MID064 197742

QUALITY ASSURANCE PROJECT PLAN
ADDENDUM NO. 1

Prepared for the

CORRECTIVE MEASURES STUDY FIELD PROGRAM

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN
USEPA ID NUMBER MID 064197742

Prepared for:

BASF CORPORATION
1609 BIDDLE AVENUE
WYANDOTTE, MICHIGAN

FEBRUARY 1999

Prepared by:

PARSONS ENGINEERING SCIENCE, INC.
1000 JORIE BOULEVARD, SUITE 250
OAK BROOK, ILLINOIS 60523

Parsons ES Project No. 733893

US EPA RECORDS CENTER REGION 5
1004376

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per Brian Freeman ORAP Mgr. Region 5

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SECTION 1.0
PROJECT DESCRIPTION

1.1 INTRODUCTION

This quality assurance project plan (QAPP) addendum updates the existing project QAPP developed for the RCRA Facility Investigation (RFI) of the BASF North Works Facility (March 14, 1996). The existing QAPP was conditionally approved by the United States Environmental Protection Agency (USEPA) Region V on March 11, 1996. Final approval of the QAPP was provided by USEPA Region V on October 21, 1996.

This QAPP addendum is necessary to facilitate the execution of the Corrective Measures Study (CMS) field program. Wherever new or replacement information has been deemed necessary or appropriate to this addendum, this has been stated and the new information has been provided. The analytical methodologies in the existing QAPP have not been changed. However, only some of the analyses performed during the RFI will be performed during the CMS field program. Several analytical parameters have been added.

1.1.1 Overall Project Objectives

Replace Section 1.1.1 with the following:

On February 24, 1994, BASF Corporation (BASF) entered into an Administrative Order on Consent (Consent Order) with the USEPA Region V for the BASF North Works Facility located at 1609 Biddle Avenue in Wyandotte, Michigan. The mutual objectives agreed to by BASF and USEPA as part of the Consent Order, included the following:

- Continue to take measures to prevent the flow of contaminated groundwater from the Facility to the Detroit River.

- Perform a RCRA Facility Investigation (RFI) to assess the nature and extent of releases of hazardous wastes and hazardous constituents at or from the Facility.
- Perform a Corrective Measures Study (CMS) to identify and evaluate alternatives for potential corrective actions.

QST Environmental performed the RFI, and the Draft RFI report was submitted to the USEPA Region V in December 1997. In June 1998, BASF contracted Parsons Engineering Science, Inc. (Parsons ES) to perform the CMS. The CMS tasks include the preparation of a CMS work plan, identification of alternatives, and evaluation of feasible corrective measures.

The findings from the RFI suggest that the main pathway by which chemical constituents could be leaving the Facility is via groundwater. As stated in the Draft RFI report, the geologic and hydrogeologic conditions at the Facility are complex due, in part, to natural and man-made events. Although the CMS will assess a variety of remedial and management alternatives to address the intent of the Consent Order, it is anticipated that to address groundwater migration issues, groundwater containment will probably be a major component of any corrective action strategy developed for the Facility.

Following Parsons ES's review of the RFI findings and conclusions, it was concluded by both Parsons ES and BASF that there are existing data gaps that need to be filled before Parsons ES can perform the CMS as stipulated in the Consent Order, and assess groundwater containment strategies for the Facility, especially relative to the Detroit River. Parsons ES prepared a work plan for the CMS field program dated October 27, 1998, and submitted it to the USEPA Region V for review. The work plan was approved by the USEPA Region V on November 20, 1998.

The CMS field program was designed to fill the data gaps identified following the RFI. Specifically, the intent of the CMS field program is to evaluate the following key issues:

1. The physical and hydrogeologic characteristics of the fill along the northern, southern, and eastern property boundaries.
2. The hydraulic connection between the fill and native sand units along the northern and southern property boundaries.
3. The hydrogeologic impact of the clay ridge that runs parallel to the Detroit River shoreline along the eastern Facility boundary, relative to the easterly flow of groundwater in the native sand unit.
4. The chemical/physical characteristics of the groundwater in the fill and native sand units along the northern and southern property boundaries, as it relates to preventing chemical constituent transport onto and/or off the site relative to adjacent properties.

1.4.1 Specific Objectives and Associated Tasks

Replace Section 1.4.1 (Pages 16 through 23) with the following:

Objectives

The overall objective of the CMS field program is to gather additional data, primarily hydrogeological information useful in the evaluation of pump-and-treat technologies and/or containment strategies related to preventing the off-site migration of Facility groundwater into the Detroit River or to adjacent properties. As such, the CMS field investigation will focus on boundary areas most likely to be associated with Facility groundwater off-site migration, namely along the northern, eastern, and southern Facility boundaries. The Parsons ES CMS field investigation will focus on (1) assessing the physical and hydrogeologic characteristics of the shallow fill units, (2) understanding the role that the clay ridge performs relative to the containment of Facility groundwater flowing to the east through the native sand unit, and (3) evaluating whether there is a hydraulic connection between the shallow fill unit and the native sand unit in boundary areas where the native sand is present over the Lacustrine Clay.

Tasks

The CMS field investigation will involve performing a geophysical survey, drilling soil borings, installing monitoring wells, collecting soil samples for geologic and lithologic

purposes, collecting groundwater samples for analytical purposes, and executing field hydrogeologic tests. Specific methodologies are consolidated as Standard Operating Procedures (SOPs). The SOPs for field tasks are compiled in Appendix B.

1. Evaluation of the Location of the Lacustrine Clay Ridge:
   - Conduct seismic refraction/reflection geophysical surveys (SOP-13) to detect and identify the clay ridge believed to lie approximately parallel to the trend of the Detroit River.
2. Eastern Shoreline Investigation:
   - Once the clay ridge location has been mapped using geophysical techniques, seven borings (for wells CMSMW-5 through -11) will be advanced approximately 400 feet apart along the crest of the clay ridge. New wells will be screened in the fill material.
   - To fulfill the objective of understanding the physical characteristics of the subsurface materials, all newly advanced borings will be continuously split-spoon sampled, and the sample cores will be visually logged by a Parsons ES field geologist. Subsurface material descriptions will be based on the Unified Soil Classification System (USCS). In addition, on a boring-by-boring basis, one sample from each discrete type of subsurface material identified during USCS logging will be submitted to a geotechnical laboratory for grain-size distribution analysis.
   - To evaluate the chemical constituents present in the groundwater which could adversely impact the effectiveness of a groundwater extraction system, both the newly installed and existing monitoring wells along the eastern shoreline will have samples collected and analyzed for: geochemical constituents (dissolved oxygen, specific conductance, temperature, pH, redox potential, and iron calcium, hardness, alkalinity, total dissolved solids [TDS], total solids [TS], total organic carbon [TOC], and chemical oxygen demand [COD]).
   - To evaluate the hydrogeologic properties of the subsurface units, Parsons ES proposes to perform slug tests on 15 wells (six existing and nine newly installed wells). The slug testing will provide hydraulic conductivity data of the subsurface materials (SOP-21).
   - Locations at which nested wells (P-29-N/RFIMW-1, RFIMW-2/CMSMW-3, and RFIMW-3/CMSMW-4) are present will have a pumping test performed to assess the interrelationship between the upper and lower saturated units. The purpose of this activity is to assess whether the groundwater in the native sand unit can be controlled from the fill unit. A transducer will be placed in the

well that is screened in the native sand, and water will be pumped from the shallow fill well for approximately 2 to 3 hours. The degree of interconnection between the two separate units will be assessed based on the changes that are noted by the transducer in the native sand unit (SOP-23).

3. Northern and Southern Property Boundary Investigations:

   - Along the northern boundary, both the newly installed shallow fill wells CMSMW-1 and -2, and the existing deep native sand wells RFIMW-22 and -23 will have groundwater samples collected and analyzed for VOCs and SVOCs. In addition, because the nested well pair P-29-N/RFIMW-1 is situated at the eastern edge of the northern boundary area, these two wells will also have groundwater samples collected and analyzed for VOCs and SVOCs. All collected groundwater samples will also be analyzed for the geochemical constituents identified previously.

   - Along the southern boundary, the newly installed shallow wells CMSMW-12F, -13F, and -14F; the newly installed deep native sand wells CMSMW-13S and -14S; the existing native sand wells PM4NA and RFIMW-29 will have groundwater samples collected and analyzed for VOCs and SVOCs.

   - To assess whether there is a hydraulic connection between the fill and native sand units situated in the vicinity of both the northern and southern boundaries, Parsons ES will place a transducer in the native sand well and pump groundwater from the fill well at each of the five nested well locations (RFIMW-23/CMSMW-1, RFIMW-22/CMSMW-2, PM4NA/CMSMW-12, CMSMW-13S/CMSMW-13F, and CMSMW-14S/CMSMW-14F), over a period of approximately 2 to 3 hours (refer to Subsection 2.2.2). Parsons ES will evaluate changes in groundwater conditions to assess the interrelationship (if any) between the upper and lower units. The purpose of this activity is to evaluate whether the groundwater in the native sand unit can be controlled from the fill unit. The degree of interconnection between the two separate units will be assessed based on the changes that are noted by the transducer in the native sand unit.

4. Evaluation of Historical Drainage Ditch Outlet Locations:

   - To assess this scenario, Parsons ES will locate the outlet locations associated with these ditches and perform a subsurface evaluation of the area(s). To achieve this objective, Parsons ES proposes to perform a combination of geophysical assessments and subsurface soil collection to delineate the locations of these trenches.

Figure 1-1 shows the new and existing monitoring well locations that will be evaluated during the CMS field program. Figure 1-2 shows approximated drainage ditch locations.

1.4.2 Project Target Parameters and Intended Data Usages

Replace subsection titled "Analytical Parameters and Usage" with the following:

The target analytical parameters (and the associated methods) for the CMS investigation are summarized in Tables 1.1 and 7.4. As described in Section 1.5.2, these target groundwater parameters were selected for each area of the site (i.e., eastern shoreline, northern and southern property boundaries). In summary, the target parameters include the following constituents:

- Volatile Organic Compounds (VOCs) in ambient air (EPA Method TO-14)
- Volatile Organic Compounds (VOCs) in groundwater (SW-846 Method 8260A)
- Semivolatile Organic Compounds (SVOCs) in groundwater (SW-846 Method 8270B)
- Calcium (SW-846 Method 6010A)
- Hardness (EPA Method 130.2)
- Alkalinity (EPA Method 310.1)
- Total Dissolved Solids (TDS) (EPA Method 160.1)
- Total Solids (TS) (EPA Method 160.3)
- Total Organic Content (TOC) (SW-846 9060)
- Chemical Oxygen Demand (COD) (EPA Method 410.4)
- Geochemical Parameters (Dissolved Oxygen, Specific Conductivity, pH, Temperature, Redox Potential, Total and Ferrous Iron)

The following table has been revised to include proposed CMS groundwater and soil sampling and analysis procedures:

- Table 1-1 - Summary Table of the Sampling and Analysis Program for the RCRA CMS Field Program.

1.4.3 Data Quality Objectives

The data quality objectives that apply to the CMS field program are as follows:

1. Screening DQO Level I will apply to groundwater field sample data for pH, temperature, specific conductance, redox potential, dissolved oxygen, and water level measurements.

2. Field Analyses DQO Level II will apply to surveying data, geophysical data, aquifer testing data, and to the HACH® kit iron test data.

3. Off-Site Laboratory Analyses DQO Level III will apply to grain size analysis performed in accordance with American Society of Testing Materials (ASTM) methods, and to groundwater sample analyses for calcium, hardness, alkalinity, TDS, TS, TOC, and COD.

4. Off-Site Laboratory CLP/CLP-like Analyses DQO Level IV will apply to:

    - VOC and SVOC groundwater sample analyses performed in accordance with SW-846 methodologies.

    - VOC air sample analysis performed in accordance with USEPA Method TO-14, Determination of Volatile Organic Compounds in Ambient Air Using SUMMA® Polished Canister Sampling and Gas Chromatographic Analysis.

1.5.9 SWMU H - Emergency Containment Pond

Replace the subsections titled "Objectives", "Tasks", and "Data Usage" (Pages 46 through 49) with the following:

Objectives

A preliminary risk assessment conducted as part of the RFI predicted that SWMU H may pose an unacceptable risk to human health and the environment in its current state. The assumptions used in the risk assessment for SWMU H suggest that VOCs are being emitted from the ground surface in this area and are posing an unacceptable inhalation risk. The primary objective for conducting an investigation at SWMU H is to quantify the concentration of VOCs being emitted from the ground surface.

Tasks

A mass flux evaluation of SWMU H will be performed to evaluate whether VOCs are actually being emitted from the ground surface at levels that constitute an unacceptable risk. A flux chamber will be utilized for this evaluation. The emission isolation flux chamber is used to measure the flux of volatile chemical constituents from a flat horizontal surface under controlled conditions. The technique involves the use of a surface enclosure (flux chamber) to isolate a known surface area, and to contain and extract the evolving chemical constituents in a quantifiable manner. SOP-24 (Appendix B) presents the mass flux procedure in more detail.

Data Usage

Air samples will be collected in Summa® canisters during the flux investigation and sent to Quanterra laboratory for analysis of VOC concentrations. The intent is to use these "actual conditions" measurements to re-evaluate the risk calculated in the RFI risk assessment, by replacing some of the broad-based assumptions utilized initially with location-specific, in-field measurements.

1.6 PROJECT SCHEDULE

The project schedule information relative to the CMS field program has been provided. Replace Section 1.6 with the following:

Activities associated with the CMS field program will commence after the USEPA Region V has notified BASF that this QAPP addendum has been approved. Field activities are anticipated to begin 10 work days after USEPA approval. The field portion of the CMS field program is anticipated to extend over a three-month period. A project schedule for the CMS field program has been included herein as Figure 1-15.

TABLE 1-1
SUMMARY OF THE SAMPLING AND ANALYSIS PROGRAM FOR RCRA CMS
BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

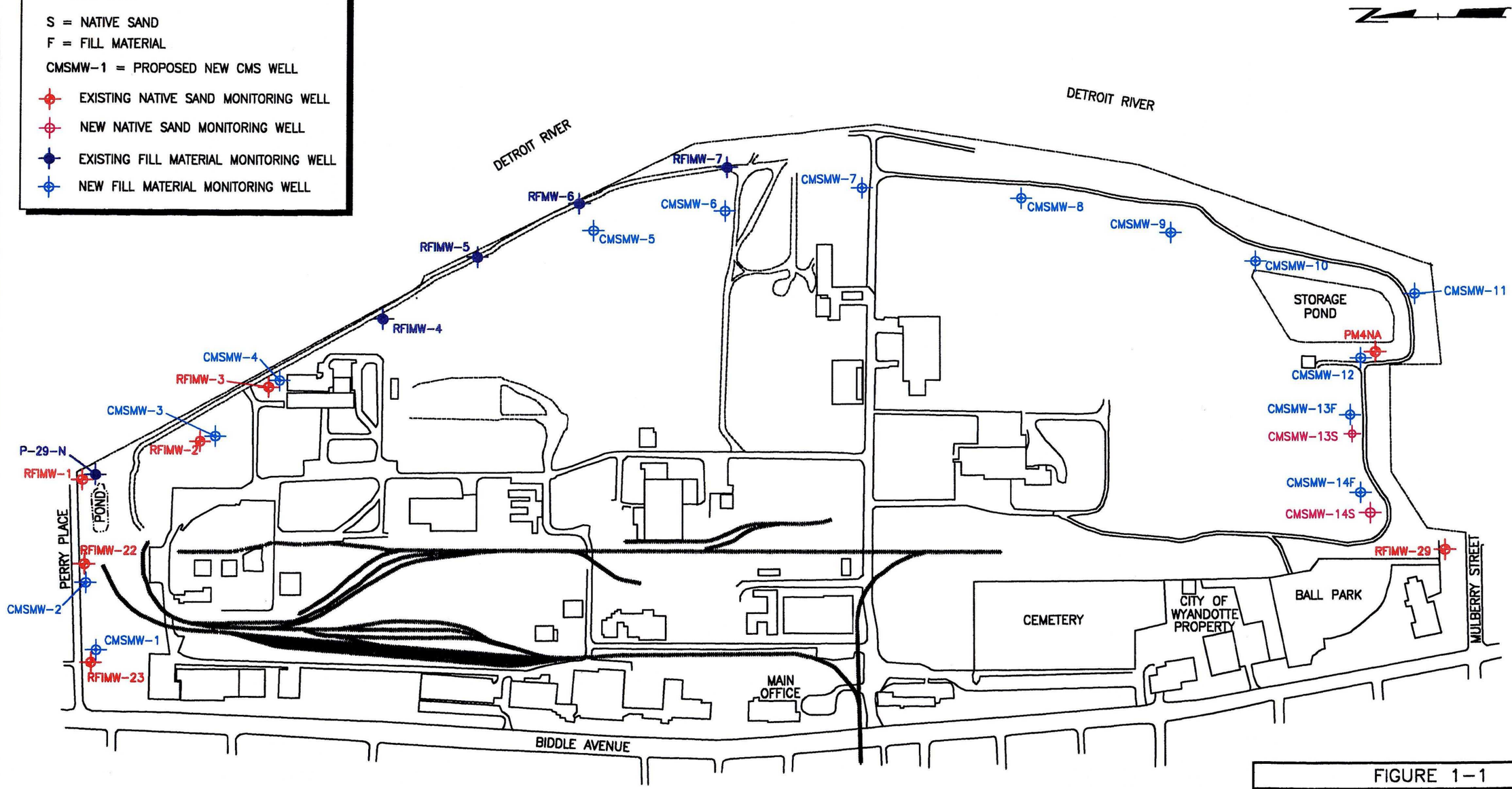
Location	Matrix	Field Parameters	Laboratory Parameters	Analytical Methods	Investigative Samples			Field Quality Control Samples						Rinseate Blanks			Blind Duplicates			MS/MSD[2]			Total Samples[2]
								Field Duplicates			Trip Blanks[1]												
					No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	
New and Existing	Groundwater	pH, Redox,	Volatile Organics	SW-846 8260A	0	1	0	0	1/10	0	0	1	0	0	1/day	0	0	1/20	0	0	1/20	0	0
Monitoring Wells along the		Specific Conductance	Semivolatile Organics	SW-846 8270B	0	1	0	0	1/10	0	NA	NA	NA	0	1/day	0	0	1/20	0	0	1/20	0	0
Eastern shoreline		Temperature	Calcium	SW-846 6010A	15	1	15	2	1/10	2	NA	NA	NA	1	1/day	1	1	1/20	1	1	1/20	1	19
		Dissolved Oxygen	Hardness	EPA 130.2	15	1	15	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	18
		Water Level	Alkalinity	EPA 310.1	15	1	15	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	18
		Total and ferrous iron	TDS	EPA 160.1	15	1	15	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	0	1/20	0	18
			TS	EPA 160.3	15	1	15	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	0	1/20	0	18
			TOC	SW-846 9060	15	1	15	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	18
			COD	EPA 410.4	15	1	15	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	18
New and Existing	Groundwater	pH, Redox,	Volatile Organics	SW-846 8260A	13	1	13	2	1/10	2	2	1	2	2	1/day	2	1	1/20	1	1	1/20	1	20
Monitoring Wells along the		Specific Conductance	Semivolatile Organics	SW-846 8270B	13	1	13	2	1/10	2	NA	NA	NA	2	1/day	2	1	1/20	1	1	1/20	1	18
Northern and Southern		Temperature	Calcium	SW-846 6010A	11	1	11	2	1/10	2	NA	NA	NA	2	1/day	2	1	1/20	1	1	1/20	1	16
Property Boundaries		Dissolved Oxygen	Hardness	EPA 130.2	11	1	11	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	14
		Water Level	Alkalinity	EPA 310.1	11	1	11	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	14
		Total and ferrous iron	TDS	EPA 160.1	11	1	11	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	0	1/20	0	14
			TS	EPA 160.3	11	1	11	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	0	1/20	0	14
			TOC	SW-846 9060	11	1	11	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	14
			COD	EPA 410.4	11	1	11	2	1/10	2	NA	NA	NA	0	1/day	0	1	1/20	1	1	1/20	1	14
New Monitoring Wells	Soil	Field Headspace Screening (PID)	Grain Size Analysis	ASTM 422	15 - 35	1	15 - 35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15 - 35
SWMUH/AOC5 Mass Flux Evaluation[3]	Air	Temperature	Volatile Organics	TO-14	9	1	9	1	1/10	1	3	1	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	13

(1) This is an estimated number of samples. One trip blank will be included in each shipment cooler containing VOC samples.
(2) MS/MSD samples are investigative samples on which the additional MS and MSD analyses are performed. Therefore, the sample total does not count MS/MSD samples as additional samples.
(3) The actual number of air samples collected will be determined in the field . The number shown in this table is an estimate. The three "trip blank" samples refer to one trip blank and two shadow blank samples. Refer to SOP-23.

LEGEND

S = NATIVE SAND
F = FILL MATERIAL
CMSMW-1 = PROPOSED NEW CMS WELL

- EXISTING NATIVE SAND MONITORING WELL
- NEW NATIVE SAND MONITORING WELL
- EXISTING FILL MATERIAL MONITORING WELL
- NEW FILL MATERIAL MONITORING WELL



0 400 800

SCALE: 1"=400'

FIGURE 1-1

BASF CORPORATION
WYANDOTTE, MICHIGAN

CMS FIELD INVESTIGATION
NEW AND EXISTING GROUNDWATER
MONITORING WELL LOCATIONS

PARSONS ENGINEERING SCIENCE, INC.
DESIGN • RESEARCH • PLANNING
1000 JORIE BLVD. • OAKBROOK, ILLINOIS 60523 • (630) 990-7300
OFFICES IN PRINCIPAL CITIES

DATE: 8/9/98 [NP]
R:\DRAWINGS\BASF\33893006.DWG

LEGEND

- DITCH LOCATIONS – 1919
- DITCH LOCATIONS – 1921
- DITCH LOCATIONS – 1922
- DITCH LOCATIONS – 1924
- DITCH LOCATIONS – 1955
- DITCH LOCATIONS – DATE UNKNOWN
- EXIST. NATIVE SAND WELL
- NEW NATIVE SAND WELL
- EXIST. FILL MATERIAL WELL
- NEW FILL MATERIAL WELL

DETROIT RIVER

DETROIT RIVER

A

B

C

D

E

RFIMW-5

RFIMW-4

RFIMW-3

CMSMW-4

CMSMW-3

RFIMW-2

P-29-N

RFIMW-1

POND

PERRY PLACE

RFIMW-22

CMSMW-2

CMSMW-1

RFIMW-23

RFMW-6

CMSMW-5

RFIMW-7

CMSMW-6

RFMW-8

CMSMW-7

CMSMW-8

RFMW-10

CMSMW-9

CMSMW-10

CMSMW-11

STORAGE POND

PM4NA

CMSMW-12

CMSMW-13F

CMSMW-13S

CMSMW-14F

CMSMW-14S

RFIMW-29

MULBERRY STREET

BALL PARK

CITY OF WYANDOTTE PROPERTY

CEMETERY

MAIN OFFICE

BIDDLE AVENUE

0 400 800

SCALE: 1"=400'

DATE: 8/14/98 [NP]
R:\DRAWINGS\BASF\33893004.DWG

FIGURE 1-2

BASF CORPORATION
WYANDOTTE, MICHIGAN

FORMER
DRAINAGE DITCH LOCATIONS
DIGITIZED PATHWAYS

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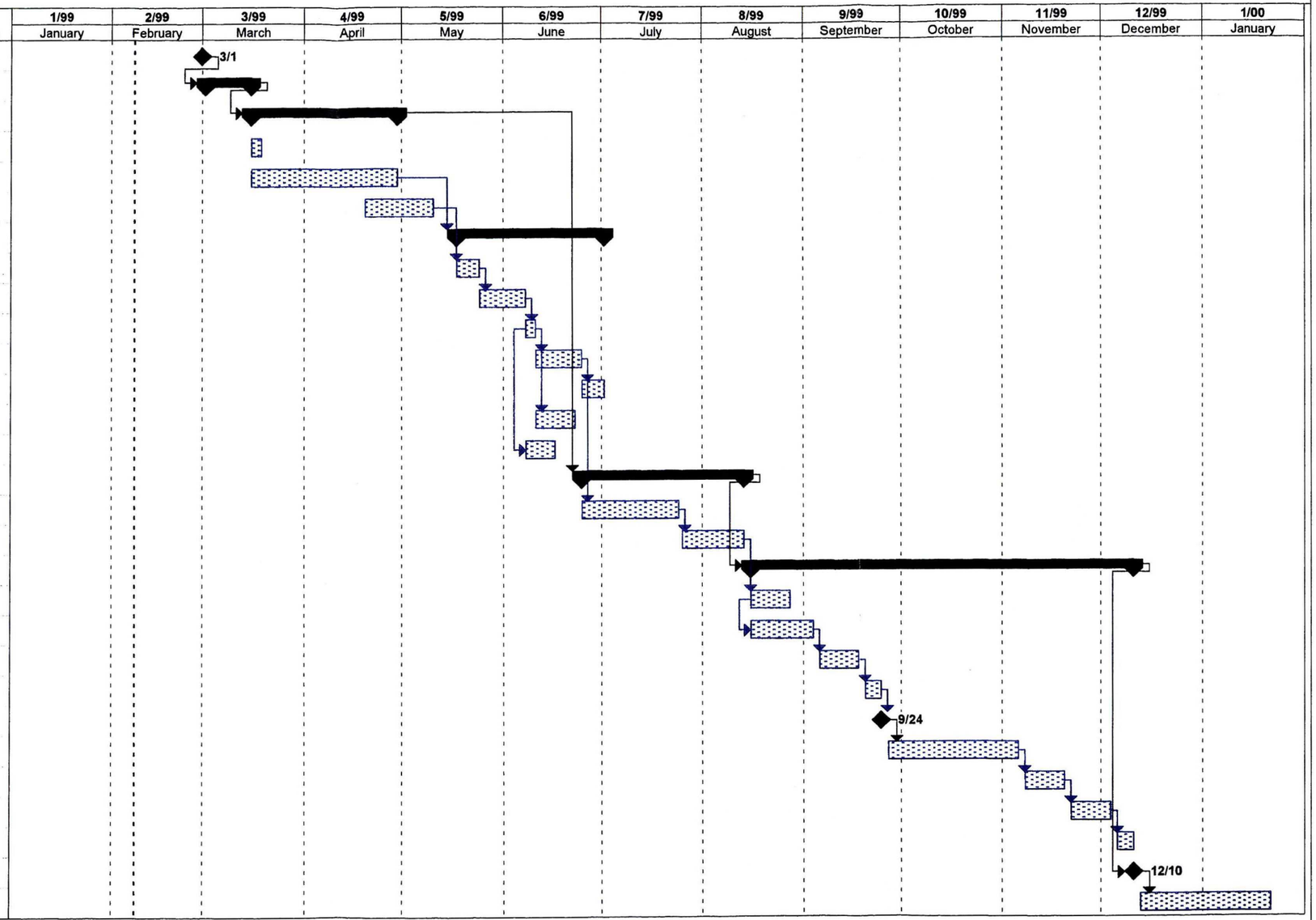
FIGURE 1-15
PROJECT SCHEDULE FOR THE CORRECTIVE MEASURES STUDY FIELD PROGRAM
BASF NORTH WORKS FACILITY, WYANDOTTE, MICHIGAN

Task Name	Duration	Start	Finish	Predecessors
1.0 QAPP Approval	**0d**	**3/1/99**	**3/1/99**	
2.0 Project In-Office Mobilization	**10d**	**3/2/99**	**3/15/99**	**1FS+1d**
3.0 Field Work-Part 1	**33d**	**3/16/99**	**4/30/99**	**2**
3.1 PES Develop Existing Wells	3d	3/16/99	3/18/99	
3.2 Geophysical Survey	33d	3/16/99	4/30/99	
4.0 PES Evaluation of Geophysical Data	**15d**	**4/20/99**	**5/10/99**	**7FS-10ed**
5.0 Field Work - Part 2	**33d**	**5/18/99**	**7/1/99**	**5**
5.1 Office Mobilization Period	5d	5/18/99	5/24/99	8FS+5d
5.2 Install 16 New Wells	10d	5/25/99	6/7/99	10
5.3 Perform Well Development of New Wells	3d	6/8/99	6/10/99	11
5.4 Groundwater Screening/Sampling	10d	6/11/99	6/24/99	12
5.5 Aquifer Testing	5d	6/25/99	7/1/99	13
5.6 Slug Testing	8d	6/11/99	6/22/99	12
5.7 Mass Flux Field Investigation*	7d	6/8/99	6/16/99	12SS
6.0 Laboratory Data Activities	**36d**	**6/25/99**	**8/13/99**	**3**
6.1 Laboratory Analytical Period	30ed	6/25/99	7/25/99	13
6.2 Data Validation	15d	7/26/99	8/13/99	18
7.0 CMS Data Report	**85d**	**8/16/99**	**12/10/99**	**17**
7.1 PES Data Reduction, Tabulation, Evaluation	10d	8/16/99	8/27/99	19
7.2 Prepare Draft Report	15d	8/16/99	9/3/99	21SS
7.3 BASF Review Draft Report	10d	9/6/99	9/17/99	22
7.4 PES Revise Draft Report	5d	9/20/99	9/24/99	23
7.5 PES Submit Draft Report to USEPA	0d	9/24/99	9/24/99	24
7.6 USEPA Review Draft Report	30d	9/27/99	11/5/99	25
7.7 PES Address USEPA Comments/Revise Repoi	10d	11/8/99	11/19/99	26
7.8 BASF Review Report Amendments	10d	11/22/99	12/3/99	27
7.9 PES Address BASF Comments/Finalize Report	5d	12/6/99	12/10/99	28
8.0 Submit Final Report to USEPA	**0d**	**12/10/99**	**12/10/99**	**20**
9.0 USEPA Approval of Final Report	**30d**	**12/13/99**	**1/21/00**	**30**



PARSONS ENGINEERING SCIENCE, INC.

