	Ratio	Lower	Upper
83	100		
85	65.4	52.9	79.3
47	28.8	24.6	36.8

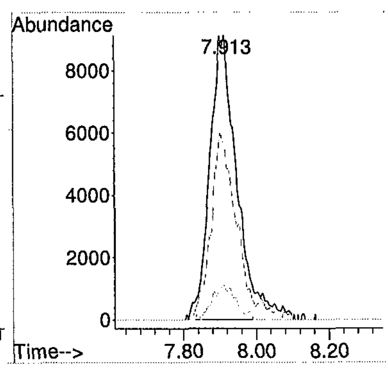


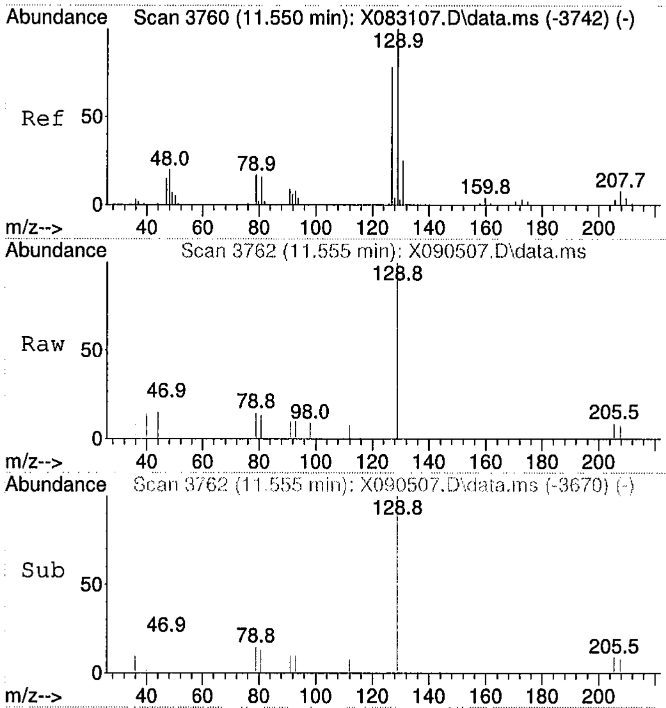


#52
Bromodichloromethane
Concen: 7.18 ug/L m
RT: 7.913 min Scan# 2456
Delta R.T. 0.025 min
Lab File: X090507.D
Acq: 5 Sep 2018 11:47 am

Tgt Ion: 83 Resp: 47954

Ion	Ratio	Lower	Upper
83	100		
85	61.8	47.0	70.6
129	11.5	9.9	14.9

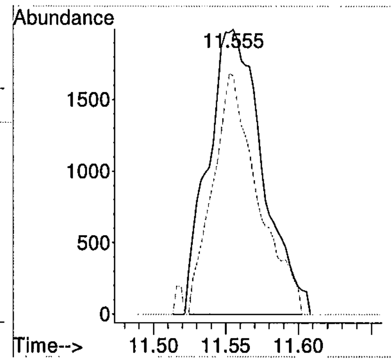




#62
Dibromochloromethane
Concen: 2.24 ug/L
RT: 11.555 min Scan# 3762
Delta R.T. 0.005 min
Lab File: X090507.D
Acq: 5 Sep 2018 11:47 am

Tgt Ion:129 Resp: 5191

Ion	Ratio	Lower	Upper
129	100		
127	83.6	62.2	93.4



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R1-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-2
Analysis Method:	8260C	Lab File ID:	X083118.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 17:30
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
67-66-3	Chloroform	48		1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	4.2		1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	12		1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R1-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-2
Analysis Method:	8260C	Lab File ID:	X083118.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 17:30
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R1-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-2
Analysis Method:	8260C	Lab File ID:	X083118.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 17:30
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Data Path : C:\MS4\083118\
Data File : X083118.D
Acq On : 31 Aug 2018 5:30 pm
Operator : EA
Sample : 141881-H-2 LM=8260C BT=MS4083118A
Misc : B312BSV=R1=1
ALS Vial : 18 Sample Multiplier: 1

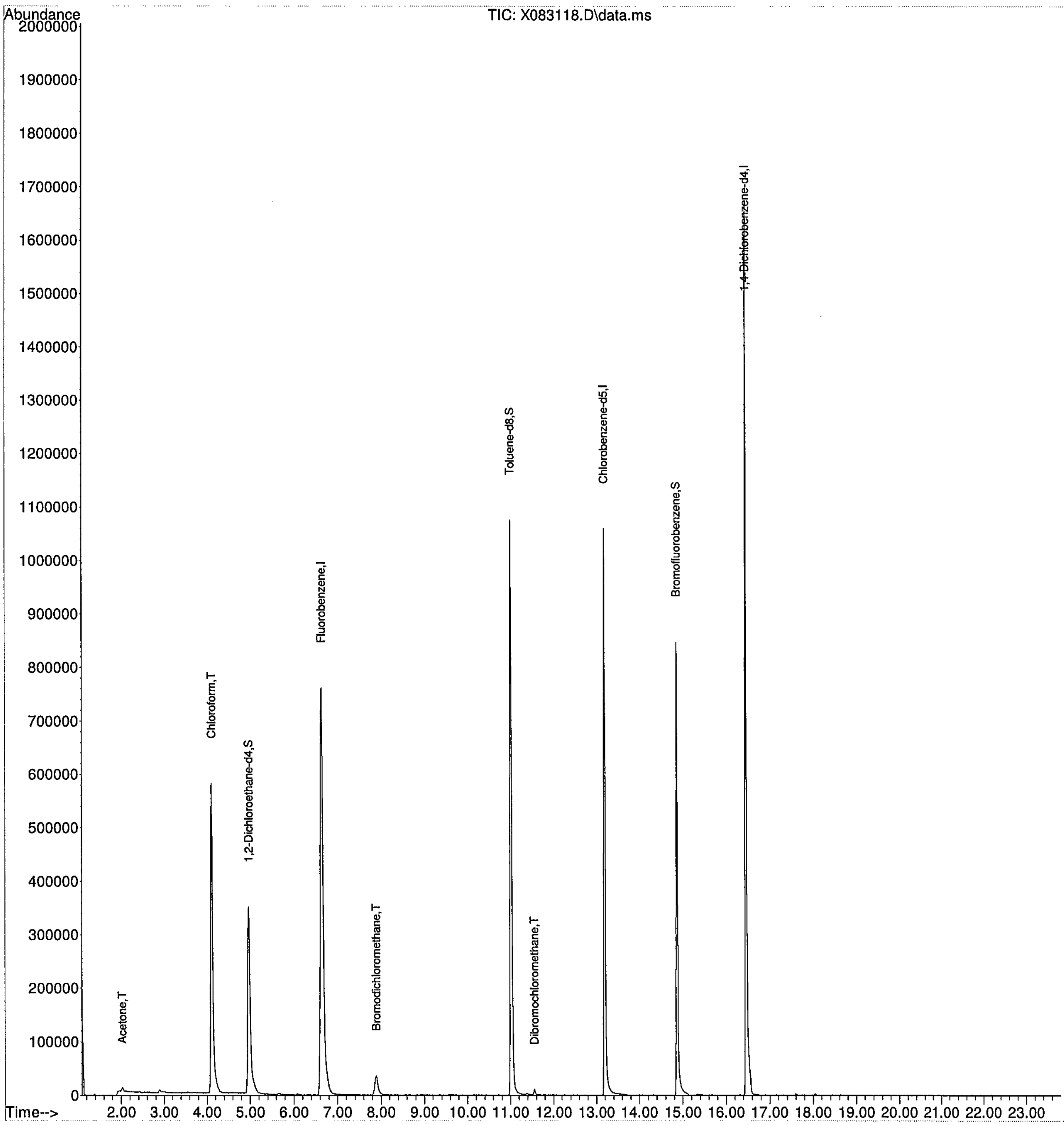
Quant Time: Sep 04 08:44:06 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

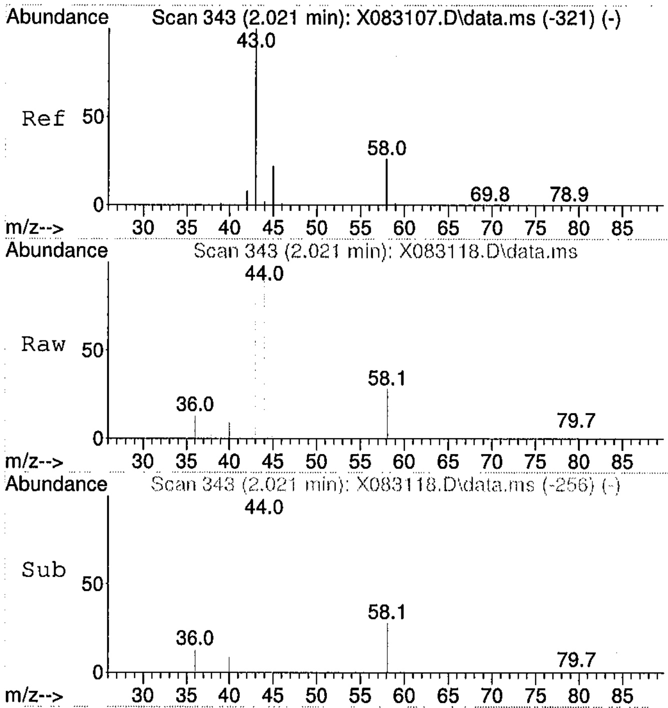
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.647	2002	1574081	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	750336	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.463	5522	896151	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.974	1402	494656	49.17	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery	=	98.34%	
69) Toluene-d8	11.014	3568	1051661	51.97	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery	=	103.94%	
82) Bromofluorobenzene	14.868	4950	345646	50.48	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery	=	100.96%	
Target Compounds						Qvalue
14) Acetone	2.021	343	3776m	3.91	ug/L	
35) Chloroform	4.115	1094	741622	48.50	ug/L	97
52) Bromodichloromethane	7.891	2448	58745	12.21	ug/L	94
62) Dibromochloromethane	11.558	3763	6969	4.18	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

```
Data Path : C:\MS4\083118\
Data File : X083118.D
Acq On    : 31 Aug 2018   5:30 pm
Operator  : EA
Sample    : 141881-H-2  LM=8260C  BT=MS4083118A
Misc      : B312BSV=R1=1
ALS Vial  : 18   Sample Multiplier: 1

Quant Time: Sep 04 08:44:06 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration
```

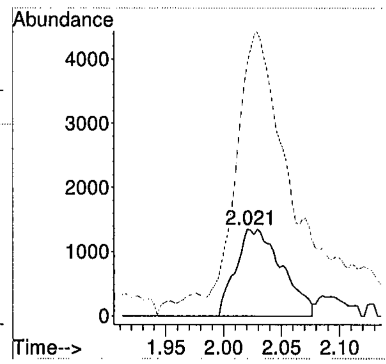


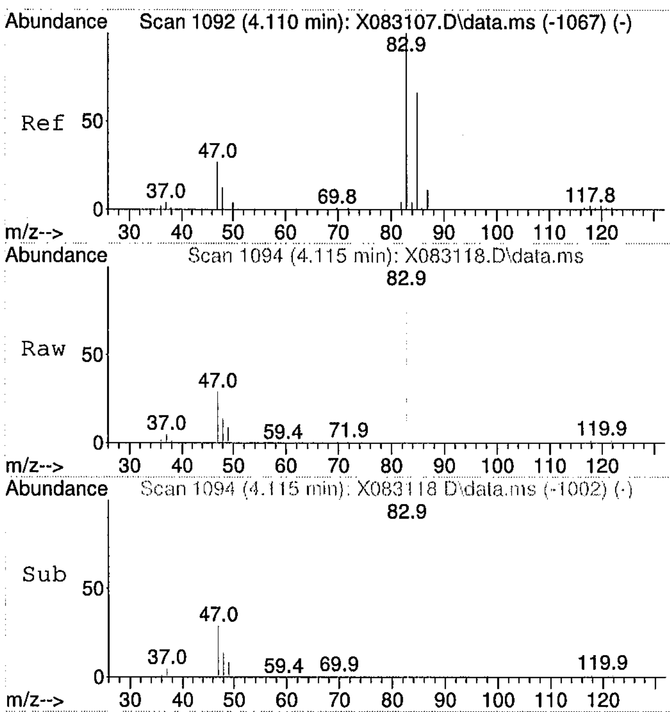


#14
Acetone
Concen: 3.91 ug/L m
RT: 2.021 min Scan# 343
Delta R.T. -0.000 min
Lab File: X083118.D
Acq: 31 Aug 2018 5:30 pm

Tgt Ion: 58 Resp: 3776

Ion	Ratio	Lower	Upper
58	100		
43	290.0	306.4	459.6#

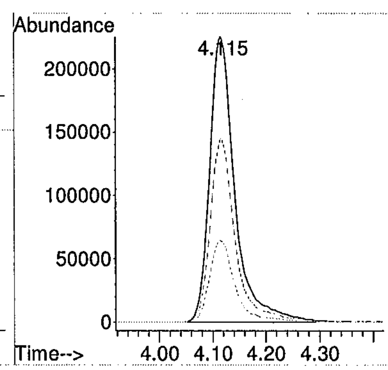


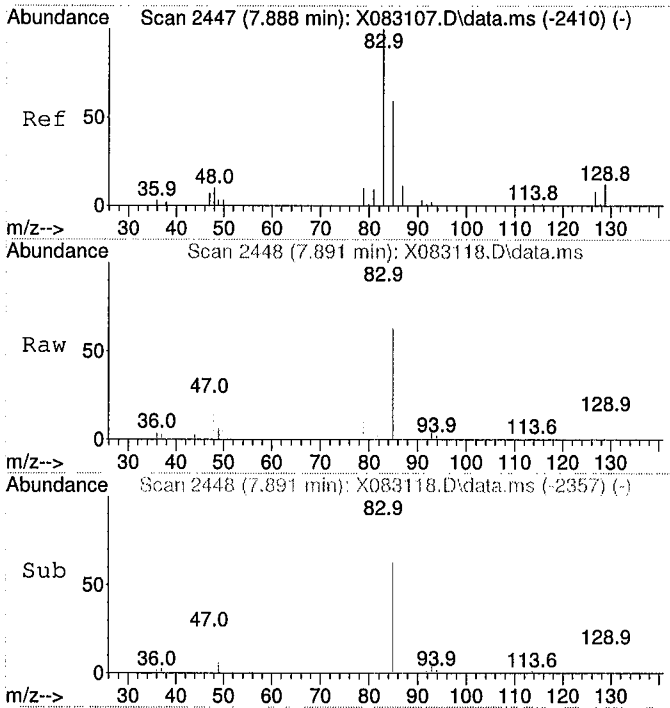


#35
Chloroform
Concen: 48.50 ug/L
RT: 4.115 min Scan# 1094
Delta R.T. 0.005 min
Lab File: X083118.D
Acq: 31 Aug 2018 5:30 pm

Tgt Ion: 83 Resp: 741622

Ion	Ratio	Lower	Upper
83	100		
85	64.1	52.9	79.3
47	28.6	24.6	36.8

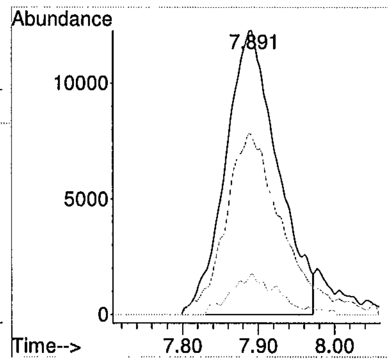


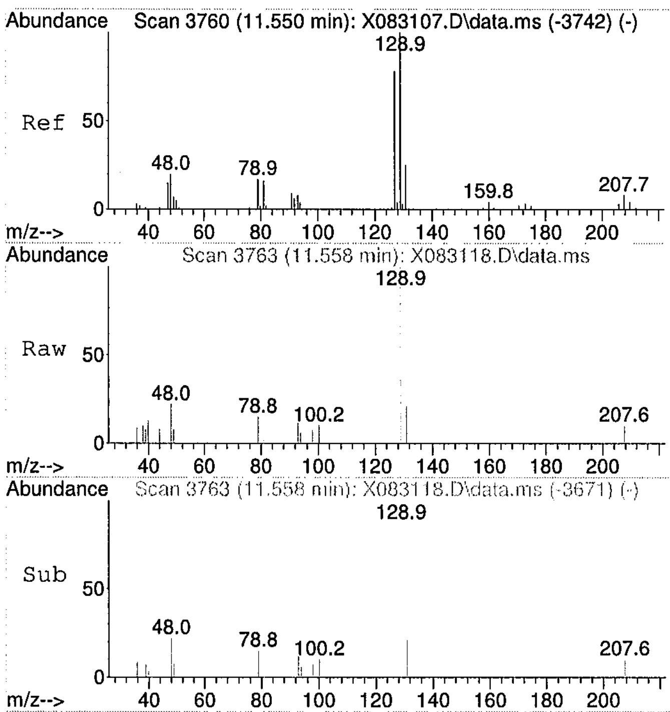


#52
Bromodichloromethane
Concen: 12.21 ug/L
RT: 7.891 min Scan# 2448
Delta R.T. 0.003 min
Lab File: X083118.D
Acq: 31 Aug 2018 5:30 pm

Tgt Ion: 83 Resp: 58745

Ion	Ratio	Lower	Upper
83	100		
85	63.2	47.0	70.6
129	14.4	9.9	14.9

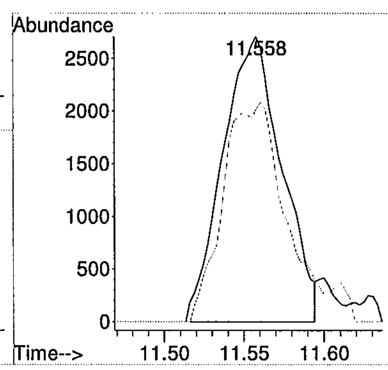




#62
Dibromochloromethane
Concen: 4.18 ug/L
RT: 11.558 min Scan# 3763
Delta R.T. 0.008 min
Lab File: X083118.D
Acq: 31 Aug 2018 5:30 pm

Tgt Ion:129 Resp: 6969

Ion	Ratio	Lower	Upper
129	100		
127	74.5	62.2	93.4



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample ID:	B312BSV-R1-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-2
Analysis Method:	8260C	Lab File ID:	X083118.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 17:30
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		
Number TICs Found:	0	TIC Total:	0

CAS No.	Compound Name	RT	Result	Q
	Tentatively Identified Compound	0.00	None	

FORM I-TIC 8260C

LSC Area Percent Report

Data Path : C:\MS4\083118\
Data File : X083118.D
Acq On : 31 Aug 2018 5:30 pm
Operator : EA
Sample : 141881-H-2 LM=8260C BT=MS4083118A
Misc : B312BSV=R1=1
ALS Vial : 18 Sample Multiplier: 1

Integration Parameters: rteint.p
Integrator: RTE
Smoothing : ON
Sampling : 1
Start Thrs: 0.2
Stop Thrs : 0

Filtering: 5
Min Area: 3 % of largest Peak
Max Peaks: 100
Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters

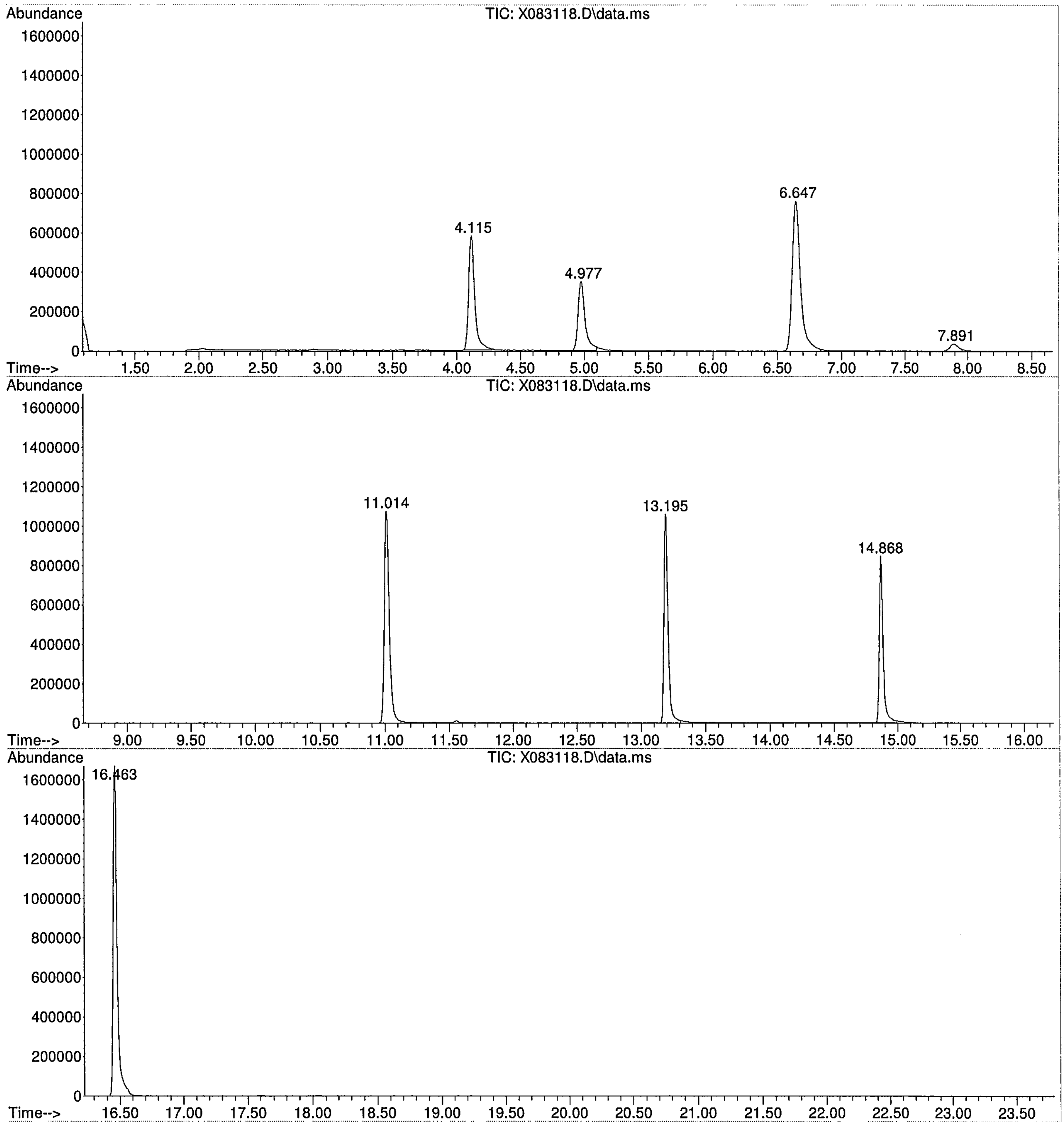
Signal : TIC: X083118.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.115	1071	1094	1152	rBV2	577782	1901765	54.16%	11.022%
2	4.977	1378	1403	1446	rBV3	347324	1326896	37.79%	7.690%
3	6.647	1965	2002	2070	rBV	760961	3430100	97.68%	19.879%
4	7.891	2414	2448	2472	rBV4	35862	171640	4.89%	0.995%
5	11.014	3546	3568	3607	rBV	1075488	2837640	80.81%	16.445%
6	13.195	4332	4350	4391	rBV	1059334	2306625	65.69%	13.368%
7	14.868	4931	4950	4994	rBV	847613	1768715	50.37%	10.251%
8	16.463	5504	5522	5572	rBV	1670721	3511507	100.00%	20.351%

Sum of corrected areas: 17254888

LSC Report - Integrated Chromatogram

```
Data Path : C:\MS4\083118\
Data File : X083118.D
Acq On    : 31 Aug 2018   5:30 pm
Operator  : EA
Sample    : 141881-H-2  LM=8260C  BT=MS4083118A
Misc      : B312BSV=R1=1
ALS Vial  : 18   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P
```



Library Search Compound Report

```
Data Path : C:\MS4\083118\
Data File : X083118.D
Acq On    : 31 Aug 2018   5:30 pm
Operator  : EA
Sample    : 141881-H-2  LM=8260C  BT=MS4083118A
Misc      : B312BSV=R1=1
ALS Vial  : 18   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P
```

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

```
Data Path : C:\MS4\083118\
Data File : X083118.D
Acq On    : 31 Aug 2018   5:30 pm
Operator  : EA
Sample    : 141881-H-2  LM=8260C  BT=MS4083118A
Misc      : B312BSV=R1=1
ALS Vial  : 18   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

                                                   |--Internal Standard---|
TIC Top Hit name       RT  EstConc Units Response |#     RT      Resp  Conc|
----------------------------------------------------------------------------
```

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R2-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-3
Analysis Method:	8260C	Lab File ID:	X083119.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:02
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	5.2		1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	14		1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R2-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-3
Analysis Method:	8260C	Lab File ID:	X083119.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:02
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R2-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-3
Analysis Method:	8260C	~~Lab File ID:~~	~~X083119.D~~
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:02
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083119.D
Acq On : 31 Aug 2018 6:02 pm
Operator : EA
Sample : 141881-H-3 LM=8260C BT=MS4083118A
Misc : B312BSV=R2=1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Sep 04 08:48:11 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

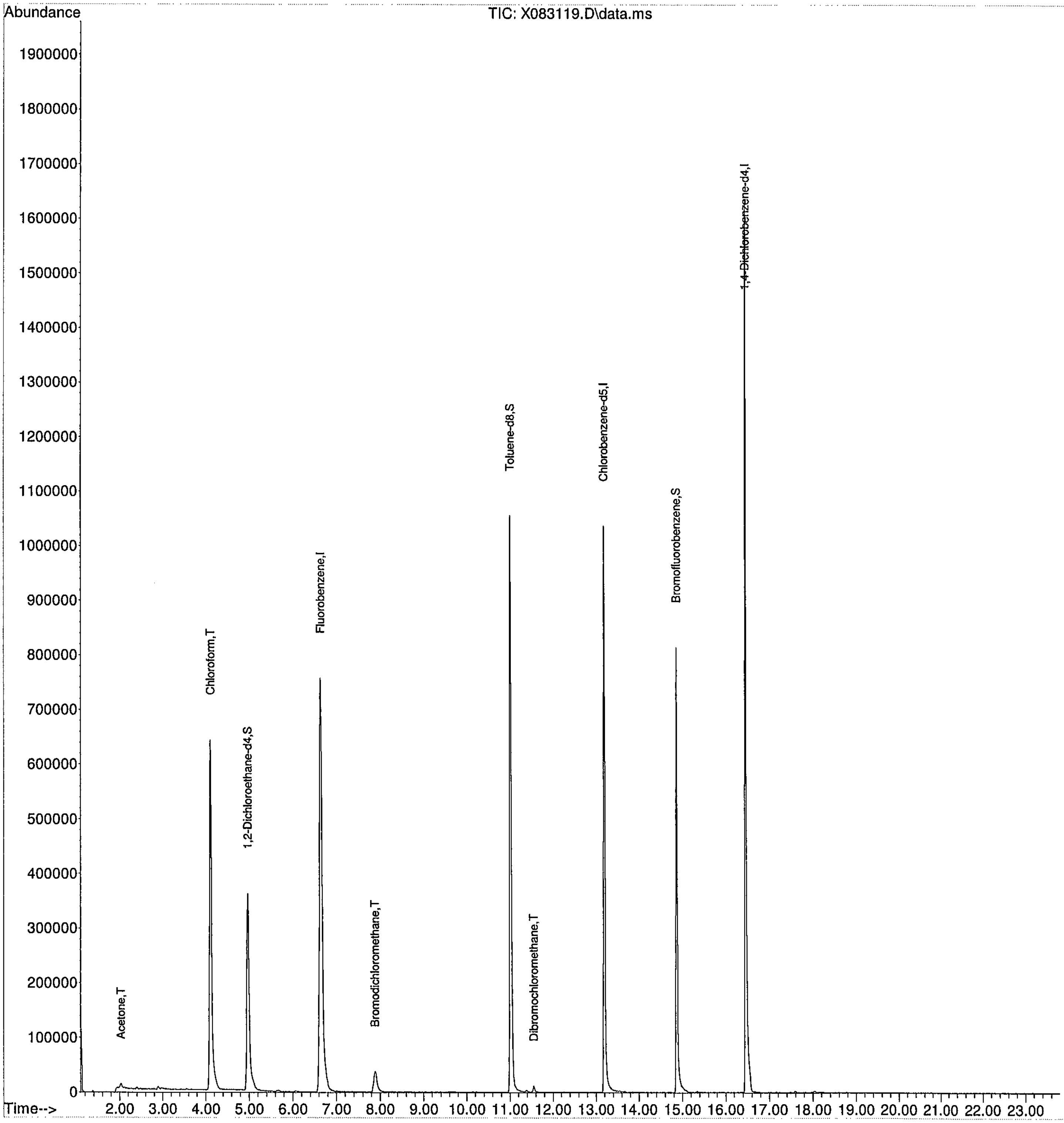
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.644	2001	1579352	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	733440	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	865007	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	505227	50.06	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	100.12%		
69) Toluene-d8	11.017	3569	1016567	51.39	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	102.78%		
82) Bromofluorobenzene	14.868	4950	327100	48.87	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	97.74%		
Target Compounds						Qvalue
14) Acetone	2.029	346	4394	4.53	ug/L	81
35) Chloroform	4.115	1094	819559	53.42	ug/L	98
52) Bromodichloromethane	7.883	2445	67043	13.89	ug/L	91
62) Dibromochloromethane	11.555	3762	8655	5.17	ug/L #	80

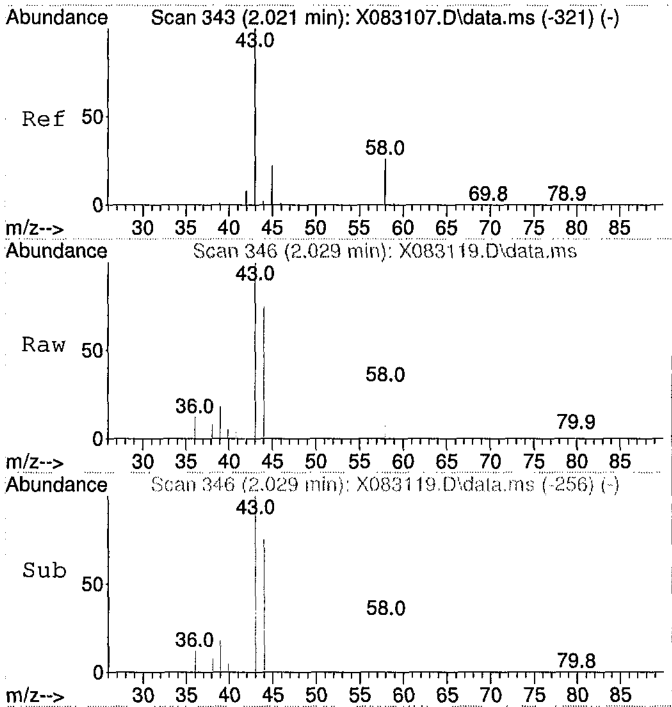
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083119.D
Acq On : 31 Aug 2018 6:02 pm
Operator : EA
Sample : 141881-H-3 LM=8260C BT=MS4083118A
Misc : B312BSV=R2=1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Sep 04 08:48:11 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

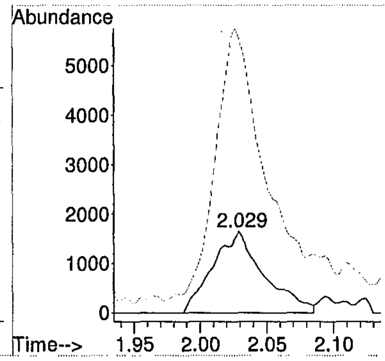


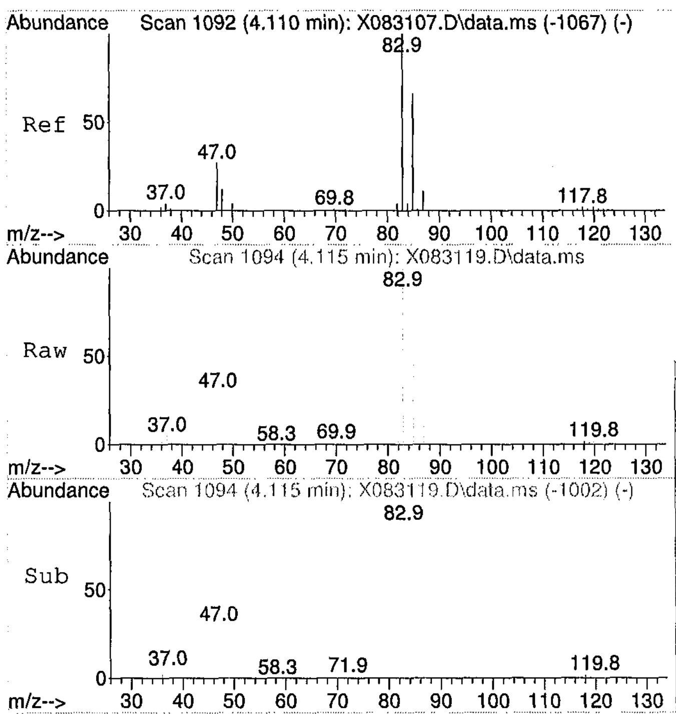


#14
Acetone
Concen: 4.53 ug/L
RT: 2.029 min Scan# 346
Delta R.T. 0.008 min
Lab File: X083119.D
Acq: 31 Aug 2018 6:02 pm

Tgt Ion: 58 Resp: 4394

Ion	Ratio	Lower	Upper
58	100		
43	338.3	306.4	459.6

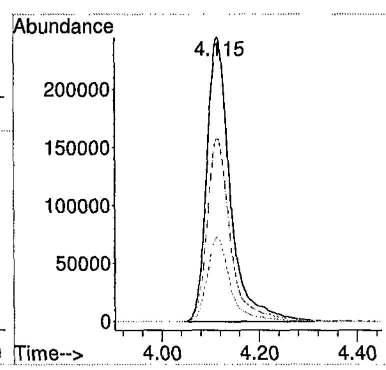


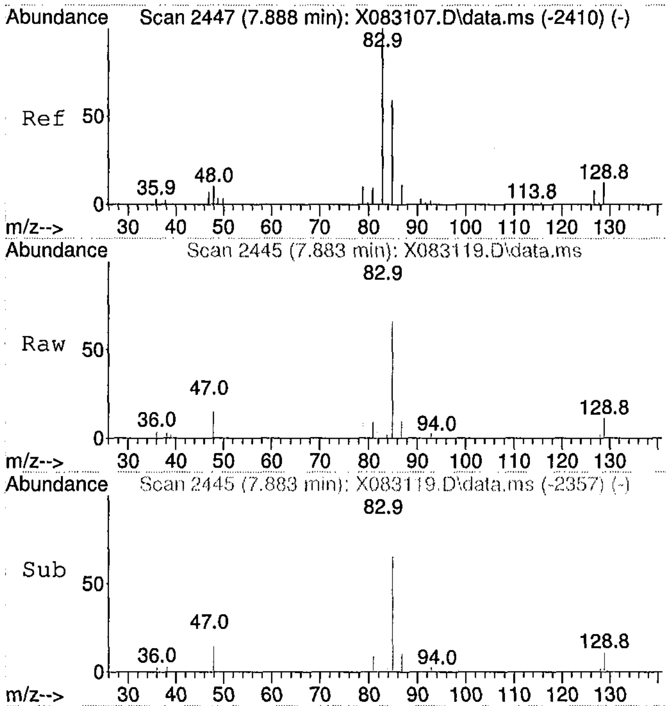


#35
Chloroform
Concen: 53.42 ug/L
RT: 4.115 min Scan# 1094
Delta R.T. 0.006 min
Lab File: X083119.D
Acq: 31 Aug 2018 6:02 pm

Tgt Ion: 83 Resp: 819559

Ion	Ratio	Lower	Upper
83	100		
85	64.3	52.9	79.3
47	29.7	24.6	36.8

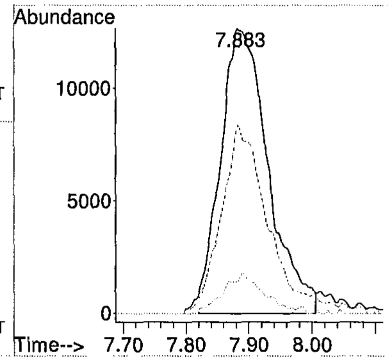


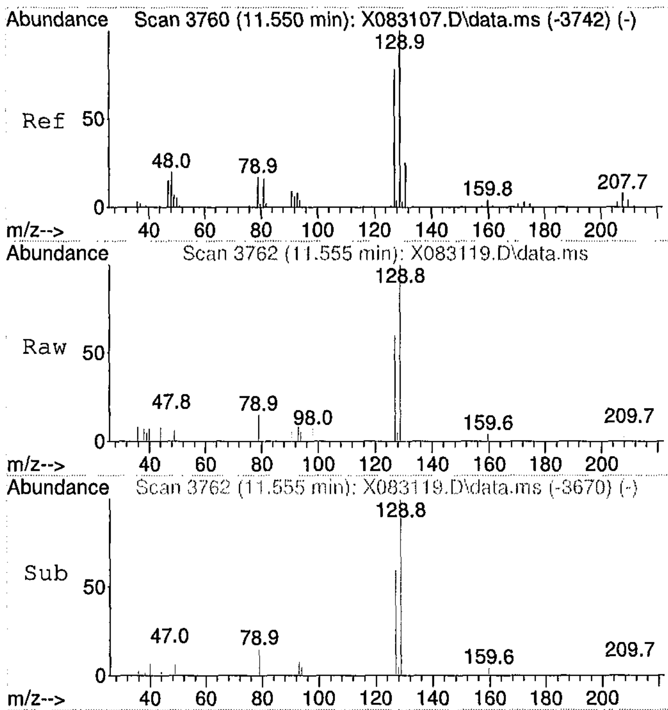


#52
Bromodichloromethane
Concen: 13.89 ug/L
RT: 7.883 min Scan# 2445
Delta R.T. -0.006 min
Lab File: X083119.D
Acq: 31 Aug 2018 6:02 pm

Tgt Ion: 83 Resp: 67043

Ion	Ratio	Lower	Upper
83	100		
85	66.2	47.0	70.6
129	11.2	9.9	14.9

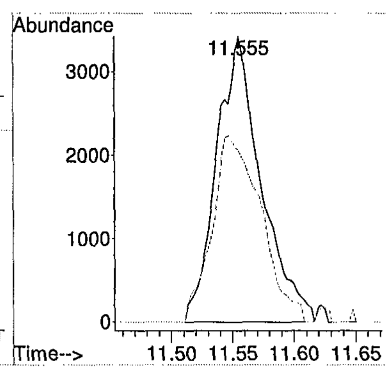




#62
Dibromochloromethane
Concen: 5.17 ug/L
RT: 11.555 min Scan# 3762
Delta R.T. 0.005 min
Lab File: X083119.D
Acq: 31 Aug 2018 6:02 pm

Tgt Ion:129 Resp: 8655

Ion	Ratio	Lower	Upper
129	100		
127	60.1	62.2	93.4#



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample ID:	B312BSV-R2-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-3
Analysis Method:	8260C	Lab File ID:	X083119.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:02
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		
Number TICs Found:	0	TIC Total:	0

CAS No.	Compound Name	RT	Result	Q
	Tentatively Identified Compound	0.00	None	

FORM I-TIC 8260C

Data Path : C:\MS4\083118\
Data File : X083119.D
Acq On : 31 Aug 2018 6:02 pm
Operator : EA
Sample : 141881-H-3 LM=8260C BT=MS4083118A
Misc : B312BSV=R2=1
ALS Vial : 19 Sample Multiplier: 1

Integration Parameters: rteint.p
Integrator: RTE
Smoothing : ON
Sampling : 1
Start Thrs: 0.2
Stop Thrs : 0

Filtering: 5
Min Area: 3 % of largest Peak
Max Peaks: 100
Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters

Signal : TIC: X083119.D\data.ms

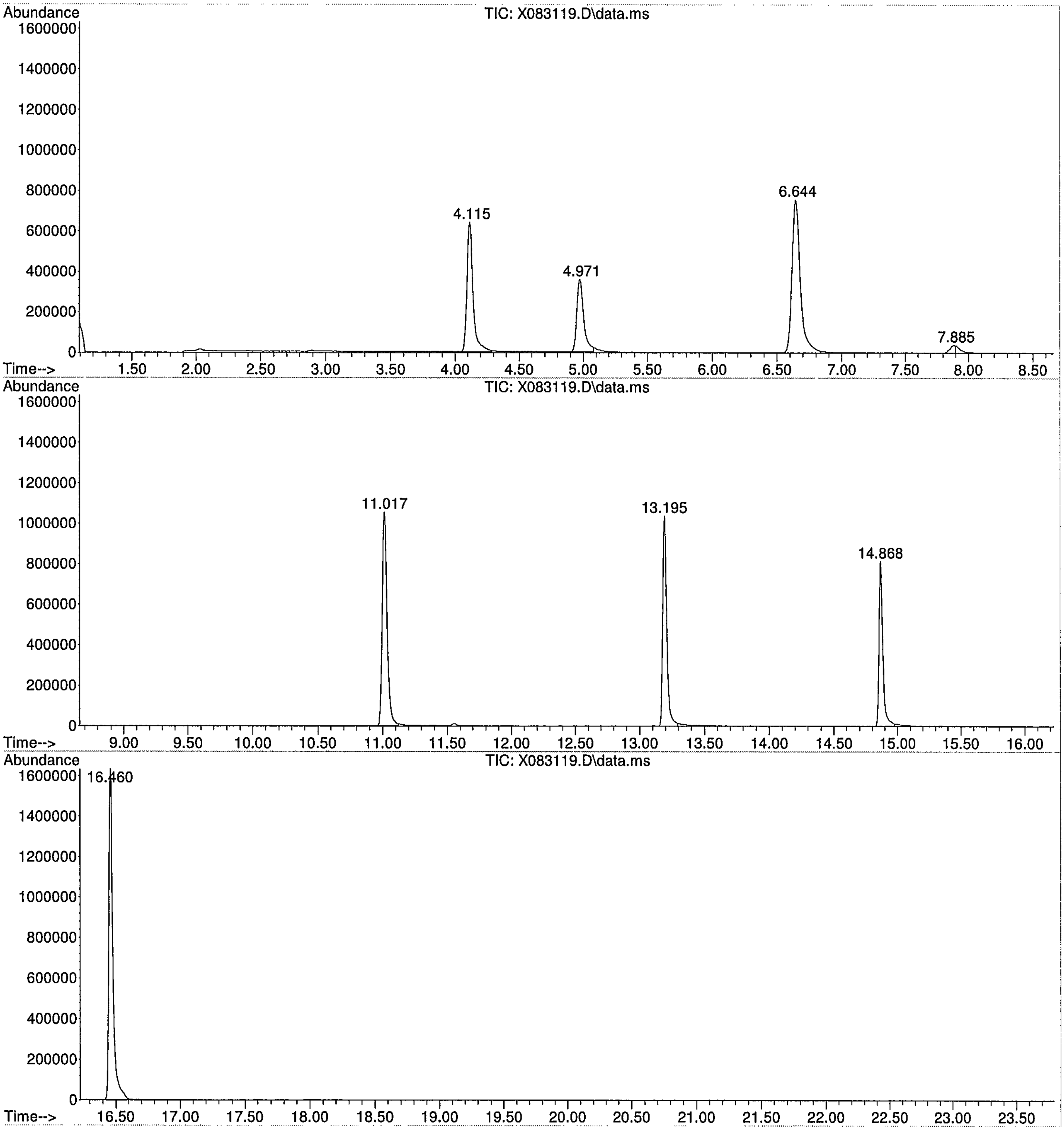
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.115	1069	1094	1155	rBV	640972	2145297	62.46%	12.538%
2	4.971	1377	1401	1440	rBV	358589	1338785	38.98%	7.824%
3	6.644	1964	2001	2070	rBV	757252	3434544	100.00%	20.073%
4	7.885	2419	2446	2450	rBV3	36679	102739	2.99%	0.600%
5	11.017	3542	3569	3606	rBV	1055691	2766214	80.54%	16.167%
6	13.195	4332	4350	4386	rBV	1036598	2251141	65.54%	13.157%
7	14.868	4931	4950	4988	rBV	814409	1682945	49.00%	9.836%
8	16.460	5504	5521	5574	rBV	1633054	3388627	98.66%	19.805%

Sum of corrected areas: 17110292

Data Path : C:\MS4\083118\
Data File : X083119.D
Acq On : 31 Aug 2018 6:02 pm
Operator : EA
Sample : 141881-H-3 LM=8260C BT=MS4083118A
Misc : B312BSV=R2=1
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

```
Data Path : C:\MS4\083118\
Data File : X083119.D
Acq On    : 31 Aug 2018   6:02 pm
Operator  : EA
Sample    : 141881-H-3  LM=8260C  BT=MS4083118A
Misc      : B312BSV=R2=1
ALS Vial  : 19   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P
```

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

```
Data Path : C:\MS4\083118\
Data File : X083119.D
Acq On    : 31 Aug 2018   6:02 pm
Operator  : EA
Sample    : 141881-H-3  LM=8260C  BT=MS4083118A
Misc      : B312BSV=R2=1
ALS Vial  : 19   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P
```

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	B312BSV-R2-1 DL	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-3 DL
Analysis Method:	8260C	Lab File ID:	X090508.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/05/2018 12:19
% Moisture:		Dilution Factor:	2
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
67-66-3	Chloroform	44	D	2.0	2.0

FORM I 8260C

Data Path : C:\MS4\090518\
Data File : X090508.D
Acq On : 5 Sep 2018 12:19 pm
Operator : EA
Sample : 141881-G-3 DF=2 LM=8260C BT=MS4090518A
Misc : B312BSV-R2-1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 05 12:47:36 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

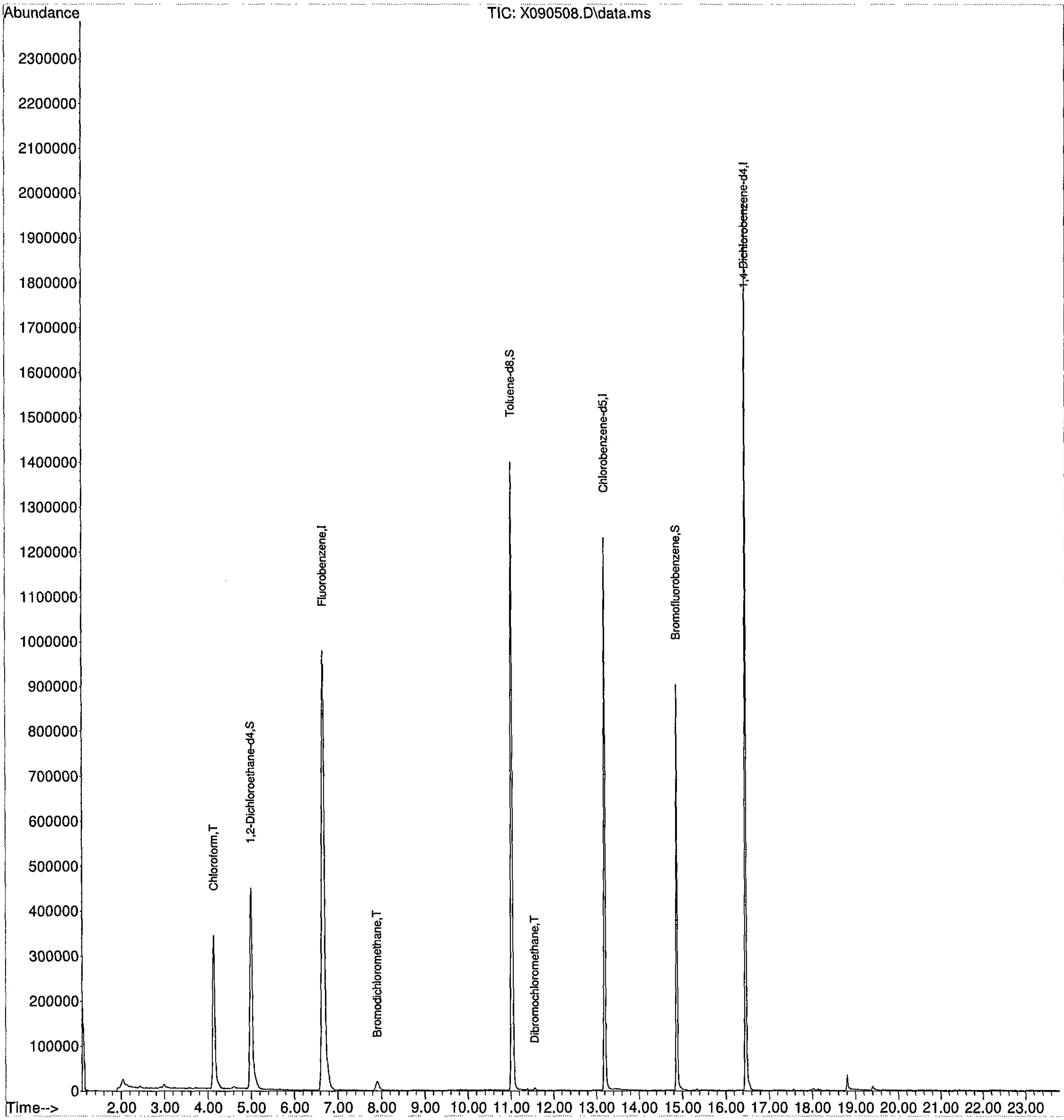
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.664	2008	2102437	50.00	ug/L	0.02
66) Chlorobenzene-d5	13.198	4351	827801	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	902961	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.994	1409	644999	48.00	ug/L	0.02
Spiked Amount 50.000	Range 77 - 117		Recovery =	96.00%		
69) Toluene-d8	11.020	3570	1327718	59.47	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	118.94%		
82) Bromofluorobenzene	14.868	4950	320326	42.41	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	84.82%		
Target Compounds						Qvalue
35) Chloroform	4.135	1101	453519	22.20	ug/L	99
52) Bromodichloromethane	7.897	2450	35132	5.47	ug/L #	95
62) Dibromochloromethane	11.552	3761	4159	1.87	ug/L	97

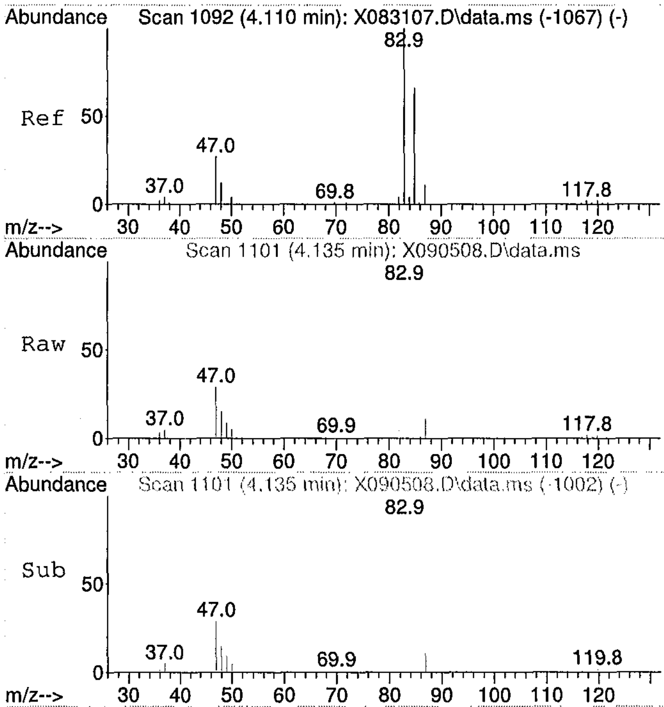
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090508.D
Acq On : 5 Sep 2018 12:19 pm
Operator : EA
Sample : 141881-G-3 DF=2 LM=8260C BT=MS4090518A
Misc : B312BSV-R2-1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 05 12:47:36 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

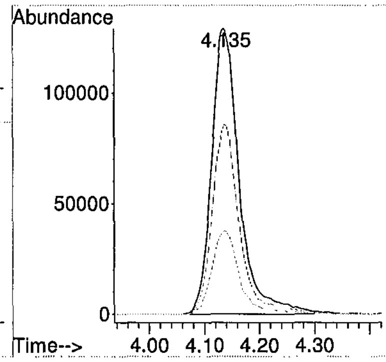


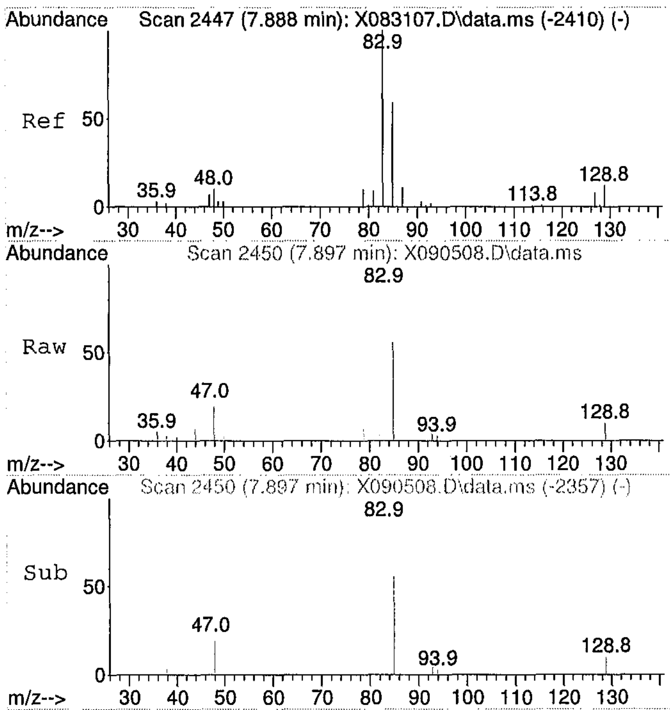


#35
Chloroform
Concen: 22.20 ug/L
RT: 4.135 min Scan# 1101
Delta R.T. 0.025 min
Lab File: X090508.D
Acq: 5 Sep 2018 12:19 pm

Tgt Ion: 83 Resp: 453519

Ion	Ratio	Lower	Upper
83	100		
85	65.5	52.9	79.3
47	29.0	24.6	36.8

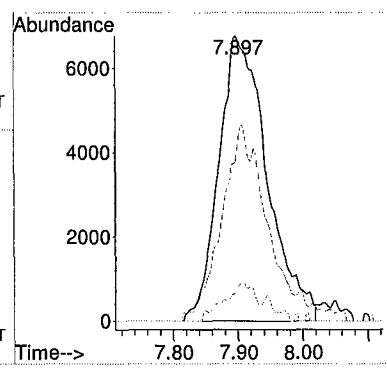


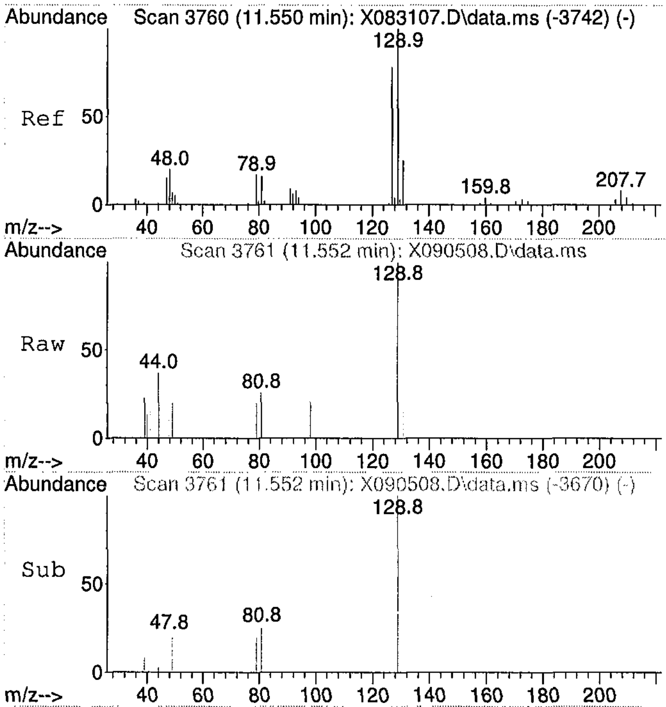


#52
Bromodichloromethane
Concen: 5.47 ug/L
RT: 7.897 min Scan# 2450
Delta R.T. 0.008 min
Lab File: X090508.D
Acq: 5 Sep 2018 12:19 pm

Tgt Ion: 83 Resp: 35132

Ion	Ratio	Lower	Upper
83	100		
85	55.6	47.0	70.6
129	9.9	9.9	14.9#

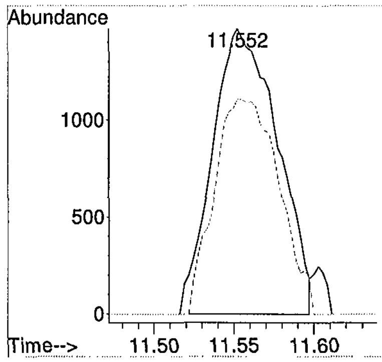




#62
Dibromochloromethane
Concen: 1.87 ug/L
RT: 11.552 min Scan# 3761
Delta R.T. 0.002 min
Lab File: X090508.D
Acq: 5 Sep 2018 12:19 pm

Tgt Ion:129 Resp: 4159

Ion	Ratio	Lower	Upper
129	100		
127	75.4	62.2	93.4



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	DUP083018	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4
Analysis Method:	8260C	Lab File ID:	X083120.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:34
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	4.9		1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	14		1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	DUP083018	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4
Analysis Method:	8260C	Lab File ID:	X083120.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:34
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	DUP083018	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4
Analysis Method:	8260C	Lab File ID:	X083120.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:34
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Data Path : C:\MS4\083118\
Data File : X083120.D
Acq On : 31 Aug 2018 6:34 pm
Operator : EA
Sample : 141881-H-4 LM=8260C BT=MS4083118A
Misc : DUP083018
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 04 09:08:45 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

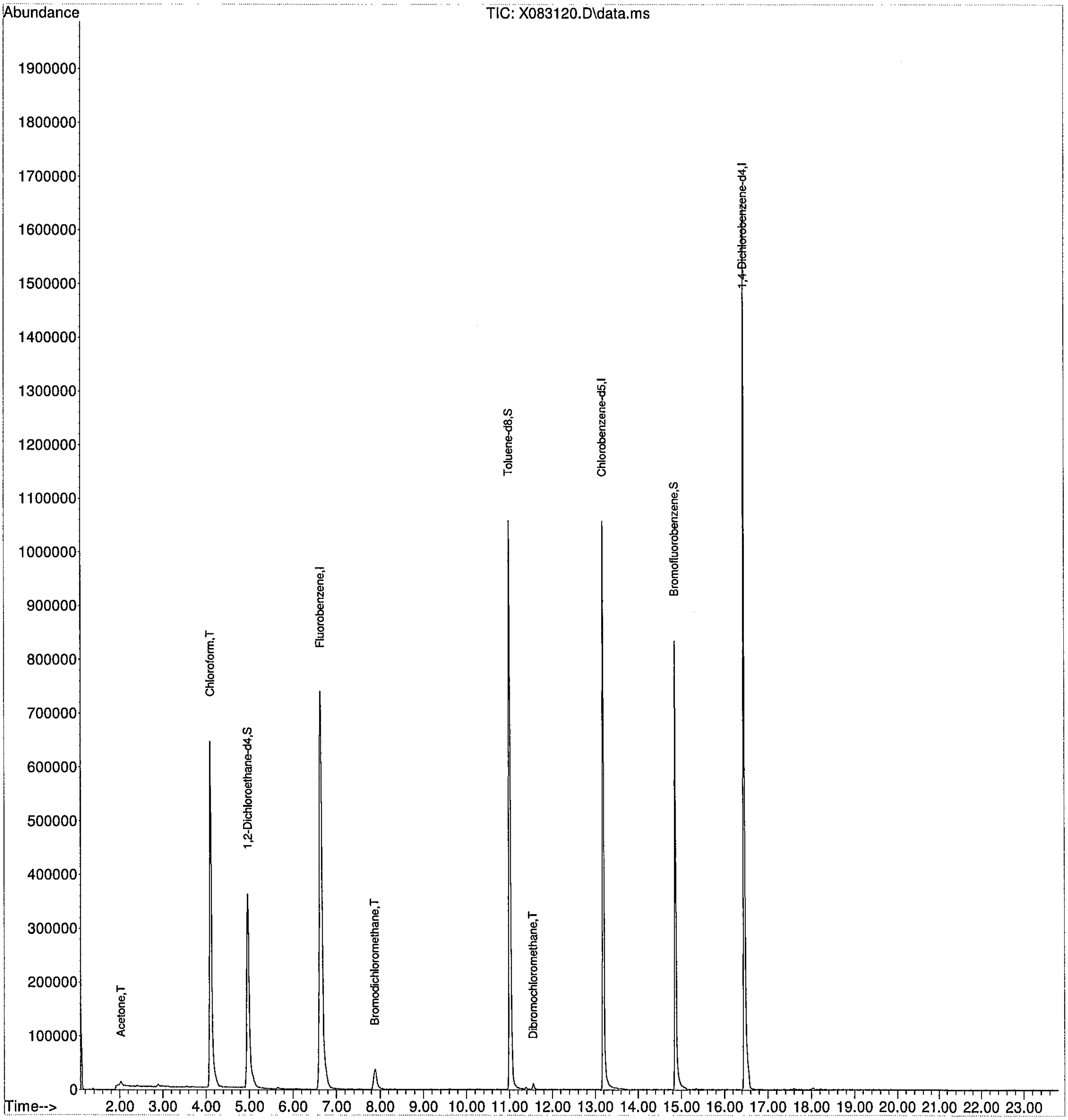
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.647	2002	1539791	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	742263	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	885795	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.974	1402	503692	51.19	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	102.38%		
69) Toluene-d8	11.014	3568	1001590	50.03	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	100.06%		
82) Bromofluorobenzene	14.868	4950	335910	49.59	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	99.18%		
Target Compounds						Qvalue
14) Acetone	2.026	345	4115	4.35	ug/L	68
35) Chloroform	4.115	1094	817106	54.62	ug/L	96
52) Bromodichloromethane	7.883	2445	66762m	14.18	ug/L	
62) Dibromochloromethane	11.552	3761	7946	4.87	ug/L	88

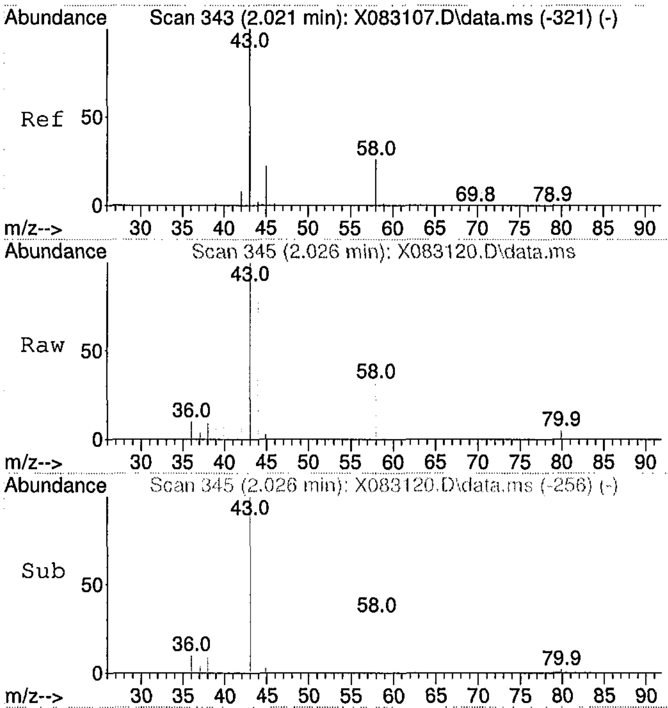
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083120.D
Acq On : 31 Aug 2018 6:34 pm
Operator : EA
Sample : 141881-H-4 LM=8260C BT=MS4083118A
Misc : DUP083018
ALS Vial : 20 Sample Multiplier: 1

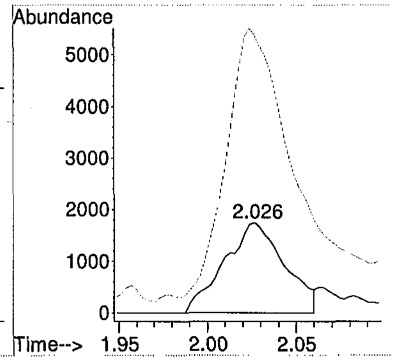
Quant Time: Sep 04 09:08:45 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

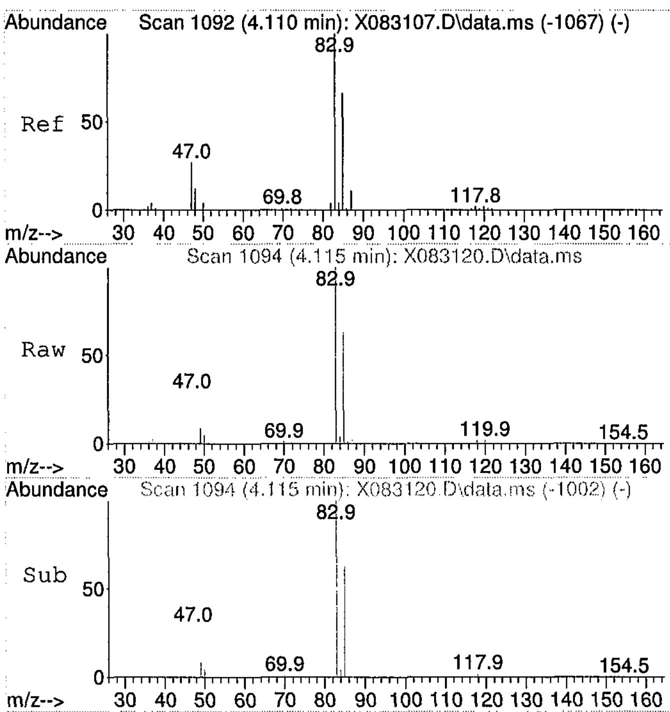




#14
Acetone
Concen: 4.35 ug/L
RT: 2.026 min Scan# 345
Delta R.T. 0.006 min
Lab File: X083120.D
Acq: 31 Aug 2018 6:34 pm

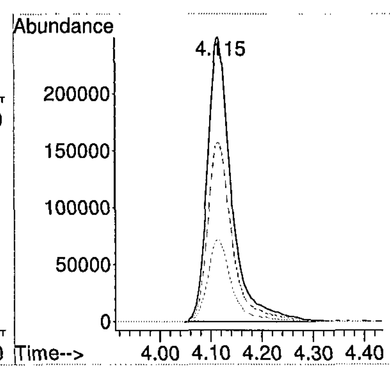
Tgt Ion: 58	Resp:	4115
Ion Ratio	Lower	Upper
58 100		
43 309.4	306.4	459.6