Task | Milestone | Summary | Rolled Up Task

* Actual date of the mass flux field investigation will be dependent on weather conditions.

Duration: d = work days; ed = calendar days

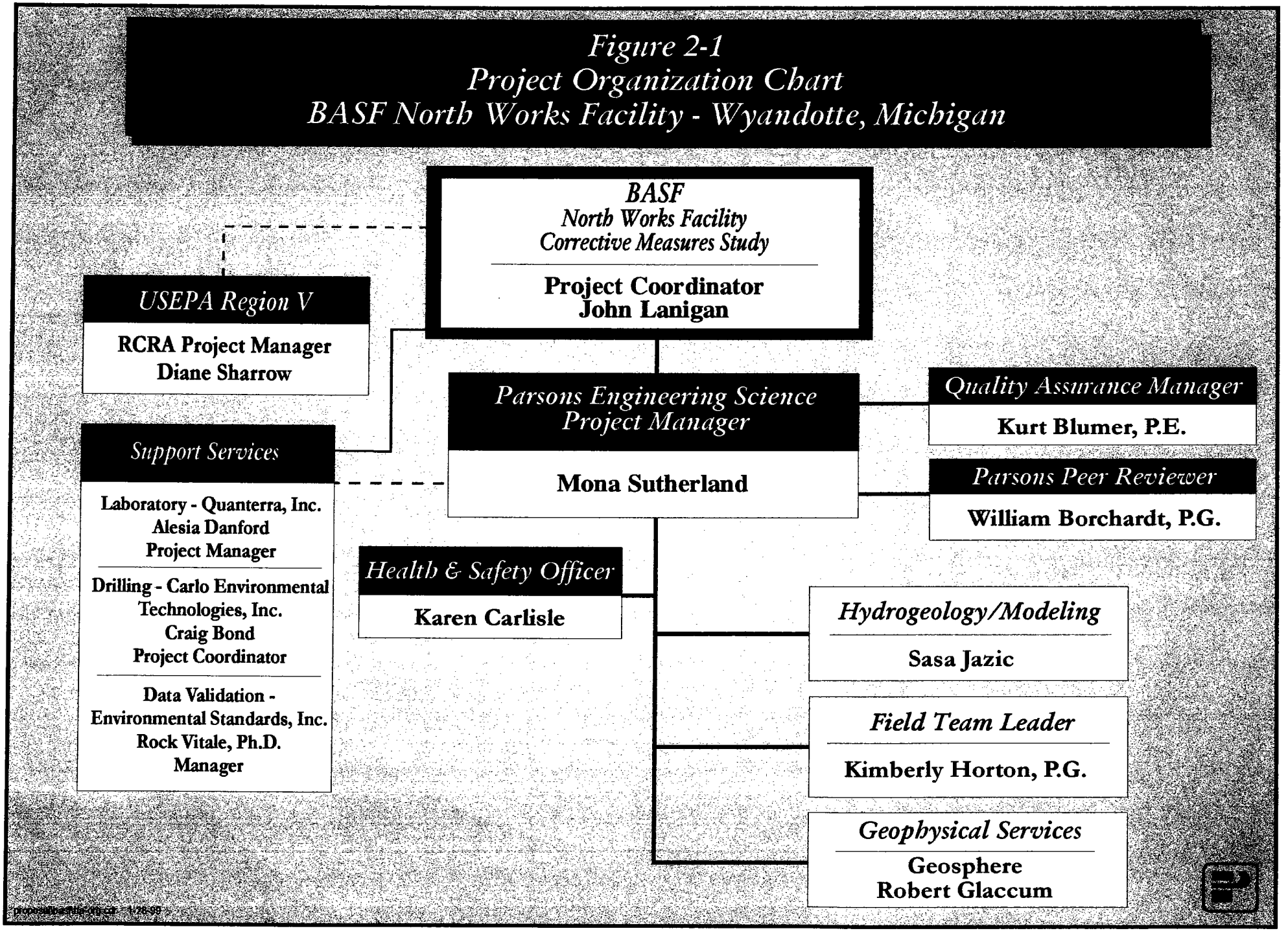
SECTION 2.0
PROJECT ORGANIZATION AND RESPONSIBILITY

The Project Organization and Responsibilities applicable to the CMS field program are as follows:

- Mr. John Lanigan will serve as the BASF Project Coordinator.
- Parsons ES is the Environmental Consultant retained by BASF to conduct the CMS field work and prepare the CMS Report.
- Ms. Mona Sutherland will serve as the Parsons ES Project Manager for the CMS.
- Ms. Karen Carlisle will serve as the Parsons ES Health and Safety Officer for the CMS field program.
- Ms. Susan Fullerton will serve as the Parsons ES CMS Technical Director/Oversight Reviewer.
- Mr. Kurt Blumer will serve as the Parsons ES CMS QA Manager.
- Mr. William Borchardt will serve as the Parsons ES CMS Peer Reviewer.
- Ms. Kimberly Horton will serve as the Parsons ES CMS Field Team Leader.
- Quanterra, Inc. (Quanterra) will be responsible for all analytical services associated with the CMS field program.
- Ms. Alesia Danford will serve as the Quanterra Project Manager.
- Environmental Standards, Inc. (ESI) will be responsible for all data validation activities.
- Dr. Rock Vitale will serve as the ESI Data Validation Manager.
- Drilling services will be provided by Carlo Environmental Technologies, Inc. (Carlo).
- Mr. Craig Bond will serve as Carlo's project coordinator.
- Geophysical work will be performed by Geosphere.
- Mr. Robert Glaccum will serve as Geosphere's project coordinator.

The CMS project organization chart is presented as Figure 2-1.

Figure 2-1
Project Organization Chart
BASF North Works Facility - Wyandotte, Michigan



SECTION 3.0
QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA IN TERMS OF PRECISION, ACCURACY, COMPLETENESS, REPRESENTATIVENESS, AND COMPARABILITY

The analytical methodologies for the analysis of groundwater samples for VOCs and SVOCs will remain consistent with those assigned in the original QAPP. For air sample collection and analyses the following will apply:

3.1.2 Field Precision Objectives

The precision of field measurements associated with the mass flux evaluation will be established by assessing the flow rate for one of the triplicate sampling events. The flow rate should be within 10 percent of the 3-sample mean and the mean within 20 percent of the target flow. Total sample volume should be within 10 percent of the target (3.0 liters), and the sample time should correspond.

3.1.3 Laboratory Precision Objectives

The precision of laboratory air analyses using Method TO-14 will be assessed by monitoring the laboratory control sample (LCS) results. Both a LCS and a LCS duplicate (LCSD) will analyzed. The target relative percent difference (RPD) will be ± 20 percent. Additionally, one duplicate sample will be collected in the field for every 10 or less air samples. The duplicate will be labeled as a completely separate sample with no notation as to which original sample it duplicates, and it will be submitted blind to laboratory. The duplicate sample will be analyzed for the same analytical parameters as the original investigative sample. The samples will not be spiked; therefore, there will be less information due to non-detected compounds. However, the RPD can be calculated for duplicate sample data in the same way as for the LCS.

3.2.2 Field Accuracy Objectives

The accuracy of field measurements associated with the mass flux evaluation will be established by the calibration of the flow meters against a primary standard (bubble flow meter). Acceptable calibration is when no point in the calibration range deviates from the true value by more than 5 percent of the full-scale reading of the device being calibrated.

3.2.3 Laboratory Accuracy Objectives

The accuracy of laboratory air analyses using Method TO-14 will be assessed by evaluating spiked data. LCS and method blanks will be analyzed on a frequency of one per analytical batch of up to 20 samples. Surrogates will be analyzed for every investigative and QC sample.

3.6 LEVEL OF QUALITY CONTROL EFFORT

The level of quality control samples that will be collected as part of the CMS field program is presented in Table 1-1. Quality assurance objectives for laboratory air analysis are summarized in Table 3-1. Quality assurance objectives for the additional laboratory groundwater analysis are summarized in Table 3-2.

TABLE 3-1
QUALITY ASSURANCE OBJECTIVES FOR AIR ANALYSIS

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Method	Parameter	QC Element	Frequency	Acceptance Criteria	Corrective Action
TO-14 (GC/MS)	Volatile Organics	Method blank	1/batch of up to 20 samples	< RL[2]	1) Run system blank 2) Reanalyze method blank
		Internal standard	Every sample	IS area of sample must be within a factor of 2 of CCV	1) Check sensitivity of instrument 2) Reanalyze sample
		Surrogate spikes	Every field and QC sample	70-130% Recovery	1) Check calculations 2) Reanalyze sample 3) Assess impact on data
		LCS[1]	1/batch of up to 20 samples	70-130% Recovery	1) Check calculations 2) Reanalyze LCS 3) Reanalyze samples associated with failed LCS

[1]LCS - Laboratory Control Samples

[2]RL - Reporting Limit

Surrogates: 1,2-dichloroethane-d4, toluene-d8, bromofluorobenzene
LCS Control Analytes: Dichlorodifluoromethane, 1,1,1-Trichloroethane, Toluene, Chlorobenzene, 1,2,4-Trichlorobenzene

TABLE 3-2
QUALITY ASSURANCE OBJECTIVES FOR GROUNDWATER ANALYSES

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Analyte	Method	Reporting Limit (mg/L)	Method Detection Limit (mg/L)	Control RL (%)	Control RPD (%)	Surrogate RL (%)	Surrogate RPD(%)
Calcium	6010A	5.0	0.150	86-109	12	80-120	20
Hardness, as $CaCO_3$	130.2	2.0	1.3	90-110	20	80-120	20
Total Alkalinity	310.1	5.0	3.8	80-120	20	80-120	20
Total Dissolved Solids	160.1	10	5.7	80-120	20	0-0	20
Total Organic Carbon	415.1	1	0.47	90-110	20	90-110	20
Chemical Oxygen Demand	410.4	10	8.7	90-110	20	90-110	20

RL: Recovery Limits

RPD: Relative Percent Difference

SECTION 4.0
SAMPLING PROCEDURES

4.1 FIELD SAMPLING PROCEDURES

The following field Standard Operating Procedures (SOPs) that are applicable to the CMS field effort, have been added to Appendix B:

- SOP-10 ADDENDUM - Field Measurement of Groundwater Field Parameters
- SOP-11 ADDENDUM - Field Screening for Volatile Organic Compounds
- SOP-13A - Electromagnetic (EM) Surveys
- SOP-13B - Seismic Reflection Surveys
- SOP-13C - Seismic Refraction Surveys
- SOP-21 - Field Measurement of Total and Ferrous Iron in Groundwater
- SOP-22 - Hydraulic Connectivity Pump Tests
- SOP-23 - Flux Chamber

The following laboratory SOPs that are applicable to the CMS field effort, have been added to Appendix C:

- Quanterra SOP No. KNOX-MS-0001, VOA Canister analysis in accordance with EPA method TO-14.
- Quanterra SOP No. NC-WC-0017, Total Organic Carbon (TOC) analysis in accordance with SW-846 Method 9060.
- Quanterra SOP No. NC-WC-0006, Total Alkalinity analysis in accordance with EPA Method 310.1.
- Quanterra SOP No. NC-WC-0036, Total Hardness analysis in accordance with EPA Method 130.2.
- Quanterra SOP No. NC-WC-0055, Total Dissolved Solids (TDS) analysis in accordance with EPA Method 160.1.
- Quanterra SOP No. NC-WC-0004, Total Solids (TS) analysis in accordance with EPA Method 160.3.
- Quanterra SOP No. NC-WC-0019, Chemical Oxygen Demand (COD) analysis in accordance with EPA Method 410.4.

4.3 LABORATORY CONTAINER PREPARATION PROCEDURES

Table 4-1 has been modified to reflect laboratory container preparation procedural requirements for the CMS sample analytical program.

TABLE 4-1
LABORATORY SAMPLE PRESERVATION SUMMARY FOR THE CMS ANALYTICAL PROGRAM

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Parameter	Container	Preservative	Recommended Holding Time	Minimum Amount of Sample Required
Groundwater Samples				
Volatile Organic Compounds	Glass Teflon Lined Septum VOA vials	HCl, pH < 2 Cool, 4°C	14 days	Three 40 mL VOA Glass vials
Semivolatile Organic Compounds	Glass Teflon Lined Cap	Cool, 4°C	7 days (extraction) 40 days (analysis)	Two 1 Liter bottles
Total Calcium	Plastic	HNO_3, pH < 2 Cool, 4°C	6 months	500 mL
Dissolved Calcium	Plastic	Cool, 4°C	6 months	500 mL
Hardness	Plastic	HNO_3, pH < 2 Cool, 4°C	6 months	250 mL
Total Alkalinity	Plastic	Cool, 4°C	14 days	250 mL
Total Dissolved Solids	Plastic	Cool, 4°C	7 days	250 mL
Total Solids	Plastic	Cool, 4°C	7 days	100 mL
Total Organic Carbon	Glass Teflon Lined Septum VOA Vials	H_2SO_4, pH < 2 Cool, 4°C	28 days	Two 40 mL VOA Glass Vials
Chemical Oxygen Demand	Glass Amber	H_2SO_4, pH < 2 Cool, 4°C	28 days	125 mL
Soil Samples				
Grain Size Distribution	Glass	None	None	300 to 500 grams
Air Samples				
GC Volatile Organic Compounds	6-Liter SUMMA™ Passivated Stainless Steel Canisters	None	14 days	500 mL

SECTION 5.0
CUSTODY PROCEDURES

No changes proposed for this section.

SECTION 6.0
CALIBRATION PROCEDURES AND FREQUENCY

The following section discusses the calibration procedures associated with field analysis of groundwater samples for total iron, ferrous iron, and pH, and field calibration procedures for geophysical equipment. Laboratory calibration requirements and protocols for air sample analyses are also discussed.

6.1 FIELD INSTRUMENT CALIBRATION

Field Kit Analyses

Both total and ferrous iron field analyses will be performed in the field using the HACH® Model DR/700 Portable Colorimeter. Calibration curves for various compounds (wavelengths ranging from 420 to 810 nanometers) have been factory pre-programmed onto ten different filter modules. These filter modules, which contain optical filters and nonvolatile memory devices for each group of methods, are inserted into the base of the colorimeter enclosure before performing the field analyses. Calibration curves for HACH®methods 8008 (total iron) and 8146 (ferrous iron) are both stored in filter module 50.01. The use of this filter module precludes the need for performing calibrations in the field. As described in Section 8.0, the accuracy and precision of each analytical procedure will be checked at least once during each sampling event.

pH Meter

The sampling team will calibrate a digital pH meter in the field according to the manufacturer's specifications (Appendix B). Field personnel will check instrument calibration at the beginning and end of each sampling day and log all calibration activities in the field log. The calibration procedure involves immersing the pH probe into a container of certified pH buffer solution and comparing the digital readout to the known value of the buffer solution. At least two ranges must be calibrated, and the accuracy of the pH meter

must fall within 0.1 standard units of the pH, within the working temperature of 2 °C to 40 °C.

Electromagnetic Geophysical Equipment

Electromagnetic (EM) calibration/ checkout will be made on site by executing a series of diagnostic procedures recommended by Geonics Ltd., the equipment manufacturer. First, the instrument will be turned on and battery levels will be checked. Batteries will be replaced if the level indicator is below one half the total scale. Secondly, the instrument will be taken to a zone free of metal. There, the in-phase setting will be zeroed on the 30 scale by switching to the comp setting and by using the fine and coarse screws to zero the meter. Next, the phase angle will be adjusted to exactly 90 degrees by switching to the phase setting and comparing meter readings with the appropriate settings. Finally, the operator will return to the comp setting, where a full scale deflection should be observed when turning the coarse switch one notch.

As a further check, the EM instrument will be taken to a reference location on (or just off) the Facility property that is (a) free of metallic interferences and (b) exhibits readings that can be considered to be at or close to background conditions. EM readings will be taken every morning and afternoon at this location to check that the instrument has not drifted or malfunctioned. If a slight drift has occurred due to battery usage, minor corrections will be made in the data during data processing.

Seismic Geophysical Equipment

The seismograph will execute a built in self-calibration/checkout routine when it is turned on. A series of steps also will be executed by the equipment operator to support the calibration process. The operator will check battery level voltage and will set input filters, time window, and data sampling rates. Trigger cable and geophone cables will be connected. A series of preliminary tests will be made by checking proper triggering, channel gain levels, geophone response levels, stacking operations, and hard drive operation. The on-board printer will be checked. A quality check will be made by

comparing the slope of the airwave from two or more of these test shots - it should have a velocity in the range of 1050 to 1100 feet per second (as measured on the printout).

6.2 LABORATORY INSTRUMENT CALIBRATION

The laboratory SOPs presented in Appendix C contain method-specific information on calibration requirements. Table 6-1 presents a summary of calibration frequency and acceptance criteria for the air analysis methodology.

TABLE 6-1
SUMMARY OF CALIBRATION PROCEDURES FOR GROUNDWATER ANALYSES

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Method	Parameter	Calibration	Frequency	Acceptance Criteria	Corrective Action
USEPA 130.2	Hardness	Initial calibration: Standardize titrant	Daily, prior to analysis	Not applicable	Not applicable
USEPA 310.1	Alkalinity	Initial calibration: Two point calibration of pH meter	Daily, prior to analysis	0.05 pH units of true value	1) Evaluate system 2) Recalibrate
USEPA 160.1	Total Dissolved Solids (TDS)	Gravimetric determination: Calibrate balance as follows: Two weight calibration - low & high target range	Daily, prior to analysis	Low target ± (0.01 to 0.2) grams depending on specific weight used. High target ± (0.01 to 0.5) grams depending on specific weight used	1) Out of range - recalibrate
USEPA 160.3	Total solids (TS)	Gravimetric determination: Calibrate balance as follows: Two weight calibration - low & high target range	Daily, prior to analysis	Low target ± (0.01 to 0.2) grams depending on specific weight used. High target ± (0.01 to 0.5) grams	1) Out of range - recalibrate

TABLE 6-1
SUMMARY OF CALIBRATION PROCEDURES FOR GROUNDWATER ANALYSES

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Method	Parameter	Calibration	Frequency	Acceptance Criteria	Corrective Action
USEPA 415.1/SW846 Method 9060	Total Organic Carbon (TOC)	Initial calibration: Three levels plus a blank	Daily, prior to analysis	R > or = 0.995	1) Evaluate system 2)Recalibrate
		Continuing calibration (CCV): One mid-level standard	After initial calibration, every 20 samples	±15% of true value	1) Recalibrate 2) Reanalyze all samples from last valid CCV
		Ending calibration: One mid-level standard	At the end of the analytical sequence	±15% of true value	1) Recalibrate 2) Reanalyze all samples from last valid CCV
USEPA 410.4	Chemical oxygen demand (COD)	Initial calibration: Five levels plus a blank	Daily, prior to analysis	R > or - 0.995	1) Evaluate system 2) Recalibrate
		Continuing calibration (CCV): One level standard	After initial calibration, every 10 samples	±10% of true value	
		Ending calibration: One level standard	At the end of the analytical sequence	±10% of true value	1) Evaluate system 2) Recalibrate

TABLE 6-2
CALIBRATION CRITERIA AND CORRECTIVE ACTION FOR AIR ANALYSES

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Method	Parameter	Calibration	Frequency	Acceptance Criteria	Corrective Action
TO-14 (GC/MS)	Volatile Organic Compounds	Check of mass spectral ion intensities using BFB	Every 12 hours	Refer to SOP criteria	1) Retune instrument 2) Repeat BFB analysis
		Multipoint calibration (minimum five points)	Initially and as required	% RSD for non-polar analytes ≤ 30%; %RSD for polar analytes ≤ 40%. No criteria applied for methanol or n-butanol.	1) Evaluate system 2) Recalibrate
		Continuing Calibration Verification (CCV)	Every 12 hours	For nonpolar analytes %D ≤ 25% for all TO14 analytes except 1,2,4-trichlorobenzene and hexachlorobutadiene %D ≤ 30%, and maximum of 4 TO14 analytes with %D up to 40%.. For polar analytes, %D ≤ 40% with maximum of 2 polar analytes with %D up to 50%. No criteria applied for methanol or n-butanol.	1) Evaluate system 2) Repeat calibration check 3) Recalibrate 4) Reanalyze affected samples

SECTION 7.0
ANALYTICAL PROCEDURES

7.1 FIELD ANALYTICAL PROCEDURES

Total iron and ferrous iron analyses will be performed in the field using a HACH® field testing kit. The procedures that will be followed to perform these analyses are discussed in Appendix B, SOP-21, entitled *Field Measurements of Total and Ferrous Iron in Groundwater*.

7.3 LABORATORY ANALYTICAL PROCEDURES

The following tables have been amended:

- Table 7-1 - Summary of Additional Methods for Sample Preparation/Sample Extraction.
- The Table 7-5 - EPA Method TO-14 Reporting Limits for air VOC analysis has been added.

TABLE 7-1
SUMMARY OF ADDITIONAL METHODS FOR SAMPLE PREPARATION/SAMPLE EXTRACTION

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Parameter	Matrix	Method	Lab SOP Name
Hardness	Water	USEPA Method 130.2	NC-WC-0036
Total Alkalinity	Water	USEPA Method 310.1	NC-WC-0006
Total Dissolved Solids	Water	USEPA Method 160.1	NC-WC-055
Total Solids	Water	USEPA Method 160.4	NC-WC-0004
Total Organic Carbon	Water	USEPA Method 415.1	NC-WC-0017
Chemical Oxygen Demand	Water	USEPA Method 410.4	NC-WC-0019
GC Volatiles	Air	USEPA Method TO-14[1]	KNOX-MS-0001

[1]EPA Compendium Method TO-14, "Determination of Volatile Organic Compounds in Ambient Air Using SUMMA Passivated Canister Sampler and Gas Chromatographic Analysis," USEPA 600/4-89/017, June 1988.

TABLE 7-5
USEPA METHOD TO-14 REPORTING LIMITS

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Compound	Reporting Limits (ppb, v/v)
Acetone	5
Acetonitrile	1
Acrolein	0.5
Acrylonitrile	0.5
alpha-Methylstyrene	0.2
Benzene	0.2
Benzyl chloride	0.2
Bromodichloromethane	0.2
Bromoform	0.2
Bromomethane	0.2
1,3-Butadiene	0.2
n-Butane	0.2
1-Butanol	0.5
2-Butanone (MEK)	0.5
Carbon disulfide	0.2
Carbon tetrachloride	0.2
Chlorobenzene	0.2
Dibromochloromethane	0.2
Chlorodifluoromethane	0.2
Chloroethane	0.2
Chloroform	0.2
Chloromethane	0.5
3-Chloropropene	0.2
Cyclohexane	0.2
n-Decane	0.2
1,2-Dibromoethane (EDB)	0.2
Dibromomethane	0.2
1,2-Dichlorobenzene	0.2
1,3-Dichlorobenzene	0.2
1,4-Dichlorobenzene	0.2
Dichlorodifluoromethane	0.2
1,1-Dichloroethane	0.2
1,2-Dichloroethane	0.2
cis-1,2-Dichloroethene	0.2
trans-1,2-Dichloroethene	0.2
1,1-Dichloroethene	0.2
1,2-Dichloropropane	0.2
cis-1,3-Dichloropropene	0.2
trans-1,3-Dichloropropene	0.2

TABLE 7-5
USEPA METHOD TO-14 REPORTING LIMITS

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Compound	Reporting Limits (ppb, v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	0.2
n-Dodecane	0.2
Ethylbenzene	0.2
Ethyl ether	0.5
n-Heptane	0.2
Hexachlorobutadiene	0.2
n-Hexane	0.2
2-Hexanone	0.5
Cumene	0.2
Methanol	10
Methylene chloride	0.2
4-Methyl-2-pentanone (MIBK)	0.5
Methyl tert-butyl ether	0.5
Naphthalene	0.2
Nonane	0.2
n-Octane	0.2
Pentane	0.5
n-Propylbenzene	0.2
Styrene	0.2
1,1,2,2-Tetrachloroethane	0.2
Tetrachloroethene	0.2
Toluene	0.2
1,2,4-Trichlorobenzene	0.2
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.2
Trichloroethene	0.2
Trichlorofluoromethane	0.2
1,1,2-Trichlorotrifluoroethane	0.2
1,2,4-Trimethylbenzene	0.2
1,3,5-Trimethylbenzene	0.2
n-Undecane	0.2
Vinyl acetate	0.5
Vinyl chloride	0.2
m-Xylene & p-Xylene	0.2
o-Xylene	0.2

Note: Reporting Limits are equivalent to Project Quantitation Limits (PQL)

SECTION 8.0
INTERNAL QUALITY CONTROL CHECKS

8.1 FIELD QC CHECKS

The following section discusses the quality control checks that will be implemented during field analysis of total/ferrous iron and the flux evaluation.