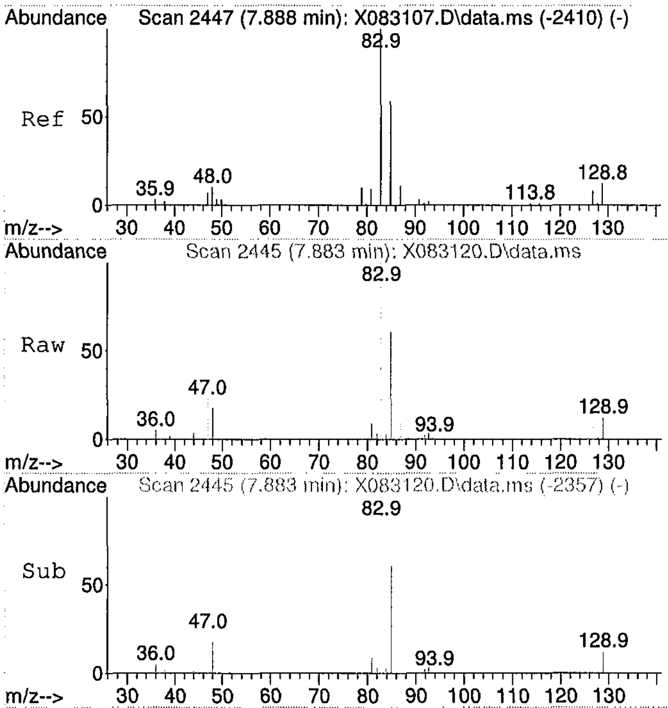




#35
Chloroform
Concen: 54.62 ug/L
RT: 4.115 min Scan# 1094
Delta R.T. 0.006 min
Lab File: X083120.D
Acq: 31 Aug 2018 6:34 pm

Tgt Ion: 83	Resp:	817106
Ion Ratio	Lower	Upper
83 100		
85 63.0	52.9	79.3
47 29.0	24.6	36.8

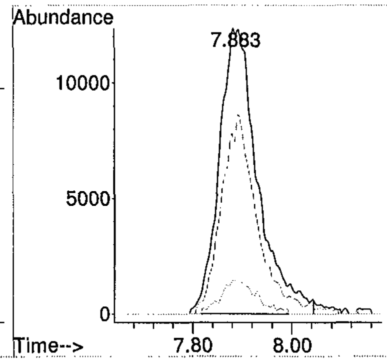


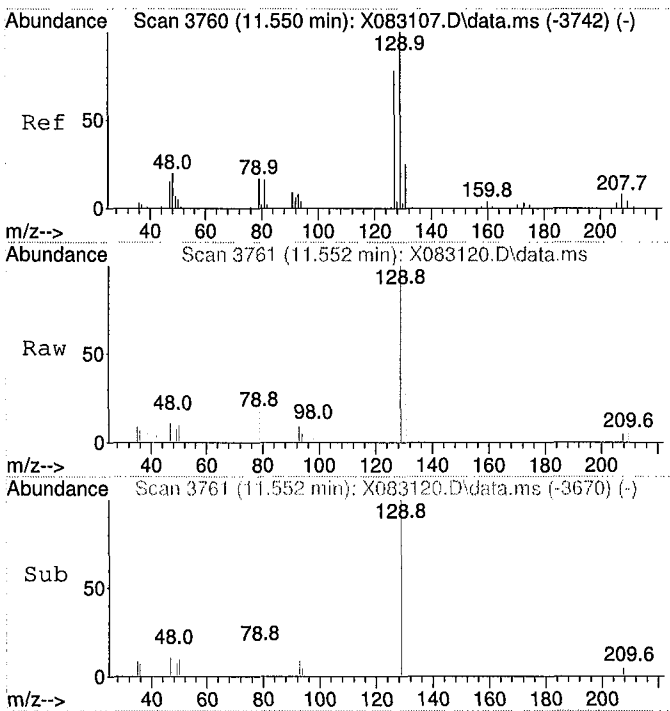


#52
Bromodichloromethane
Concen: 14.18 ug/L m
RT: 7.883 min Scan# 2445
Delta R.T. -0.006 min
Lab File: X083120.D
Acq: 31 Aug 2018 6:34 pm

Tgt Ion: 83 Resp: 66762

Ion	Ratio	Lower	Upper
83	100		
85	61.1	47.0	70.6
129	11.7	9.9	14.9

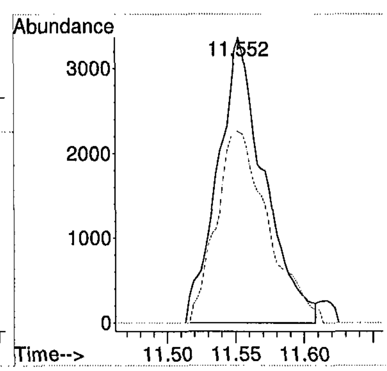




#62
Dibromochloromethane
Concen: 4.87 ug/L
RT: 11.552 min Scan# 3761
Delta R.T. 0.002 min
Lab File: X083120.D
Acq: 31 Aug 2018 6:34 pm

Tgt Ion:129 Resp: 7946

Ion	Ratio	Lower	Upper
129	100		
127	67.0	62.2	93.4



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample ID:	DUP083018	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4
Analysis Method:	8260C	Lab File ID:	X083120.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 18:34
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		
Number TICs Found:	0	TIC Total:	0

CAS No.	Compound Name	RT	Result	Q
	Tentatively Identified Compound	0.00	None	

FORM I-TIC 8260C

Data Path : C:\MS4\083118\
Data File : X083120.D
Acq On : 31 Aug 2018 6:34 pm
Operator : EA
Sample : 141881-H-4 LM=8260C BT=MS4083118A
Misc : DUP083018
ALS Vial : 20 Sample Multiplier: 1

Integration Parameters: rteint.p
Integrator: RTE
Smoothing : ON
Sampling : 1
Start Thrs: 0.2
Stop Thrs : 0

Filtering: 5
Min Area: 3 % of largest Peak
Max Peaks: 100
Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters

Signal : TIC: X083120.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.115	1069	1094	1157	rBV2	643564	2123579	61.44%	12.407%
2	4.974	1377	1402	1440	rBV2	360230	1343603	38.87%	7.850%
3	6.644	1963	2001	2065	rBV2	740423	3365808	97.38%	19.665%
4	7.883	2417	2445	2446	rBV2	35889	77867	2.25%	0.455%
5	11.014	3546	3568	3611	rBV	1058895	2732469	79.06%	15.964%
6	13.195	4333	4350	4400	rBV	1057188	2298309	66.50%	13.428%
7	14.868	4932	4950	4987	rBV	834505	1718136	49.71%	10.038%
8	16.460	5501	5521	5576	rBV	1656292	3456243	100.00%	20.193%

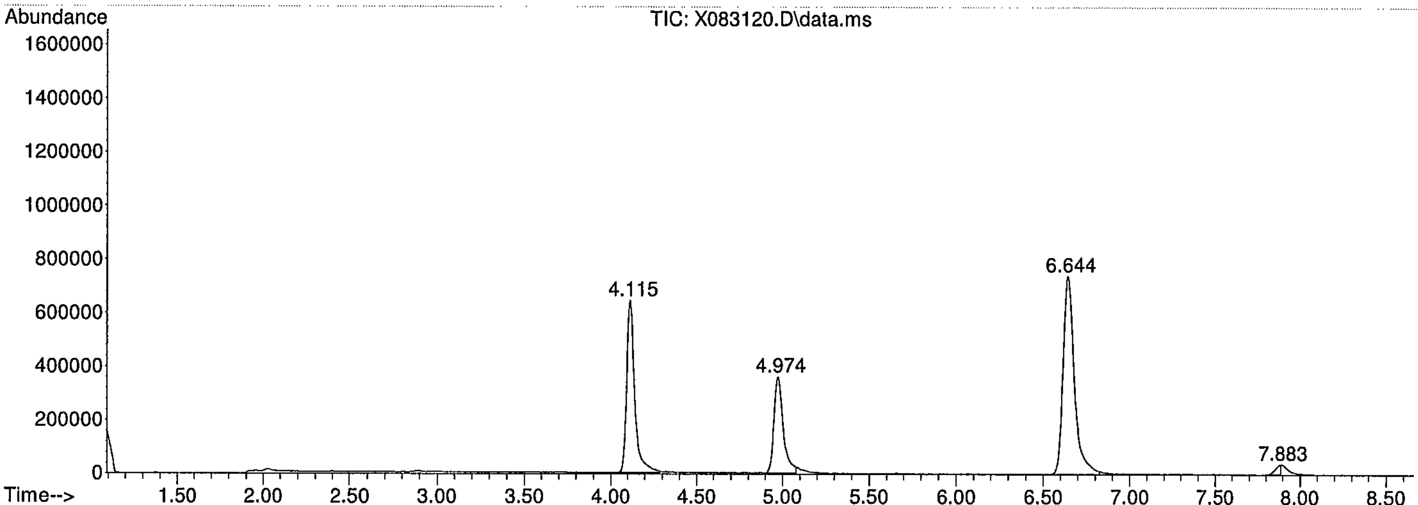
Sum of corrected areas: 17116014

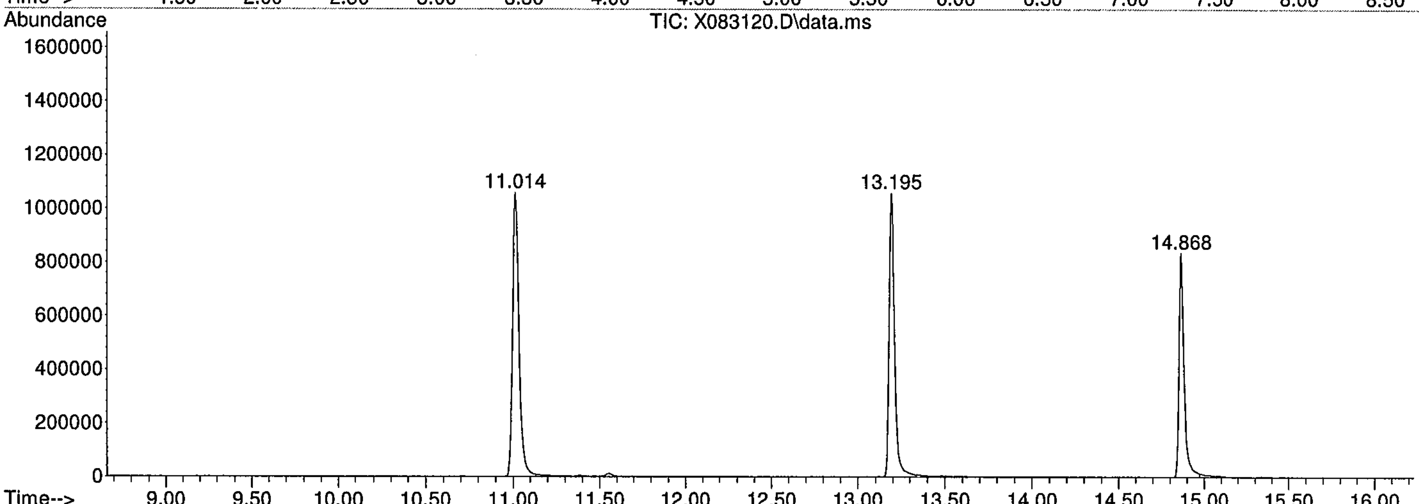
LSC Report - Integrated Chromatogram

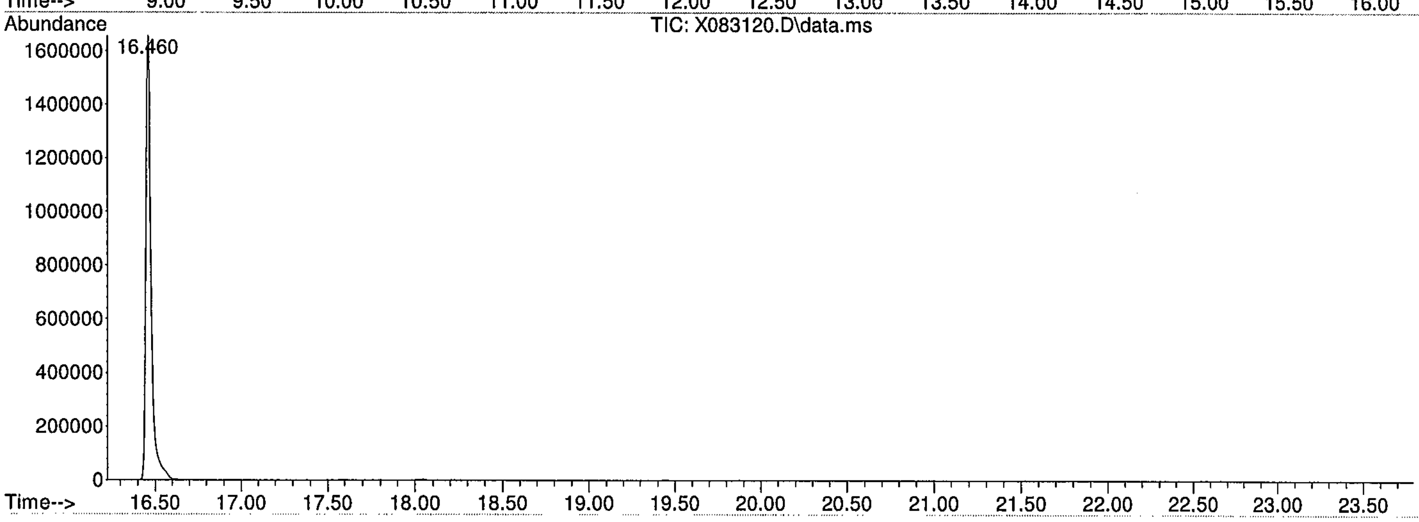
Data Path : C:\MS4\083118\
Data File : X083120.D
Acq On : 31 Aug 2018 6:34 pm
Operator : EA
Sample : 141881-H-4 LM=8260C BT=MS4083118A
Misc : DUP083018
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Library Search Compound Report

Data Path : C:\MS4\083118\
Data File : X083120.D
Acq On : 31 Aug 2018 6:34 pm
Operator : EA
Sample : 141881-H-4 LM=8260C BT=MS4083118A
Misc : DUP083018
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

Data Path : C:\MS4\083118\
Data File : X083120.D
Acq On : 31 Aug 2018 6:34 pm
Operator : EA
Sample : 141881-H-4 LM=8260C BT=MS4083118A
Misc : DUP083018
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc

1

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	DUP083018 DL	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4 DL
Analysis Method:	8260C	Lab File ID:	X090509.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/05/2018 12:51
% Moisture:		Dilution Factor:	2
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
67-66-3	Chloroform	43	D	2.0	2.0

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090509.D
Acq On : 5 Sep 2018 12:51 pm
Operator : EA
Sample : 141881-F-4 DF=2 LM=8260C BT=MS4090518A
Misc : DUP
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 05 13:19:23 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

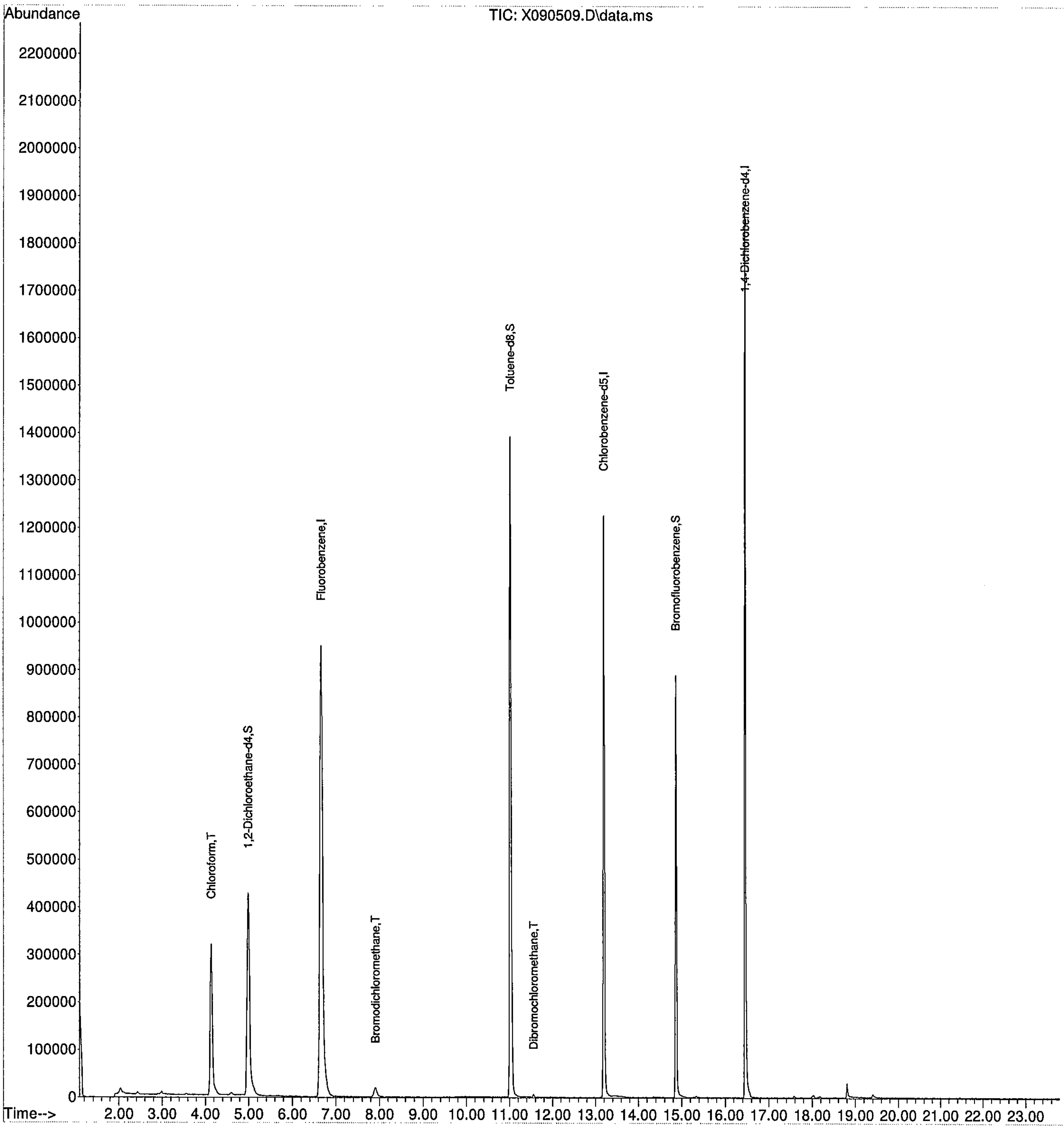
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.664	2008	2042376	50.00	ug/L	0.02
66) Chlorobenzene-d5	13.198	4351	824233	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	869917	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.993	1409	603612	46.24	ug/L	0.02
Spiked Amount 50.000	Range 77 - 117		Recovery	=	92.48%	
69) Toluene-d8	11.023	3571	1303148	58.62	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery	=	117.24%	
82) Bromofluorobenzene	14.868	4950	319816	42.52	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery	=	85.04%	
Target Compounds						Qvalue
35) Chloroform	4.137	1102	425916	21.47	ug/L	97
52) Bromodichloromethane	7.908	2454	31777	5.09	ug/L	95
62) Dibromochloromethane	11.561	3764	3797	1.75	ug/L	99

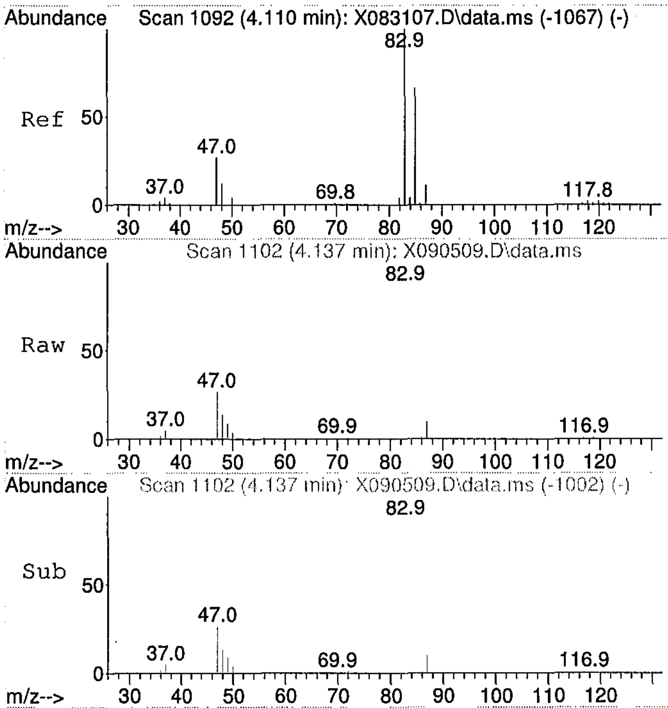
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

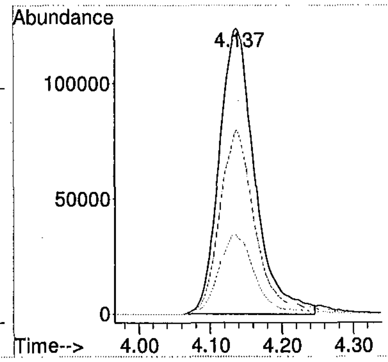
Data Path : C:\MS4\090518\
Data File : X090509.D
Acq On : 5 Sep 2018 12:51 pm
Operator : EA
Sample : 141881-F-4 DF=2 LM=8260C BT=MS4090518A
Misc : DUP
ALS Vial : 9 Sample Multiplier: 1

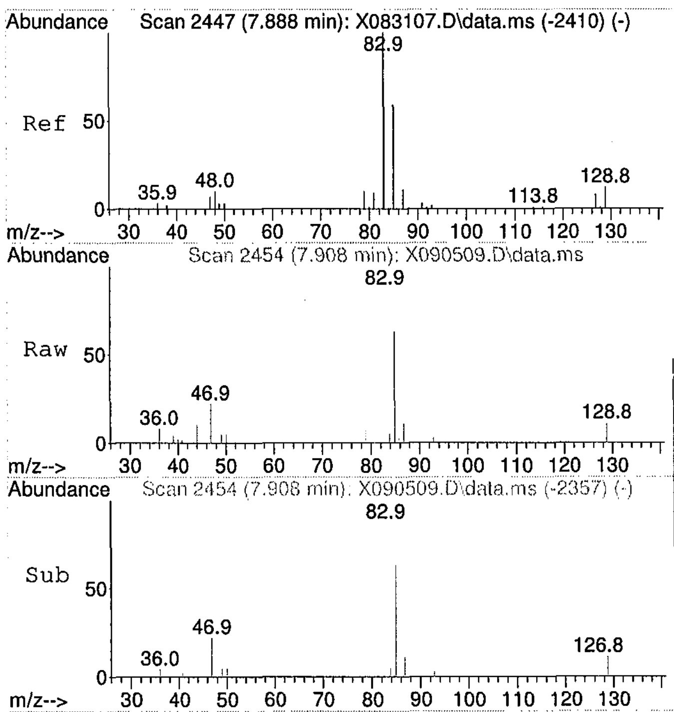
Quant Time: Sep 05 13:19:23 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



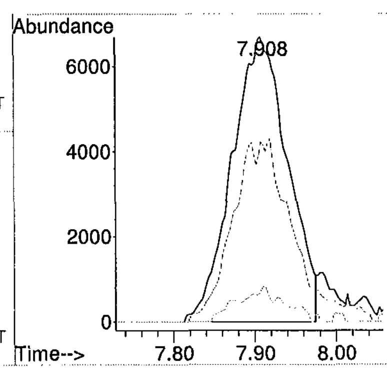


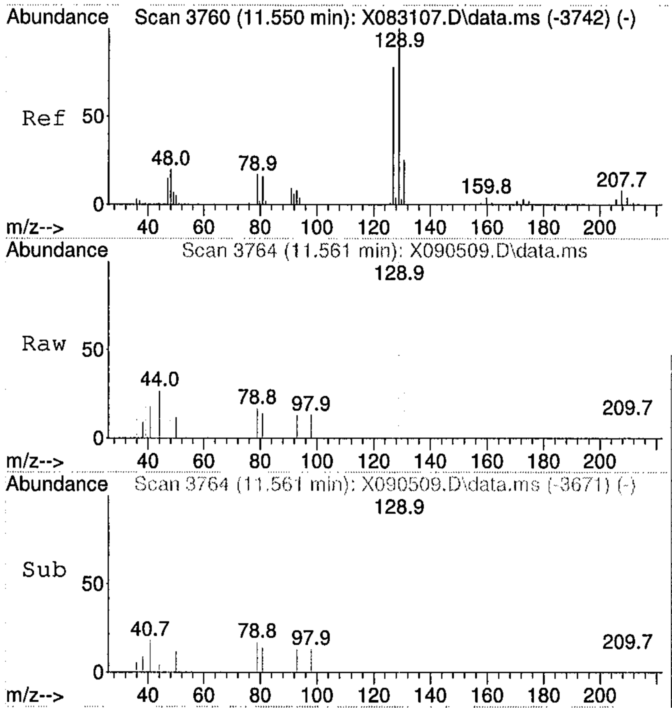

```
#35
Chloroform
Concen:     21.47 ug/L
RT:      4.137 min   Scan# 1102
Delta R.T.   0.028 min
Lab File:    X090509.D
Acq:   5 Sep 2018   12:51 pm

Tgt Ion: 83 Resp:   425916
Ion   Ratio   Lower   Upper
 83   100
 85    64.5    52.9    79.3
 47    27.3    24.6    36.8
```






```
#52
Bromodichloromethane
Concen:     5.09 ug/L
RT:      7.908 min   Scan# 2454
Delta R.T.   0.019 min
Lab File:    X090509.D
Acq:   5 Sep 2018   12:51 pm

Tgt Ion: 83 Resp:    31777
Ion   Ratio   Lower   Upper
 83   100
 85    63.1    47.0    70.6
129    11.0     9.9    14.9
```

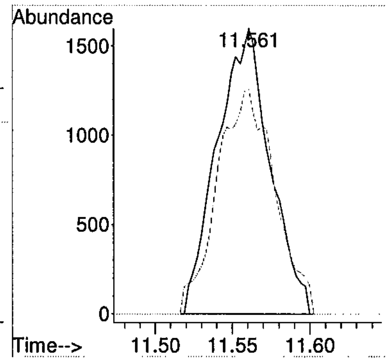




#62
Dibromochloromethane
Concen: 1.75 ug/L
RT: 11.561 min Scan# 3764
Delta R.T. 0.011 min
Lab File: X090509.D
Acq: 5 Sep 2018 12:51 pm

Tgt Ion:129 Resp: 3797

Ion	Ratio	Lower	Upper
129	100		
127	78.8	62.2	93.4



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	Trip Blank	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-5
Analysis Method:	8260C	Lab File ID:	X083121.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 19:06
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
67-66-3	Chloroform	1.0	U	1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	1.0	U	1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	1.0	U	1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0

FORM I 8260C

1

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	Trip Blank	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-5
Analysis Method:	8260C	Lab File ID:	X083121.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 19:06
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	Trip Blank	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-5
Analysis Method:	8260C	Lab File ID:	X083121.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 19:06
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Quantitation Report (QT Reviewed)

```
Data Path : C:\MS4\083118\
Data File : X083121.D
Acq On    : 31 Aug 2018   7:06 pm
Operator  : EA
Sample    : 141881-C-5  LM=8260C  BT=MS4083118A
Misc      : TRIP BLK
ALS Vial  : 21   Sample Multiplier: 1

Quant Time: Sep 04 09:10:15 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration
```

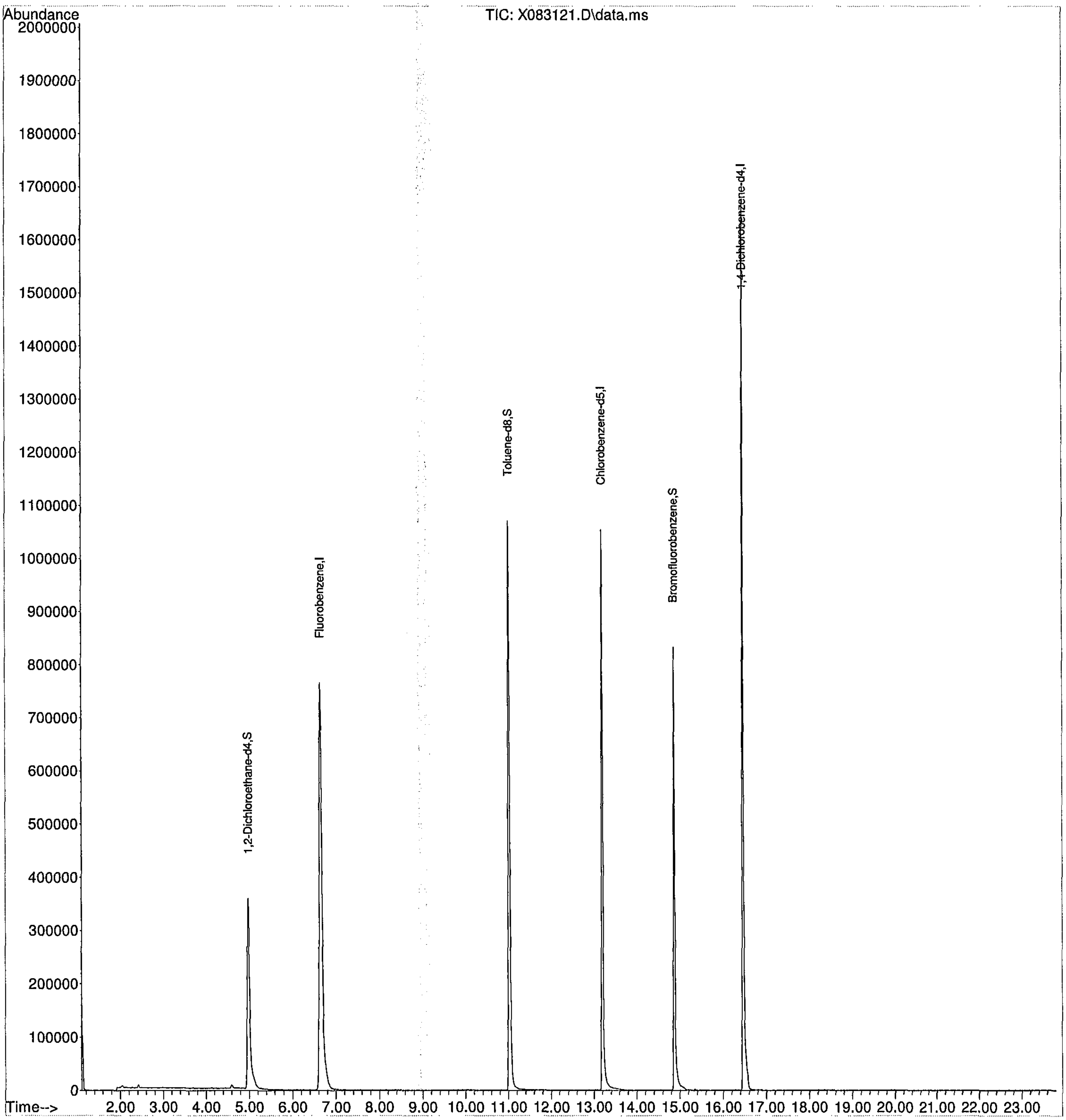
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.645	2001	1593183	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	757168	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.463	5522	899316	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.977	1403	512113	50.30	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	100.60%		
69) Toluene-d8	11.017	3569	1043588	51.10	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	102.20%		
82) Bromofluorobenzene	14.868	4950	343339	49.69	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	99.38%		

Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\MS4\083118\
Data File : X083121.D
Acq On : 31 Aug 2018 7:06 pm
Operator : EA
Sample : 141881-C-5 LM=8260C BT=MS4083118A
Misc : TRIP BLK
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Sep 04 09:10:15 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample ID:	Trip Blank	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-5
Analysis Method:	8260C	Lab File ID:	X083121.D
Sample wt/vol:	5 (mL)	Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	08/31/2018 19:06
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		
Number TICs Found:	0	TIC Total:	0

CAS No.	Compound Name	RT	Result	Q
	Tentatively Identified Compound	0.00	None	

FORM I-TIC 8260C

Data Path : C:\MS4\083118\
Data File : X083121.D
Acq On : 31 Aug 2018 7:06 pm
Operator : EA
Sample : 141881-C-5 LM=8260C BT=MS4083118A
Misc : TRIP BLK
ALS Vial : 21 Sample Multiplier: 1

Integration Parameters: rteint.p
Integrator: RTE
Smoothing : ON
Sampling : 1
Start Thrs: 0.2
Stop Thrs : 0

Filtering: 5
Min Area: 3 % of largest Peak
Max Peaks: 100
Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

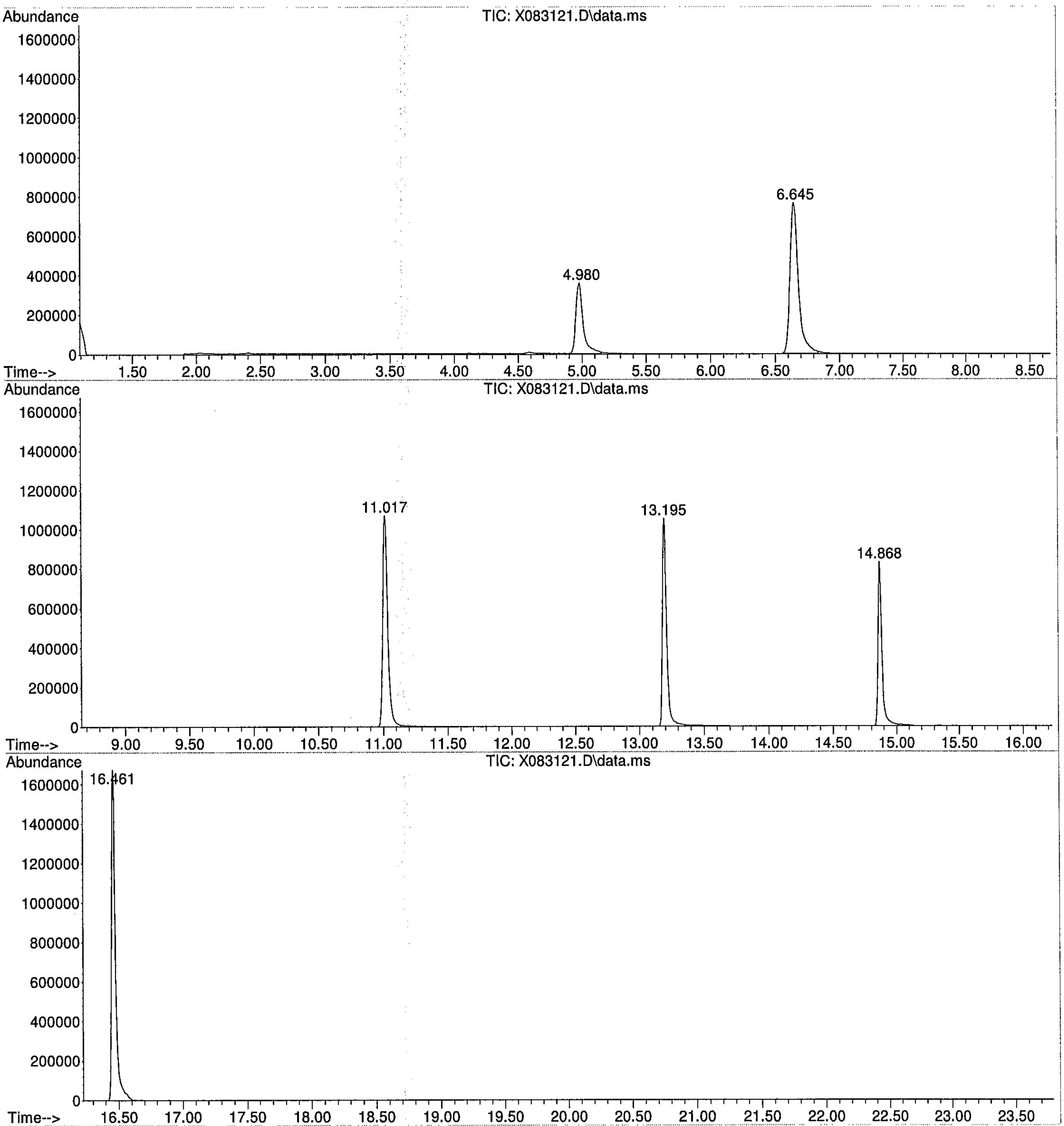
Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters

Signal : TIC: X083121.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.980	1374	1404	1465	rBV	357672	1418196	40.69%	9.242%
2	6.645	1968	2001	2069	rBV	764696	3484944	100.00%	22.711%
3	11.017	3547	3569	3612	rBV	1070371	2843506	81.59%	18.531%
4	13.195	4331	4350	4405	rBV	1054167	2358011	67.66%	15.367%
5	14.868	4934	4950	5002	rBV	832113	1771720	50.84%	11.546%
6	16.461	5505	5521	5572	rBV	1672887	3468603	99.53%	22.604%

Sum of corrected areas: 15344980

```
Data Path : C:\MS4\083118\
Data File : X083121.D
Acq On    : 31 Aug 2018   7:06 pm
Operator  : EA
Sample    : 141881-C-5  LM=8260C  BT=MS4083118A
Misc      : TRIP BLK
ALS Vial  : 21   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P
```



Library Search Compound Report

Data Path : C:\MS4\083118\
Data File : X083121.D
Acq On : 31 Aug 2018 7:06 pm
Operator : EA
Sample : 141881-C-5 LM=8260C BT=MS4083118A
Misc : TRIP BLK
ALS Vial : 21 Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

```
Data Path : C:\MS4\083118\
Data File : X083121.D
Acq On    : 31 Aug 2018   7:06 pm
Operator  : EA
Sample    : 141881-C-5  LM=8260C  BT=MS4083118A
Misc      : TRIP BLK
ALS Vial  : 21   Sample Multiplier: 1

Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters

TIC Library   : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

                                                    |--Internal Standard---|
TIC Top Hit name       RT  EstConc Units Response |#     RT      Resp  Conc|
-----------------------------------------------------------------------------
```

Volatile Data
Standards Data

Method Path : C:\MS4\METHODS\
Method File : 8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Fri Aug 31 13:54:22 2018
Response Via : Initial Calibration

Calibration Files
1.0 =X083103.D 2.5 =X083104.D 5.0 =X083105.D 10 =X083106.D 20 =X083107.D 30 =X083108.D 40 =X083109.D 50 =X083110.D

		Compound	1.0	2.5	5.0	10	20	30	40	50	Avg	%RSD
1)	I	Fluorobenzene	---------------ISTD---------------------									
2)	T	Dichlorodifluo...	0.474	0.522	0.467	0.477	0.476	0.487	0.456	0.467	0.478	4.15
3)	T	Chloromethane	0.511	0.488	0.471	0.484	0.506	0.546	0.543	0.490	0.505	5.45
4)	T	Vinyl Chloride	0.655	0.555	0.548	0.540	0.491	0.505	0.476	0.428	0.525	12.91
5)	T	Bromomethane	0.350	0.317	0.298	0.281	0.287	0.284	0.273	0.274	0.295	8.92
6)	T	Chloroethane	0.306	0.265	0.254	0.264	0.256	0.260	0.251	0.256	0.264	6.70
7)	T	Acrolein	0.061	0.066	0.065	0.066	0.064	0.067	0.064	0.066	0.065	3.29
8)	T	Acetonitrile	0.023	0.054	0.032	0.028	0.031	0.030	0.029	0.032	0.032	28.60
9)	T	Acrylonitrile	0.133	0.123	0.122	0.128	0.125	0.128	0.130	0.133	0.128	3.21
10)	T	Trichlorofluor...	0.521	0.481	0.467	0.470	0.503	0.501	0.499	0.499	0.493	3.72
11)	T	Diethyl ether	0.262	0.219	0.237	0.228	0.231	0.228	0.227	0.218	0.231	6.01
12)	T	FREON 123A	0.430	0.409	0.318	0.319	0.333	0.328	0.313	0.318	0.346	13.35
13)	T	FC-113	0.364	0.349	0.313	0.298	0.307	0.319	0.305	0.308	0.320	7.29
14)	T	Acetone	0.036	0.032	0.032	0.031	0.030	0.031	0.025	0.029	0.031	9.96
15)	T	IPA	0.013	0.012	0.012	0.011	0.012	0.012	0.010	0.014	0.012	10.74
16)	T	TBA	0.016	0.016	0.019	0.018	0.022	0.025	0.021	0.027	0.020	19.25
17)	T	Methyl acetate	0.261	0.259	0.256	0.242	0.251	0.278	0.281	0.282	0.264	5.64
18)	T	Allyl chloride	0.454	0.378	0.418	0.424	0.458	0.510	0.501	0.506	0.456	10.51
19)	T	Iodomethane	0.589	0.536	0.493	0.528	0.512	0.525	0.516	0.509	0.526	5.43
20)	T	1,1-Dichloroet...	0.556	0.499	0.474	0.486	0.494	0.503	0.483	0.500	0.499	4.95
21)	T	Methylene Chlo...	0.409	0.370	0.335	0.325	0.339	0.340	0.334	0.323	0.347	8.32
22)	T	Carbon Disulfide	0.715	0.656	0.618	0.659	0.700	0.740	0.708	0.720	0.690	5.92
23)	T	trans-1,2-Dich...	0.471	0.425	0.441	0.430	0.452	0.459	0.439	0.441	0.445	3.40
24)	T	MTBE	0.855	0.770	0.783	0.794	0.800	0.844	0.830	0.839	0.814	3.88
25)	T	1,1-Dichloroet...	0.617	0.508	0.528	0.525	0.525	0.546	0.527	0.528	0.538	6.23
26)	T	Propionitrile	0.046	0.040	0.037	0.038	0.038	0.041	0.034	0.045	0.040	10.31
27)	T	Vinyl Acetate	0.465	0.431	0.456	0.441	0.490	0.529	0.546	0.540	0.487	9.43
28)	T	Chloroprene	0.523	0.448	0.477	0.467	0.482	0.497	0.504	0.519	0.490	5.29
29)	T	Hexane	0.377	0.344	0.342	0.333	0.360	0.370	0.346	0.358	0.354	4.21
30)	T	2-Butanone	0.025	0.026	0.025	0.025	0.026	0.028	0.028	0.032	0.027	8.94
31)	T	Diisopropyleth...	1.044	0.996	0.952	0.949	0.981	1.007	0.982	1.000	0.989	3.10
32)	T	cis-1,2-Dichlo...	0.447	0.417	0.453	0.437	0.432	0.452	0.430	0.435	0.438	2.76
33)	T	Methacrylonitrile	0.211	0.206	0.204	0.237	0.205	0.229	0.220	0.219	0.216	5.54
34)	T	Bromochloromet...	0.218	0.183	0.180	0.190	0.191	0.186	0.193	0.190	0.191	6.01
35)	T	Chloroform	0.546	0.461	0.456	0.495	0.483	0.485	0.480	0.480	0.486	5.61
36)	T	2,2-Dichloropr...	0.345	0.303	0.306	0.309	0.337	0.351	0.351	0.361	0.333	7.03
37)	T	Methyl acrylate	0.191	0.165	0.184	0.173	0.189	0.205	0.208	0.215	0.191	9.15
38)	T	Isobutyl alcohol	0.010	0.010	0.011	0.009	0.010	0.011	0.008	0.013	0.010	14.87
39)	T	Tetrahydrofuran	0.092	0.064	0.048	0.038	0.032	0.034	0.035	0.036	0.047	44.15
40)	S	1,2-Dichloroet...	0.375	0.320	0.320	0.293	0.307	0.315	0.313	0.313	0.320	7.55
41)	T	1,2-Dichloroet...	0.420	0.374	0.368	0.377	0.369	0.382	0.378	0.378	0.381	4.32
42)	T	1,1,1-Trichlor...	0.358	0.329	0.325	0.330	0.332	0.338	0.321	0.341	0.334	3.50
43)	T	1-Chlorobutane	0.541	0.471	0.468	0.495	0.535	0.551	0.531	0.555	0.518	6.80
44)	T	1,1-Dichloropr...	0.369	0.310	0.320	0.317	0.359	0.371	0.360	0.381	0.348	8.09

Response Factor Report MS4

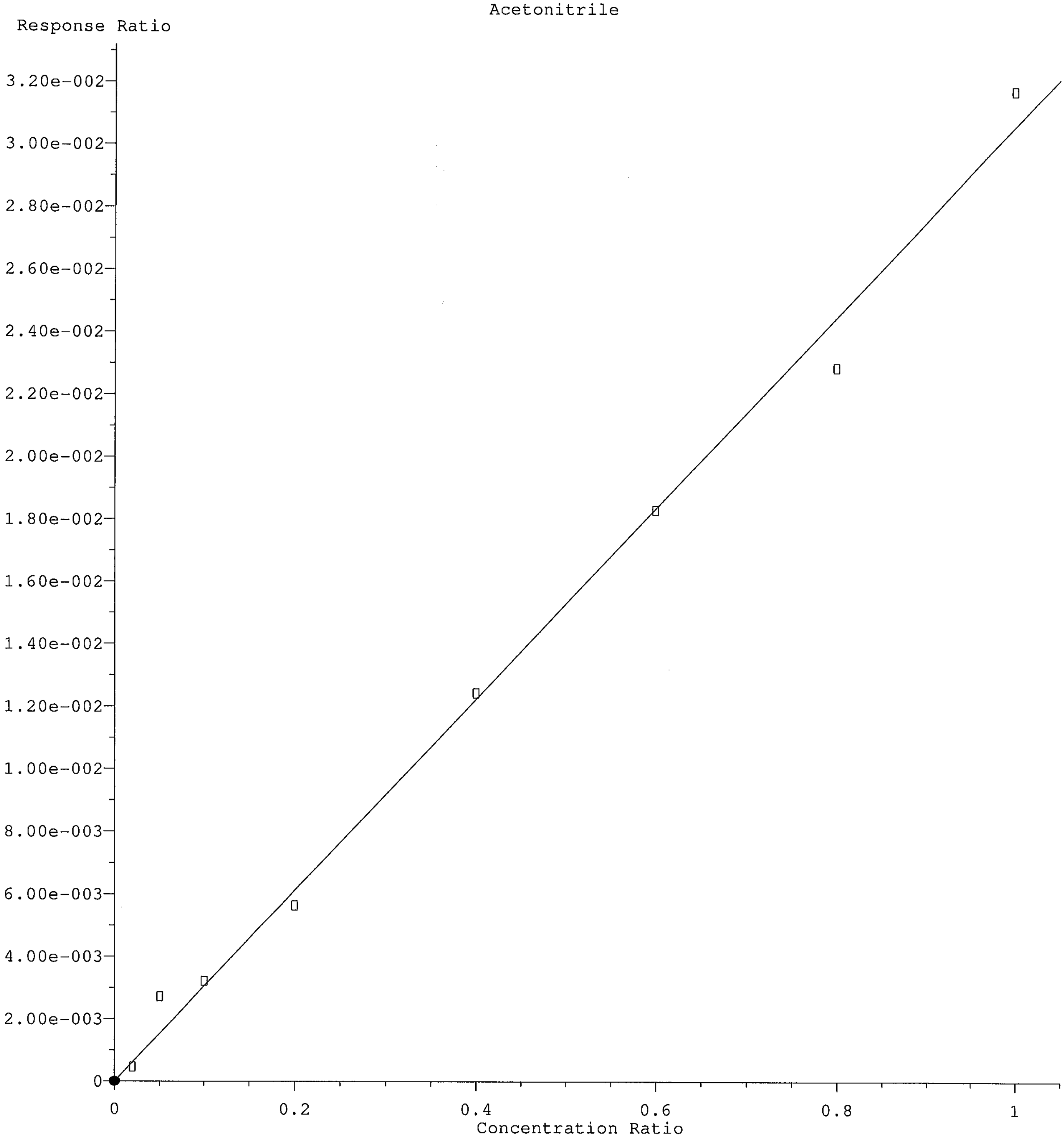
Method Path : C:\MS4\METHODS\
Method File : 8260083118.M

45)	T	Cyclohexane	0.582	0.525	0.550	0.576	0.594	0.604	0.580	0.609	0.577	4.84
46)	T	Carbon Tetrach...	0.209	0.201	0.176	0.197	0.199	0.203	0.193	0.205	0.198	5.14
47)	T	Benzene	1.085	0.986	1.073	1.078	1.136	1.172	1.114	1.144	1.099	5.24
48)	T	tert-Amyl meth...	1.348	0.899	0.741	0.686	0.692	0.720	0.708	0.722	0.815	27.73
49)	T	Dibromomethane	0.139	0.128	0.132	0.134	0.130	0.144	0.139	0.142	0.136	4.16
50)	T	1,2-Dichloropr...	0.236	0.208	0.211	0.224	0.225	0.248	0.241	0.255	0.231	7.26
51)	T	Trichloroethene	0.264	0.220	0.224	0.230	0.237	0.260	0.245	0.257	0.242	7.03
52)	T	Bromodichlorom...	0.160	0.141	0.150	0.136	0.144	0.164	0.161	0.167	0.153	7.72
53)	T	2-Nitropropane	0.034	0.026	0.031	0.028	0.030	0.035	0.033	0.032	0.031	9.24
54)	T	1,4-Dioxane		0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	24.74
55)	T	Methyl methacr...	0.126	0.106	0.117	0.127	0.147	0.165	0.173	0.179	0.142	19.39
56)	T	Methylcyclohexane	0.465	0.400	0.400	0.440	0.464	0.484	0.442	0.480	0.447	7.35
57)		2-Chloroethylv...	0.036	0.053	0.053	0.052	0.060	0.073	0.078	0.082	0.061	25.74
58)	T	cis-1,3-Dichlo...	0.136	0.113	0.138	0.146	0.178	0.203	0.212	0.225	0.169	24.42
59)	T	trans-1,3-Dich...	0.077	0.076	0.087	0.092	0.111	0.132	0.142	0.150	0.108	27.41
60)	T	1,1,2-Trichlor...	0.148	0.108	0.126	0.132	0.139	0.150	0.150	0.151	0.138	11.07
61)	T	1,3-Dichloropr...	0.215	0.202	0.204	0.211	0.221	0.248	0.249	0.251	0.225	9.20
62)	T	Dibromochlorom...	0.054	0.046	0.046	0.048	0.051	0.059	0.060	0.060	0.053	11.39
63)	T	Ethyl methacry...	0.167	0.141	0.167	0.183	0.200	0.231	0.239	0.242	0.196	19.29
64)	T	1,2-Dibromoethane	0.114	0.099	0.100	0.092	0.103	0.117	0.118	0.120	0.108	10.01
65)	T	Bromoform	0.021	0.026	0.024	0.023	0.025	0.028	0.027	0.027	0.025	9.44
66)	I	Chlorobenzene-d5	----------------	ISTD	--------------------							
67)	T	4-Methyl-2-Pen...	0.425	0.431	0.489	0.516	0.549	0.598	0.572	0.604	0.523	13.43
68)	T	2-Hexanone	0.194	0.210	0.216	0.255	0.271	0.290	0.286	0.290	0.251	15.72
69)	S	Toluene-d8	1.403	1.140	1.230	1.292	1.420	1.479	1.393	1.430	1.348	8.61
70)	T	Toluene	1.494	1.383	1.537	1.612	1.764	1.818	1.700	1.755	1.633	9.32
71)	T	Tetrachloroethene	0.483	0.474	0.477	0.499	0.487	0.521	0.450	0.480	0.484	4.25
72)	T	1,1,1,2-Tetrac...	0.283	0.239	0.253	0.250	0.280	0.288	0.276	0.289	0.270	7.28
73)	T	Chlorobenzene	1.099	0.972	0.951	0.917	0.971	1.007	0.956	0.967	0.980	5.52
74)	T	1-Chlorohexane	0.316	0.294	0.323	0.320	0.361	0.391	0.362	0.385	0.344	10.33
75)	T	Ethylbenzene	1.706	1.509	1.610	1.682	1.820	1.902	1.787	1.847	1.733	7.58
76)	T	m,p-Xylene	1.303	1.162	1.268	1.342	1.438	1.474	1.389	1.426	1.350	7.65
77)	T	Styrene	0.894	0.781	0.813	0.853	0.944	0.995	0.951	0.984	0.902	8.87
78)	T	o-Xylene	1.611	1.593	1.674	1.739	1.829	1.864	1.736	1.774	1.728	5.62
79)	T	1,1,2,2-Tetrac...	0.529	0.447	0.495	0.465	0.475	0.488	0.457	0.465	0.478	5.44
80)	T	1,2,3-Trichlor...	0.435	0.414	0.398	0.382	0.373	0.390	0.358	0.356	0.388	7.05
81)	T	trans-1,4-Dich...	0.110	0.085	0.083	0.076	0.082	0.078	0.078	0.073	0.083	14.06
82)	S	Bromofluoroben...	0.661	0.466	0.414	0.407	0.429	0.439	0.415	0.419	0.456	18.59
83)	T	Isopropylbenzene	1.989	1.917	2.106	2.220	2.396	2.420	2.250	2.361	2.207	8.54
84)	T	Bromobenzene	0.604	0.594	0.656	0.597	0.631	0.659	0.617	0.631	0.624	4.00
85)	T	n-Propylbenzene	2.072	2.007	2.098	2.233	2.445	2.536	2.277	2.441	2.264	8.67
86)	T	2-Chlorotoluene	1.430	1.366	1.378	1.497	1.492	1.475	1.385	1.405	1.429	3.73
87)	T	4-Chlorotoluene	1.218	1.134	1.249	1.232	1.246	1.270	1.174	1.190	1.214	3.72
88)	T	1,3,5-Trimethy...	1.688	1.608	1.806	1.896	2.044	2.075	1.938	2.048	1.888	9.22
89)	T	Pentachloroethane	0.081	0.074	0.082	0.073	0.102	0.099	0.114	0.114	0.092	18.40
90)	T	tert-Butylbenzene	1.307	1.283	1.476	1.587	1.805	1.801	1.724	1.869	1.607	14.34
91)	T	1,2,4-Trimethy...	1.646	1.705	1.886	1.940	2.090	2.096	1.976	2.051	1.924	8.85
92)	T	sec-Butylbenzene	1.991	2.077	2.449	2.379	2.634	2.684	2.458	2.632	2.413	10.69
93)	I	1,4-Dichlorobenzen...	----------------	ISTD	--------------------							
94)	T	1,3-Dichlorobe...	0.888	0.812	0.877	0.876	0.897	0.929	0.881	0.875	0.879	3.72
95)	T	Benzyl chloride	0.313	0.229	0.237	0.249	0.301	0.354	0.386	0.405	0.309	22.02
96)	T	1,4-Dichlorobe...	1.123	0.844	0.909	0.924	0.899	0.919	0.855	0.874	0.919	9.53

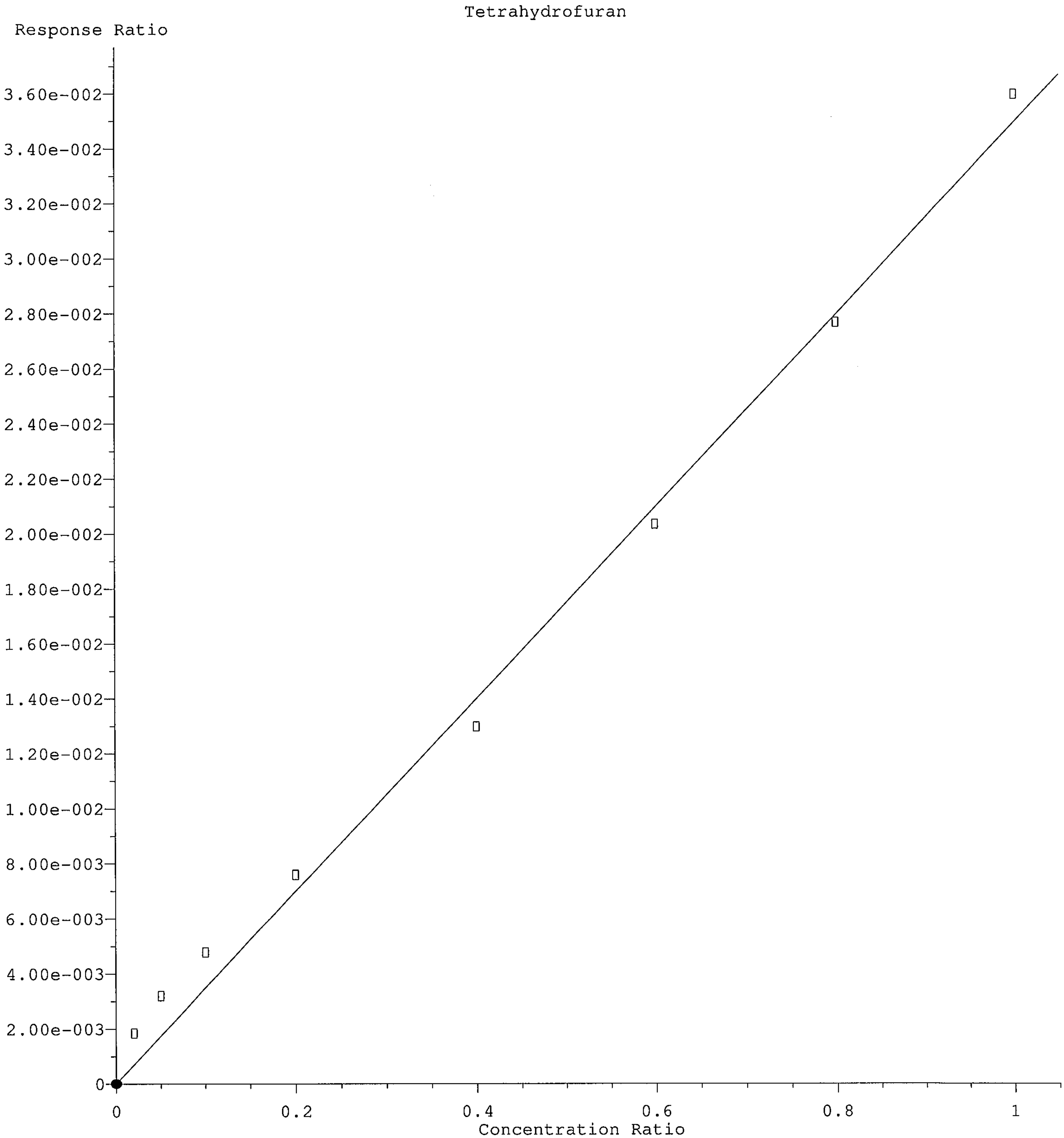
Method Path : C:\MS4\METHODS\
Method File : 8260083118.M

97)	T	4-Isopropyltol...	1.467	1.398	1.634	1.808	2.035	2.202	2.114	2.216	1.859	17.73
98)	T	1,2-Dichlorobe...	1.083	0.955	0.991	1.036	1.112	1.146	1.103	1.095	1.065	6.11
99)	T	n-Butylbenzene	1.284	1.279	1.448	1.578	1.767	1.878	1.782	1.851	1.608	15.35
100)	T	1,2-Dibromo-3-...	0.030	0.028	0.032	0.035	0.039	0.046	0.046	0.047	0.038	20.51
101)	T	Hexachloroethane	0.059	0.056	0.057	0.060	0.077	0.085	0.086	0.090	0.071	20.31
102)	T	1,2,4-Trichlor...	0.623	0.532	0.657	0.734	0.830	0.920	0.885	0.921	0.763	19.45
103)	T	Naphthalene	1.095	1.055	1.378	1.763	2.034	2.293	2.232	2.348	1.775	30.21
104)	T	Hexachlorobuta...	0.320	0.242	0.266	0.288	0.303	0.324	0.299	0.328	0.296	10.13
105)	T	1,2,3-Trichlor...	0.622	0.601	0.702	0.782	0.849	0.920	0.881	0.920	0.785	16.47

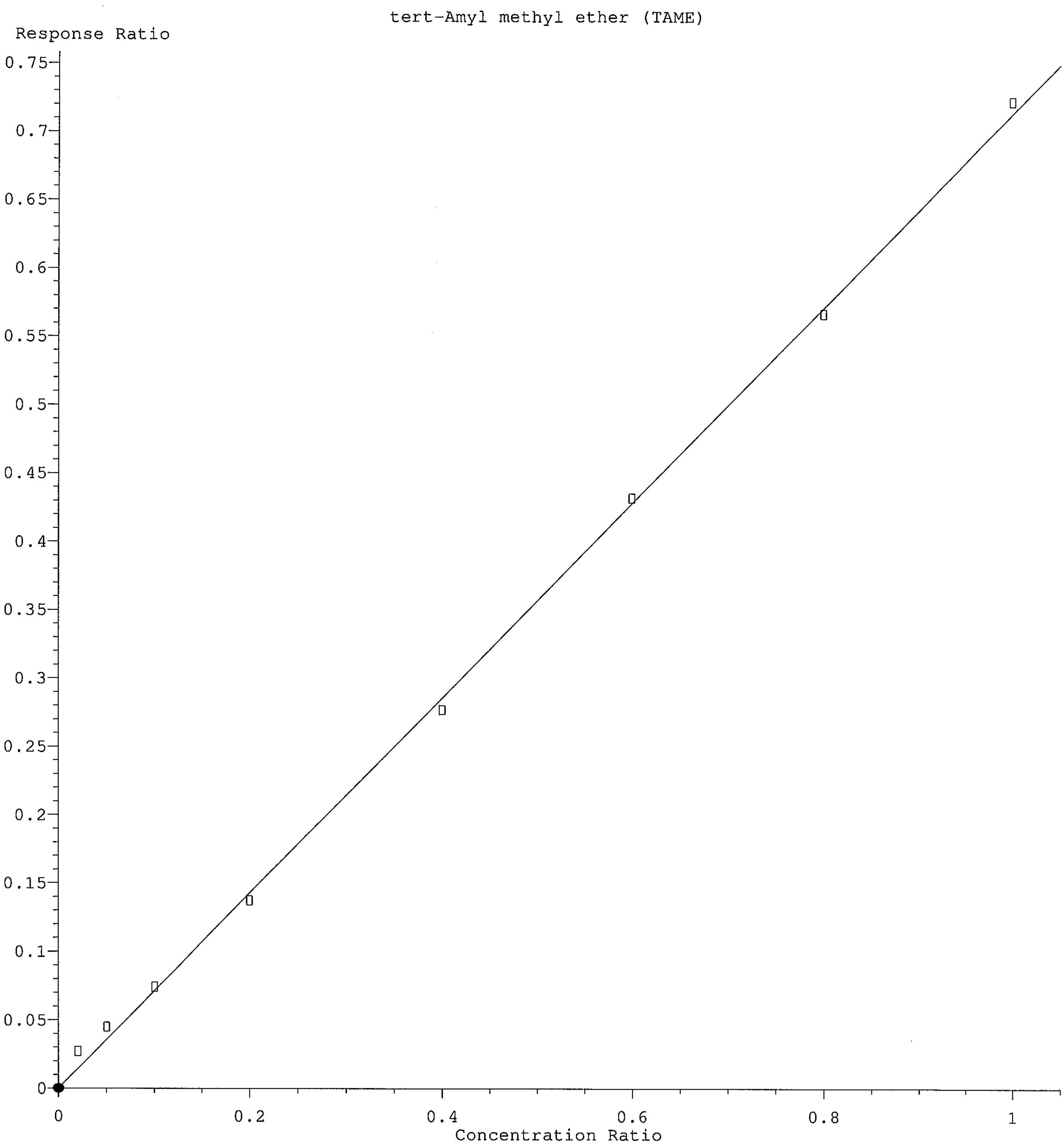
(#) = Out of Range



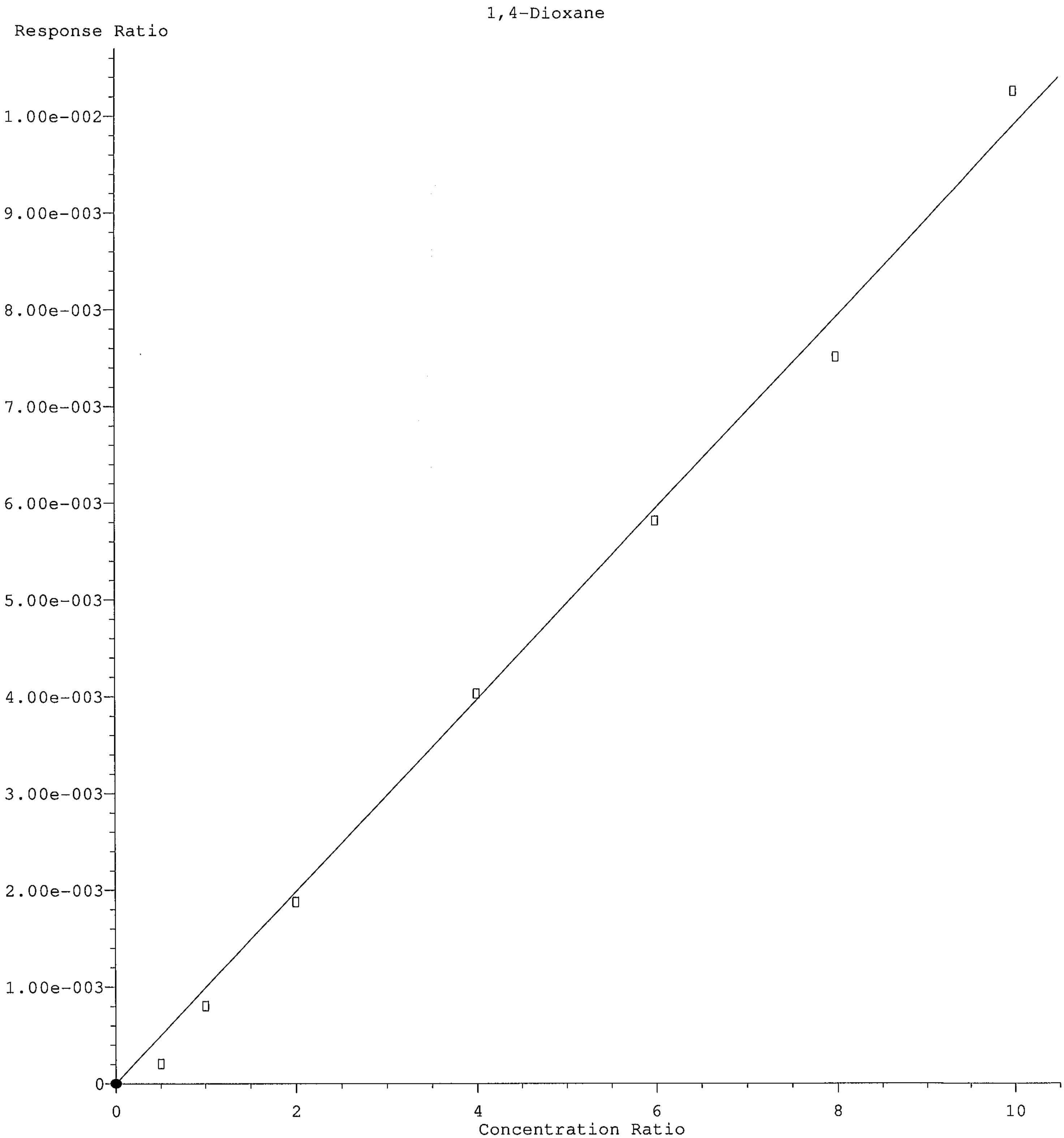
Response = 3.056e-002 * Amt
Coef of Det (r^2) = 0.994   Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018



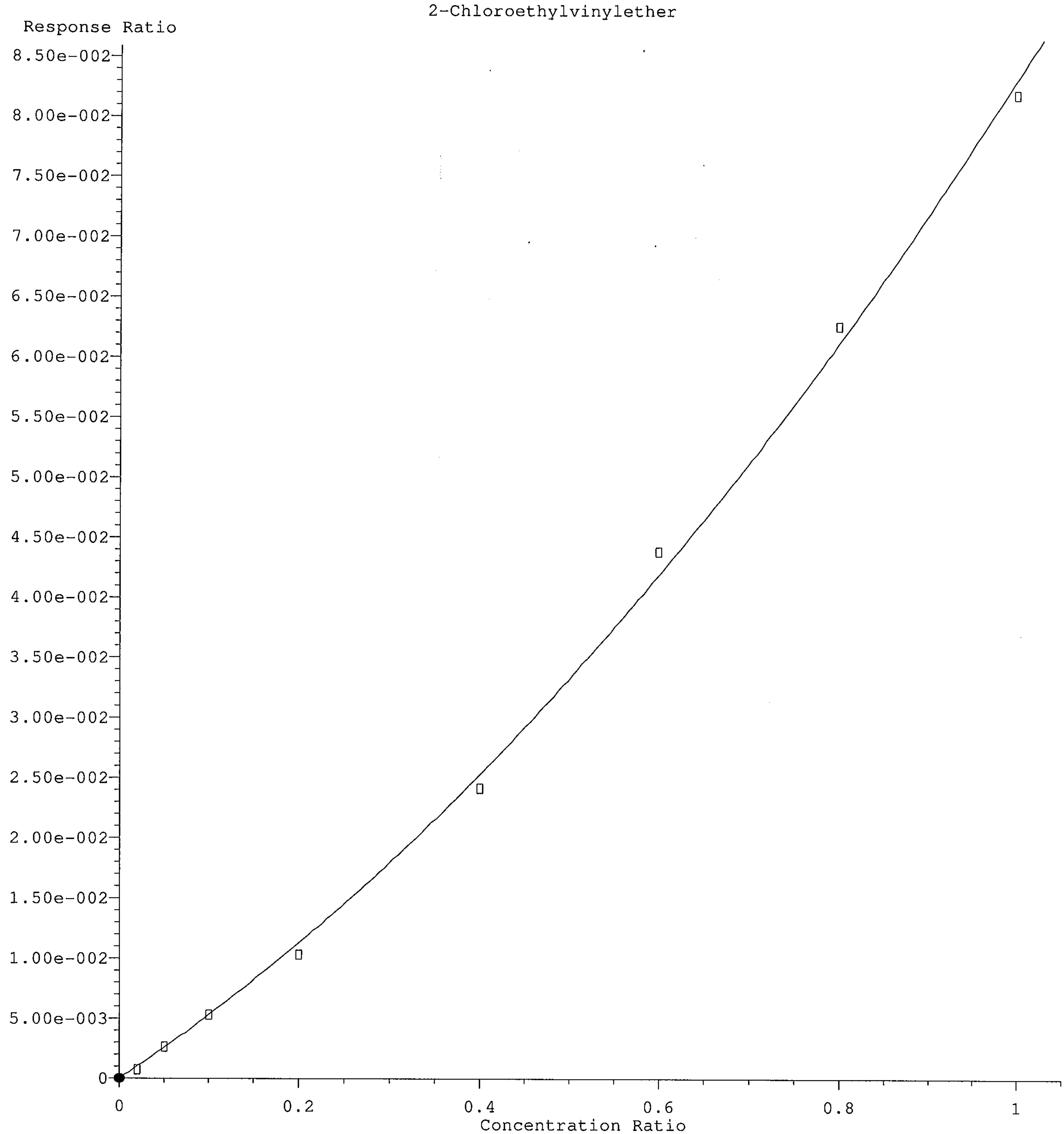
Response = 3.495e-002 * Amt
Coef of Det (r^2) = 0.994 Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018



Response = 7.138e-001 * Amt
Coef of Det (r^2) = 0.999 Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018

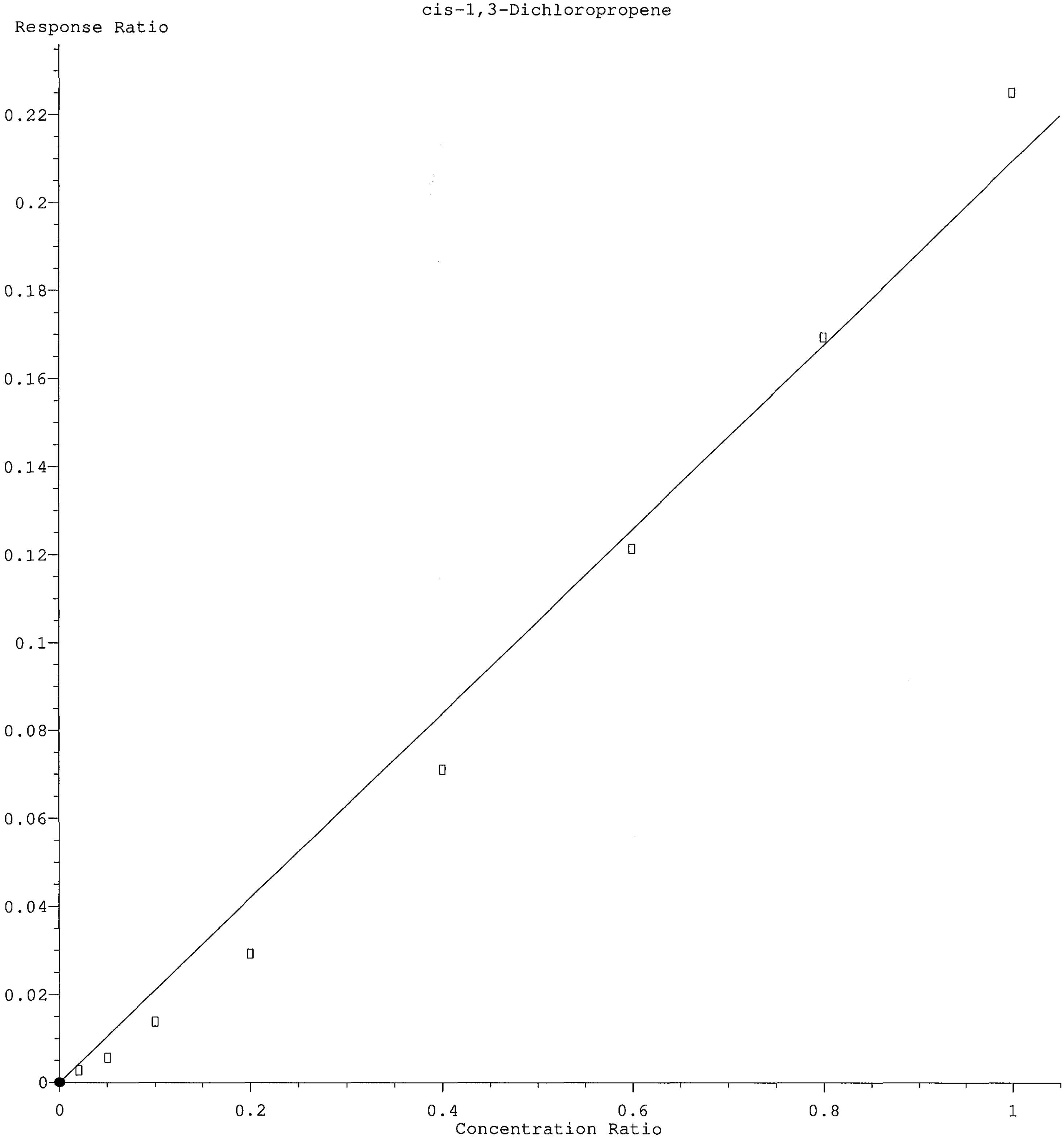


Response = 9.883e-004 * Amt
Coef of Det (r^2) = 0.996   Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018

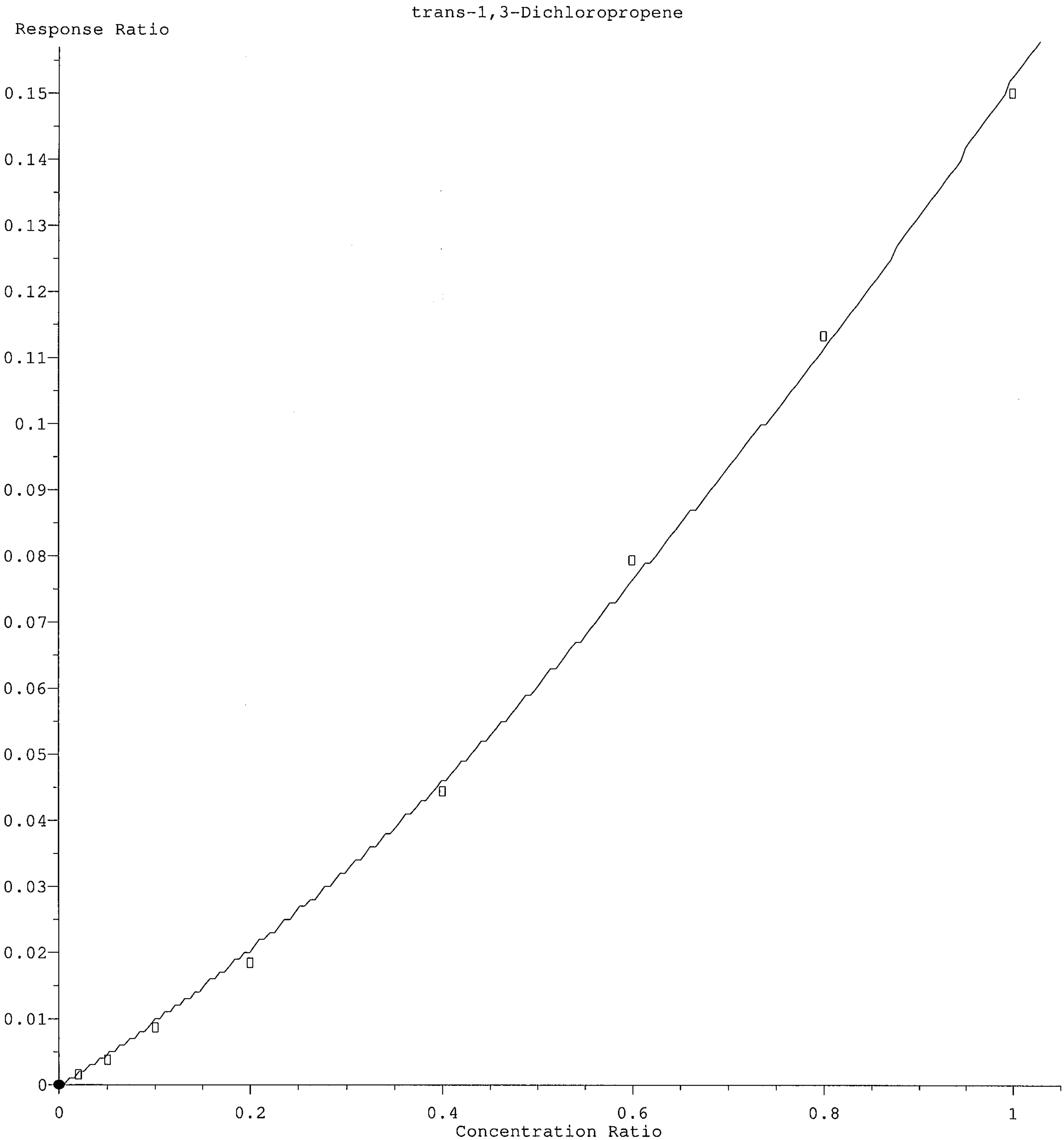


R = 3.325e-002 A*A + 4.985e-002 A + 0.000e+000
Coef of Det (r^2) = 0.998   Curve Fit: Quad/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018

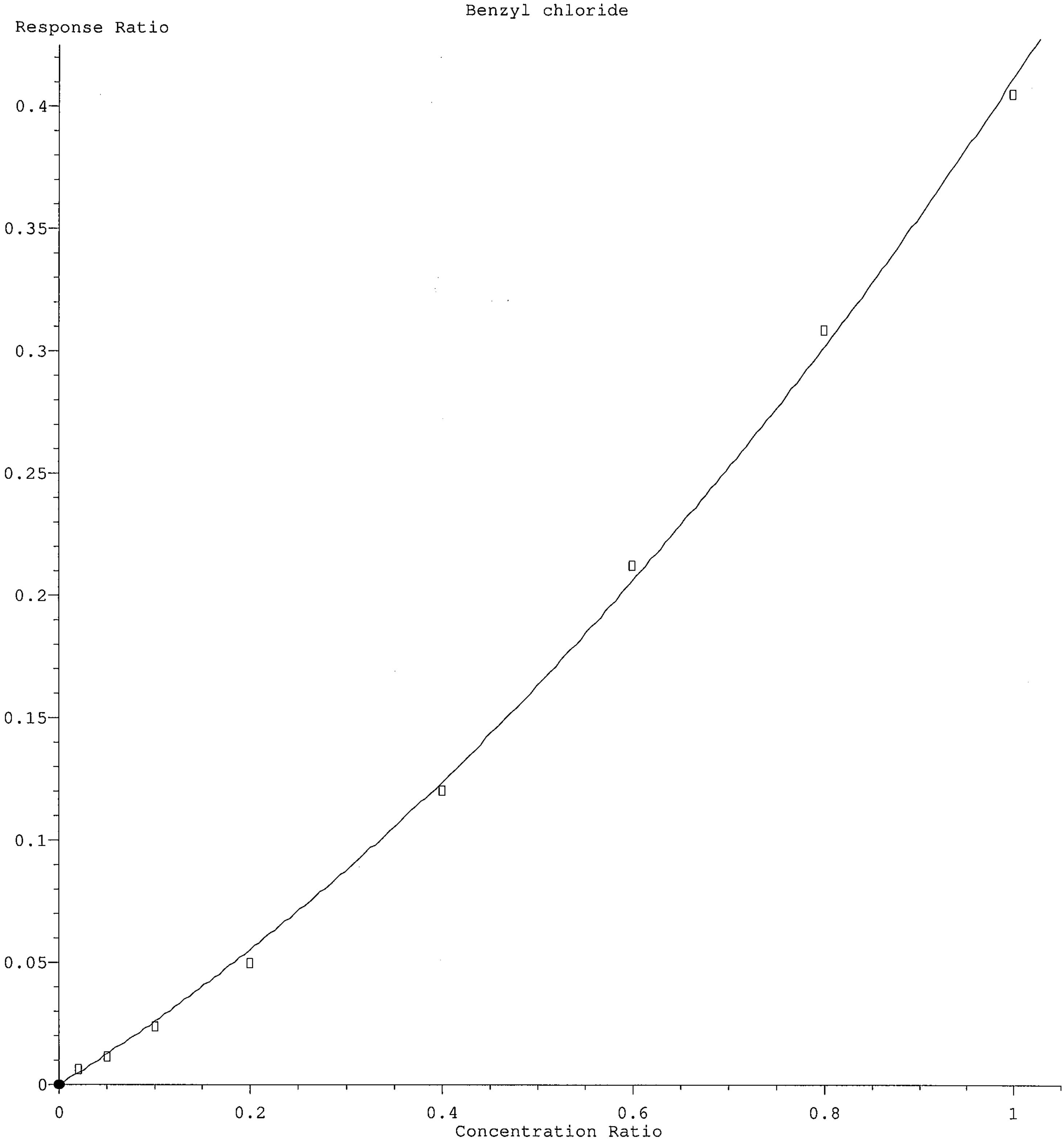
cis-1,3-Dichloropropene



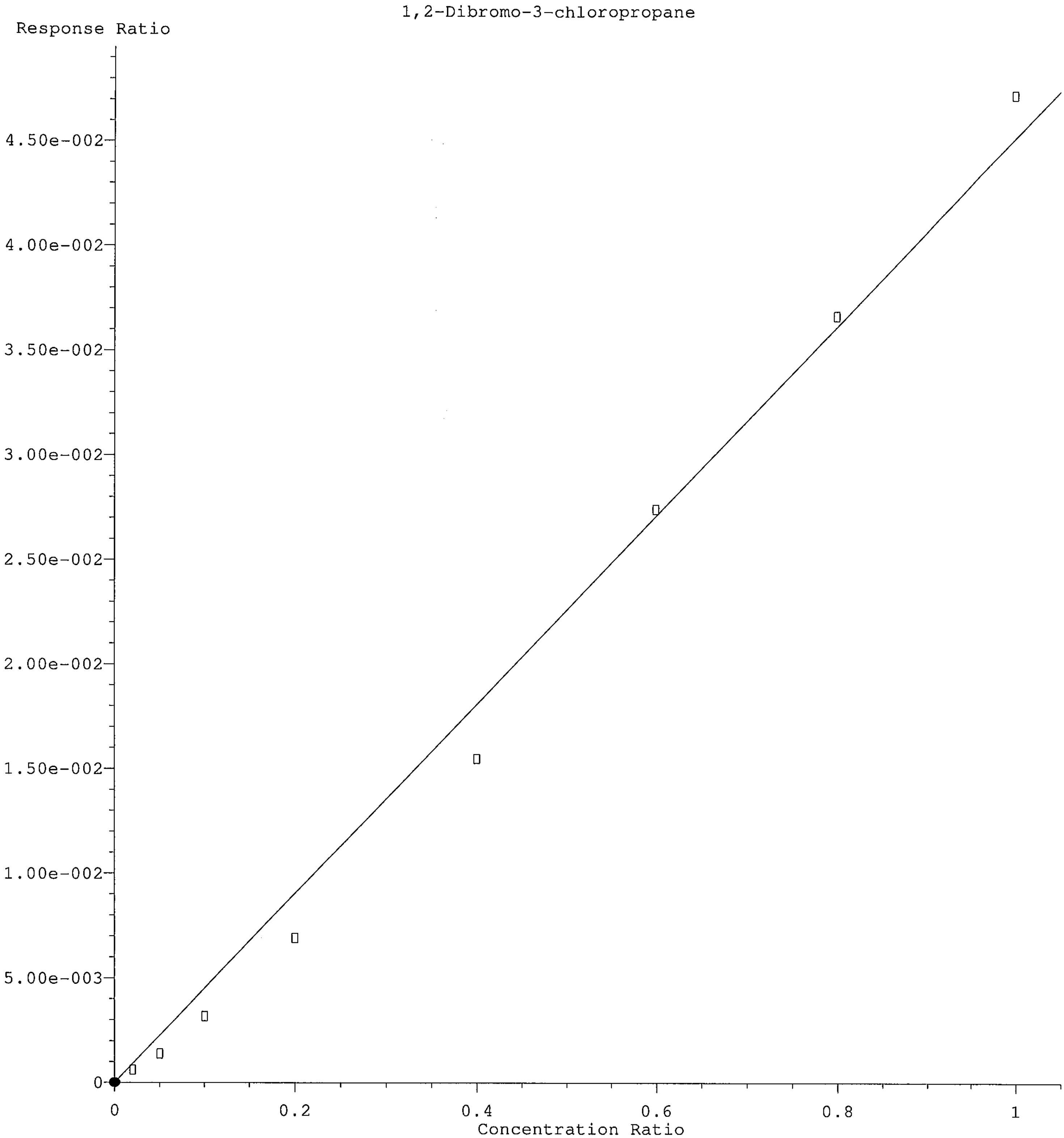
Response = 2.100e-001 * Amt
Coef of Det (r^2) = 0.992   Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018



R = 6.266e-002 A*A + 8.937e-002 A + 0.000e+000
Coef of Det (r^2) = 0.999   Curve Fit: Quad/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:5[illegible]

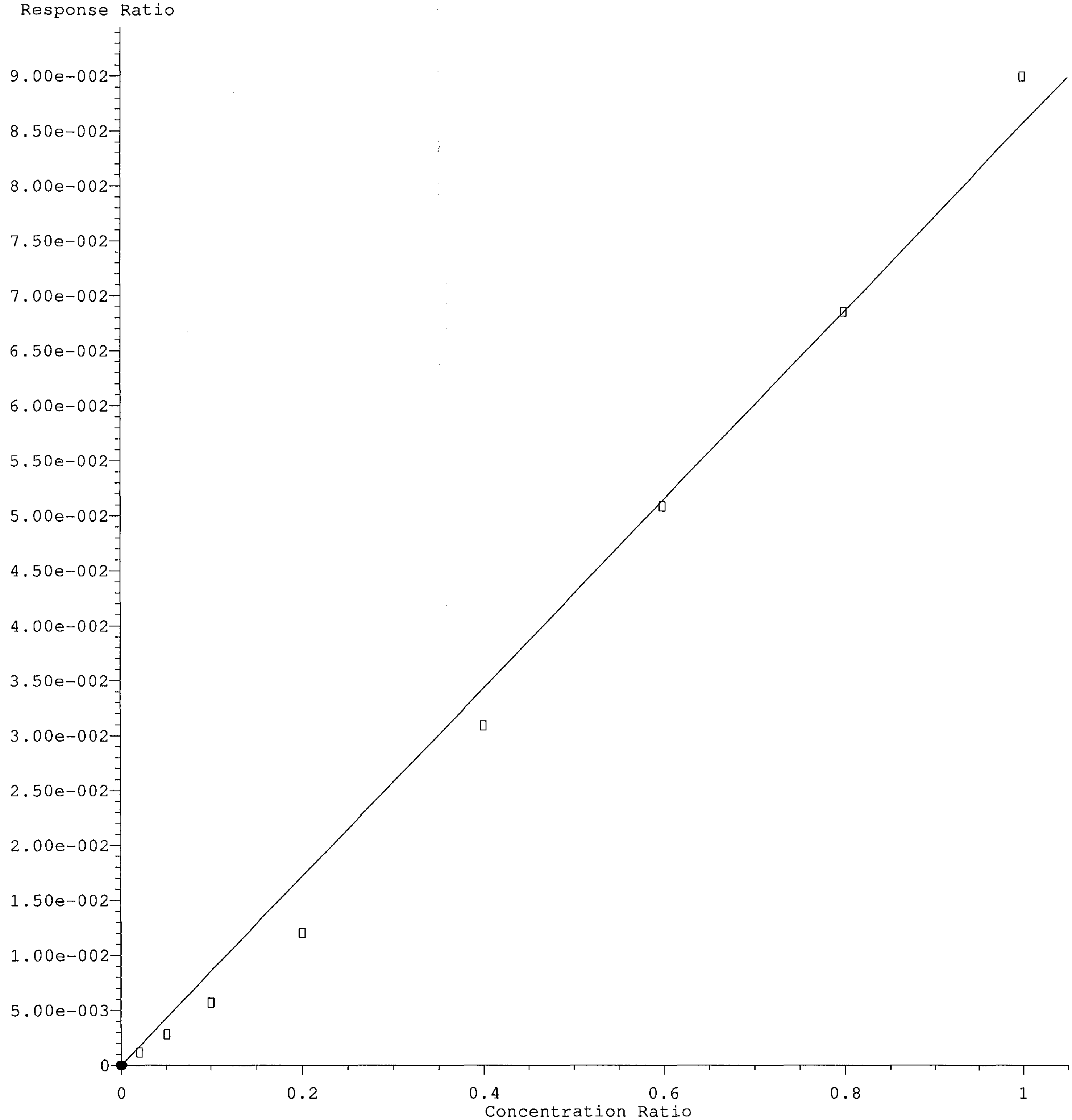


R = 1.694e-001 A*A + 2.416e-001 A + 0.000e+000
Coef of Det (r^2) = 0.999   Curve Fit: Quad/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018

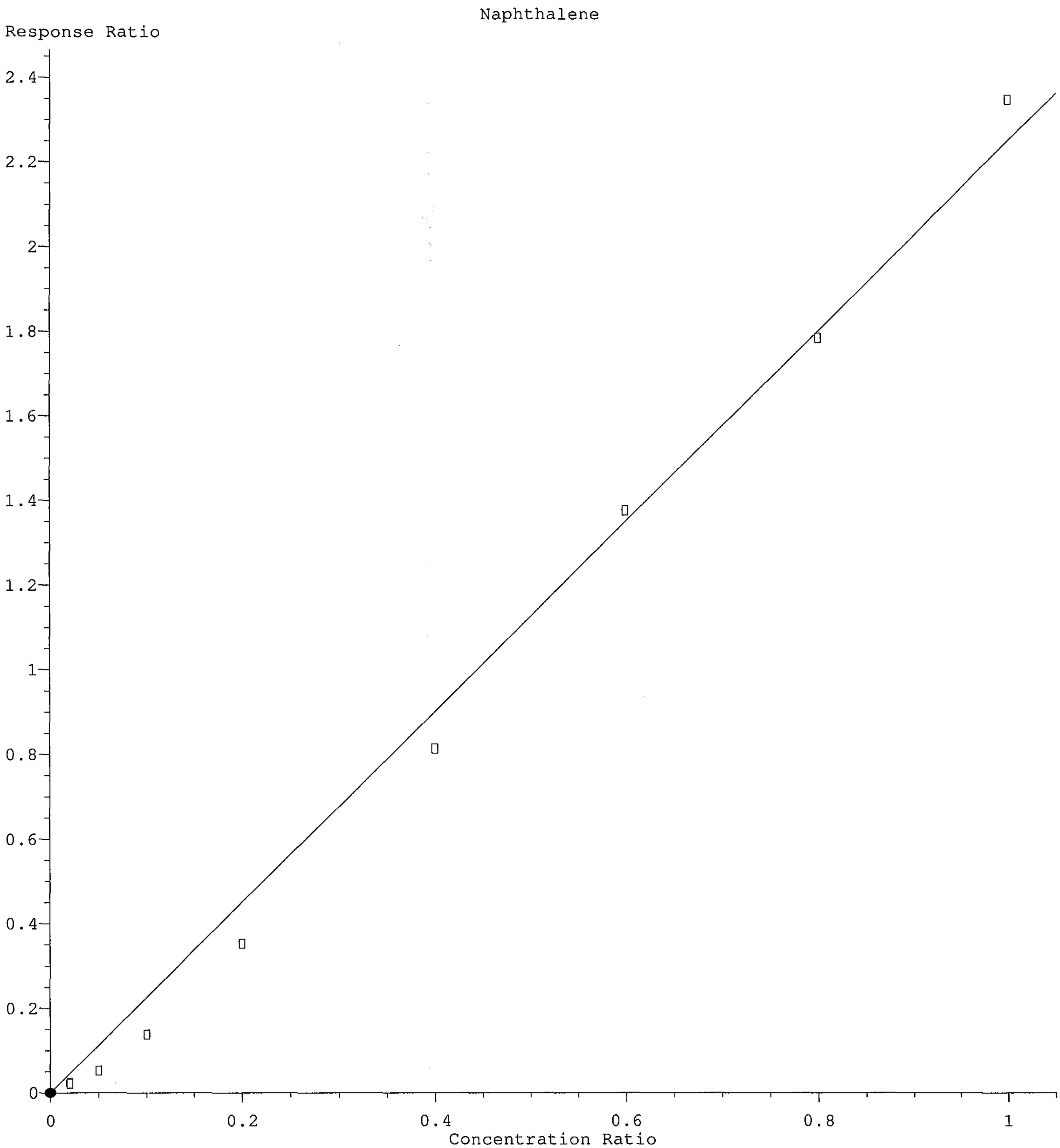


Response = 4.513e-002 * Amt
Coef of Det (r^2) = 0.995   Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018

Hexachloroethane



Response = 8.561e-002 * Amt
Coef of Det (r^2) = 0.996   Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018



Response = 2.250e+000 * Amt
Coef of Det (r^2) = 0.997   Curve Fit: Linear/(0,0)
Method Name: C:\MS4\METHODS\8260083118.M
Calibration Table Last Updated: Fri Aug 31 13:54:22 2018

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083103.D
Acq On : 31 Aug 2018 9:30 am
Operator : EA
Sample : VSTD001
Misc : VSTD001
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Aug 31 10:03:26 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.642	2000	1445800	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	679530	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	849293	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	10848m	1.29	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery	=	2.58%#	
69) Toluene-d8	11.020	3570	19069	1.00	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery	=	2.00%#	
82) Bromofluorobenzene	14.876	4953	8985	1.63	ug/L	0.01
Spiked Amount 50.000	Range 74 - 119		Recovery	=	3.26%#	

Compound	R.T.	Scan	Response	Conc	Units	Qvalue
Target Compounds						
2) Dichlorodifluoromethane	1.212	46	13710	1.03	ug/L #	91
3) Chloromethane	1.281	72	14775	1.04	ug/L #	96
4) Vinyl Chloride	1.387	112	18948	1.40	ug/L	91
5) Bromomethane	1.574	182	10131	1.47	ug/L	95
6) Chloroethane	1.622	200	8855	1.25	ug/L #	87
7) Acrolein	1.943	315	3512	2.12	ug/L	95
8) Acetonitrile	1.954	319	671m	0.83	ug/L	
9) Acrylonitrile	2.341	458	3837	1.11	ug/L #	83
10) Trichlorofluoromethane	1.957	320	15067m	1.03	ug/L	
11) Diethyl ether	2.104	373	7584	1.27	ug/L	95
12) FREON 123A	1.882	298	12437	1.45	ug/L	95
13) FC-113	2.461	501	10534	1.27	ug/L #	87
14) Acetone	2.024	344	2084	2.83	ug/L	81
15) IPA	1.998	335	3641	13.89	ug/L #	85
16) TBA	2.328	453	4524	8.60	ug/L	91
17) Methyl acetate	2.459	500	7551	1.08	ug/L #	92
18) Allyl chloride	2.461	501	13131	1.12	ug/L	91
19) Iodomethane	2.300	443	17031	1.21	ug/L	97
20) 1,1-Dichloroethene	2.286	438	16064	1.18	ug/L	96
21) Methylene Chloride	2.400	479	11814	1.30	ug/L	96
22) Carbon Disulfide	2.534	527	20678m	1.68	ug/L	
23) trans-1,2-Dichloroethene	2.947	675	13610	1.13	ug/L	95
24) MTBE	3.083	724	24732	1.03	ug/L	97
25) 1,1-Dichloroethane	3.186	761	17848	1.20	ug/L	98
26) Propionitrile	3.234	778	6633m	6.30	ug/L	
27) Vinyl Acetate	3.407	840	13439	1.18	ug/L #	92
28) Chloroprene	3.582	903	15127	1.11	ug/L	95
29) Hexane	3.672	935	10888	1.20	ug/L	98
30) 2-Butanone	3.713	950	1423	2.04	ug/L #	60
31) Diisopropylether (DIPE)	3.780	974	30199	1.05	ug/L	100
32) cis-1,2-Dichloroethene	3.825	990	12934	1.11	ug/L	87
33) Methacrylonitrile	3.831	992	12218m	2.02	ug/L	
34) Bromochloromethane	4.017	1059	6301m	1.24	ug/L	
35) Chloroform	4.109	1092	15777	1.21	ug/L	97
36) 2,2-Dichloropropane	4.193	1122	9989	1.03	ug/L #	93
37) Methyl acrylate	4.291	1157	5516m	1.04	ug/L	
38) Isobutyl alcohol	4.422	1204	2759m	11.02	ug/L	
39) Tetrahydrofuran	4.575	1259	2663m	2.15	ug/L	
41) 1,2-Dichloroethane	5.111	1451	12133	1.19	ug/L	98
42) 1,1,1-Trichloroethane	5.250	1501	10359	1.18	ug/L	91
43) 1-Chlorobutane	5.309	1522	15631	1.03	ug/L	95
44) 1,1-Dichloropropene	5.652	1645	10666m	1.06	ug/L	
45) Cyclohexane	5.741	1677	16834m	0.97	ug/L	
46) Carbon Tetrachloride	5.930	1745	6054m	1.43	ug/L	

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083103.D
Acq On : 31 Aug 2018 9:30 am
Operator : EA
Sample : VSTD001
Misc : VSTD001
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Aug 31 10:03:26 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

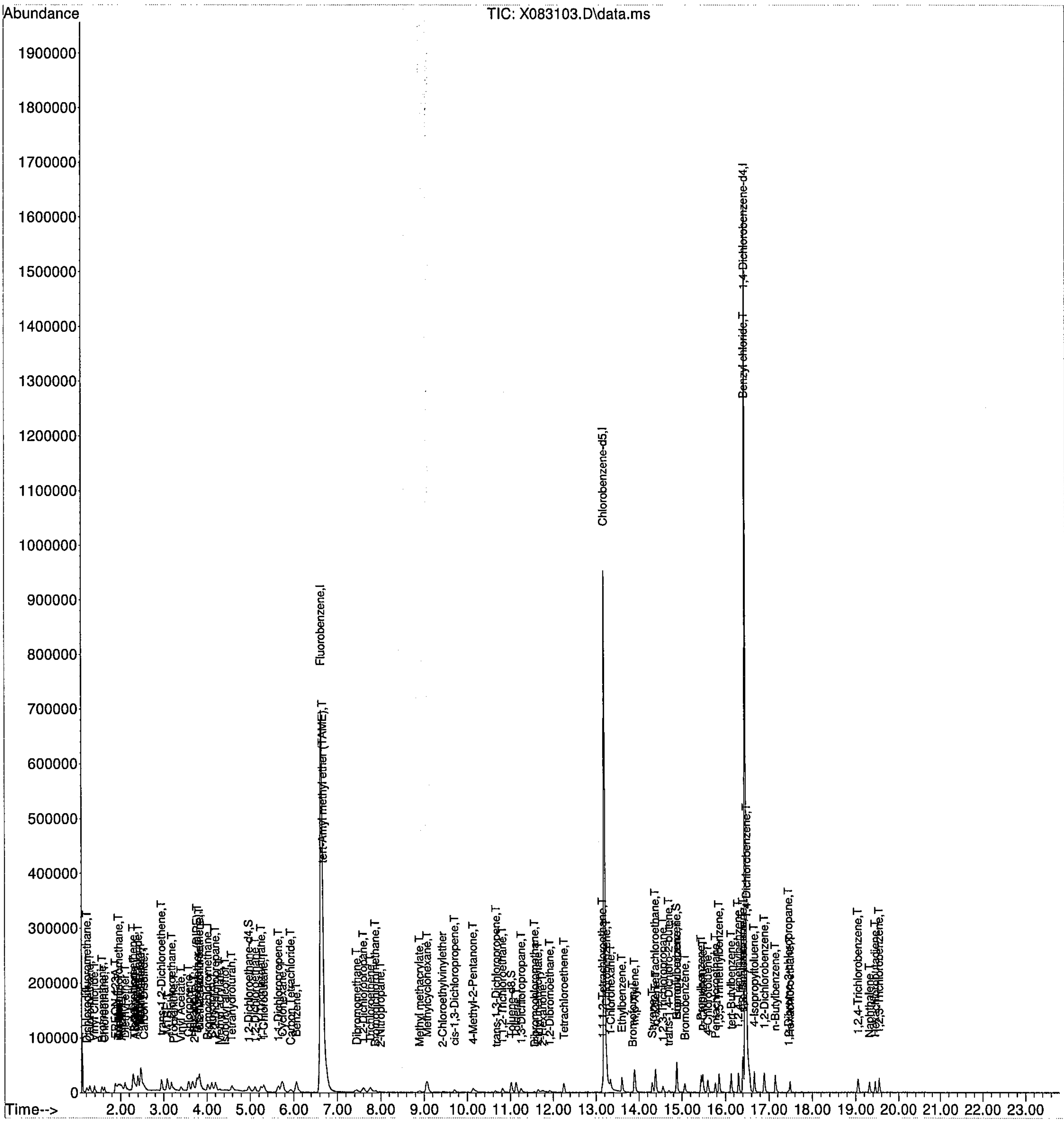
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47) Benzene	6.062	1792	31374	0.98	ug/L	96
48) tert-Amyl methyl ether...	6.678	2013	38978m	1.62	ug/L	
49) Dibromomethane	7.447	2289	4007m	1.12	ug/L	
50) 1,2-Dichloropropane	7.595	2342	6817m	0.96	ug/L	
51) Trichloroethene	7.763	2402	7620m	1.13	ug/L	
52) Bromodichloromethane	7.880	2444	4625m	1.43	ug/L	
53) 2-Nitropropane	7.994	2485	984m	1.15	ug/L	
55) Methyl methacrylate	8.895	2808	3632m	0.84	ug/L	
56) Methylcyclohexane	9.068	2870	13459m	1.00	ug/L	
57) 2-Chloroethylvinylether	9.427	2999	1049m	0.57	ug/L	
58) cis-1,3-Dichloropropene	9.703	3098	3944	0.83	ug/L	96
59) trans-1,3-Dichloropropene	10.668	3444	2240m	0.73	ug/L	
60) 1,1,2-Trichloroethane	10.816	3497	4288m	1.09	ug/L	
61) 1,3-Dichloropropane	11.257	3655	6227	0.97	ug/L	98
62) Dibromochloromethane	11.566	3766	1566m	1.43	ug/L	
63) Ethyl methacrylate	11.642	3793	4821	0.81	ug/L #	79
64) 1,2-Dibromoethane	11.926	3895	3292m	1.23	ug/L	
65) Bromoform	13.850	4585	605	1.13	ug/L #	80
67) 4-Methyl-2-Pentanone	10.133	3252	11560	1.65	ug/L #	91
68) 2-Hexanone	11.750	3832	5270m	1.70	ug/L	
70) Toluene	11.140	3613	20303	0.88	ug/L	93
71) Tetrachloroethene	12.258	4014	6571	0.82	ug/L	96
72) 1,1,1,2-Tetrachloroethane	13.153	4335	3850	1.40	ug/L #	93
73) Chlorobenzene	13.242	4367	14934	1.18	ug/L	91
74) 1-Chlorohexane	13.337	4401	4290	0.87	ug/L	98
75) Ethylbenzene	13.605	4497	23180	0.96	ug/L	97
76) m,p-Xylene	13.898	4602	35413	1.91	ug/L	98
77) Styrene	14.308	4749	12149	1.00	ug/L	98
78) o-Xylene	14.391	4779	21890	0.92	ug/L	95
79) 1,1,2,2-Tetrachloroethane	14.377	4774	7188	1.35	ug/L #	87
80) 1,2,3-Trichloropropane	14.556	4838	5917	1.27	ug/L	91
81) trans-1,4-Dichloro-2-b...	14.692	4887	1499m	1.79	ug/L	
83) Isopropylbenzene	14.885	4956	27038	0.89	ug/L	96
84) Bromobenzene	15.072	5023	8209m	1.07	ug/L	
85) n-Propylbenzene	15.440	5155	28153	0.92	ug/L	100
86) 2-Chlorotoluene	15.482	5170	19436	1.02	ug/L	98
87) 4-Chlorotoluene	15.596	5211	16551	1.07	ug/L	96
88) 1,3,5-Trimethylbenzene	15.855	5304	22947	0.91	ug/L	97
89) Pentachloroethane	15.772	5274	1104	2.22	ug/L #	81
90) tert-Butylbenzene	16.134	5404	17764	0.80	ug/L	100
91) 1,2,4-Trimethylbenzene	16.299	5463	22366	0.86	ug/L	92
92) sec-Butylbenzene	16.402	5500	27056	0.83	ug/L	96
94) 1,3-Dichlorobenzene	16.405	5501	15076	1.03	ug/L	91
95) Benzyl chloride	16.452	5518	5322	1.10	ug/L	98
96) 1,4-Dichlorobenzene	16.494	5533	19072m	1.29	ug/L	
97) 4-Isopropyltoluene	16.664	5594	24911	0.73	ug/L	97
98) 1,2-Dichlorobenzene	16.895	5677	18402	1.02	ug/L	96
99) n-Butylbenzene	17.146	5767	21816	0.76	ug/L	96
100) 1,2-Dibromo-3-chloropr...	17.453	5877	518m	1.04	ug/L	
101) Hexachloroethane	17.484	5888	1007	1.04	ug/L #	31
102) 1,2,4-Trichlorobenzene	19.051	6450	10590	0.74	ug/L	99
103) Naphthalene	19.319	6546	18592	0.55	ug/L	100
104) Hexachlorobutadiene	19.458	6596	5430	1.18	ug/L #	85
105) 1,2,3-Trichlorobenzene	19.547	6628	10572	0.73	ug/L	81

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083103.D
Acq On : 31 Aug 2018 9:30 am
Operator : EA
Sample : VSTD001
Misc : VSTD001
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Aug 31 10:03:26 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083104.D
Acq On : 31 Aug 2018 10:02 am
Operator : EA
Sample : VSTD0025
Misc : VSTD0025
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Aug 31 10:34:00 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.633	1997	1335691	50.00	ug/L	-0.01
66) Chlorobenzene-d5	13.195	4350	649244	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	830743	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.957	1396	21371	2.74	ug/L	-0.01
Spiked Amount 50.000	Range 77 - 117		Recovery =	5.48%#		
69) Toluene-d8	11.014	3568	37020	2.04	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	4.08%#		
82) Bromofluorobenzene	14.874	4952	15120	2.87	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	5.74%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.204	43	34860	2.83	ug/L	95
3) Chloromethane	1.273	69	32595	2.49	ug/L	97
4) Vinyl Chloride	1.377	108	37081	2.97	ug/L	99
5) Bromomethane	1.552	174	21142	3.32	ug/L	95
6) Chloroethane	1.616	198	17692	2.70	ug/L	97
7) Acrolein	1.932	311	8873	5.81	ug/L	88
8) Acetonitrile	1.943	315	3629	4.84	ug/L #	34
9) Acrylonitrile	2.336	456	8233	2.58	ug/L #	90
10) Trichlorofluoromethane	1.968	324	32098m	2.37	ug/L	
11) Diethyl ether	2.093	369	14623	2.65	ug/L	94
12) FREON 123A	1.869	293	27309	3.46	ug/L	93
13) FC-113	2.462	501	23280	3.04	ug/L #	93
14) Acetone	2.015	341	4252	6.26	ug/L	92
15) IPA	1.987	331	8080	33.37	ug/L #	85
16) TBA	2.328	453	10889	22.41	ug/L #	82
17) Methyl acetate	2.448	496	17329	2.69	ug/L	96
18) Allyl chloride	2.456	499	25218	2.34	ug/L	95
19) Iodomethane	2.286	438	35790	2.74	ug/L	99
20) 1,1-Dichloroethene	2.275	434	33332	2.66	ug/L	95
21) Methylene Chloride	2.386	474	24724	2.95	ug/L	96
22) Carbon Disulfide	2.514	520	43811	3.85	ug/L #	53
23) trans-1,2-Dichloroethene	2.936	671	28368	2.56	ug/L	95
24) MTBE	3.078	722	51422	2.31	ug/L	99
25) 1,1-Dichloroethane	3.173	756	33943	2.47	ug/L	95
26) Propionitrile	3.223	774	13399m	13.78	ug/L	
27) Vinyl Acetate	3.393	835	28776	2.72	ug/L #	95
28) Chloroprene	3.577	901	29919	2.38	ug/L	97
29) Hexane	3.663	932	22983	2.73	ug/L	98
30) 2-Butanone	3.702	946	3434m	5.32	ug/L	
31) Diisopropylether (DIPE)	3.769	970	66528	2.51	ug/L	99
32) cis-1,2-Dichloroethene	3.820	988	27863	2.60	ug/L	97
33) Methacrylonitrile	3.817	987	27473m	4.91	ug/L	
34) Bromochloromethane	4.006	1055	12254	2.62	ug/L	95
35) Chloroform	4.096	1087	30821	2.57	ug/L	93
36) 2,2-Dichloropropane	4.179	1117	20226	2.25	ug/L	95
37) Methyl acrylate	4.285	1155	11000m	2.24	ug/L	
38) Isobutyl alcohol	4.400	1196	6575m	28.43	ug/L	
39) Tetrahydrofuran	4.572	1258	4269m	3.74	ug/L	
41) 1,2-Dichloroethane	5.100	1447	24959	2.65	ug/L #	88
42) 1,1,1-Trichloroethane	5.245	1499	21951	2.70	ug/L	89
43) 1-Chlorobutane	5.300	1519	31463m	2.24	ug/L	
44) 1,1-Dichloropropene	5.635	1639	20698	2.23	ug/L	95
45) Cyclohexane	5.727	1672	35047	2.19	ug/L	96
46) Carbon Tetrachloride	5.931	1745	13410m	3.42	ug/L	

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083104.D
Acq On   : 31 Aug 2018 10:02 am
Operator : EA
Sample   : VSTD0025
Misc   : VSTD0025
ALS Vial : 4   Sample Multiplier: 1

Quant Time: Aug 31 10:34:00 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

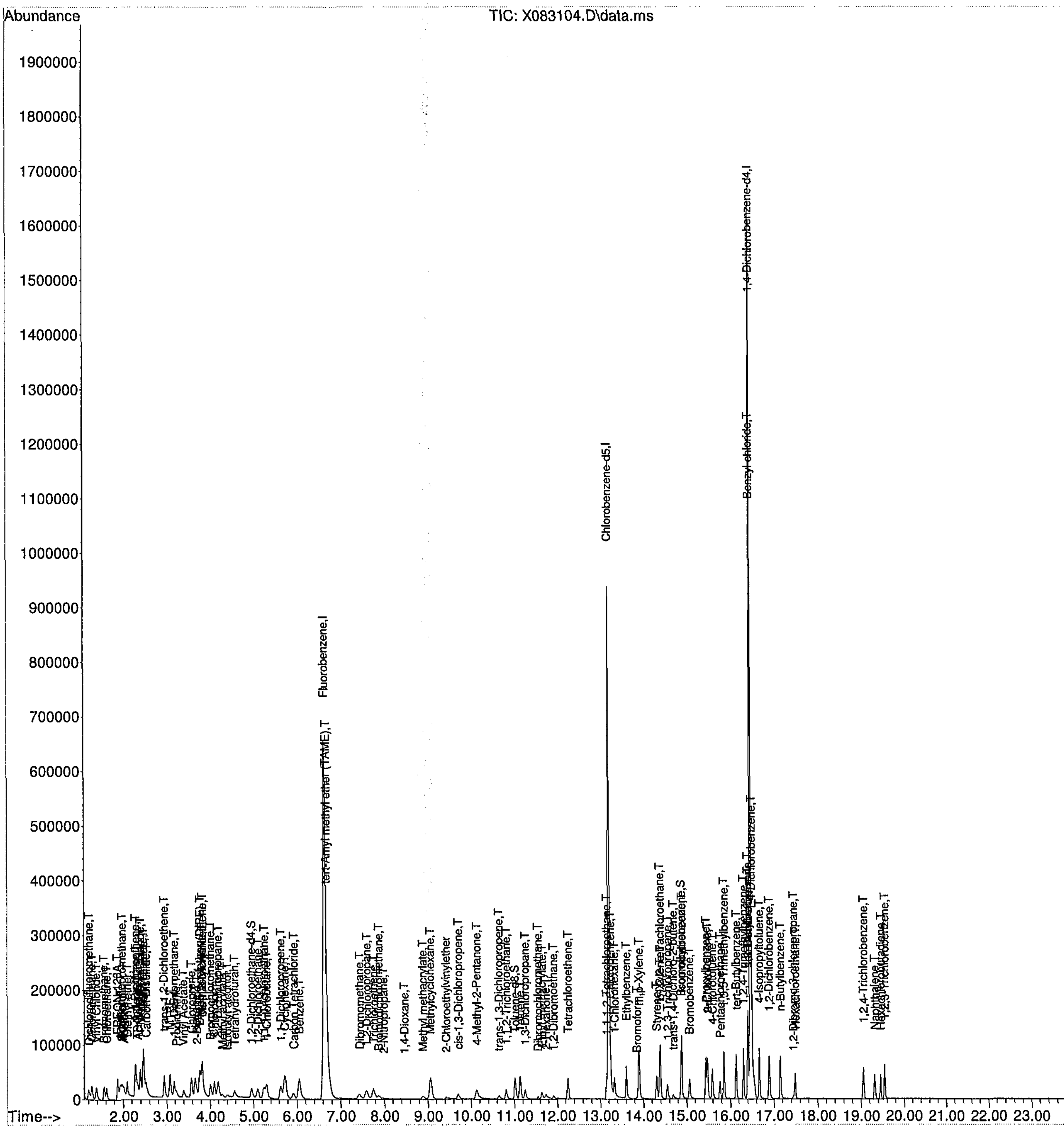
Compound	R.T.	Scan	Response	Conc Units	Dev(Min)
47) Benzene	6.050	1788	65824	2.23 ug/L	94
48) tert-Amyl methyl ether...	6.670	2010	60030m	2.71 ug/L	
49) Dibromomethane	7.431	2283	8546m	2.59 ug/L	
50) 1,2-Dichloropropane	7.595	2342	13900m	2.12 ug/L	
51) Trichloroethene	7.752	2398	14714m	2.37 ug/L	
52) Bromodichloromethane	7.874	2442	9436m	3.17 ug/L	
53) 2-Nitropropane	7.980	2480	1749m	2.22 ug/L	
54) 1,4-Dioxane	8.457	2651	274m	12.20 ug/L	
55) Methyl methacrylate	8.884	2804	7078m	1.77 ug/L	
56) Methylcyclohexane	9.051	2864	26726m	2.15 ug/L	
57) 2-Chloroethylvinylether	9.422	2997	3511m	2.07 ug/L	
58) cis-1,3-Dichloropropene	9.706	3099	7532	1.71 ug/L	98
59) trans-1,3-Dichloropropene	10.641	3434	5063m	1.79 ug/L	
60) 1,1,2-Trichloroethane	10.813	3496	7223	1.99 ug/L	96
61) 1,3-Dichloropropane	11.246	3651	13511	2.28 ug/L	91
62) Dibromochloromethane	11.547	3759	3096m	3.06 ug/L	
63) Ethyl methacrylate	11.644	3794	9420	1.72 ug/L	96
64) 1,2-Dibromoethane	11.909	3889	6588	2.66 ug/L #	87
65) Bromoform	13.848	4584	1768	3.58 ug/L #	91
67) 4-Methyl-2-Pentanone	10.125	3249	28006	4.17 ug/L #	95
68) 2-Hexanone	11.731	3825	13604m	4.60 ug/L	
70) Toluene	11.131	3610	44889	2.04 ug/L	92
71) Tetrachloroethene	12.252	4012	15373	2.01 ug/L	92
72) 1,1,1,2-Tetrachloroethane	13.148	4333	7752	2.94 ug/L	96
73) Chlorobenzene	13.237	4365	31569	2.61 ug/L	99
74) 1-Chlorohexane	13.329	4398	9550	2.02 ug/L	88
75) Ethylbenzene	13.602	4496	48979	2.12 ug/L	98
76) m,p-Xylene	13.900	4603	75456	4.26 ug/L	93
77) Styrene	14.305	4748	25347	2.19 ug/L	99
78) o-Xylene	14.386	4777	51704	2.28 ug/L	99
79) 1,1,2,2-Tetrachloroethane	14.380	4775	14496	2.86 ug/L	99
80) 1,2,3-Trichloropropane	14.559	4839	13453	3.02 ug/L	94
81) trans-1,4-Dichloro-2-b...	14.687	4885	2764	3.46 ug/L #	73
83) Isopropylbenzene	14.882	4955	62215	2.15 ug/L	97
84) Bromobenzene	15.061	5019	19294	2.64 ug/L	93
85) n-Propylbenzene	15.440	5155	65163	2.22 ug/L	95
86) 2-Chlorotoluene	15.479	5169	44337	2.44 ug/L	97
87) 4-Chlorotoluene	15.590	5209	36805	2.49 ug/L	97
88) 1,3,5-Trimethylbenzene	15.855	5304	52201	2.16 ug/L	97
89) Pentachloroethane	15.772	5274	2391	5.03 ug/L #	70
90) tert-Butylbenzene	16.134	5404	41661	1.97 ug/L	100
91) 1,2,4-Trimethylbenzene	16.302	5464	55362	2.22 ug/L	97
92) sec-Butylbenzene	16.405	5501	67437	2.15 ug/L	97
94) 1,3-Dichlorobenzene	16.405	5501	33723	2.35 ug/L	99
95) Benzyl chloride	16.449	5517	9519	2.02 ug/L	96
96) 1,4-Dichlorobenzene	16.491	5532	35071	2.43 ug/L	98
97) 4-Isopropyltoluene	16.664	5594	58074	1.75 ug/L	98
98) 1,2-Dichlorobenzene	16.890	5675	39688	2.25 ug/L	93
99) n-Butylbenzene	17.146	5767	53141	1.89 ug/L	91
100) 1,2-Dibromo-3-chloropr...	17.442	5873	1146m	2.36 ug/L	
101) Hexachloroethane	17.487	5889	2334	2.46 ug/L #	48
102) 1,2,4-Trichlorobenzene	19.051	6450	22096	1.57 ug/L	98
103) Naphthalene	19.316	6545	43801	1.33 ug/L	100
104) Hexachlorobutadiene	19.455	6595	10058	2.23 ug/L	99
105) 1,2,3-Trichlorobenzene	19.545	6627	24972	1.77 ug/L	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083104.D
Acq On   : 31 Aug 2018 10:02 am
Operator : EA
Sample   : VSTD0025
Misc   : VSTD0025
ALS Vial : 4   Sample Multiplier: 1

Quant Time: Aug 31 10:34:00 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083105.D
Acq On : 31 Aug 2018 10:34 am
Operator : EA
Sample : VSTD005
Misc : VSTD005
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Aug 31 11:00:52 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc Units	Dev(Min)
Internal Standards					
1) Fluorobenzene	6.647	2002	1641577	50.00 ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	778307	50.00 ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.461	5521	942776	50.00 ug/L	0.00
System Monitoring Compounds					
40) 1,2-Dichloroethane-d4	4.977	1403	52576	5.49 ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	10.98%#	
69) Toluene-d8	11.020	3570	95757	4.40 ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	8.80%#	
82) Bromofluorobenzene	14.868	4950	32208	5.11 ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	10.22%#	
Target Compounds					Qvalue
2) Dichlorodifluoromethane	1.220	49	76668	5.07 ug/L	95
3) Chloromethane	1.292	76	77312	4.81 ug/L	99
4) Vinyl Chloride	1.398	116	89961	5.86 ug/L	98
5) Bromomethane	1.571	181	48975	6.25 ug/L	98
6) Chloroethane	1.630	203	41764	5.19 ug/L	99
7) Acrolein	1.946	316	21276	11.33 ug/L	93
8) Acetonitrile	1.962	322	5275m	5.73 ug/L	
9) Acrylonitrile	2.350	461	19987m	5.09 ug/L	
10) Trichlorofluoromethane	1.982	329	76680m	4.61 ug/L	
11) Diethyl ether	2.105	373	38853	5.72 ug/L	92
12) FREON 123A	1.888	300	52145	5.37 ug/L	97
13) FC-113	2.473	505	51356	5.46 ug/L #	100
14) Acetone	2.027	345	10386	12.44 ug/L	90
15) IPA	1.996	334	19387	65.15 ug/L	99
16) TBA	2.339	457	31902m	53.42 ug/L	
17) Methyl acetate	2.462	501	41972	5.30 ug/L	98
18) Allyl chloride	2.470	504	68611	5.17 ug/L	96
19) Iodomethane	2.300	443	80971	5.05 ug/L	95
20) 1,1-Dichloroethene	2.292	440	77856	5.05 ug/L	97
21) Methylene Chloride	2.403	480	54935	5.33 ug/L	97
22) Carbon Disulfide	2.531	526	101502	7.25 ug/L #	83
23) trans-1,2-Dichloroethene	2.952	677	72321	5.30 ug/L	98
24) MTBE	3.092	727	128577	4.69 ug/L	99
25) 1,1-Dichloroethane	3.187	761	86736	5.13 ug/L	99
26) Propionitrile	3.237	779	30174	25.25 ug/L	98
27) Vinyl Acetate	3.413	842	74821	5.76 ug/L	98
28) Chloroprene	3.591	906	78373	5.08 ug/L	96
29) Hexane	3.677	937	56156	5.43 ug/L	97
30) 2-Butanone	3.716	951	8372m	10.55 ug/L	
31) Diisopropylether (DIPE)	3.783	975	156313	4.79 ug/L	100
32) cis-1,2-Dichloroethene	3.836	994	74307	5.63 ug/L	94
33) Methacrylonitrile	3.828	991	67134m	9.77 ug/L	
34) Bromochloromethane	4.026	1062	29607	5.15 ug/L	94
35) Chloroform	4.115	1094	74881	5.07 ug/L	93
36) 2,2-Dichloropropane	4.207	1127	50174	4.55 ug/L	98
37) Methyl acrylate	4.302	1161	30238	5.01 ug/L	95
38) Isobutyl alcohol	4.411	1200	18308m	64.42 ug/L	
39) Tetrahydrofuran	4.584	1262	7839	5.58 ug/L	98
41) 1,2-Dichloroethane	5.114	1452	60403	5.21 ug/L #	94
42) 1,1,1-Trichloroethane	5.250	1501	53299	5.33 ug/L	100
43) 1-Chlorobutane	5.314	1524	76744	4.44 ug/L	96
44) 1,1-Dichloropropene	5.649	1644	52472	4.59 ug/L	99
45) Cyclohexane	5.744	1678	90362	4.59 ug/L	95
46) Carbon Tetrachloride	5.942	1749	28889	6.00 ug/L	100

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083105.D
Acq On : 31 Aug 2018 10:34 am
Operator : EA
Sample : VSTD005
Misc : VSTD005
ALS Vial : 5 Sample Multiplier: 1

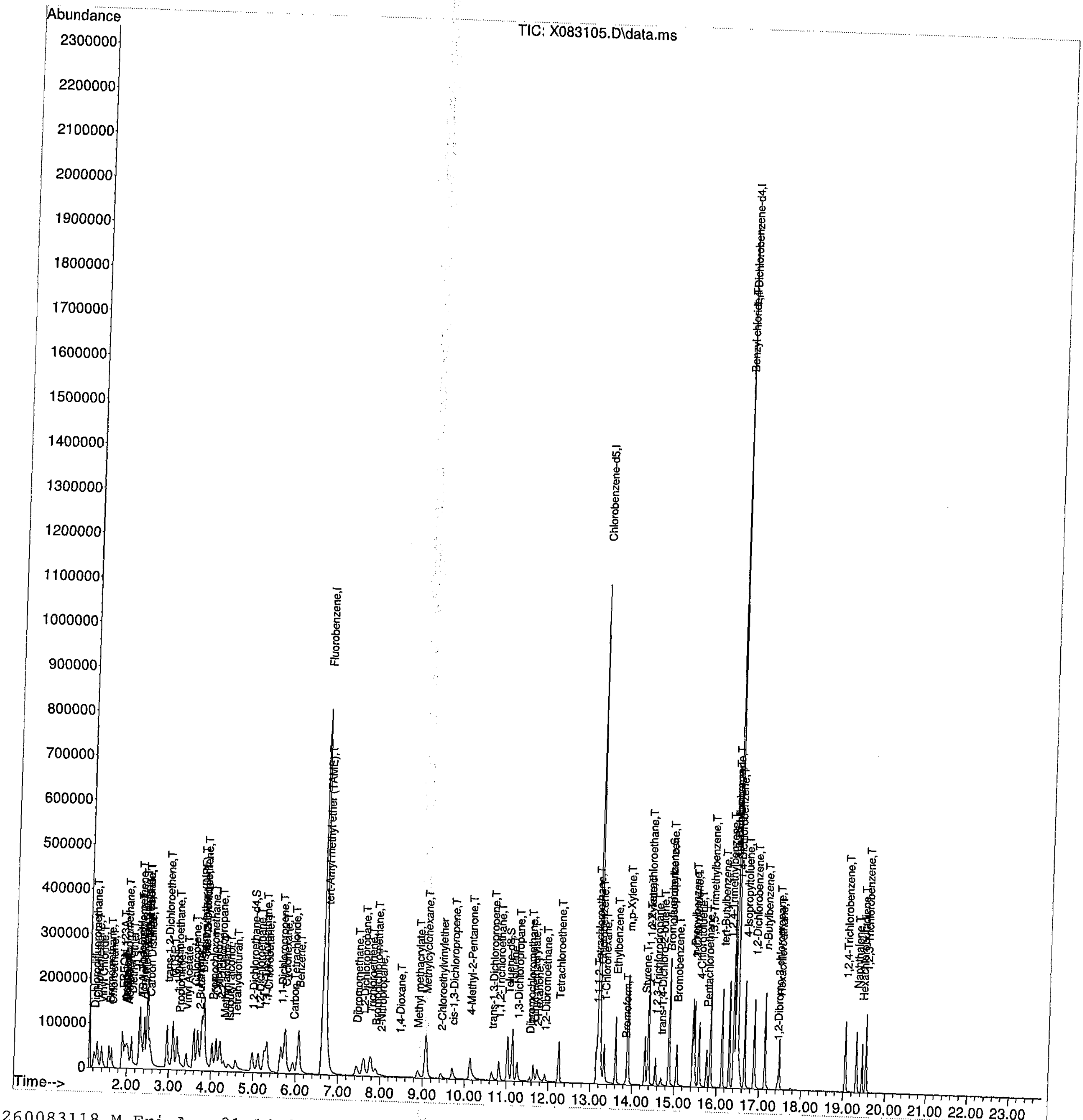
Quant Time: Aug 31 11:00:52 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

	Compound	R.T.	Scan	Response	Conc	Units		Dev(Min)
47)	Benzene	6.065	1793	176195	4.85	ug/L		99
48)	tert-Amyl methyl ether...	6.695	2019	121678	4.47	ug/L	#	89
49)	Dibromomethane	7.431	2283	21672m	5.34	ug/L		
50)	1,2-Dichloropropane	7.598	2343	34704m	4.32	ug/L		
51)	Trichloroethene	7.763	2402	36720	4.80	ug/L		90
52)	Bromodichloromethane	7.886	2446	24615m	6.72	ug/L		
53)	2-Nitropropane	8.014	2492	5041m	5.20	ug/L		
54)	1,4-Dioxane	8.446	2647	1319m	47.77	ug/L		
55)	Methyl methacrylate	8.878	2802	19177	3.90	ug/L		93
56)	Methylcyclohexane	9.062	2868	65636	4.30	ug/L		96
57)	2-Chloroethylvinylether	9.433	3001	8687	4.17	ug/L	#	51
58)	cis-1,3-Dichloropropene	9.707	3099	22713	4.20	ug/L		98
59)	trans-1,3-Dichloropropene	10.646	3436	14265	4.11	ug/L		96
60)	1,1,2-Trichloroethane	10.811	3495	20624	4.62	ug/L		95
61)	1,3-Dichloropropane	11.249	3652	33506	4.60	ug/L		95
62)	Dibromochloromethane	11.553	3761	7516	6.05	ug/L		83
63)	Ethyl methacrylate	11.633	3790	27491	4.09	ug/L		98
64)	1,2-Dibromoethane	11.915	3891	16404	5.38	ug/L	#	89
65)	Bromoform	13.848	4584	4008	6.60	ug/L	#	92
67)	4-Methyl-2-Pentanone	10.122	3248	76043	9.45	ug/L		99
68)	2-Hexanone	11.728	3824	33546	9.46	ug/L		99
70)	Toluene	11.132	3610	119648	4.54	ug/L		100
71)	Tetrachloroethene	12.250	4011	37092	4.04	ug/L		96
72)	1,1,1,2-Tetrachloroethane	13.150	4334	19697	6.24	ug/L		97
73)	Chlorobenzene	13.237	4365	74054	5.10	ug/L		96
74)	1-Chlorohexane	13.332	4399	25163	4.44	ug/L		92
75)	Ethylbenzene	13.605	4497	125326	4.53	ug/L		97
76)	m,p-Xylene	13.895	4601	197331	9.28	ug/L		99
77)	Styrene	14.305	4748	63256	4.56	ug/L		98
78)	o-Xylene	14.386	4777	130317	4.80	ug/L		100
79)	1,1,2,2-Tetrachloroethane	14.377	4774	38493	6.33	ug/L		94
80)	1,2,3-Trichloropropane	14.556	4838	30971	5.80	ug/L		93
81)	trans-1,4-Dichloro-2-b...	14.684	4884	6430	6.71	ug/L	#	89
83)	Isopropylbenzene	14.882	4955	163917	4.73	ug/L		99
84)	Bromobenzene	15.058	5018	51042	5.83	ug/L		98
85)	n-Propylbenzene	15.437	5154	163299	4.65	ug/L		99
86)	2-Chlorotoluene	15.479	5169	107260	4.93	ug/L		97
87)	4-Chlorotoluene	15.591	5209	97209	5.50	ug/L		99
88)	1,3,5-Trimethylbenzene	15.855	5304	140529	4.84	ug/L		99
89)	Pentachloroethane	15.769	5273	6418	11.26	ug/L		91
90)	tert-Butylbenzene	16.132	5403	114908	4.54	ug/L		95
91)	1,2,4-Trimethylbenzene	16.299	5463	146824	4.92	ug/L		100
92)	sec-Butylbenzene	16.402	5500	190630	5.08	ug/L		97
94)	1,3-Dichlorobenzene	16.402	5500	82701	5.08	ug/L		97
95)	Benzyl chloride	16.452	5518	22361	4.18	ug/L		95
96)	1,4-Dichlorobenzene	16.491	5532	85740	5.23	ug/L		96
97)	4-Isopropyltoluene	16.664	5594	154011	4.09	ug/L		99
98)	1,2-Dichlorobenzene	16.890	5675	93462	4.67	ug/L		97
99)	n-Butylbenzene	17.144	5766	136502	4.29	ug/L		100
100)	1,2-Dibromo-3-chloropr...	17.439	5872	2996	5.43	ug/L	#	81
101)	Hexachloroethane	17.487	5889	5392	5.02	ug/L		69
102)	1,2,4-Trichlorobenzene	19.051	6450	61908	3.88	ug/L		94
103)	Naphthalene	19.313	6544	129876	3.47	ug/L		100
104)	Hexachlorobutadiene	19.453	6594	25065	4.91	ug/L		96
105)	1,2,3-Trichlorobenzene	19.542	6626	66175	4.13	ug/L		97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\MS4\083118\
Data File : X083105.D
Acq On : 31 Aug 2018 10:34 am
Operator : EA
Sample : VSTD005
Misc : VSTD005
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Aug 31 11:00:52 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083106.D
Acq On : 31 Aug 2018 11:06 am
Operator : EA
Sample : VSTD010
Misc : VSTD010
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 31 11:39:57 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.645	2001	1621799	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	794071	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.461	5521	914871	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.977	1403	94973	10.05	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	20.10%#		
69) Toluene-d8	11.017	3569	205150	9.24	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	18.48%#		
82) Bromofluorobenzene	14.871	4951	64701	10.05	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	20.10%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.220	49	154873	10.36	ug/L	97
3) Chloromethane	1.294	77	156865	9.88	ug/L #	96
4) Vinyl Chloride	1.398	116	175148	11.54	ug/L	100
5) Bromomethane	1.576	183	90994	11.76	ug/L	97
6) Chloroethane	1.635	205	85477	10.76	ug/L	96
7) Acrolein	1.946	316	42916	23.13	ug/L	93
8) Acetonitrile	1.960	321	9159m	10.06	ug/L	
9) Acrylonitrile	2.350	461	41415	10.67	ug/L	99
10) Trichlorofluoromethane	1.990	332	152593m	9.29	ug/L	
11) Diethyl ether	2.107	374	74067	11.04	ug/L	92
12) FREON 123A	1.890	301	103331	10.77	ug/L	99
13) FC-113	2.478	507	96754	10.40	ug/L	98
14) Acetone	2.027	345	19842	24.06	ug/L	97
15) IPA	1.999	335	34960	118.92	ug/L #	96
16) TBA	2.336	456	57449	97.37	ug/L #	81
17) Methyl acetate	2.462	501	78592	10.05	ug/L	98
18) Allyl chloride	2.473	505	137397	10.49	ug/L	98
19) Iodomethane	2.303	444	171117	10.80	ug/L	97
20) 1,1-Dichloroethene	2.291	440	157698	10.36	ug/L	98
21) Methylene Chloride	2.403	480	105300	10.34	ug/L	96
22) Carbon Disulfide	2.534	527	213841	15.47	ug/L	96
23) trans-1,2-Dichloroethene	2.952	677	139564	10.36	ug/L	97
24) MTBE	3.089	726	257436	9.51	ug/L	99
25) 1,1-Dichloroethane	3.189	762	170249	10.18	ug/L	99
26) Propionitrile	3.237	779	61552	52.14	ug/L	98
27) Vinyl Acetate	3.410	841	142917	11.14	ug/L	99
28) Chloroprene	3.591	906	151408	9.93	ug/L	98
29) Hexane	3.677	937	108063	10.58	ug/L	99
30) 2-Butanone	3.714	950	16167	20.62	ug/L	93
31) Diisopropylether (DIPE)	3.783	975	307958	9.56	ug/L	99
32) cis-1,2-Dichloroethene	3.836	994	141801	10.88	ug/L	99
33) Methacrylonitrile	3.831	992	153658m	22.62	ug/L	
34) Bromochloromethane	4.026	1062	61774	10.87	ug/L	96
35) Chloroform	4.115	1094	160433	11.00	ug/L	95
36) 2,2-Dichloropropane	4.207	1127	100121	9.18	ug/L	95
37) Methyl acrylate	4.294	1158	56084	9.41	ug/L	95
38) Isobutyl alcohol	4.411	1200	29078	103.56	ug/L	98
39) Tetrahydrofuran	4.595	1266	12314m	8.88	ug/L	
41) 1,2-Dichloroethane	5.111	1451	122303	10.68	ug/L	98
42) 1,1,1-Trichloroethane	5.261	1505	107063	10.83	ug/L	98
43) 1-Chlorobutane	5.320	1526	160509	9.40	ug/L	97
44) 1,1-Dichloropropene	5.657	1647	102743	9.11	ug/L	99
45) Cyclohexane	5.741	1677	186880m	9.60	ug/L	
46) Carbon Tetrachloride	5.928	1744	63922m	13.43	ug/L	