Iron

Both total and ferrous iron field analyses will be performed in the field using the HACH® Model DR/700 Portable Colorimeter. Before performing the field analyses, a spike standard (1.0 mg/L) and a method blank (distilled water) will be used to check the accuracy of the procedure and the freshness of the reagents. If the known standard solution is tested and gives a result within 10 percent of the correct concentration, the reagents are working properly and the procedure is being followed correctly.

Duplicate analyses will also be run on at least one out of every ten field samples, to check precision. In order for the data to meet the acceptable level of precision, the relative percent difference between the duplicate analyses must be less than 30 percent.

Flux Evaluation

Each sample location will be sampled three times (one sample will be collected on three different days from each sample location). The field measurements associated with the flow rate for one of the triplicate sampling events will be assessed. The flow rate should be within 10 percent of the three-sample mean, and the mean within 20 percent of the target flow. The total sample volume should be within 10 percent of the target (3.0 liters), and the sample time should correspond. In addition, three blank samples (one trip blank and two shadow blanks) will be collected and sent to the laboratory for analysis.

8.2 LABORATORY QC CHECKS

The internal QC checks for laboratory analyses include method blanks, surrogate spikes, internal standards, and LCSs. A description of the specific QC requirements, frequency of QC sample analysis, and QC acceptance criteria for the air analytical method is provided in the air laboratory SOP in Appendix C (SOP No. KNOX-MS-0001). This information is also summarized in Table 6-1.

SECTION 9.0
DATA REDUCTION, VALIDATION AND REPORTING

No other changes/additions are proposed to the data validation approach specified in the existing project QAPP, with the exception of that which is discussed below.

9.1.4 Geophysical Data Reduction Procedures

Electromagnetic data will be downloaded from OmniData digital loggers using firmware and software provided by the equipment manufacturer Geonics, Ltd.. These data will be converted from raw (H and D-files) logger files to standard X, Y, C, I files (x, y coordinates, conductivity, and in-phase data) in ASCII format that can be read by text editors and spreadsheet programs. Data will be entered into Surfer® for Windows (Version 6.04) worksheet format and checked for proper values (grid coordinates, conductivity, and in-phase data in the correct ranges). Data then will be gridded using Krigging methods and contoured using color fill options. Computer Aided Drafting (CAD) basemaps will be prepared in MicroStation/AutoCAD programs and exported to Surfer® for overlay with the color contours. Plots will then be made on color printers in standard 8.5 x 11 inch or 11 x 17 inch formats.

9.2.3 Procedures to Validate Laboratory Data

All laboratory analytical data will be validated by ESI. One hundred percent of the data will be assessed based on Level III validation protocols. Twenty percent of the data will be subjected to Level IV validation protocols. If ESI determines that potentially significant and extensive data quality problems are present in the data set (based on the findings of either the Level III and/or Level IV validation procedures) than all (100 percent) of the analytical data will be Level IV validated.

9.2.4 Procedures Used to Validate Geophysical Data

Validation of the geophysical software is made using standard sample data sets

provided by the manufacturer. These data are reprocessed and checked for consistency with known results and outputs. In addition, general trends in the final contours are compared to visual features noted at the site.

9.3.3 Geophysical Data Reporting

The geophysical data that will be reported will include descriptions of field methods used, data acquisition locations, areas covered, and the density of coverage. Plots will be provided on a CAD map of the site showing the exact locations of geophysical data acquired. The locations will be generated directly from the (x, y) coordinates used in the contour map generation. Final contour maps will generally be annotated with site labels and interpretation of major contour features, to assist the reader in locating features discussed in the text portion of the geophysical report. All raw, intermediate, and final data sets, maps and contour figure, as well as the written report will be made available on CD ROM to facilitate the archiving of the entire geophysical project.

SECTION 10.0
PERFORMANCE AND SYSTEM AUDITS

No changes proposed for this section.

SECTION 11.0
PREVENTIVE MAINTENANCE

Preventive maintenance associated with geophyiscal and mass flux equipment, and for laboratory air analysis is discussed below.

11.1 FIELD INSTRUMENT PREVENTIVE MAINTENANCE

Flux Evaluation

All components of the flux field equipment (hoses, seals, flow meters, etc.) will be visually inspected for damage (breaks, punctures, leaks, dents) each day before field work commences. Any damaged equipment will either be repaired in the field or replaced in accordance with the equipment manufacturers' specifications.

Geophysical Equipment

All geophysical instruments are kept in the specialized, foam-padded shipping containers provided by the manufacturer, to minimize vibrations and damage during storage and transport. In preparation for field work, the EM instrument(s) will be checked for good battery levels and response levels. Batteries will be removed if prolonged storage or shipping in high heat or cold is anticipated to increase the chance of leakage from the alkaline batteries. Clamps and other connections will be checked, cleaned, and adjusted to ensure proper operation of the instrument and to prolong its life. Cables will be properly coiled and securely placed in their positions in the shipping container to minimize the possibility of pinching wires or crushing connectors.

11.2 LABORATORY INSTRUMENT PREVENTIVE MAINTENANCE

Table 11-1 summarizes the key maintenance requirements for the laboratory air analysis equipment.

TABLE 11-1
INSTRUMENT MAINTENANCE SCHEDULE FOR AIR ANALYSIS
MASS SPECTROMETER

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN

Daily	As Needed	Semi-Annually	Annually
Check for sufficient gas supply. Check for correct column flow and/or inlet pressure.	Check level of oil in mechanical pumps and diffusion pump if vacuum is insufficient. Add oil if needed between service contract maintenance.	Change oil in the mechanical rough pump. Relubricate the turbomolecular pump bearing wick.	Replace the exhaust filters on the mechanical rough pump every 1-2 years.
Check temperatures of injector, detector. Verify temperature programs.	Replace electron multiplier when the tuning voltage approaches the maximum and/or when sensitivity falls below required levels.		
Check inlets, septa.	Clean Source, including all ceramics and lenses - the source cleaning is indicated by a variety of symptoms including inability of the analyst to tune the instrument to specifications, poor response, and high background contamination.		
Check values of lens voltages, electron multiplier, and relative abundance and mass assignments of the calibration compounds.	Replace filaments when both filaments burn out or performance indicates need for replacement.		

SECTION 12.0
SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

No changes proposed for this section.

SECTION 13.0
CORRECTIVE ACTION

No changes proposed for this section.

SECTION 14.0
QUALITY ASSURANCE REPORTS TO MANAGEMENT

No changes proposed for this section.

APPENDIX B ADDENDUM

STANDARD OPERATING PROCEDURES FOR FIELD TASKS

APPENDIX B ADDENDUM

FIELD STANDARD OPERATING PROCEDURES

Selected modifications have been made to the following existing SOPs to include specific groundwater monitoring equipment that will be used in the field by Parsons ES:

SOP-10 Addendum - Field Measurement of Groundwater Parameters

SOP-11 Addendum - Field Screening for Volatile Organic Compounds

The following SOP addenda have been added to the existing SOP-13 to incorporate additional geophysical techniques that will be used during the CMS field effort:

SOP-13A - Electromagnetic (EM) Surveys

SOP-13B - Seismic Reflection Surveys

SOP-13C - Seismic Refraction Surveys

The following SOPs have been added to incorporate additional field procedures that will be performed as part of the CMS field program:

SOP-22 Hydraulic Connectivity Pump Tests

SOP-23 Emission Isolation Flux Chamber

SOP-10 Section 8

FIELD ANALYSIS OF TOTAL AND FERROUS IRON IN GROUNDWATER

1.0 OBJECTIVE

There are several common geochemical constituents in groundwater that can impact the effectiveness of a groundwater extraction or injection system. Iron, in particular, can cause major problems for treatment systems. When dissolved ferrous iron (Fe^{2+}) comes in contact with oxygen, it is rapidly oxidized into insoluble ferric iron (Fe^{3+}), resulting in scale formation and fouling of treatment systems. The reduced treatment efficiency can make any treatment system totally ineffective. The tendency for iron to readily precipitate out of solution requires that concentrations are measured in the field as soon as the sample is collected. This standard operating procedure (SOP) describes measurement procedures that will be used for total and ferrous iron analyses in groundwater using a field laboratory kit.

2.0 EQUIPMENT SPECIFICATIONS

Both total and ferrous iron analyses will be performed using the HACH® Model DR/700 Portable Colorimeter. Calibrations for each analytical parameter are stored in interchangeable filter modules, allowing for direct readouts of concentrations. Module 50.01 provides a direct readout for all tests measured at wavelengths of 500 nanometers (nm), including total and ferrous iron. The colorimeter's specifications include the following:

- Percent Transmittance 0.0 to 200.0% T
- Absorbance -0.300 to 2.000 Abs
- Relative %T 0.0 to 9999% T
- Relative Abs +4.00 to -3.60 Abs
- Detector Silicon Photocell
- Light Source Tungsten Lamp

- Operating Temperature Range -40 to 60 °C
- Linearity < ±0.004 Abs @0.3 Abs
- Repeatability < ±0.004 Abs @0 Abs

3.0 MEASUREMENT

Groundwater samples collected during sampling will be analyzed in the field for total and ferrous iron using HACH® analyses. The samples will be analyzed for ferrous iron by method 8146 and total iron by method 8008 samples using a HACH® DR/700 Colorimeter. The HACH® field analyses, which are described in more detail below, will be performed in accordance with the protocol prescribed by the manufacturer.

3.1 TOTAL IRON

Total iron in groundwater samples will be measured in accordance with HACH® method 8008, an adaptation of the FerroVer Method described in *Standard Methods for the Examination of Water and Wastewater*. The field method for total iron analysis has proven to be accurate and comparable to laboratory analyses. Total iron analyses using the HACH® colorimeter and chemical reagents will be performed as follows:

- Install module 50.01 in the DR/700 Colorimeter.
- Select program number 50.03.1.
- Fill a 10-mL borosilicate glass vial with the groundwater sample.
- Add the contents of one FerroVer Iron Reagent Powder Pillow to the sample vial. Cap and invert to mix.
- Wait 3 minutes for the reaction to occur.
- Insert the prepared sample into the colorimeter cell holder and record the results.

FerroVer Iron Reagent reacts with all soluble iron and most insoluble forms of iron in the sample to produce a total ferrous iron concentration. This reacts with the 1,10 phenanthroline indicator in the reagent to form an orange color in proportion to the iron concentration.

3.2 FERROUS IRON

Ferrous iron in groundwater samples will be measured in accordance with HACH® method 8146, an adaptation of the 1,10 Phenathroline Method in *Standard Methods for the Examination of Water and Wastewater*. The field method for ferrous iron has proven to be accurate and comparable to laboratory analyses. Ferrous iron analysis will be performed as follows:

- Install module 50.01 in the DR/700 Colorimeter.
- Select program number 50.01.1.
- Fill a 25-mL borosilicate glass vial with the sample.
- Add the contents of one Ferrous Iron Reagent Powder Pillow to the sample vial. Cap and invert to mix.
- Wait 3 minutes for the reaction to occur.
- Insert the prepared sample into the colorimeter cell holder and record the results.

The 1,10 phenanthroline indicator in the Ferrous Iron Reagent reacts with ferrous iron in the sample to form an orange color in proportion to the ferrous iron concentration. Ferric iron does not interfere. The ferric iron concentration can be determined by subtracting the ferrous iron concentration from the results of the total iron test.

4.0 ACCURACY CHECK

At least one time during each sampling event, a spike standard and a method blank (distilled water) will be analyzed to check accuracy. In addition, duplicate analyses will be run on at least one out of every ten field samples and the spike standard to check precision. Standards can be used to check the accuracy of a procedure and the freshness of the reagents. If a known standard solution is tested and gives the correct concentration test result, the reagents are working properly and the procedure is being followed correctly.

4.1 TOTAL IRON

The protocol for total iron specifies a single spike standard (1.0 mg/L) accuracy check. A 1.0 mg/L total iron standard solution will be prepared by diluting 1.00 mL of Iron Standard Solution (100 mg/L Fe) to 100 mL with demineralized water.

4.2 FERROUS IRON

The protocol for ferrous iron specifies a single spike standard (1.0 mg/L) accuracy check. A ferrous iron stock solution (100 mg/L Fe^{2+}) will be prepared by dissolving 0.7022 grams of Ferrous Ammonium Sulfate hexahydrate in demineralized water. The solution will then be diluted to 1 Liter. 1.0 mL of the stock solution will be diluted to 100 mL with demineralized water to make a 1.0 mg/L standard solution.

5.0 DILUTION

The applicable concentration range for both analytical methods (HACH® methods 8008 and 8146) is 0 to 5.00 mg/L. In the event that the maximum concentration is exceeded, a portion of the sample must be diluted with distilled water and the analysis should be run again on the diluted sample.

SOP-10

MEASUREMENT OF GROUNDWATER FIELD PARAMETERS

Selected modifications have been made to SOP-10 to include groundwater monitoring equipment that will be used in the field by Parsons ES. The pre-existing SOP is largely applicable with the exception of the following:

3.0 OXIDATION-REDUCTION

3.2 SPECIFICATIONS (of Horiba D-22 pH/ORP meter)

Range:	-1999 to +1999 mV
Accuracy:	1 mV
Reproducibility:	± 1 mV ± 1 digit

4.0 PH METER

4.2 SPECIFICATIONS (Horiba U-10 Water Quality meter)

Principle:	Glass Electrode
Range:	0.00 to 14.00 Std. pH units
Resolution:	0.01 (Expanded Readout)
Temp. Compensation:	Yes (0° to 50° C)
Repeatability:	± 0.05

5.0 DISSOLVED OXYGEN METER

5.2 SPECIFICATIONS (Horiba U-10 Water Quality meter)

Principle:	Membrane Galvanic Cell
Range:	0 to 19.9 mg/L
Resolution:	0.01 mg/L (Expanded Readout)
Temp. Compensation:	Yes (0° to 40° C)
Repeatability:	± 0.1 mg/L

6.0 SPECIFIC CONDUCTANCE METER

6.2 SPECIFICATIONS (Horiba U-10 Water Quality meter)

Principle:	4-electrode
Range:	0 to 100 mS/cm
Resolution:	0.01 mS/cm (Expanded Readout)
Temp. Compensation:	Yes (0° to 50° C)
Repeatability:	± 1 %

7.0 THERMOMETER

7.2 SPECIFICATIONS (Horiba U-10 Water Quality meter)

Principle:	Themistor
Range:	0° to 50° C
Resolution:	0.1 °C (Expanded Readout)
Repeatability:	± 0.3 °C

SOP-11

FIELD SCREENING FOR VOLATILE ORGANIC COMPOUNDS

Selected modifications have been made to SOP-11 to include field screening equipment that will be used in the field by Parsons ES. The pre-existing SOP is largely applicable with the exception of the following addition:

8.0 PE PHOTOVAC 2020

8.1 PE PHOTOVAC 2020 PHOTOIONIZATION DETECTOR (PID)

The Photovac PID measures the concentration of airborne photoionizable gases and vapors and automatically displays these concentrations.

A gas stream is directed into the Photovac PID through a small port at the center of the UV lamp window and through a series of larger ports around the perimeter of the lamp window. A UV lamp generates photons which ionize specific molecules in the gas stream. The ionized molecules in the detector cell are then subjected to a continuous electric field. The ions move in the electric field, generating a current which is proportional to the concentration of the ionized molecules in the detector cell. An electrometer circuit converts this current to a voltage that is then fed to a microprocessor. The microprocessor subtracts any background from the signal and divides this signal by a sensitivity value obtained by calibrating a standard gas of known concentration.

A standard of isobutylene at a known concentration is typically used for setting the sensitivity of the PID. If the Photovac PID is calibrated with isobutylene, it displays concentrations in units equivalent to ppm of isobutylene. If isobutylene were the only photoionizable chemical in the sample, then the Photovac PID would display true parts-per-million (ppm) concentrations directly. As such, isobutylene has a Response Factor (RF) $=1.0$. The Photovac PID responds more or less readily to other chemicals than it does to isobutylene, however. Table SOP-11-3, modified from the "PE Photovac 2020 User's Manual" (PE Photovac, 1997), lists response factors for various gases.

8.2 LIMITATIONS

- Does not distinguish between individual pollutants.
- Permanent gases (argon, carbon dioxide, nitrogen, oxygen, water vapor, etc.) require a relatively high energy for ionization, and are not ionized by the UV photons. However, many chemicals which are considered pollutants, including most hydrocarbons, are readily ionized.
- Methane will not be detected by the PE Photovac PID.
- Total concentrations are relative to the calibration gas used. Therefore, actual contaminant species and their quantities cannot be identified.
- Exposure to excessive heat, cold, or intensive sunlight may result in erroneous readings.

8.3 MAINTENANCE AND CALIBRATION

The instrument user is responsible for properly calibrating and operating the instrument. When the instrument is scheduled for or requires maintenance, these functions should be conducted only by qualified individuals. If possible, maintenance responsibilities should be restricted to one or two individuals who will also bear responsibilities for logging the equipment in and out. Documentation of instrument user, dates of use, instrument identification number, maintenance and calibration functions, and project identification shall be maintained.

8.4 SPECIFIC PROCEDURES

8.4.1 Startup and Calibration Procedures

- Press the ON/OFF key.
- Press the "Set" and "Clock" keys to ensure the correct time is entered. Press the ENTER key to ensure the correct date has been entered.
- Ensure the battery pack is fully charged.
- Select "Set" and then "Cal".
- Press the ENTER key and enter a response factor (See Table 11-3).
- Press the ENTER key and enter an alarm level.
- Connect the supply of zero air. If you are using a gas bag with zero air, open the bag and connect the gas bag adapter to the inlet.

- Select "Set" "Cal" and "Zero". The Photovac PID sets its zero point.
- Select "Set" "Cal" and "Span". The Photovac PID asks for the span gas concentration. Enter the known span gas concentration, without pressing the ENTER to confirm it.
- Open the bag and then connect the gas bag adapter to the inlet. Press ENTER. Do not allow the PID to evacuate the gas bag completely.
- When the display reverts to the default display, the Photovac PID is calibrated and ready to use.

8.4.2 Shutdown Procedures

- Press the ON/OFF key.
- Plug the AC adapter into the jack located on the back of the Photovac PID. Plug the AC adapter into an AC outlet. The LED on the PID indicates the charge state. Red indicates the battery is being charged. Green indicates the battery is fully charged and ready for use. Charging a fully discharged battery pack will take approximately 4 hours.

8.4.3 Removing and Replacing the UV Lamp

- Ensure the instrument is turned off.
- Remove the lamp housing cover.
- Tilt the unit slightly and remove the lamp.
- Discard the o-ring and spring supplied with the replacement lamp.
- Without touching the lamp window, place the new lamp into the lampholder, window first.
- Replace the lamp housing cover and tighten the cover down.

8.4.4 Cleaning the UV Lamp Window

- Ensure the instrument is turned off.
- Remove the lamp as outlined previously.
- Allow the lamp to cool to room temperature to avoid thermal shock which could crack the window.

- Dampen a cotton swab in methanol and dab it into the aluminum oxide cleaning powder. Allow a small amount of the cleaning compound to adhere to the cotton tip.
- Using small circular motions, rub the cleaning compound onto the lamp window for approximately 1 minute.
- Dampen another cotton swab with methanol and remove any trace amounts of the cleaning compound from the lamp window.
- Wipe the window and the lamp with a dry, lint free tissue to remove any trace amounts of the cleaning compound and methanol.
- Without touching the lamp window, replace the lamp.

8.4.5 Replacing the Sample Inlet Filter

- Ensure the instrument is turned off.
- Unscrew the filter housing from the detector housing. Be careful not to lose the o-ring seal.
- Remove the Teflon/Polypropylene filter and install the new filter. Place the filter so that the Teflon side is facing down in the filter housing and the mesh side is facing the detector.
- Replace the filter housing.

8.4.6 Maintenance and Calibration Schedule

Function	Frequency
Perform routine calibration	Prior to each use.
Factory checkout and calibration	Annually or when malfunctioning or after changing UV light source.
Wipe down readout unit	After each use.
Clean UV light source window	Every month or as use and site conditions dictate.
Replace the sample inlet filter	Weekly, or as use and site conditions dictate.
Recharge battery	After each use.

8.4.7 Troubleshooting

- Signal from zero gas is too high.
  - If another fault occurred while the PID was setting up its zero point, this fault is displayed. Ensure no faults are occurring and calibrate the instrument again.
  - Contamination of sample line, probe, or the inlet filter. Clean and replace the sample line, probe, and inlet filter.
  - Ambient air is contaminated. If you are unsure about the quality of ambient air, use a supply of commercial zero grade air cylinder.
- Signal from span gas is to low.
  - UV lamp window is dirty. Clean the UV lamp window.
  - UV lamp is failing. Install a new UV lamp.
  - Incompatible application. The concentration and sample gas are mixed up or incompatible with the PID.
- UV lamp fault. UV lamp has not started.
  - UV lamp has not started. Turn the PID on and off again. Allow 60 seconds for the UV lamp to start and for the fault to clear.
  - UV lamp is failing. Install a new UV lamp.
  - Electronic problem. If a new UV lamp still generates this fault, then contact the PE Photovac Service Department.
- Pump current is too low or too high.
  - If the pump sounds labored, it is operating beyond normal operating conditions. Check for an obstruction in the sample line, sample probe, and inlet filter.
  - UV lamp is too wide, causing flow to be restricted. Contact the PE Photovac Service Department.
  - PID has been exposed to a solvent that can pass through the inlet filter and liquid has been aspirated. Contact the PE Photovac Service Department.
  - The pump has failed. Contact the PE Photovac Service Department.

- Very low or no instrument response detected, yet compounds are known to be present.

  - PID has not been calibrated properly. Ensure that the calibration gas is of a reliable concentration and then recalibrate the instrument. After the instrument has been calibrated, sample the bag of calibration gas. A reading equivalent to the calibration gas concentration should be displayed. If not, contact the PE Photovac Service Department.

  - Response factor has been set to zero. Enter the correct response factor. If the compound is not listed or you are measuring gas mixtures, enter a value of 1.0.

  - Detector is leaking, resulting in a decrease in sensitivity. Ensure that the UV lamp, o-ring seal, and lamp cover have been installed correctly.

  - Sampling environment is extremely humid. Water vapor is not ionized by the PID, but it does scatter and absorb the light, resulting in a lower reading.

  - High concentration of non-ionizable compounds. Chemical compounds, such as methane, with ionization potentials greater than 10.6 eV scatter and absorb the UV light. Sensitivity may be decreased significantly.

- Erroneously high readings

  - Sampling environment is extremely humid. Water vapor may contain mineral salts which carry a charge. The water vapor becomes an electrolytic solution which becomes ionized as it enters the detector.

  - PID has not been calibrated properly.

  - Detector has been short circuited by foreign material in the detector cell. Do not touch the wire grid inside the detector cell. Use a gentle jet of compressed air to remove dust and dirt in the detector cell.

- Instrument status shows "Over"

  - High concentrations of gases and vapors will cause a rapid change in signal level. The detector and associated electronics may become temporarily saturated. Move the PID to a location where it can sample clean air. Sample clean air until the reading stabilizes around zero.

  - PID has not been calibrated properly.

- Detector has been short circuited by foreign material in the detector cell. Do not touch the wire grid inside the detector cell. Use a gentle jet of compressed air to remove dust and dirt in the detector cell.

TABLE SOP-11-3

Compound	RESPONSE FACTOR
Acetaldehyde	10.5
Acetone	1.2
Acrolein (2-Propenal)	4.0
Allyl Chloride (3-Chloro-1-Propene)	3.9
Benzene	0.5
Bromoform (Tribromomethane)	2.0
1,3-Butadiene	0.7
n-Butanol	3.4
n-Butyl Acetate	2.3
n-Butyl Acrylate	1.8
n-Butyl Mercaptan (Butanethiol)	0.6
Carbon Disulfide	1.3
Chlorobenzene	0.4
Crotonaldehyde (2-Butenal)	1.2
Cumene (Isopropylbenzene)	0.6
Cyclohexane	1.3
Cyclohexanone	0.9
1,2-Dichlorobenzene (ortho-)	0.5
Cis-1,2 Dichloroethylene	0.8
Trans-1,2 Dichloroethylene	0.4
N,N-Dimethylformamide (DMF)	0.8
1,4-Dioxane	1.3
Epichlorohydrin	6.5
Ethanol	8.8
Ethyl Acetate	3.8
Ethyl Acrylate	2.3
Ethylbenzene	0.5
Ethyl Cellosolve (2-Ethoxyethanol)	1.3
Ethyl Ether (Diethyl Ether)	1.2
Ethyl Mercaptan (Ethanethiol)	0.6
Ethylene	10.1
n-Heptane	2.4

Compound	RESPONSE FACTOR
n-Hexane	4.7
Hydrogen Sulfide	3.3
Isobutyl Acetate	2.6
Isobutyraldehyde	1.1
Isopentane	8.2
Isoprene (2-Methyl-1,3-Butadiene)	0.6
Isopropanol	4.4
Isopropyl Acetate	2.6
Isopropyl Ether	0.8
Methyl Bromide (Bromomethane)	1.6
Methyl Ethyl Ketone (2-Butanone)	0.8
Methyl Isobutyl Ketone	1.0
Methyl Mercaptan	0.5
Methyl Methacrylate	1.4
Methyl tert-Butyl Ether (MTBE)	0.8
Monomethylamine	1.3
n-Nonane	1.4
Iso-Octane (2,2,4-Trimethylpentane)	1.2
n-Pentane	10.4
n-Propanol	5.1
Propionaldehyde (Propanal)	14.8
n-Propyl Acetate	3.1
Propylene	1.2
Propylene Oxide	5.8
Styrene	0.4
Tetrachloroethylene (Perchloroethylene)	0.5
Tetrahydrofuran	1.5
Toluene	0.5
Trichloroethylene (TCE)	0.5
Trimethylamine	0.9
Vinyl Acetate	1.2
Vinyl Bromide	0.4
Vinyl Chloride (Chloroethylene)	1.7
Vinylidene Chloride (1,1-DCE)	0.8
Meta-Xylene	0.5
Ortho-Xylene	0.5
Para-Xylene	0.5

SOP-13A
ELECTROMAGNETICS (EM) SURVEYS

1.0 OBJECTIVE

The purpose of this procedure is to provide general technical information concerning high resolution electromagnetic surveys and their conduct in the field using the EM31, the EM38 and/or the EM34 instruments.

2.0 SCOPE

This procedure addresses the use and application of high resolution EM survey methods. It is not intended to provide a complete discussion of state-of-the-art in high resolution EM survey techniques. A generalized approach to conducting an EM survey is outlined. This approach is summarized and is to be utilized as a guide to providing EM services. EM survey techniques are specialized in terms of methods and equipment and use of survey techniques is project and site specific.

3.0 REQUIREMENTS

Prior to initiation of geophysical field activities, project objectives must be defined as they relate to the application of EM investigations.

Planning of field activities at a project site is based on defining specific objectives or targets utilizing EM technology. A field plan should allow sufficient latitude and flexibility for the geophysicist to modify technical parameters (many of which can not be determined without prior site experience) such as line direction, line spacing and sampling interval. Changes in application of the methodology and/or refinement of technical parameters will be reported to the on-site client representative.

Planning prior to field operations must address the following issues based on EM surveys conducted at sites of similar geology, soil type and/or type of waste materials:

1. Determine the proper instrument necessary to achieve the depth of investigation needed to sense conditions that are desired from the survey. Site specific operational considerations or limitations of the instrument's coil spacings should be addressed.

2. The rationale for selection of EM line locations and orientations relative to the site objectives must be addressed. Determination of whether a series of parallel line coverage or multiple profiles are appropriate.

3. An assessment should be made of line spacing (density) and digital sampling along the line needed to provide adequate resolution of the subsurface project objectives.

4. Health and safety issues must be addressed relative to anticipated hazards within the project site.

5. All necessary permits, landowner permissions, clearances, and notifications, must be completed prior to initiation of field operations.

6. The locations of above and underground utilities should be determined along EM lines. Typically, the presence of utility lines affect instrument readings as the coil size increases, that is, the EM34 is more susceptible than the EM31, and the EM31 is more susceptible than the EM38. Typical clearances that might be expected are 25 to 100 feet for EM34 measurements, 10-25 feet for EM31 measurements and 3-10 feet for EM38 measurements.

4.0 REFERENCES

4.1 McNeil, Duncan 1976-1990. Ground Conductivity Measurements Using EM Instruments, Geonics, Ltd., Mississauwa, Ontario, Canada, EM instrument manuals, Canada.

4.2 Benson, R.C., Glaccum, R.A. and Noel, M.R. 1982. Geophysical Techniques for Sensing Buried Wastes and Waste Migration, Technos, Inc. Miami, FL, Contract No. 68-03-3050, USEPA Environmental Monitoring Systems Laboratory, Las Vegas, NV.

4.3 Costello, R.L., 1980. Identification and Description of Geophysical Techniques, Report No. DRXTH-TE-CR-80084, U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, MD; Defense Technical Information System Number ADA 12393.

5.0 DEFINITIONS

5.1 EM LINE

The line along which EM data are collected.

5.2 EM METHOD

The geophysical method which utilizes the recording and measurement of artificially produced electromagnetic fields to determine changes in bulk subsurface conductivity to assess for geologic structure, soil conditions, the presence of buried (bulk and metallic) materials, and conductive contaminants.

5.3 EM38, EM31, EM34

A family of EM instruments manufactured by Geonics Ltd. of Canada. Each instrument transmits EM energy using electrical coils into the surrounding ground, which cause current loops. These loops generate weak electrical fields that are sensed by the receiver coil of the instrument. Instruments increase in size as a function of their coil spacings:

EM38 - 1 meter

EM31 - 3.6 meters

EM34 - 10, 20, or 40 meters (EM34XL - higher power option in instrument)

5.4 RECORDER

An electronic device that records the electrical signals generated by the EM instrument. Both analog and digital recorders are used. Typically, digital methods are employed to facilitate input of data into field/office computers for processing. Older style chart recorders provide instantaneous, continuous profiles of the data that have to be digitized for computer use.

5.5 SURVEY PARAMETERS

Typical survey applications employ a series of parallel lines to cover an area with a high density of EM lines to map buried wastes or changes in fill or soil conditions. The spacing between these lines controls one aspect of the resolution of the survey. The second aspect is the sampling interval employed by the digital recorder along these lines. The closer the spacing and the smaller the sampling interval, the greater the probability of sensing and delineating changes in ground conductivity or the presence of buried metal.

Line Spacing - line spacings typically range from 2 to 20 feet for the EM38 and EM31 instruments and 20 to 100 feet for the larger EM34 instrument.

Sampling Interval - sampling intervals typically range from 1.0 to 10 feet for the EM38 and EM31 instruments and 10 to 100 feet for the EM34 instrument.

5.6 TRUCK MOUNTED EM

A specially equipped field truck that is capable of efficiently carrying out an EM34 survey using the 10 meter coil spacing. The EM coils and electronics are placed on wooden booms in the front and back sides of the vehicle, and are supported by a tripod-cable system. Post processing equations remove the electrical effect of the steel vehicle.

6.0 RESPONSIBILITIES

6.1 PROJECT GEOPHYSICIST

Responsible for defining the scope of the EM survey during development of the work plan with the assistance of the site geophysicist and client.

6.2 SITE GEOPHYSICIST

Responsible for proper collection and interpretation of the EM data on-site and the later processing of the EM data. Also oversees the interpretation and presentation of EM contour maps/profiles presented in the survey report.

7.0 EQUIPMENT

The equipment necessary to conduct an EM survey is specialized and varies depending on site specific requirements. Equipment typically used includes the following:

1. Geonics EM38, EM31 and/or EM34XL instruments.
2. Polycorder digital data logger.
3. EM-to-Polycorder cable (for transfer of readings to recorder).
4. Field computer to download, store and preliminary process EM data from Polycorder.
5. 4-wheel drive field vehicles as necessary, Truck Mounted EM34
6. Other field supplies as appropriate: tapes, hammers, flagging, spray paint, etc. to generate and setup survey grid or profile line locations and stations along lines.

Operation and quality control concerns relative to equipment and field methods will be in accordance with manufacturer's instructions and guidelines. Quality control issues are discussed within the appropriate section of this field procedure.

8.0 PROCEDURE

8.1 GENERAL EM THEORY

Electromagnetic (EM) geophysical methods provide a means of measuring the electrical conductivity of subsurface soil, rock or groundwater. This electrical conductivity is a function of the type of soil or rock, the porosity and permeability of the materials, and the nature of fluids that fill the pore space in the medium. In most cases, the conductivity (specific conductance) of the pore fluids will dominate the measurement. Accordingly, the EM method is applicable to the assessment of natural hydrogeologic conditions as well as the mapping of many types of contaminant plumes. In addition, buried wastes, drums, and trenches as well as metallic utility lines may be located using the inphase component of the conductivity circuitry.

Natural variations in subsurface conductivity may be caused by changes in soil moisture content, groundwater specific conductance, depth of soil cover over rock, and thickness of soil and rock layers. Changes in soil or rock types and structural features such as fractures or voids may also produce changes in conductivity. Localized deposits of organic materials, clay, sand, gravel, or salt-rich zones will also affect subsurface conductivity.

Many contaminants will produce an increase in free ion concentrations when introduced into soil or ground-water systems. This increase over background conductivity values enables detection and mapping of contaminated soil and groundwater at spill or leak sites, landfills, impoundments, and hazardous waste sites. Large amounts of organic fluids such as petroleum fuels can displace the normal soil moisture, causing a decrease in conductivity. Although the aerial extent of such fluids can be mapped, it is not commonly done. The mapping of a plume with EM methods will usually define the local flow direction of

contaminants. Contaminant migration rates can be established by comparing measurements taken at different times.

The absolute values of conductivity for geologic materials (and contaminants) are not necessarily diagnostic in themselves, but the variations in conductivity, laterally and with depth, are significant. It is these variations that enable the investigator to rapidly find anomalous conditions that may be of concern.

EM instruments are composed of transmitter and receiver coils. The transmitter coil radiates an electromagnetic field, which induces eddy currents in the ground below the instrument. Each of these eddy current loops, in turn, generate a secondary electromagnetic field that is proportional to the magnitude of the current flowing within that loop. A part of the secondary magnetic field from each loop is intercepted by the receiver coil and produces an output voltage, which (within limits) is linearly related to subsurface conductivity. This reading is a bulk measurement of ground conductivity, i.e., the cumulative response to subsurface conditions ranging from the surface to the effective depth of the instrument.

The sampling depth of EM equipment is related to the instrument's coil spacing. The nominal sampling depth of each system is approximately one and one-half times the coil spacing. Accordingly, the nominal depth of response for the Geonics EM38, EM31 and EM34 (10, 20, 40 meter coil spacing) is 1.5, 6, 15, 30, and 60 meters (approximately 5, 20, 50, 100, and 200 feet).

The conductivity value read on the instrument is a composite measurement, representing the combined effects of all layers below the instrument including the thickness of soil and/or rock layers, their depth, and the specific conductivities of these layers, from the surface to the nominal depth of the instrument. The conductivity values are influenced more strongly by layers in the middle portion of their depth range; conductivity conditions from the surface to the instrument's nominal depth range contribute about 75% of the instrument's response. However, contributions from highly conductive layers at greater depths may have a

significant influence on the reading, particularly if the near-surface layer(s) has very low conductivity.

EM instruments are calibrated to read subsurface conductivity in units of millisiemens/meter (formerly called millimhos/meter). These units are related to resistivity units as follows:

$$1000/(\text{mS/m}) = 1 \text{ ohm-meter}$$
$$1000/(\text{mS/m}) = 3.281 \text{ ohm-feet}$$

Inphase metal readings provided by the EM31 and EM34 instruments are acquired instantaneously during conductivity measurements; this signal is an early component of the conductivity reading that is susceptible to buried metal materials. Inphase metal units are given in terms of part-per-thousand (ppt).

8.2 EM SURVEY METHODS

High resolution EM surveys are employed to detect many different subsurface conditions such as changes in soil/fill conditions, location of buried wastes and metallic targets and conductive features such as groundwater plumes that have increased electrolyte content. Coverage of the area of concern must take into account the type(s) of features sought, that is, the resolution of the investigation must be consistent with the size, orientation, and nature of the features to be detected and mapped. Due to the rapidity at which EM measurements can be acquired and processed (using the increased computer processing available today), investigations with very high resolution can be economically implemented. Most often these investigations are made using a series of parallel lines over the suspect area.

If relatively small targets need to be located, line spacings are placed close together. Line spacings of 2 feet for the EM38 instrument and 5 feet for the EM31 instrument provide approximately 100 percent coverage, based on the lateral sensitivity of these instruments for targets, such as artillery shells and individual buried steel drums, respectively. Greater spacings of 10 to 20 feet are appropriate for locating linear features such as buried channels,

old utility lines or landfill edges, if the orientation of the EM survey lines is approximately perpendicular to the feature. For the EM34, 10, 20, 40-meter coil spacing measurements are made as discrete station along lines typically 20 to 200 feet apart. Truck Mounted EM34-10 lines are spaced 20 feet apart and are used to locate geologic features or large conductivity plumes.

Collecting measurements along the EM line (or the Sampling Interval) is the second aspect of the survey density. Intervals of 2.5 to 5 feet are usually appropriate for the EM38 and EM31 instruments for locating buried man-made features such as finding drums, utility lines, or fill boundaries. Greater intervals of 10 to 50 feet are appropriate for larger, geologic structures or gross soil/bedrock changes. Truck Mounted EM34-10 sampling intervals are generally 10-20 feet apart, dependent on the amount of anthropogenic fill and cultural interferences.

Typically, these data are recorded onto the Polycorder data logger using a special cable from the EM instrument. The analog EM signals are converted to digital readings using software particular to the Polycorder and Geonics instruments. As the recorder is filled to capacity, it is periodically downloaded to a field computer for temporary storage and preliminary processing to ensure that all header information is correct for the field parameters. These data may then be processed into preliminary contour maps for field use or later processing and plotting with CAD maps of the site on a more powerful office computer/plotter system.

8.2.1 Quality Control

At the beginning of each survey, the EM instrument is taken to a corner of the site or a nearby off-site location to perform check readings and adjustments as suggested in the Geonics instrument manuals. Typically, several measurements are made at this calibration location to check the operation and consistency of the instrument readings. At sites with very low conductivity (below 10 mS/m), this type of check is important. It is also important if comparing inphase metal readings over several days of operation, as small drift occurs due to battery wear (yet still within operating voltages) and if two different EM instruments are used.

These readings can be recorded in a notebook or onto the Polycorder for more extensive or lengthy survey periods. Slight adjustments may or may not be made to the data, dependent on these check readings.

8.3 FIELD OPERATIONS OF EM SURVEYS

8.3.1 Mobilization

Field activities begin with the mobilization of equipment and crew to the site. Planned EM lines/coverage area are located and gridded using colored pin flags and/or spray paint. Any unanticipated logistical problems are addressed at this time.

8.3.2 Field Testing and Gridding

An initial walk around (testing) is performed (with the EM38 or EM31) to determine optimum EM instrument scale settings on the instrument(s). The operator tries to obtain a "feel" for the high conductivity and low (background) conductivity areas of the site. The optimum scale setting for the site will then be determined. Generally this is the 10-30 scale for geologic conditions and the 100 or 300 scale for landfill or buried metal sites. An assessment will be made for localized interferences by running a series of parallel lines across the site; fences, railroad tracks, power lines and buried utility lines can adversely affect the quality of the survey if not properly considered. Based on these evaluations and consultation with the client, setting up of grid baselines and gridding of the survey area will commence. Check readings will be made at a designated location for quality control of readings.

8.3.3 EM Survey

The survey will be performed along the proscribed survey grid lines, using the appropriate orientation, line spacing and sampling interval. Data will be recorded on the Polycorder

logger and periodically downloaded to the hard drive of the field computer. EM header files will be checked for proper line number and start points; appropriate range of values will be checked in the D-data file. A backup of field files will be made on a floppy disk.

8.3.4 Preliminary Survey Results

If appropriate, the data will be reviewed each evening and checked for expected value ranges. The data may be preliminary processed and contoured to provide insight on gross site features and possible cultural interferences. These contours may be used to change line orientation or increase density of lines in certain areas, if warranted by unexpected utility lines or smaller targets.

8.4 Data Processing, Analysis and Interpretation

Full data processing and editing are applied to the data when performing the final data analysis and interpretation in the office. The various steps applied during processing are data specific, but may include conversion of data from raw Geonics files to standard 3 coordinate files (X, Y, Z reading) files. Data are gridded using Surfer for Windows software and Krigging algorithms. Appropriate search dimensions are used for the X and Y coordinate directions; smoothing and contrasting color contouring schemes are selected as needed. Contour data are labeled as to known interferences (fences, sewer lines, etc.) and interpreted features using information from field notes and suspected conditions.

8.5 EM Survey Report

A report (or chapter in a more expansive report) will be prepared which describes the EM survey, line locations, contour maps, and interpretation of the results. The report will include contour maps (or profiles) referenced to site features or placed on a CAD map of the site. Recommendations will be made if appropriate.

SOP-13B
SEISMIC REFLECTION SURVEYS

1.0 OBJECTIVE

The purpose of this procedure is to provide general technical information concerning high resolution seismic reflection surveys and their conduct in the field.

2.0 SCOPE

This procedure addresses the use and application of high resolution seismic reflection survey methods. It is not intended to provide a complete discussion of state-of-the-art in high resolution reflection survey techniques. A generalized approach to conducting a seismic reflection survey is outlined. This approach is summarized and is to be utilized as a guide to providing seismic reflection services. Seismic reflection survey techniques are specialized in terms of methods and equipment. Use of seismic reflection survey techniques is project and site specific.

3.0 REQUIREMENTS

Prior to initiation of geophysical field activities, project objectives must be defined as they relate to the application of high resolution seismic reflection investigations.

Planning of field activities at a project site is based on defining specific objectives or targets utilizing seismic reflection technology. A field plan should allow sufficient latitude and flexibility for the geophysicist to modify technical parameters (many of which can not be determined without prior site experience) such as energy source, geophone spacing and shot interval. Changes in methodology and/or refinement of technical parameters will be reported to the on-site client representative.

Planning prior to field operations must address the following issues based on seismic reflection surveys conducted at sites of similar geology:

1. Energy source and method of generating the seismic pulses necessary to penetrate sufficiently deep into the subsurface and reflect back to the geophones. Site specific operational considerations or limitations of energy source selections need also be addressed.

2. The rationale for selection of seismic line locations and orientations relative to the site objectives.

3. Geophone spacing and shot point interval relative to providing adequate seismic resolution of the subsurface project objectives.

4. Health and safety issues must be addressed relative to anticipated hazards within the project site.

5. All necessary permits, landowner authorizations, clearances, and notifications.

6. The locations of potentially affected underground utilities along seismic lines. Typically, the underground clearance covers a 5 to 10 foot wide area that traverses the seismic line. The reason for a subsurface clearance is to prevent augering the geophone plant holes or shot holes into underground utilities. Penetration of borings is usually 1 to 3 feet.

4.0 REFERENCES

4.1 Benson, R.C., Glaccum, R.A. and Noel, M.R. 1982. Geophysical Techniques for Sensing Buried Wastes and Waste Migration, Technos, Inc. Miami, FL, Contract No. 68-03-3050, USEPA Environmental Monitoring Systems Laboratory, Las Vegas, NV.

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4.4 Shariff, R.E., 1976. Encyclopedic Dictionary of Exploration Geophysics, Society of Exploration Geophysics, Tulsa, OK.

4.5 Steeples, D.W. and Miller, R.D., 1988. Seismic Reflection Methods Applied to Engineering, Environmental, and Ground-Water Problems, Society of Engineering & Exploration Geophysicists, Symposium on the Application of Geophysics to Engineering and Environmental Problems, Golden, CO, p. 409-460.

4.6 Slaine, D.D., Pehme, P.E., Hunter, J.A., Pullans, S.E., Greenhouse, J.P., 1990. Mapping Overburden Stratigraphy at a Proposed Hazardous Waste Facility Using Shallow Seismic Reflection Methods, Geotechnical and Environmental Geophysics, v, II:Environmental and Groundwater, S.H. Ward, Editor, Society of Exploration Geophysics, Salt Lake City, UT, pp 273-280.

5.0 DEFINITIONS

5.1 SEISMIC LINE

The line along which seismic data are collected.

5.2 SEISMIC REFLECTION METHOD

The geophysical method utilizes the recording and measurement of artificially produced elastic wave pulses to determine geologic structure, thickness of geologic formations or units, water table depths, or other geologic information.

5.3 GEOPHONE

A seismic detector that transforms seismic energy into electrical current, which can be recorded by the seismograph.

5.4 SEISMOGRAPH

An electronic device that records the signals detected by the geophones.

5.5 WAVE TYPES

Two general wave types are generated by the energy source which propagate away from the seismic source through the subsurface. The wave types are body waves (longitudinal and transverse waves) and surface waves.

Longitudinal Wave - An elastic wave, in which particle motion is in the direction of propagation. Also called P-wave or compressional wave.

Transverse Wave - An elastic wave, in which particle motion is perpendicular to the direction of propagation. Also called S-wave.

Surface Wave - Seismic wave that propagates along or near the ground surface. Also called ground roll.

5.6 OFFSET DISTANCE

Distance from the seismic source to the geophone.

6.0 RESPONSIBILITIES

6.1 PROJECT GEOPHYSICIST

Responsible for defining the scope of the seismic survey during development of the work plan with the assistance of the site geophysicist and client.

6.2 SITE GEOPHYSICIST

Responsible for proper collection and interpretation of the seismic data on-site and the later processing of the raw seismic data. Also oversees the interpretation and presentation of seismic sections presented in the survey report.

7.0 EQUIPMENT

The equipment necessary to conduct a high resolution seismic reflection survey is specialized and varies depending on site specific requirements. Equipment typically used includes the following:

1. Bison 9000 instantaneous floating point engineering seismograph.
2. 120 channel Input/Output Roll Box (roll along switch)
3. Geophones: Mark Products 30 Hz phones
4. Geophone cables: three 24-channel cables with 20 foot takeouts.
5. Seismic source: Bison EWG 5, Bison EWG 1, Betsy shotgun source, or 12 pound hammer, depending on site specific requirements.
6. Field computer to download and store seismic data.
7. Field-office computer with appropriate software for processing and presentation of seismic data.
8. Field vehicles

9. Other field supplies as appropriate: tapes, hammers, flagging, etc.

Operation and quality control concerns relative to equipment and field methods will be in accordance with manufacturer's instructions and guidelines. Quality control issues are discussed within the appropriate section of this field procedure. Seismic sources are discussed in Section 8.3. The final determination of the source(s) and survey specifications will be based on the results of the on-site feasibility test.

8.0 PROCEDURE

8.1 GENERAL SEISMIC THEORY

Seismographs used in seismic surveys measure and record the arrival time, amplitude, and patterns of artificially produced compressional waves that are detected by geophones. Geophones are arranged in an array along the seismic line. When the energy source is activated, compressional seismic waves propagate radially outward and downward from the energy source. Passage of these waves are measured by geophones at or near the ground surface. These waves move along several paths before being detected by the geophones: direct, reflected, refracted, diffracted, or a combination. The paths are analyzed and travel times and velocities are measured. The reflected wave velocities and travel times are utilized to calculate reflector depths. These reflections are used to interpret geologic and hydrogeologic features. Surface waves produced by the energy source in the seismic reflection survey are generally not used and their existence tend to obscure the measurement of the more definitive reflected longitudinal waves. These low frequency surface waves are commonly referred to as ground roll interference. Data collected by the seismograph is stored on tape or in memory for later processing and analysis.

8.2 SEISMIC REFLECTION SURVEY METHODS AND ENERGY SOURCES

Seismic reflection has been extensively used by the petroleum industry for deep exploration. Current seismic reflection survey methods have been refined and made more applicable to shallow hydrogeologic and engineering investigations.

Shallow high resolution seismic reflection surveys typically employ either common depth point (CDP) or optimum offset methods. These methods may utilize the same geophone array geometries and seismic energy sources. The primary difference is in the location of the source relative to the geophones, the interpretation of seismic data, and the quantity of seismic traces (data) generated for processing. Results from these approaches reliably identify subsurface seismic reflection targets.

Factors considered in the selection of the seismic reflection survey method include: the identification of the dominant frequency reflecting from depths, the correlation of the reflecting horizons with known geology, the adequacy of each of the methods at detecting recognizable and continuous reflections, and the results of the normal moveout (NMO) tests. These factors are determined based on the results of the on-site seismic reflection feasibility test (Section 8.3.2).

8.2.1 Common Depth Point (Or Common Midpoint Method)

The data collection method, in which the same portion of the subsurface is involved in producing reflections at different offset distances. During processing, the data are corrected for normal moveout (differences in travel times to the reflector from different offset distances), and summed to enhance the reflection amplitude while at the same time reducing noise such as ground roll.

8.2.2 Optimum Offset Method

The optimum offset method utilizes a constant source offset distance along the seismic line. Selection of the offset distance is great enough to be beyond the effect of ground roll and direct air wave, yet small enough to provide high resolution of shallow structure.

8.2.3 Seismic Energy Sources

Seismic waves or vibrations are generated from an artificial energy source and measured during shallow high resolution seismic surveys. Energy sources commonly used are a sledge hammer, small explosive charge, weight drop, or accelerated weight drop.

Hammer - A sledge hammer is used to strike a metal plate. A trigger attached to the hammer initiates the seismograph recording. The energy imparted into the ground with each hammer blow is relatively small in comparison to the other sources. Repeated hammer blows are used to sum (or stack) data for a particular shot point. Hammers provide high frequency seismic waves and are repeatable, but may not be suitable in high noise areas (e.g., along busy roads). Hammer blows are non-destructive and pose little safety concerns for the person swinging the hammer. Safety glasses are required. Hearing protection may also be appropriate.

Weight Drops - A weight is lifted and dropped onto a metal plate. Weight drops have more energy than sledge hammer blows, but lack the repeatability. Weight drops tend to bounce after the initial drop adding noise or smear the wavelets. This results in overall lower frequencies. Safety glasses are required.

Accelerated Weight Drops - These are typically trailer mounted and use large rubber bands to accelerate the weight. This system produces more energy than the hammer and is repeatable. The trailer tends to bounce, introducing noise into the record. Stacking of the data is possible. Due to size and weight requirements, this equipment cannot be used in all areas. It is non-destructive and has few health and safety concerns. Safety glasses and hearing protection are required.

Shotgun Shells - The shotgun shell is an excellent source of high frequency seismic waves. The shotgun shells may be either mechanically or electrically detonated. Shells are detonated in shallow boreholes typically 2 inches in diameter and 1 to 3 feet in depth. Disadvantages of this method are that a borehole must be dug, there is a risk, although minimal, in using

explosive charges, and they cannot be used where buried utilities or hazardous objects (such as drums) are suspected. Stacking is not possible because the bore holes are blasted wider and/or deeper. Safety glasses and possibly hearing protection are required.

If the energy source used is a small explosive charge (such as a 10 or 12 gauge shotgun shell) it is detonated in a shallow borehole. These boreholes, if required, are typically 2 inches in diameter, dug with a portable hand auger, and are less than 3 feet deep. The same auger is often used to make boreholes for the geophones to minimize wind and other surface noise.

8.3 FIELD OPERATIONS OF SEISMIC REFLECTION SURVEYS

8.3.1 Mobilization

Field activities begin with the mobilization of equipment and crew to the site. Planned seismic lines are located (staked or flagged) and any unanticipated logistical problems are addressed at this time.

8.3.2 Field Testing

Initial testing is performed to determine optimum data collection parameters. These include the near offset distance and filter settings. The number of stacks for each shot point will be determined for each shot point at the time of each shot, based on the appearance of the printed record.

8.3.3 Seismic Reflection Survey

After completion of the field test and the survey specifications have been decided, the seismic survey will be performed. The survey will proceed with a selection of geophone spacing using the roll box and activation of the seismic source at the appropriate location. After sufficient stacks have been recorded to produce a good seismic record and the data are stored, the roll box is switched to select the next series of geophones and the next record is collected.

8.3.4 Preliminary Survey Results, Filtering and Quality Control

After stacking at each shot point is performed and before data are saved to the field computer, the record is printed on the seismographs printer. The data are reviewed for dead traces, noise levels, and signal strength. If problems are observed, then they are corrected at the time. Preliminary processing is applied to the data each day after leaving the field and plots of the data are reviewed to identify any problems that may be present. If data problems are found, appropriate solutions to the problems are incorporated in the seismic collection procedures.

8.4 Data Processing, Analysis and Interpretation

Full data processing and editing are applied to the data in the office. The various steps applied during processing are data specific, but may include conversion from Bison format to KGS format, gain compensation, field statics corrections, filtering, deconvolution, filtering, normal moveout corrections, stacking, residual static corrections, filtering, automatic gain control, migration, or more filtering.

8.5 Seismic Reflection Survey Report

A report will be prepared that addresses the results of the seismic survey. Seismic sections will be constructed and annotated with interpreted features such as the bedrock surface and identifiable faults. A map will be prepared showing the location of the seismic lines. The report will describe field procedures, processing and results.

SOP-13C
SEISMIC REFRACTION SURVEYS

1.0 OBJECTIVE

The purpose of this procedure is to provide general technical information concerning seismic refraction surveys and their conduct in the field.

2.0 SCOPE

This procedure addresses the use and application of seismic refraction survey methods. It is not intended to provide a complete discussion of refraction survey techniques. A generalized approach to conducting a seismic refraction survey is outlined. This approach is summarized and is to be utilized as a guide to providing seismic refraction services. Seismic refraction survey techniques are specialized in terms of methods and equipment. Use of seismic refraction survey techniques is project and site specific.

3.0 REQUIREMENTS

Prior to initiation of geophysical field activities, project objectives must be defined as they relate to the application of seismic refraction investigations.

Planning of field activities at a project site is based on defining specific objectives or targets utilizing seismic refraction technology. A field plan should allow sufficient latitude and flexibility for the geophysicist to modify technical parameters (many of which cannot be determined without prior site experience) such as energy source, geophone spacing and shot interval. Changes in methodology and/or refinement of technical parameters will be reported to the on-site client representative. The survey will not be continued if inadequate results are obtained.

Planning prior to field operations must address the following issues based on seismic refraction surveys conducted at sites of similar geology:

1. Energy source and method of generating the seismic pulses necessary to penetrate to the layer of interest, travel along its surface, and refract back to the geophones. Site specific operational considerations or limitations of energy source selections should be considered.
2. The rationale for selection of seismic line locations and orientations relative to the site objectives.
3. Geophone spacing and shot point interval relative to providing adequate seismic resolution of the project objectives.
4. Health and safety issues relative to anticipated hazards within the project site.
5. All necessary permits, landowner permissions, clearances, and notifications, must be completed prior to initiation of field operations.
6. The locations of potentially affected underground utilities along seismic lines. Typically, the underground clearance covers a 5 to 10 foot wide area that traverses the seismic line. The reason for a subsurface clearance is to prevent placing the geophone plant holes or shot holes into underground utilities. Penetration of borings is usually 1 to 3 feet.