Data Path : C:\MS4\083118\
Data File : X083106.D
Acq On : 31 Aug 2018 11:06 am
Operator : EA
Sample : VSTD010
Misc : VSTD010
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 31 11:39:57 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

	Compound	R.T.	Scan	Response	Conc	Units		Dev(Min)
47)	Benzene	6.062	1792	349601	9.74	ug/L		96
48)	tert-Amyl methyl ether...	6.695	2019	222561	8.27	ug/L		94
49)	Dibromomethane	7.434	2284	43413m	10.82	ug/L		
50)	1,2-Dichloropropane	7.607	2346	72786m	9.16	ug/L		
51)	Trichloroethene	7.771	2405	74528m	9.87	ug/L		
52)	Bromodichloromethane	7.883	2445	44006	12.16	ug/L		97
53)	2-Nitropropane	8.017	2493	9102m	9.50	ug/L		
54)	1,4-Dioxane	8.438	2644	3047m	111.70	ug/L		
55)	Methyl methacrylate	8.881	2803	41146	8.46	ug/L	#	94
56)	Methylcyclohexane	9.065	2869	142686	9.47	ug/L		97
57)	2-Chloroethylvinylether	9.416	2995	16712	8.12	ug/L	#	78
58)	cis-1,3-Dichloropropene	9.704	3098	47368	8.86	ug/L		94
59)	trans-1,3-Dichloropropene	10.643	3435	29932	8.73	ug/L		96
60)	1,1,2-Trichloroethane	10.814	3496	42779	9.69	ug/L		93
61)	1,3-Dichloropropane	11.246	3651	68589	9.52	ug/L		98
62)	Dibromochloromethane	11.550	3760	15480	12.61	ug/L		90
63)	Ethyl methacrylate	11.633	3790	59392	8.94	ug/L		94
64)	1,2-Dibromoethane	11.912	3890	29680	9.86	ug/L		98
65)	Bromoform	13.850	4585	7525	12.54	ug/L		95
67)	4-Methyl-2-Pentanone	10.122	3248	163970	19.98	ug/L		98
68)	2-Hexanone	11.720	3821	80907	22.36	ug/L		99
70)	Toluene	11.131	3610	256068	9.52	ug/L		98
71)	Tetrachloroethene	12.252	4012	79266	8.47	ug/L		99
72)	1,1,1,2-Tetrachloroethane	13.150	4334	39685	12.32	ug/L		94
73)	Chlorobenzene	13.237	4365	145690	9.84	ug/L		96
74)	1-Chlorohexane	13.332	4399	50762	8.78	ug/L		89
75)	Ethylbenzene	13.602	4496	267074	9.45	ug/L		98
76)	m,p-Xylene	13.895	4601	426107	19.65	ug/L		100
77)	Styrene	14.305	4748	135494	9.57	ug/L		98
78)	o-Xylene	14.386	4777	276206	9.97	ug/L		99
79)	1,1,2,2-Tetrachloroethane	14.375	4773	73875	11.92	ug/L		99
80)	1,2,3-Trichloropropane	14.556	4838	60672	11.13	ug/L		98
81)	trans-1,4-Dichloro-2-b...	14.684	4884	12058	12.34	ug/L	#	95
83)	Isopropylbenzene	14.882	4955	352550	9.97	ug/L		100
84)	Bromobenzene	15.058	5018	94855	10.62	ug/L		96
85)	n-Propylbenzene	15.437	5154	354588	9.90	ug/L		98
86)	2-Chlorotoluene	15.479	5169	237807	10.72	ug/L		98
87)	4-Chlorotoluene	15.588	5208	195647	10.84	ug/L		99
88)	1,3,5-Trimethylbenzene	15.855	5304	301042	10.17	ug/L		97
89)	Pentachloroethane	15.766	5272	11516	19.81	ug/L		90
90)	tert-Butylbenzene	16.131	5403	252093	9.76	ug/L		97
91)	1,2,4-Trimethylbenzene	16.299	5463	308064	10.12	ug/L		96
92)	sec-Butylbenzene	16.399	5499	377860	9.86	ug/L		100
94)	1,3-Dichlorobenzene	16.399	5499	160309	10.15	ug/L		98
95)	Benzyl chloride	16.449	5517	45529	8.78	ug/L		99
96)	1,4-Dichlorobenzene	16.491	5532	169038	10.62	ug/L		99
97)	4-Isopropyltoluene	16.664	5594	330790	9.05	ug/L		99
98)	1,2-Dichlorobenzene	16.890	5675	189591	9.75	ug/L		99
99)	n-Butylbenzene	17.141	5765	288667	9.34	ug/L		98
100)	1,2-Dibromo-3-chloropr...	17.445	5874	6325	11.82	ug/L	#	76
101)	Hexachloroethane	17.484	5888	10998	10.54	ug/L	#	54
102)	1,2,4-Trichlorobenzene	19.048	6449	134306	8.68	ug/L		95
103)	Naphthalene	19.313	6544	322655	8.89	ug/L		100
104)	Hexachlorobutadiene	19.456	6595	52633	10.62	ug/L		99
105)	1,2,3-Trichlorobenzene	19.542	6626	143089	9.21	ug/L		99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

```
Data Path : C:\MS4\083118\
Data File : X083106.D
Acq On    : 31 Aug 2018  11:06 am
Operator  : EA
Sample    : VSTD010
Misc      : VSTD010
ALS Vial  : 6   Sample Multiplier: 1

Quant Time: Aug 31 11:39:57 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration
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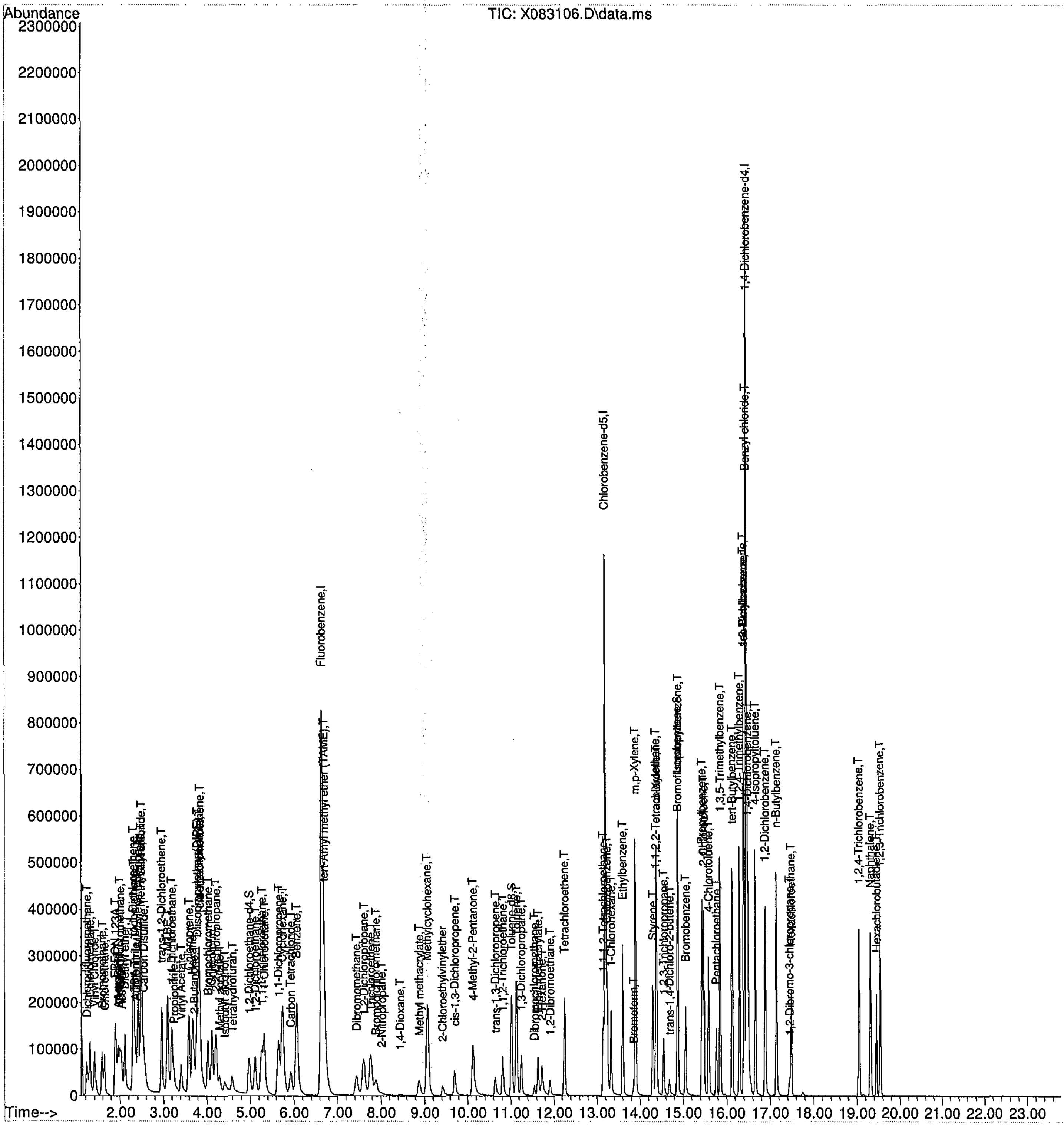


Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083107.D
Acq On : 31 Aug 2018 11:38 am
Operator : EA
Sample : VSTD020
Misc : VSTD020
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 31 12:05:51 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc Units	Dev(Min)
Internal Standards					
1) Fluorobenzene	6.639	1999	1758079	50.00 ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	868898	50.00 ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	954832	50.00 ug/L	0.00
System Monitoring Compounds					
40) 1,2-Dichloroethane-d4	4.971	1401	215670	21.04 ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	42.08%#	
69) Toluene-d8	11.017	3569	493506	20.32 ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	40.64%#	
82) Bromofluorobenzene	14.865	4949	149235	21.19 ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	42.38%#	
Target Compounds					Qvalue
2) Dichlorodifluoromethane	1.217	48	334684	20.65 ug/L	98
3) Chloromethane	1.289	75	355561	20.65 ug/L	99
4) Vinyl Chloride	1.401	117	345329	21.00 ug/L	99
5) Bromomethane	1.568	180	201949	24.08 ug/L	99
6) Chloroethane	1.630	203	180001	20.90 ug/L	98
7) Acrolein	1.940	314	90291	44.89 ug/L	99
8) Acetonitrile	1.957	320	21866m	22.16 ug/L	
9) Acrylonitrile	2.344	459	88030	20.93 ug/L	96
10) Trichlorofluoromethane	1.990	332	353713m	19.86 ug/L	
11) Diethyl ether	2.102	372	162338	22.31 ug/L	97
12) FREON 123A	1.885	299	234158	22.51 ug/L	99
13) FC-113	2.475	506	216206	21.45 ug/L #	97
14) Acetone	2.021	343	42497	47.53 ug/L	89
15) IPA	1.996	334	83840	263.08 ug/L #	94
16) TBA	2.336	456	156770	245.11 ug/L	94
17) Methyl acetate	2.459	500	176498	20.82 ug/L	99
18) Allyl chloride	2.464	502	322334	22.70 ug/L	98
19) Iodomethane	2.300	443	360212	20.97 ug/L	98
20) 1,1-Dichloroethene	2.286	438	347298	21.05 ug/L	98
21) Methylene Chloride	2.397	478	238451	21.60 ug/L	99
22) Carbon Disulfide	2.528	525	492001	32.83 ug/L	95
23) trans-1,2-Dichloroethene	2.947	675	317747	21.76 ug/L	98
24) MTBE	3.086	725	562421	19.17 ug/L	99
25) 1,1-Dichloroethane	3.184	760	369171	20.37 ug/L	99
26) Propionitrile	3.228	776	135005	105.49 ug/L	100
27) Vinyl Acetate	3.404	839	344452	24.78 ug/L	99
28) Chloroprene	3.585	904	338930	20.50 ug/L	98
29) Hexane	3.675	936	253376	22.89 ug/L	99
30) 2-Butanone	3.714	950	35937	42.28 ug/L	94
31) Diisopropylether (DIPE)	3.778	973	689956	19.75 ug/L	100
32) cis-1,2-Dichloroethene	3.831	992	303884	21.52 ug/L	99
33) Methacrylonitrile	3.822	989	288817m	39.23 ug/L	
34) Bromochloromethane	4.023	1061	134216	21.79 ug/L	98
35) Chloroform	4.110	1092	339575	21.48 ug/L	99
36) 2,2-Dichloropropane	4.199	1124	237240	20.07 ug/L	98
37) Methyl acrylate	4.285	1155	132756	20.56 ug/L	94
38) Isobutyl alcohol	4.411	1200	67472	221.67 ug/L	98
39) Tetrahydrofuran	4.575	1259	22818	15.18 ug/L	96
41) 1,2-Dichloroethane	5.105	1449	259496	20.91 ug/L	98
42) 1,1,1-Trichloroethane	5.253	1502	233665	21.80 ug/L	95
43) 1-Chlorobutane	5.309	1522	376550	20.34 ug/L	95
44) 1,1-Dichloropropene	5.643	1642	252802	20.67 ug/L	100
45) Cyclohexane	5.744	1678	417621	19.79 ug/L	98
46) Carbon Tetrachloride	5.936	1747	139742m	27.09 ug/L	

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083107.D
Acq On : 31 Aug 2018 11:38 am
Operator : EA
Sample : VSTD020
Misc : VSTD020
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 31 12:05:51 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

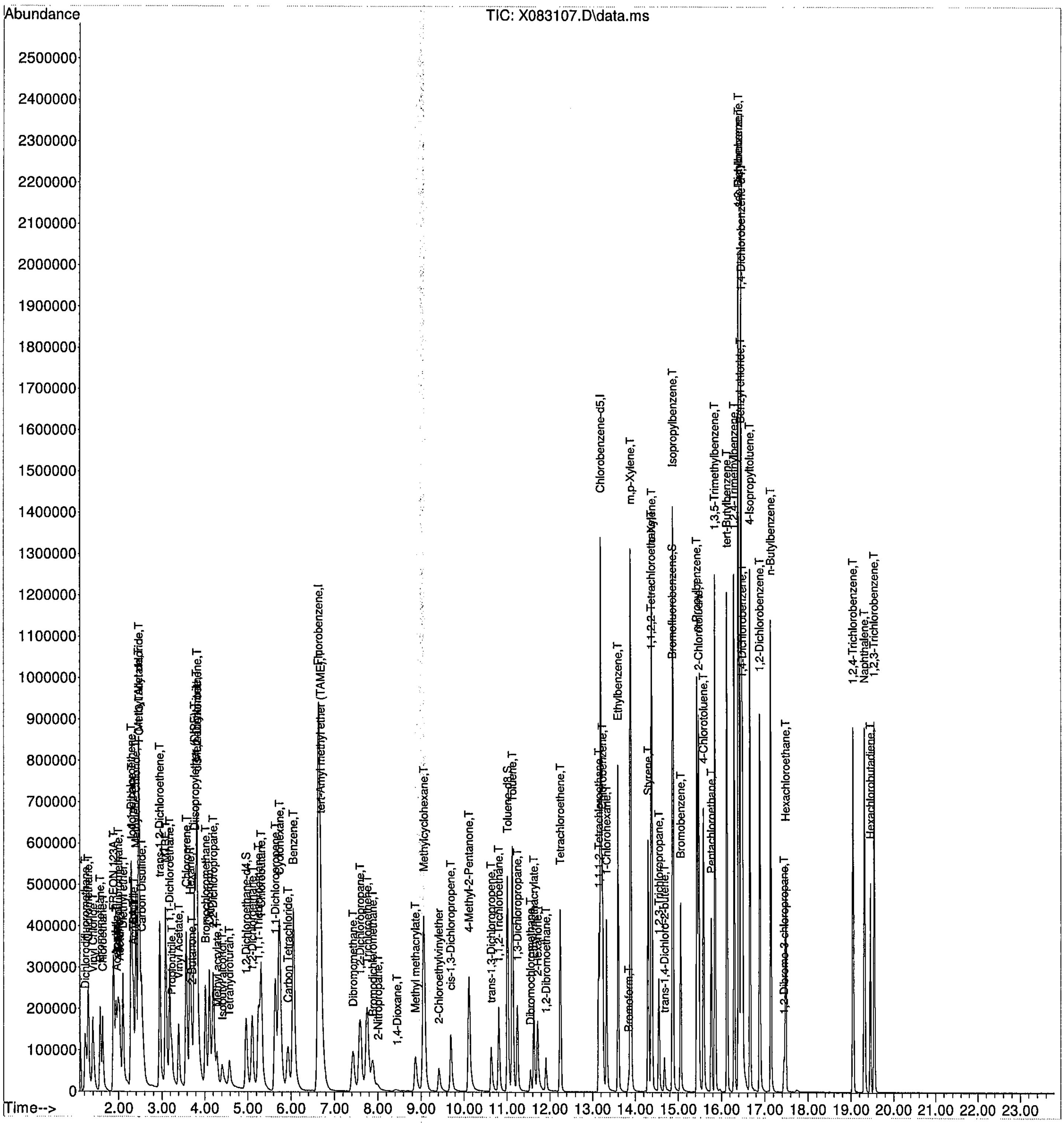
	Compound	R.T.	Scan	Response	Conc	Units		Dev(Min)
47)	Benzene	6.056	1790	798933	20.53	ug/L		100
48)	tert-Amyl methyl ether...	6.686	2016	486862	16.68	ug/L		96
49)	Dibromomethane	7.431	2283	91754	21.10	ug/L		97
50)	1,2-Dichloropropane	7.595	2342	157921	18.34	ug/L		96
51)	Trichloroethene	7.763	2402	166339	20.32	ug/L		96
52)	Bromodichloromethane	7.888	2447	100963	25.74	ug/L		95
53)	2-Nitropropane	8.005	2489	21395m	20.61	ug/L		
54)	1,4-Dioxane	8.446	2647	7088m	239.69	ug/L		
55)	Methyl methacrylate	8.870	2799	103270	19.59	ug/L		98
56)	Methylcyclohexane	9.068	2870	326368	19.97	ug/L		95
57)	2-Chloroethylvinylether	9.416	2995	42429	19.01	ug/L	#	85
58)	cis-1,3-Dichloropropene	9.698	3096	125057	21.58	ug/L		99
59)	trans-1,3-Dichloropropene	10.635	3432	78109	21.01	ug/L		98
60)	1,1,2-Trichloroethane	10.811	3495	98038	20.49	ug/L		97
61)	1,3-Dichloropropane	11.243	3650	155592	19.93	ug/L		98
62)	Dibromochloromethane	11.550	3760	36072	27.11	ug/L		96
63)	Ethyl methacrylate	11.628	3788	140502	19.51	ug/L		97
64)	1,2-Dibromoethane	11.912	3890	72726	22.28	ug/L		99
65)	Bromoform	13.847	4584	17873	27.48	ug/L		97
67)	4-Methyl-2-Pentanone	10.116	3246	381946	42.52	ug/L		100
68)	2-Hexanone	11.717	3820	188395	47.58	ug/L		100
70)	Toluene	11.131	3610	613024	20.83	ug/L		96
71)	Tetrachloroethene	12.250	4011	169419	16.55	ug/L		100
72)	1,1,1,2-Tetrachloroethane	13.150	4334	97461	27.64	ug/L		95
73)	Chlorobenzene	13.234	4364	337506	20.84	ug/L		99
74)	1-Chlorohexane	13.329	4398	125606	19.84	ug/L		96
75)	Ethylbenzene	13.599	4495	632494	20.46	ug/L		100
76)	m,p-Xylene	13.892	4600	999233	42.11	ug/L		100
77)	Styrene	14.302	4747	328074	21.17	ug/L		98
78)	o-Xylene	14.386	4777	635633	20.96	ug/L		97
79)	1,1,2,2-Tetrachloroethane	14.375	4773	165189	24.35	ug/L		99
80)	1,2,3-Trichloropropane	14.550	4836	129537	21.72	ug/L		98
81)	trans-1,4-Dichloro-2-b...	14.681	4883	28600	26.75	ug/L	#	85
83)	Isopropylbenzene	14.879	4954	832662	21.52	ug/L		100
84)	Bromobenzene	15.058	5018	219202	22.43	ug/L		97
85)	n-Propylbenzene	15.434	5153	849678	21.68	ug/L		99
86)	2-Chlorotoluene	15.476	5168	518668	21.37	ug/L		98
87)	4-Chlorotoluene	15.588	5208	433024	21.93	ug/L		99
88)	1,3,5-Trimethylbenzene	15.853	5303	710449	21.92	ug/L		98
89)	Pentachloroethane	15.766	5272	35593	55.96	ug/L		93
90)	tert-Butylbenzene	16.131	5403	627504	22.20	ug/L		100
91)	1,2,4-Trimethylbenzene	16.299	5463	726246	21.81	ug/L		99
92)	sec-Butylbenzene	16.399	5499	915611	21.84	ug/L		100
94)	1,3-Dichlorobenzene	16.399	5499	342603	20.78	ug/L		98
95)	Benzyl chloride	16.449	5517	114939	21.23	ug/L		99
96)	1,4-Dichlorobenzene	16.491	5532	343533	20.68	ug/L		98
97)	4-Isopropyltoluene	16.661	5593	777091	20.36	ug/L		99
98)	1,2-Dichlorobenzene	16.890	5675	424866	20.94	ug/L		98
99)	n-Butylbenzene	17.141	5765	674699	20.92	ug/L		98
100)	1,2-Dibromo-3-chloropr...	17.445	5874	14776	26.45	ug/L		93
101)	Hexachloroethane	17.484	5888	29506	27.10	ug/L	#	55
102)	1,2,4-Trichlorobenzene	19.048	6449	316861	19.62	ug/L		98
103)	Naphthalene	19.310	6543	776798	20.52	ug/L		100
104)	Hexachlorobutadiene	19.453	6594	115786	22.39	ug/L		98
105)	1,2,3-Trichlorobenzene	19.542	6626	324095	19.98	ug/L		100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083107.D
Acq On : 31 Aug 2018 11:38 am
Operator : EA
Sample : VSTD020
Misc : VSTD020
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 31 12:05:51 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



8260083118.M Fri Aug 31 14:06:40 2018 RPT1

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083108.D
Acq On : 31 Aug 2018 12:10 pm
Operator : EA
Sample : VSTD030
Misc : VSTD030
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Aug 31 12:38:00 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.642	2000	1772196	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	922518	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	967819	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.968	1400	335329	32.46	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	64.92%#		
69) Toluene-d8	11.014	3568	818907	31.76	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	63.52%#		
82) Bromofluorobenzene	14.865	4949	242796	32.48	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	64.96%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.220	49	517740	31.69	ug/L	99
3) Chloromethane	1.292	76	580842	33.47	ug/L	98
4) Vinyl Chloride	1.401	117	536858	32.38	ug/L	99
5) Bromomethane	1.571	181	301874	35.71	ug/L	99
6) Chloroethane	1.632	204	276213	31.82	ug/L	99
7) Acrolein	1.943	315	143355	70.70	ug/L	99
8) Acetonitrile	1.960	321	32423m	32.60	ug/L	
9) Acrylonitrile	2.344	459	136185	32.12	ug/L	98
10) Trichlorofluoromethane	1.987	331	532990	29.69	ug/L	94
11) Diethyl ether	2.105	373	242688	33.09	ug/L	98
12) FREON 123A	1.885	299	349226	33.31	ug/L	98
13) FC-113	2.473	505	339514	33.41	ug/L #	98
14) Acetone	2.024	344	66374	73.65	ug/L	91
15) IPA	1.996	334	131097	408.08	ug/L	99
16) TBA	2.336	456	262123	406.57	ug/L	94
17) Methyl acetate	2.459	500	295661	34.61	ug/L	99
18) Allyl chloride	2.467	503	542151	37.87	ug/L	98
19) Iodomethane	2.300	443	558043	32.22	ug/L	98
20) 1,1-Dichloroethene	2.286	438	534648	32.15	ug/L	99
21) Methylene Chloride	2.400	479	361952	32.53	ug/L	99
22) Carbon Disulfide	2.528	525	786583	52.07	ug/L	94
23) trans-1,2-Dichloroethene	2.947	675	488111	33.16	ug/L	99
24) MTBE	3.089	726	897858	30.36	ug/L	99
25) 1,1-Dichloroethane	3.184	760	580215	31.76	ug/L	99
26) Propionitrile	3.234	778	220403	170.85	ug/L	98
27) Vinyl Acetate	3.407	840	562458	40.14	ug/L	100
28) Chloroprene	3.585	904	528171	31.69	ug/L	97
29) Hexane	3.675	936	392999	35.22	ug/L	98
30) 2-Butanone	3.714	950	59663	69.64	ug/L #	90
31) Diisopropylether (DIPE)	3.781	974	1070448	30.40	ug/L	100
32) cis-1,2-Dichloroethene	3.831	992	480247	33.73	ug/L	98
33) Methacrylonitrile	3.822	989	487496m	65.68	ug/L	
34) Bromochloromethane	4.020	1060	197456	31.80	ug/L	97
35) Chloroform	4.112	1093	515666	32.36	ug/L	100
36) 2,2-Dichloropropane	4.204	1126	372757	31.29	ug/L	98
37) Methyl acrylate	4.288	1156	217819	33.46	ug/L	97
38) Isobutyl alcohol	4.416	1202	119864	390.66	ug/L	99
39) Tetrahydrofuran	4.584	1262	36081	23.80	ug/L #	77
41) 1,2-Dichloroethane	5.108	1450	406590	32.50	ug/L	99
42) 1,1,1-Trichloroethane	5.247	1500	359264	33.26	ug/L	99
43) 1-Chlorobutane	5.311	1523	585458	31.37	ug/L	100
44) 1,1-Dichloropropene	5.643	1642	394828	32.02	ug/L	99
45) Cyclohexane	5.747	1679	642321	30.20	ug/L	99
46) Carbon Tetrachloride	5.933	1746	215787	41.50	ug/L	93

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083108.D
Acq On   : 31 Aug 2018 12:10 pm
Operator : EA
Sample   : VSTD030
Misc   : VSTD030
ALS Vial : 8   Sample Multiplier: 1

Quant Time: Aug 31 12:38:00 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

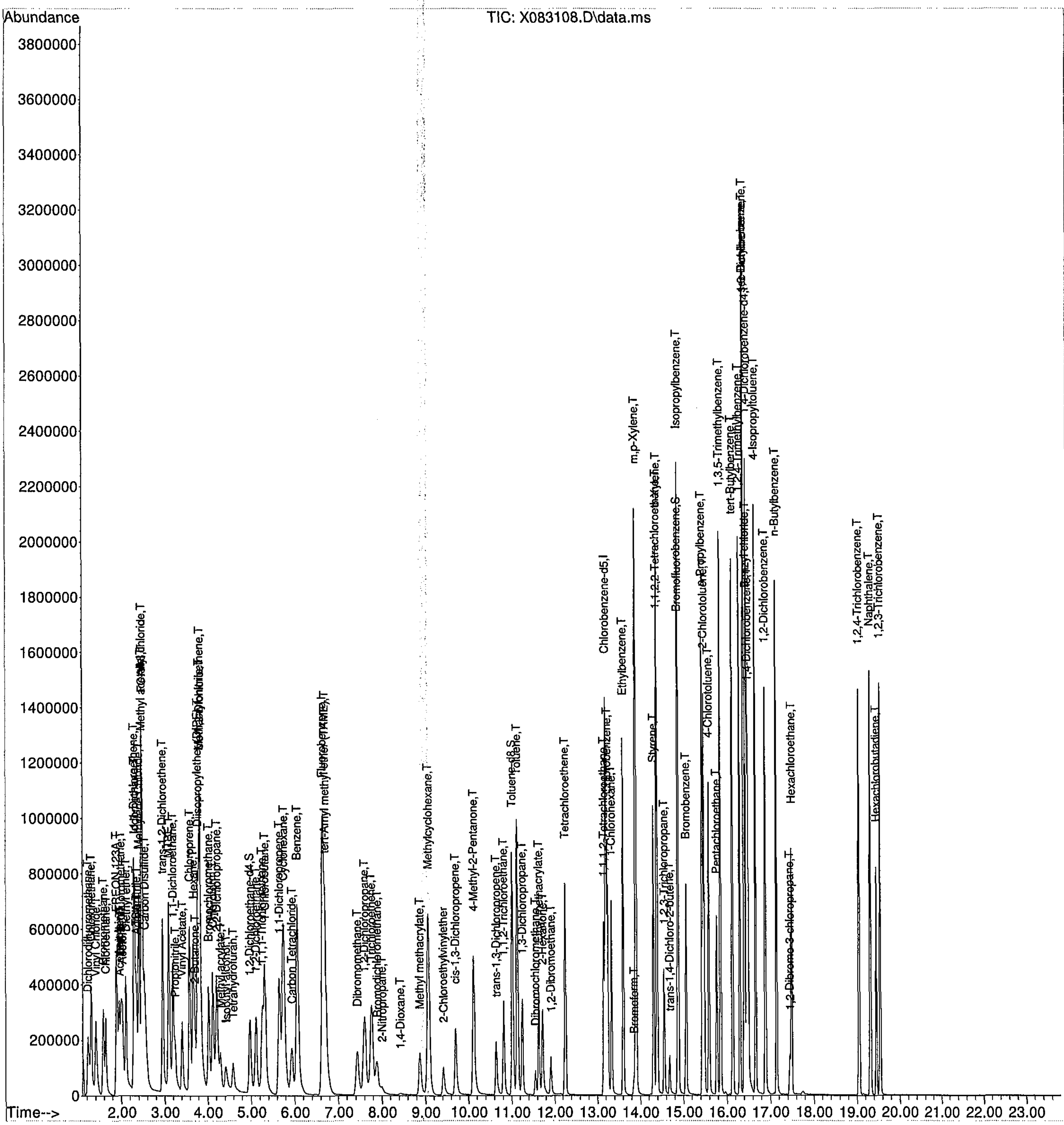
Compound	R.T.	Scan	Response	Conc Units	Dev(Min)
47) Benzene	6.062	1792	1246564	31.78 ug/L	99
48) tert-Amyl methyl ether...	6.689	2017	765463	26.02 ug/L	93
49) Dibromomethane	7.428	2282	152683	34.83 ug/L	97
50) 1,2-Dichloropropane	7.595	2342	263738	30.38 ug/L	96
51) Trichloroethene	7.754	2399	276910	33.55 ug/L	98
52) Bromodichloromethane	7.885	2446	174122	44.03 ug/L	90
53) 2-Nitropropane	8.000	2487	36790m	35.15 ug/L	
54) 1,4-Dioxane	8.415	2636	10306m	345.73 ug/L	
55) Methyl methacrylate	8.867	2798	175950	33.10 ug/L	98
56) Methylcyclohexane	9.068	2870	514592	31.24 ug/L	96
57) 2-Chloroethylvinylether	9.416	2995	77717	34.54 ug/L #	92
58) cis-1,3-Dichloropropene	9.698	3096	215362	36.87 ug/L	98
59) trans-1,3-Dichloropropene	10.638	3433	140774	37.56 ug/L	98
60) 1,1,2-Trichloroethane	10.811	3495	159652	33.09 ug/L	97
61) 1,3-Dichloropropane	11.246	3651	263394	33.47 ug/L	97
62) Dibromochloromethane	11.552	3761	62503	46.59 ug/L	98
63) Ethyl methacrylate	11.628	3788	245564	33.83 ug/L	97
64) 1,2-Dibromoethane	11.912	3890	124892	37.96 ug/L	98
65) Bromoform	13.845	4583	29884	45.57 ug/L	93
67) 4-Methyl-2-Pentanone	10.116	3246	662257	69.44 ug/L	99
68) 2-Hexanone	11.714	3819	321120	76.39 ug/L	97
70) Toluene	11.129	3609	1006291	32.21 ug/L	97
71) Tetrachloroethene	12.250	4011	288587	26.55 ug/L	95
72) 1,1,1,2-Tetrachloroethane	13.150	4334	159611	42.63 ug/L	94
73) Chlorobenzene	13.237	4365	557347	32.41 ug/L	98
74) 1-Chlorohexane	13.329	4398	216432	32.21 ug/L	99
75) Ethylbenzene	13.602	4496	1052634	32.08 ug/L	100
76) m,p-Xylene	13.892	4600	1631954	64.78 ug/L	99
77) Styrene	14.302	4747	551005	33.49 ug/L	98
78) o-Xylene	14.386	4777	1031972	32.05 ug/L	100
79) 1,1,2,2-Tetrachloroethane	14.375	4773	270023	37.49 ug/L	99
80) 1,2,3-Trichloropropane	14.553	4837	215728	34.06 ug/L	98
81) trans-1,4-Dichloro-2-b...	14.681	4883	43087	37.96 ug/L #	77
83) Isopropylbenzene	14.879	4954	1339488	32.60 ug/L	99
84) Bromobenzene	15.058	5018	364547	35.13 ug/L	99
85) n-Propylbenzene	15.434	5153	1403839	33.73 ug/L	99
86) 2-Chlorotoluene	15.476	5168	816247	31.68 ug/L	99
87) 4-Chlorotoluene	15.588	5208	702997	33.53 ug/L	99
88) 1,3,5-Trimethylbenzene	15.853	5303	1148343	33.38 ug/L	100
89) Pentachloroethane	15.769	5273	54611	80.87 ug/L	93
90) tert-Butylbenzene	16.131	5403	996919	33.22 ug/L	99
91) 1,2,4-Trimethylbenzene	16.299	5463	1160397	32.82 ug/L	98
92) sec-Butylbenzene	16.399	5499	1485652	33.38 ug/L	99
94) 1,3-Dichlorobenzene	16.399	5499	539750	32.30 ug/L	99
95) Benzyl chloride	16.449	5517	205520	37.44 ug/L	97
96) 1,4-Dichlorobenzene	16.491	5532	533728	31.70 ug/L	98
97) 4-Isopropyltoluene	16.661	5593	1278466	33.05 ug/L	99
98) 1,2-Dichlorobenzene	16.887	5674	665436	32.36 ug/L	100
99) n-Butylbenzene	17.141	5765	1090653	33.36 ug/L	99
100) 1,2-Dibromo-3-chloropr...	17.445	5874	26522	46.85 ug/L	96
101) Hexachloroethane	17.487	5889	49212	44.59 ug/L #	53
102) 1,2,4-Trichlorobenzene	19.048	6449	534316	32.65 ug/L	99
103) Naphthalene	19.310	6543	1331242	34.69 ug/L	100
104) Hexachlorobutadiene	19.453	6594	188244	35.91 ug/L	100
105) 1,2,3-Trichlorobenzene	19.542	6626	534225	32.50 ug/L	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083108.D
Acq On : 31 Aug 2018 12:10 pm
Operator : EA
Sample : VSTD030
Misc : VSTD030
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Aug 31 12:38:00 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083109.D
Acq On : 31 Aug 2018 12:42 pm
Operator : EA
Sample : VSTD040
Misc : VSTD040
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Aug 31 13:50:08 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.642	2000	1763517	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	948505	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.461	5521	960815	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	441764	42.97	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	85.94%		
69) Toluene-d8	11.014	3568	1057373	39.88	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	79.76%		
82) Bromofluorobenzene	14.865	4949	315038	40.99	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	81.98%		

Compound	R.T.	Scan	Response	Conc	Units	Qvalue
Target Compounds						
2) Dichlorodifluoromethane	1.217	48	643303	39.57	ug/L	97
3) Chloromethane	1.294	77	765946	44.35	ug/L #	97
4) Vinyl Chloride	1.401	117	671056	40.68	ug/L	98
5) Bromomethane	1.571	181	384982	45.77	ug/L	99
6) Chloroethane	1.632	204	354057	40.99	ug/L	99
7) Acrolein	1.940	314	179712	89.06	ug/L	96
8) Acetonitrile	1.951	318	40306m	40.72	ug/L	
9) Acrylonitrile	2.342	458	183275	43.44	ug/L	97
10) Trichlorofluoromethane	1.987	331	703463m	39.38	ug/L	
11) Diethyl ether	2.102	372	320826	43.96	ug/L	98
12) FREON 123A	1.885	299	441872	42.35	ug/L	98
13) FC-113	2.470	504	430503	42.57	ug/L	99
14) Acetone	2.024	344	70929	79.09	ug/L	94
15) IPA	1.990	332	134771m	421.58	ug/L	
16) TBA	2.333	455	291528m	454.40	ug/L	
17) Methyl acetate	2.459	500	396795	46.67	ug/L	98
18) Allyl chloride	2.467	503	706702	49.61	ug/L	99
19) Iodomethane	2.300	443	727430	42.21	ug/L	100
20) 1,1-Dichloroethene	2.286	438	681345	41.17	ug/L	99
21) Methylene Chloride	2.397	478	471090	42.55	ug/L	98
22) Carbon Disulfide	2.528	525	999542	66.49	ug/L	91
23) trans-1,2-Dichloroethene	2.947	675	619259	42.27	ug/L	98
24) MTBE	3.086	725	1171290	39.81	ug/L	99
25) 1,1-Dichloroethane	3.184	760	744080	40.94	ug/L	100
26) Propionitrile	3.228	776	239572	186.62	ug/L	96
27) Vinyl Acetate	3.404	839	769692	55.20	ug/L	100
28) Chloroprene	3.585	904	711370	42.89	ug/L	96
29) Hexane	3.672	935	487861	43.93	ug/L	99
30) 2-Butanone	3.711	949	80079	93.93	ug/L #	88
31) Diisopropylether (DIPE)	3.781	974	1385377	39.53	ug/L	100
32) cis-1,2-Dichloroethene	3.831	992	607188	42.86	ug/L	98
33) Methacrylonitrile	3.822	989	619455m	83.87	ug/L	
34) Bromochloromethane	4.018	1059	272301	44.07	ug/L	97
35) Chloroform	4.112	1093	677243	42.71	ug/L	98
36) 2,2-Dichloropropane	4.202	1125	494901	41.74	ug/L	98
37) Methyl acrylate	4.288	1156	293677	45.33	ug/L	94
38) Isobutyl alcohol	4.405	1198	115799	379.27	ug/L	95
39) Tetrahydrofuran	4.575	1259	48827	32.37	ug/L	88
41) 1,2-Dichloroethane	5.105	1449	533225	42.83	ug/L	98
42) 1,1,1-Trichloroethane	5.250	1501	452485	42.09	ug/L	97
43) 1-Chlorobutane	5.309	1522	748488	40.30	ug/L	99
44) 1,1-Dichloropropene	5.646	1643	507276	41.35	ug/L	99
45) Cyclohexane	5.741	1677	817686	38.63	ug/L	98
46) Carbon Tetrachloride	5.936	1747	271616	52.50	ug/L	93

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083109.D
Acq On   : 31 Aug 2018 12:42 pm
Operator : EA
Sample   : VSTD040
Misc   : VSTD040
ALS Vial : 9   Sample Multiplier: 1

Quant Time: Aug 31 13:50:08 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

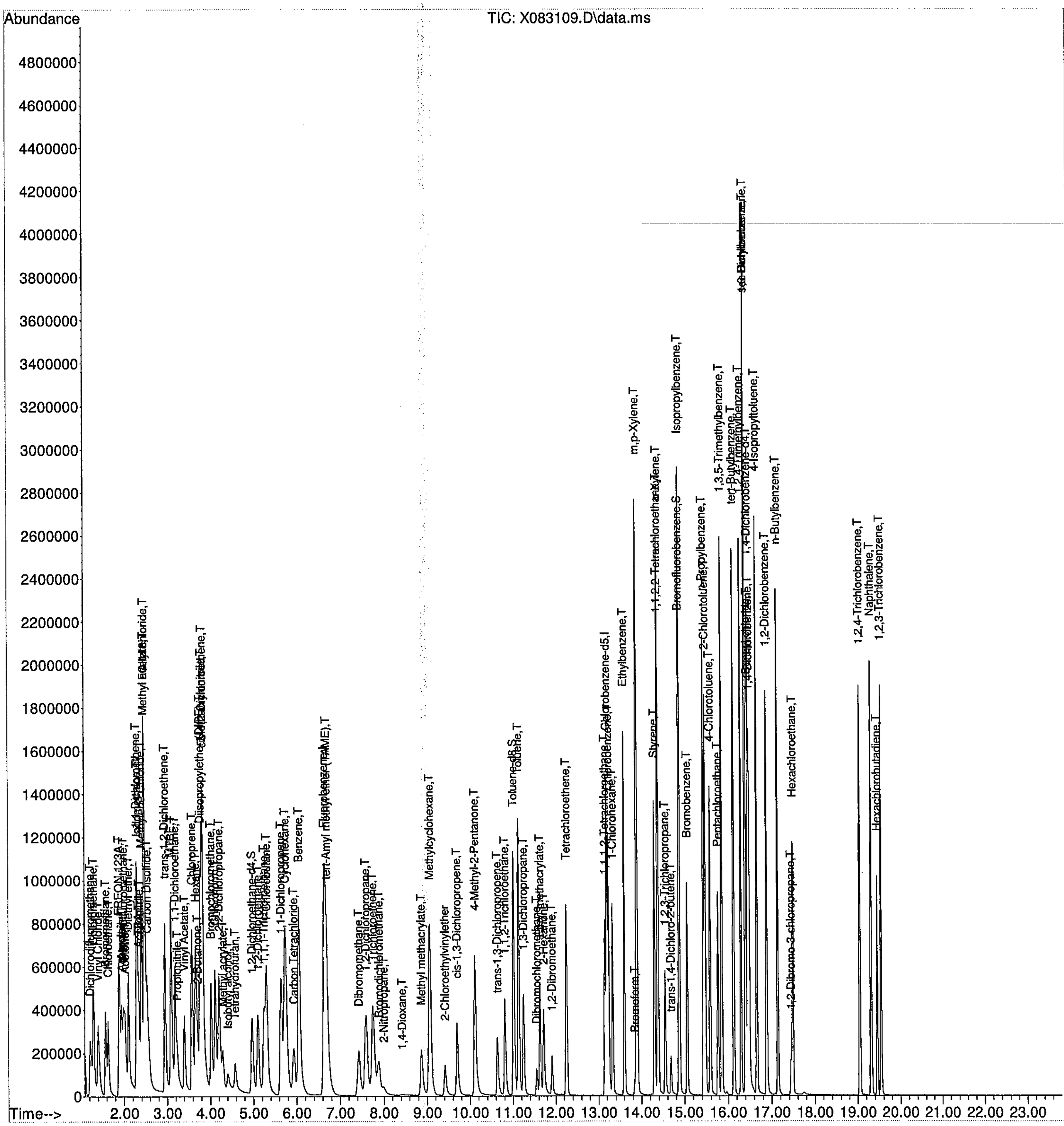
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47) Benzene	6.059	1791	1572255	40.28	ug/L	98
48) tert-Amyl methyl ether...	6.692	2018	999048	34.13	ug/L	98
49) Dibromomethane	7.425	2281	196501	45.05	ug/L	94
50) 1,2-Dichloropropane	7.593	2341	339380	39.28	ug/L	99
51) Trichloroethene	7.754	2399	346175	42.15	ug/L	96
52) Bromodichloromethane	7.891	2448	227393	57.79	ug/L	90
53) 2-Nitropropane	7.994	2485	46059m	44.23	ug/L	
54) 1,4-Dioxane	8.421	2638	13250m	446.68	ug/L	
55) Methyl methacrylate	8.867	2798	243613	46.06	ug/L	99
56) Methylcyclohexane	9.068	2870	623339	38.03	ug/L	99
57) 2-Chloroethylvinylether	9.416	2995	110424	49.32	ug/L #	94
58) cis-1,3-Dichloropropene	9.698	3096	299006	51.44	ug/L	98
59) trans-1,3-Dichloropropene	10.632	3431	200104	53.65	ug/L	99
60) 1,1,2-Trichloroethane	10.808	3494	211188	43.99	ug/L	99
61) 1,3-Dichloropropane	11.246	3651	351210	44.85	ug/L	95
62) Dibromochloromethane	11.550	3760	84403	63.23	ug/L	98
63) Ethyl methacrylate	11.628	3788	336758	46.62	ug/L	97
64) 1,2-Dibromoethane	11.909	3889	166845	50.96	ug/L	96
65) Bromoform	13.848	4584	38549	59.08	ug/L	99
67) 4-Methyl-2-Pentanone	10.114	3245	868627	88.59	ug/L	99
68) 2-Hexanone	11.714	3819	433836	100.37	ug/L	98
70) Toluene	11.129	3609	1289594	40.15	ug/L	98
71) Tetrachloroethene	12.250	4011	341538	30.56	ug/L	99
72) 1,1,1,2-Tetrachloroethane	13.150	4334	209365	54.39	ug/L	96
73) Chlorobenzene	13.237	4365	725292	41.03	ug/L	98
74) 1-Chlorohexane	13.329	4398	274646	39.75	ug/L	99
75) Ethylbenzene	13.599	4495	1356318	40.20	ug/L	99
76) m,p-Xylene	13.892	4600	2107558	81.37	ug/L	100
77) Styrene	14.302	4747	721671	42.66	ug/L	100
78) o-Xylene	14.386	4777	1316973	39.78	ug/L	99
79) 1,1,2,2-Tetrachloroethane	14.375	4773	346956	46.85	ug/L	98
80) 1,2,3-Trichloropropane	14.550	4836	271812	41.74	ug/L	99
81) trans-1,4-Dichloro-2-b...	14.679	4882	58952	50.52	ug/L #	81
83) Isopropylbenzene	14.879	4954	1707662	40.43	ug/L	100
84) Bromobenzene	15.058	5018	468154	43.88	ug/L	98
85) n-Propylbenzene	15.434	5153	1727776	40.38	ug/L	99
86) 2-Chlorotoluene	15.476	5168	1051175	39.68	ug/L	99
87) 4-Chlorotoluene	15.588	5208	891158	41.34	ug/L	99
88) 1,3,5-Trimethylbenzene	15.853	5303	1470681	41.58	ug/L	98
89) Pentachloroethane	15.766	5272	86250	124.22	ug/L	98
90) tert-Butylbenzene	16.131	5403	1308108	42.40	ug/L	99
91) 1,2,4-Trimethylbenzene	16.299	5463	1499446	41.24	ug/L	99
92) sec-Butylbenzene	16.399	5499	1864947	40.75	ug/L	99
94) 1,3-Dichlorobenzene	16.399	5499	677286	40.83	ug/L	99
95) Benzyl chloride	16.449	5517	296813	54.47	ug/L	98
96) 1,4-Dichlorobenzene	16.491	5532	657441	39.33	ug/L	98
97) 4-Isopropyltoluene	16.661	5593	1625098	42.31	ug/L	99
98) 1,2-Dichlorobenzene	16.887	5674	847555	41.52	ug/L	100
99) n-Butylbenzene	17.141	5765	1370111	42.21	ug/L	100
100) 1,2-Dibromo-3-chloropr...	17.442	5873	35198	62.63	ug/L	94
101) Hexachloroethane	17.484	5888	65843	60.09	ug/L #	44
102) 1,2,4-Trichlorobenzene	19.048	6449	679950	41.85	ug/L	99
103) Naphthalene	19.311	6543	1715728	45.04	ug/L	100
104) Hexachlorobutadiene	19.453	6594	229852	44.16	ug/L	99
105) 1,2,3-Trichlorobenzene	19.542	6626	677051	41.49	ug/L	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083109.D
Acq On : 31 Aug 2018 12:42 pm
Operator : EA
Sample : VSTD040
Misc : VSTD040
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Aug 31 13:50:08 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083110.D
Acq On : 31 Aug 2018 1:14 pm
Operator : EA
Sample : VSTD050
Misc : VSTD050
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Aug 31 13:51:52 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.642	2000	1822287	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.192	4349	987592	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	1004162	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.968	1400	570259	53.68	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	107.36%		
69) Toluene-d8	11.014	3568	1411789	51.14	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	102.28%		
82) Bromofluorobenzene	14.865	4949	413476	51.66	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	103.32%		

Target Compounds	R.T.	Scan	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	1.220	49	850706	50.65	ug/L	98
3) Chloromethane	1.292	76	892936	50.03	ug/L #	96
4) Vinyl Chloride	1.398	116	779272	45.71	ug/L	99
5) Bromomethane	1.568	180	499550	57.47	ug/L	99
6) Chloroethane	1.630	203	467069	52.32	ug/L	99
7) Acrolein	1.940	314	242156	116.14	ug/L	98
8) Acetonitrile	1.957	320	57786m	56.50	ug/L	
9) Acrylonitrile	2.344	459	242105	55.53	ug/L	99
10) Trichlorofluoromethane	1.987	331	909753	49.29	ug/L	97
11) Diethyl ether	2.102	372	397190	52.67	ug/L	98
12) FREON 123A	1.885	299	579180	53.72	ug/L	98
13) FC-113	2.473	505	561356	53.72	ug/L #	98
14) Acetone	2.024	344	105259	113.59	ug/L	83
15) IPA	1.996	334	252879	765.53	ug/L	97
16) TBA	2.339	457	485362	732.13	ug/L	98
17) Methyl acetate	2.459	500	513506	58.45	ug/L	98
18) Allyl chloride	2.464	502	922561	62.68	ug/L	98
19) Iodomethane	2.300	443	928243	52.13	ug/L	100
20) 1,1-Dichloroethene	2.286	438	911664	53.31	ug/L	98
21) Methylene Chloride	2.400	479	588855	51.47	ug/L	99
22) Carbon Disulfide	2.528	525	1311627	84.44	ug/L #	89
23) trans-1,2-Dichloroethene	2.947	675	803891	53.11	ug/L	99
24) MTBE	3.089	726	1528274	50.26	ug/L	99
25) 1,1-Dichloroethane	3.181	759	962476	51.24	ug/L	100
26) Propionitrile	3.231	777	413184	311.48	ug/L	98
27) Vinyl Acetate	3.404	839	983919	68.29	ug/L	99
28) Chloroprene	3.585	904	945529	55.17	ug/L	95
29) Hexane	3.672	935	652779	56.89	ug/L	99
30) 2-Butanone	3.716	951	115285	130.87	ug/L #	81
31) Diisopropylether (DIPE)	3.780	974	1822835	50.34	ug/L	100
32) cis-1,2-Dichloroethene	3.828	991	793216	54.18	ug/L	98
33) Methacrylonitrile	3.822	989	798149m	104.58	ug/L	
34) Bromochloromethane	4.020	1060	346182	54.22	ug/L	97
35) Chloroform	4.112	1093	875025	53.40	ug/L	98
36) 2,2-Dichloropropane	4.202	1125	657861	53.70	ug/L	97
37) Methyl acrylate	4.288	1156	392258	58.59	ug/L	98
38) Isobutyl alcohol	4.416	1202	236138	748.47	ug/L	97
39) Tetrahydrofuran	4.578	1260	65589	42.08	ug/L	91
41) 1,2-Dichloroethane	5.105	1449	688614	53.53	ug/L	98
42) 1,1,1-Trichloroethane	5.250	1501	621004	55.90	ug/L	99
43) 1-Chlorobutane	5.309	1522	1011325	52.69	ug/L	99
44) 1,1-Dichloropropene	5.643	1642	694163	54.75	ug/L	98
45) Cyclohexane	5.744	1678	1109004	50.71	ug/L	99
46) Carbon Tetrachloride	5.928	1744	373347	69.83	ug/L	93

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083110.D
Acq On : 31 Aug 2018 1:14 pm
Operator : EA
Sample : VSTD050
Misc : VSTD050
ALS Vial : 10 Sample Multiplier: 1

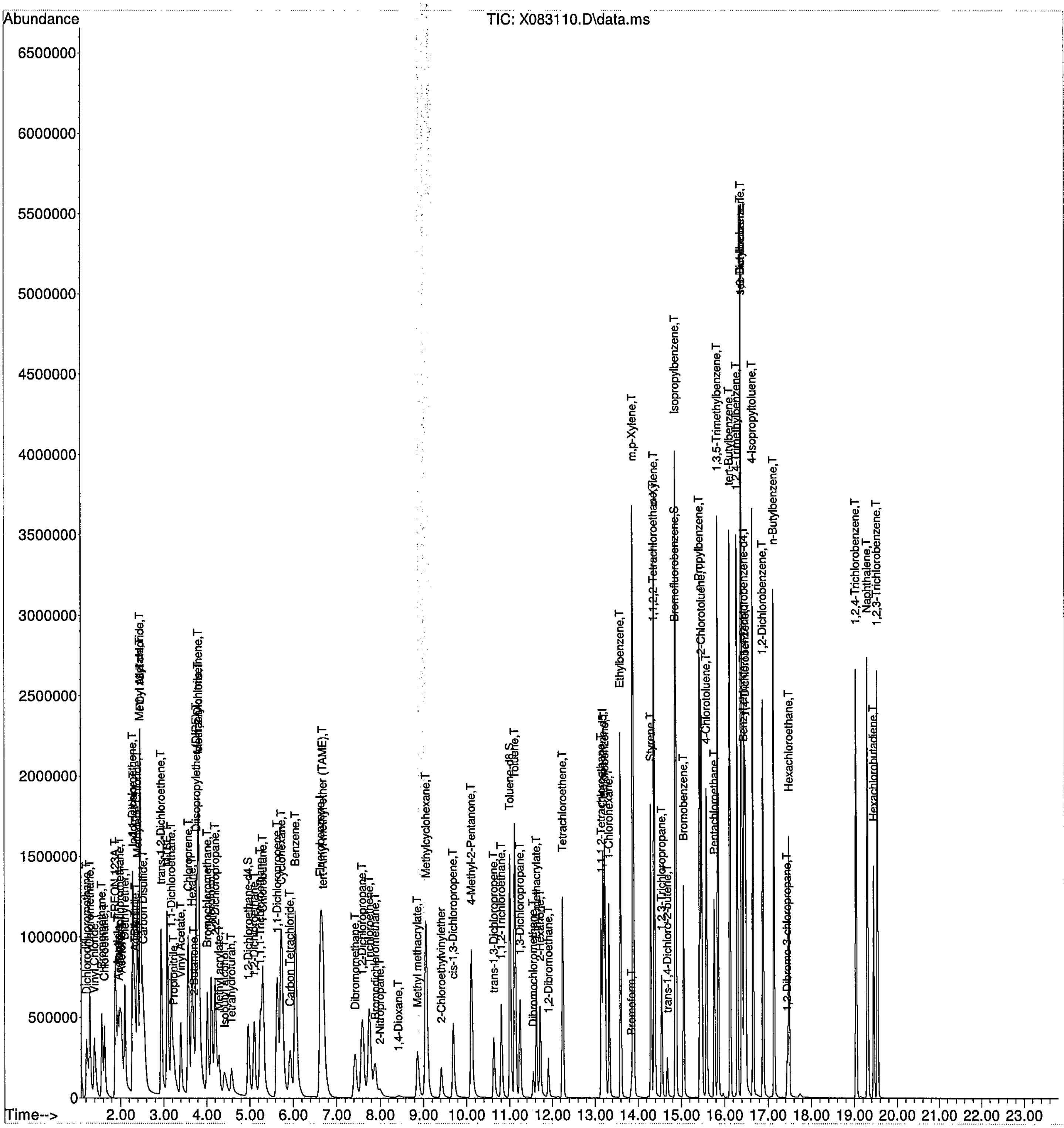
Quant Time: Aug 31 13:51:52 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47) Benzene	6.059	1791	2084535	51.68	ug/L	99
48) tert-Amyl methyl ether...	6.689	2017	1316091	43.51	ug/L	99
49) Dibromomethane	7.431	2283	258337	57.31	ug/L	98
50) 1,2-Dichloropropane	7.598	2343	464562	52.04	ug/L	96
51) Trichloroethene	7.757	2400	468752	55.24	ug/L	96
52) Bromodichloromethane	7.891	2448	305065	75.03	ug/L	91
53) 2-Nitropropane	7.994	2485	57857	53.76	ug/L	97
54) 1,4-Dioxane	8.421	2638	18691m	609.79	ug/L	
55) Methyl methacrylate	8.867	2798	326846	59.80	ug/L	96
56) Methylcyclohexane	9.070	2871	873914	51.60	ug/L	97
57) 2-Chloroethylvinylether	9.416	2995	149178	64.47	ug/L #	92
58) cis-1,3-Dichloropropene	9.695	3095	410522	68.35	ug/L	97
59) trans-1,3-Dichloropropene	10.632	3431	273699	71.02	ug/L	99
60) 1,1,2-Trichloroethane	10.811	3495	274445	55.33	ug/L	98
61) 1,3-Dichloropropane	11.246	3651	457457	56.54	ug/L	98
62) Dibromochloromethane	11.550	3760	109003	79.03	ug/L	97
63) Ethyl methacrylate	11.628	3788	441070	59.09	ug/L	97
64) 1,2-Dibromoethane	11.912	3890	218532	64.59	ug/L	97
65) Bromoform	13.847	4584	48883	72.50	ug/L	99
67) 4-Methyl-2-Pentanone	10.113	3245	1193292	116.88	ug/L	98
68) 2-Hexanone	11.714	3819	573066	127.34	ug/L	98
70) Toluene	11.129	3609	1733481	51.83	ug/L	99
71) Tetrachloroethene	12.250	4011	473935	40.72	ug/L	98
72) 1,1,1,2-Tetrachloroethane	13.150	4334	285880	71.33	ug/L	97
73) Chlorobenzene	13.237	4365	955246	51.90	ug/L	97
74) 1-Chlorohexane	13.329	4398	380426	52.88	ug/L	100
75) Ethylbenzene	13.599	4495	1823770	51.91	ug/L	99
76) m,p-Xylene	13.892	4600	2817253	104.47	ug/L	100
77) Styrene	14.302	4747	972034	55.18	ug/L	100
78) o-Xylene	14.386	4777	1752416	50.84	ug/L	98
79) 1,1,2,2-Tetrachloroethane	14.374	4773	459127	59.55	ug/L	98
80) 1,2,3-Trichloropropane	14.553	4837	351166	51.79	ug/L	98
81) trans-1,4-Dichloro-2-b...	14.678	4882	72067	59.31	ug/L #	74
83) Isopropylbenzene	14.879	4954	2331945	53.02	ug/L	99
84) Bromobenzene	15.058	5018	623232	56.10	ug/L	99
85) n-Propylbenzene	15.434	5153	2411115	54.12	ug/L	99
86) 2-Chlorotoluene	15.476	5168	1387776	50.31	ug/L	99
87) 4-Chlorotoluene	15.588	5208	1175392	52.37	ug/L	99
88) 1,3,5-Trimethylbenzene	15.852	5303	2022111	54.90	ug/L	98
89) Pentachloroethane	15.766	5272	112339	155.39	ug/L	95
90) tert-Butylbenzene	16.131	5403	1845489	57.45	ug/L	100
91) 1,2,4-Trimethylbenzene	16.299	5463	2025409	53.50	ug/L	98
92) sec-Butylbenzene	16.399	5499	2599660	54.56	ug/L	100
94) 1,3-Dichlorobenzene	16.399	5499	878554	50.67	ug/L	99
95) Benzyl chloride	16.449	5517	407097	71.48	ug/L	96
96) 1,4-Dichlorobenzene	16.491	5532	878118	50.26	ug/L	99
97) 4-Isopropyltoluene	16.661	5593	2225232	55.44	ug/L	99
98) 1,2-Dichlorobenzene	16.887	5674	1099237	51.52	ug/L	99
99) n-Butylbenzene	17.141	5765	1858680	54.79	ug/L	99
100) 1,2-Dibromo-3-chloropr...	17.442	5873	47384	80.67	ug/L	98
101) Hexachloroethane	17.487	5889	90333	78.88	ug/L #	46
102) 1,2,4-Trichlorobenzene	19.045	6448	925235	54.49	ug/L	97
103) Naphthalene	19.310	6543	2357644	59.21	ug/L	100
104) Hexachlorobutadiene	19.453	6594	329100	60.50	ug/L	97
105) 1,2,3-Trichlorobenzene	19.542	6626	924066	54.18	ug/L	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\MS4\083118\
Data File : X083110.D
Acq On : 31 Aug 2018   1:14 pm
Operator : EA
Sample : VSTD050
Misc : VSTD050
ALS Vial : 10   Sample Multiplier: 1

Quant Time: Aug 31 13:51:52 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 09:59:42 2018
Response via : Initial Calibration



Continuing Calibration Report MS4

Method Path : C:\MS4\METHODS\
Method File : 8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Thu Sep 13 16:13:08 2018
Response Via : Initial Calibration

CC Data File: X083113.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%
1	I	Fluorobenzene	1.000	1.000	0.0	101
2	T	Dichlorodifluoromethane	0.478	0.473	1.2	100
3	T	Chloromethane	0.505	0.474	6.1	95
4	T	Vinyl Chloride	0.525	0.485	7.5	100
5	T	Bromomethane	0.295	0.252	14.7	89
6	T	Chloroethane	0.264	0.252	4.5	100
7	T	Acrolein	0.065	0.065	0.2	102
8	T	Acetonitrile	0.032	0.032	0.6	105
9	T	Acrylonitrile	0.128	0.128	-0.4	103
10	T	Trichlorofluoromethane	0.493	0.473	4.1	95
11	T	Diethyl ether	0.231	0.224	3.0	98
12	T	FREON 123A	0.346	0.328	5.2	99
13	T	FC-113	0.320	0.310	3.3	102
14	T	Acetone	0.031	0.030	3.1	99
15	T	IPA	0.012	0.010	12.7	88
16	T	TBA	0.020	0.021	-4.9	97
17	T	Methyl acetate	0.264	0.260	1.4	105
18	T	Allyl chloride	0.456	0.468	-2.6	103
19	T	Iodomethane	0.526	0.505	3.9	100
20	T	1,1-Dichloroethene	0.499	0.473	5.2	97
21	T	Methylene Chloride	0.347	0.342	1.3	102
22	T	Carbon Disulfide	0.690	0.625	9.4	90
23	T	trans-1,2-Dichloroethene	0.445	0.446	-0.2	100
24	T	MTBE	0.814	0.828	-1.6	105
25	T	1,1-Dichloroethane	0.538	0.527	2.0	101
26	T	Propionitrile	0.040	0.038	4.2	101
27	T	Vinyl Acetate	0.487	0.513	-5.3	106
28	T	Chloroprene	0.490	0.470	4.1	98
29	T	Hexane	0.354	0.343	3.0	96
30	T	2-Butanone	0.027	0.026	4.2	101
31	T	Diisopropylether (DIPE)	0.989	0.967	2.2	100
32	T	cis-1,2-Dichloroethene	0.438	0.435	0.6	102
33	T	Methacrylonitrile	0.216	0.220	-1.6	108
34	T	Bromochloromethane	0.191	0.194	-1.1	102
35	T	Chloroform	0.486	0.455	6.4	95
36	T	2,2-Dichloropropane	0.333	0.340	-2.0	102
37	T	Methyl acrylate	0.191	0.190	0.4	102
38	T	Isobutyl alcohol	0.010	0.009	8.9	98
39	T	Tetrahydrofuran	0.047	0.033	29.7#	104
40	S	1,2-Dichloroethane-d4	0.320	0.739	-131.2#	243#
41	T	1,2-Dichloroethane	0.381	0.367	3.6	100
42	T	1,1,1-Trichloroethane	0.334	0.335	-0.2	102
43	T	1-Chlorobutane	0.518	0.538	-3.8	101
44	T	1,1-Dichloropropene	0.348	0.353	-1.3	99
45	T	Cyclohexane	0.577	0.597	-3.3	101
46	T	Carbon Tetrachloride	0.198	0.178	9.8	91
47	T	Benzene	1.099	1.125	-2.4	100
48	T	tert-Amyl methyl ether (TAME)	0.815	0.702	13.9	102
49	T	Dibromomethane	0.136	0.125	7.7	97
50	T	1,2-Dichloropropane	0.231	0.234	-1.5	105
51	T	Trichloroethene	0.242	0.239	1.2	102
52	T	Bromodichloromethane	0.153	0.138	9.5	97
53	T	2-Nitropropane	0.031	0.027	13.7	89
54	T	1,4-Dioxane	0.001	0.001	-8.7	95
55	T	Methyl methacrylate	0.142	0.147	-3.5	101
56	T	Methylcyclohexane	0.447	0.472	-5.5	103
57		2-Chloroethylvinylether	0.061	0.064	-5.1	107
58	T	cis-1,3-Dichloropropene	0.169	0.170	-0.5	96
59	T	trans-1,3-Dichloropropene	0.108	0.107	1.3	97
60	T	1,1,2-Trichloroethane	0.138	0.133	3.9	96
61	T	1,3-Dichloropropane	0.225	0.218	3.4	99

Method Path : C:\MS4\METHODS\
Method File : 8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Thu Sep 13 16:13:08 2018
Response Via : Initial Calibration

CC Data File: X083113.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%
62	T	Dibromochloromethane	0.053	0.045	14.6	89
63	T	Ethyl methacrylate	0.196	0.204	-4.2	103
64	T	1,2-Dibromoethane	0.108	0.101	6.3	99
65	T	Bromoform	0.025	0.022	12.9	88
66	I	Chlorobenzene-d5	1.000	1.000	0.0	100
67	T	4-Methyl-2-Pentanone	0.523	0.551	-5.4	100
68	T	2-Hexanone	0.251	0.269	-7.1	99
69	S	Toluene-d8	1.348	3.626	-168.9#	255#
70	T	Toluene	1.633	1.776	-8.7	100
71	T	Tetrachloroethene	0.484	0.468	3.3	96
72	T	1,1,1,2-Tetrachloroethane	0.270	0.254	6.0	90
73	T	Chlorobenzene	0.980	0.954	2.7	98
74	T	1-Chlorohexane	0.344	0.392	-13.8	108
75	T	Ethylbenzene	1.733	1.794	-3.5	98
76	T	m,p-Xylene	1.350	1.399	-3.6	97
77	T	Styrene	0.902	0.920	-2.0	97
78	T	o-Xylene	1.728	1.777	-2.9	97
79	T	1,1,2,2-Tetrachloroethane	0.478	0.454	4.9	95
80	T	1,2,3-Trichloropropane	0.388	0.359	7.6	96
81	T	trans-1,4-Dichloro-2-butene	0.083	0.079	5.0	96
82	S	Bromofluorobenzene	0.456	1.057	-131.6#	245#
83	T	Isopropylbenzene	2.207	2.354	-6.7	98
84	T	Bromobenzene	0.624	0.622	0.3	98
85	T	n-Propylbenzene	2.264	2.365	-4.5	96
86	T	2-Chlorotoluene	1.429	1.447	-1.3	97
87	T	4-Chlorotoluene	1.214	1.200	1.2	96
88	T	1,3,5-Trimethylbenzene	1.888	1.962	-3.9	96
89	T	Pentachloroethane	0.092	0.094	-1.4	91
90	T	tert-Butylbenzene	1.607	1.742	-8.5	96
91	T	1,2,4-Trimethylbenzene	1.924	2.013	-4.7	96
92	T	sec-Butylbenzene	2.413	2.550	-5.7	97
93	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	96
94	T	1,3-Dichlorobenzene	0.879	0.893	-1.5	96
95	T	Benzyl chloride	0.309	0.384	-24.0#	122
96	T	1,4-Dichlorobenzene	0.919	0.879	4.3	94
97	T	4-Isopropyltoluene	1.859	2.066	-11.1	98
98	T	1,2-Dichlorobenzene	1.065	1.093	-2.6	94
99	T	n-Butylbenzene	1.608	1.798	-11.8	98
100	T	1,2-Dibromo-3-chloropropane	0.038	0.037	1.8	92
101	T	Hexachloroethane	0.071	0.097	-36.5#	121
102	T	1,2,4-Trichlorobenzene	0.763	0.869	-14.0	101
103	T	Naphthalene	1.775	2.159	-21.7#	102
104	T	Hexachlorobutadiene	0.296	0.306	-3.4	97
105	T	1,2,3-Trichlorobenzene	0.785	0.888	-13.1	100

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	50.000	50.000	0.0	101	0.00
2	T	Dichlorodifluoromethane	20.000	19.762	1.2	100	0.00
3	T	Chloromethane	20.000	18.780	6.1	95	0.00
4	T	Vinyl Chloride	20.000	18.503	7.5	100	0.00
5	T	Bromomethane	20.000	17.064	14.7	89	0.00
6	T	Chloroethane	20.000	19.110	4.5	100	0.00
7	T	Acrolein	40.000	39.919	0.2	102	0.00
8	T	Acetonitrile	20.000	21.148	-5.7	105	0.00
9	T	Acrylonitrile	20.000	20.084	-0.4	103	0.00
10	T	Trichlorofluoromethane	20.000	19.187	4.1	95	0.00
11	T	Diethyl ether	20.000	19.408	3.0	98	0.00
12	T	FREON 123A	20.000	18.951	5.2	99	0.00
13	T	FC-113	20.000	19.340	3.3	102	0.00
14	T	Acetone	40.000	38.778	3.1	99	0.00
15	T	IPA	200.000	174.633	12.7	88	0.00
16	T	TBA	200.000	209.805	-4.9	97	0.00
17	T	Methyl acetate	20.000	19.725	1.4	105	0.00
18	T	Allyl chloride	20.000	20.514	-2.6	103	0.00
19	T	Iodomethane	20.000	19.215	3.9	100	0.00
20	T	1,1-Dichloroethene	20.000	18.956	5.2	97	0.00
21	T	Methylene Chloride	20.000	19.735	1.3	102	0.00
22	T	Carbon Disulfide	20.000	18.128	9.4	90	0.00
23	T	trans-1,2-Dichloroethene	20.000	20.049	-0.2	100	0.00
24	T	MTBE	20.000	20.328	-1.6	105	0.00
25	T	1,1-Dichloroethane	20.000	19.602	2.0	101	0.00
26	T	Propionitrile	100.000	95.765	4.2	101	0.00
27	T	Vinyl Acetate	20.000	21.070	-5.4	106	0.00
28	T	Chloroprene	20.000	19.181	4.1	98	0.00
29	T	Hexane	20.000	19.409	3.0	96	0.00
30	T	2-Butanone	40.000	38.301	4.2	101	0.00
31	T	Diisopropylether (DIPE)	20.000	19.563	2.2	100	0.00
32	T	cis-1,2-Dichloroethene	20.000	19.876	0.6	102	0.00
33	T	Methacrylonitrile	40.000	40.632	-1.6	108	0.00
34	T	Bromochloromethane	20.000	20.215	-1.1	102	0.00
35	T	Chloroform	20.000	18.718	6.4	95	0.00
36	T	2,2-Dichloropropane	20.000	20.404	-2.0	102	0.00
37	T	Methyl acrylate	20.000	19.910	0.4	102	0.00
38	T	Isobutyl alcohol	200.000	182.166	8.9	98	0.00
39	T	Tetrahydrofuran	20.000	18.934	5.3	104	0.00
40	S	1,2-Dichloroethane-d4	20.000	46.249	-131.2#	243	0.00
41	T	1,2-Dichloroethane	20.000	19.270	3.7	100	0.00
42	T	1,1,1-Trichloroethane	20.000	20.040	-0.2	102	0.00
43	T	1-Chlorobutane	20.000	20.752	-3.8	101	0.00
44	T	1,1-Dichloropropene	20.000	20.265	-1.3	99	0.00
45	T	Cyclohexane	20.000	20.660	-3.3	101	0.00
46	T	Carbon Tetrachloride	20.000	18.035	9.8	91	0.00
47	T	Benzene	20.000	20.478	-2.4	100	0.00
48	T	tert-Amyl methyl ether (TAM	20.000	19.617	1.9	102	0.00
49	T	Dibromomethane	20.000	18.456	7.7	97	0.00
50	T	1,2-Dichloropropane	20.000	20.304	-1.5	105	0.01
51	T	Trichloroethene	20.000	19.756	1.2	102	0.00
52	T	Bromodichloromethane	20.000	18.100	9.5	97	0.00
53	T	2-Nitropropane	20.000	17.251	13.7	89	0.00
54	T	1,4-Dioxane	200.000	191.732	4.1	95	-0.03

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55	T	Methyl methacrylate	20.000	20.696	-3.5	101	0.00
56	T	Methylcyclohexane	20.000	21.103	-5.5	103	0.00
57		2-Chloroethylvinylether	20.000	19.962	0.2	107	0.00
58	T	cis-1,3-Dichloropropene	20.000	19.016	4.9	96	0.00
59	T	trans-1,3-Dichloropropene	20.000	18.771	6.1	97	0.00
60	T	1,1,2-Trichloroethane	20.000	19.223	3.9	96	0.00
61	T	1,3-Dichloropropane	20.000	19.310	3.5	99	0.00
62	T	Dibromochloromethane	20.000	17.088	14.6	89	0.00
63	T	Ethyl methacrylate	20.000	20.833	-4.2	103	0.00
64	T	1,2-Dibromoethane	20.000	18.730	6.3	99	0.00
65	T	Bromoform	20.000	17.420	12.9	88	0.00
66	I	Chlorobenzene-d5	50.000	50.000	0.0	100	0.00
67	T	4-Methyl-2-Pentanone	40.000	42.154	-5.4	100	0.00
68	T	2-Hexanone	40.000	42.832	-7.1	99	0.00
69	S	Toluene-d8	20.000	53.773	-168.9#	255	0.00
70	T	Toluene	20.000	21.747	-8.7	100	0.00
71	T	Tetrachloroethene	20.000	19.334	3.3	96	0.00
72	T	1,1,1,2-Tetrachloroethane	20.000	18.806	6.0	90	0.00
73	T	Chlorobenzene	20.000	19.463	2.7	98	0.00
74	T	1-Chlorohexane	20.000	22.768	-13.8	108	0.00
75	T	Ethylbenzene	20.000	20.703	-3.5	98	0.00
76	T	m,p-Xylene	40.000	41.455	-3.6	97	0.00
77	T	Styrene	20.000	20.408	-2.0	97	0.00
78	T	o-Xylene	20.000	20.576	-2.9	97	0.00
79	T	1,1,2,2-Tetrachloroethane	20.000	19.020	4.9	95	0.00
80	T	1,2,3-Trichloropropane	20.000	18.483	7.6	96	0.00
81	T	trans-1,4-Dichloro-2-butene	20.000	19.000	5.0	96	0.00
82	S	Bromofluorobenzene	20.000	46.313	-131.6#	245	0.00
83	T	Isopropylbenzene	20.000	21.330	-6.6	98	0.00
84	T	Bromobenzene	20.000	19.934	0.3	98	0.00
85	T	n-Propylbenzene	20.000	20.892	-4.5	96	0.00
86	T	2-Chlorotoluene	20.000	20.254	-1.3	97	0.00
87	T	4-Chlorotoluene	20.000	19.759	1.2	96	0.00
88	T	1,3,5-Trimethylbenzene	20.000	20.782	-3.9	96	0.00
89	T	Pentachloroethane	20.000	20.287	-1.4	91	0.00
90	T	tert-Butylbenzene	20.000	21.691	-8.5	96	0.00
91	T	1,2,4-Trimethylbenzene	20.000	20.932	-4.7	96	0.00
92	T	sec-Butylbenzene	20.000	21.136	-5.7	97	0.00
93	I	1,4-Dichlorobenzene-d4	50.000	50.000	0.0	96	0.00
94	T	1,3-Dichlorobenzene	20.000	20.306	-1.5	96	0.00
95	T	Benzyl chloride	20.000	23.661	-18.3	122	0.00
96	T	1,4-Dichlorobenzene	20.000	19.144	4.3	94	0.00
97	T	4-Isopropyltoluene	20.000	22.227	-11.1	98	0.00
98	T	1,2-Dichlorobenzene	20.000	20.526	-2.6	94	0.00
99	T	n-Butylbenzene	20.000	22.354	-11.8	98	0.00
100	T	1,2-Dibromo-3-chloropropane	20.000	16.253	18.7	92	0.00
101	T	Hexachloroethane	20.000	22.570	-12.9	121	0.00
102	T	1,2,4-Trichlorobenzene	20.000	22.800	-14.0	101	0.00
103	T	Naphthalene	20.000	19.055	4.7	102	0.00
104	T	Hexachlorobutadiene	20.000	20.679	-3.4	97	0.00
105	T	1,2,3-Trichlorobenzene	20.000	22.625	-13.1	100	0.00

Evaluate Continuing Calibration Report

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

Compound	Amount	Calc.	%Dev	Area%	Dev(min)

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.644	2001	1775652	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	866864	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	916920	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	524827	46.25	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	92.50%		
69) Toluene-d8	11.014	3568	1257169	53.77	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	107.54%		
82) Bromofluorobenzene	14.865	4949	366337	46.31	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	92.62%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.222	50	335666	19.76	ug/L	98
3) Chloromethane	1.289	75	336672	18.78	ug/L	96
4) Vinyl Chloride	1.395	115	344782	18.50	ug/L	98
5) Bromomethane	1.571	181	179068	17.06	ug/L	100
6) Chloroethane	1.632	204	179171	19.11	ug/L	96
7) Acrolein	1.943	315	92122	39.92	ug/L	99
8) Acetonitrile	1.957	320	22923m	21.15	ug/L	
9) Acrylonitrile	2.347	460	91066	20.08	ug/L	95
10) Trichlorofluoromethane	1.987	331	335703	19.19	ug/L	96
11) Diethyl ether	2.104	373	159445	19.41	ug/L	97
12) FREON 123A	1.888	300	232837	18.95	ug/L	99
13) FC-113	2.473	505	220127	19.34	ug/L	95
14) Acetone	2.026	345	42266m	38.78	ug/L	
15) IPA	1.998	335	73614	174.63	ug/L #	96
16) TBA	2.339	457	152125	209.80	ug/L	98
17) Methyl acetate	2.461	501	184813	19.72	ug/L	99
18) Allyl chloride	2.470	504	332269	20.51	ug/L	98
19) Iodomethane	2.302	444	358915	19.22	ug/L	99
20) 1,1-Dichloroethene	2.289	439	336173	18.96	ug/L	99
21) Methylene Chloride	2.400	479	243068	19.73	ug/L	98
22) Carbon Disulfide	2.531	526	443902	18.13	ug/L	99
23) trans-1,2-Dichloroethene	2.949	676	316600	20.05	ug/L	98
24) MTBE	3.089	726	587939	20.33	ug/L	97
25) 1,1-Dichloroethane	3.186	761	374606	19.60	ug/L	99
26) Propionitrile	3.234	778	135985	95.76	ug/L	99
27) Vinyl Acetate	3.410	841	364429	21.07	ug/L	99
28) Chloroprene	3.588	905	333530	19.18	ug/L	97
29) Hexane	3.674	936	243813	19.41	ug/L	98
30) 2-Butanone	3.711	949	36445	38.30	ug/L #	87
31) Diisopropylether (DIPE)	3.780	974	687132	19.56	ug/L	100
32) cis-1,2-Dichloroethene	3.833	993	309148	19.88	ug/L	99
33) Methacrylonitrile	3.825	990	312295m	40.63	ug/L	
34) Bromochloromethane	4.023	1061	137456	20.22	ug/L	95
35) Chloroform	4.115	1094	322883	18.72	ug/L	99
36) 2,2-Dichloropropane	4.202	1125	241148	20.40	ug/L	99
37) Methyl acrylate	4.291	1157	135195	19.91	ug/L	96
38) Isobutyl alcohol	4.413	1201	65936	182.17	ug/L	98
39) Tetrahydrofuran	4.575	1259	23622	18.93	ug/L	95
41) 1,2-Dichloroethane	5.108	1450	260526	19.27	ug/L	98
42) 1,1,1-Trichloroethane	5.253	1502	237816	20.04	ug/L	96
43) 1-Chlorobutane	5.317	1525	381888	20.75	ug/L	93
44) 1,1-Dichloropropene	5.646	1643	250665	20.26	ug/L	97
45) Cyclohexane	5.744	1678	423675	20.66	ug/L	97
46) Carbon Tetrachloride	5.933	1746	126677	18.04	ug/L	98

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

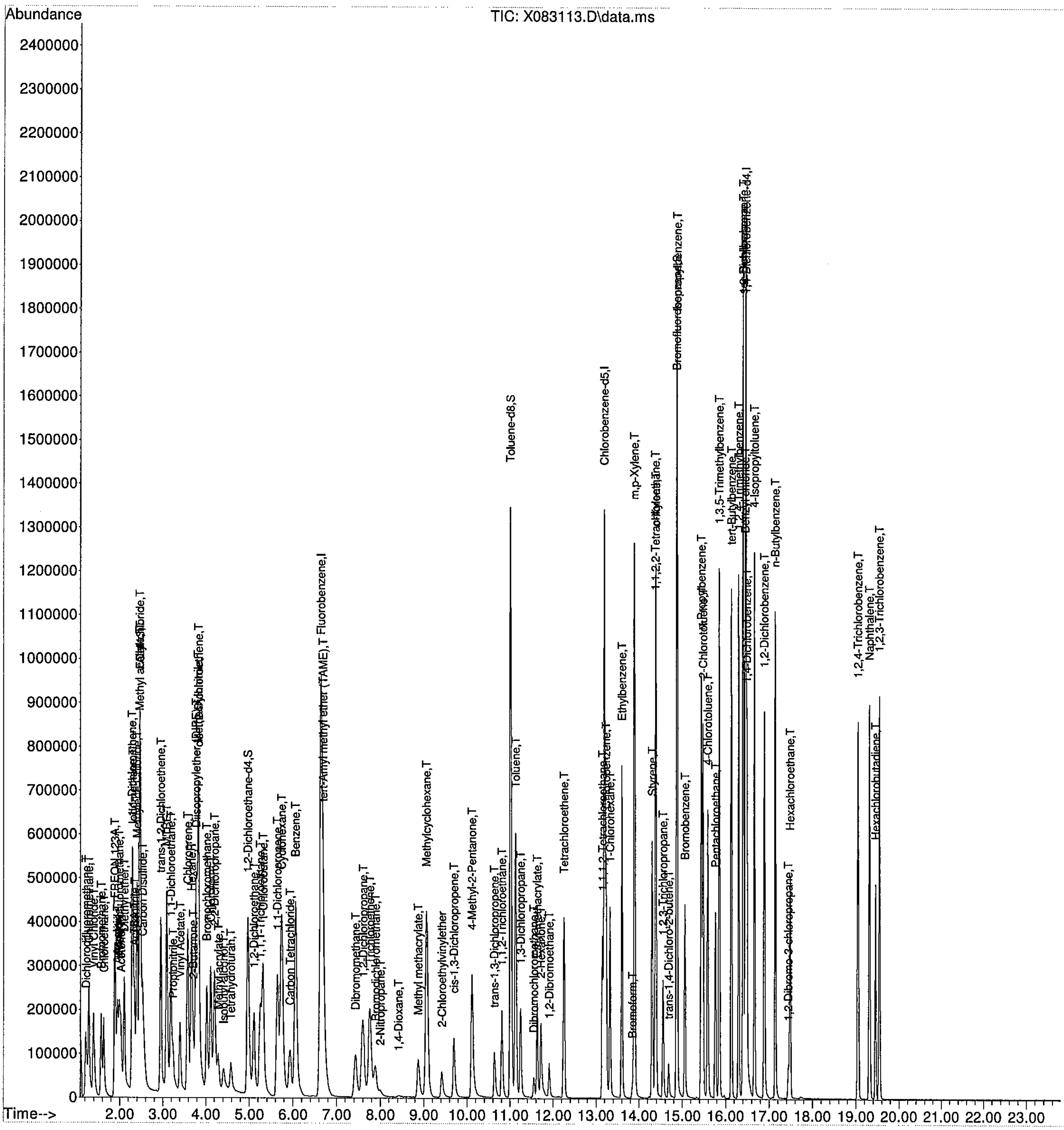
	Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47)	Benzene	6.059	1791	798920	20.48	ug/L	99
48)	tert-Amyl methyl ether...	6.689	2017	498347	19.62	ug/L	99
49)	Dibromomethane	7.431	2283	89097	18.46	ug/L	97
50)	1,2-Dichloropropane	7.606	2346	166547	20.30	ug/L	98
51)	Trichloroethene	7.765	2403	169861	19.76	ug/L	98
52)	Bromodichloromethane	7.891	2448	98246	18.10	ug/L	93
53)	2-Nitropropane	8.000	2487	19023m	17.25	ug/L	
54)	1,4-Dioxane	8.415	2636	6720m	191.73	ug/L	
55)	Methyl methacrylate	8.873	2800	104701	20.70	ug/L	99
56)	Methylcyclohexane	9.065	2869	334888	21.10	ug/L	97
57)	2-Chloroethylvinylether	9.422	2997	45442	19.96	ug/L	95
58)	cis-1,3-Dichloropropene	9.701	3097	120595	19.02	ug/L	99
59)	trans-1,3-Dichloropropene	10.635	3432	76074	18.77	ug/L	98
60)	1,1,2-Trichloroethane	10.811	3495	94191	19.22	ug/L	98
61)	1,3-Dichloropropane	11.246	3651	154484	19.31	ug/L	98
62)	Dibromochloromethane	11.552	3761	32144	17.09	ug/L	95
63)	Ethyl methacrylate	11.630	3789	145175	20.83	ug/L	97
64)	1,2-Dibromoethane	11.915	3891	71753	18.73	ug/L	96
65)	Bromoform	13.847	4584	15673	17.42	ug/L	99
67)	4-Methyl-2-Pentanone	10.116	3246	382376	42.15	ug/L	96
68)	2-Hexanone	11.717	3820	186644	42.83	ug/L	100
70)	Toluene	11.129	3609	615652	21.75	ug/L	100
71)	Tetrachloroethene	12.252	4012	162221	19.33	ug/L	100
72)	1,1,1,2-Tetrachloroethane	13.150	4334	88001	18.81	ug/L	97
73)	Chlorobenzene	13.237	4365	330735	19.46	ug/L	99
74)	1-Chlorohexane	13.329	4398	135805	22.77	ug/L	99
75)	Ethylbenzene	13.602	4496	621937	20.70	ug/L	100
76)	m,p-Xylene	13.895	4601	970355	41.45	ug/L	99
77)	Styrene	14.302	4747	319116	20.41	ug/L	100
78)	o-Xylene	14.386	4777	616261	20.58	ug/L	98
79)	1,1,2,2-Tetrachloroethane	14.377	4774	157478	19.02	ug/L	99
80)	1,2,3-Trichloropropane	14.553	4837	124412	18.48	ug/L	98
81)	trans-1,4-Dichloro-2-b...	14.678	4882	27373	19.00	ug/L	95
83)	Isopropylbenzene	14.879	4954	816328	21.33	ug/L	98
84)	Bromobenzene	15.058	5018	215518	19.93	ug/L	95
85)	n-Propylbenzene	15.437	5154	819891	20.89	ug/L	100
86)	2-Chlorotoluene	15.476	5168	501664	20.25	ug/L	99
87)	4-Chlorotoluene	15.588	5208	415931	19.76	ug/L	99
88)	1,3,5-Trimethylbenzene	15.852	5303	680178	20.78	ug/L	98
89)	Pentachloroethane	15.766	5272	32462	20.29	ug/L	97
90)	tert-Butylbenzene	16.131	5403	604194	21.69	ug/L	99
91)	1,2,4-Trimethylbenzene	16.299	5463	698152	20.93	ug/L	99
92)	sec-Butylbenzene	16.399	5499	884288	21.14	ug/L	100
94)	1,3-Dichlorobenzene	16.399	5499	327472	20.31	ug/L	99
95)	Benzyl chloride	16.446	5516	140709	23.66	ug/L	98
96)	1,4-Dichlorobenzene	16.491	5532	322493	19.14	ug/L	98
97)	4-Isopropyltoluene	16.661	5593	757762	22.23	ug/L	99
98)	1,2-Dichlorobenzene	16.890	5675	400975	20.53	ug/L	99
99)	n-Butylbenzene	17.141	5765	659343	22.35	ug/L	97
100)	1,2-Dibromo-3-chloropr...	17.442	5873	13591	16.25	ug/L	96
101)	Hexachloroethane	17.484	5888	35685m	22.57	ug/L	
102)	1,2,4-Trichlorobenzene	19.048	6449	318904	22.80	ug/L	100
103)	Naphthalene	19.310	6543	791835	19.05	ug/L	100
104)	Hexachlorobutadiene	19.453	6594	112319	20.68	ug/L	99
105)	1,2,3-Trichlorobenzene	19.542	6626	325553	22.62	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