4.0 REFERENCES

4.1 Benson, R.C., Glaccum, R.A. and Noel, M.R. 1982. Geophysical Techniques for Sensing Buried Wastes and Waste Migration, Technos, Inc. Miami, FL, Contract No. 68-03-3050, USEPA Environmental Monitoring Systems Laboratory, Las Vegas, NV.

4.2 Costello, R.L., 1980. Identification and Description of Geophysical Techniques, Report No. DRXTH-TE-CR-80084, U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, MD; Defense Technical Information System Number ADA 12393.

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4.4 Shariff, R.E., 1976. Encyclopedic Dictionary of Exploration Geophysics, Society of Exploration Geophysics, Tulsa, OK.

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5.0 DEFINITIONS

The definitions of common terms used relating to seismic refraction geophysical methods are presented below.

5.1 SEISMIC LINE

The line along which seismic data are collected.

5.2 SEISMIC REFRACTION METHOD

The geophysical method that utilizes the recording and measurement of artificially produced elastic wave pulses to determine geologic structure, thickness of geologic formations or units, water table depths, and other geologic information.

5.3 GEOPHONE

A seismic detector that transforms seismic energy into electrical current.

5.4 SEISMOGRAPH

An electronic device that records the signals detected by the geophones.

5.5 WAVE TYPES

Two general wave types are generated by the energy source which propagate away from the seismic source through the subsurface. The wave types are body waves (longitudinal and transverse waves) and surface waves.

Longitudinal Wave - An elastic wave, in which, particle motion is in the direction of propagation. Also called P-wave or compressional wave.

Transverse Wave - An elastic wave, in which, particle motion is perpendicular to the direction of propagation. Also called S-wave.

Surface Wave - Seismic wave that propagates along or near the ground surface. Also called ground roll.

5.6 OFFSET DISTANCE

Distance from the seismic source to the geophones.

6.0 RESPONSIBILITIES

6.1 PROJECT GEOPHYSICIST

Responsible for defining the scope of the seismic survey during development of the work plan with the assistance of the site geophysicist and client.

6.2 SITE GEOPHYSICIST

Responsible for proper collection and interpretation of the seismic data on-site and the later processing of the raw seismic data. Also oversees the interpretation and presentation of seismic sections presented in the survey report.

7.0 EQUIPMENT

The equipment necessary to conduct a seismic refraction survey is specialized and varies depending on site specific requirements. Equipment typically used includes the following:

1. Bison 9000 instantaneous floating point engineering seismograph.
2. 120 channel Input/Output Roll Box (roll along switch)
3. Geophones: Mark Products 30 Hz phones
4. Geophone cables: four 24-channel cables with 20 foot takeouts.
5. Seismic source: Bison EWG-5, Bison EWG-3, Betsy shotgun source, or 12 pound hammer, depending on site specific requirements.
6. Field computer to download and store seismic data.
7. Field-office computer with appropriate software for processing and presentation of seismic data.
8. Field vehicles
9. Other field supplies as appropriate: tapes, hammers, flagging, etc.

Operation and quality control concerns relative to equipment and field methods will be in accordance with manufacturer's instructions and guidelines. Quality control issues are discussed within the appropriate section of this field procedure. Seismic sources are more thoroughly discussed in Section 8.3. The final determination of the source(s) and survey specifications will be determined based on the results of initial on-site testing.

8.0 PROCEDURES

8.1 GENERAL SEISMIC THEORY

Seismic refraction was first used to aid in oil exploration for mapping oil bearing structures. Most oil exploration efforts currently involve reflection techniques, however, refraction techniques are still used. Refraction has found an increasing use in engineering and environmental applications and is particularly well suited for providing shallow information.

Seismographs used in seismic surveys measure and record the arrival time, amplitude, and patterns of artificially produced compressional waves detected by geophones. Geophones are arranged in an array along the seismic line. When the energy source is activated, compressional seismic waves propagate radially outward and downward from the energy source. Passage of these waves are measured by geophones at or near the ground surface. These waves move along several paths before being detected by the geophones: direct, reflected, refracted, diffracted, or a combination. The paths are analyzed and travel times and velocities are measured. The first arriving refracted wave velocities and travel times are utilized to calculate reflector depths. These first arrivals are used to interpret geologic and hydrogeologic features. Data collected by the seismograph is stored on magnetic tape or in the computer memory for later processing and analysis.

8.2 SEISMIC ENERGY SOURCES

Seismic waves or vibrations are generated from an artificial energy source and measured during shallow refraction seismic surveys. Energy sources commonly used are a sledge hammer, small explosive charge, weight drop, or accelerated weight drop.

Hammer - A sledge hammer is used to strike a metal plate and a trigger attached to the hammer initiates the seismograph recording. The energy imparted into the ground with each hammer blow is relatively small in comparison to the other sources. Repeated hammer blows

are used to sum (or stack) data for a particular shot point. Hammers provide high frequency seismic waves and are repeatable, but may not be suitable in high noise areas (e.g., along busy roads). Hammer blows are non-destructive and pose little safety concerns for the person swinging the hammer. Safety glasses are required. Hearing protection is also appropriate.

Weight Drops - A weight is lifted and dropped onto a metal plate. Weight drops have more energy than sledge hammer blows, but lack the repeatability. Weight drops tend to bounce after the initial drop, adding noise or smear the wavelets. This results in overall lower frequencies. Safety glasses are required. Hearing protection is also appropriate.

Accelerated Weight Drops - These are typically trailer mounted and use large rubber bands to accelerate the weight. This system produces more energy than the hammer and is repeatable. The trailer tends to bounce, introducing noise into the record. Stacking of the data is possible. Due to size and weight concern, this method cannot be used in all areas. It is non-destructive and has few health and safety concerns. Safety glasses and hearing protection are required.

Shotgun Shells - The shotgun shell is an excellent source of high frequency seismic waves. The shotgun shells may be either mechanically or electrically detonated. Shells are detonated in shallow boreholes, typically 2 inches in diameter and 1 to 3 feet in depth. Disadvantages of this method are that a borehole must be dug, there is a minimal risk in using explosive charges, and they cannot be used where buried utilities or hazardous objects (such as drums) are suspected. Stacking is not possible because the boreholes are blasted wider and/or deeper. Safety glasses and possibly hearing protection are required.

If the energy source used is a small explosive charge (such as a 10 or 12 gauge shotgun shell) it is detonated in a shallow borehole. These boreholes, if required, are typically 2 inches in diameter, dug with a portable hand auger, and are less than 3 feet deep. The same auger is often used to make boreholes for the geophones to minimize wind and other surface noise.

8.3 FIELD OPERATIONS OF SEISMIC REFRACTION SURVEYS

8.3.1 Mobilization

Field activities begin with mobilization of equipment and crew to the site. Planned seismic lines are located (staked or flagged) and any unanticipated logistical problems are addressed at this time.

8.3.2 Field Testing

Most data acquisition parameters are decided upon in the office prior to mobilization to the field. Initial data collected in the field will establish whether the data acquisition parameters are adequate. Specifically, the data will be analyzed to determine whether the deepest layer of interest (generally bedrock) is being detected. The initial data will also be used to determine if geophone are operating properly.

8.3.3 Seismic Refraction Survey

After completion of the field test and the survey specifications are decided, the seismic survey will be conducted. The survey will proceed by selecting geophone spacing using the roll box and activating the seismic source at the appropriate location. After sufficient data stacks have been recorded to produce a good seismic record, the data are stored, the seismic source is moved to the next shot point location and the next record is collected.

8.3.4 Preliminary Survey Results, Filtering and Quality Control

After stacking at each shot point is performed and before data are saved to the field computer, the record is printed on the seismograph printer. The data are reviewed for dead traces, noise levels and signal strength. If problems are observed, then they are corrected at the time. Preliminary processing are applied to the data each day after leaving the field and plots of the

data are reviewed to identify any problems that may be present. If found, solutions to any problems are incorporated in the seismic collection procedures.

8.4 DATA PROCESSING, ANALYSIS AND INTERPRETATION

Full data processing and editing are applied to the data in the office. The various steps applied during processing are picking of first arrival times, assignment of specific layers to each arrival, and interpretation of the data using the GRM method. Any problems in the picked times and layer assignments are identified, corrected and the GRM program is re-run. Several iterations of this process are often required to obtain the most accurate interpretation. The Interpex Software Program Gremix is generally used.

8.5 SEISMIC REFRACTION SURVEY REPORT

A report will be prepared that addresses the results of the seismic survey. Seismic sections will be constructed and annotated with interpreted features such as the bedrock surface and identifiable faults. A map will be prepared showing the location of the seismic lines. If a grid system is used, a contour or 3D map is often generated using the refraction data with boring information. The report will describe field procedures, data processing techniques and results.

SOP-22
HYDRAULIC INTERCONNECTION AQUIFER TESTING

1.0 OBJECTIVE

This standard operating procedure (SOP) discusses the equipment and procedures that will be used to conduct aquifer testing for the purpose of evaluating hydraulic interconnection between the fill and the native sand stratigraphic units.

The fill and the native sand stratigraphic units are separated by a clay-peat layer of variable thickness. It is believed that the fill and the native sand layers are not hydraulically connected due to the lower permeability of the clay-peat layer. The objective of this aquifer testing is to evaluate hydraulic connectivity of the fill and native sand units. This information can then be used to evaluate whether pumping from the upper (fill) zone can also control the flow in the lower (native sand) zone.

This aquifer testing will be performed utilizing nested wells that will be installed at specified locations. A description of the aquifer test is presented in Section 3.0.

2.0 PERSONNEL QUALIFICATIONS

Personnel conducting the aquifer test will be geologists and/or engineers with a background in hydrogeology, or field technicians with an appropriate amount of applicable experience or on-the-job training under the supervision of other qualified personnel.

3.0 PROCEDURE

The procedure for conducting the aquifer testing is described in this subsection. The aquifer testing will be performed utilizing nested wells that will be installed at specified locations. Two nested wells will be installed at each proposed location. One well will be screened in the fill unit and the other will be screened in the native sand unit. Water will be pumped from the well screened in the fill unit using a submersible pump capable of fitting into the well diameters and meeting the pumping rates required. A pressure transducer will be inserted into the well screened in the native sand unit. A data logger will be used to record the response of the native sand well to the pumping. If the two stratigraphic units are hydraulically connected, the water levels in the deeper well should change rapidly due to the pumping. Conversely, if the units are not connected, no change will be observed in the water level in the deep well.

The maximum pumping rate that can be extracted from each well will be determined during well-development. This aquifer testing program will be performed at three different pumping rates. The pumping will start at the rate of approximately 1/4 of the estimated maximum pumping rate. The second step will be at approximately 1/2 of the estimated maximum pumping rate. The third and the final step will be at the estimated maximum pumping rate. The first and the second pumping steps will last no less than 30 minutes. The final pumping step will last no less than 60 minutes. A typical range of time intervals for water level measurements will follow SOP-21.

Water extracted during the pumping will be stored in a temporary storage tank, sampled and analyzed, and then properly disposed.

The pumping test results will be presented as the drawdown vs. time for a given pumping rate. A response of water levels in the deep well to pumping will be used to qualitatively evaluate hydraulic connectivity between the layers.

SOP-23
EMISSION ISOLATION FLUX CHAMBER SOP

1.0 OBJECTIVE

The objective of this procedure is to describe the actions and activities required to collect a sample of surface-emitted VOCs using the surface isolation emission flux chamber sampling method. Sampling equipment and operation, location, QA/QC and analysis are described.

2.0 FIELD MEASUREMENT PROCEDURES

Three locations representative of the surface to be evaluated are selected. A stainless steel collar is placed on the surface and pushed down so at least two inches of collar are below the soil surface. If vegetation extends above the top of the collar, it should be cut off. The flux chamber is bolted to the collar and sample and sweep air lines attached. A thermocouple is inserted into one of the fittings using a bored-through Swagelok™ union and connected to the temperature readout. The pressure gauge is attached to another fitting on the dome and sweep air is supplied from the cylinder. Sweep air rate is set as described below. Pressure in the chamber should not exceed 3 inches water column (w.c.). A SUMMA canister is connected to the sample tap on the sample line manifold and a bypass rotameter on the discharge of the manifold.

3.0 FLUX CHAMBER SAMPLING

3.1 EQUIPMENT AND SPECIFICATIONS

Component	Description	Specification
Emission Isolation Flux Chamber Dome	Acrylic	Spherical, 4" displacement at center, 16" ID at seal, 2" lip for seal, ¼" thick molded
	Holes for fittings	Four, 3 - ½" ID, 1 – 13/16" ID, all with stainless steel Swagelok™ bulkhead fittings

Component	Description	Specification
Stainless Steel collar	Stainless Steel Cylinder with mounting flange	16" ID x 7" H, with welded 2" dome mounting flange
Sample, sweep line	Teflon™	¼" OD, 5-8 ft. long, thin walled, stainless steel Swagelok™ nuts and ferrules
Pressure gauge	Chamber excess pressure indicator	0-10" w.c., either diaphragm or U-tube, with appropriate fittings
Swagelok fittings, as needed	Stainless steel compression fittings	Swagelok™ brand, stainless steel, sizes as needed for connections. ¼" bulkhead unions with Teflon™ washers for chamber penetrations
Summa Canisters, with critical orifices	Stainless steel canister	Spherical, passivated internal surfaces, integral valves
Sweep air	High Purity compressed air	Compressed air, less than 0.1 ppm THC, Steel or Aluminum cylinder, with standard CGA 590 fittings
Thermocouples	Fine wire Type K	36" long, bead tip, Teflon™ coated
Temperature readout	Digital temperature display	Battery operated, inputs for type K thermocouple
Sampling manifold, with bypass rotameter	Stainless steel tubing	¼" thin-walled, with two discharge ports and one inlet port; one discharge port equipped with 0-5 L/min rotameter.

3.3 CALIBRATION

Thermocouples and temperature readouts are calibrated against boiling water and ice bath reference points annually. Flow meters (rotameters) are calibrated against soap film bubble meters annually. Canister volumes are calibrated via water displacement techniques by the laboratory. The sweep air is certified by the vendor/manufacturer as to contents.

3.4 MEASUREMENT

3.4.1 Pre-Sampling

The chamber must be purged in order to collect an accurate sample. The sweep air is delivered to the chamber at approximately 2 liters per minute (L/min). The chamber needs to be purged with at least 3 volume equivalents. With the collar 1 inch deep, the overall internal volume of the apparatus is about 30 liters. At a 2 L/min sweep rate, the chamber should be purged for at least 45 minutes. Verify that the internal pressure does not exceed 3.0" w.c.

3.4.2 Sampling

Attach the critical orifice and vacuum gauge to a 6-liter canister using the supplied fittings. For this project, the critical orifice should be sized to sample at a rate of 50 ± 5 cubic centimeters per minute (cc/min). Using ¼" Teflon tubing, connect the SUMMA canister to the sample tap on the sampling manifold. Open the canister valve and note and record the vacuum reading. The reading should be 27" of mercury or greater. A sample volume of approximately 3 liters is desired, which is approximately 1 hour of sampling at 50 cc/min. Record initial readings of start time, vacuum, sweep rate, bypass flow rate, ambient temperature and chamber temperature. Record readings every 10 minutes during sampling of temperature. Final vacuum should be about one-half of the initial reading. After one hour, close the valve, record final conditions and complete data recording. Disconnect canister, orifice, and vacuum gauge from sample tap.

3.4.3 Post-Sampling and Analysis

A total of three sample locations will be sampled three times each. For a given location, samples will be collected on three different days. Three blank samples will be taken: a trip blank will be submitted to the lab with the first shipment of canisters after the first day of sampling. On the second and third days, a shadow blank (a canister connected to the closed sample tap of an operating flux chamber for one hour) will be submitted. Canisters will be analyzed by GC/MS according to EPA Method TO-14 for the standard target compound list.

3.5 DOCUMENTATION AND DATA TREATMENT

3.5.1 Documentation

The primary documentation is the field data sheet; field notebooks are used to log other pertinent data like site activity, pre-test preps, sample shipping and labeling. The chain-of-custody form provides the documentation and tracking for individual samples.

3.5.2 Data Treatment

Emission flux will be calculated by the equation below:

$$E_i = \frac{Y_i Q}{A}$$

where :

E_i = emission rate of component i, mass/area-time
Y_i = concentration of component i in sweep air, mass/volume
Q = sweep air rate, volume/time
A = surface area enclosed by sampling collar, area

Average flux will be determined for each location as the arithmetic average of the three samples; no field blank correction is anticipated.

3.6 PREVENTIVE MAINTENANCE AND CORRECTIVE ACTION

All components are checked visually for damage and leaks. Any problems are repaired prior to sampling. If damage occurs during sampling, the sample is invalid and another must be collected after repairing the problem.

APPENDIX C ADDENDUM

STANDARD OPERATING PROCEDURES FOR LABORATORY TASKS

APPENDIX C ADDENDUM

LABORATORY STANDARD OPERATING PROCEDURES

The following laboratory SOPs have been added to Appendix C:

- Quanterra SOP No. KNOX-MS-0001, VOA Canister analysis in accordance with EPA method TO-14.
- Quanterra SOP No. NC-WC-0017, Total Organic Carbon (TOC) analysis in accordance with SW-846 Method 9060.
- Quanterra SOP No. NC-WC-0006, Total Alkalinity analysis in accordance with EPA Method 310.1.
- Quanterra SOP No. NC-WC-0036, Total Hardness analysis in accordance with EPA Method 130.2.
- Quanterra SOP No. NC-WC-0055, Total Dissolved Solids (TDS) analysis in accordance with EPA Method 160.1.
- Quanterra SOP No. NC-WC-0004, Total Solids (TS) analysis in accordance with EPA Method 160.3.
- Quanterra SOP No. NC-WC-0019, Chemical Oxygen Demand (COD) analysis in accordance with EPA Method 410.4.

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Environmental Services

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SOP No.: KNOX-MS-0001
Revision No.: 1
Revision Date: 08/28/97

OPERATION SPECIFIC STANDARD OPERATING PROCEDURE

TITLE: VOA CANISTER ANALYSIS

(SUPERSEDES: KNOX-MS-0001, Revision 0**)**

Prepared By: [signature] 8-28-97

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1. Scope and Application

1.1 The purpose of this Standard Operating Procedure (SOP) is to define the procedures and quality control necessary to analyze samples collected in "SUMMA™ passivated" stainless steel canisters.

1.2 This method is applicable to the analysis of ambient air, indoor air, landfill gases and other gaseous samples.

1.3 Responsibilities to perform this procedure in the lab are as follows:

Position	Responsibilities
Analyst	- Prepares and analyzes samples - Summarizes/Assembles data package
Team/Group Leader	- Schedules/Assigns analyses - Reviews data package

2. Summary of Method

2.1 Microscale Purge and Trap (MSPT): A precisely measured aliquot is removed from the canister and concentrated on a cryogenic trap. The cryogenic trap is desorbed. Polar and nonpolar compounds are quantitatively transferred to a sub-ambient Tenax™ trap. Most of the water remains on the cryotrap and CO_2 passes through the Tenax trap and is vented. The Tenax™ trap is thermally desorbed to the on-column cryofocuser. Sample components are separated by temperature programmed gas chromatography and detected with a quadrupole mass spectrometer.

2.2 The compounds analyzed by this method are listed in Tables 1, 2 and 3.

3. Definitions

3.1 Canister - a stainless steel container, typically 6-liter volume, equipped with a stainless steel shut-off valve, suitable for use from vacuum to 40 psig.

3.2 SUMMA™ Passivation - a proprietary treatment process used to deactivate stainless steel surfaces. It produces a pure chrome/nickel oxide surface that features a high level of inertness.

3.3 Absolute pressure - pressure measured with reference to absolute zero pressure, expressed as kpa, mmHg, or psia.

3.4 Gauge pressure - pressure above atmospheric pressure as measured by a standard gauge. Zero gauge pressure is equal to ambient atmospheric pressure, expressed as mmHg, inches Hg, or psig.

3.5 Polar compound - Oxygen-containing compound capable of forming hydrogen bonds in water; compound having significant solubility in water.

4. Interferences

4.1 Only compounds having both a similar mass spectrum and GC retention time would be expected to interfere in the method. The most common occurrence of this would be with structural isomers.

4.2 Large concentrations of water, methane, or carbon dioxide may limit the size of the aliquot that can be effectively cryotrapped. This may elevate the quantitation limits obtainable for samples of this type.

5. Safety

5.1 Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2 Eye protection that satisfies ANSI Z87.1 (as per the Chemical Hygiene Plan), laboratory coat and appropriate gloves must be worn while samples, standards, solvents and reagents are being handled. Disposable gloves that have become contaminated will be removed and discarded, other gloves will be cleaned immediately. VITON gloves may be worn when halogenated solvents are used for extractions or sample preparation. Nitrile gloves may be used when other solvents are handled. [Note: VITON is readily degraded by acetone; all solvents will readily pass through disposable latex rubber gloves.]

5.3 The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the MSDS files maintained in the laboratory. The following specific hazards are known:

5.3.1 Chemicals that have been classified as carcinogens, or potential carcinogens, under OSHA include benzene, carbon tetrachloride, chloroform, 1,4-dichlorobenzene, methylene chloride and vinyl chloride.

5.3.2 Chemicals known to be **flammable** are methanol, acetonitrile, hexane, acetone and methylene chloride.

5.4 Exposure to chemicals will be maintained **as low as reasonably achievable**, therefore, unless they are known to be non-hazardous, all samples will be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent, and waste containers will be kept closed unless transfers are being made.

5.5 The preparation of all standards and reagents and glassware cleaning procedure that involve solvents such as methylene chloride will be conducted in a fume hood with the sash closed as far as the operations will permit.

5.6 All work must be stopped in the event of a known, or potential compromise to the health or safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

6. Equipment and Supplies

6.1 Canisters, 6- 15-, and 33-liter sizes, preferably equipped with two valves and integral vacuum/pressure gauge, Scientific Instrumentation/Specialists, Moscow, ID, or equivalent.

6.2 Static gas dilution bottles (SGDB), nominally 2000 ml, with mininert valves, Tekmar Co., Cincinnati, OH, or equivalent.

6.3 Syringes, liquid, 50 µL and 10 µL, and gas-tight, 500 µL, 1000 µL, 2.5 mL, 50 mL, 500 mL, all side port needle, Hamilton, Inc., Reno, NV, or equivalent.

6.4 Mercury barometer, Baxter Scientific Co., Obetz, OH, or equivalent.

6.5 Gas Chromatograph/Mass Spectrometer System, Model XLE or 5100, Finnigan MAT, San Jose, CA, or equivalent.

6.6 Fused silica capillary column, 60 m x 0.32 1μm, film DB-5, J&W Scientific, Folsom, CA or equivalent.

6.7 Vacuum pump, oilless, Model 726.3 TTP, KNF Newberger, Princeton, NJ, or equivalent.

6.8 Canister concentrator system, Model 2000, Entech Co., Simi Valley, CA with a Model 2016, 16-position auto sampler manifold.

6.9 Zero air generator, capable of delivering air with no analytes present at the reporting limit.

6.10 Test gauge, 0 to 30 in. Hg, Jay Instrument Co., Cincinnati, Ohio (NIST certified by Jay Instruments).

6.11 Test gauge 0-60 psi, Jay Instrument Co., Cincinnati, Ohio (NIST certified by Jay Instruments).

7. Reagents and Standards

7.1 Helium, ultra high purity, 99.999+%, Air Products, or equivalent.

7.2 Liquid nitrogen, 22 psig, Air Products, or equivalent.

7.3 Nitrogen, ultra high purity, Air Products or equivalent

7.4 Internal/Surrogate Standard: bromochloromethane, 1,4-difluorobenzene, d5-chlorobenzene, d4-1,2-dichloroethane, d8-toluene (all at 40 ppb) and bromofluorobenzene (at 20 ppb) in nitrogen, 2000 psig, Scott Specialty Gases, Troy, MI, or equivalent.

7.5 Gaseous Standards, target compounds, 300 ppb v/v, vendor-certified high-pressure aluminum cylinders (except those compounds listed in 7.6 and 7.7).

7.6 Standard grade neat compounds of hexachloro-cyclobutadiene (HCB) and naphthalene, 99+% or of known purity, Chem Service, West Chester, PA; or equivalent.

7.6.1 Naphthalene/Hexachlorobutadiene (HCB) Stock Standard: Approximately 3.5 mg of naphthalene is weighed into a quartz crucible small enough to be dropped into a SGDB. The crucible is introduced into the SGDB and the bottle is capped with a mininert valve. Approximately 4.5 µL of HCB is added to the SGDB using a 10 µL syringe. The exact weight/volume to be added is calculated from the volume of the SGDB such that adding 5 milliliters from the SGDB to the working standard yields a concentration of 50 ppb(v/v) of HCB and Naphthalene in the working standard. The SGDB is placed in an oven at 60°C for at least 24 hours.

7.7 Prepared Standard, polar compounds, vendor certified mix containing methanol, ethyl ether, acetone, acrylonitrile, vinyl acetate, 2-butanone, 1-butanol, 4-methyl-2-pentanone, 2-hexanone, methyl-tert-butyl ether, acrolein, and acetonitrile, Ultra Scientific, North Kingstown, RI or equivalent.

7.7.1 Polar Stock Standard: Approximately 30 µL of the polar standard mix is injected into a SGDB via a 50 µL syringe. The exact volume to be added is calculated from the volume of the SGDB such that adding 10 mL from the SGDB to the working standard yields a concentration of 200 ppb (v/v) for methanol and 100 ppb(v/v) for the other polar compounds in the working standard.

7.8 Additional Standards: Neat materials, not contained in the certified cylinders, can be added to a SGDB either individually or as a mix.

7.8.1 If the desired compound is a gas at room temperature, 5 mL are added to an evacuated 6 liter summa canister. The canister is pressurized with ultra-zero air to exactly 3 atm gauge pressure. A 7.2 mL injection of this standard to the 15 liter canister will result in a concentration of 50 ppb v/v in the final canister standard.

7.8.2 If the desired compound is a liquid or solid at room temperature, the volume of each liquid to be added to the SGDB should be back calculated so that the final concentration in the canister standard is exactly 50 ppb v/v. For example, if the standard is a liquid with a density of 1 g/mL and a

molecular weight of 100 g/mole, and 3 mL of the SGDB will be transferred to the canister, then 4.1 μL of the standard would be added to a 2000 mL SGDB.

7.9 50 ppb v/v Canister Stock

7.9.1 100 μL of boiled deionized water is injected through an 11 mm septum (inserted into a 1/4-in. nut) into a clean evacuated 15-liter canister. The canister is allowed to stand for at least 20 minutes to allow all the water to evaporate from the valve area.

7.9.2 10 mL of the polar stock, 5 mL of the naphthalene/HCB stock, and 3 mL of the SGDB containing the additional compounds (as applicable) are injected through the septum. The canister is then brought up to exactly zero inches gauge pressure with ultra zero air.

7.9.3 The barometric pressure is read and 1/3 atmosphere of each high pressure TO-14 gas standard is added to the 15 liter canister.