```
Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On    : 31 Aug 2018   2:50 pm
Operator  : EA
Sample    : LCS  LM=8260C  BT=MS4083118A
Misc      : VSTD020
ALS Vial  : 13   Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration
```



Continuing Calibration Report MS4

Method Path : C:\MS4\METHODS\
Method File : 8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Thu Sep 13 16:12:34 2018
Response Via : Initial Calibration

CC Data File: X090503.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%
1	I	Fluorobenzene	1.000	1.000	0.0	131
2	T	Dichlorodifluoromethane	0.478	0.393	17.9	108
3	T	Chloromethane	0.505	0.485	4.0	125
4	T	Vinyl Chloride	0.525	0.427	18.6	114
5	T	Bromomethane	0.295	0.250	15.5	114
6	T	Chloroethane	0.264	0.232	12.3	118
7	T	Acrolein	0.065	0.067	-3.4	137
8	T	Acetonitrile	0.032	0.033	-2.0	139
9	T	Acrylonitrile	0.128	0.104	18.7	108
10	T	Trichlorofluoromethane	0.493	0.444	10.0	115
11	T	Diethyl ether	0.231	0.223	3.7	126
12	T	FREON 123A	0.346	0.277	19.9	109
13	T	FC-113	0.320	0.276	13.8	117
14	T	Acetone	0.031	0.029	4.5	127
15	T	IPA	0.012	0.010	18.6	106
16	T	TBA	0.020	0.018	10.7	107
17	T	Methyl acetate	0.264	0.212	19.8	110
18	T	Allyl chloride	0.456	0.461	-1.0	131
19	T	Iodomethane	0.526	0.476	9.6	121
20	T	1,1-Dichloroethene	0.499	0.437	12.5	116
21	T	Methylene Chloride	0.347	0.285	17.7	110
22	T	Carbon Disulfide	0.690	0.669	3.0	125
23	T	trans-1,2-Dichloroethene	0.445	0.410	7.9	118
24	T	MTBE	0.814	0.762	6.4	124
25	T	1,1-Dichloroethane	0.538	0.493	8.4	123
26	T	Propionitrile	0.040	0.033	18.7	111
27	T	Vinyl Acetate	0.487	0.491	-0.7	131
28	T	Chloroprene	0.490	0.494	-1.0	134
29	T	Hexane	0.354	0.323	8.7	117
30	T	2-Butanone	0.027	0.028	-2.7	141
31	T	Diisopropylether (DIPE)	0.989	0.932	5.7	124
32	T	cis-1,2-Dichloroethene	0.438	0.396	9.5	120
33	T	Methacrylonitrile	0.216	0.243	-12.2	154#
34	T	Bromochloromethane	0.191	0.171	10.8	117
35	T	Chloroform	0.486	0.445	8.4	120
36	T	2,2-Dichloropropane	0.333	0.332	0.4	128
37	T	Methyl acrylate	0.191	0.187	2.1	129
38	T	Isobutyl alcohol	0.010	0.010	0.0	139
39	T	Tetrahydrofuran	0.047	0.032	33.1#	127
40	S	1,2-Dichloroethane-d4	0.320	0.738	-130.9#	314#
41	T	1,2-Dichloroethane	0.381	0.360	5.5	127
42	T	1,1,1-Trichloroethane	0.334	0.325	2.8	128
43	T	1-Chlorobutane	0.518	0.551	-6.4	134
44	T	1,1-Dichloropropene	0.348	0.377	-8.1	137
45	T	Cyclohexane	0.577	0.552	4.4	121
46	T	Carbon Tetrachloride	0.198	0.181	8.3	119
47	T	Benzene	1.099	1.122	-2.1	129
48	T	tert-Amyl methyl ether (TAME)	0.815	0.698	14.3	132
49	T	Dibromomethane	0.136	0.131	3.6	131
50	T	1,2-Dichloropropane	0.231	0.239	-3.5	139
51	T	Trichloroethene	0.242	0.244	-0.7	135
52	T	Bromodichloromethane	0.153	0.139	9.1	126
53	T	2-Nitropropane	0.031	0.030	3.8	128
54	T	1,4-Dioxane	0.001	0.001	-29.3#	146
55	T	Methyl methacrylate	0.142	0.145	-1.7	129
56	T	Methylcyclohexane	0.447	0.435	2.6	122
57		2-Chloroethylvinylether	0.061	0.075	-23.8#	163#
58	T	cis-1,3-Dichloropropene	0.169	0.195	-15.2	143
59	T	trans-1,3-Dichloropropene	0.108	0.122	-12.4	143
60	T	1,1,2-Trichloroethane	0.138	0.138	-0.1	129
61	T	1,3-Dichloropropane	0.225	0.220	2.4	130

Method Path : C:\MS4\METHODS\
Method File : 8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Thu Sep 13 16:12:34 2018
Response Via : Initial Calibration

CC Data File: X090503.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%
62	T	Dibromochloromethane	0.053	0.048	8.7	123
63	T	Ethyl methacrylate	0.196	0.176	10.4	115
64	T	1,2-Dibromoethane	0.108	0.100	7.7	126
65	T	Bromoform	0.025	0.021	17.6	107
66	I	Chlorobenzene-d5	1.000	1.000	0.0	124
67	T	4-Methyl-2-Pentanone	0.523	0.494	5.5	112
68	T	2-Hexanone	0.251	0.223	11.4	102
69	S	Toluene-d8	1.348	3.730	-176.6#	327#
70	T	Toluene	1.633	1.847	-13.1	130
71	T	Tetrachloroethene	0.484	0.569	-17.6	145
72	T	1,1,1,2-Tetrachloroethane	0.270	0.267	1.0	119
73	T	Chlorobenzene	0.980	0.958	2.3	123
74	T	1-Chlorohexane	0.344	0.371	-7.9	128
75	T	Ethylbenzene	1.733	1.793	-3.5	123
76	T	m,p-Xylene	1.350	1.376	-2.0	119
77	T	Styrene	0.902	0.886	1.8	117
78	T	o-Xylene	1.728	1.742	-0.8	119
79	T	1,1,2,2-Tetrachloroethane	0.478	0.470	1.5	123
80	T	1,2,3-Trichloropropane	0.388	0.362	6.8	121
81	T	trans-1,4-Dichloro-2-butene	0.083	0.067	19.7	101
82	S	Bromofluorobenzene	0.456	0.968	-112.1#	280#
83	T	Isopropylbenzene	2.207	2.237	-1.3	116
84	T	Bromobenzene	0.624	0.591	5.3	117
85	T	n-Propylbenzene	2.264	2.098	7.3	107
86	T	2-Chlorotoluene	1.429	1.345	5.9	112
87	T	4-Chlorotoluene	1.214	1.080	11.0	108
88	T	1,3,5-Trimethylbenzene	1.888	1.854	1.8	113
89	T	Pentachloroethane	0.092	0.082	11.6	99
90	T	tert-Butylbenzene	1.607	1.653	-2.9	114
91	T	1,2,4-Trimethylbenzene	1.924	1.846	4.0	110
92	T	sec-Butylbenzene	2.413	2.362	2.1	112
93	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	108
94	T	1,3-Dichlorobenzene	0.879	0.943	-7.2	113
95	T	Benzyl chloride	0.309	0.388	-25.3#	139
96	T	1,4-Dichlorobenzene	0.919	0.918	0.1	110
97	T	4-Isopropyltoluene	1.859	2.100	-13.0	111
98	T	1,2-Dichlorobenzene	1.065	1.211	-13.7	117
99	T	n-Butylbenzene	1.608	1.718	-6.8	105
100	T	1,2-Dibromo-3-chloropropane	0.038	0.048	-26.2#	132
101	T	Hexachloroethane	0.071	0.073	-2.2	102
102	T	1,2,4-Trichlorobenzene	0.763	1.002	-31.4#	130
103	T	Naphthalene	1.775	2.564	-44.5#	136
104	T	Hexachlorobutadiene	0.296	0.337	-13.9	120
105	T	1,2,3-Trichlorobenzene	0.785	1.017	-29.6#	129

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	50.000	50.000	0.0	131	0.01
2	T	Dichlorodifluoromethane	20.000	16.417	17.9	108	0.01
3	T	Chloromethane	20.000	19.209	4.0	125	0.03
4	T	Vinyl Chloride	20.000	16.277	18.6	114	0.02
5	T	Bromomethane	20.000	16.910	15.4	114	0.05
6	T	Chloroethane	20.000	17.542	12.3	118	0.03
7	T	Acrolein	40.000	41.357	-3.4	137	0.01
8	T	Acetonitrile	20.000	21.696	-8.5	139	0.05
9	T	Acrylonitrile	20.000	16.262	18.7	108	0.00
10	T	Trichlorofluoromethane	20.000	18.007	10.0	115	0.02
11	T	Diethyl ether	20.000	19.266	3.7	126	0.01
12	T	FREON 123A	20.000	16.017	19.9	109	0.01
13	T	FC-113	20.000	17.232	13.8	117	0.02
14	T	Acetone	40.000	38.202	4.5	127	0.01
15	T	IPA	200.000	162.821	18.6	106	0.01
16	T	TBA	200.000	178.690	10.7	107	0.00
17	T	Methyl acetate	20.000	16.048	19.8	110	0.01
18	T	Allyl chloride	20.000	20.199	-1.0	131	0.01
19	T	Iodomethane	20.000	18.085	9.6	121	0.02
20	T	1,1-Dichloroethene	20.000	17.508	12.5	116	0.02
21	T	Methylene Chloride	20.000	16.461	17.7	110	0.02
22	T	Carbon Disulfide	20.000	19.402	3.0	125	0.01
23	T	trans-1,2-Dichloroethene	20.000	18.420	7.9	118	0.01
24	T	MTBE	20.000	18.713	6.4	124	0.01
25	T	1,1-Dichloroethane	20.000	18.320	8.4	123	0.01
26	T	Propionitrile	100.000	81.311	18.7	111	0.01
27	T	Vinyl Acetate	20.000	20.147	-0.7	131	0.01
28	T	Chloroprene	20.000	20.194	-1.0	134	0.01
29	T	Hexane	20.000	18.263	8.7	117	0.01
30	T	2-Butanone	40.000	41.074	-2.7	141	0.01
31	T	Diisopropylether (DIPE)	20.000	18.854	5.7	124	0.01
32	T	cis-1,2-Dichloroethene	20.000	18.095	9.5	120	0.01
33	T	Methacrylonitrile	40.000	44.869	-12.2	154	0.00
34	T	Bromochloromethane	20.000	17.847	10.8	117	0.01
35	T	Chloroform	20.000	18.326	8.4	120	0.01
36	T	2,2-Dichloropropane	20.000	19.927	0.4	128	0.02
37	T	Methyl acrylate	20.000	19.586	2.1	129	0.01
38	T	Isobutyl alcohol	200.000	199.906	0.0	139	0.00
39	T	Tetrahydrofuran	20.000	18.034	9.8	127	0.03
40	S	1,2-Dichloroethane-d4	20.000	46.178	-130.9#	314	0.01
41	T	1,2-Dichloroethane	20.000	18.890	5.5	127	0.01
42	T	1,1,1-Trichloroethane	20.000	19.438	2.8	128	0.01
43	T	1-Chlorobutane	20.000	21.282	-6.4	134	0.01
44	T	1,1-Dichloropropene	20.000	21.624	-8.1	137	0.02
45	T	Cyclohexane	20.000	19.126	4.4	121	0.01
46	T	Carbon Tetrachloride	20.000	18.335	8.3	119	0.01
47	T	Benzene	20.000	20.421	-2.1	129	0.01
48	T	tert-Amyl methyl ether (TAM	20.000	19.524	2.4	132	0.01
49	T	Dibromomethane	20.000	19.280	3.6	131	0.02
50	T	1,2-Dichloropropane	20.000	20.703	-3.5	139	0.01
51	T	Trichloroethene	20.000	20.139	-0.7	135	0.00
52	T	Bromodichloromethane	20.000	18.177	9.1	126	0.00
53	T	2-Nitropropane	20.000	19.245	3.8	128	0.00
54	T	1,4-Dioxane	200.000	228.153	-14.1	146	0.00

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55	T	Methyl methacrylate	20.000	20.340	-1.7	129	0.00
56	T	Methylcyclohexane	20.000	19.479	2.6	122	0.00
57		2-Chloroethylvinylether	20.000	22.859	-14.3	163	0.00
58	T	cis-1,3-Dichloropropene	20.000	21.355	-6.8	143	0.00
59	T	trans-1,3-Dichloropropene	20.000	20.901	-4.5	143	0.00
60	T	1,1,2-Trichloroethane	20.000	20.026	-0.1	129	0.00
61	T	1,3-Dichloropropane	20.000	19.528	2.4	130	0.00
62	T	Dibromochloromethane	20.000	18.261	8.7	123	0.00
63	T	Ethyl methacrylate	20.000	17.922	10.4	115	0.00
64	T	1,2-Dibromoethane	20.000	18.451	7.7	126	0.00
65	T	Bromoform	20.000	16.479	17.6	107	0.00
66	I	Chlorobenzene-d5	50.000	50.000	0.0	124	0.00
67	T	4-Methyl-2-Pentanone	40.000	37.795	5.5	112	0.00
68	T	2-Hexanone	40.000	35.457	11.4	102	0.00
69	S	Toluene-d8	20.000	55.316	-176.6#	327	0.00
70	T	Toluene	20.000	22.619	-13.1	130	0.00
71	T	Tetrachloroethene	20.000	23.514	-17.6	145	0.00
72	T	1,1,1,2-Tetrachloroethane	20.000	19.808	1.0	119	0.00
73	T	Chlorobenzene	20.000	19.539	2.3	123	0.00
74	T	1-Chlorohexane	20.000	21.572	-7.9	128	0.00
75	T	Ethylbenzene	20.000	20.693	-3.5	123	0.00
76	T	m,p-Xylene	40.000	40.781	-2.0	119	0.00
77	T	Styrene	20.000	19.638	1.8	117	0.00
78	T	o-Xylene	20.000	20.167	-0.8	119	0.00
79	T	1,1,2,2-Tetrachloroethane	20.000	19.691	1.5	123	0.00
80	T	1,2,3-Trichloropropane	20.000	18.637	6.8	121	0.00
81	T	trans-1,4-Dichloro-2-butene	20.000	16.058	19.7	101	0.00
82	S	Bromofluorobenzene	20.000	42.419	-112.1#	280	0.00
83	T	Isopropylbenzene	20.000	20.265	-1.3	116	0.00
84	T	Bromobenzene	20.000	18.944	5.3	117	0.00
85	T	n-Propylbenzene	20.000	18.533	7.3	107	0.00
86	T	2-Chlorotoluene	20.000	18.827	5.9	112	0.00
87	T	4-Chlorotoluene	20.000	17.791	11.0	108	0.00
88	T	1,3,5-Trimethylbenzene	20.000	19.639	1.8	113	0.00
89	T	Pentachloroethane	20.000	17.679	11.6	99	0.00
90	T	tert-Butylbenzene	20.000	20.583	-2.9	114	0.00
91	T	1,2,4-Trimethylbenzene	20.000	19.196	4.0	110	0.00
92	T	sec-Butylbenzene	20.000	19.574	2.1	112	0.00
93	I	1,4-Dichlorobenzene-d4	50.000	50.000	0.0	108	0.00
94	T	1,3-Dichlorobenzene	20.000	21.440	-7.2	113	0.00
95	T	Benzyl chloride	20.000	23.860	-19.3	139	0.00
96	T	1,4-Dichlorobenzene	20.000	19.984	0.1	110	0.00
97	T	4-Isopropyltoluene	20.000	22.591	-13.0	111	0.00
98	T	1,2-Dichlorobenzene	20.000	22.730	-13.7	117	0.00
99	T	n-Butylbenzene	20.000	21.363	-6.8	105	0.00
100	T	1,2-Dibromo-3-chloropropane	20.000	20.878	-4.4	132	0.00
101	T	Hexachloroethane	20.000	16.904	15.5	102	0.00
102	T	1,2,4-Trichlorobenzene	20.000	26.284	-31.4#	130	0.00
103	T	Naphthalene	20.000	22.632	-13.2	136	0.00
104	T	Hexachlorobutadiene	20.000	22.778	-13.9	120	0.00
105	T	1,2,3-Trichlorobenzene	20.000	25.912	-29.6#	129	0.00

Evaluate Continuing Calibration Report

```
Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On    :  5 Sep 2018   9:39 am
Operator  : EA
Sample    : LCS  LM=8260C  BT=MS4090518A
Misc      : VSTD020
ALS Vial  : 3   Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration


Min. RRF     :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 150%

       Compound                        Amount  Calc.     %Dev Area% Dev(min)
-------------------------------------------------------------------------

  (#) = Out of Range                 SPCC's out = 0  CCC's out = 0
```

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.653	2004	2295136	50.00	ug/L	0.01
66) Chlorobenzene-d5	13.195	4350	1081236m	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	1028131	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.982	1405	677330	46.18	ug/L	0.01
Spiked Amount 50.000	Range 77 - 117		Recovery =	92.36%		
69) Toluene-d8	11.017	3569	1613072	55.32	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	110.64%		
82) Bromofluorobenzene	14.865	4949	418519	42.42	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	84.84%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.230	53	360427	16.42	ug/L	99
3) Chloromethane	1.324	88	445092	19.21	ug/L #	96
4) Vinyl Chloride	1.425	126	392036m	16.28	ug/L	
5) Bromomethane	1.614	197	229357m	16.91	ug/L	
6) Chloroethane	1.656	213	212583	17.54	ug/L	98
7) Acrolein	1.954	319	123362m	41.36	ug/L	
8) Acetonitrile	2.007	338	30398m	21.70	ug/L	
9) Acrylonitrile	2.353	462	95308	16.26	ug/L	96
10) Trichlorofluoromethane	2.007	338	407221m	18.01	ug/L	
11) Diethyl ether	2.116	377	204590	19.27	ug/L	96
12) FREON 123A	1.896	303	254361m	16.02	ug/L	
13) FC-113	2.492	512	253503m	17.23	ug/L	
14) Acetone	2.032	347	53820m	38.20	ug/L	
15) IPA	2.007	338	88715m	162.82	ug/L	
16) TBA	2.344	459	167470	178.69	ug/L	98
17) Methyl acetate	2.470	504	194355	16.05	ug/L #	96
18) Allyl chloride	2.478	507	422874	20.20	ug/L	97
19) Iodomethane	2.316	449	436634	18.09	ug/L	99
20) 1,1-Dichloroethene	2.302	444	401321	17.51	ug/L	99
21) Methylene Chloride	2.414	484	262068	16.46	ug/L	97
22) Carbon Disulfide	2.542	530	614097m	19.40	ug/L	
23) trans-1,2-Dichloroethene	2.958	679	375968	18.42	ug/L	99
24) MTBE	3.097	729	699567	18.71	ug/L	99
25) 1,1-Dichloroethane	3.195	764	452520	18.32	ug/L	99
26) Propionitrile	3.242	781	149240m	81.31	ug/L	
27) Vinyl Acetate	3.415	843	450424	20.15	ug/L	99
28) Chloroprene	3.599	909	453885	20.19	ug/L	98
29) Hexane	3.686	940	296545	18.26	ug/L	98
30) 2-Butanone	3.725	954	50519m	41.07	ug/L	
31) Diisopropylether (DIPE)	3.792	978	855953	18.85	ug/L	100
32) cis-1,2-Dichloroethene	3.845	997	363787	18.10	ug/L	99
33) Methacrylonitrile	3.831	992	445757	44.87	ug/L	98
34) Bromochloromethane	4.034	1065	156855	17.85	ug/L	97
35) Chloroform	4.123	1097	408618	18.33	ug/L	95
36) 2,2-Dichloropropane	4.218	1131	304406	19.93	ug/L	99
37) Methyl acrylate	4.299	1160	171897	19.59	ug/L	95
38) Isobutyl alcohol	4.416	1202	93526m	199.91	ug/L	
39) Tetrahydrofuran	4.603	1269	29082m	18.03	ug/L	
41) 1,2-Dichloroethane	5.119	1454	330102	18.89	ug/L	98
42) 1,1,1-Trichloroethane	5.264	1506	298163	19.44	ug/L	98
43) 1-Chlorobutane	5.320	1526	506221	21.28	ug/L	94
44) 1,1-Dichloropropene	5.660	1648	345730	21.62	ug/L	99
45) Cyclohexane	5.758	1683	506970	19.13	ug/L	98
46) Carbon Tetrachloride	5.947	1751	166462	18.34	ug/L	99

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc Units	Dev(Min)
47) Benzene	6.070	1795	1029768	20.42 ug/L	99
48) tert-Amyl methyl ether...	6.697	2020	641093	19.52 ug/L	95
49) Dibromomethane	7.447	2289	120304m	19.28 ug/L	
50) 1,2-Dichloropropane	7.609	2347	219497	20.70 ug/L	100
51) Trichloroethene	7.765	2403	223811	20.14 ug/L	97
52) Bromodichloromethane	7.891	2448	127532	18.18 ug/L	96
53) 2-Nitropropane	8.014	2492	27430m	19.24 ug/L	
54) 1,4-Dioxane	8.449	2648	10336m	228.15 ug/L	
55) Methyl methacrylate	8.873	2800	133002	20.34 ug/L	100
56) Methylcyclohexane	9.076	2873	399550	19.48 ug/L	99
57) 2-Chloroethylvinylether	9.422	2997	69170	22.86 ug/L #	88
58) cis-1,3-Dichloropropene	9.701	3097	178624	21.36 ug/L	98
59) trans-1,3-Dichloropropene	10.638	3433	111956	20.90 ug/L	98
60) 1,1,2-Trichloroethane	10.813	3496	126838	20.03 ug/L	100
61) 1,3-Dichloropropane	11.246	3651	201928	19.53 ug/L	97
62) Dibromochloromethane	11.552	3761	44399	18.26 ug/L	98
63) Ethyl methacrylate	11.628	3788	161427	17.92 ug/L	98
64) 1,2-Dibromoethane	11.912	3890	91362	18.45 ug/L	95
65) Bromoform	13.847	4584	19164	16.48 ug/L #	97
67) 4-Methyl-2-Pentanone	10.116	3246	427612	37.79 ug/L	98
68) 2-Hexanone	11.714	3819	192717m	35.46 ug/L	
70) Toluene	11.131	3610	798692	22.62 ug/L	99
71) Tetrachloroethene	12.252	4012	246074	23.51 ug/L	99
72) 1,1,1,2-Tetrachloroethane	13.150	4334	115609	19.81 ug/L	98
73) Chlorobenzene	13.237	4365	414131	19.54 ug/L	99
74) 1-Chlorohexane	13.329	4398	160495	21.57 ug/L	94
75) Ethylbenzene	13.602	4496	775369	20.69 ug/L	100
76) m,p-Xylene	13.892	4600	1190653	40.78 ug/L	100
77) Styrene	14.302	4747	383021	19.64 ug/L	98
78) o-Xylene	14.386	4777	753369	20.17 ug/L	97
79) 1,1,2,2-Tetrachloroethane	14.377	4774	203348	19.69 ug/L	98
80) 1,2,3-Trichloropropane	14.553	4837	156472	18.64 ug/L	99
81) trans-1,4-Dichloro-2-b...	14.678	4882	28856m	16.06 ug/L	
83) Isopropylbenzene	14.879	4954	967363	20.27 ug/L	98
84) Bromobenzene	15.058	5018	255468	18.94 ug/L	97
85) n-Propylbenzene	15.434	5153	907179	18.53 ug/L	99
86) 2-Chlorotoluene	15.476	5168	581622	18.83 ug/L	98
87) 4-Chlorotoluene	15.588	5208	467119	17.79 ug/L	100
88) 1,3,5-Trimethylbenzene	15.852	5303	801718	19.64 ug/L	98
89) Pentachloroethane	15.769	5273	35284	17.68 ug/L	95
90) tert-Butylbenzene	16.131	5403	715111	20.58 ug/L	100
91) 1,2,4-Trimethylbenzene	16.296	5462	798597	19.20 ug/L	100
92) sec-Butylbenzene	16.399	5499	1021449	19.57 ug/L	99
94) 1,3-Dichlorobenzene	16.399	5499	387698	21.44 ug/L	100
95) Benzyl chloride	16.449	5517	159420	23.86 ug/L	99
96) 1,4-Dichlorobenzene	16.488	5531	377479	19.98 ug/L	98
97) 4-Isopropyltoluene	16.661	5593	863614	22.59 ug/L	100
98) 1,2-Dichlorobenzene	16.887	5674	497899	22.73 ug/L	98
99) n-Butylbenzene	17.138	5764	706556	21.36 ug/L	100
100) 1,2-Dibromo-3-chloropr...	17.442	5873	19576	20.88 ug/L	92
101) Hexachloroethane	17.487	5889	29969	16.90 ug/L	83
102) 1,2,4-Trichlorobenzene	19.045	6448	412233m	26.28 ug/L	
103) Naphthalene	19.310	6543	1054570m	22.63 ug/L	
104) Hexachlorobutadiene	19.453	6594	138722m	22.78 ug/L	
105) 1,2,3-Trichlorobenzene	19.542	6626	418070m	25.91 ug/L	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

```
Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On    :  5 Sep 2018   9:39 am
Operator  : EA
Sample    : LCS  LM=8260C  BT=MS4090518A
Misc      : VSTD020
ALS Vial  : 3   Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title  : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration
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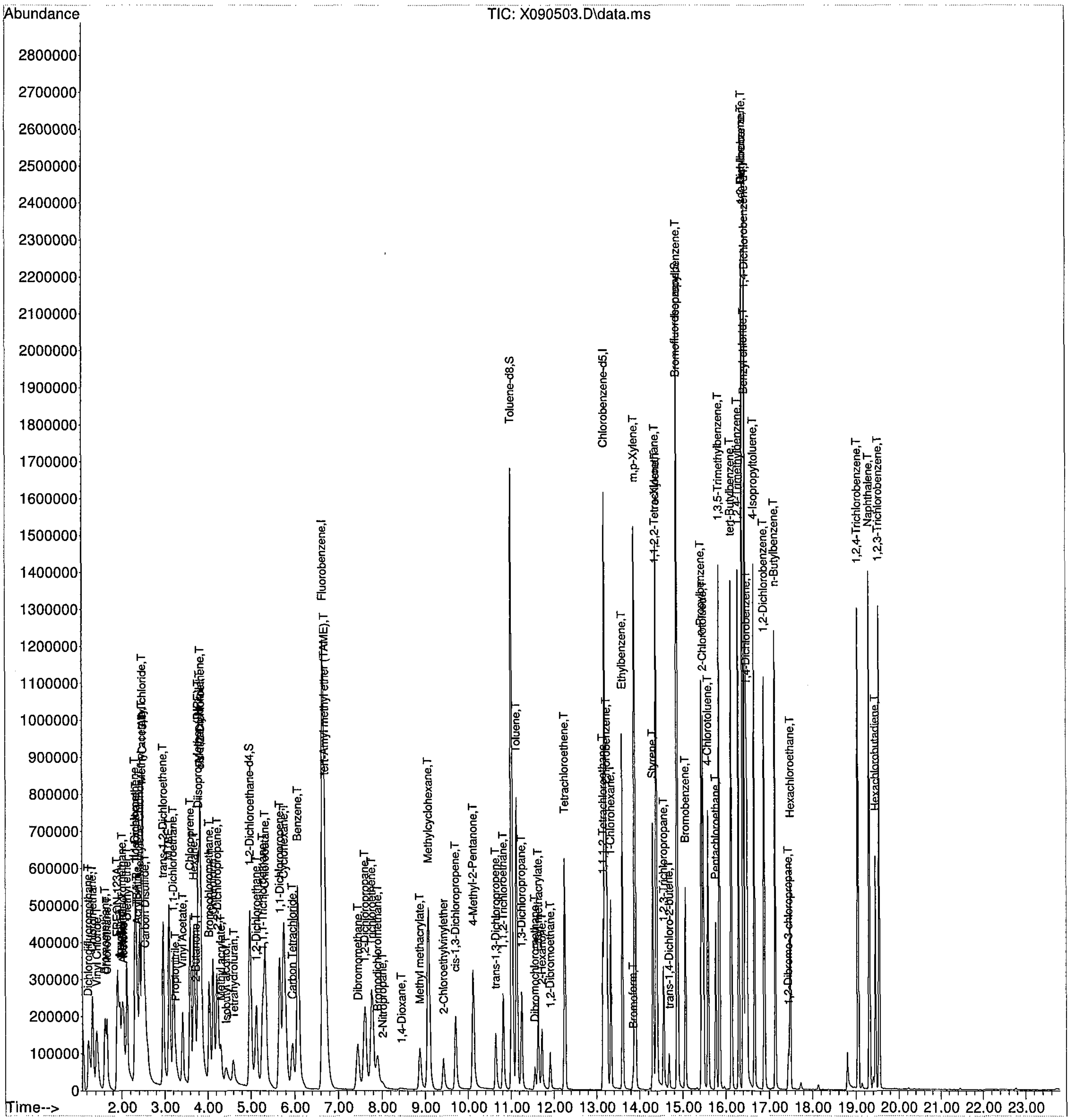


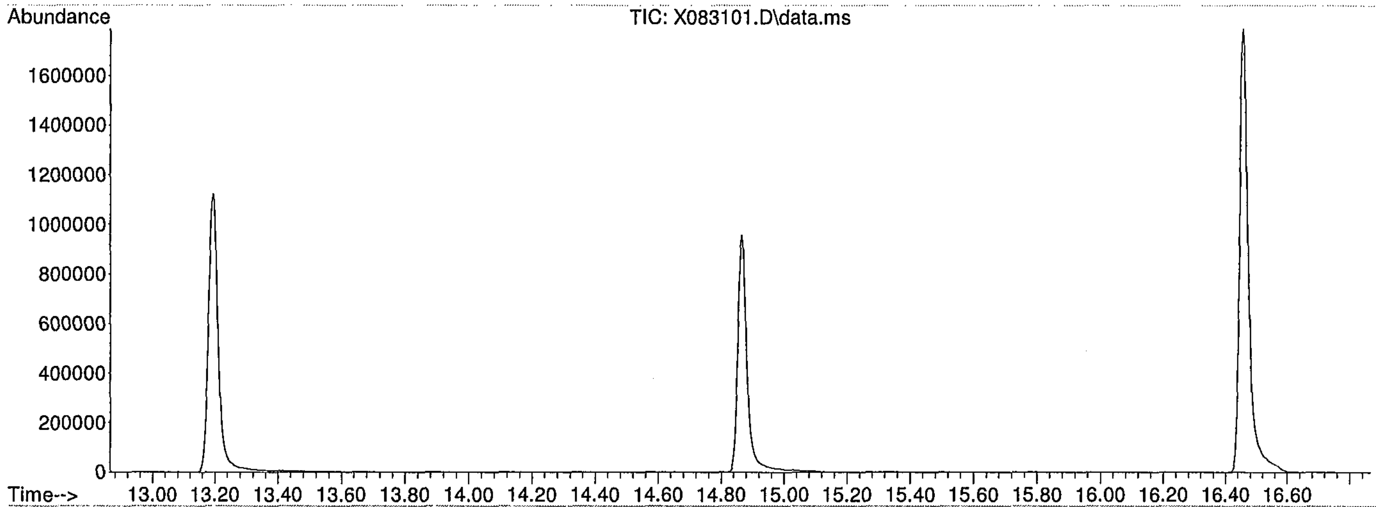
8260083118.M Fri Sep 07 11:30:48 2018 RPT1 Page: 4

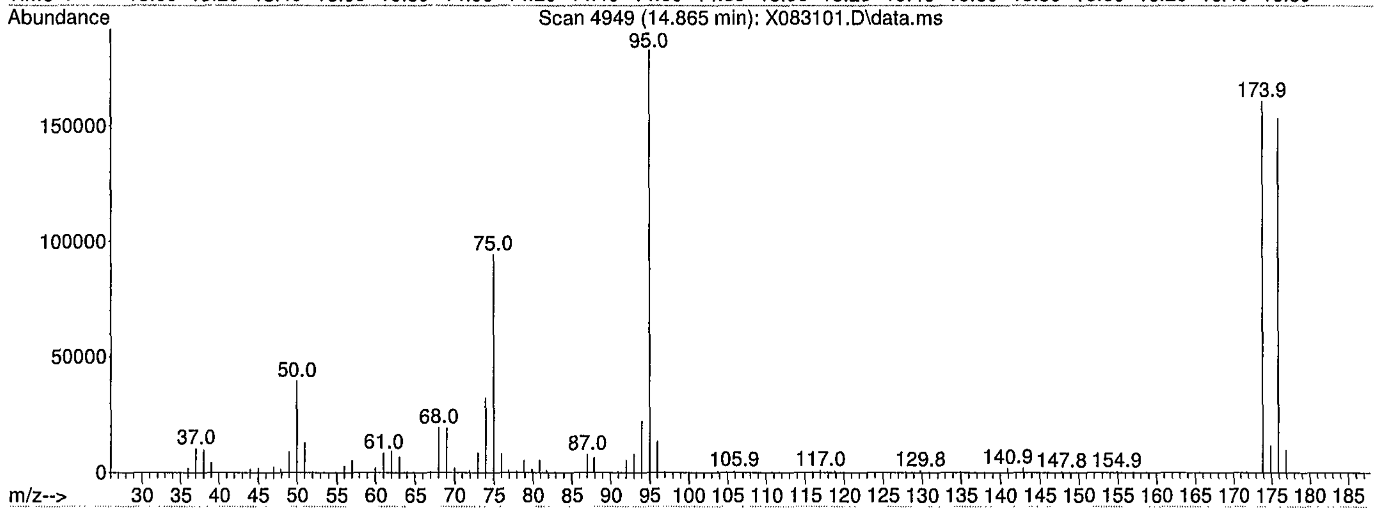
Volatile Data
Raw QC Data

Data Path : C:\MS4\083118\
Data File : X083101.D
Acq On : 31 Aug 2018 8:26 am
Operator : EA
Sample : BFB
Misc : BFB
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Fri Aug 31 14:49:06 2018





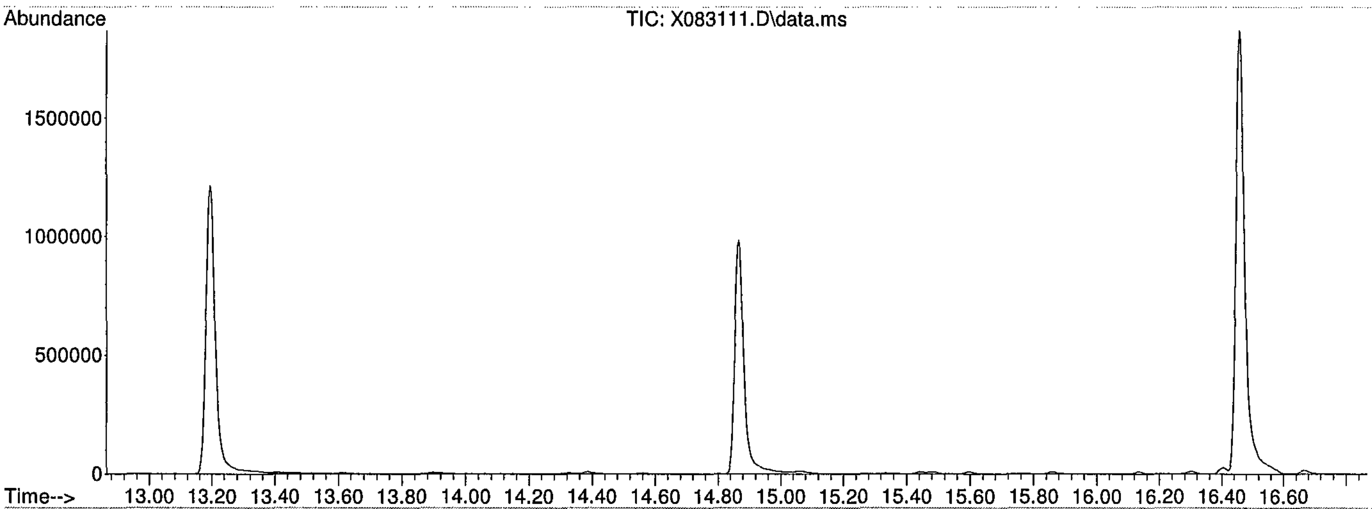
Spectrum Information: Scan 4949

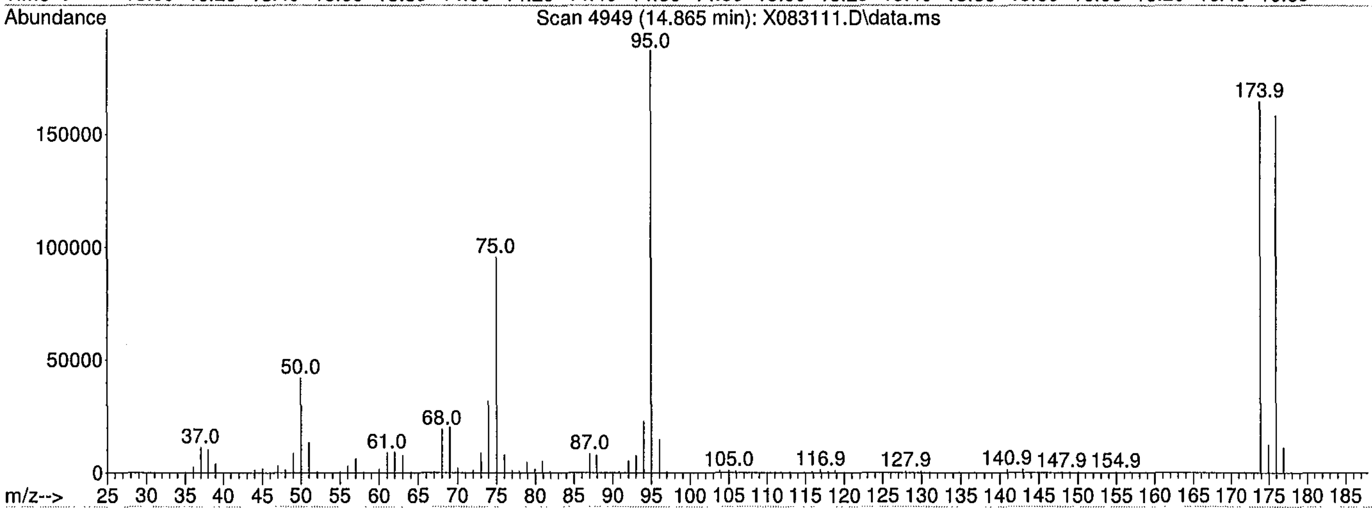
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.6	39488	PASS
75	95	30	60	51.6	94304	PASS
95	95	100	100	100.0	182912	PASS
96	95	5	9	7.4	13536	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	88.0	160896	PASS
175	174	5	9	7.2	11647	PASS
176	174	95	101	95.3	153408	PASS
177	176	5	9	6.5	9979	PASS

Data Path : C:\MS4\083118\
Data File : X083111.D
Acq On : 31 Aug 2018 1:46 pm
Operator : EA
Sample : MB
Misc : MB
ALS Vial : 11 Sample Multiplier: 1

Integration File: rteint.p

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Fri Aug 31 14:49:06 2018





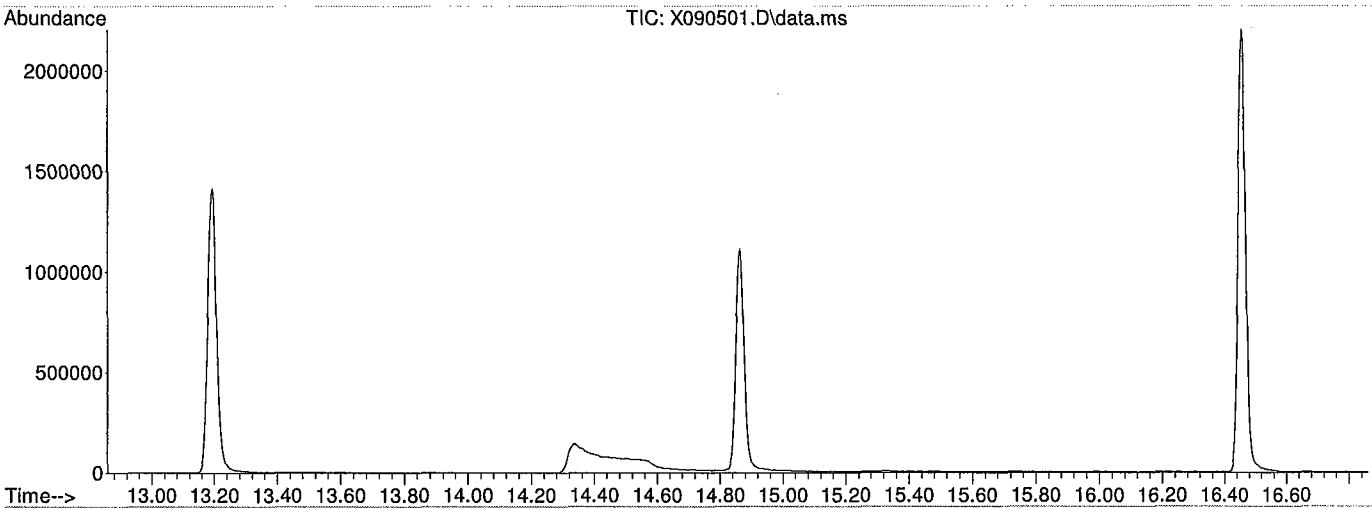
Spectrum Information: Scan 4949

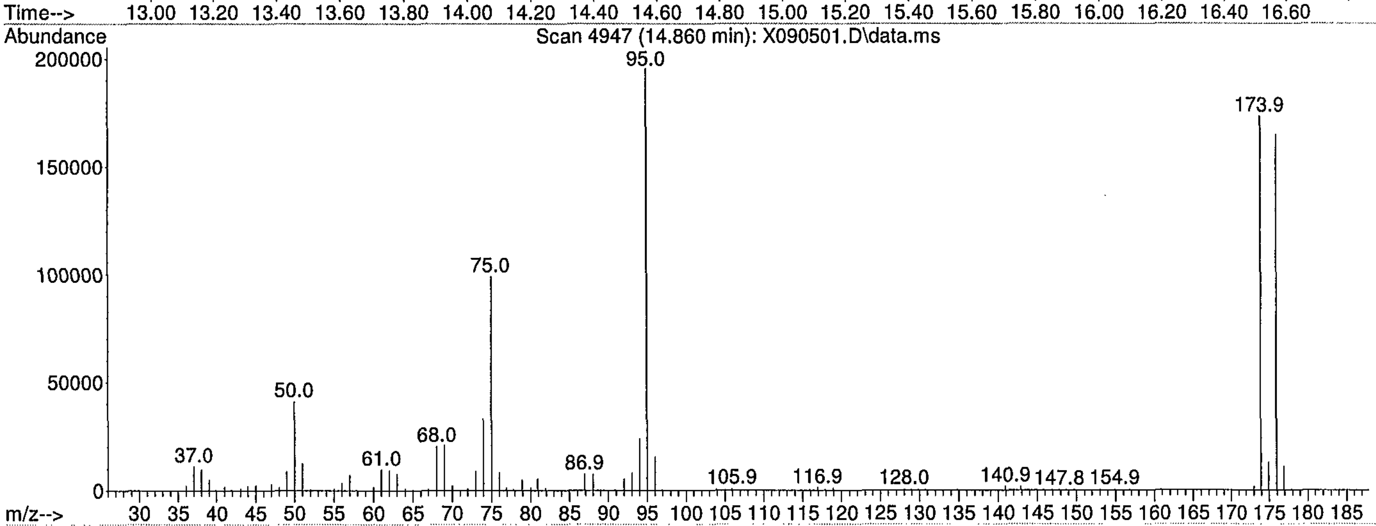
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	22.5	42120	PASS
75	95	30	60	51.0	95608	PASS
95	95	100	100	100.0	187392	PASS
96	95	5	9	7.8	14642	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	88.0	164864	PASS
175	174	5	9	7.5	12329	PASS
176	174	95	101	96.2	158592	PASS
177	176	5	9	7.1	11303	PASS