7.10 Low Standard Preparation: 1 and 5 ppb v/v calibration point

7.10.1 40 μL of boiled deionized water is injected through an 11 mm septum (inserted into a 1/4 inch nut) into a clean evacuated 6-liter canister. The canister is allowed to stand for at least 20 minutes to allow all the water to evaporate from the valve area.

7.10.2 Three 400 mL aliquots of the 50 ppb (v/v) standard are injected through the septum using the glass and Teflon 0.5 liter syringe.

7.10.3 The 6-liter canister is brought to 1 atmosphere gauge pressure with ultra zero air or nitrogen.

7.11 Approved SGDB and canister stock standards (section 7.8) may be used for 6 months from the date of preparation. Working canister standards may be used for two months from the date of preparation.

7.12 The HCB/naphthalene SGDB is stored at 60°C. Other SGDB and canister standards are stored at room temperature. Mixes and neat compounds are stored between -20 °C and 6°C.

7.13 Approval of Stock Standards

7.13.1 Every six months when the new stock is made, it is analyzed by comparison to the old stock. Alternately, two new stocks may be prepared.

7.13.2 The SGDB standards are analyzed as follows: Humidify two 6 liter canisters with 40 µL of water each, and spike with equal known volumes (typically 5 - 10 mL) of the standards, and bring to an equal final pressure of nominally 15 psig.

7.13.3 The two standards must agree to within 20 percent difference after taking into account nominal volume differences between the two bottles.

7.13.4 Working canister standards are approved for use by analysis versus another 50 ppb v/v canister standard. The acceptance criteria are given in Section 9.

8. Sample Collection, Preservation and Storage

Container Type	Preservative	Holding Time
SUMMA canister	None	None specified

9. Quality Control

9.1 Internal/Surrogate Standards

9.1.1 Internal standards and surrogates are added to each analytical standard, blank and sample. The acceptance criteria for each internal standard's area for every analysis must be within 50% to 200 % recovery of the internal standard area from the continuing calibration standard.

9.1.2 Surrogate recoveries must fall within 70% to 130 %.

9.1.3 If the internal standard areas or surrogate recoveries for a sample are outside their limits, the cause is determined. If it is a result of a system

problem, then the problem must be corrected and the sample reanalyzed with acceptable results. If it is the result of a matrix effect, the sample must be reanalyzed to confirm this.

9.2 Initial Calibration and Tune Check

9.2.1 All abundance criteria for BFB must be met using the tune check or the first run of a calibration curve (See Figure 4).

9.2.2 A calibration curve is valid for all nonpolar analytes if all nonpolar analytes have a relative standard deviation (RSD) ≤30%.

9.2.3 A calibration curve is valid for all polar analytes if all polar analytes have an RSD ≤40%. No RSD criteria are applied to methanol and n-butanol.

9.3 Daily Continuing Calibration and Tune Check

9.3.1 All abundance criteria for BFB in Figure 4 must be met using the tune standard or the daily calibration standard.

9.3.2 A mid-level standard (usually 10 ppb) is analyzed as the continuing calibration standard. For all analytes, a percent difference (%D) is calculated using the response factor from the standard and the average response factor from the current initial calibration curve.

9.3.2.1 The continuing calibration standard used may be a different standard from the one used for the initial calibration as long as the standard used contains all target analytes at the same level as the standard used to generate the initial calibration curve.

9.3.3 A continuing calibration standard is acceptable for all nonpolar analytes if the %D ≤25% for all TO-14 list target analytes (40 analytes) with the following allowances: 1,2,4-trichlorobenzene and hexachlorobutadiene may have a %D ≤ 30% and a maximum of four TO-14 list analytes may have %D of ≤40%.

9.3.4 A continuing calibration standard is valid for all polar analytes if the %D is ≤40% for all polar analytes, with the following allowances: a maximum of

two polar analytes may have %D of ≤50% and no criteria are applied to methanol and n-butanol.

9.3.5 If the continuing calibration standard does not meet the above criteria, corrective action must be taken and/or a new initial calibration performed.

9.4 System Blanks

9.4.1 For each 12 hour tune in which samples are analyzed, an acceptable system blank must be analyzed before samples analysis may begin.

9.4.1.1 A system blank is defined as a sample from a cleaned canister, humidified with 40 uL of water and filled with zero air nominally to 15 psig.

9.4.1.2 An acceptable system blank is one with all target analytes less than or equal to the laboratory practical quantitation limit (PQL) (see Tables 1, 2 and 3).

9.4.2 If a system blank does not meet the above criteria, then the blank must be reanalyzed or a new blank made and analyzed with acceptable results.

9.5 Reference Standards

9.5.1 Reference standards are defined as standards independently made by the same method as analytical standards and used to verify analytical standards.

9.5.2 A reference standard must be analyzed every seven days.

9.5.3 A new standard must be compared to a reference standard before use. All non-polar analytes in the new standard must be within $\pm$ 30 % recovery with the allowance of up to two non-polar analytes having $\pm$ 40% recovery. All polar analytes in the reference standard must be within $\pm$ 40% recovery with the allowance of up to two polar analytes having $\pm$ 55% recovery.

9.5.4 If reference criteria cannot be met, a new standard must be prepared.

9.6 Duplicate Analysis

9.6.1 Duplicate analysis is a separate aliquot of a sample which is analyzed by the same method as the original sample.

9.6.2 One duplicate is analyzed for every twenty samples.

9.6.3 Acceptance criteria for non-polar target analytes is ≤ 30% RPD and ≤ 40% RPD for polar target analytes. No RPD criteria are applied to methanol and n-butanol.

9.7 Canister Blank Checking

9.7.1 From each cleaned lot of canisters, a canister is selected, humidified with 40 µL clean water, and pressurized nominally to 15 psig with zero air. (See SOP KNOX-SC-0001, current revision, "Canister Cleaning and Preparation").

9.7.2 A blank check is analyzed within 24 hours of a valid tune check and calibration. Alternately, a blank check may be analyzed within 24 hours of a valid tune check/single mid-point standard.

9.7.3 A blank check passes if all target analytes are present at less than the reporting limit.

9.7.4 If a blank check canister does not pass, the can may be re-analyzed. If the acceptance criteria is still not met, the entire lot of canisters must be recleaned, and a blank check from the re-cleaned lot must pass.

10. Calibration and Standardization

10.1 Instrument Conditions

10.1.1 The instrument must be configured to the scan rate, scan range, recommended GC program, and Entech method listed in Figures 1, 2 and 3.

10.1.2 The mass spectrometer is leak checked by scan for air and water on a daily basis per instructions given by the manufacturer (for example, see Finnigan manuals).

10.1.3 Mass assignments of the mass spectrometer are checked and adjusted using perfluorotributylamine (PFTBA FC43).

10.1.4 The mass spectrometer is tuned to meet the criteria for BFB (see Figure 4).

10.1.5 The electron multiplier is adjusted to yield a peak area of approximately 10,000 area units for the EICP of 128 m/z for bromochloromethane, the first internal standard. This area is checked using the Finnigan MSDS software.

10.1.6 The mass spectrometer is adjusted to minimize noise (see instrument manufacturer instruction manuals).

10.1.7 See Tables 1, 2 and 3 for suggested quantitation ions.

10.2 Initial Calibration

10.2.1 A five-point calibration curve is analyzed for all analytes. The dynamic range of the curve is generally 1 ppb v/v to 30 ppb v/v for most analytes.

10.2.2 The BFB spectrum of the first standard must meet the criteria listed in Figure 4. Alternatively, a tune standard may be analyzed prior to the five point curve in which the BFB spectrum meets the criteria listed in Figure 4. Whichever analysis is used as the tune standard establishes the beginning of the daily 12 hour clock.

10.2.3 The initial calibration curve must meet all criteria outlined in Section 9.2

10.2.4 If the curve is acceptable and there is time remaining in the 12 hour tune, blanks and samples may be analyzed. The concentrations in the samples and blanks are calculated using the response factors from the mid-range standard (10 ppb) from the initial calibration curve.

10.3 Daily Continuing Calibration Check

10.3.1 On each day in which samples are to be analyzed, a daily continuing calibration check (CCC) standard must be analyzed for all target analytes. The CCC is analyzed at a concentration of 10 ppb v/v for most target analytes.

10.3.2 The BFB spectrum of the CCC must meet the criteria listed in Figure 4. Alternatively, a tune standard may be analyzed prior to the continuing calibration check standard in which the BFB spectrum meets the criteria listed in Figure 4. The analysis that is used as the tune standard establishes the beginning of the daily 12 hour clock.

10.3.3 The CCC is acceptable if it meets all criteria outlined in Section 9.3.

10.3.4 If the CCC does not meet the criteria outlined in Section 9.3, then corrective action must be taken and/or a new initial calibration performed.

11. Procedure

11.1 Following a successful initial or continuing calibration and prior to analysis of actual samples an acceptable system blank must be analyzed (see section 9.4). Following a successful system blank analysis, actual sample analysis may begin.

11.1.1 The desired sample size of each sample to be analyzed is determined. The standard aliquot size is 500 mL.

11.1.2 The pressure of each sample canister is checked. If the pressures is above 15 psig, the excess pressure is vented.

11.1.3 Each sample name, volume (aliquot), method, and manifold position are loaded into the Entech M 2000 data system name list.

11.1.4 The automated back-purge function is used to sweep each manifold line in the name list with helium for 30 seconds. As the purge of each position is completed, the appropriate canister is attached.

11.1.5 An automated leak check is run on each position. A hard copy of the leak check results is included with the daily calibration package.

11.1.6 If all positions pass the leak check, the concentrator traps are baked for 3 minutes. The canister valves are opened.

11.1.7 A name list identical to the Entech name list is written to the GC/MS auto sampler program.

11.1.8 The Entech autosampler is started and the GC/MS autosampler program is started. (Note: The scan and GC descriptors are initiated by the GC/MS autosampler procedure.)

11.1.9 100 ml of the surrogate/internal standard is added by the Entech concentrator to the stage one cryogenic trap prior to sample introduction.

11.1.10 The analyses proceed automatically for each name in the Entech autosampler program.

11.2 Instrument Dilutions

11.2.1 Volumes of 50 to 500 mL may be analyzed by the instrument. The standard aliquot is 500 mL, which equals a dilution factor of one.

11.2.2 If an analyte found in the sample is over the curve by less than a factor of ten, then the aliquot size of the sample may be reduced to a volume as low as 50 mL. This dilution factor is multiplied with all other dilution factors for this sample to obtain the final dilution factor.

11.2.3 If an instrument dilution is performed to bring one or more analytes within the curve, the analyte having the highest concentration should not be diluted to less than 5 ppb (v/v) measured against the daily continuing calibration check.

11.3 Canister Dilutions

11.3.1 Samples which have an initial pressure of less than 0 psig upon receipt must be pressurized to a pressure greater than 0 psig prior to analysis.

11.3.2 Measure the initial pressure of the canister using an NIST traceable, certified vacuum gauge.

11.3.3 If the initial pressure of the canister is less than -15" Hg, the analyst may elect to add 40 uL of deionized water to the canister through a septum sealed nut.

11.3.4 Next, fill the canister with zero air or nitrogen to the desired pressure. This pressure should be between 0 and 40 psig.

11.3.5 The final pressure is measured using an NIST traceable, certified gauge.

11.3.6 The canister is allowed to equilibrate for one hour. If the canister was pressurized to greater than 15 psig, pressure should be released from the canister to bring the pressure below 15 psig.

11.3.7 The barometric pressure, the aliquot volume, initial pressure and final pressure are recorded in a laboratory notebook.

11.3.8 This canister may be further diluted, if necessary, by any dilution methods.

11.4 High Levels Sample

11.4.1 High-level samples, for example, are those containing ppm levels of volatile organic compounds.

11.4.2 The original sample canister must have a pressure of between 0 to 15 psig. If the pressure is less than 0 psig, then proceed to Section 11.3. If the canister is greater than 15 psig, then it must be bled down to about 15 psig. A septum cap is attached to the sample canister and a 50-mL gas-tight syringe is purged with helium. A septum cap is attached to a clean evacuated 6-liter canister (the dilution canister).

11.4.3 The syringe is inserted into the septum cap of the canister containing the sample and the canister valve is opened. The syringe is purged twice with sample and vented. The desired volume is then withdrawn and transferred into the dilution canister. 40 µL of deionized water is also added to the dilution canister. The dilution canister is then pressurized using nitrogen or clean air.

11.4.4 The final pressure is measured in the new canister using a NIST traceable, certified gauge.

11.4.5 The barometric pressure, the aliquot volume and final canister pressure are recorded in a laboratory notebook. The serial dilution factor is calculated.

11.4.6 If a high level dilution is performed to bring one or more analytes within the curve, the analyte having the highest concentration should not be diluted to less than 5 ppb (v/v) measured against the daily continuing calibration check.

11.4.7 This new canister may be further diluted, if necessary, by any dilution method. The final dilution factor is the product of all the dilution factor for the sample.

11.5 In-canister Dilutions

11.5.1 If an analyte found in the sample is over the curve by greater than a factor of ten, an in-canister dilution may be performed.

11.5.2 The canister is bled to ambient pressure.

11.5.3 Next, the canister is pressurized to the desired pressure. This pressure should be between 0 and 40 psig.

11.5.4 The final pressure is measured using an NIST traceable, certified gauge.

11.5.5 The canister is allowed to equilibrate for one hour. If the canister was pressurized to greater than 15 psig, pressure should be released from the canister to bring the pressure below 15 psig.

11.5.6 The barometric pressure and the initial and final pressures are recorded in a laboratory notebook.

11.5.7 If an in-canister dilution is performed to bring one or more analytes within the curve, the analyte having the highest concentration should not be diluted to less than 5 ppb (v/v) measured against the daily continuing calibration check. Care should be taken to avoid over-dilution for in-canister dilutions since the original sample is affected.

11.5.8 This canister can be further diluted, if necessary, by any dilution method. This dilution factor is multiplied with all other dilution factors for this sample to obtain the final dilution factor.

11.6 One time procedural variations are allowed only if deemed necessary in the professional judgment of supervision to accommodate variations in sample matrix, radioactivity, chemistry sample size or other parameters. Any variation in procedure shall be completely documented using a Nonconformance Memo and approved by a Technical Specialist and QA Manager. If contractually required, the client shall be notified. The Nonconformance Memo shall be filed in the project file.

11.7 Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

12. Data Analysis and Calculations

12.1 Calculation legend:

12.1.1 A = amount of neat compound, µL

12.1.2 CB = concentration in SGDB, µg/mL

12.1.3 CC = concentration in canister, ppb v/v

12.1.4 CS = concentration in mix, µg/µL

12.1.5 C_x = the value determined by vendor certification analyses is used in the following calculations, ppb v/v (300 ppb nominal)

12.1.6 d = density of neat compound, g/mL

12.1.7 DF = dilution factor, unitless

12.1.8 Fv_{can} = final volume in a pressurized canister, liters

12.1.9 GC = gas constant at 21°C, 24.2 nL/n mole

12.1.10 MW = molecular weight, ng/n mole

12.1.11 P_B = barometric pressure

12.1.12 P_F = final pressure, units specified

12.1.13 P_I = initial pressure, units specified

12.1.14 P_T = transfer pressure, units specified

12.1.15 P_x = pressure in X = inches, psia or mmHg

12.1.16 TK = temperature in Kelvin

12.1.17 Tv_x = transfer volume, liters or µL

12.1.18 V_{bottle} = volume of static gas dilution bottle, mL

12.1.19 V_{mix} = volume of mix, µL

12.2 Calculations:

12.2.1

$$FV = \frac{Canister\ size\ (L)\ x\ P_F (mm\ Hg\ Abs)}{P_B (mm\ Hg\ Abs)}$$

12.2.2 $P_{mm}\ Hg = 25.4 \times P$ inches.

12.2.3 $P_{mm}\ Hg = P_{psi} \times 51.7149$

12.3 Polar stock:

12.3.1 $$CS\ \mu g / uL = \frac{A * d * 1000}{V_{mix}}$$

12.3.2 $$CB\ \mu g / mL = \frac{CS * TV,\ \mu L}{V_{bottle}}$$

12.4 Polar concentration in target dilution standard

$$CC,\ ppb\ v/v = \frac{TV,\ \mu L\ *\ CB\ x\ GC}{MW\ *\ FV}$$

12.5 Hexachlorobutadiene/naphthalene stock

12.5.1

$$CB_{HCB},\ \mu g/mL = \frac{2.5\ \mu L * d * 1000}{V_{bottle}}$$

12.5.2

$$CB_{NAPHTH},\ \mu g/mL = \frac{2\ mg * 1000}{V_{bottle}}$$

12.6 Concentration of HCB/naphthalene in primary target standard.

$$CC,\ ppb\ v/v = \frac{0.8829 * TV,\ mL * CB\ x\ 1000 * GC}{FV * MW}$$

where 0.8829 is a temperature correction factor.

12.7 Concentration of Cylinder Standards: Concentration of Nonpolar Analytes in Primary Target Standard

$$CC,\ ppb\ v/v = \frac{(P_T - P_I,\ psi)(Cx)}{(P_F,\ psi + PB,\ psi)}$$

12.8 Target Dilution Standard (CC is the concentration of the Primary Target Standard).

$$CC,\ ppb\ v/v = \frac{(P_T - P_I)(CC)}{(P_F + PB,\ psi)}$$

12.9 Dilution Factor of original sample canisters

$$DF = \frac{P_{f\ (mm\ Abs)}}{P_{i\ (mm\ Abs)}} \ x \ \frac{Sample\ volume\ injected}{500\ ml}$$

12.9.1 Serial Dilution Factor

DF = FV/TV

12.10 Response Factor (RF)

$$RF = \frac{Ax * Cis}{Ais * Cx}$$

where:

x	=	area of the characteristic ion for the target compound.
Ais	=	area of the characteristic ion for the internal standard.
Cx	=	amount of the target compound.
Cis	=	amount of the internal standard.

12.11 Average Response Factor (ARF)

$$ARF = \frac{RF_1 + RF_2 + ... + RF_n}{n}$$

where:

n	=	the number of calibration points

12.12 Standard deviation of the ARF:

$$S = \sqrt{\frac{\Sigma_i^n (ARF - RF_n)^2}{n-1}}$$

12.13 Relative standard deviation (RSD) of the ARF:

$$RSD = \frac{S}{ARF} * 100\%$$

12.14 Continuing Calibration Check: Percent deviation (% D) of the daily RF values as compared with the initial ARF values:

$$\%D = \frac{|RF - ARF|}{ARF} * 100\%$$

12.15 Sample Quantitation: The amount of target compound detected is determined using the daily RF values:

$$Amount = \frac{Ax * Cis * DF}{Ais * RF}$$

12.16 Unit conversions

12.16.1

$$Amount, \mu g / m^3 = \frac{Amount, ppb * MW}{GC}$$

12.16.2

$$Amount, ppm\ v/v = amount, \frac{ppb\ v/v}{1000}$$

12.17 Quantitation of Unknowns

12.17.1 If required, nontarget peaks are reported with probable identifications as Tentatively Identified Compounds (TICs). These are quantitated using the nearest internal standard and assuming a response factor of 1;

correction for dilution factor is also made. Search criteria are those in the 2/88 CLP Statement of Work.

12.18 Estimated results (less than the reporting limits listed in Tables 1, 2 and 3) are not calculated for this procedure.

12.19 Duplicates: Relative percent difference (RPD) for duplicate analyses:

$$RPD = \frac{|A_1 - A_2|}{\bar{A}} \times 100\%$$

where:

A_1	=	amount determined in first analysis
A_2	=	amount determined in second analysis
A	=	average determination, $(A_1 + A_2)/2$

13. Method Performance

13.1 The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. Pollution Prevention

14.1 All attempts will be made by laboratory personnel to minimize the use of solvents when performing this procedure.

15. Waste Management

15.1 Waste generated in this procedure must be segregated and disposed according to the facility hazardous waste procedures.

16. References

16.1 Compendium Method TO-14, "The Determination of Volatile Organic Compounds (VOCs) in Ambient Air Using SUMMA™ Passivated Canister Sampler and Gas Chromatographic Analysis," U.S. EPA 600/4-89/017, June 1988.

16.2 Compendium Method IP-1A, "Determination of Volatile Organic Compounds (VOCs) in Indoor Air: Stainless Steel Canisters," U.S. EPA Draft, September 1989.

16.3 "Standard Operating Procedure for the Preparation and Use of Standard Organic Gas Mixtures in a Static Gas Dilution Bottle," Berkeley, R.E.; Swanson, D.H.; Bumgarner, J.E.; Environmental Monitoring Systems Laboratory, U.S. EPA, RTP, NC.

16.4 "S.I.S. Grab Sampling Containers: User Information/Instruction Sheet," Scientific Instrumentation Specialists, Moscow, ID.

16.5 "Operator's Manual, Entech Model 2000 Concentrator," Entech Co., Simi Valley, CA

16.6 "Automated Cryogenic Preconcentration and Gas Chromatographic Determination of Volatile Organic Compounds in Air", McCleny, W.A.; Pleil, J.D., Holdren, M.W., Smith, R.N., Analytical Chemistry; 1984, 56 2947-2270.

16.7 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", Riggen, R.M., EPA-600/4-84-041, April 1984.

16.8 Supplement to EPA/600/4-84/041: "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", Riggen, R.M., Winbury, W.T., Tilly, in the reference standard, EPA-600/4-87/006.

16.9 Quality Assurance of Chemical Measurements, Taylor, John K., 1987.

16.10 "U.S. EPA Contract Laboratory Program Statement of Work for Organic Analysis", Multi-Media, Multi-Concentration Rev. 2/88.

16.11 Quanterra Quality Assurance Management Plan (current revision).

17. Miscellaneous

17.1 Other SOPs cross-referenced in this SOP:

KNOX-SC-0001, "Canister Cleaning and Preparation", latest revision.

17.2 List of tables and figures referenced in the body of the SOP:

Table 1: Target Analytes - TO-14 Compounds

Table 2: Target Analytes - Other Nonpolar Compounds

Table 3: Target Analytes - Other Polar Compounds

Figure 1: Recommended Entech Conditions

Figure 2: Scan Descriptor

Figure 3: Recommended Oven Conditioning

Figure 4: BFB Tuning Criteria

Figure 5: Example of a Data Review Checklist

Figure 6: Flow Chart

Table 1: Target Analytes - TO-14 Compounds

CAS NUMBER	METHOD TO-14 COMPOUNDS	REPORTING LIMITS (ppb, v/v)	MOLECULAR WEIGHT (ng/n mole)	RETENTION TIME [a] (minutes)	SUGGESTED ION
75-71-8	Dichlorodifluoromethane (b)	0.2	120.91	2.83	85
76-14-2	1,2-Dichlorotetrafluoroethane (c)	0.2	170.93	2.97	135
74-87-3	Chloromethane	0.5	50.49	2.97	52
75-01-4	Vinyl Chloride	0.2	62.5	3.11	62
74-83-9	Bromomethane	0.2	94.94	3.42	94
75-00-3	Chloroethane	0.2	64.52	3.53	64
75-69-4	Trichlorofluoromethane (d)	0.2	137.38	3.96	101
75-35-4	1,1-Dichloroethene	0.2	96.94	4.50	96
76-13-1	1,1,2-Trichlorotrifluoroethane (e,f)	0.2	187.38	4.64	101
75-09-2	Methylene Chloride (f)	0.2	84.93	4.77	84
76-34-3	1,1-Dichloroethane	0.2	98.96	5.73	63
156-59-2	cis-1,2-Dichloroethene	0.2	96.94	6.52	96
67-66-3	Chloroform	0.2	119.38	6.81	83
71-55-6	1,1,1-Trichloroethane	0.2	133.41	7.67	97
56-23-5	Carbon Tetrachloride	0.2	153.82	8.22	117
71-43-2	Benzene	0.2	78.12	8.20	78
107-06-2	1,2-Dichloroethane	0.2	98.96	7.77	62
79-01-6	Trichloroethene	0.2	131.39	9.44	130
78-87-5	1,2-Dichloropropane	0.2	112.99	9.40	63
10061-01-5	cis-1,3-Dichloropropene	0.2	110.97	10.83	75
108-88-3	Toluene	0.2	92.15	11.87	91
10061-02-6	trans-1,3-Dichloropropene	0.2	110.97	11.72	75
79-00-5	1,1,2-Trichloroethane	0.2	133.41	11.97	97
127-18-4	Tetrachloroethene	0.2	165.83	13.32	129
106-93-4	1,2-Dibromoethane	0.2	187.87	13.22	107
108-90-7	Chlorobenzene	0.2	112.56	14.32	112
100-41-4	Ethylbenzene	0.2	106.17	14.65	91
IT5-30-5	m/p-Xylene (g)	0.2	106.17	14.83	91
95-47-6	o-Xylene	0.2	106.17	15.39	91
100-42-5	Styrene	0.2	104.16	15.33	104
79-34-5	1,1,2,2-Tetrachloroethane	0.2	167.85	15.73	83
108-67-8	1,3,5-Trimethylbenzene	0.2	120.19	16.78	105
95-63-6	1,2,4-Trimethylbenzene	0.2	120.19	17.22	105
541-73-1	1,3-Dichlorobenzene	0.2	147.01	17.49	146
106-46-7	1,4-Dichlorobenzene	0.2	147.01	17.58	146
100-44-7	Benzyl Chloride	0.2	126.59	17.57	91
95-50-1	1,2-Dichlorobenzene	0.2	147.01	17.95	146
120-82-1	1,2,4-Trichlorobenzene	0.2	181.46	19.75	180
87-68-3	Hexachlorobutadiene	0.2	260.76	20.10	225

a) Approximate Times
b) Freon 12
c) Freon 114
d) Freon 11
e) Freon 113
f) This is a common laboratory solvent
g) m-xylene and p-xylene coelute

Table 2: Target Analytes - Other Nonpolar Compounds

CAS NUMBER	OTHER NON-POLAR COMPOUNDS	REPORTING LIMITS (ppb, v/v)	MOLECULAR WEIGHT (ng/n mole)	RETENTION TIME [a] (minutes)	SUGGESTED ION
75-45-6	Chlorodifluoromethane (b)	0.2	86.47	2.78	51
106-97-8	n-Butane	0.2	58.13	3.18	43
106-99-0	1,3-Butadiene	0.2	54.09	3.17	54
109-66-0	Pentane	0.5	72.15	4.14	41
75-15-0	Carbon Disulfide	0.2	76.14	4.89	76
107-05-1	3-Chloropropene	0.2	76.53	4.78	39
156-60-5	trans-1,2-Dichloroethene	0.2	96.94	5.40	96
110-54-3	n-Hexane	0.2	86.18	6.19	56
110-82-7	Cyclohexane	0.2	84.16	8.19	69
142-82-5	n-Heptane	0.2	100.21	9.32	43
74-95-3	Dibromomethane	0.2	173.85	9.52	93
75-27-4	Bromodichloromethane	0.2	163.86	9.68	83
111-65-9	n-Octane	0.2	114.13	12.81	85
124-48-1	Dibromochloromethane	0.2	208.29	12.87	129
111-84-2	Nonane	0.2	128.26	15.33	57
75-25-2	Bromoform	0.2	252.75	15.28	173
98-82-8	Cumene	0.2	120.2	16.00	105
103-65-1	n-Propylbenzene	0.2	120.19	16.54	91
124-18-5	Decane	0.2	142.29	17.10	57
98-83-9	alpha-Methylstyrene	0.2	118.18	17.01	118
1120-21-4	n-Undecane	0.2	156.32	18.45	57
112-40-3	n-Dodecane	0.2	170.34	19.55	57
91-20-3	Naphthalene	0.2	128.19	19.90	128

a) Approximate Times
b) Freon 22

Table 3: Target Analytes - Other Polar Compounds

CAS NUMBER	OTHER POLAR COMPOUNDS	REPORTING LIMITS (ppb, v/v)	MOLECULAR WEIGHT (ng/n mole)	RETENTION TIME [a] (minutes)	SUGGESTED ION
67-56-1	Methanol	10	32.04	3.11	31
60-29-7	Ethyl Ether	0.5	74.12	4.26	31
67-64-1	Acetone	5	58.08	4.09	58
107-13-1	Acrylonitrile	0.5	53.06	4.60	53
108-05-4	Vinyl Acetate	0.5	86.09	5.83	43
78-93-9	2-Butanone	0.5	72.12	6.19	72
71-36-3	1-Butanol	0.5	74.12	8.19	31
108-10-1	4-Methyl-2-Pentanone	0.5	100.16	10.79	43
591-78-6	2-Hexanone	0.5	100.16	12.51	58
1634-04-4	Methyl-t-Butylether	0.5	88.09	5.51	73
107-02-8	Acrolein	0.5	56.06	3.99	56
75-05-8	Acetonitrile	1.0	41.05	4.05	41