Data Path : C:\MS4\090518\
Data File : X090501.D
Acq On : 5 Sep 2018 8:35 am
Operator : EA
Sample : BFB
Misc : BFB
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : C:\MS4\METHODS\8260083118.M
Title : Method for the analysis of 8260 waters
Last Update : Fri Aug 31 14:49:06 2018





Spectrum Information: Scan 4947

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.0	41160	PASS
75	95	30	60	50.7	99248	PASS
95	95	100	100	100.0	195712	PASS
96	95	5	9	7.9	15396	PASS
173	174	0.00	2	1.0	1799	PASS
174	95	50	100	88.6	173440	PASS
175	174	5	9	7.5	12934	PASS
176	174	95	101	95.2	165056	PASS
177	176	5	9	6.8	11233	PASS

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	MB 420-124333/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124333/2
Analysis Method:	8260C	Lab File ID:	X083116.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:26
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
67-66-3	Chloroform	1.0	U	1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	1.0	U	1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	1.0	U	1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	MB 420-124333/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124333/2
Analysis Method:	8260C	Lab File ID:	X083116.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:26
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	MB 420-124333/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124333/2
Analysis Method:	8260C	Lab File ID:	X083116.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	08/31/2018 16:26
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083116.D
Acq On : 31 Aug 2018 4:26 pm
Operator : EA
Sample : MB LM=8260C BT=MS4083118A
Misc : MB
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Sep 04 08:42:18 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.647	2002	1632784	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	811534	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.461	5521	926667	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.974	1402	508654	48.75	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	97.50%		
69) Toluene-d8	11.017	3569	1101595	50.33	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	100.66%		
82) Bromofluorobenzene	14.868	4950	364916	49.28	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	98.56%		

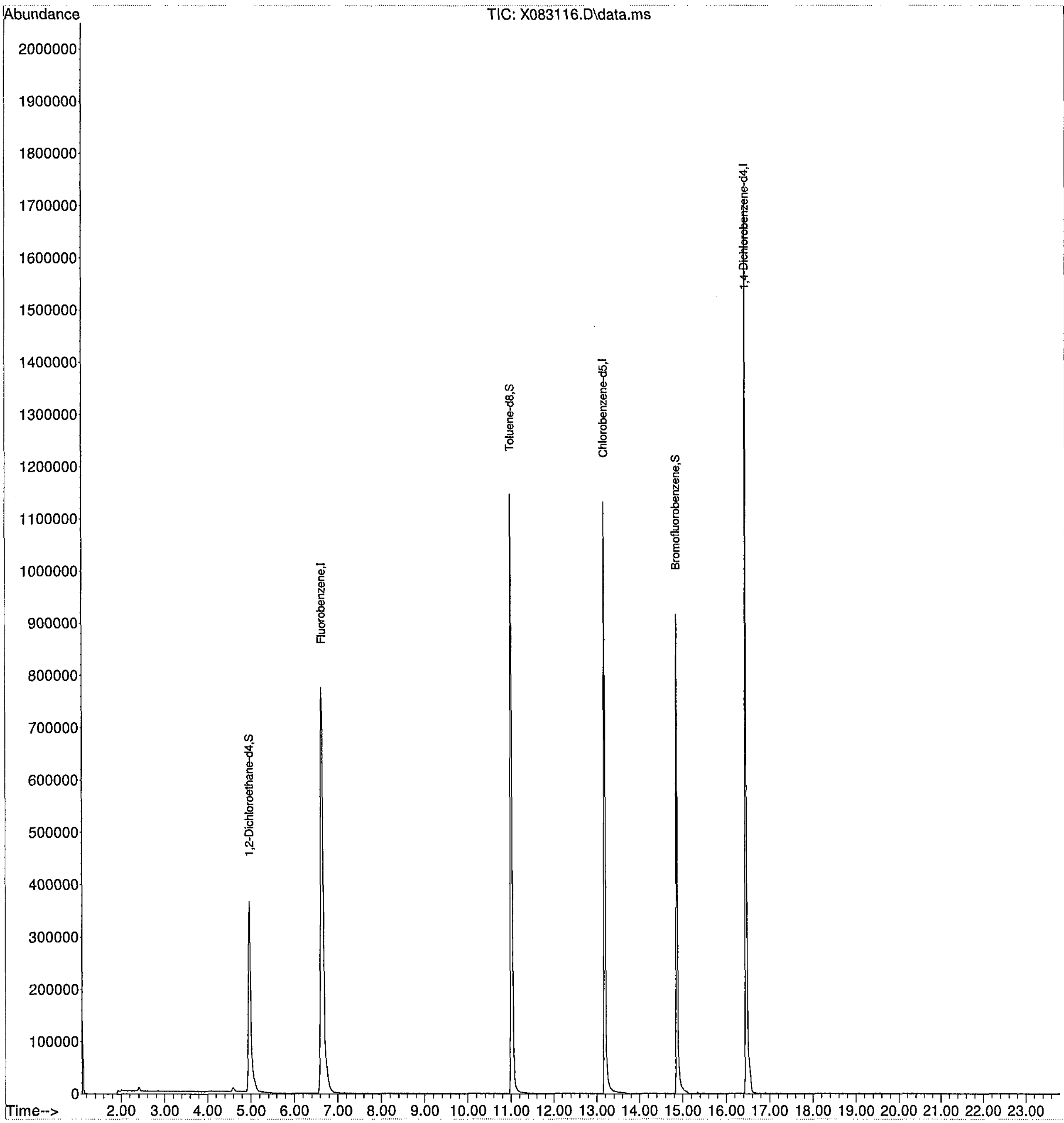
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083116.D
Acq On : 31 Aug 2018 4:26 pm
Operator : EA
Sample : MB LM=8260C BT=MS4083118A
Misc : MB
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Sep 04 08:42:18 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	MB 420-124409/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124409/2
Analysis Method:	8260C	Lab File ID:	X090506.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/05/2018 11:15
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	1.0	U	1.0	1.0
75-34-3	1,1-Dichloroethane	1.0	U	1.0	1.0
67-66-3	Chloroform	1.0	U	1.0	1.0
56-23-5	Carbon tetrachloride	1.0	U	1.0	1.0
78-87-5	1,2-Dichloropropane	1.0	U	1.0	1.0
124-48-1	Dibromochloromethane	1.0	U	1.0	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	1.0	1.0
108-90-7	Chlorobenzene	1.0	U	1.0	1.0
75-69-4	Trichlorofluoromethane	1.0	U	1.0	1.0
107-06-2	1,2-Dichloroethane	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	1.0
75-27-4	Dichlorobromomethane	1.0	U	1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	1.0
563-58-6	1,1-Dichloropropene	1.0	U	1.0	1.0
75-25-2	Bromoform	1.0	U	1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0
71-43-2	Benzene	1.0	U	1.0	1.0
108-88-3	Toluene	1.0	U	1.0	1.0
100-41-4	Ethylbenzene	1.0	U	1.0	1.0
74-87-3	Chloromethane	1.0	U	1.0	1.0
74-83-9	Bromomethane	1.0	U	1.0	1.0
75-01-4	Vinyl chloride	1.0	U	1.0	1.0
75-00-3	Chloroethane	1.0	U	1.0	1.0
75-35-4	1,1-Dichloroethene	1.0	U	1.0	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	1.0
79-01-6	Trichloroethene	1.0	U	1.0	1.0
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	1.0
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	1.0
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	1.0

FORM I 8260C

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ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	MB 420-124409/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124409/2
Analysis Method:	8260C	Lab File ID:	X090506.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/05/2018 11:15
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
136777-61-2	m-Xylene & p-Xylene	2.0	U	2.0	2.0
95-47-6	o-Xylene	1.0	U	1.0	1.0
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	1.0
74-95-3	Dibromomethane	1.0	U	1.0	1.0
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	1.0
100-42-5	Styrene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	1.0
67-64-1	Acetone	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	1.0	U	1.0	1.0
74-88-4	Iodomethane	1.0	U	1.0	1.0
78-93-3	2-Butanone (MEK)	1.0	U	1.0	1.0
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	5.0
591-78-6	2-Hexanone	5.0	U	5.0	5.0
74-97-5	Chlorobromomethane	1.0	U	1.0	1.0
594-20-7	2,2-Dichloropropane	1.0	U	1.0	1.0
106-93-4	1,2-Dibromoethane	1.0	U	1.0	1.0
142-28-9	1,3-Dichloropropane	1.0	U	1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0
108-86-1	Bromobenzene	1.0	U	1.0	1.0
104-51-8	n-Butylbenzene	1.0	U	1.0	1.0
135-98-8	sec-Butylbenzene	1.0	U	1.0	1.0
98-06-6	tert-Butylbenzene	1.0	U	1.0	1.0
95-49-8	2-Chlorotoluene	1.0	U	1.0	1.0
106-43-4	4-Chlorotoluene	1.0	U	1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	5.0	U	5.0	5.0
87-68-3	Hexachlorobutadiene	1.0	U	1.0	1.0
98-82-8	Isopropylbenzene	1.0	U	1.0	1.0
99-87-6	p-Isopropyltoluene	1.0	U	1.0	1.0
91-20-3	Naphthalene	5.0	U	5.0	5.0
103-65-1	N-Propylbenzene	1.0	U	1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	MB 420-124409/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124409/2
Analysis Method:	8260C	Lab File ID:	X090506.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/05/2018 11:15
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	1.0
1330-20-7	Xylenes, Total	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	10	U	10	10

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090506.D
Acq On : 5 Sep 2018 11:15 am
Operator : EA
Sample : MB LM=8260C BT=MS4090518A
Misc : MB
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 05 11:41:18 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.667	2009	2233101	50.00	ug/L	0.03
66) Chlorobenzene-d5	13.198	4351	882934	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.461	5521	940165m	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.999	1411	655204	45.91	ug/L	0.03
Spiked Amount 50.000	Range 77 - 117		Recovery =	91.82%		
69) Toluene-d8	11.020	3570	1408149	59.13	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	118.26%		
82) Bromofluorobenzene	14.868	4950	348425	43.25	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	86.50%		

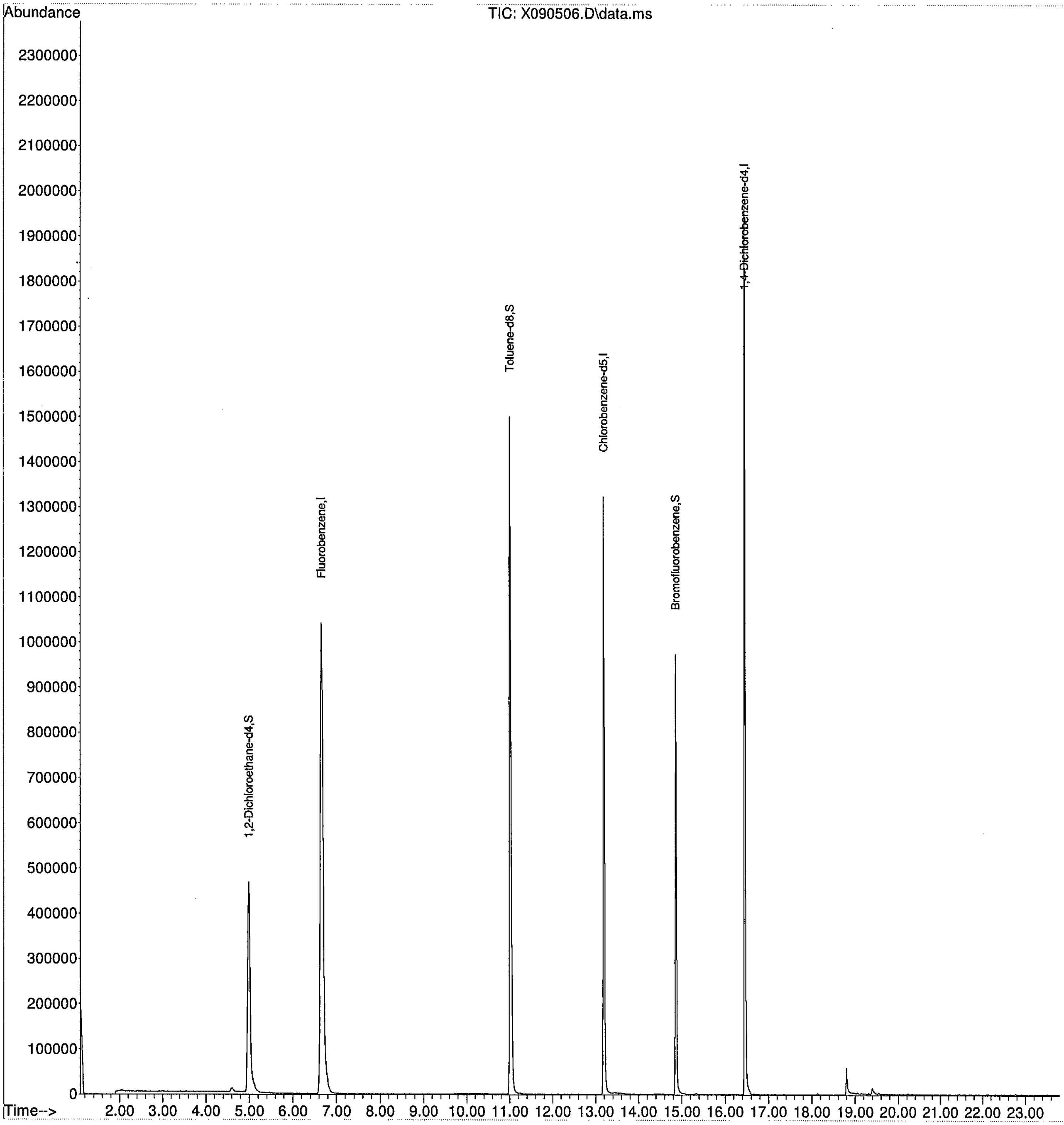
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090506.D
Acq On : 5 Sep 2018 11:15 am
Operator : EA
Sample : MB LM=8260C BT=MS4090518A
Misc : MB
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 05 11:41:18 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	LCS 420-124333/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124333/1
Analysis Method:	8260C	Lab File ID:	X083113.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	08/31/2018 14:50
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	20		1.0	1.0
75-34-3	1,1-Dichloroethane	20		1.0	1.0
67-66-3	Chloroform	19		1.0	1.0
56-23-5	Carbon tetrachloride	18		1.0	1.0
78-87-5	1,2-Dichloropropane	20		1.0	1.0
124-48-1	Dibromochloromethane	17		1.0	1.0
79-00-5	1,1,2-Trichloroethane	19		1.0	1.0
127-18-4	Tetrachloroethene	19		1.0	1.0
108-90-7	Chlorobenzene	19		1.0	1.0
75-69-4	Trichlorofluoromethane	19		1.0	1.0
107-06-2	1,2-Dichloroethane	19		1.0	1.0
71-55-6	1,1,1-Trichloroethane	20		1.0	1.0
75-27-4	Dichlorobromomethane	18		1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	19		1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	19		1.0	1.0
563-58-6	1,1-Dichloropropene	20		1.0	1.0
75-25-2	Bromoform	17		1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	19		1.0	1.0
71-43-2	Benzene	20		1.0	1.0
108-88-3	Toluene	22		1.0	1.0
100-41-4	Ethylbenzene	21		1.0	1.0
74-87-3	Chloromethane	19		1.0	1.0
74-83-9	Bromomethane	17		1.0	1.0
75-01-4	Vinyl chloride	19		1.0	1.0
75-00-3	Chloroethane	19		1.0	1.0
75-35-4	1,1-Dichloroethene	19		1.0	1.0
156-60-5	trans-1,2-Dichloroethene	20		1.0	1.0
79-01-6	Trichloroethene	20		1.0	1.0
95-50-1	1,2-Dichlorobenzene	21		1.0	1.0
541-73-1	1,3-Dichlorobenzene	20		1.0	1.0
106-46-7	1,4-Dichlorobenzene	19		1.0	1.0
1634-04-4	Methyl tert-butyl ether	20		1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	LCS 420-124333/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124333/1
Analysis Method:	8260C	Lab File ID:	X083113.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	08/31/2018 14:50
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
136777-61-2	m-Xylene & p-Xylene	41		2.0	2.0
95-47-6	o-Xylene	21		1.0	1.0
156-59-2	cis-1,2-Dichloroethene	20		1.0	1.0
74-95-3	Dibromomethane	18		1.0	1.0
96-18-4	1,2,3-Trichloropropane	18		1.0	1.0
100-42-5	Styrene	20		1.0	1.0
75-71-8	Dichlorodifluoromethane	20		1.0	1.0
67-64-1	Acetone	39		5.0	5.0
75-15-0	Carbon disulfide	18		1.0	1.0
74-88-4	Iodomethane	19		1.0	1.0
78-93-3	2-Butanone (MEK)	38		1.0	1.0
108-05-4	Vinyl acetate	21		1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	42		5.0	5.0
591-78-6	2-Hexanone	43		5.0	5.0
74-97-5	Chlorobromomethane	20		1.0	1.0
594-20-7	2,2-Dichloropropane	20		1.0	1.0
106-93-4	1,2-Dibromoethane	19		1.0	1.0
142-28-9	1,3-Dichloropropane	19		1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	19		1.0	1.0
108-86-1	Bromobenzene	20		1.0	1.0
104-51-8	n-Butylbenzene	22		1.0	1.0
135-98-8	sec-Butylbenzene	21		1.0	1.0
98-06-6	tert-Butylbenzene	22		1.0	1.0
95-49-8	2-Chlorotoluene	20		1.0	1.0
106-43-4	4-Chlorotoluene	20		1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	16		5.0	5.0
87-68-3	Hexachlorobutadiene	21		1.0	1.0
98-82-8	Isopropylbenzene	21		1.0	1.0
99-87-6	p-Isopropyltoluene	22		1.0	1.0
91-20-3	Naphthalene	19		5.0	5.0
103-65-1	N-Propylbenzene	21		1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	23		1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	LCS 420-124333/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124333/1
Analysis Method:	8260C	Lab File ID:	X083113.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	08/31/2018 14:50
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124333		

CAS No.	Compound Name	Result	Q	RL	RL
120-82-1	1,2,4-Trichlorobenzene	23		1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	21		1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	21		1.0	1.0
1330-20-7	Xylenes, Total	62		1.0	1.0

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.644	2001	1775652	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	866864	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	916920	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	524827	46.25	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	92.50%		
69) Toluene-d8	11.014	3568	1257169	53.77	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	107.54%		
82) Bromofluorobenzene	14.865	4949	366337	46.31	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	92.62%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.222	50	335666	19.76	ug/L	98
3) Chloromethane	1.289	75	336672	18.78	ug/L	96
4) Vinyl Chloride	1.395	115	344782	18.50	ug/L	98
5) Bromomethane	1.571	181	179068	17.06	ug/L	100
6) Chloroethane	1.632	204	179171	19.11	ug/L	96
7) Acrolein	1.943	315	92122	39.92	ug/L	99
8) Acetonitrile	1.957	320	22923m	21.15	ug/L	
9) Acrylonitrile	2.347	460	91066	20.08	ug/L	95
10) Trichlorofluoromethane	1.987	331	335703	19.19	ug/L	96
11) Diethyl ether	2.104	373	159445	19.41	ug/L	97
12) FREON 123A	1.888	300	232837	18.95	ug/L	99
13) FC-113	2.473	505	220127	19.34	ug/L	95
14) Acetone	2.026	345	42266m	38.78	ug/L	
15) IPA	1.998	335	73614	174.63	ug/L #	96
16) TBA	2.339	457	152125	209.80	ug/L	98
17) Methyl acetate	2.461	501	184813	19.72	ug/L	99
18) Allyl chloride	2.470	504	332269	20.51	ug/L	98
19) Iodomethane	2.302	444	358915	19.22	ug/L	99
20) 1,1-Dichloroethene	2.289	439	336173	18.96	ug/L	99
21) Methylene Chloride	2.400	479	243068	19.73	ug/L	98
22) Carbon Disulfide	2.531	526	443902	18.13	ug/L	99
23) trans-1,2-Dichloroethene	2.949	676	316600	20.05	ug/L	98
24) MTBE	3.089	726	587939	20.33	ug/L	97
25) 1,1-Dichloroethane	3.186	761	374606	19.60	ug/L	99
26) Propionitrile	3.234	778	135985	95.76	ug/L	99
27) Vinyl Acetate	3.410	841	364429	21.07	ug/L	99
28) Chloroprene	3.588	905	333530	19.18	ug/L	97
29) Hexane	3.674	936	243813	19.41	ug/L	98
30) 2-Butanone	3.711	949	36445	38.30	ug/L #	87
31) Diisopropylether (DIPE)	3.780	974	687132	19.56	ug/L	100
32) cis-1,2-Dichloroethene	3.833	993	309148	19.88	ug/L	99
33) Methacrylonitrile	3.825	990	312295m	40.63	ug/L	
34) Bromochloromethane	4.023	1061	137456	20.22	ug/L	95
35) Chloroform	4.115	1094	322883	18.72	ug/L	99
36) 2,2-Dichloropropane	4.202	1125	241148	20.40	ug/L	99
37) Methyl acrylate	4.291	1157	135195	19.91	ug/L	96
38) Isobutyl alcohol	4.413	1201	65936	182.17	ug/L	98
39) Tetrahydrofuran	4.575	1259	23622	18.93	ug/L	95
41) 1,2-Dichloroethane	5.108	1450	260526	19.27	ug/L	98
42) 1,1,1-Trichloroethane	5.253	1502	237816	20.04	ug/L	96
43) 1-Chlorobutane	5.317	1525	381888	20.75	ug/L	93
44) 1,1-Dichloropropene	5.646	1643	250665	20.26	ug/L	97
45) Cyclohexane	5.744	1678	423675	20.66	ug/L	97
46) Carbon Tetrachloride	5.933	1746	126677	18.04	ug/L	98

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On : 31 Aug 2018 2:50 pm
Operator : EA
Sample : LCS LM=8260C BT=MS4083118A
Misc : VSTD020
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

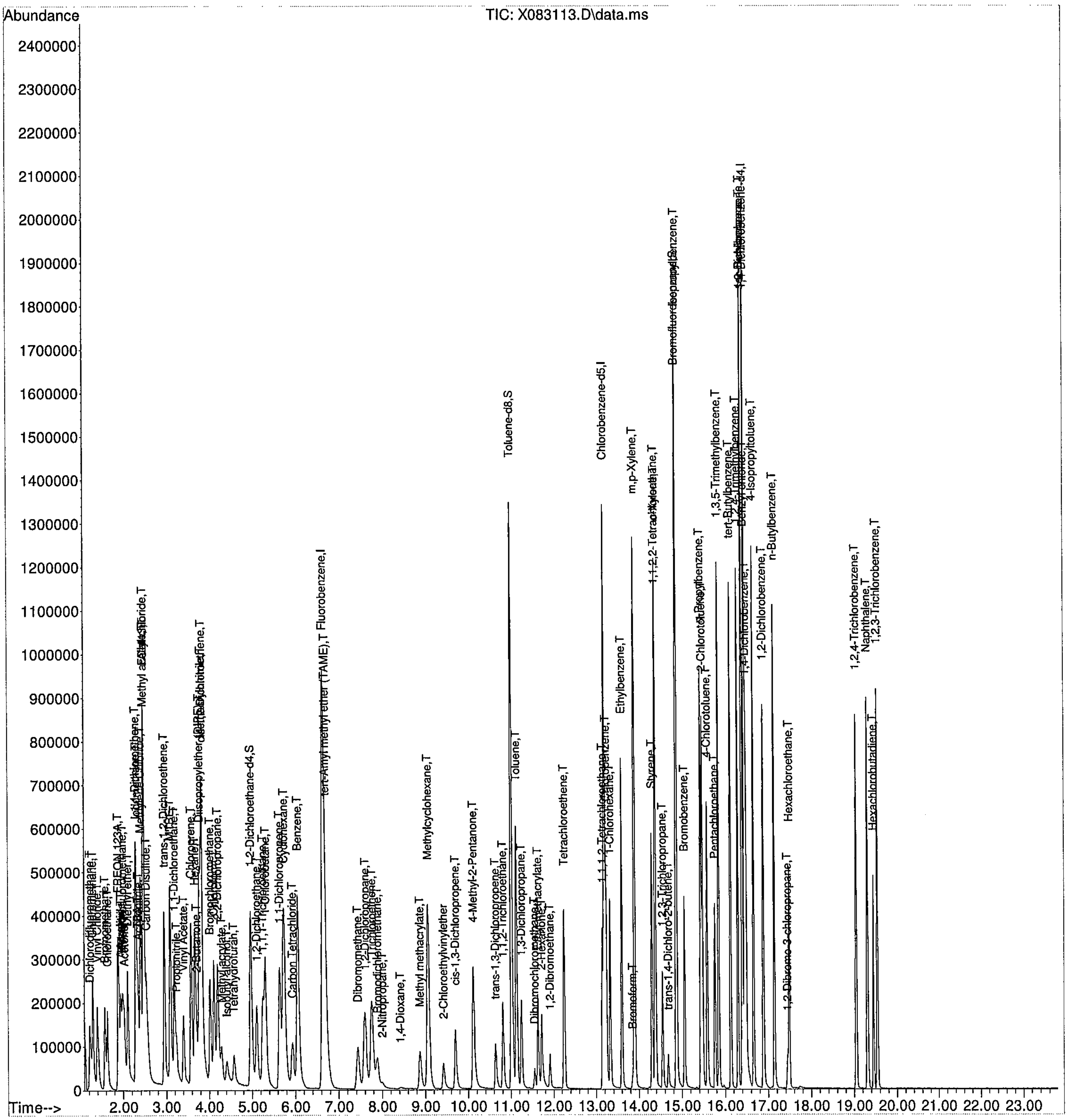
	Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47)	Benzene	6.059	1791	798920	20.48	ug/L	99
48)	tert-Amyl methyl ether...	6.689	2017	498347	19.62	ug/L	99
49)	Dibromomethane	7.431	2283	89097	18.46	ug/L	97
50)	1,2-Dichloropropane	7.606	2346	166547	20.30	ug/L	98
51)	Trichloroethene	7.765	2403	169861	19.76	ug/L	98
52)	Bromodichloromethane	7.891	2448	98246	18.10	ug/L	93
53)	2-Nitropropane	8.000	2487	19023m	17.25	ug/L	
54)	1,4-Dioxane	8.415	2636	6720m	191.73	ug/L	
55)	Methyl methacrylate	8.873	2800	104701	20.70	ug/L	99
56)	Methylcyclohexane	9.065	2869	334888	21.10	ug/L	97
57)	2-Chloroethylvinylether	9.422	2997	45442	19.96	ug/L	95
58)	cis-1,3-Dichloropropene	9.701	3097	120595	19.02	ug/L	99
59)	trans-1,3-Dichloropropene	10.635	3432	76074	18.77	ug/L	98
60)	1,1,2-Trichloroethane	10.811	3495	94191	19.22	ug/L	98
61)	1,3-Dichloropropane	11.246	3651	154484	19.31	ug/L	98
62)	Dibromochloromethane	11.552	3761	32144	17.09	ug/L	95
63)	Ethyl methacrylate	11.630	3789	145175	20.83	ug/L	97
64)	1,2-Dibromoethane	11.915	3891	71753	18.73	ug/L	96
65)	Bromoform	13.847	4584	15673	17.42	ug/L	99
67)	4-Methyl-2-Pentanone	10.116	3246	382376	42.15	ug/L	96
68)	2-Hexanone	11.717	3820	186644	42.83	ug/L	100
70)	Toluene	11.129	3609	615652	21.75	ug/L	100
71)	Tetrachloroethene	12.252	4012	162221	19.33	ug/L	100
72)	1,1,1,2-Tetrachloroethane	13.150	4334	88001	18.81	ug/L	97
73)	Chlorobenzene	13.237	4365	330735	19.46	ug/L	99
74)	1-Chlorohexane	13.329	4398	135805	22.77	ug/L	99
75)	Ethylbenzene	13.602	4496	621937	20.70	ug/L	100
76)	m,p-Xylene	13.895	4601	970355	41.45	ug/L	99
77)	Styrene	14.302	4747	319116	20.41	ug/L	100
78)	o-Xylene	14.386	4777	616261	20.58	ug/L	98
79)	1,1,2,2-Tetrachloroethane	14.377	4774	157478	19.02	ug/L	99
80)	1,2,3-Trichloropropane	14.553	4837	124412	18.48	ug/L	98
81)	trans-1,4-Dichloro-2-b...	14.678	4882	27373	19.00	ug/L	95
83)	Isopropylbenzene	14.879	4954	816328	21.33	ug/L	98
84)	Bromobenzene	15.058	5018	215518	19.93	ug/L	95
85)	n-Propylbenzene	15.437	5154	819891	20.89	ug/L	100
86)	2-Chlorotoluene	15.476	5168	501664	20.25	ug/L	99
87)	4-Chlorotoluene	15.588	5208	415931	19.76	ug/L	99
88)	1,3,5-Trimethylbenzene	15.852	5303	680178	20.78	ug/L	98
89)	Pentachloroethane	15.766	5272	32462	20.29	ug/L	97
90)	tert-Butylbenzene	16.131	5403	604194	21.69	ug/L	99
91)	1,2,4-Trimethylbenzene	16.299	5463	698152	20.93	ug/L	99
92)	sec-Butylbenzene	16.399	5499	884288	21.14	ug/L	100
94)	1,3-Dichlorobenzene	16.399	5499	327472	20.31	ug/L	99
95)	Benzyl chloride	16.446	5516	140709	23.66	ug/L	98
96)	1,4-Dichlorobenzene	16.491	5532	322493	19.14	ug/L	98
97)	4-Isopropyltoluene	16.661	5593	757762	22.23	ug/L	99
98)	1,2-Dichlorobenzene	16.890	5675	400975	20.53	ug/L	99
99)	n-Butylbenzene	17.141	5765	659343	22.35	ug/L	97
100)	1,2-Dibromo-3-chloropr...	17.442	5873	13591	16.25	ug/L	96
101)	Hexachloroethane	17.484	5888	35685m	22.57	ug/L	
102)	1,2,4-Trichlorobenzene	19.048	6449	318904	22.80	ug/L	100
103)	Naphthalene	19.310	6543	791835	19.05	ug/L	100
104)	Hexachlorobutadiene	19.453	6594	112319	20.68	ug/L	99
105)	1,2,3-Trichlorobenzene	19.542	6626	325553	22.62	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report   (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083113.D
Acq On   : 31 Aug 2018   2:50 pm
Operator : EA
Sample   : LCS LM=8260C BT=MS4083118A
Misc   : VSTD020
ALS Vial : 13   Sample Multiplier: 1

Quant Time: Aug 31 15:17:42 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	LCS 420-124409/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124409/1
Analysis Method:	8260C	Lab File ID:	X090503.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/05/2018 09:39
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
75-09-2	Methylene Chloride	16		1.0	1.0
75-34-3	1,1-Dichloroethane	18		1.0	1.0
67-66-3	Chloroform	18		1.0	1.0
56-23-5	Carbon tetrachloride	18		1.0	1.0
78-87-5	1,2-Dichloropropane	21		1.0	1.0
124-48-1	Dibromochloromethane	18		1.0	1.0
79-00-5	1,1,2-Trichloroethane	20		1.0	1.0
127-18-4	Tetrachloroethene	24		1.0	1.0
108-90-7	Chlorobenzene	20		1.0	1.0
75-69-4	Trichlorofluoromethane	18		1.0	1.0
107-06-2	1,2-Dichloroethane	19		1.0	1.0
71-55-6	1,1,1-Trichloroethane	19		1.0	1.0
75-27-4	Dichlorobromomethane	18		1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	21		1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	21		1.0	1.0
563-58-6	1,1-Dichloropropene	22		1.0	1.0
75-25-2	Bromoform	16		1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	20		1.0	1.0
71-43-2	Benzene	20		1.0	1.0
108-88-3	Toluene	23		1.0	1.0
100-41-4	Ethylbenzene	21		1.0	1.0
74-87-3	Chloromethane	19		1.0	1.0
74-83-9	Bromomethane	17		1.0	1.0
75-01-4	Vinyl chloride	16		1.0	1.0
75-00-3	Chloroethane	18		1.0	1.0
75-35-4	1,1-Dichloroethene	18		1.0	1.0
156-60-5	trans-1,2-Dichloroethene	18		1.0	1.0
79-01-6	Trichloroethene	20		1.0	1.0
95-50-1	1,2-Dichlorobenzene	23		1.0	1.0
541-73-1	1,3-Dichlorobenzene	21		1.0	1.0
106-46-7	1,4-Dichlorobenzene	20		1.0	1.0
1634-04-4	Methyl tert-butyl ether	19		1.0	1.0

FORM I 8260C

1

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	LCS 420-124409/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124409/1
Analysis Method:	8260C	Lab File ID:	X090503.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/05/2018 09:39
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
136777-61-2	m-Xylene & p-Xylene	41		2.0	2.0
95-47-6	o-Xylene	20		1.0	1.0
156-59-2	cis-1,2-Dichloroethene	18		1.0	1.0
74-95-3	Dibromomethane	19		1.0	1.0
96-18-4	1,2,3-Trichloropropane	19		1.0	1.0
100-42-5	Styrene	20		1.0	1.0
75-71-8	Dichlorodifluoromethane	16		1.0	1.0
67-64-1	Acetone	38		5.0	5.0
75-15-0	Carbon disulfide	19		1.0	1.0
74-88-4	Iodomethane	18		1.0	1.0
78-93-3	2-Butanone (MEK)	41		1.0	1.0
108-05-4	Vinyl acetate	20		1.0	1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	38		5.0	5.0
591-78-6	2-Hexanone	35		5.0	5.0
74-97-5	Chlorobromomethane	18		1.0	1.0
594-20-7	2,2-Dichloropropane	20		1.0	1.0
106-93-4	1,2-Dibromoethane	18		1.0	1.0
142-28-9	1,3-Dichloropropane	20		1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	20		1.0	1.0
108-86-1	Bromobenzene	19		1.0	1.0
104-51-8	n-Butylbenzene	21		1.0	1.0
135-98-8	sec-Butylbenzene	20		1.0	1.0
98-06-6	tert-Butylbenzene	21		1.0	1.0
95-49-8	2-Chlorotoluene	19		1.0	1.0
106-43-4	4-Chlorotoluene	18		1.0	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	21		5.0	5.0
87-68-3	Hexachlorobutadiene	23		1.0	1.0
98-82-8	Isopropylbenzene	20		1.0	1.0
99-87-6	p-Isopropyltoluene	23		1.0	1.0
91-20-3	Naphthalene	23		5.0	5.0
103-65-1	N-Propylbenzene	19		1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	26		1.0	1.0

FORM I 8260C

ORGANIC ANALYSIS DATA SHEET
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client Sample ID:	LCS 420-124409/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124409/1
Analysis Method:	8260C	Lab File ID:	X090503.D
Sample wt/vol:	5 (mL)	Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/05/2018 09:39
% Moisture:		Dilution Factor:	1
GC Column/ID:	DB-VRX 0.18 (um)	Soil Aliquot:	
Soil Extract Vol.:		Units:	ug/L
Analy. Batch No.:	124409		

CAS No.	Compound Name	Result	Q	RL	RL
120-82-1	1,2,4-Trichlorobenzene	26		1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	20		1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	19		1.0	1.0
1330-20-7	Xylenes, Total	61		1.0	1.0

FORM I 8260C

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.653	2004	2295136	50.00	ug/L	0.01
66) Chlorobenzene-d5	13.195	4350	1081236m	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	1028131	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.982	1405	677330	46.18	ug/L	0.01
Spiked Amount 50.000	Range 77 - 117		Recovery = 92.36%			
69) Toluene-d8	11.017	3569	1613072	55.32	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery = 110.64%			
82) Bromofluorobenzene	14.865	4949	418519	42.42	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery = 84.84%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.230	53	360427	16.42	ug/L	99
3) Chloromethane	1.324	88	445092	19.21	ug/L #	96
4) Vinyl Chloride	1.425	126	392036m	16.28	ug/L	
5) Bromomethane	1.614	197	229357m	16.91	ug/L	
6) Chloroethane	1.656	213	212583	17.54	ug/L	98
7) Acrolein	1.954	319	123362m	41.36	ug/L	
8) Acetonitrile	2.007	338	30398m	21.70	ug/L	
9) Acrylonitrile	2.353	462	95308	16.26	ug/L	96
10) Trichlorofluoromethane	2.007	338	407221m	18.01	ug/L	
11) Diethyl ether	2.116	377	204590	19.27	ug/L	96
12) FREON 123A	1.896	303	254361m	16.02	ug/L	
13) FC-113	2.492	512	253503m	17.23	ug/L	
14) Acetone	2.032	347	53820m	38.20	ug/L	
15) IPA	2.007	338	88715m	162.82	ug/L	
16) TBA	2.344	459	167470	178.69	ug/L	98
17) Methyl acetate	2.470	504	194355	16.05	ug/L #	96
18) Allyl chloride	2.478	507	422874	20.20	ug/L	97
19) Iodomethane	2.316	449	436634	18.09	ug/L	99
20) 1,1-Dichloroethene	2.302	444	401321	17.51	ug/L	99
21) Methylene Chloride	2.414	484	262068	16.46	ug/L	97
22) Carbon Disulfide	2.542	530	614097m	19.40	ug/L	
23) trans-1,2-Dichloroethene	2.958	679	375968	18.42	ug/L	99
24) MTBE	3.097	729	699567	18.71	ug/L	99
25) 1,1-Dichloroethane	3.195	764	452520	18.32	ug/L	99
26) Propionitrile	3.242	781	149240m	81.31	ug/L	
27) Vinyl Acetate	3.415	843	450424	20.15	ug/L	99
28) Chloroprene	3.599	909	453885	20.19	ug/L	98
29) Hexane	3.686	940	296545	18.26	ug/L	98
30) 2-Butanone	3.725	954	50519m	41.07	ug/L	
31) Diisopropylether (DIPE)	3.792	978	855953	18.85	ug/L	100
32) cis-1,2-Dichloroethene	3.845	997	363787	18.10	ug/L	99
33) Methacrylonitrile	3.831	992	445757	44.87	ug/L	98
34) Bromochloromethane	4.034	1065	156855	17.85	ug/L	97
35) Chloroform	4.123	1097	408618	18.33	ug/L	95
36) 2,2-Dichloropropane	4.218	1131	304406	19.93	ug/L	99
37) Methyl acrylate	4.299	1160	171897	19.59	ug/L	95
38) Isobutyl alcohol	4.416	1202	93526m	199.91	ug/L	
39) Tetrahydrofuran	4.603	1269	29082m	18.03	ug/L	
41) 1,2-Dichloroethane	5.119	1454	330102	18.89	ug/L	98
42) 1,1,1-Trichloroethane	5.264	1506	298163	19.44	ug/L	98
43) 1-Chlorobutane	5.320	1526	506221	21.28	ug/L	94
44) 1,1-Dichloropropene	5.660	1648	345730	21.62	ug/L	99
45) Cyclohexane	5.758	1683	506970	19.13	ug/L	98
46) Carbon Tetrachloride	5.947	1751	166462	18.34	ug/L	99

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

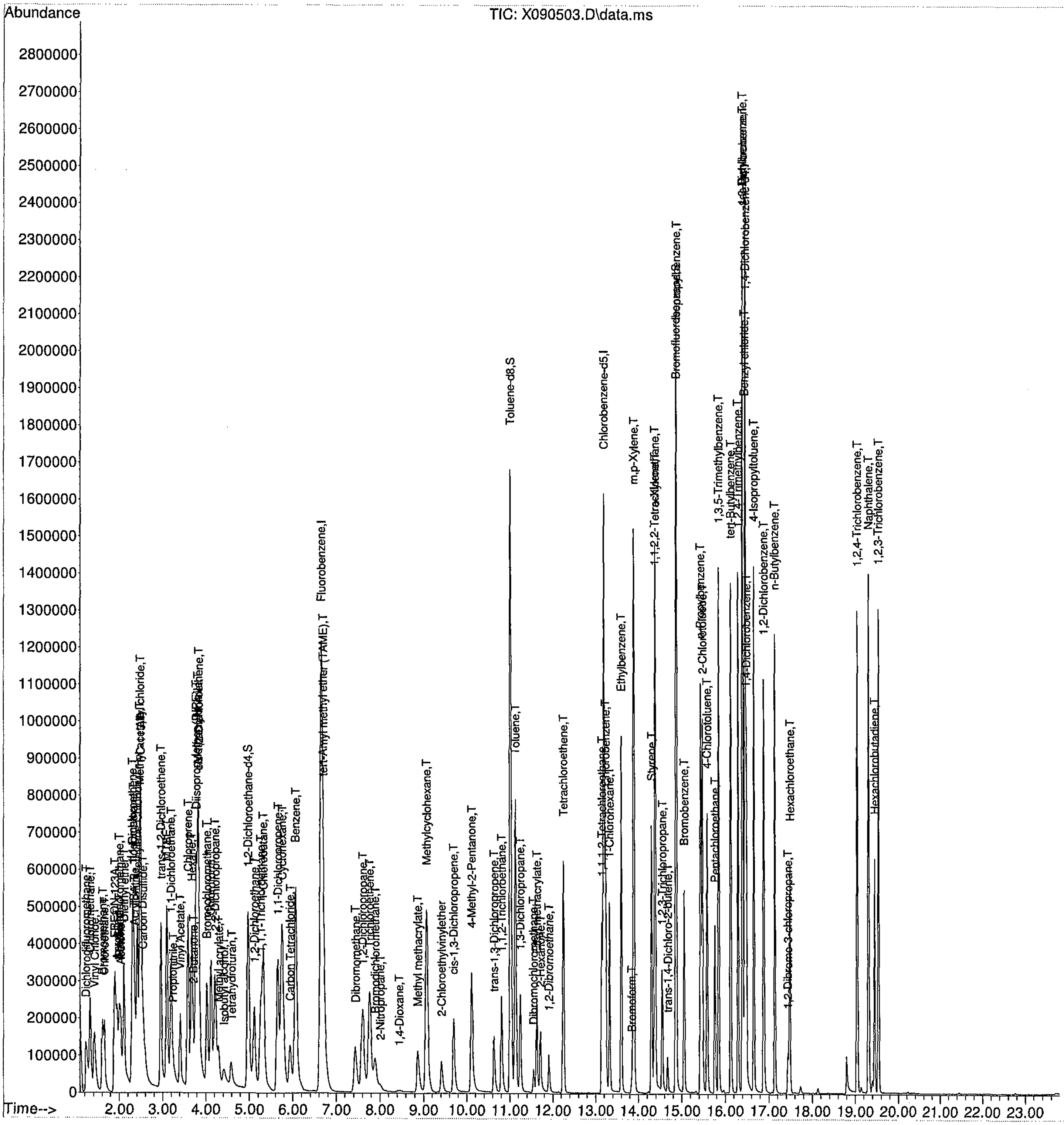
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47) Benzene	6.070	1795	1029768	20.42	ug/L	99
48) tert-Amyl methyl ether...	6.697	2020	641093	19.52	ug/L	95
49) Dibromomethane	7.447	2289	120304m	19.28	ug/L	
50) 1,2-Dichloropropane	7.609	2347	219497	20.70	ug/L	100
51) Trichloroethene	7.765	2403	223811	20.14	ug/L	97
52) Bromodichloromethane	7.891	2448	127532	18.18	ug/L	96
53) 2-Nitropropane	8.014	2492	27430m	19.24	ug/L	
54) 1,4-Dioxane	8.449	2648	10336m	228.15	ug/L	
55) Methyl methacrylate	8.873	2800	133002	20.34	ug/L	100
56) Methylcyclohexane	9.076	2873	399550	19.48	ug/L	99
57) 2-Chloroethylvinylether	9.422	2997	69170	22.86	ug/L #	88
58) cis-1,3-Dichloropropene	9.701	3097	178624	21.36	ug/L	98
59) trans-1,3-Dichloropropene	10.638	3433	111956	20.90	ug/L	98
60) 1,1,2-Trichloroethane	10.813	3496	126838	20.03	ug/L	100
61) 1,3-Dichloropropane	11.246	3651	201928	19.53	ug/L	97
62) Dibromochloromethane	11.552	3761	44399	18.26	ug/L	98
63) Ethyl methacrylate	11.628	3788	161427	17.92	ug/L	98
64) 1,2-Dibromoethane	11.912	3890	91362	18.45	ug/L	95
65) Bromoform	13.847	4584	19164	16.48	ug/L #	97
67) 4-Methyl-2-Pentanone	10.116	3246	427612	37.79	ug/L	98
68) 2-Hexanone	11.714	3819	192717m	35.46	ug/L	
70) Toluene	11.131	3610	798692	22.62	ug/L	99
71) Tetrachloroethene	12.252	4012	246074	23.51	ug/L	99
72) 1,1,1,2-Tetrachloroethane	13.150	4334	115609	19.81	ug/L	98
73) Chlorobenzene	13.237	4365	414131	19.54	ug/L	99
74) 1-Chlorohexane	13.329	4398	160495	21.57	ug/L	94
75) Ethylbenzene	13.602	4496	775369	20.69	ug/L	100
76) m,p-Xylene	13.892	4600	1190653	40.78	ug/L	100
77) Styrene	14.302	4747	383021	19.64	ug/L	98
78) o-Xylene	14.386	4777	753369	20.17	ug/L	97
79) 1,1,2,2-Tetrachloroethane	14.377	4774	203348	19.69	ug/L	98
80) 1,2,3-Trichloropropane	14.553	4837	156472	18.64	ug/L	99
81) trans-1,4-Dichloro-2-b...	14.678	4882	28856m	16.06	ug/L	
83) Isopropylbenzene	14.879	4954	967363	20.27	ug/L	98
84) Bromobenzene	15.058	5018	255468	18.94	ug/L	97
85) n-Propylbenzene	15.434	5153	907179	18.53	ug/L	99
86) 2-Chlorotoluene	15.476	5168	581622	18.83	ug/L	98
87) 4-Chlorotoluene	15.588	5208	467119	17.79	ug/L	100
88) 1,3,5-Trimethylbenzene	15.852	5303	801718	19.64	ug/L	98
89) Pentachloroethane	15.769	5273	35284	17.68	ug/L	95
90) tert-Butylbenzene	16.131	5403	715111	20.58	ug/L	100
91) 1,2,4-Trimethylbenzene	16.296	5462	798597	19.20	ug/L	100
92) sec-Butylbenzene	16.399	5499	1021449	19.57	ug/L	99
94) 1,3-Dichlorobenzene	16.399	5499	387698	21.44	ug/L	100
95) Benzyl chloride	16.449	5517	159420	23.86	ug/L	99
96) 1,4-Dichlorobenzene	16.488	5531	377479	19.98	ug/L	98
97) 4-Isopropyltoluene	16.661	5593	863614	22.59	ug/L	100
98) 1,2-Dichlorobenzene	16.887	5674	497899	22.73	ug/L	98
99) n-Butylbenzene	17.138	5764	706556	21.36	ug/L	100
100) 1,2-Dibromo-3-chloropr...	17.442	5873	19576	20.88	ug/L	92
101) Hexachloroethane	17.487	5889	29969	16.90	ug/L	83
102) 1,2,4-Trichlorobenzene	19.045	6448	412233m	26.28	ug/L	
103) Naphthalene	19.310	6543	1054570m	22.63	ug/L	
104) Hexachlorobutadiene	19.453	6594	138722m	22.78	ug/L	
105) 1,2,3-Trichlorobenzene	19.542	6626	418070m	25.91	ug/L	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\090518\
Data File : X090503.D
Acq On : 5 Sep 2018 9:39 am
Operator : EA
Sample : LCS LM=8260C BT=MS4090518A
Misc : VSTD020
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 05 10:17:38 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083131.D
Acq On : 1 Sep 2018 12:26 am
Operator : EA
Sample : 141880-T-1MS LM=8260C BT=MS4083118A
Misc : OUTFALL
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Sep 04 09:41:03 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.644	2001	1847015	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	976844	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.460	5521	987843	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.971	1401	551978	46.76	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	93.52%		
69) Toluene-d8	11.014	3568	1298281	49.28	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	98.56%		
82) Bromofluorobenzene	14.865	4949	400648	44.95	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	89.90%		

Target Compounds	R.T.	Scan	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	1.220	49	316762	17.93	ug/L	99
3) Chloromethane	1.292	76	339986	18.23	ug/L	99
4) Vinyl Chloride	1.401	117	331132	17.08	ug/L	99
5) Bromomethane	1.571	181	187591	17.19	ug/L	98
6) Chloroethane	1.632	204	165737	16.99	ug/L	95
7) Acrolein	1.943	315	82931	34.55	ug/L	99
8) Acetonitrile	1.951	318	15944m	14.14	ug/L	
9) Acrylonitrile	2.344	459	102763m	21.79	ug/L	
10) Trichlorofluoromethane	2.001	336	305773m	16.80	ug/L	
11) Diethyl ether	2.102	372	203293	23.79	ug/L #	1
12) FREON 123A	1.888	300	220435	17.25	ug/L	99
13) FC-113	2.473	505	212204	17.92	ug/L #	99
14) Acetone	2.024	344	3203684	2825.70	ug/L	91
15) IPA	1.993	333	18444909	42065.76	ug/L #	98
16) TBA	2.336	456	101701m	134.84	ug/L	
17) Methyl acetate	2.459	500	370447m	38.01	ug/L	
18) Allyl chloride	2.470	504	283587	16.83	ug/L #	93
19) Iodomethane	2.303	444	335886	17.29	ug/L	99
20) 1,1-Dichloroethene	2.289	439	327571	17.76	ug/L	98
21) Methylene Chloride	2.403	480	222308	17.35	ug/L	98
22) Carbon Disulfide	2.531	526	404699	15.89	ug/L #	63
23) trans-1,2-Dichloroethene	2.950	676	291034	17.72	ug/L	99
24) MTBE	3.089	726	544649	18.10	ug/L #	69
25) 1,1-Dichloroethane	3.187	761	364428	18.33	ug/L	99
26) Propionitrile	3.228	776	90344	61.16	ug/L	99
27) Vinyl Acetate	3.407	840	358380	19.92	ug/L #	94
28) Chloroprene	3.588	905	348928	19.29	ug/L	96
29) Hexane	3.675	936	216482	16.57	ug/L #	73
30) 2-Butanone	3.714	950	42980	43.42	ug/L #	64
31) Diisopropylether (DIPE)	3.781	974	596330	16.32	ug/L #	98
32) cis-1,2-Dichloroethene	3.834	993	297367	18.38	ug/L	99
33) Methacrylonitrile	3.825	990	301496m	37.71	ug/L	
34) Bromochloromethane	4.023	1061	123641	17.48	ug/L	97
35) Chloroform	4.115	1094	340379	18.97	ug/L	99
36) 2,2-Dichloropropane	4.204	1126	181923	14.80	ug/L	98
37) Methyl acrylate	4.288	1156	136495	19.33	ug/L	98
38) Isobutyl alcohol	4.414	1201	40348m	107.17	ug/L	
39) Tetrahydrofuran	4.584	1262	21948	16.91	ug/L	92
41) 1,2-Dichloroethane	5.108	1450	264292	18.79	ug/L	99
42) 1,1,1-Trichloroethane	5.253	1502	206966	16.77	ug/L	99
43) 1-Chlorobutane	5.311	1523	365076	19.07	ug/L #	94
44) 1,1-Dichloropropene	5.646	1643	243118	18.90	ug/L	97
45) Cyclohexane	5.744	1678	378311	17.73	ug/L	96
46) Carbon Tetrachloride	5.933	1746	119019	16.29	ug/L	97

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083131.D
Acq On : 1 Sep 2018 12:26 am
Operator : EA
Sample : 141880-T-1MS LM=8260C BT=MS4083118A
Misc : OUTFALL
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Sep 04 09:41:03 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

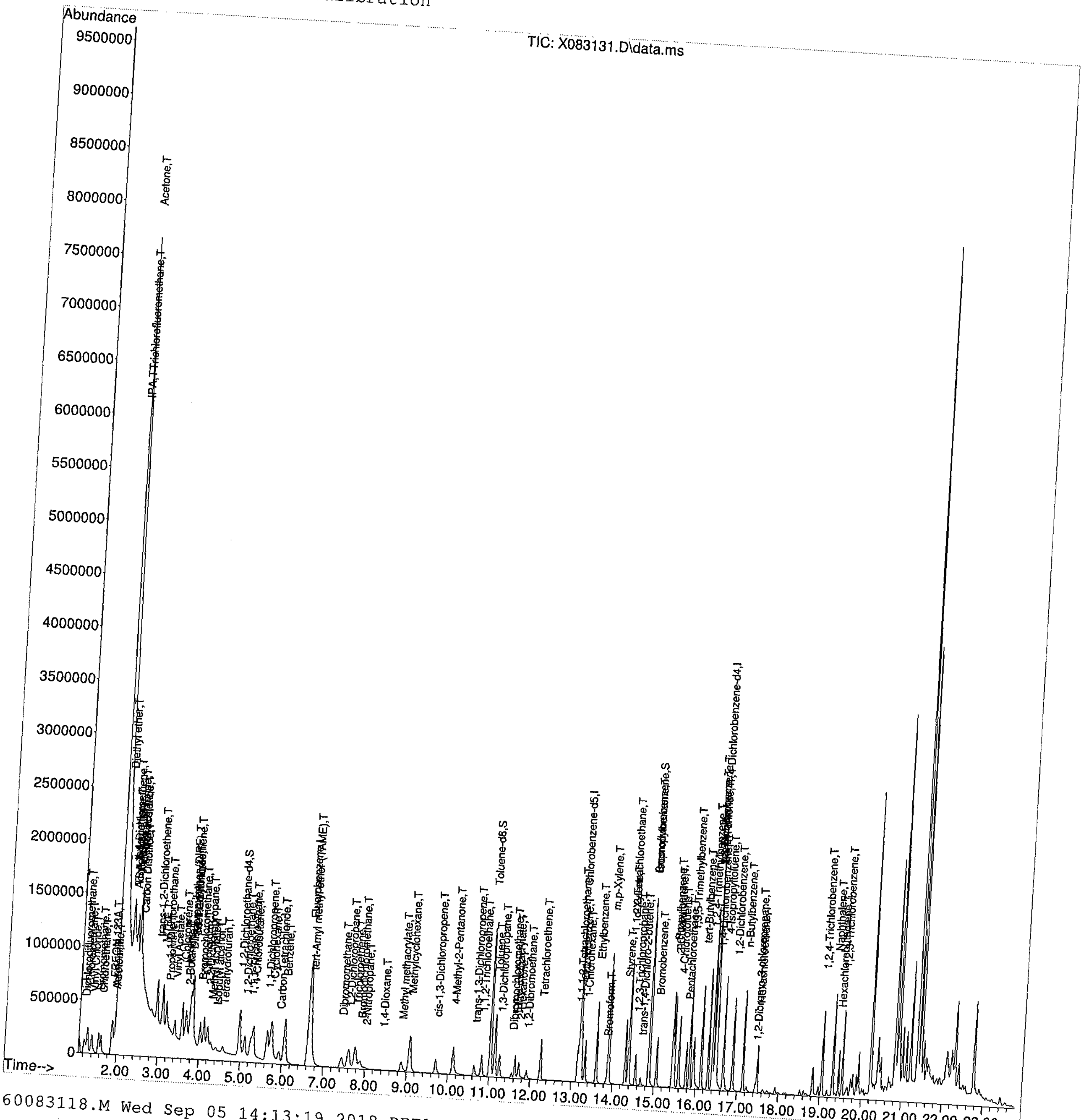
Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47) Benzene	6.062	1792	776804m	19.14	ug/L	
48) tert-Amyl methyl ether...	6.695	2019	471132	17.83	ug/L	100
49) Dibromomethane	7.434	2284	88644	17.65	ug/L	98
50) 1,2-Dichloropropane	7.598	2343	162049	18.99	ug/L	94
51) Trichloroethene	7.757	2400	161185	18.02	ug/L	97
52) Bromodichloromethane	7.885	2446	97016	17.18	ug/L	94
53) 2-Nitropropane	8.000	2487	18765m	16.36	ug/L	
54) 1,4-Dioxane	8.418	2637	6652m	182.46	ug/L	
55) Methyl methacrylate	8.870	2799	102985	19.57	ug/L	95
56) Methylcyclohexane	9.071	2871	261011	15.81	ug/L	99
58) cis-1,3-Dichloropropene	9.704	3098	117783	18.01	ug/L	97
59) trans-1,3-Dichloropropene	10.638	3433	72230	17.39	ug/L	98
60) 1,1,2-Trichloroethane	10.811	3495	95338	18.70	ug/L	96
61) 1,3-Dichloropropane	11.249	3652	159813	19.20	ug/L	98
62) Dibromochloromethane	11.552	3761	34021	17.39	ug/L	95
63) Ethyl methacrylate	11.628	3788	136222	18.79	ug/L	98
64) 1,2-Dibromoethane	11.909	3889	72337	18.15	ug/L	95
65) Bromoform	13.853	4586	17469	18.67	ug/L	97
67) 4-Methyl-2-Pentanone	10.119	3247	352105	34.45	ug/L	99
68) 2-Hexanone	11.717	3820	163761	33.35	ug/L	97
70) Toluene	11.131	3610	602884	18.90	ug/L	99
71) Tetrachloroethene	12.250	4011	147587	15.61	ug/L	95
72) 1,1,1,2-Tetrachloroethane	13.150	4334	82537	15.65	ug/L	98
73) Chlorobenzene	13.237	4365	325955	17.02	ug/L	99
74) 1-Chlorohexane	13.329	4398	120584	17.94	ug/L	100
75) Ethylbenzene	13.602	4496	612134	18.08	ug/L	98
76) m,p-Xylene	13.895	4601	942213	35.72	ug/L	99
77) Styrene	14.302	4747	314710	17.86	ug/L	95
78) o-Xylene	14.386	4777	590109	17.48	ug/L	98
79) 1,1,2,2-Tetrachloroethane	14.377	4774	170683	18.29	ug/L	99
80) 1,2,3-Trichloropropane	14.553	4837	137345	18.11	ug/L	99
81) trans-1,4-Dichloro-2-b...	14.679	4882	22816	14.05	ug/L #	95
83) Isopropylbenzene	14.879	4954	719227	16.68	ug/L	99
84) Bromobenzene	15.058	5018	218890	17.97	ug/L	99
85) n-Propylbenzene	15.437	5154	759584	17.18	ug/L	100
86) 2-Chlorotoluene	15.476	5168	483727	17.33	ug/L	100
87) 4-Chlorotoluene	15.588	5208	408501	17.22	ug/L	99
88) 1,3,5-Trimethylbenzene	15.853	5303	615409	16.69	ug/L	99
89) Pentachloroethane	15.766	5272	33865	18.78	ug/L	97
90) tert-Butylbenzene	16.131	5403	495474	15.78	ug/L	98
91) 1,2,4-Trimethylbenzene	16.299	5463	646348	17.20	ug/L	98
92) sec-Butylbenzene	16.399	5499	714676	15.16	ug/L	100
94) 1,3-Dichlorobenzene	16.399	5499	319129	18.37	ug/L	99
95) Benzyl chloride	16.449	5517	98144	16.51	ug/L	98
96) 1,4-Dichlorobenzene	16.491	5532	311907	17.19	ug/L	97
97) 4-Isopropyltoluene	16.661	5593	645379	17.57	ug/L	99
98) 1,2-Dichlorobenzene	16.887	5674	383370	18.22	ug/L	98
99) n-Butylbenzene	17.141	5765	542382	17.07	ug/L	98
100) 1,2-Dibromo-3-chloropr...	17.445	5874	14812	16.44	ug/L	88
101) Hexachloroethane	17.487	5889	21178	12.43	ug/L	87
102) 1,2,4-Trichlorobenzene	19.048	6449	277115	18.39	ug/L	99
103) Naphthalene	19.310	6543	817481	18.26	ug/L	100
104) Hexachlorobutadiene	19.453	6594	97730	16.70	ug/L	93
105) 1,2,3-Trichlorobenzene	19.542	6626	278844	17.99	ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083131.D
Acq On : 1 Sep 2018 12:26 am
Operator : EA
Sample : 141880-T-1MS LM=8260C BT=MS4083118A
Misc : OUTFALL
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Sep 04 09:41:03 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



8260083118.M Wed Sep 05 14:13:19 2018 RPT1

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083132.D
Acq On : 1 Sep 2018 12:58 am
Operator : EA
Sample : 141880-T-1MSD LM=8260C BT=MS4083118A
Misc : OUTFALL
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Sep 04 09:43:04 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	6.645	2001	1901303	50.00	ug/L	0.00
66) Chlorobenzene-d5	13.195	4350	983652	50.00	ug/L	0.00
93) 1,4-Dichlorobenzene-d4	16.461	5521	958734	50.00	ug/L	0.00
System Monitoring Compounds						
40) 1,2-Dichloroethane-d4	4.974	1402	557664	45.89	ug/L	0.00
Spiked Amount 50.000	Range 77 - 117		Recovery =	91.78%		
69) Toluene-d8	11.014	3568	1324958	49.94	ug/L	0.00
Spiked Amount 50.000	Range 74 - 129		Recovery =	99.88%		
82) Bromofluorobenzene	14.865	4949	400180	44.58	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery =	89.16%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.225	51	310164	17.05	ug/L	97
3) Chloromethane	1.292	76	358505	18.68	ug/L	98
4) Vinyl Chloride	1.404	118	356181	17.85	ug/L	100
5) Bromomethane	1.571	181	185520	16.51	ug/L	97
6) Chloroethane	1.632	204	175778	17.51	ug/L	98
7) Acrolein	1.946	316	81477	32.97	ug/L	96
8) Acetonitrile	1.912	304	16755m	14.44	ug/L	
9) Acrylonitrile	2.344	459	72222	14.88	ug/L	93
10) Trichlorofluoromethane	1.996	334	334235m	17.84	ug/L	
11) Diethyl ether	2.105	373	206137	23.43	ug/L #	1
12) FREON 123A	1.888	300	225443	17.14	ug/L	98
13) FC-113	2.478	507	213681	17.53	ug/L	99
14) Acetone	2.024	344	2602298	2229.73	ug/L	96
15) IPA	1.993	333	14583750	32310.26	ug/L #	98
16) TBA	2.333	455	83639	107.73	ug/L #	11
17) Methyl acetate	2.462	501	181650m	18.11	ug/L	
18) Allyl chloride	2.473	505	312823	18.04	ug/L #	97
19) Iodomethane	2.303	444	346870	17.34	ug/L	98
20) 1,1-Dichloroethene	2.291	440	337848	17.79	ug/L	99
21) Methylene Chloride	2.403	480	229611	17.41	ug/L	98
22) Carbon Disulfide	2.531	526	448364	17.10	ug/L #	82
23) trans-1,2-Dichloroethene	2.950	676	301186	17.81	ug/L	98
24) MTBE	3.089	726	566193	18.28	ug/L #	63
25) 1,1-Dichloroethane	3.189	762	379130	18.53	ug/L	98
26) Propionitrile	3.234	778	83913	55.19	ug/L #	90
27) Vinyl Acetate	3.407	840	345825	18.67	ug/L #	93
28) Chloroprene	3.591	906	328316	17.63	ug/L	99
29) Hexane	3.677	937	197768	14.70	ug/L #	53
30) 2-Butanone	3.714	950	36918	36.23	ug/L #	17
31) Diisopropylether (DIPE)	3.783	975	693927	18.45	ug/L #	97
32) cis-1,2-Dichloroethene	3.834	993	295534	17.75	ug/L	99
33) Methacrylonitrile	3.828	991	329587	40.05	ug/L	93
34) Bromochloromethane	4.023	1061	129543	17.79	ug/L	100
35) Chloroform	4.115	1094	354614	19.20	ug/L	96
36) 2,2-Dichloropropane	4.204	1126	199456	15.76	ug/L	100
37) Methyl acrylate	4.294	1158	128547	17.68	ug/L	99
38) Isobutyl alcohol	4.405	1198	40787m	105.24	ug/L	
39) Tetrahydrofuran	4.584	1262	22383	16.75	ug/L	100
41) 1,2-Dichloroethane	5.108	1450	262455	18.13	ug/L	99
42) 1,1,1-Trichloroethane	5.253	1502	219900	17.31	ug/L	96
43) 1-Chlorobutane	5.314	1524	379734	19.27	ug/L #	90
44) 1,1-Dichloropropene	5.649	1644	262526	19.82	ug/L	99
45) Cyclohexane	5.744	1678	402459	18.33	ug/L	93
46) Carbon Tetrachloride	5.936	1747	125377	16.67	ug/L	94