[a] Approximate Times

Figure 1: Recommended Entech Conditions

8-Port Valve Temperature = 125°C
GC Transfer Line Temperature = 100 °C
Manifold Transfer Line Temperature = 100 °C
16-Position Sample Valve Temperature = 100 °C
M1 Glass Bead Cryotrap Trapping Temperature = -160 °C
M2 Sorbent Packed Cryotrap Trapping Temperature = -25 °C
Cryofocusing Trap Trapping Temperature = -190 °C

Set Under Shoot Focusing Temperature To Conserve LN2
Preheat of M1 Glass Bead Cryotrap before Transfer = Yes

M1 Glass Bead Cryotrap Preheat Temperature = 0 °C
M1 Glass Bead Cryotrap Desorption Temperature = 15 °C
Transfer Flow Rate to Packed Column = 7 milliliters/minutes
Total Volume to Transfer VOC's to Packed Column = 30 milliliters
Optional Flow Rate Change During Transfer/Separation = 0 milliliters/minute
Volume For Optional Secondsond Stage = 0 milliliters
Preheat M2 Sorbent Packed Cryotrap Before Transfer = No

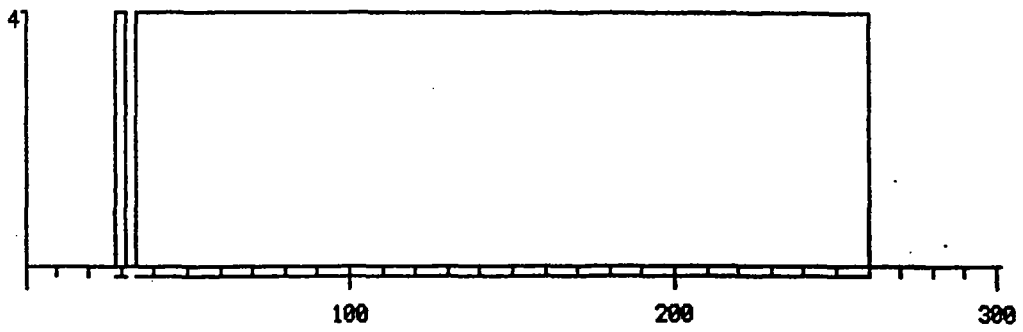
Desorption/Injection Temperature of M2 Sorbent Packed Cryotrap = 210 °C
M1 Glass Bead Cryotrap Bakeout Temperature = 160 °C
M2 Sorbent Packed Cryotrap Bakeout Temperature = 210 °C
Heat Samples = No
Sample Trapping Flow Rate = 100 milliliters/minutes
Internal Standard Sampling Flow Rate = 100 milliliters/minutes
Flow Rate of Sweep/Purge gas during final Trap Flush = 100 milliliters/minutes
Sweep Remaining Sample Flush into Trap Volume = 50 milliliters
Line Conditioning Sample Flush Time before Trapping = 30 seconds
Carrier Flush Time before Trapping = 30 seconds

Time to Transfer Sample to Focusing Trap = 2 minutes 30 seconds
Total time sample inject = 2 minutes 0 seconds
Bake Out Times for M1 and M2 = 6 minutes 0 seconds

Figure 2: Scan Descriptor

```
SCAN          DESC: DN
INST: FINN    CALI: CA081497

MASS DEFECT AT 100 U      30 MMU
MASTER RATE                4
TOTAL ACQU TIME        0.315 S
TOTAL SCAN TIME        0.334 S
CENTROID SAMPLE TIME   0.100 MS
```



MPW: 1	MFW: 80	MA: 20	TH: 1	BL: 0
2.	28.509	260.578	1.000	0.334
INT	BEGIN	END	TIME	(SECS)
#	MASS	MASS	REQUEST	ACTUAL
1.	28.509	31.509	0.007	0.004
2.	34.510	260.578	0.325	0.311

Figure 3: Recommended Oven Conditioning

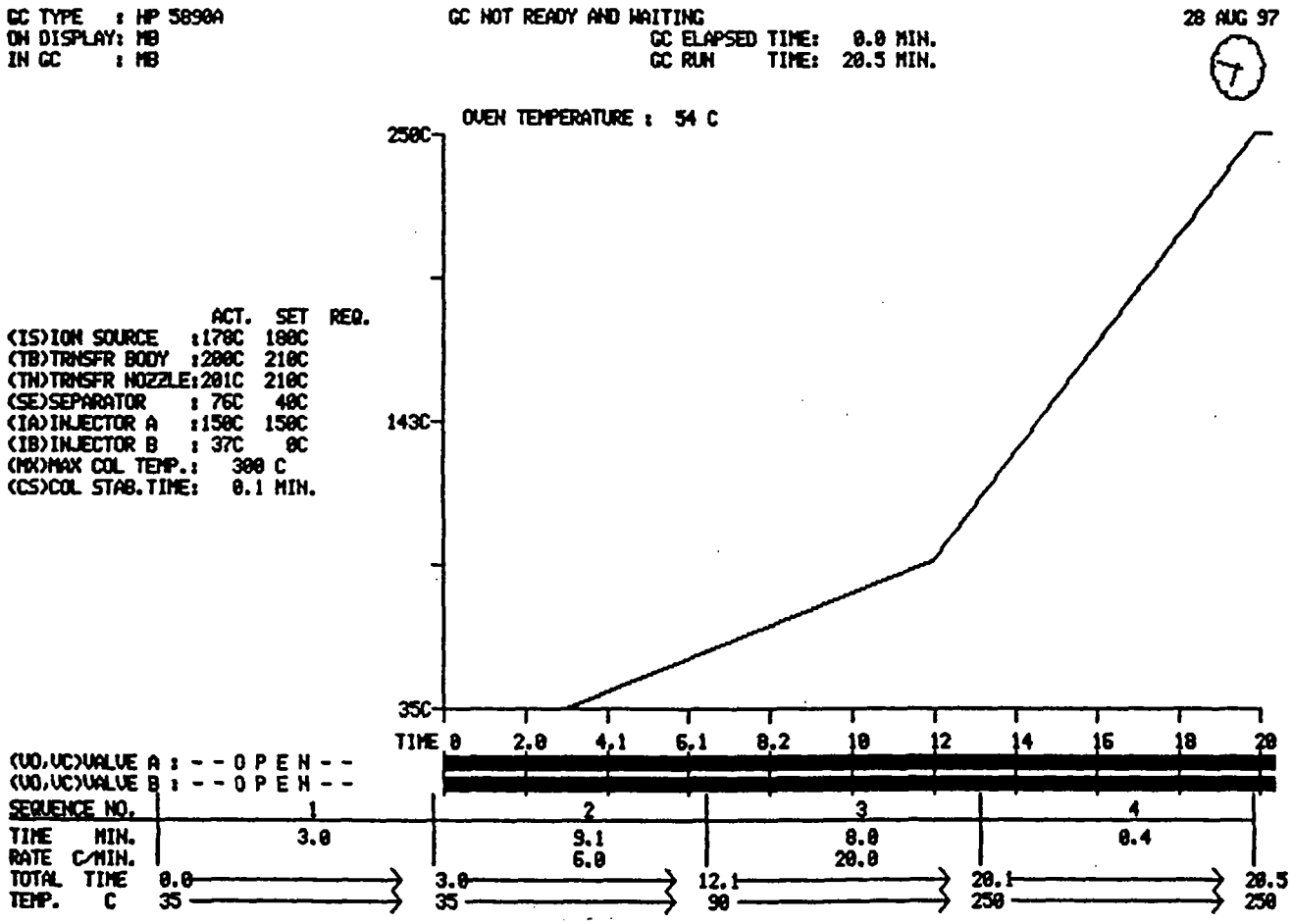


Figure 4: BFB Tuning Criteria

Mass	Abundance Criteria
50	15 to 40% of mass 95
75	30 to 60% of mass 95
95	Base peak, 100% relative abundance
96	5 to 9% of mass 95
173	Less than 2% of mass 174
174	Greater than 50% of mass 95
175	5 to 9% of mass 174
176	95% to 101% of mass 174
177	5 to 9 % of mass 176

Figure 5: Example Data Review Checklist

Quanterra GC/MS Air Initial Calibration Data Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1
Page 1 of 1

Standards Analyzed:								
File IDs:								
Analysis Date:				Instrument:				

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd Level
A. Tune					
1. Did BFB meet tune criteria?					
2. Were all standards injected within 12 hours of when BFB was injected?					
B. Reference Standards					
1. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars ±40%R; polar analytes ±40%R and ≤2 polars ±55%R)					
C. Initial Calibration					
1. Were at least 5 levels of each compound analyzed?					
2. Is %RSD for all nonpolar analytes ≤ 30%?					
3. Is %RSD for all polar analytes ≤ 40%? (No criteria for methanol and n-butanol.)					
4. Were the high standards checked for saturation?					
5. If manual integrations were performed, are they clearly identified, initialed and dated?					
6. Was ICAL summary form processed using the correct result files? (Analyst and 2nd level reviewer should compare 2-3 RFs from each standard quan report to ICAL summary form.)					
7. Was date/time of analysis verified between analysis header and logbook as correct?					
8. Elution order checked on isomeric pairs?					

Analyst: _____ **Date:** _____
Comments:

2nd Level Reviewer : _____ **Date:** _____
Comments:

* Such action must be taken in consultation with client.

Figure 5: Example Data Review Checklist (continued)

Quanterra GC/MS Air Continuing Calibration Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1
Page 1 of 1

Standard Analyzed:		Run Date:		ICAL File or Date:	
File ID:		Instrument:			

Review Items A. Tune	N/A	Yes	No	If No, why is data reportable?	2nd Level
1. Did BFB meet tune criteria?					
2. Were all standards injected within 12 hours of when BFB was injected?					
B. Reference Standards					
1. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars ±40%R; polar analytes ±40%R and ≤2 polars ±55%R)					
C. Continuing Calibration					
1. Was the CCAL compared to the correct ICAL?					
2. Was a mid-level standard used for CCAL?					
3. Is the %D ≤ 25% for all nonpolar TO-14 list analytes except %D of ≤ 30% for 1,2,4-trichlorobenzene & hexachlorobutadiene? (maximum of 4 TO-14 list nonpolar analytes may have %D ≤ 50%.)					
4. Is the %D ≤ 40% for all polar analytes? Two polar analytes may have %D ≤ 50%. (No criteria for methanol and n-butanol.)					
5. If manual integrations were performed, are they clearly identified, initialed and dated?					
6. Was date/time of analysis verified between analysis header and logbook as correct?					
7. Elution order checked on isomeric pairs?					

Analyst: _____ **Date:** _____
Comments:

2nd Level Reviewer : _____ **Date:** _____
Comments:

* Such action must be taken in consultation with client.

Figure 5: Example Data Review Checklist (continued)

Quanterra GC/MS Air Data Review / Narrative Checklist **LOT/Project #**_____
Method: TO-14 - KNOX-MS-0001 Rev 1 **Page 1 of 2**

Analysis Date:				
Instrument ID:				
ICAL File or Date:				
CCAL File:				

Review Items **A. Tune**	N/A	Yes	No	If No, why is data reportable?	2nd Level
1. Were all samples injected within 12 hours of when BFB was injected?					
B. Initial Calibration					
1. Has an Initial Calibration Checklist been completed for all calibrations?					
C. Continuing Calibration					
1. Has a Continuing Calibration Checklist been completed for each analytical batch?					
D. CLIENT SAMPLE AND QC SAMPLE Results					
1. Were all special project requirements met?					
2. Were dilution factors and header information verified?					
3. Are surrogates and internal standards (IS) within QC limits (70-130% R)? *If no, list samples/surrogates/IS/reason (e.g., sur1):* Sample / Surrogate/IS / Reason _____ _____ _____				☐ **[sur1]** Surrogate %R outside QC limits due to matrix effect since DUP surr. %R demonstrated same effect. ☐ **[sur2]** Surrogate %R outside QC limits due to matrix effect since reanalysis demonstrated the same effect. ☐ **[sur5]** Surrogate %R outside QC limits; however, at the client's request, the data was flagged as estimated and released without further investigation. * ☐ **[sur6]** Surrogate %R outside QC limits due to matrix effect since dilution showed acceptable %R. ☐ **[is1]** Upon consultation with the client, reanalysis was not performed to meet this QC criteria. * ☐ **[is2]** Reanalysis confirmed that a matrix effect is responsible for the IS criteria not being met. ☐ **[is3]** Reanalysis at a dilution showed acceptable results. ☐ See Comment no.	
4. Was the correct CCAL used for quantitation? (Check ≥ 3 compounds for each sample by manually calculating concentraion using the daily RF.)					
5. Were positive hits evaluated using qualitative identification criteria and technical judgement?					
6. Are positive results within calibration range?					
7. Were peaks checked for saturation?					
8. If manual integrations were performed, are they clearly identified, initialed and dated?					
9. Final report acceptable? (Results correct, RLs calculated correctly, units correct, surrogate %R correct, appropriate flags used, deviations noted in narrative, dilution factor correct, analysis dates correct.)					
E. Preparation/Matrix QC					
1. System blank analyzed every 12 hours prior to samples?					
2. System blank surrogate recoveries within QC limits (70-130% R) ?				☐ **[mb1]** Sample surrogates within limits and there is no analyte >RL in samples associated with blank.*	
3. Are all analytes present in the system blank ≤ RL? *If no, list blank ID:* _____				☐ **[mb6]** Analyte(s) is a common lab contaminant (methylene chloride and/or Freon) and is ≤2x RL.* ☐ **[mb3]** There is no analyte > RL in the samples associated with method blank.* ☐ **[mb4]** Sample results are > 20x higher than blank.	

* Such action must be taken in consultation with client.

Figure 5: Example Data Review Checklist (continued)

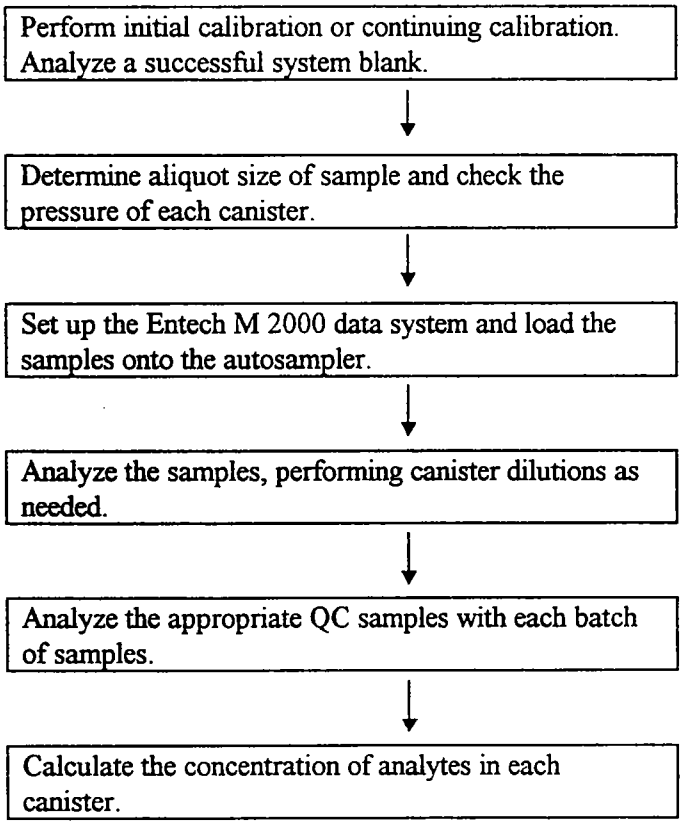
Quanterra GC/MS Air Data Review / Narrative Checklist **LOT/Project #_____**
Method: TO-14 - KNOX-MS-0001 Rev 1 **Page 2 of 2**

E. Preparation/Matrix QC (continued)	N/A	Yes	No	If No, why is data reportable?	2nd Level
4. DUP done per 20 samples and are all RPDs within limits? (≤30 RPD for nonpolars; ≤40 RPD for polars; no criteria for methanol and n-butanol.) *If no, list DUP ID:* _____					
F. Other:					
1. Are all nonconformances documented appropriately?					

Analyst: _____ **Date:** _____
Comments:

2nd Level Reviewer : _____ **Date:** _____
Comments:

Figure 6: Flow Chart



QUANTERRA® STANDARD OPERATING PROCEDURE

TITLE: TOTAL ORGANIC CARBON (TOC) AND TOTAL INORGANIC CARBON (TIC)

(SUPERSEDES: REVISION 0)

Prepared by: _____

Reviewed by: _____
Technology Specialist

Approved by: _____
Quality Assurance Manager

Approved by: _____
Environmental Health and Safety Coordinator

Approved by: _____
Laboratory Director

Proprietary Information Statement:

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1. SCOPE AND APPLICATION

1.1. This document accurately reflects current laboratory standard operating procedures (SOP) as of the date above. All facility SOPs are maintained and updated as necessary by the laboratory QA department.

1.2. This method is applicable to the determination of Total Organic Carbon (TOC) or Total Inorganic Carbon (TIC) in waters and similar matrices. It is based on SW846 Method 9060, EPA Method 415.1, and Standard Methods 5310D. The working linear range is instrument dependent at 1 mg/L to 50 mg/L with a reporting limit of 1 mg/L.

2. SUMMARY OF METHOD

2.1. Organic carbon is converted to carbon dioxide (CO_2) using chemical oxidation. The CO_2 is then measured by an infrared detector.

3. DEFINITIONS

3.1. Refer to the glossary in the Quality Assurance Management Plan (QAMP).

4. INTERFERENCES

4.1. Method interferences may be caused by contaminants in solvents, reagents, glassware, and other processing apparatus that lead to discrete artifacts. All of these materials must be routinely demonstrated to be free from interferences under conditions of the analysis by running laboratory method blanks as described in the Quality Control section. Specific selection of reagents may be required to avoid introduction of contaminants.

4.2. Carbonate and bicarbonate interfere but are eliminated by the acidification and purging step of the instrument.

5. SAFETY

5.1. Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2. Eye protection that satisfies ANSI Z87.1 (per the Chemical Hygiene Plan), Laboratory coat, and appropriate gloves must be worn while samples, standards, solvents, and reagents are being handled. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

5.3. The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the Material Safety Data Sheets (MSDS) maintained in the laboratory. The following specific hazard is known:

5.3.1. The following materials are known to be **corrosive: Phosphoric Acid, Sulfuric Acid**.

5.4. Exposure to chemicals must be maintained **as low as reasonably achievable,** therefore, unless they are known to be non-hazardous, all samples must be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent and waste containers will be kept closed unless transfers are being made.

5.5. The preparation of standards and reagents will be conducted in/a fume hood with the sash closed as far as the operation will permit.

5.6. All work must be stopped in the event of a known or potential compromise to the health and safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

6. EQUIPMENT AND SUPPLIES

6.1. O•I Corporation Model 700 TOC Analyzer with Sampler and Printer

6.2. Nitrogen Gas and Regulator

6.3. Volumetric flasks: Various sizes

6.4. Volumetric pipets: Various sizes

6.5. Vials: 40 mL glass

6.6. Graduated cylinders: Various sizes

6.7. pH Strips

6.8. Whatman filter #4

6.9. Top loading balance: capable of accurately weighing ± 0.01 g

7. REAGENTS AND STANDARDS

7.1. Reagents

7.1.1. Sodium Persulfate: Reagent Grade

7.1.2. Sodium Persulfate Solution: Add 100 g sodium persulfate ($Na_2S_2O_8$) to a 1 liter volumetric flask and dilute to volume with reagent water.

7.1.3. Phosphoric Acid, concentrated: Reagent Grade

7.1.4. Phosphoric Acid Solution: Carefully add 59 mL concentrated phosphoric acid (H_2PO_4) to 900 mL of reagent water in a 1 liter volumetric flask. Dilute to volume with reagent water.

7.1.5. Sulfuric Acid, concentrated: Reagent Grade

7.2. Standards

7.2.1. All standards should be prepared in volumetric flasks, using volumetric pipettes, and diluted to volume with reagent water.

7.2.2. TOC Stock Standard

7.2.2.1. Primary and secondary sources are needed.

7.2.2.2. TOC 1000 mg/L

7.2.2.2.1. Dilute 1.06 g KHP (potassium acid phthalate) to volume in a 500 mL volumetric flask.

7.2.2.3. Prepare every three months.

7.2.3. TOC Calibration Standards

7.2.3.1. Prepare the following standards from the primary stock standard described in Section 7.2.2.2.1.

Concentration (mg/L)	Pipet (mL)	Stock Concentration (mg/L)	Final Volume (mL)
50	5.0	1000	100
30	3.0	1000	100
20*	2.0	1000	100
5	0.5	1000	100

*Used to calibrate instrument.

7.2.3.2. Prepare weekly.

7.2.4. TOC Verification Standard (LCS, MS/MSD and CCV)

7.2.4.1. Prepare the following standard from the secondary stock standard described in Section 7.2.2.2.1.

Concentration (mg/L)	Pipet (mL)	Stock Concentration (mg/L)	Final Volume (mL)
20	10	1000	500

7.2.4.2. Prepare weekly.

7.2.5. TIC Stock Standard 1000 mg/L

7.2.5.1. Add 3.5 g Na_2HCO_3 (sodium bicarbonate) and 4.418 g Na_2CO_3 (sodium carbonate) to a 1000 mL flask. Dilute to volume with reagent water.

7.2.5.2. Prepare every 3 months.

7.2.6. TIC Calibration Standard

7.2.6.1. Prepare in the same manner as the TOC calibration standard (Section 7.2.3.1), using the TIC stock standard described in Section 7.2.5.1.

7.2.6.2. Prepare weekly.

7.2.7. TIC Verification Standard (LCS, MS/MSD and CCV)

7.2.7.1. Prepare in the same manner as the TOC verification standard (Section 7.2.4.1), using the TIC stock standard described in Section 7.2.5.1.

7.2.7.2. Prepare daily.

8. SAMPLE PRESERVATION AND STORAGE

8.1. Samples are preserved to a pH < 2 with sulfuric acid (H_2SO_4) or hydrochloric acid (HCl) and stored in plastic or glass containers at 4°C ± 2° C.

8.2. The holding time is twenty-eight days from sampling to analysis.

9. QUALITY CONTROL

9.1. Batch Definition

9.1.1. A batch is a group of no greater than 20 samples, excluding QC samples (LCS, MS, MSD, Method Blanks), which are processed similarly with respect to the procedure. All samples within the batch must be treated with the same lots of reagents and the same processes. All samples within the batch must be treated with the same processes.

9.2. Method Blank (MB)

9.2.1. One method blank (MB) must be processed with each preparation batch. The method blank consists of reagent water containing all reagents specific to the method that is carried through the entire analytical procedure, including preparation and analysis. The method blank is used to identify any system and process interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. The method blank should not contain any analyte of interest at or above the reporting limit.

9.2.2. A method blank consisting of 40 mL of reagent water and all reagents added to the samples must be prepared and analyzed with each batch of samples. The method blank is used to identify any background interference or contamination of

the analytical system which may lead to the reporting of elevated concentration levels or false positive data.

9.2.3. Corrective Action for Blanks

9.2.3.1. If the analyte level in the method blank exceeds the reporting limit for the analytes of interest in the sample, all associated samples are reprepared and reanalyzed. If this is not possible due to limited sample quantity or other considerations, the corresponding sample data **must be taken in consultation with the client and must be addressed in the project narrative.**

9.2.3.2. If there is no analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. **Such action must be taken in consultation with the client and must be addressed in the project narrative.**

9.3. Laboratory Control Sample

9.3.1. Laboratory Control Samples are well-characterized, laboratory generated samples used to monitor the laboratory's day to day performance of routine analytical methods. The LCS is used to monitor the accuracy of the analytical process, independent of matrix effects. Ongoing monitoring of the LCS results provides evidence that the laboratory is performing the method within accepted QC guidelines for accuracy and precision.

9.3.2. A 20 mg/L LCS (TOC or TIC) must be analyzed with each batch of samples.

9.3.3. Corrective Action for LCS

9.3.3.1. If any analyte is outside established control limits the system is out of control and corrective action must occur.

9.3.3.1.1. The only exception to the requirement established in section 9.3.3.1 occurs if the LCS recovery is biased high and the associated sample(s) are ND (non detect). Under this condition, the batch is acceptable.

9.3.3.2. Corrective action will be repreparation and reanalysis of the batch unless the client agrees that other corrective action is acceptable.

9.4. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

9.4.1. One MS/MSD pair must be processed for each batch. A matrix spike (MS) is a field sample to which known concentrations of target analytes have been added. A matrix spike duplicate (MSD) is a second aliquot of the same sample (spiked identically as the MS) prepared and analyzed along with the sample and matrix spike. Some client specific data quality objectives (DQO's) may require the use of sample duplicates in place of or in addition to MS/MSD's. The MS/MSD results are used to determine the effect of a matrix on the precision and accuracy of the analytical process. Due to the potential variability of the matrix of each sample, these results may have immediate bearing only on the specific sample spiked. Samples identified as field blanks cannot be used for MS/MSD analysis.

9.4.2. An MS/MSD consisting of 20 mL of sample and 20 mL of the 20 mg/L standard will be analyzed with each analytical batch of samples.

9.4.3. Corrective action for MS/MSDs

9.4.3.1. If the analyte recovery or RPD falls outside the acceptance range, the recovery of that analyte must be in control for the LCS. If the LCS recovery is within limits, then the laboratory operation is in control and the results may be accepted. If the recovery of the LCS is outside limits, corrective action must be taken. Corrective action will include repreparation and reanalysis of the batch.

9.4.3.2. If the native analyte concentration in the MS/MSD exceeds 4x the spike level for that analyte, the recovery data is reported as DIL (diluted out).

9.4.3.3. If an MS/MSD is not possible due to limited sample volume then a laboratory control sample duplicate (LCSD) should be analyzed. The RPD of the LCS and LCSD must be compared to the matrix spike RPD limits.

10. CALIBRATION AND STANDARDIZATION

10.1. Recommended Initial Setup

10.1.1. The TOC analyzer should always be on. If it is not, turn it on using the "Power" button on the display panel. Make sure all constants are still present in the instrument by pressing "Print" key.