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083132.D
Acq On : 1 Sep 2018 12:58 am
Operator : EA
Sample : 141880-T-1MSD LM=8260C BT=MS4083118A
Misc : OUTFALL
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Sep 04 09:43:04 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration

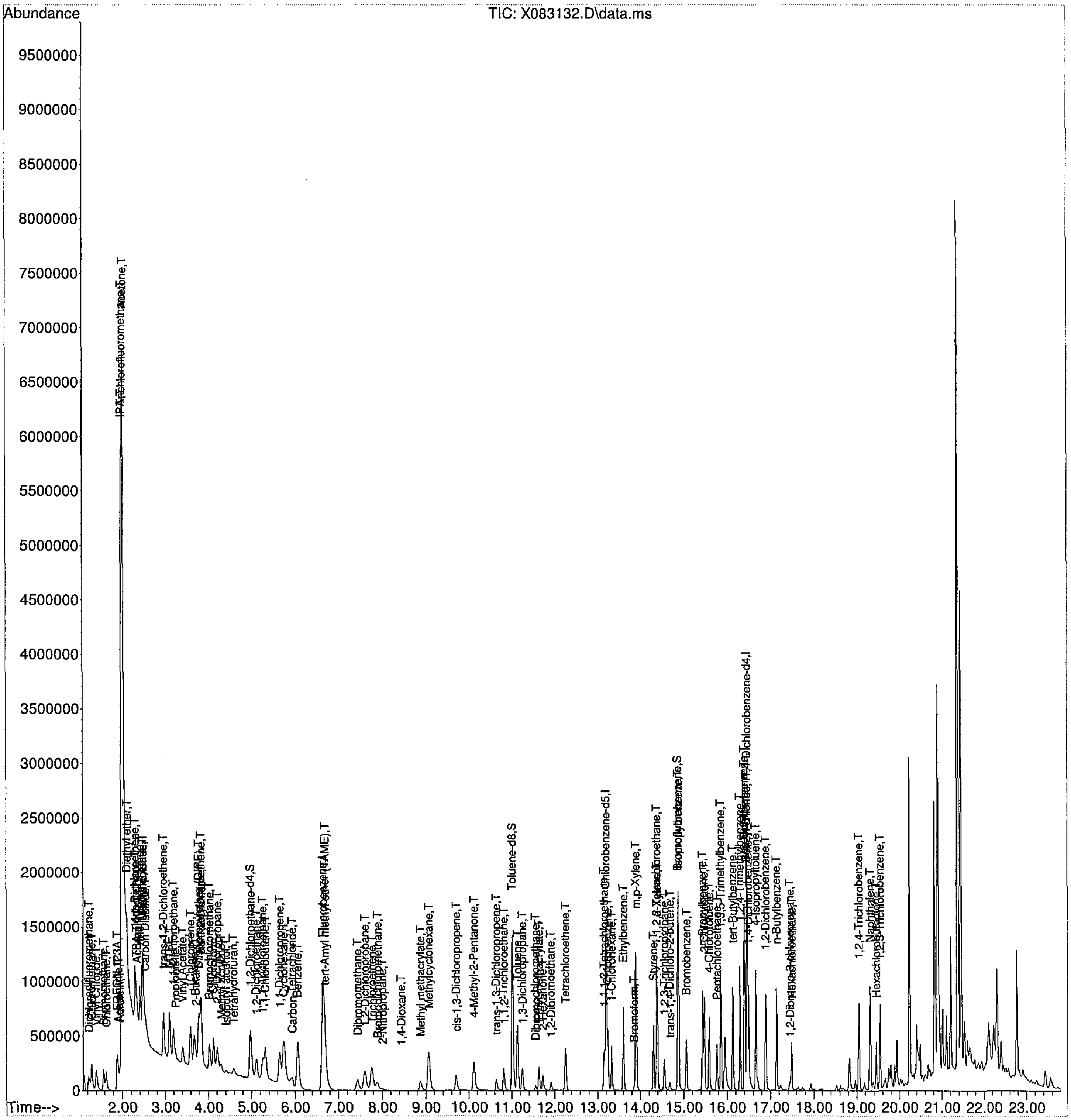
	Compound	R.T.	Scan	Response	Conc	Units	Dev(Min)
47)	Benzene	6.062	1792	803569	19.24	ug/L	100
48)	tert-Amyl methyl ether...	6.692	2018	493029	18.12	ug/L	95
49)	Dibromomethane	7.434	2284	90260	17.46	ug/L	98
50)	1,2-Dichloropropane	7.601	2344	168225	19.15	ug/L #	98
51)	Trichloroethene	7.768	2404	164290	17.85	ug/L	97
52)	Bromodichloromethane	7.897	2450	106927m	18.40	ug/L	
53)	2-Nitropropane	8.005	2489	19133m	16.20	ug/L	
54)	1,4-Dioxane	8.432	2642	5994m	159.72	ug/L	
55)	Methyl methacrylate	8.878	2802	97632	18.02	ug/L	95
56)	Methylcyclohexane	9.071	2871	268144	15.78	ug/L	98
58)	cis-1,3-Dichloropropene	9.704	3098	117557	17.54	ug/L	96
59)	trans-1,3-Dichloropropene	10.635	3432	73419	17.20	ug/L	97
60)	1,1,2-Trichloroethane	10.814	3496	94133	17.94	ug/L	98
61)	1,3-Dichloropropane	11.246	3651	154083	17.99	ug/L	99
62)	Dibromochloromethane	11.553	3761	34523	17.14	ug/L	93
63)	Ethyl methacrylate	11.628	3788	140685	18.85	ug/L	98
64)	1,2-Dibromoethane	11.909	3889	70016	17.07	ug/L	97
65)	Bromoform	13.845	4583	16073	16.68	ug/L	97
67)	4-Methyl-2-Pentanone	10.116	3246	358901	34.87	ug/L	98
68)	2-Hexanone	11.717	3820	161093	32.58	ug/L	98
70)	Toluene	11.131	3610	603998	18.80	ug/L	98
71)	Tetrachloroethene	12.252	4012	149657	15.72	ug/L	99
72)	1,1,1,2-Tetrachloroethane	13.150	4334	87816	16.54	ug/L	99
73)	Chlorobenzene	13.237	4365	326539	16.93	ug/L	98
74)	1-Chlorohexane	13.329	4398	123874	18.30	ug/L	99
75)	Ethylbenzene	13.602	4496	618322	18.14	ug/L	99
76)	m,p-Xylene	13.895	4601	962905	36.25	ug/L	99
77)	Styrene	14.302	4747	319815	18.02	ug/L	96
78)	o-Xylene	14.386	4777	608264	17.90	ug/L	97
79)	1,1,2,2-Tetrachloroethane	14.375	4773	163524	17.41	ug/L	99
80)	1,2,3-Trichloropropane	14.550	4836	133901	17.53	ug/L	97
81)	trans-1,4-Dichloro-2-b...	14.681	4883	22981	14.06	ug/L #	90
83)	Isopropylbenzene	14.879	4954	736385	16.96	ug/L	98
84)	Bromobenzene	15.058	5018	214707	17.50	ug/L	97
85)	n-Propylbenzene	15.437	5154	779320	17.50	ug/L	99
86)	2-Chlorotoluene	15.476	5168	484949	17.25	ug/L	99
87)	4-Chlorotoluene	15.588	5208	409004	17.12	ug/L	99
88)	1,3,5-Trimethylbenzene	15.853	5303	619719	16.69	ug/L	98
89)	Pentachloroethane	15.766	5272	33738	18.58	ug/L	92
90)	tert-Butylbenzene	16.131	5403	495735	15.68	ug/L	99
91)	1,2,4-Trimethylbenzene	16.296	5462	654957	17.31	ug/L	99
92)	sec-Butylbenzene	16.399	5499	730926	15.40	ug/L	100
94)	1,3-Dichlorobenzene	16.399	5499	317596	18.83	ug/L	99
95)	Benzyl chloride	16.449	5517	95883	16.60	ug/L	99
96)	1,4-Dichlorobenzene	16.491	5532	306255	17.39	ug/L	99
97)	4-Isopropyltoluene	16.661	5593	653455	18.33	ug/L	99
98)	1,2-Dichlorobenzene	16.887	5674	397768	19.47	ug/L	98
99)	n-Butylbenzene	17.141	5765	548967	17.80	ug/L	98
100)	1,2-Dibromo-3-chloropr...	17.445	5874	13322	15.24	ug/L	89
101)	Hexachloroethane	17.487	5889	20853	12.61	ug/L	86
102)	1,2,4-Trichlorobenzene	19.046	6448	286223	19.57	ug/L	98
103)	Naphthalene	19.311	6543	835294	19.22	ug/L	100
104)	Hexachlorobutadiene	19.453	6594	97901	17.24	ug/L	94
105)	1,2,3-Trichlorobenzene	19.539	6625	281116	18.68	ug/L	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MS4\083118\
Data File : X083132.D
Acq On : 1 Sep 2018 12:58 am
Operator : EA
Sample : 141880-T-1MSD LM=8260C BT=MS4083118A
Misc : OUTFALL
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Sep 04 09:43:04 2018
Quant Method : C:\MS4\METHODS\8260083118.M
Quant Title : Method for the analysis of 8260 waters
QLast Update : Fri Aug 31 14:49:06 2018
Response via : Initial Calibration



GC Organic Data QC Summary

SURROGATE COMPOUND RECOVERY
Nonhalogenated Organics using GC/FID direct inject

Lab Name: EnviroTest Laboratories,   Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water

SAMPLE ID	1,3-But
420-141881-4 MSD	95
LCS 420-124372/1	82
MB 420-124372/2	98
B312BSV-RB-1	99
B312BSV-R1-1	77
B312BSV-R2-1	85
DUP083018	93
420-141881-4 MS	68

1,3-Butanediol   QC LIMITS (70-130)

Column to be used to flag recovery values

FORM II 8015D

Lab Control Spike
Nonhalogenated Organics using GC/FID direct inject

Lab Name: EnviroTest Laboratories,   Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water   Level: Low

Lab Sample ID: LCS 420-124372/1

COMPOUND	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC #	QC LIMITS REC
N-Methyl-2-pyrrolidone	25.0	22	89	70-130

Calculations are performed before rounding

Column to be used to flag recovery and RPD values

Matrix Spike
Nonhalogenated Organics using GC/FID direct inject

Lab Name: EnviroTest Laboratories, Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water Level: Low

Matrix Spike-Client Sample ID: DUP083018

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)		MS CONCENTRATION (mg/L)	MS % REC #	QC LIMITS REC
N-Methyl-2-pyrrolidone	50.0	1.0	U	31	62 F	70-130

Calculations are performed before rounding

Column to be used to flag recovery and RPD values

FORM III 8015D

3

Matrix Spike Duplicate
Nonhalogenated Organics using GC/FID direct inject

Lab Name: EnviroTest Laboratories, Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix: Water Level: Low

Matrix Spike Duplicate-Client Sample ID: DUP083018

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC #	% RPD	QC LIMITS	
					RPD	REC
N-Methyl-2-pyrrolidone	50.0	41	81 F	27	20	70-130

Calculations are performed before rounding

Column to be used to flag recovery and RPD values

FORM III 8015D

METHOD BLANK SUMMARY
Nonhalogenated Organics using GC/FID direct inject

Lab Name: EnviroTest Laboratories, Inc. Job No.: 420-141881-1

SDG No.: GLOBALFOUNDRIES B/312B Solvent Vault

Lab File ID: 090406.D Lab Sample ID: MB 420-124372/2

Instrument ID: Hewlett Packard 5890II Dual FID Date Analyzed: 09/04/2018

Matrix: Water Time Analyzed: 1644

GC Column: Stabilwax ID: 0.53

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
LCS 420-124372/1	LCS 420-124372/1	090404.D	1540
B312BSV-RB-1	420-141881-1	090407.D	1700
B312BSV-R1-1	420-141881-2	090408.D	1716
B312BSV-R2-1	420-141881-3	090409.D	1732
DUP083018	420-141881-4	090410.D	1747
DUP083018 MS	420-141881-4 MS	090411.D	1803
DUP083018 MSD	420-141881-4 MSD	090413.D	1834

FORM IV 8015D

GC Organic Data
Sample Data

ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	B312BSV-RB-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-1
Analysis Method:	8015D	Lab File ID:	090407.D
Sample wt/vol:		Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/04/2018 17:00
% Moisture:		Dilution Factor:	2
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	1.0	U	1.0	1.0

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090407.D Vial: 5
Acq On : 4 Sep 2018 5:00 pm Operator: KM
Sample : 141881-F-1 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:12 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) s	1,3-Butanediol	5.68	534687	49.726 / 50	ppm	= 99%
	Target Compounds					
1) t	Propylene Glycol	0.00	0	N.D.	ppm	d
2) t	Ethylene Glycol	0.00	0	N.D.	ppm	d
3) t	NMP	0.00	0	N.D.	ppm	d

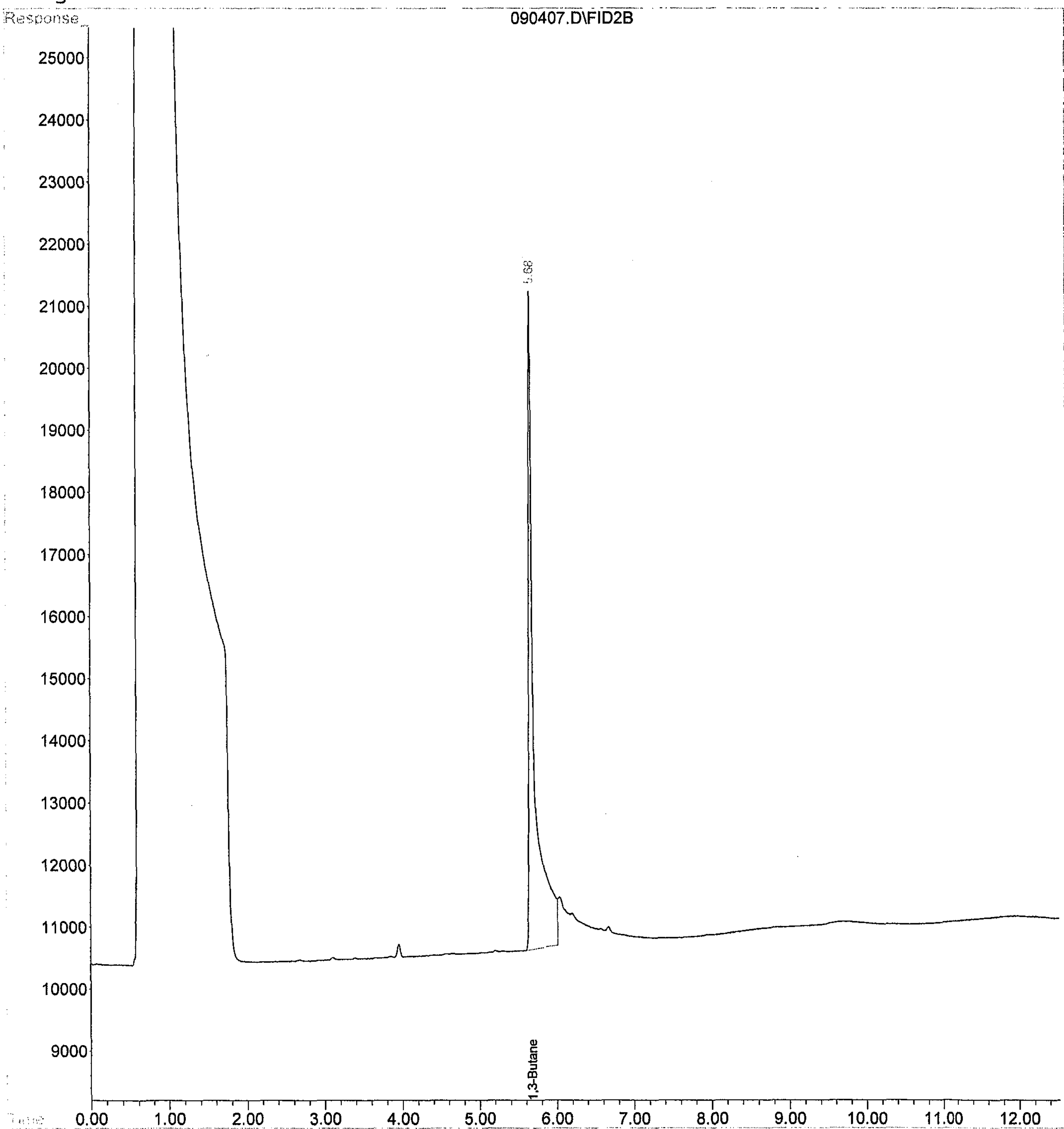
KM 9/11/18

Quantitation Report

Data File : C:\HPCHEM\2\DATA\090418G\090407.D Vial: 5
Acq On : 4 Sep 2018 5:00 pm Operator: KM
Sample : 141881-F-1 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:12 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	B312BSV-R1-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-2
Analysis Method:	8015D	Lab File ID:	090408.D
Sample wt/vol:		Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/04/2018 17:16
% Moisture:		Dilution Factor:	2
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	1.0	U	1.0	1.0

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090408.D Vial: 6
Acq On : 4 Sep 2018 5:16 pm Operator: KM
Sample : 141881-E-2 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:13 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) s	1,3-Butanediol	5.68	831637	77.343 / 100	ppm	= 77%
	Target Compounds					
1) t	Propylene Glycol	0.00	0	N.D.	ppm	d
2) t	Ethylene Glycol	0.00	0	N.D.	ppm	d
3) t	NMP	0.00	0	N.D.	ppm	d

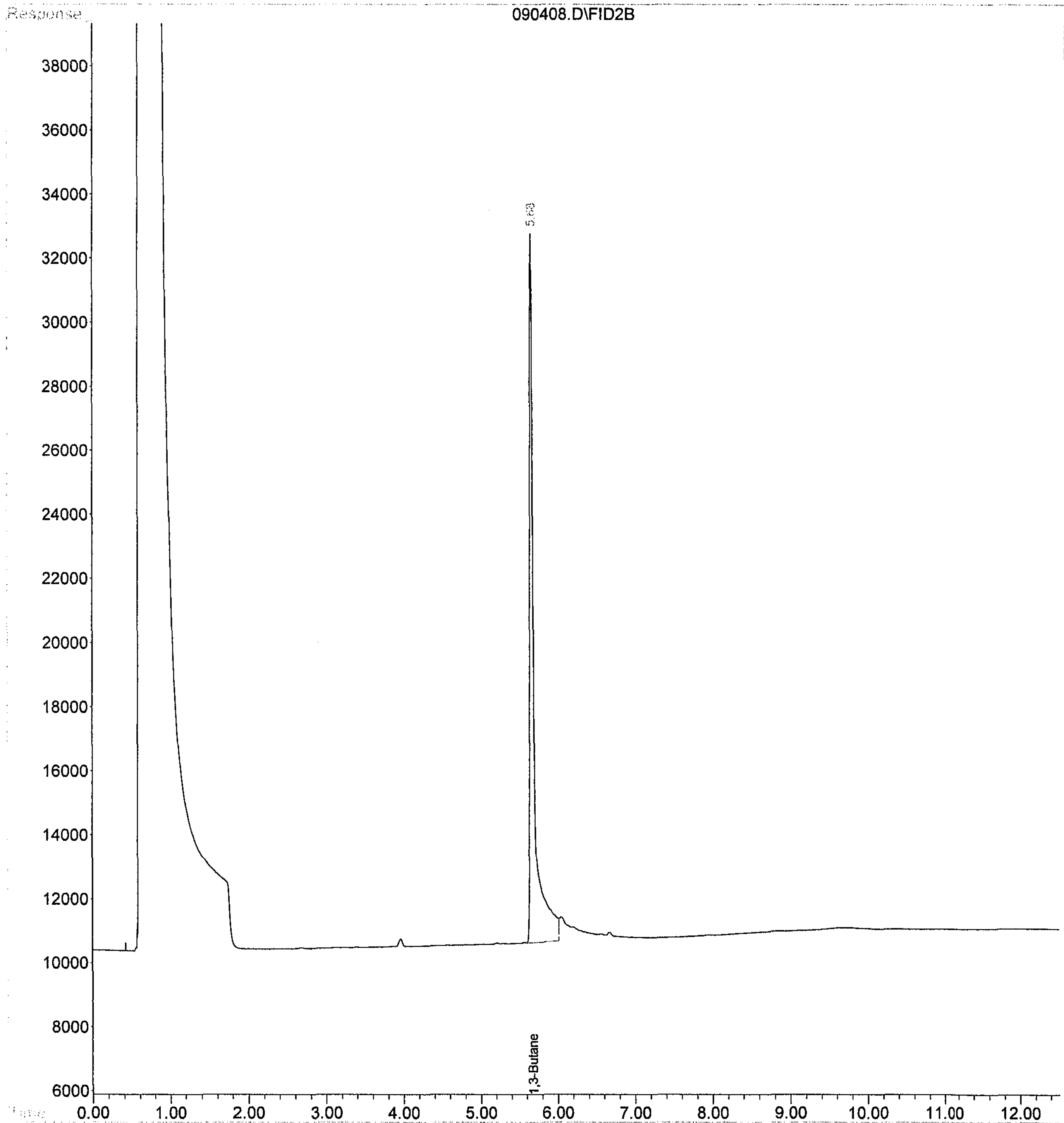
VW 9/11/18

Quantitation Report

Data File : C:\HPCHEM\2\DATA\090418G\090408.D Vial: 6
Acq On : 4 Sep 2018 5:16 pm Operator: KM
Sample : 141881-E-2 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:13 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	B312BSV-R2-1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-3
Analysis Method:	8015D	Lab File ID:	090409.D
Sample wt/vol:		Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/04/2018 17:32
% Moisture:		Dilution Factor:	2
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	1.0	U	1.0	1.0

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090409.D Vial: 7
Acq On : 4 Sep 2018 5:32 pm Operator: KM
Sample : 141881-E-3 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:13 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units	
	System Monitoring Compounds				
4) s	1,3-Butanediol	5.68	458022	$\frac{42.597}{50}$ ppm	= 85%
	Target Compounds				
1) t	Propylene Glycol	0.00	0	N.D. ppm	d
2) t	Ethylene Glycol	0.00	0	N.D. ppm	d
3) t	NMP	0.00	0	N.D. ppm	d

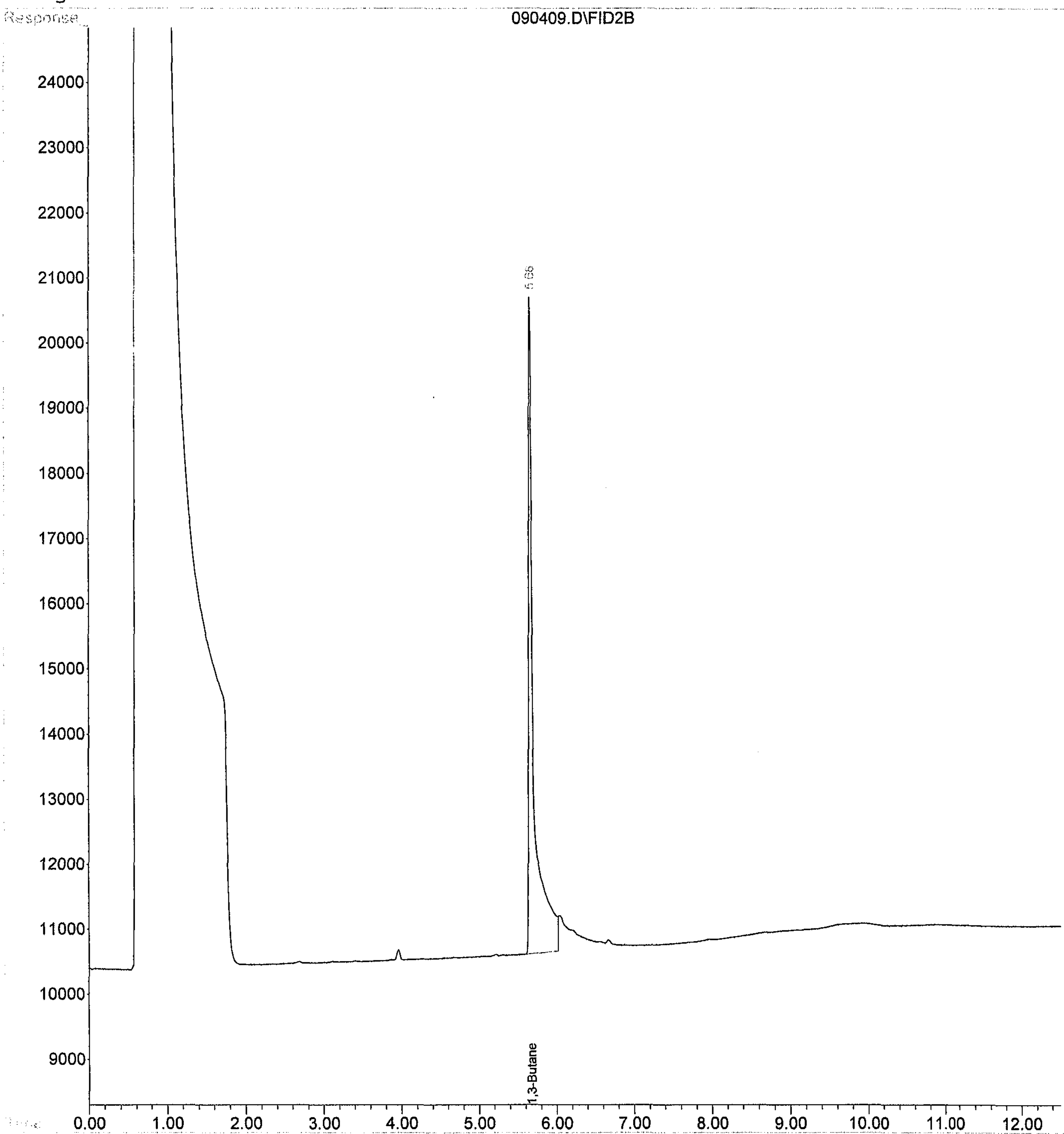
KM 9/11/18

Quantitation Report

Data File : C:\HPCHEM\2\DATA\090418G\090409.D Vial: 7
Acq On : 4 Sep 2018 5:32 pm Operator: KM
Sample : 141881-E-3 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:13 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	DUP083018	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4
Analysis Method:	8015D	Lab File ID:	090410.D
Sample wt/vol:		Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/04/2018 17:47
% Moisture:		Dilution Factor:	2
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	1.0	U	1.0	1.0

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090410.D Vial: 8
Acq On : 4 Sep 2018 5:47 pm Operator: KM
Sample : 141881-E-4 Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:14 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units	
	System Monitoring Compounds				
4) s	1,3-Butanediol	5.68	497408	$\frac{46.259}{50}$ ppm	= 93%
	Target Compounds				
1) t	Propylene Glycol	0.00	0	N.D. ppm	d
2) t	Ethylene Glycol	0.00	0	N.D. ppm	d
3) t	NMP	0.00	0	N.D. ppm	d

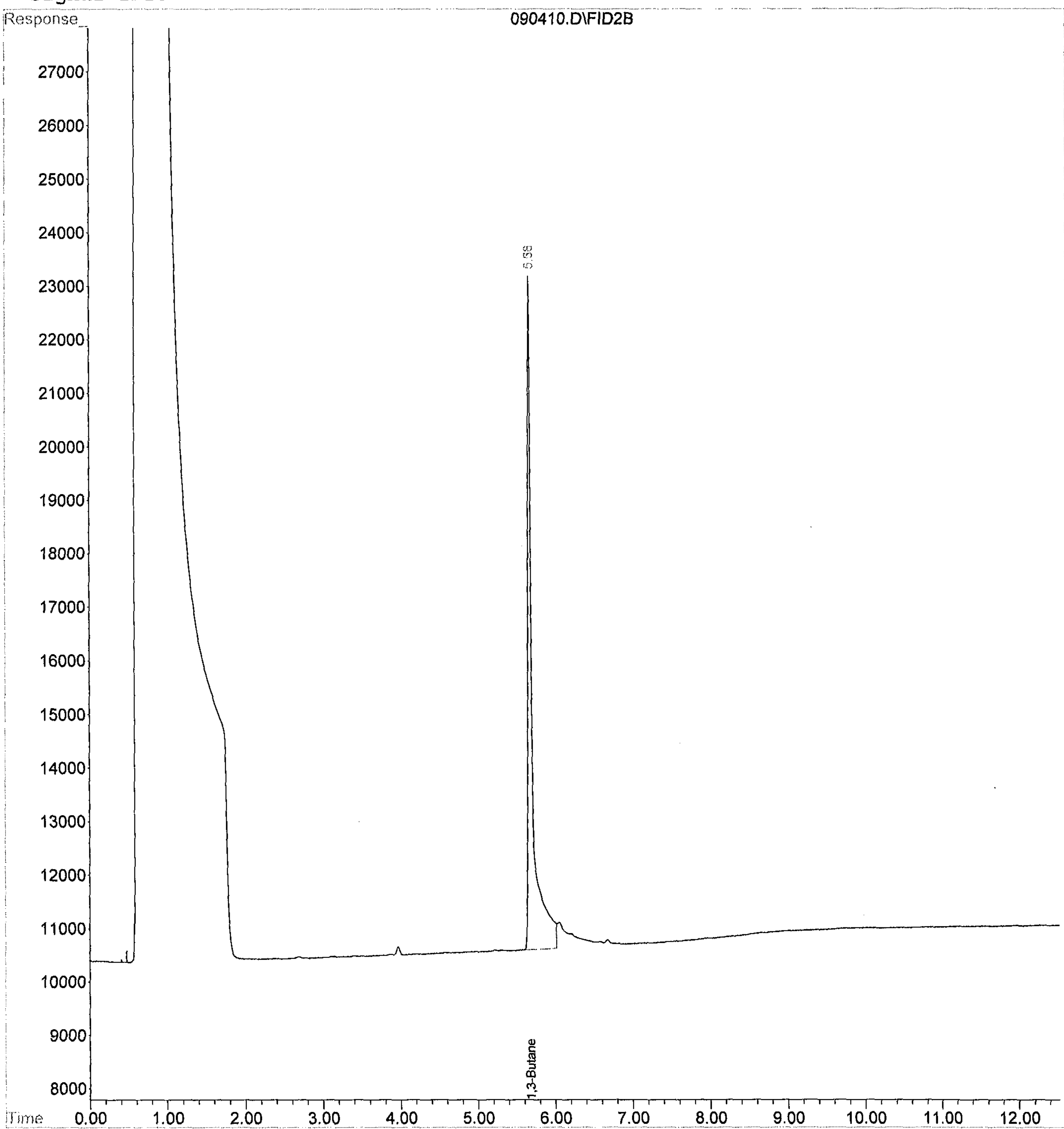
KW 9/11/18

Quantitation Report

```
Data File : C:\HPCHEM\2\DATA\090418G\090410.D            Vial: 8
Acq On    :  4 Sep 2018   5:47 pm                    Operator: KM
Sample    : 141881-E-4                               Inst    : GC-2
Misc      : BT=090418A3                              Multiplr: 2.00
IntFile   : events.e
Quant Time: Sep  5  9:14 2018  Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title        :
Last Update  : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj.  :
Signal Phase :
Signal Info  :
```



GC Organic Data
Standards Data

Response Factor Report GC-2

Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration

Calibration Files

1	=061902.D	2	=061903.D	3	=061904.D
4	=061905.D	5	=061908.D	6	=061906.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	t	Propylene Glycol	1.359	1.251	1.109	1.071	1.026	1.074	1.148	E4	11.21
2)	t	Ethylene Glycol	9.143	8.465	7.771	7.487	7.541	7.867	8.046	E3	7.97
3)	t	NMP	2.188	1.992	1.718	1.641	1.535	1.634	1.785	E4	14.08
4)	s	1,3-Butanediol		0.979	1.095	1.075	1.088	1.139	1.075	E4	5.49

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\061918G\061902.D Vial: 2
Acq On : 19 Jun 2018 3:24 pm Operator: KM
Sample : 1 GLY 6/19/18 Inst : GC-2
Misc : BT=061918A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 19 15:55 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

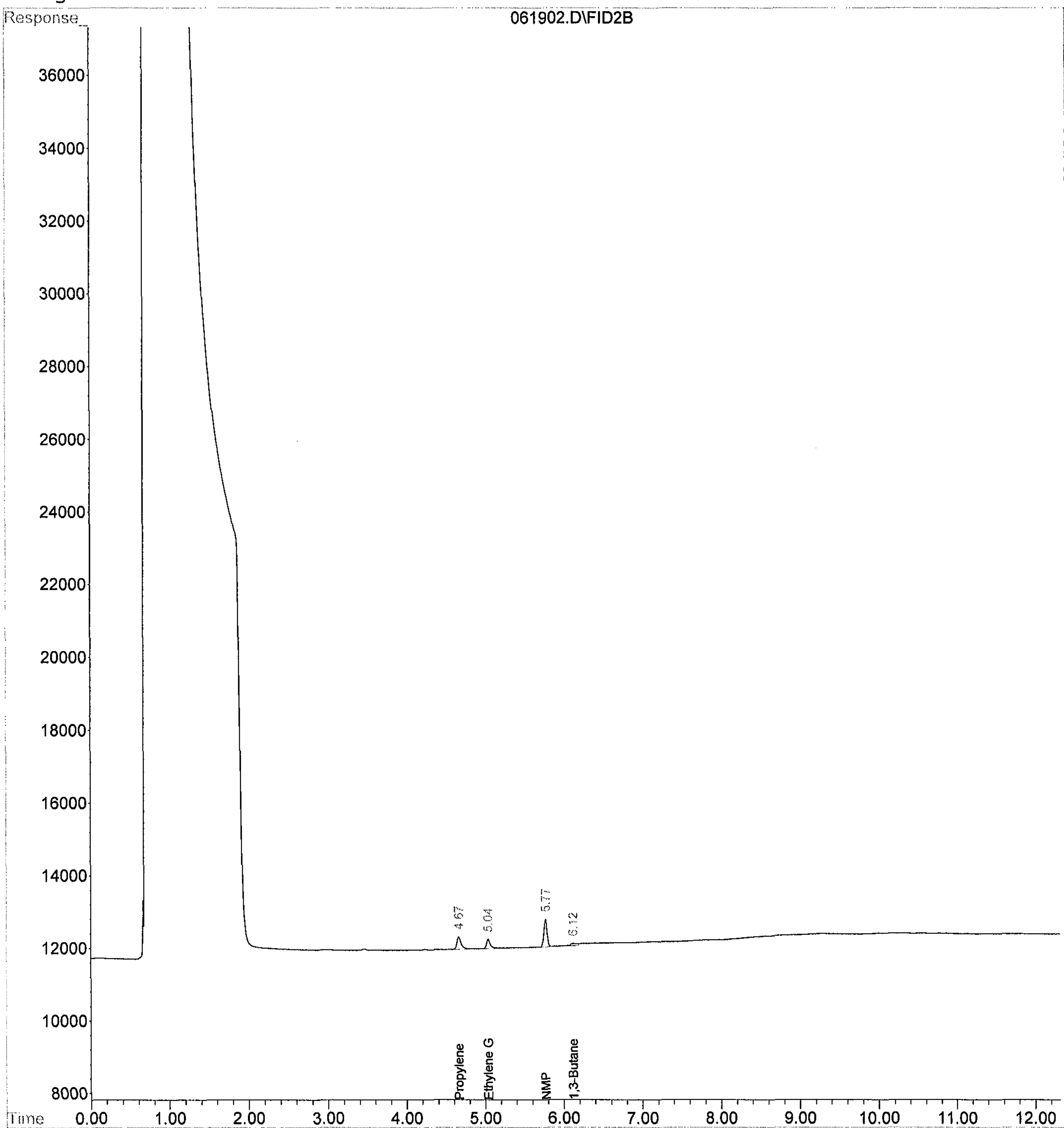
	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
4) s	1,3-Butanediol	6.12	3468	0.276 ppm
	Target Compounds			
1) t	Propylene Glycol	4.67	13592	1.070 ppm
2) t	Ethylene Glycol	5.04	9143	0.975 ppm
3) t	NMP	5.77	21876	1.199 ppm

Quantitation Report

```
Data File : C:\HPCHEM\2\DATA\061918G\061902.D           Vial: 2
Acq On    : 19 Jun 2018   3:24 pm                   Operator: KM
Sample    : 1 GLY 6/19/18                           Inst    : GC-2
Misc      : BT=061918A3                             Multiplr: 1.00
IntFile   : events.e
Quant Time: Jun 19 15:55 2018  Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title        :
Last Update  : Tue Jun 19 15:55:50 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj.  :
Signal Phase :
Signal Info  :
```



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\061918G\061903.D Vial: 3
Acq On : 19 Jun 2018 3:42 pm Operator: KM
Sample : 10 GLY 6/19/18 Inst : GC-2
Misc : BT=061918A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 19 15:56 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

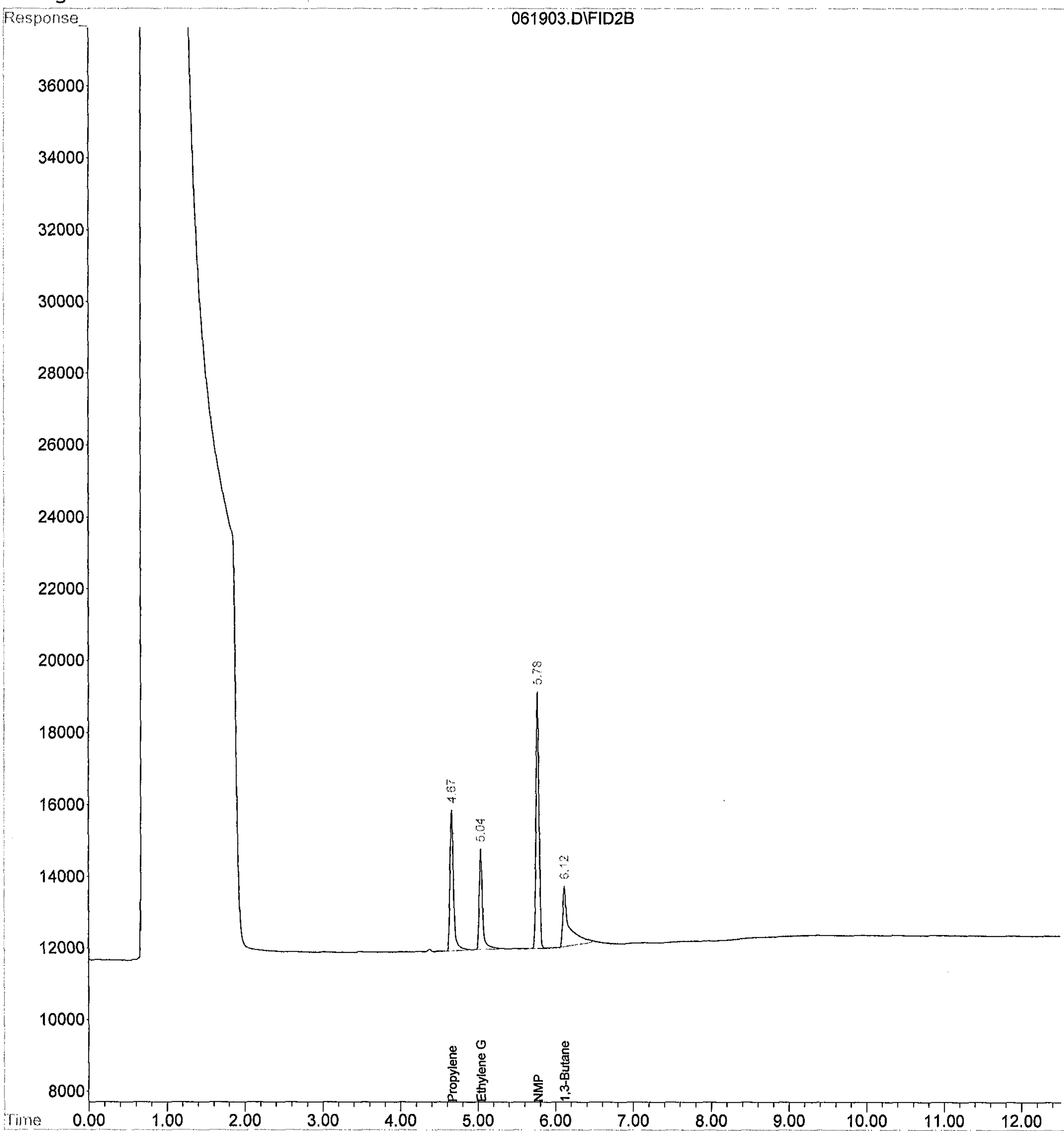
Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) s 1,3-Butanediol	6.12	97898	7.800 ppm
Target Compounds			
1) t Propylene Glycol	4.67	125062	9.846 ppm
2) t Ethylene Glycol	5.04	84650	9.025 ppm
3) t NMP	5.78	199240	10.917 ppm

Data File : C:\HPCHEM\2\DATA\061918G\061903.D Vial: 3
Acq On : 19 Jun 2018 3:42 pm Operator: KM
Sample : 10 GLY 6/19/18 Inst : GC-2
Misc : BT=061918A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 19 15:56 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File : C:\HPCHEM\2\DATA\061918G\061904.D Vial: 4
Acq On : 19 Jun 2018 4:00 pm Operator: KM
Sample : 25 GLY 6/19/18 Inst : GC-2
Misc : BT=061918A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 19 16:23 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) s 1,3-Butanediol	6.12	273807	21.816 ppm
Target Compounds			
1) t Propylene Glycol	4.67	277215	21.825 ppm
2) t Ethylene Glycol	5.04	194270	20.712 ppm
3) t NMP	5.78	429434	23.529 ppm

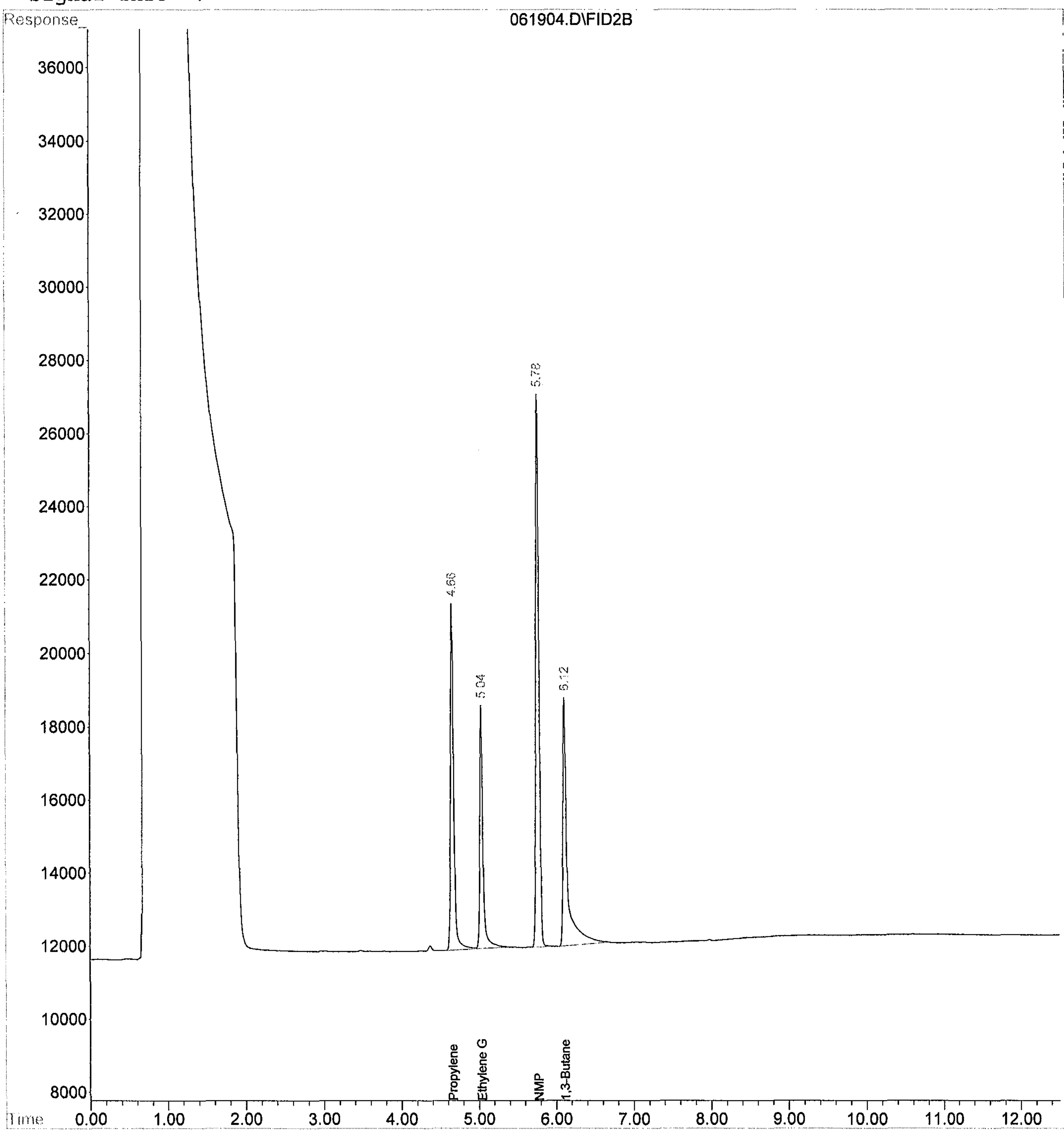
Quantitation Report

Data File : C:\HPCHEM\2\DATA\061918G\061904.D
Acq On : 19 Jun 2018 4:00 pm
Sample : 25 GLY 6/19/18
Misc : BT=061918A3
IntFile : events.e
Quant Time: Jun 19 16:23 2018 Quant Results File: GL041818.RES

Vial: 4
Operator: KM
Inst : GC-2
Multiplr: 1.00

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



```
Data File : C:\HPCHEM\2\DATA\061918G\061905.D            Vial: 5
Acq On    : 19 Jun 2018   4:16 pm                    Operator: KM
Sample    : 50 GLY 6/19/18                           Inst    : GC-2
Misc      : BT=061918A3                              Multiplr: 1.00
IntFile   : events.e
Quant Time: Jun 19 16:31 2018  Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title        :
Last Update  : Tue Jun 19 15:55:50 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj.  :
Signal Phase :
Signal Info  :
```

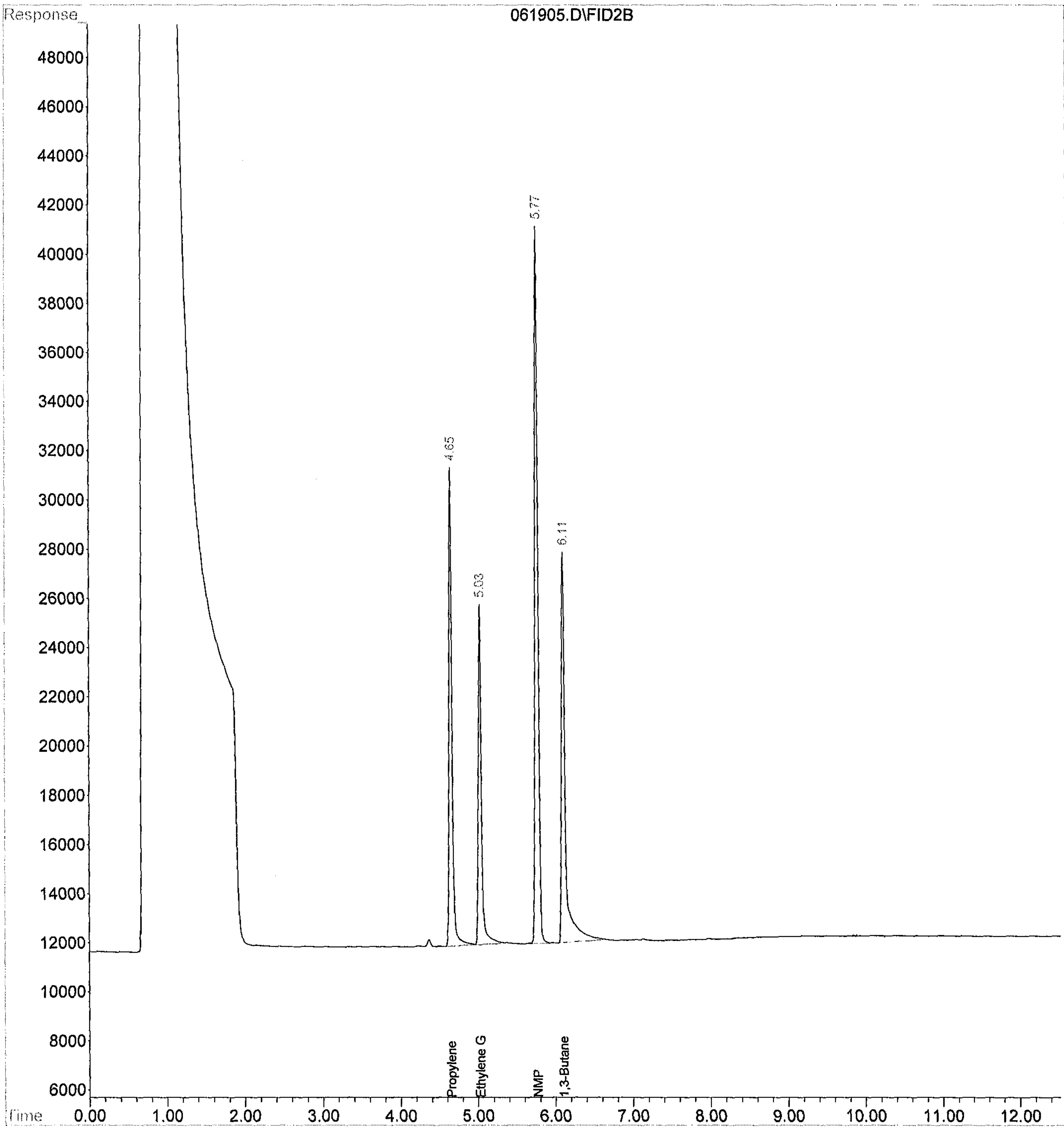
	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
4) s	1,3-Butanediol	6.11	537456	42.822 ppm
	Target Compounds			
1) t	Propylene Glycol	4.65	535395	42.152 ppm
2) t	Ethylene Glycol	5.03	374335	39.909 ppm
3) t	NMP	5.77	820357	44.948 ppm

Quantitation Report

```
Data File : C:\HPCHEM\2\DATA\061918G\061905.D           Vial: 5
Acq On    : 19 Jun 2018   4:16 pm                    Operator: KM
Sample    : 50 GLY 6/19/18                           Inst    : GC-2
Misc      : BT=061918A3                              Multiplr: 1.00
IntFile   : events.e
Quant Time: Jun 19 16:31 2018  Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title        :
Last Update  : Tue Jun 19 15:55:50 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj.  :
Signal Phase :
Signal Info  :
```



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\061918G\061906.D   Vial: 6
Acq On : 19 Jun 2018 4:32 pm   Operator: KM
Sample : 75 GLY 6/19/18   Inst : GC-2
Misc : BT=061918A3   Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 19 16:50 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

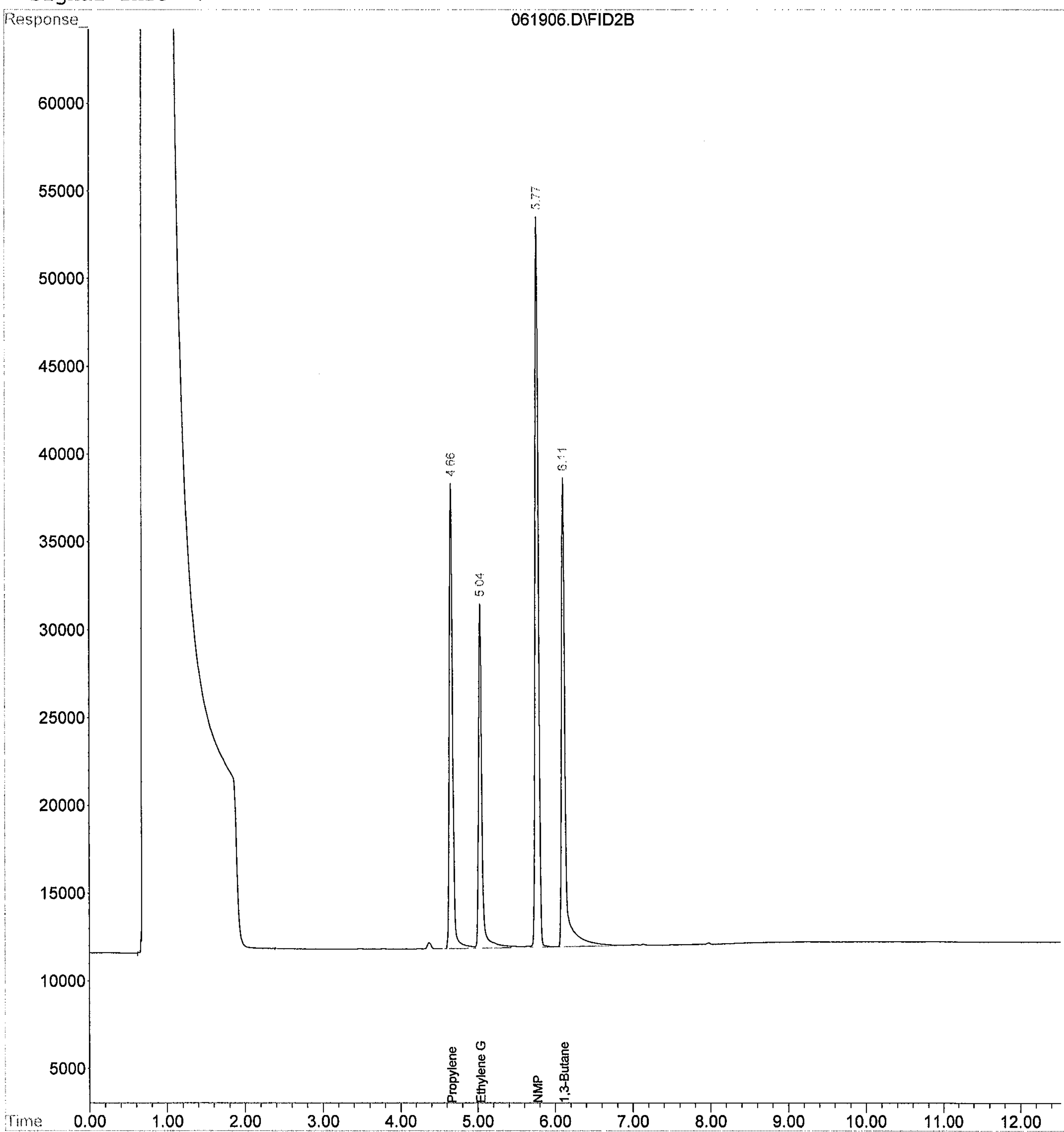
Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) s 1,3-Butanediol	6.11	854463	68.079 ppm
Target Compounds			
1) t Propylene Glycol	4.66	805720	63.435 ppm
2) t Ethylene Glycol	5.04	590047	62.906 ppm
3) t NMP	5.78	1225532	67.148 ppm

Data File : C:\HPCHEM\2\DATA\061918G\061906.D   Vial: 6
Acq On   : 19 Jun 2018   4:32 pm   Operator: KM
Sample   : 75 GLY 6/19/18   Inst   : GC-2
Misc   : BT=061918A3   Multiplr: 1.00
IntFile   : events.e
Quant Time: Jun 19 16:50 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title   :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\061918G\061908.D Vial: 7
Acq On : 19 Jun 2018 5:03 pm Operator: KM
Sample : 100 GLY 6/19/18 Inst : GC-2
Misc : BT=061918A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 20 9:21 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

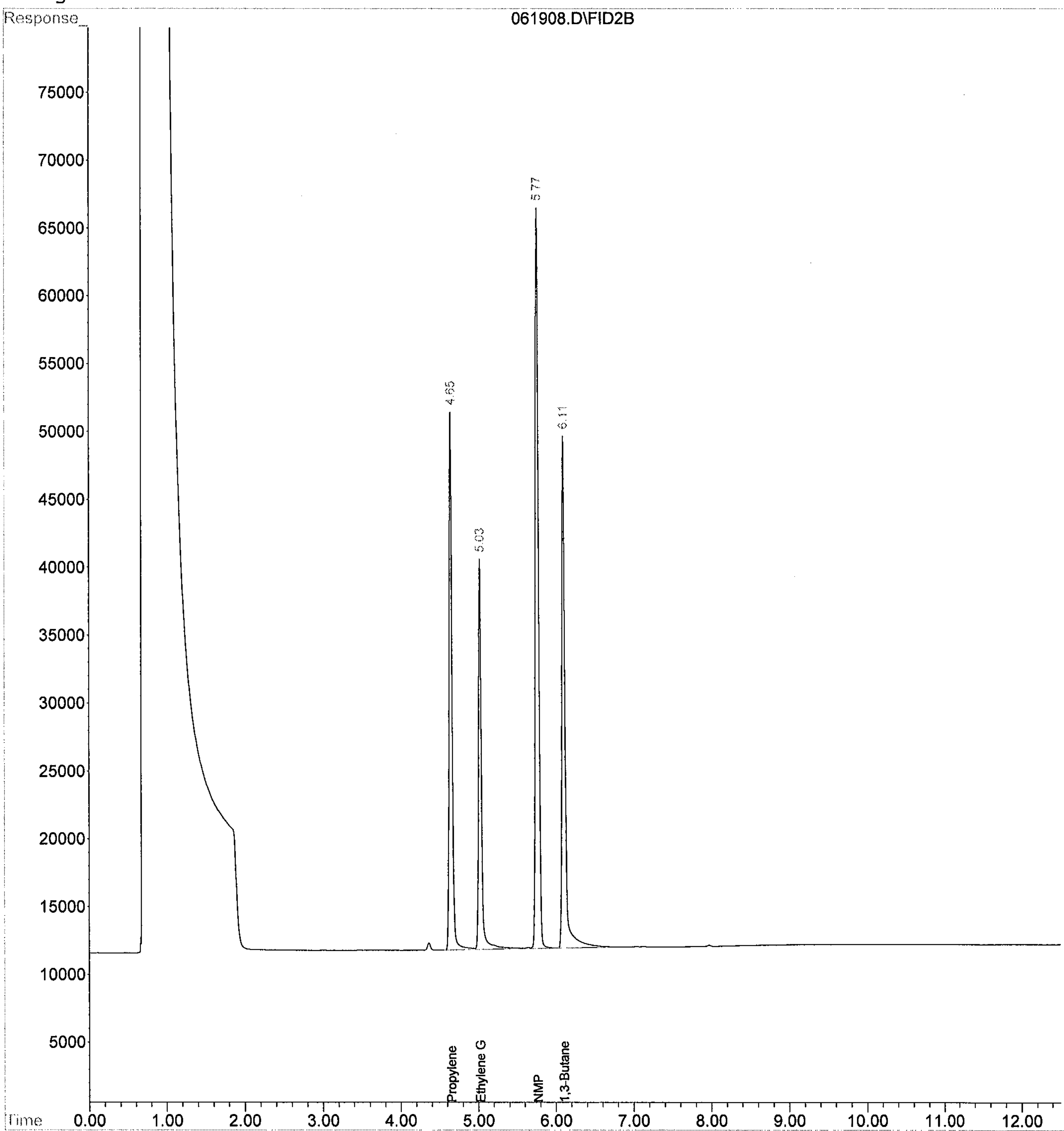
Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) s 1,3-Butanediol	6.11	1087873	86.676 ppm
Target Compounds			
1) t Propylene Glycol	4.65	1026168	80.791 ppm
2) t Ethylene Glycol	5.03	754090	80.395 ppm
3) t NMP	5.77	1534868	84.096 ppm

Quantitation Report

Data File : C:\HPCHEM\2\DATA\061918G\061908.D Vial: 7
Acq On : 19 Jun 2018 5:03 pm Operator: KM
Sample : 100 GLY 6/19/18 Inst : GC-2
Misc : BT=061918A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Jun 20 9:21 2018 Quant Results File: GL041818.RES

Quant Method : C:\HPCHEM\2\METHODS\GL041818.M (Chemstation Integrator)
Title :
Last Update : Tue Jun 19 15:55:50 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\090418G\090402.D Vial: 2
Acq On : 4 Sep 2018 3:08 pm Operator: KM
Sample : CCV50 9/4/18 Inst : GC-2
Misc : BT=090418A3 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	t	Propylene Glycol	50.000	47.379	5.2	102	-0.03
2	t	Ethylene Glycol	50.000	51.442	-2.9	111	-0.03
3	t	NMP	50.000	43.436	13.1	94	-0.03
4	s	1,3-Butanediol	50.000	43.220	13.6	86	-0.03

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090402.D Vial: 2
Acq On : 4 Sep 2018 3:08 pm Operator: KM
Sample : CCV50 9/4/18 Inst : GC-2
Misc : BT=090418A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Sep 4 15:24 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

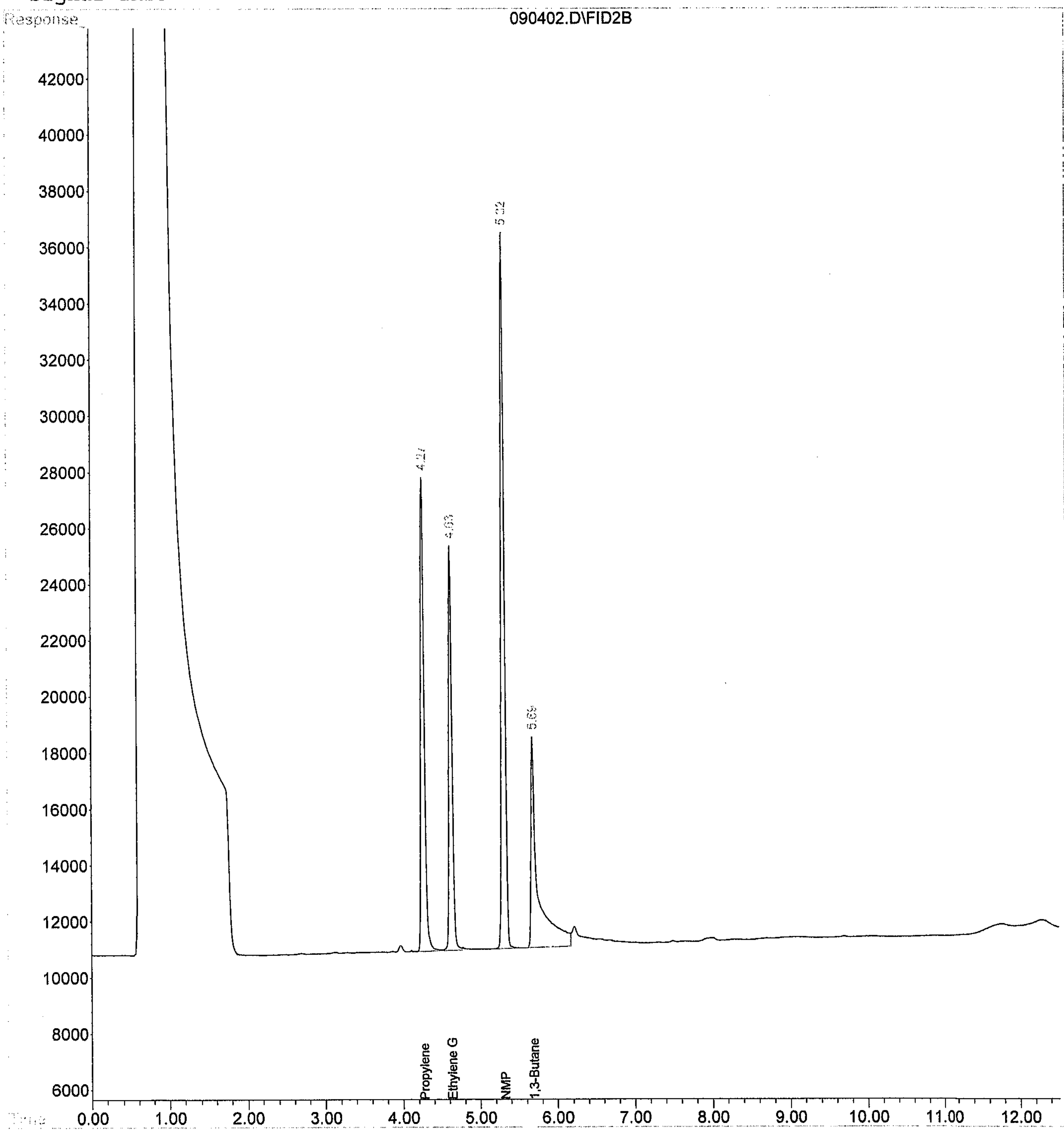
Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) s 1,3-Butanediol	5.69	464725	43.220 ppm
Target Compounds			
1) t Propylene Glycol	4.27	544061	47.379 ppm
2) t Ethylene Glycol	4.63	413885	51.442 ppm
3) t NMP	5.32	775135	43.436 ppm

Quantitation Report

Data File : C:\HPCHEM\2\DATA\090418G\090402.D   Vial: 2
Acq On : 4 Sep 2018 3:08 pm   Operator: KM
Sample : CCV50 9/4/18   Inst : GC-2
Misc : BT=090418A3   Multiplr: 1.00
IntFile : events.e
Quant Time: Sep 4 15:24 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



GC Organic Data
Raw QC Data

ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	MB 420-124372/2	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	MB 420-124372/2
Analysis Method:	8015D	Lab File ID:	090406.D
Sample wt/vol:		Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/04/2018 16:44
% Moisture:		Dilution Factor:	1
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	0.50	U	0.50	0.50

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090406.D Vial: 4
Acq On : 4 Sep 2018 4:44 pm Operator: KM
Sample : MB 9/4/18 Inst : GC-2
Misc : BT=090418A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Sep 5 9:15 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) s	1,3-Butanediol	5.69	525511	$\frac{48.873}{50}$	ppm	= 98%
	Target Compounds					
1) t	Propylene Glycol	0.00	0	N.D.	ppm	d
2) t	Ethylene Glycol	0.00	0	N.D.	ppm	d
3) t	NMP	0.00	0	N.D.	ppm	d

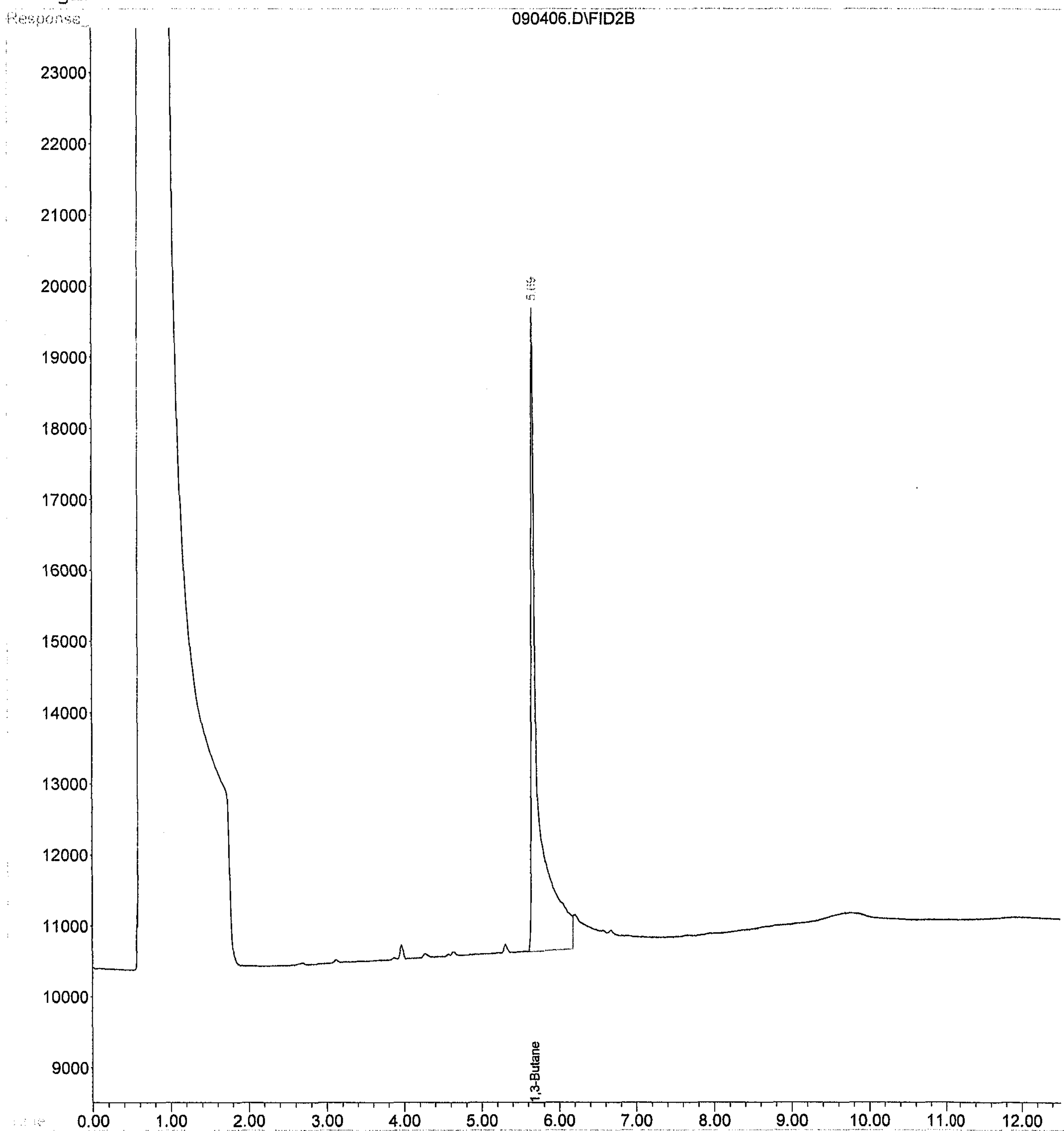
PB 9/11/18

Quantitation Report

Data File : C:\HPCHEM\2\DATA\090418G\090406.D Vial: 4
Acq On : 4 Sep 2018 4:44 pm Operator: KM
Sample : MB 9/4/18 Inst : GC-2
Misc : BT=090418A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Sep 5 9:15 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	LCS 420-124372/1	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	LCS 420-124372/1
Analysis Method:	8015D	Lab File ID:	090404.D
Sample wt/vol:		Date Received:	
Level: (low/med)	Low	Date Analyzed:	09/04/2018 15:40
% Moisture:		Dilution Factor:	1
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	22		0.50	0.50

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090404.D Vial: 3
Acq On : 4 Sep 2018 3:40 pm Operator: KM
Sample : LCS 9/4/18 Inst : GC-2
Misc : BT=090418A3 Multiplr: 1.00
IntFile : events.e
Quant Time: Sep 4 15:56 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

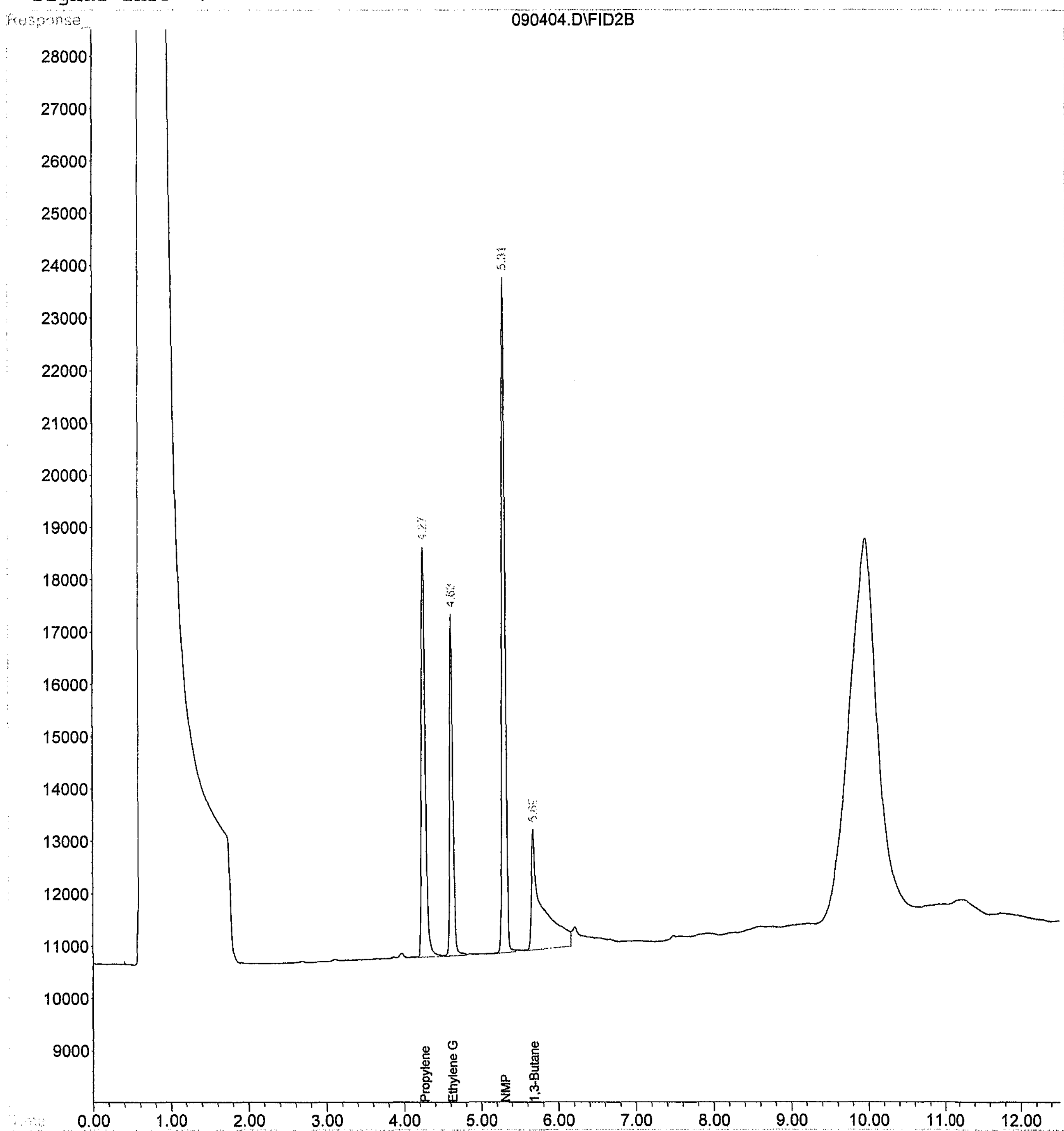
Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units		
	System Monitoring Compounds					
4) s	1,3-Butanediol	5.69	221527	20.602 ppm / 25	82%	9/4/18
	Target Compounds					
1) t	Propylene Glycol	4.27	269109	23.435 ppm		
2) t	Ethylene Glycol	4.63	192584	23.937 ppm		
3) t	NMP	5.31	398079	22.307 ppm		

Data File : C:\HPCHEM\2\DATA\090418G\090404.D   Vial: 3
Acq On : 4 Sep 2018 3:40 pm   Operator: KM
Sample : LCS 9/4/18   Inst : GC-2
Misc : BT=090418A3   Multiplr: 1.00
IntFile : events.e
Quant Time: Sep 4 15:56 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



ORGANIC ANALYSIS DATA SHEET
NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	DUP083018 MS	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4 MS
Analysis Method:	8015D	Lab File ID:	090411.D
Sample wt/vol:		Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/04/2018 18:03
% Moisture:		Dilution Factor:	2
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	31		1.0	1.0

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090411.D Vial: 9
Acq On : 4 Sep 2018 6:03 pm Operator: KM
Sample : 141881-E-4MS Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:25 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

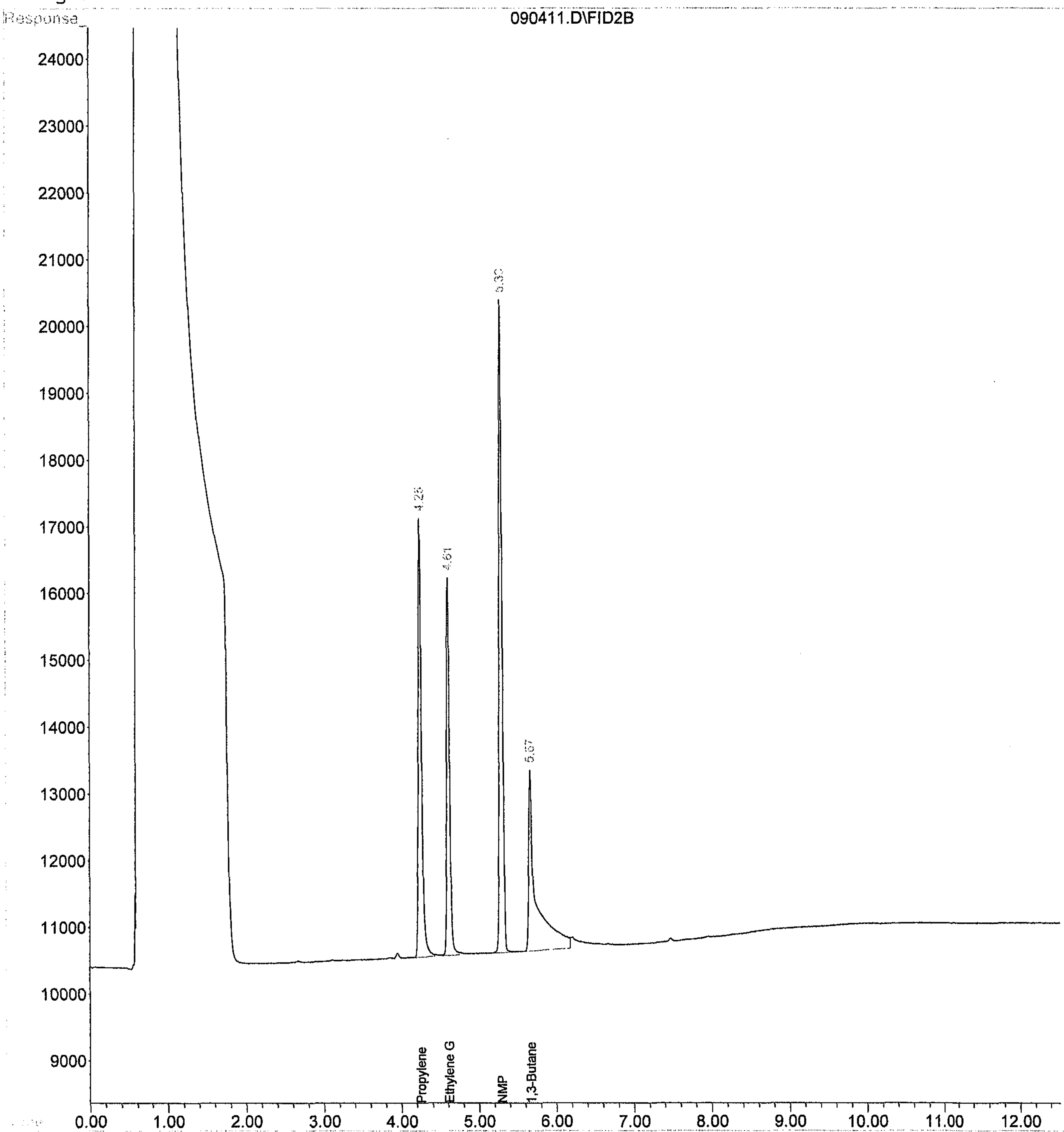
Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) s 1,3-Butanediol	5.67	183140	$\frac{34.064}{50}$ ppm = 68%
Target Compounds			
1) t Propylene Glycol	4.25	193375	33.679 ppm
2) t Ethylene Glycol	4.62	149013	37.042 ppm
3) t NMP	5.30	274670	30.783 ppm

KM 9/11/18

Data File : C:\HPCHEM\2\DATA\090418G\090411.D   Vial: 9
Acq On : 4 Sep 2018 6:03 pm   Operator: KM
Sample : 141881-E-4MS   Inst : GC-2
Misc : BT=090418A3   Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:25 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



1

ORGANIC ANALYSIS DATA SHEET

NONHALOGENATED ORGANICS USING GC/FID DIRECT INJECT

Client Sample ID:	DUP083018 MSD	Project:	D & B Engineers &
Lab Name:	EnviroTest Laboratories,	Job No.:	420-141881-1
SDG No.:	GLOBALFOUNDRIES B/312B Solvent Vault		
Matrix:	Water	Lab Sample ID:	420-141881-4 MSD
Analysis Method:	8015D	Lab File ID:	090413.D
Sample wt/vol:		Date Received:	08/30/2018 11:00
Level: (low/med)	Low	Date Analyzed:	09/04/2018 18:34
% Moisture:		Dilution Factor:	2
GC Column/ID:	Stabilwax 0.53 (mm)	Soil Aliquot:	
Soil Extract Vol.:		Units:	mg/L
Analy. Batch No.:	124372		

CAS No.	Compound Name	Result	Q	RL	RL
872-50-4	N-Methyl-2-pyrrolidone	41		1.0	1.0

FORM I 8015D

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090418G\090413.D Vial: 10
Acq On : 4 Sep 2018 6:34 pm Operator: KM
Sample : 141881-E-4MSD Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:25 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Initial Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
4) s	1,3-Butanediol	5.67	256461	$\frac{47.702}{50}$ ppm = 95%
	Target Compounds			
1) t	Propylene Glycol	4.25	257661	44.876 ppm
2) t	Ethylene Glycol	4.61	193531	48.108 ppm
3) t	NMP	5.30	361640	40.530 ppm

KM 9/11/18

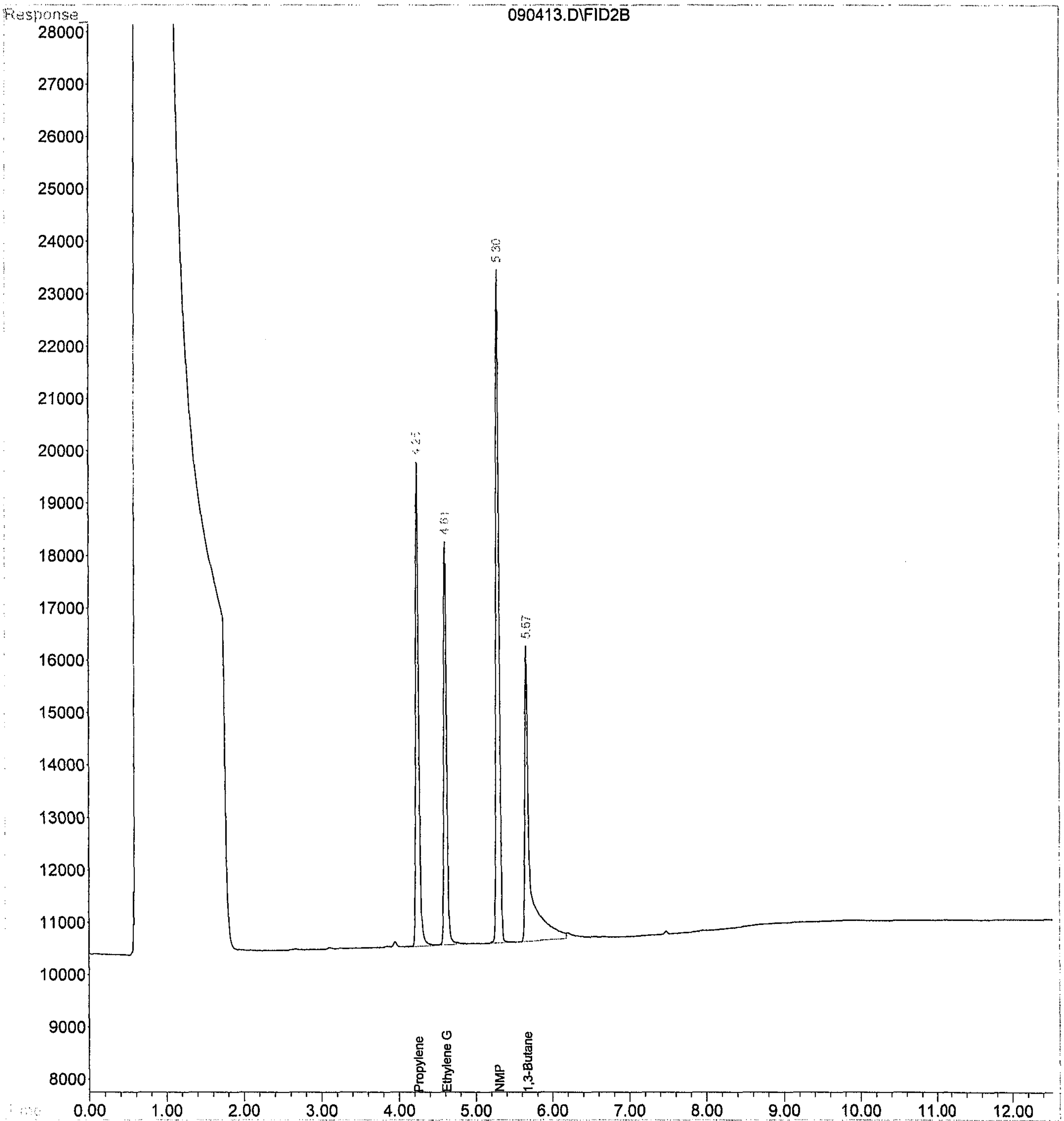
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\2\DATA\090418G\090413.D Vial: 10
Acq On : 4 Sep 2018 6:34 pm Operator: KM
Sample : 141881-E-4MSD Inst : GC-2
Misc : BT=090418A3 Multiplr: 2.00
IntFile : events.e
Quant Time: Sep 5 9:25 2018 Quant Results File: GL061918.RES

Quant Method : C:\HPCHEM\2\METHODS\GL061918.M (Chemstation Integrator)
Title :
Last Update : Mon Aug 13 16:11:01 2018
Response via : Multiple Level Calibration
DataAcq Meth : GLYCOL.M

Volume Inj. :
Signal Phase :
Signal Info :



Inorganic Data
Sample Data

Brian Werner
D & B Engineers and Architects, P.C.
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Client Sample ID: **B312BSV-RB-1**
Lab Sample ID: **420-141881-1**

Date Sampled: 08/30/2018 0930
Date Received: 08/30/2018 1100
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 10-210-00-1-A			Date Analyzed:		09/04/2018 1712	
Prep Method: Distill/Phenol			Date Prepared:		09/04/2018 1217	
Phenolics, Total Recoverable	0.010	U	mg/L	0.010	0.010	1.0

Brian Werner
D & B Engineers and Architects, P.C.
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Client Sample ID: **B312BSV-R1-1**
Lab Sample ID: **420-141881-2**

Date Sampled: 08/30/2018 0954
Date Received: 08/30/2018 1100
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 10-210-00-1-A			Date Analyzed:		09/04/2018 1730	
Prep Method: Distill/Phenol			Date Prepared:		09/04/2018 1217	
Phenolics, Total Recoverable	0.010	U	mg/L	0.010	0.010	1.0

Brian Werner
D & B Engineers and Architects, P.C.
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Client Sample ID: **B312BSV-R2-1**
Lab Sample ID: **420-141881-3**

Date Sampled: 08/30/2018 1020
Date Received: 08/30/2018 1100
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 10-210-00-1-A			Date Analyzed:	09/04/2018 1714		
Prep Method: Distill/Phenol			Date Prepared:	09/04/2018 1217		
Phenolics, Total Recoverable	0.010	U	mg/L	0.010	0.010	1.0

Brian Werner
D & B Engineers and Architects, P.C.
330 Crossways Park Drive
Woodbury, NY 11797

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Client Sample ID: **DUP083018**
Lab Sample ID: **420-141881-4**

Date Sampled: 08/30/2018 0000
Date Received: 08/30/2018 1100
Client Matrix: Water

Analyte	Result/Qualifier		Unit	RL	RL	Dilution
Method: 10-210-00-1-A			Date Analyzed:	09/04/2018 1714		
Prep Method: Distill/Phenol			Date Prepared:	09/04/2018 1217		
Phenolics, Total Recoverable	0.010	U	mg/L	0.010	0.010	1.0

Inorganic Data
QC Data

Quality Control Results

Client: D & B Engineers and Architects, P.C.

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Method Blank - Batch: 420-124339

Method: 10-210-00-1-A
Preparation: Distill/Phenol

Lab Sample ID:	MB 420-124339/27-B	Analysis Batch:	420-124360	Instrument ID:	Lachat Quikchem 8500 FIA
Client Matrix:	Water	Prep Batch:	420-124339	Lab File ID:	OM_9-4-2018_04-46-24PM.O
Dilution:	1.0	Units:	mg/L	Initial Weight/Volume:	mL
Date Analyzed:	09/04/2018 1709			Final Weight/Volume:	mL
Date Prepared:	09/04/2018 1217				

Analyte	Result	Qual	RL	RL
Phenolics, Total Recoverable	0.010	U	0.010	0.010

Lab Control Spike - Batch: 420-124339

Method: 10-210-00-1-A
Preparation: Distill/Phenol

Lab Sample ID:	LCS 420-124339/28-B	Analysis Batch:	420-124360	Instrument ID:	Lachat Quikchem 8500 FIA
Client Matrix:	Water	Prep Batch:	420-124339	Lab File ID:	OM_9-4-2018_04-46-24PM.O
Dilution:	1.0	Units:	mg/L	Initial Weight/Volume:	mL
Date Analyzed:	09/04/2018 1710			Final Weight/Volume:	mL
Date Prepared:	09/04/2018 1217				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Phenolics, Total Recoverable	0.0500	0.055	110	57 - 123	

Calculations are performed before rounding to avoid round-off errors in calculated results.

EnviroTest Laboratories, Inc.

Client: D & B Engineers and Architects, P.C.

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Matrix Spike - Batch: 420-124339

Method: 10-210-00-1-A
Preparation: Distill/Phenol

Lab Sample ID: 420-141881-1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/04/2018 1713
Date Prepared: 09/04/2018 1217

Analysis Batch: 420-124360
Prep Batch: 420-124339
Units: mg/L

Instrument ID: Lachat Quikchem 8500 FIA
Lab File ID: OM_9-4-2018_04-46-24PM.O
Initial Weight/Volume: mL
Final Weight/Volume: mL

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Phenolics, Total Recoverable	0.010	U	0.0300	0.034	114	55 - 136	

Matrix Spike - Batch: 420-124339

Method: 10-210-00-1-A
Preparation: Distill/Phenol

Lab Sample ID: 420-141688-D-1-C MS
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/04/2018 1723
Date Prepared: 09/04/2018 1217

Analysis Batch: 420-124360
Prep Batch: 420-124339
Units: mg/L

Instrument ID: Lachat Quikchem 8500 FIA
Lab File ID: OM_9-4-2018_04-46-24PM.O
Initial Weight/Volume: mL
Final Weight/Volume: mL

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Phenolics, Total Recoverable	0.010	U	0.0300	0.036	118	55 - 136	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: D & B Engineers and Architects, P.C.

Job Number: 420-141881-1
Sdg Number: GLOBALFOUNDRIES B/312B Solvent Vault

Duplicate - Batch: 420-124339

Method: 10-210-00-1-A
Preparation: Distill/Phenol

Lab Sample ID: 420-141688-D-1-B DU
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/04/2018 1700
Date Prepared: 09/04/2018 1217

Analysis Batch: 420-124360
Prep Batch: 420-124339
Units: mg/L

Instrument ID: Lachat Quikchem 8500 FIA
Lab File ID: OM_9-4-2018_04-46-24PM.O
Initial Weight/Volume: mL
Final Weight/Volume: mL

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Phenolics, Total Recoverable	0.010	U	0.0037	NC	15	U

Duplicate - Batch: 420-124339

Method: 10-210-00-1-A
Preparation: Distill/Phenol

Lab Sample ID: 420-141881-1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/04/2018 1712
Date Prepared: 09/04/2018 1217

Analysis Batch: 420-124360
Prep Batch: 420-124339
Units: mg/L

Instrument ID: Lachat Quikchem 8500 FIA
Lab File ID: OM_9-4-2018_04-46-24PM.O
Initial Weight/Volume: mL
Final Weight/Volume: mL

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Phenolics, Total Recoverable	0.010	U	-0.00072	NC	15	U

Calculations are performed before rounding to avoid round-off errors in calculated results.

Inorganic Data
Raw Data

Analyst: DM Prep Batch: 124339 Analytical Batch: 124360 Page: 1 Date : 9/4/2018

Original Run Filename: OM_9-4-2018_04-46-24PM.OMN created 9/4/2018 4:46:24 PM
Original Run Author's Signature: [newbwetchem2]
Current Run Filename: OM_9-4-2018_04-46-24PM.OMN last modified 9/4/2018 5:35:29 PM
Current Run Author's Signature: [newbwetchem2]
Description: Default New Run

Sample	Rep.	Cup No.	Channel 1 Phenolics-TR (mg/L)	
ICV	1	1	0.0484	97%
		Known Conc:	0.0350	
		Calibration:	Table/Fig. 1	
ICB/MB	1	2	-0.00345	
		Known Conc:	0.00	
LCS	1	3	-0.0138	air spike*
		Known Conc:	0.0350	
141452-1	1	4	0.00367	
141453-1	1	5	0.0115	
LCS	1	3	0.0581	116%
		Known Conc:	0.0350	
141461-2	1	6	-0.00264	air spike *
141475-1	1	7	0.108	air spike *
141477-1	1	8	0.0148	
141477-2	1	9	-6.08e-4	*
141507-1	1	10	0.00474	
141546-2	1	11	-0.00112	*
141688-1	1	12	-0.00247	*
rinse	1	13	-0.00295	
rinse	1	13	-0.00847	
CCV	1	14	0.0594	
CCB	1	15	-0.00567	
CCV	1	14	0.0476	95%
		Known Conc:	0.0500	
CCB	1	15	-1.57e-4	
		Known Conc:	100	
141688-1 du	1	16	0.00365	0% RPD
141688-1 ms	1	17	0.00164	*
141688-2	1	18	0.00444	*
141688-3	1	19	0.00635	
141688-4	1	20	0.0150	*
141690-1	1	21	0.0184	*
141787-1	1	22	0.00309	
141803-2	1	23	-6.08e-4	*
141803-4	1	24	0.00325	
141841-4	1	25	0.00121	
RINSE	1	26	-0.00926	
RINSE	1	26	-0.00832	
ccv	1	27	0.0538	108%
		Known Conc:	0.0500	
ccb	1	28	-0.00230	
		Known Conc:	100	
ICB/MB	1	29	-6.48e-4	
		Known Conc:	0.00	
LCS	1	30	0.0552	110%
		Known Conc:	0.0350	
141880-1	1	31	0.0307	
141881-1	1	32	0.00413	
141881-1 du	1	33	-7.17e-4	0% RPD
141881-1 ms	1	34	0.0342	114%
141881-2	1	35	-0.0117	*
141881-3	1	36	0.00273	
141881-4	1	37	0.00443	
141888-2	1	38	0.163	out of curve, analyzed at x5 dilution
141988-2	1	39	0.00365	
141989-2	1	40	0.00948	*
RINSE	1	41	-0.0103	
RINSE	1	41	-0.00671	
ccv	1	42	0.0471	94%

* air spike

APPROVED

9Km

Analyst: DM Prep Batch: 124332 Analytical Batch: 124360 Page: 2 Date : 9/4/2018

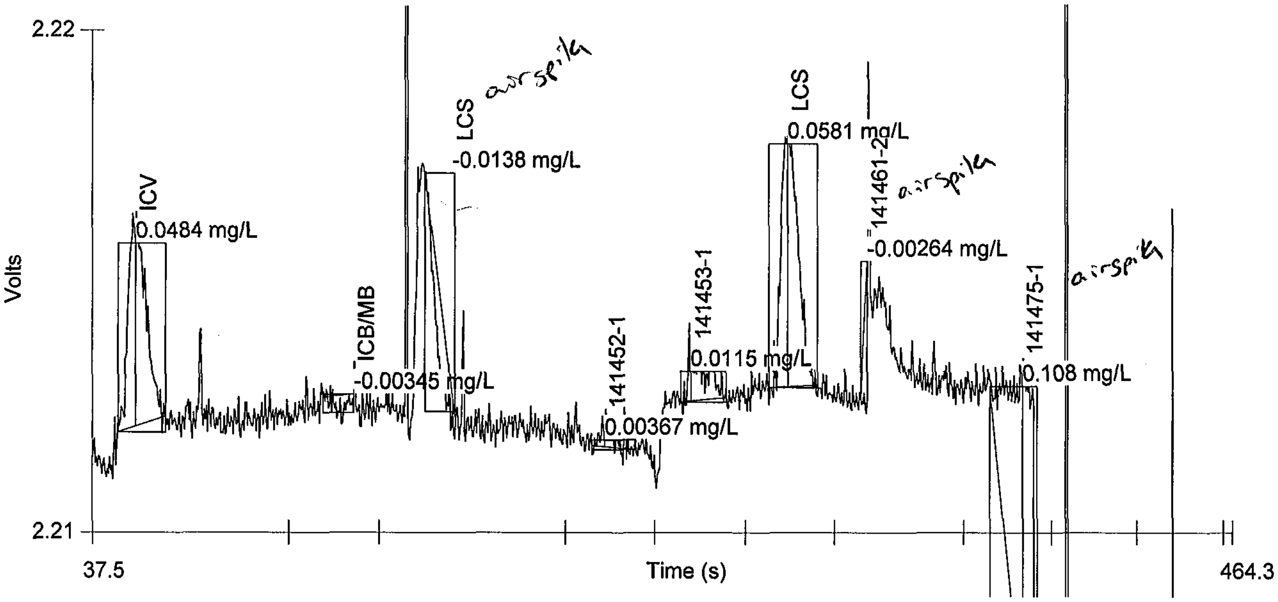
ccb	1	43	-6.08e-4	
141461-2	1	6	0.0141	
141475-1	1	7	0.00270	
141477-2	1	9	0.00504	
141546-2	1	11	0.00362	
141688-1	1	12	0.00492	
141688-1 ms	1	17	0.0355	118%
141688-4	1	20	0.00442	
141690-1	1	21	0.00527	
141803-2	1	23	0.0209	
141881-2	1	35	-0.313	
RINSE	1	41	-0.00836	
RINSE	1	41	-0.00780	
ccv	1	42	0.0470	94%
	Known Conc:		0.0500	
ccb	1	43	-0.00157	
	Known Conc:		100	
141888-2 x5	1	38	-6.08e-4	air spike
141989-2	1	40	0.0114	
141881-2	1	35	0.00896	
141888-2 x5	1	38	0.0640	1.0mL → 5mL
RINSE	1	41	-0.0290	
RINSE	1	41	-0.00775	
ccv	1	42	0.0464	93%
	Known Conc:		0.0500	
ccb	1	43	7.63e-4	
	Known Conc:		100	

Analyte Properties Table for OM_9-4-2018_04-46-24PM.OMN

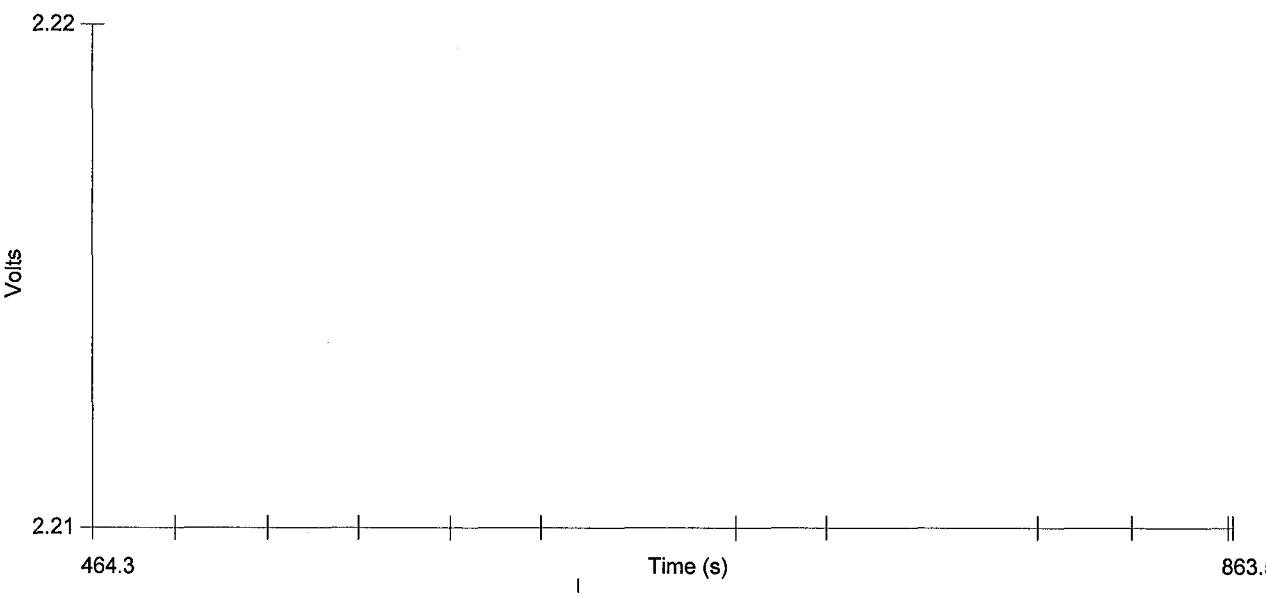
Property	Channel 1
	Phenolics-TR
Concentration Units	mg/L
Callibration Fit Type	First Order
Clear Calibration	True
Force Through Zero	False
Calibration Weighting	None
Auto Dilution Trigger	False
% of High Standard	110
Quik Chem Method	10-210-00-1-B
Chemistry	Direct/Bipolar
Calibration by Height	False
Inject to Peak Start	11
Peak Base Width	19

Analyst: DM Prep Batch: 124339 Analytical Batch: 124360 Page: 3 Date : 9/4/2018

Channel 1: Set 1 of 8

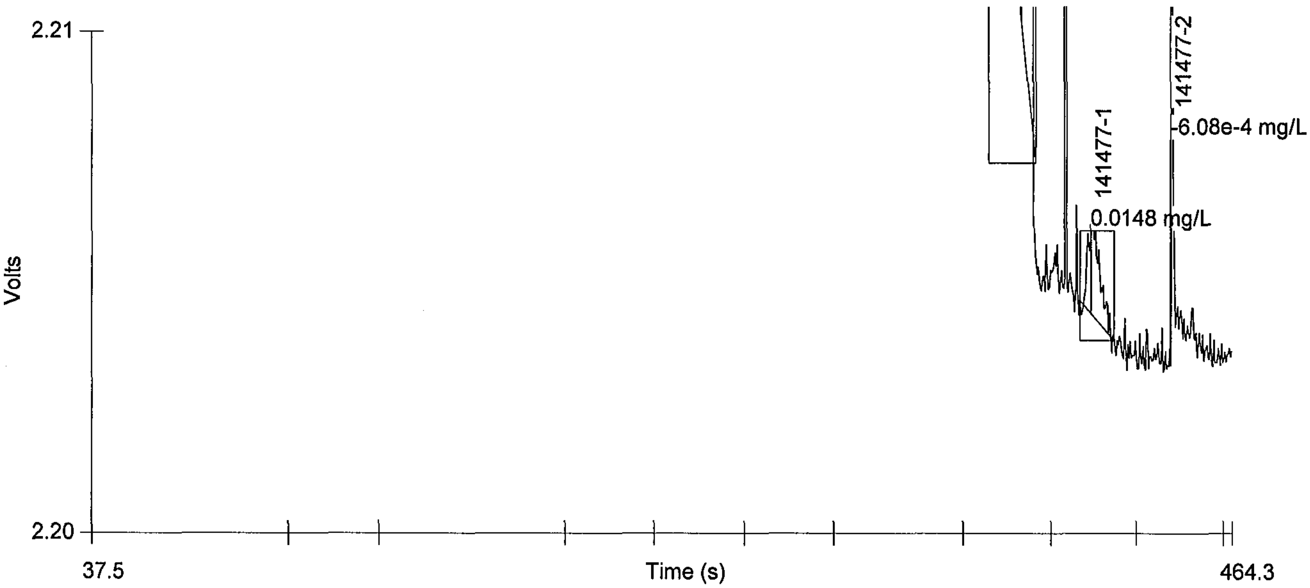


Channel 1: Set 2 of 8

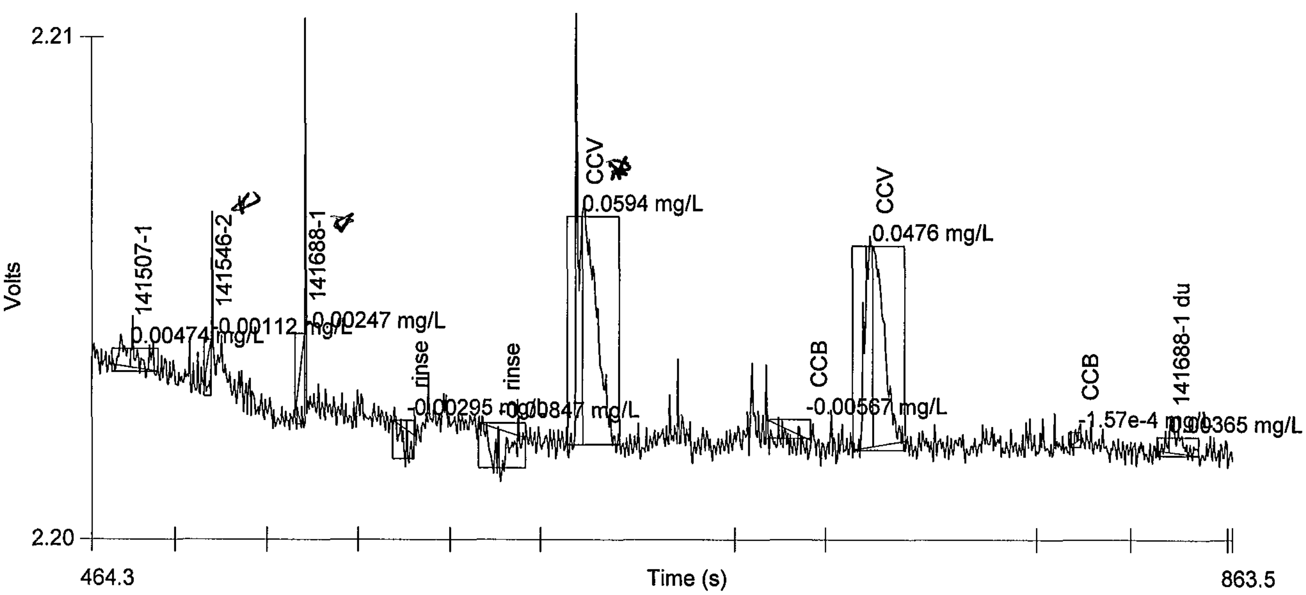


Analyst: DM Prep Batch: ~~124360~~ 124360 DM TE 9/4/18 Analytical Batch: 124339 Page: 3 Date : 9/4/2018

Channel 1: Set 1 of 8



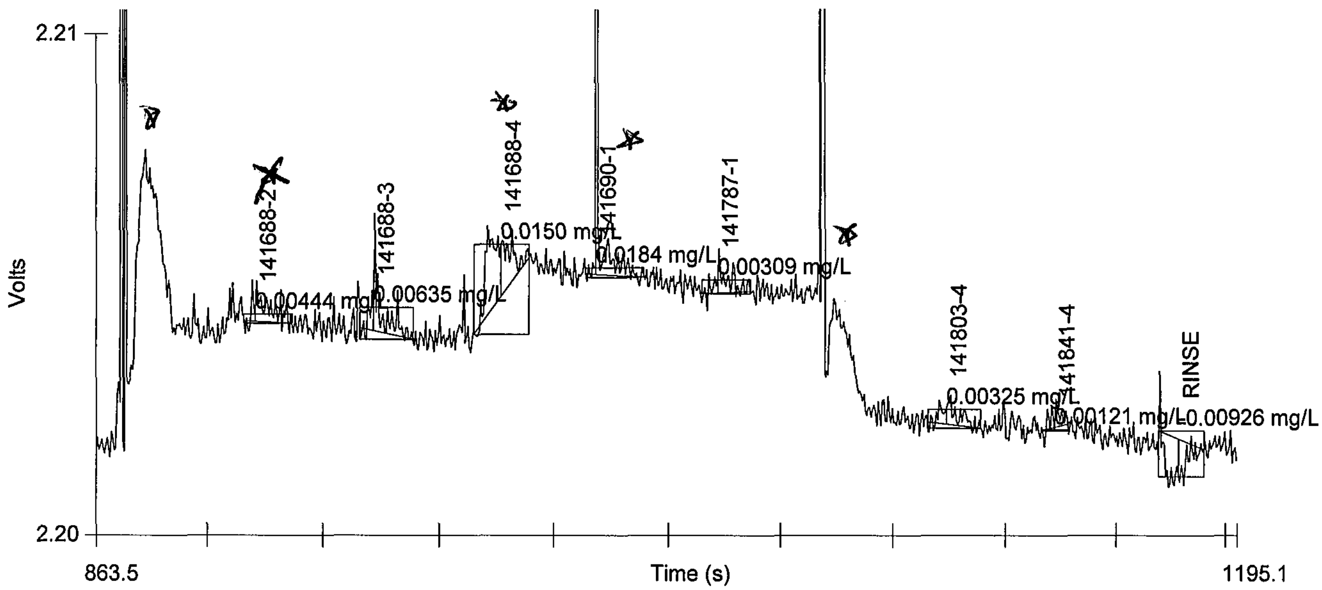
Channel 1: Set 2 of 8



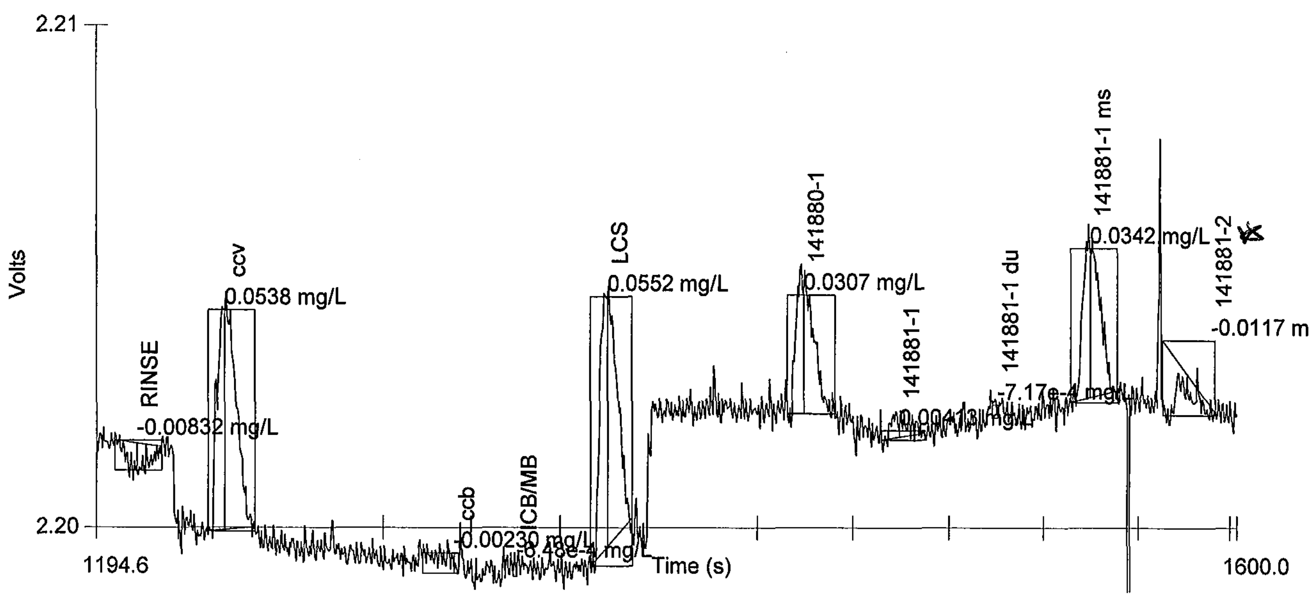
Ⓐ a::r spike

Analyst: Dh Prep Batch: 124339 Analytical Batch: 124360 Page: 4 Date : 9/4/2018

Channel 1: Set 3 of 8



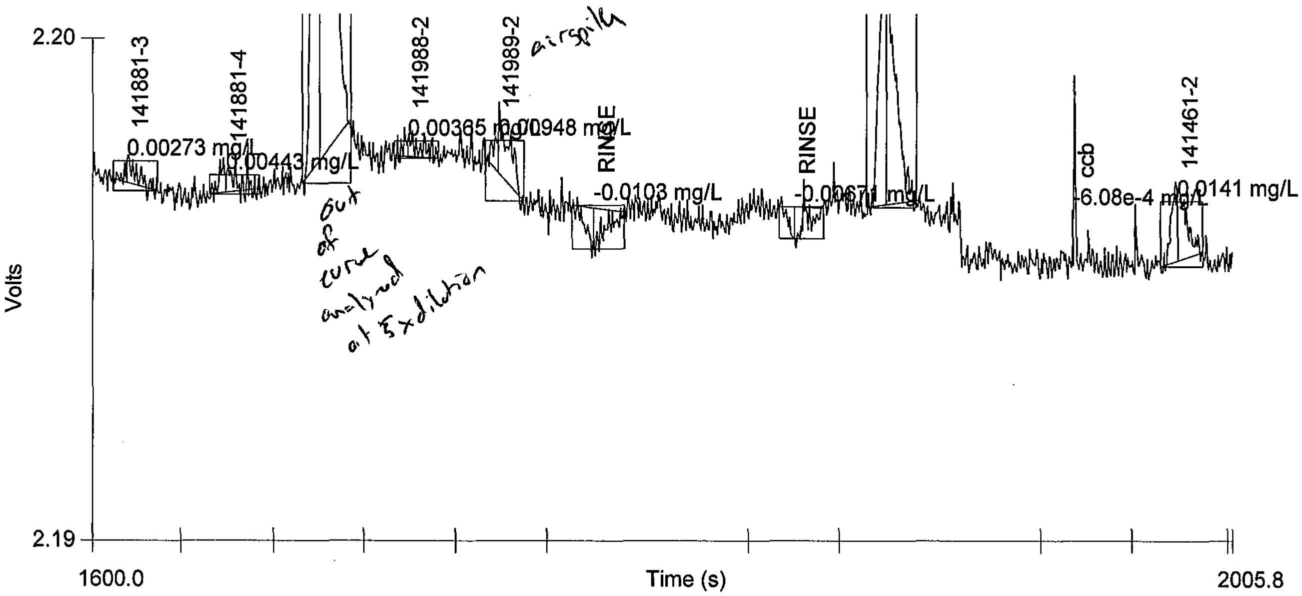
Channel 1: Set 4 of 8



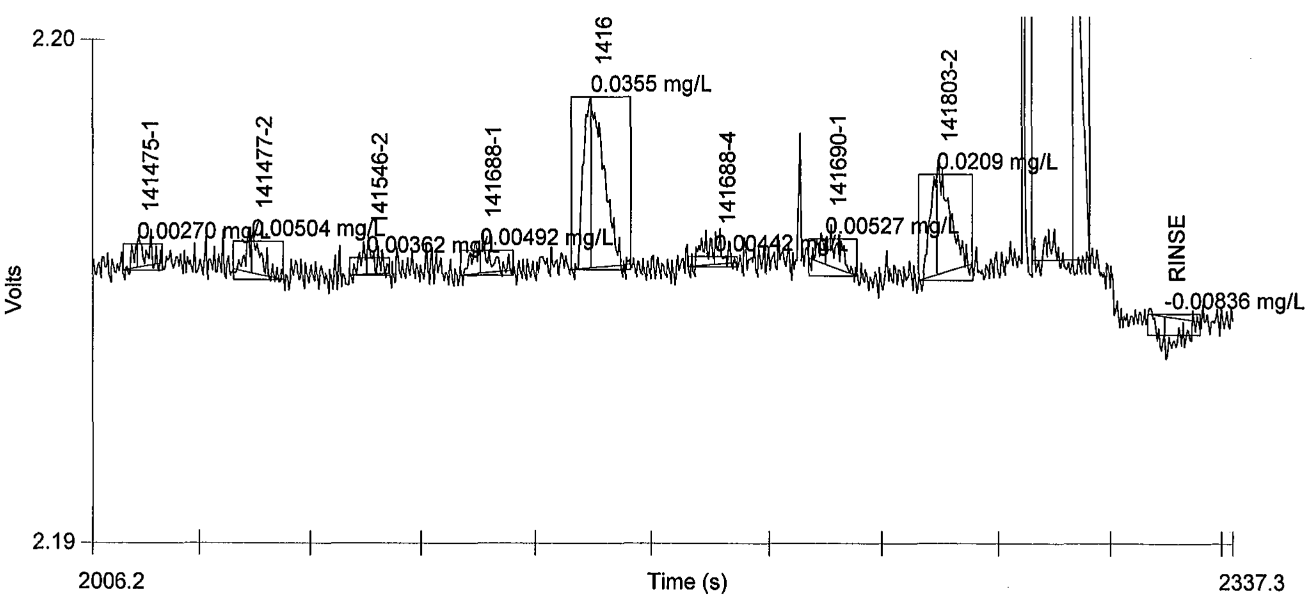
* air spike

Analyst: DM Prep Batch: 124339 Analytical Batch: 124360 Page: 5 Date : 9/4/2018

Channel 1: Set 5 of 8

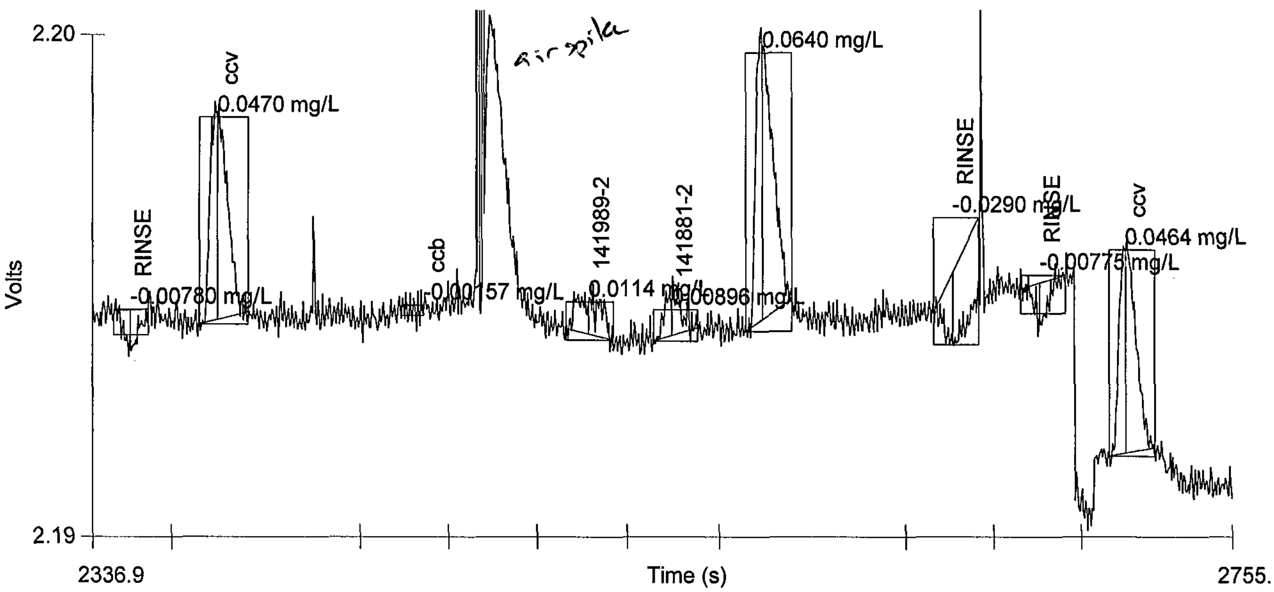


Channel 1: Set 6 of 8



Analyst: DM Prep Batch: 124339 Analytical Batch: 124360 Page: 6 Date : 9/4/2018

Channel 1: Set 7 of 8



Channel 1: Set 8 of 8

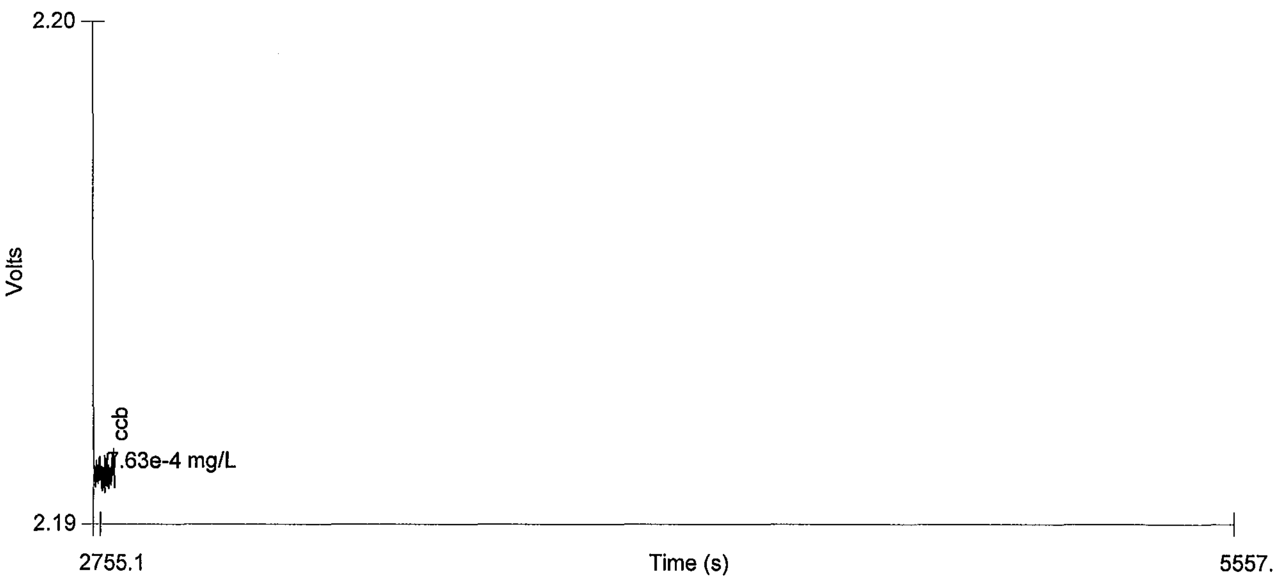
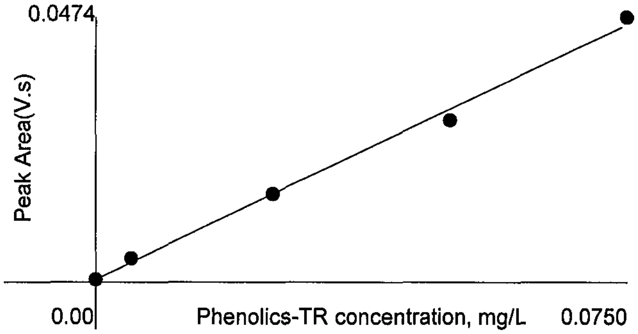


Table 1: Phenolics-TR

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	0.0750	1	0.0474	0.00640	-2.8	9/4/2018	4:30:33 PM
2	0.0500	1	0.0289	0.00402	6.5	9/4/2018	4:31:08 PM
3	0.0250	1	0.0157	0.00203	0.1	9/4/2018	4:31:44 PM
4	0.0100	1	0.00970	0.00109		9/4/2018	4:34:06 PM
5	0.00500	1	0.00424	4.48e-4	-21.3	9/4/2018	4:32:55 PM
6	0.00	1	4.40e-4	1.08e-4		9/4/2018	4:33:31 PM

Figure 1: Phenolics-TR



Area = 0.609 * Conc + 4.52e-4
Conc = 1.64 * Area - 6.08e-4
Correlation Coefficient (r) = 0.99788

No Weighting

Inorganic Data
Digestion Distillation Log

Metals/Inorganics Prep Worksheet

(Used for Collecting Prep Info)

Batch Number: 420-124339 Analyst: Mastrobuono, Danielle Batch Open: 9/4/2018 12:17:50PM

Method Code: 420-Distill_Phenol-420 Batch End:

Distillation/Phenolics

	Input Sample Lab ID	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments
1	420-1241066	ICV~420-124339/1 N/A	N/A				N/A	N/A	N/A	
2	420-1241067	MB~420-124339/2 N/A	N/A				N/A	N/A	N/A	
3	420-1241068	LCS~420-124339/3 N/A	N/A				N/A	N/A	N/A	
4	420-1241069	420-141452-G-1 (10210001A)	Semi-Annual	Water			8/31/18	8_Days - R	1	
5	420-1241070	420-141453-B-1 (10210001A)	Monthly	Water			8/31/18	8_Days - R	1	
6	420-1241071	420-141461-E-2 (10210001A)	COK Quarterly	Water			8/31/18	8_Days - R	2	airspike
7	420-1241072	420-141475-D-1 (10210001A)	Week 4	Water			9/4/18	8_Days - R	1	airspike
8	420-1241073	420-141477-G-1 (10210001A)	N/A	Water			8/29/18	5_Days - R	1	
9	420-1241074	420-141477-F-2 (10210001A)	N/A	Water			8/29/18	5_Days - R	1	airspike
10	420-1241075	420-141507-B-1 N/A	N/A				N/A	N/A	N/A	
11	420-1241076	420-141546-E-2 (10210001A)	COK Quarterly	Water			9/4/18	8_Days - R	2	airspike
12	420-1241077	420-141688-D-1 (10210001A)	Quarterly	Water			9/13/18	12_Days - R	4	airspike
13	420-1241078	CCV~420-124339/13 N/A	N/A				N/A	N/A	N/A	
14	420-1241079	CCB~420-124339/14 N/A	N/A				N/A	N/A	N/A	
15	420-1241080	420-141688-D-1~DU (10210001A)	Quarterly	Water			9/13/18	12_Days - R	4	

Metals/Inorganics Prep Worksheet

(Used for Collecting Prep Info)

Batch Number: 420-124339 Analyst: Mastrobuono, Danielle Batch Open: 9/4/2018 12:17:50PM

Method Code: 420-Distill_Phenol-420 Batch End:

16	420-1241081	420-141688-D-1~MS (10210001A)	Quarterly	Water			9/13/18	12_Days - R	4	air spike
17	420-1241082	420-141688-F-2 (10210001A)	Quarterly	Water			9/13/18	12_Days - R	4	~~air spike~~ DATE 9/4/18
18	420-1241083	420-141688-E-3 (10210001A)	Quarterly	Water			9/13/18	12_Days - R	4	
19	420-1241084	420-141688-G-4 (10210001A)	Quarterly	Water			9/13/18	12_Days - R	4	air spike
20	420-1241085	420-141690-D-1 (10210001A)	Quarterly	Water			9/7/18	8_Days - R	1	air spike
21	420-1241086	420-141787-E-1 (10210001A)	Week 5	Water			9/4/18	3_Days - R	1	
22	420-1241087	420-141803-B-2 (10210001A)	N/A	Water			9/6/18	5_Days - R	1	air spike
23	420-1241088	420-141803-B-4 (10210001A)	N/A	Water			9/6/18	5_Days - R	1	
24	420-1241089	420-141841-A-4 (10210001A)	N/A	Water			9/4/18	3_Days - R	1	
25	420-1241090	CCV~420-124339/25 N/A	N/A				N/A	N/A	N/A	
26	420-1241091	CCB~420-124339/26 N/A	N/A				N/A	N/A	N/A	
27	420-1241092	MB~420-124339/27 N/A	N/A				N/A	N/A	N/A	
28	420-1241093	LCS~420-124339/28 N/A	N/A				N/A	N/A	N/A	
29	420-1241094	420-141880-E-1 (10210001A)		Water			9/12/18	8_Days - R	1	
30	420-1241095	420-141881-B-1 (10210001A)	GLOBALFOUNDRIES B/312B Solvent Vault	Water			9/7/18	5_Days - R	2	
31	420-1241096	420-141881-B-1~DU (10210001A)	GLOBALFOUNDRIES B/312B Solvent Vault	Water			9/7/18	5_Days - R	2	
32	420-1241097	420-141881-B-1~MS (10210001A)	GLOBALFOUNDRIES B/312B Solvent Vault	Water			9/7/18	5_Days - R	2	

Metals/Inorganics Prep Worksheet

(Used for Collecting Prep Info)

Batch Number: 420-124339 Analyst: Mastrobuono, Danielle Batch Open: 9/4/2018 12:17:50PM

Method Code: 420-Distill_Phenol-420 Batch End:

33	420-1241098	420-141881-E-2 (10210001A)	GLOBALFOUNDRIES B/312B Solvent Vault	Water			9/7/18	5_Days - R	2	airspike, airspike
34	420-1241099	420-141881-A-3 (10210001A)	GLOBALFOUNDRIES B/312B Solvent Vault	Water			9/7/18	5_Days - R	2	
35	420-1241100	420-141881-A-4 (10210001A)	GLOBALFOUNDRIES B/312B Solvent Vault	Water			9/7/18	5_Days - R	2	
36	420-1241101	420-141888-B-2 (10210001A)	Pre-Treated Mini Schedule	Water			9/12/18	8_Days - R	1	x5 1.0mL → 5mL, airspike
37	420-1241102	420-141988-A-2 (10210001A)	N/A	Water			9/10/18	5_Days - R	1	
38	420-1241103	420-141989-A-2 (10210001A)	N/A	Water			9/10/18	5_Days - R	1	airspike
39	420-1241104	CCV~420-124339/39 N/A	N/A				N/A	N/A	N/A	
40	420-1241105	CCB~420-124339/40 N/A	N/A				N/A	N/A	N/A	

Batch Notes

Batch Comment ______________________________

APPENDIX G

DATA VALIDATION

D&B ENGINEERS AND ARCHITECTS, P.C.

DATA VALIDATION CHECKLIST

Project Name:	GLOBALFOUNDRIES B/312B Solvent Vault
Project Number:	3932-07
Sample Date(s):	August 30, 2018
Sample Team:	Brian Werner
Matrix/Number of Samples:	Rinse Water/ 2 Field Duplicate/ 1 Trip Blank / 1 Rinsate Blank/1
Analyzing Laboratory:	EnviroTest Laboratories, Inc., Newburgh, NY
Analyses:	Volatile Organic Compounds (VOCs): by SW846 8260C N-methyl-2-pyrrolidone by SW846 8015D Phenols: by QuickChem 10-210-00-1-A
Laboratory Report No:	420-141881 Date: 9/17/18

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample analysis date		X		X	
7. Copy of chain-of-custody form signed by Lab sample custodian		X		X	
8. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:
A validation was conducted on the data package and any applicable qualification of the data was determined using the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017, method performance criteria, and D&B Engineers and Architects, P.C. professional judgment. The qualification of data discussed within this data validation checklist did not impact the usability of the sample results.

D&B ENGINEERS AND ARCHITECTS, P.C.

Custody Numbers:420-141881
SAMPLE AND ANALYSIS LIST

Sample ID	Lab ID	Sample Collection Date	Parent Sample	Analysis		
				VOC	N-methyl-2-pyrrolidone	Phenols
B312BSV-RB-1	420-141881-01	8/30/2018		X	X	X
B312BSV-R1-1	420-141881-02	8/30/2018		X	X	X
B312BSV-R2-1	420-141881-03	8/30/2018		X	X	X
DUP083018	420-141881-04	8/30/2018	B312BSV-R2-1	X	X	X
Trip Blank	420-141881-05	8/30/2018		X	X	X

ALL ANALYSES

	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Holding times		X		X	
2. Blanks					
A. Method blanks		X		X	
B. Trip blanks		X		X	
C. Rinsate blanks		X	X		
3. Matrix spike (MS) %R		X	X		
4. Matrix spike duplicate (MSD) %R		X		X	
5. MS/MSD precision (RPD)		X	X		
6. Laboratory control sample (LCS) %R		X	X		
7. Surrogate spike recoveries		X		X	
8. Instrument performance check		X		X	
9. Internal standard retention times and areas		X		X	
10. Initial calibration RRF's and %RSD's		X		X	
11. Continuing calibration RRF's and %D's		X		X	
12. Transcriptions – quant report vs. Form I		X		X	

VOCs - volatile organic compounds   %D - percent difference   RRF - relative response factor
%R - percent recovery   %RSD - percent relative standard deviation   RPD - relative percent difference

Comments:
Performance was acceptable, except the following:

2C. The water source utilized (B312BSV-RB-1) had chloroform, dibromochloromethane and dichlorobromomethane detected in it. Chloroform, dibromochloromethane and dichlorobromomethane were qualified as non-detected (UB) in samples B312BSV-R1-1, B312BSV-R1-1 and DUP083018 based on blank result.

3&5. The %R was below the QC limit for n-methyl-2-pyrrolidone in the MS and the RPD was above the QC limit in the MS/MSD. N-methyl-2-pyrrolidone was qualified as an estimated detection limit (UJ) in all samples.

6. The %R was above the QC limit for 1,2,4-trichlorobenzene in LSC. It was not detected in the samples therefore qualification of the data was not necessary.

D&B ENGINEERS AND ARCHITECTS, P.C.

DATA VALIDATION AND QUALIFICATION SUMMARY **Laboratory Numbers: 420-141881**

Sample ID	Analyte(s)	Qualifier	Reason(s)
All Analyses			
B312BSV-R1-1, B312BSV-R1-1 and DUP083018	Chloroform, dibromochloromethane and dichlorobromomethane	UB	Detected in the water source utilized
All samples	N-methyl-2-pyrrolidone	UJ	The %R was below the QC limit in the MS

VALIDATION PERFORMED BY & DATE:	Donna M. Brown 9/20/2018
VALIDATION PERFORMED BY SIGNATURE:	Donna M Brown