Contant Settings		
STD Mass	=	6.76 ug C
Sample Vol	=	0.338 mL
Acid Vol	=	4 x 100 uL
Oxidant Vol	=	10 x 100 uL

10.1.2. Adjust the nitrogen to 30 psi using the flow valve on the tank. The gauge should always be set at 30 psi when the instrument is not in use.

10.1.2.1. If the main valve reads < 200 psi, the tank should be changed. **Do not** allow the tank to go empty.

10.1.3. Remove the reagent bottles from the front of the instrument and fill with appropriate reagents (phosphoric acid solution and sodium persulfate). Do not fill bottles completely full; leave a small amount of air space. Loosely reconnect caps (and tubing), and replace the bottles into the instrument.

10.1.4. Expose the key pad on the front of the instrument and locate the "Prime Acid" and "Prime Oxidant" buttons. Push each button 20-30 times to get fresh reagent into the instrument.

Note: Listen to the clicking sound; it will "change" when the pumps have been primed.

10.1.5. Press the "Select Display Mode" Key once to see I.R. output. This value should be 5-15 mv; if not, remove the right cover (under the printer) and slowly adjust the "Zero Adjust" knob until the display reads between 5-15 mv.

10.2. Blanking the Instrument

10.2.1. Press the "Display Mode" button on the key pad until the red light on the display panel moves down to "Calibration Constants".

10.2.2. Press the "Select Next Display" button until "Enter IC Blank" appears on the display.

10.2.2.1. Press "0", "Enter".

10.2.2.2. Press "0", "Enter" when "Enter POC Blank" appears.

10.2.2.3. Press "0", "Enter" when "Enter OC Blank" appears.

10.2.3. Press the "Select Display Mode" until the red light returns to the "Normal" position.

10.2.4. Press the "Set System Config" button, then press "1", "Enter".

10.2.4.1. Press "Enter" until "Sample Pump" appears. Press "0", "Enter" to disable the pump.

10.2.4.2. When "Sample Loop Valve" appears, press "0", "Enter" to disable.

10.2.5. Press "Enter" until "Auto Sampler" appears. Press "0", "Enter" to disable the sampler.

10.2.6. Press "Enter" until "Sample ID Number" appears; then press "1", "Enter".

10.2.6.1. "Sample Stop Number" will appear. Press "1", "Enter".

10.2.6.2. "Number of Reps Per Sample" will appear; press "10", "Enter".

10.2.6.3. Press the "Clear Entry" button to get back to "TIC/TOC Analysis - Ready".

10.2.7. The instrument is ready to run reagent blanks. Be sure the printer is on, and press the "Run/Stop" button to start blanking. Blanking will take about an hour and a half.

10.2.7.1. This is a good time to make standards and retrieve samples.

10.2.8. When the the reagent blanks are finished running, average the TIC mv values and the TOC mv values.

10.2.8.1. Only average the last 5 values.

Note: If the instrument has been idle for a long period of time, it may be necessary to enter 20 or more reps (Section 10.2.6.2) until the mv values are stable before averaging at least 5 values.

10.2.9. Press the "Select Display Mode" button on the key pad until the red light moves down to "Calibration Constants" on the display panel.

10.2.9.1. Press the "Select Next Display" button until "Enter IC Blank" appears. Enter in the average mv values for TIC and TOC (Section 10.2.8) and press "Enter".

10.2.9.2. Press "Select Display Mode" until the red light on the display panel goes back to "Normal".

10.3. Calibrating the Instrument

Note: The instrument can only run one analysis at a time (TOC or TIC). Calibrate and verify the instrument using the appropriate standards (TOC or TIC). To switch analysis, the instrument must be re-calibrated and reverified using that standard.

10.3.1. Prepare a 20ppm TOC or TIC calibration standard (Section 7.2.3 or 7.2.6) and pour it into a 40 mL vial (fill 3/4 full). Place the vial on the auto sampler. Push the "Manual Advance" button on the back of the sampler until the standard vial is directly under the needle.

10.3.2. Press "Set System Config.", then press "1", "Enter".

10.3.2.1. Press "Enter" until "Sample Pump" appears on the display. Press "1", "Enter" to enable the pump.

10.3.2.2. "Sample Loop Valve" will appear on display - press "1", "Enter" to enable the loop.

10.3.2.3. Press "Enter" until "Auto Sampler" appears. Press "1", "Enter" to enable the sampler.

10.3.3. Press "Enter" until "Sample ID Number" appears. Press "1", "Enter".

10.3.3.1. "Sample Stop Number" will appear. Press "1", "Enter".

10.3.3.2. "Number of Reps" will appear. Press "5", "Enter".

10.3.3.3. Press the "Clear" button to get back to Normal.

10.3.4. The instrument is now ready to calibrate. Be sure the calibration standard is under the needle, the printer is on and the rinse water reservoir is on.

10.3.4.1. Press the "Run/Stop" button to begin calibration.

10.3.5. When the calibration is finished running (approximately 40 minutes), average the mv values for the desired species (TOC or TIC).

10.3.5.1. Press "Select Display Mode" until the red light on the display comes down to "Calibration Constants".

10.3.5.2. Press the "Select Next Display" button until "Enter Standard Avg" appears.

10.3.5.3. Enter the average TOC or TIC mv value and press "Enter".

10.3.5.4. Press "Select Display Mode" until the red light returns to "Normal".

10.3.6. Press the "Print" button on the display panel to print all statistics.

10.4. Initial Calibration Verification

10.4.1. The instrument is calibrated weekly for normal production and daily for expanded deliverables. Calibration is verified at the beginning of the run using 5, 30, and 50 mg/L standards, made from the same source (Section 7.2.3 or 7.2.6), to demonstrate linearity at the low, middle, and upper range of the instrument.

10.5. Continuing Calibration

10.5.1. The run is checked at the beginning, after every ten samples, and at the end of the run of the same species (TOC or TIC) using a midrange CCV made from a secondary source (Section 7.2.4 or 7.2.7) to verify continued linearity. A CCV cannot vary from the original curve by more than ± 10%, or recalibration is required.

10.5.2. System cleanliness is checked every ten samples and at the end of the run using a Continuing Calibration Blank (CCB). A CCB cannot contain the analyte of interest above the reporting limit, or recalibration is required.

10.6. Analytical Documentation

10.6.1. Record all analytical information in the analytical logbook/logsheet, including the analytical data from standards, blanks, LCSs, MS/MSDs, and any corrective actions or modifications to the method.

10.6.2. All standards are logged into a department standard logbook. All standards are assigned a unique number for identification. Logbooks are reviewed by the supervisor or designee.

10.6.3. Documentation, such as all associated instrument printouts (final runs, screens, reruns, QC samples, etc.) and daily calibration data corresponding to all final runs, is available for each data file.

10.6.4. Sample results and associated QC are entered into the Laboratory Information Management System (LIMS) after final technical review.

11. PROCEDURE

11.1. Sample Preparation Procedure

11.1.1. Check the pH of the sample. If the pH > 2, add concentrated H_2SO_4 drop by drop to the sample (in the TOC vial) until the pH is < 2.

11.1.2. If excess particulate matter exists, filter an aliquot of sample through a Whatman #4 filter into a TOC vial.

11.2. Preparation Documentation

11.2.1. Record any sample preparation on the analytical logsheet.

12. DATA ANALYSIS AND CALCULATIONS

12.1. Recommended Instrument Conditions

12.1.1. The instrument is blanked (Section 10.2) and calibrated (Section 10.3) daily, prior to any analysis.

12.2. Sample Analysis Procedure

12.2.1. Write up a run protocol on the logsheet, keeping in mind calibration verification requirements.

12.2.1.1. Quadruplicate analysis is required. Results are reported for the average.

12.2.2. All samples and standards should be poured into 40 mL vials. Samples received in vials can be run in those containers, provided there is not an excess of solids.

12.2.3. Using the key pad on the front of the instrument, press "Set System Config" button, then press "2", "Enter".

12.2.3.1. "Sample ID Number" will appear, press "1", "Enter".

12.2.3.2. "Sample Stop Number" will appear. Enter the last number on the run protocol.

12.2.3.3. "Number of Reps" will appear; press "4", "Enter".

12.2.4. The instrument is ready to analyze samples. Be sure the samples are loaded on the sampler, the first one positioned under the needle.

12.2.5. Press the "Run/Stop" button; the red light will come on.

12.2.6. Samples that fall outside the linear range (> 50 mg/L) of the instrument must be diluted and reanalyzed.

12.2.6.1. Samples following a high sample should be re-analyzed if carryover is a concern.

12.2.7. When analysis is complete, properly dispose of or put away samples and standards.

12.3. Calculations

12.3.1. ***Total Organic Carbon, mg/L = Average Instrument Value x Dilution***

Where:

TOC, mg/L = average of the 4 instrument values x dilution (if any)*

12.3.2. ***LCS % Recovery*** = $\dfrac{\textit{Average of 4 instrument values*}}{20} \times 100$

12.3.3. ***MS/MSD % recovery*** =

$$\frac{\textit{(Avg of 4 instrument values* MS or MSD) - (Avg sample instrument value* \div 2)}}{10}$$

**One of the values may be judged erroneous and disregarded if three of the four are consistent. If no consistency can be found in the four values, the sample must be rerun.*

13. METHOD PERFORMANCE

13.1. Each laboratory must have initial demonstration of performance data on file and corresponding method detection limit files.

13.2. Training Qualifications:

13.2.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. POLLUTION PREVENTION

14.1. This method does not contain any specific modifications that serve to minimize or prevent pollution.

15. WASTE MANAGEMENT

15.1. Acid waste must be collected in clearly labeled acid water containers.

15.2. Solid materials (gloves, soiled paper products) are placed in the solid debris container. Do not put liquids in the solid waste container.

15.3. Refer to the Laboratory Sample and Waste Disposal plan.

15.4. Laboratory personnel assigned to perform hazardous waste disposal procedures must have a working knowledge of the established procedures and practices of Quanterra. They must have training on the hazardous waste disposal practices upon initial assignment to these tasks, followed by annual refresher training.

16. REFERENCES

16.1. References

16.1.1. SW846, Test Methods for Evaluating Solid Waste, Third Edition, Total Organic Carbon, Method 9060

16.1.2. EPA 600, Methods for Chemical Analysis of Water and Wastes, Organic Carbon, Method 415.1

16.1.3. Standard Methods, Total Organic Carbon, Method 5310D

17. MISCELLANEOUS (TABLES, APPENDICES, ETC...)

17.1. Reporting limits

17.1.1. The lower reporting limit is 1 mg/L.

17.1.2. If samples require dilution or smaller volumes than specified in this method, the RL will be elevated.

17.2. Troubleshooting guide

17.2.1. See the manufacturer's instructions for an instrument troubleshooting guide and maintenance requirements.

QUANTERRA® STANDARD OPERATING PROCEDURE

TITLE: ALKALINITY (TOTAL)

(SUPERSEDES: NC-WC-0006 (REVISION 1))

Prepared by: Patrick O'Mea 3/4/98
Date

Reviewed by: Liz Bellini 3-4-98
Technology Specialist Date

Approved by: [signature] 3/5/98
Quality Assurance Manager Date

Approved by: [signature] 3-6-98
Environmental Health and Safety Coordinator Date

Approved by: Christopher R Oprandi 3/6/98
Laboratory Director Date

Proprietary Information Statement:

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1. SCOPE AND APPLICATION

1.1. This method is applicable for the determination of total alkalinity in drinking, surface, saline, domestic, and industrial waters and wastewaters. It is also applicable to the determination of water-soluble alkalinity in solid samples if they have been prepared according to NC-WC-0073. It is based on EPA Method 310.1 and Standard Methods 2320B. The working linear range is 5 to 1000 mg/L.

1.2. This document accurately reflects current laboratory standard operating procedures (SOP) as of the date above. All facility SOPs are maintained and updated as necessary by the laboratory QA department.

2. SUMMARY OF METHOD

2.1. An unaltered sample is titrated to an electrometrical endpoint of pH 4.5. The sample must not be filtered, concentrated, or altered in any way.

3. DEFINITIONS

3.1. Refer to the glossary in the Quality Assurance Management Plan (QAMP).

4. INTERFERENCES

4.1. Method interferences may be caused by contaminants in solvents, reagents, glassware, and other processing apparatus that lead to discrete artifacts. All of these materials must be routinely demonstrated to be free from interferences under conditions of the analysis by running laboratory method blanks as described in the Quality Control section. Specific selection of reagents may be required to avoid introduction of contaminants.

4.2. Samples with salts of weak organic and inorganic acids and greases or oils will interfere with pH measurements.

5. SAFETY

5.1. Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2. Eye protection that satisfies ANSI Z87.1 (as per the Chemical Hygiene Plan), laboratory coat, and appropriate gloves must be worn while samples, standards, solvents, and

reagents are being handled. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

5.3. The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the Material Safety Data Sheets (MSDS) maintained in the laboratory. The following specific hazards are known:

5.3.1. The following materials are known to be **corrosive: Sulfuric Acid**

5.4. Exposure to chemicals must be maintained **as low as reasonably achievable**, therefore, unless they are known to be non-hazardous, all samples must be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent and waste containers will be kept closed unless transfers are being made.

5.5. The preparation of standards and reagents will be conducted in a fume hood with the sash closed as far as the operation will permit.

5.6. All work must be stopped in the event of a known or potential compromise to the health and safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

6. EQUIPMENT AND SUPPLIES

6.1. pH meter and electrode(s) with temperature compensation

6.2. Stir plate and stir bars

6.3. Graduated cylinders: various

6.4. Beakers: various

6.5. Buret: Class A 25 mL or 50 mL

6.6. Volumetric pipettes: various

6.7. Autopipettor and disposable tips

6.8. Top loading balance: Capable of accurately weighing ± 0.01 g

6.9. Volumetric flasks: various

6.10. Autotitrator

6.11. Oven

6.12. Desicator

7. REAGENTS AND STANDARDS

7.1. Reagents

7.1.1. 0.02 N Sulfuric Acid: reagent grade, purchased.

7.1.2. Sodium Carbonate (Na_2CO_3): reagent grade, dry overnight in 180°C oven and cool in a desiccator.

7.2. Standards

7.2.1. Target Calibration Standard

7.2.1.1. pH Buffers: 4, 7, and 10 (Manufactured)

7.2.2. Laboratory Control Sample

7.2.2.1. Alkalinity Standard, 25,000 mg/L $CaCO_3$, purchased

7.2.3. Matrix Spike Standard

7.2.3.1. Alkalinity Standard, 25,000 mg/L $CaCO_3$, purchased

8. SAMPLE COLLECTION, PRESERVATION AND STORAGE

8.1. Samples are not chemically preserved.

8.2. Samples are stored in plastic or glass containers at 4°C ± 2°C.

8.3. The holding time is fourteen days from sampling to analysis.

9. QUALITY CONTROL

9.1. Batch Definition

9.1.1. A batch is a group of no greater than 20 samples excluding QC samples (LCS, Method Blank, MS, MSD) which are processed similarly, with respect to the procedure. All sample setups must be initiated within a 24 hour period from the initial preparation or extraction and without interruption of the process. All samples within the batch must be treated with the same lots of reagents and the same processes.

9.2. Method Blank

9.2.1. One method blank (MB) must be processed with each preparation batch. The method blank consists of reagent water containing all reagents specific to the method that is carried through the entire analytical procedure, including preparation and analysis. The method blank is used to identify any system and process interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. The method blank should not contain any analyte of interest at or above the reporting limit.

9.2.2. A reagent water blank consisting of 50 mL of reagent water and all other reagents added to samples within the analytical batch is analyzed with each analytical batch of samples.

9.2.3. Corrective Action for Blanks

9.2.3.1. If the analyte level in the method blank exceeds the reporting limit for the analytes of interest in the sample, all associated samples are reprepared and reanalyzed. If this is not possible due to limited sample quantity or other considerations, the corresponding sample data **must be addressed in the project narrative.**

9.2.3.2. If there is no analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. **Such action must be taken in consultation with the client and must be addressed in the project narrative.**

9.3. Laboratory Control Sample (LCS)

9.3.1. One aqueous LCS must be processed with each preparation batch. The LCS must be carried through the entire analytical procedure. The LCS is used to monitor the accuracy of the analytical process. On-going monitoring of the LCS results provides evidence that the laboratory is performing the method within acceptable accuracy and precision guidelines.

9.3.2. An LCS consisting of 1mL of the 25,000 mg/L alkalinity standard and 50 mL reagent water is analyzed with each analytical batch of samples.

9.3.3. Corrective Action for LCS

9.3.3.1. If any analyte is outside established control limits the system is out of control and corrective action must occur.

9.3.3.2. Corrective action will be repreparation and reanalysis of the batch unless the client agrees that other corrective action is acceptable.

9.4. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

9.4.1. One MS/MSD pair must be processed for each batch. A matrix spike (MS) is a field sample to which known concentrations of target analytes have been added. A matrix spike duplicate (MSD) is a second aliquot of the same sample (spiked identically as the MS) prepared and analyzed along with the sample and matrix spike. Some client specific data quality objectives (DQO's) may require the use of sample duplicates in place of or in addition to MS/MSD's. The MS/MSD results are used to determine the effect of a matrix on the precision and accuracy of the analytical process. Due to the potential variability of the matrix of each sample, these results may have immediate bearing only on the specific sample spiked. Samples identified as field blanks cannot be used for MS/MSD analysis.

9.4.2. An MS/MSD consisting of 1 mL of the 25,000 mg/L alkalinity standard and 50 mL of the sample will be analyzed.

9.4.3. Corrective action for MS/MSDs

9.4.3.1. If the analyte recovery or RPD falls outside the acceptance range, the recovery of that analyte must be in control for the LCS. If the LCS recovery is within limits, then the laboratory operation is in control and the results may be accepted. If the recovery of the LCS is outside limits,

corrective action must be taken. Corrective action will include repreparation and reanalysis of the batch.

9.4.3.2. If the native analyte concentration in the MS/MSD exceeds 4x the spike level for that analyte, the recovery data is reported as DIL (diluted out).

9.4.3.3. If an MS/MSD is not possible due to limited sample volume then a laboratory control sample duplicate (LCSD) should be analyzed. The RPD of the LCS and LCSD must be compared to the matrix spike RPD limits.

10. CALIBRATION AND STANDARDIZATION

10.1. Instrument Tuning

10.1.1. Calibrate the pH meter according to the manufacturer's specifications. See pH Electrode Method SOP # NC-WC-0010.

10.2. Initial Calibration

10.2.1. The pH meter is calibrated with at least two calibration buffers. A third buffer is analyzed to confirm the calibration.

10.3. Continuing Calibration

10.3.1. Check the pH meter at least every ten analyses with pH4 buffer. The acceptance range for the calibration check (CCV) is 4.0 +/- 0.05 pH units.

11. PROCEDURE

11.1. One time procedural variations are allowed only if deemed necessary in the professional judgment of supervision to accommodate variation in sample matrix, radioactivity, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Nonconformance Memo and is approved by a Technical Specialist and QA Manager. If contractually required, the client shall be notified. The Nonconformance Memo shall be filed in the project file.

11.2. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

11.3. Sample Preparation

11.3.1. For solids preparation, see SOP NC-WC-0073.

11.4. Sample Analysis

11.4.1. Place 50 mL of sample, or an aliquot diluted to 50 mL with reagent water, in a beaker. Begin mixing; measure and record initial pH of the sample. Titrate the sample to an endpoint of pH 4.5 with 0.02 N H_2SO_4. Record the volume of the titrant on the analytical logsheet. Samples requiring >50 mL titrant (> 75 mL using autotitrator) should be re-analyzed using less sample volume. Record dilution.

11.5. Standardization

11.5.1. To standardize 0.02 N sulfuric acid, titrate 50 mL reagent water and 0.02 g sodium carbonate (weighed accurately and recorded) with 0.02 N H_2SO_4 to a pH of 4.5. This should be performed monthly or on a new lot of acid (whichever is more frequent). Calculate as follows:

$$N = \frac{A \times 1000}{53.00 \times B}$$

Where:

$A = g\ NA_2CO_3$

$B = mL\ .02\ N\ H_2SO_4\ titrant$

Repeat standardization two or three more times. Record standardization in the calibration logbook.

11.6. Analytical Documentation

11.6.1. Record all analytical information in the analytical logbook/logsheet, including the analytical data from standards, blanks, LCSs, MS/MSDs, and any corrective actions or modifications to the method.

11.6.2. All standards are logged into a department standard logbook. All standards are assigned an unique number for identification. Logbooks are reviewed by the supervisor or designee.

11.6.3. Documentation such as all associated instrument printouts (final runs, screens, reruns, QC samples, etc.) and daily calibration data corresponding to all final runs is available for each data file.

11.6.4. Sample results and associated QC are entered into the LIMs after final technical review.

12. DATA ANALYSIS AND CALCULATIONS

12.1. $$\textit{Alkalinity, mg/L } CaCO_3 \textit{ to pH 4.5} = \frac{A \times N \times 50{,}000}{mL \text{ of sample}}$$

12.2. $$LCS\ \% = \frac{mg/L}{500\ (true)} \times 100$$

$$MS/MSD\ \% = \frac{B - C}{500\ (true)} \times 100$$

Where:

A = mL of Titrant

N = Normality of Titrant

B = MS/MSD, mg/L

C = Sample, mg/L

13. METHOD PERFORMANCE

13.1. Each laboratory must have initial demonstration of performance data on file and corresponding method detection limit files.

13.2. Training Qualifications:

13.2.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. POLLUTION PREVENTION

14.1. This method does not contain any specific modifications that serve to minimize or prevent pollution.

15. WASTE MANAGEMENT

15.1. Acid waste must be collected in clearly labeled acid waste containers.

15.2. Solid materials (gloves, soiled paper products, etc.) are placed in the solid debris container. Do not put liquids in the solid waste container.

15.3. Refer to the Laboratory Sample and Waste Disposal plan.

15.4. Laboratory personnel assigned to perform hazardous waste disposal procedures must have a working knowledge of the established procedures and practices of Quanterra. They must have training on the hazardous waste disposal practices upon initial assignment to these tasks, followed by an annual refresher training.

16. REFERENCES

16.1. References

16.1.1. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, Revised March 1983, Alkalinity, Method 310.1.

16.1.2. Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992,Alkalinity Methods, 2320B.

16.1.3. EPA 600, Methods for Chemical Analysis of Water and Wastes, pH, Method 150.1.

16.2. Associated SOPs

16.2.1. Solid Extraction for Wet Chemistry Parameters, NC-WC-0073.

16.2.2. pH Electrode Method for Wet Chemistry Parameters, NC-WC-0010.

17. MISCELLANEOUS (TABLES, APPENDICES, ETC...)

17.1. Reporting limits

17.1.1. The lower reporting limit (RL) for undiluted samples is 5 mg/L $CaCO_3$.

17.1.2. If samples require dilution or smaller volumes than specified in this method, the RL will be elevated.

17.2. Method Deviation

17.2.1. Alkalinity is performed at room temperature and not 25°C as stated in EPA Method 310.1.

17.2.2. A fixed endpoint of 4.5 is used for all samples since the sample concentration is often unknown.

17.2.3. The Sodium Carbonate (Na_2CO_3) is dried at 180°C overnight instead of at 250° C for 4 hours.

QUANTERRA STANDARD OPERATING PROCEDURE

TITLE: TOTAL HARDNESS (MG/L $CACO_3$)

(SUPERSEDES:REVISION O, DATED 05/12/95)))

Prepared by: _____

Reviewed by: _____
Technology Specialist

Approved by: _____
Quality Assurance Manager

Approved by: _____
Environmental Health and Safety Coordinator

Approved by: _____
Laboratory Director

Proprietary Information Statement:

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1. SCOPE AND APPLICATION

1.1. This method is applicable to the determination of Hardness in waters and wastewaters. It is based on EPA Method 130.2. The approximate working range is 2 to 400 mg/L.

1.2. This document accurately reflects current laboratory standard operating procedures (SOP) as of the date above. All facility SOPs are maintained and updated as necessary by the laboratory QA department.

2. SUMMARY OF METHOD

2.1. Calcium and magnesium ions in the sample are sequestered upon the addition of magnesium ethylenediamine tetraacetate (MgEDTA). The end point of the reaction is detected using Eriochrome Black T indicator, which has a red color in the presence of calcium and magnesium and a blue color when the cations are sequestered.

3. DEFINITIONS

3.1. Refer to the glossary in the Quality Assurance Management Plan (QAMP).

4. INTERFERENCES

4.1. Method interferences may be caused by contaminants in solvents, reagents, glassware, and other processing apparatus that lead to discrete artifacts. All of these materials must be routinely demonstrated to be free from interferences under conditions of the analysis by running laboratory method blanks as described in the Quality Control section. Specific selection of reagents may be required to avoid introduction of contaminants.

4.2. Excessive amounts of heavy metals can interfere. This can be overcome by complexing the metals with cyanide. Sodium cyanide solution may be added to prevent metallic interference.

5. SAFETY

5.1. Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2. Eye protection that satisfies ANSI Z87.1 (as per the Chemical Hygiene Plan), laboratory coat, and appropriate gloves must be worn while samples, standards, solvents, and

reagents are being handled. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

5.3. The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the Material Safety Data Sheets (MSDS) maintained in the laboratory.

5.3.1. The following materials are known to be **corrosive: Ammonium Hydroxide**

5.4. Exposure to chemicals must be maintained **as low as reasonable achievable**, therefore, unless they are known to be non-hazardous, all samples must be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent and waste containers will be kept closed unless transfers are being made.

5.5. The preparation of standards and reagents will be conducted in a fume hood with the sash closed as far as the operation will permit.

5.6. All work must be stopped in the event of a known or potential compromise to the health and safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

6. EQUIPMENT AND SUPPLIES

6.1. Stir plate and stir bars

6.2. Erlenmeyer flasks: various

6.3. Graduated cylinders: various

6.4. Autopipettor and disposable tips

6.5. Class A Microburet: 10 mL

6.6. Volumetric flasks: various

6.7. Plastic bottles: various

6.8. Analytical balance: Capable of accurately weighing ± 0.0001 g

7. REAGENTS AND STANDARDS

7.1. Reagents

7.1.1. Ammonium Chloride (NH_4Cl): reagent grade

7.1.2. Ammonium Hydroxide (NH_4OH): reagent grade

7.1.3. Magnesium EDTA: reagent grade

7.1.4. EDTA Buffer Solution: Dissolve 16.9 g of NH_4Cl in 143 mL of NH_4OH. Add 1.25 g of magnesium salt of EDTA and dilute to 250 mL with reagent water. Mix well and store in a plastic bottle. This solution is stable for one month. Alternatively, use purchased hardness buffer.

7.1.5. Eriochrome Black T Indicator: reagent grade

7.1.6. Sodium Chloride (NaCl): reagent grade

7.1.7. Indicator: Mix together 0.5 g of Eriochrome Black T and 100 g of NaCl. Alternatively, use purchased indicator (such as Calamagite).

7.1.8. 1 N Ammonium Hydroxide: Dilute 7 mL of NH_4OH to 100 mL with reagent water and mix well.

7.1.9. Disodium EDTA Dihydrate: Primary standard grade

7.1.10. 0.02 N EDTA Titrant: Purchased. Alternatively, prepare titrant by dissolving 3.723 g of disodium EDTA dihydrate in about 400 mL of reagent water in a 1000 mL volumetric flash. Dilute to 1 liter with reagent water and mix well. This solution is stable for six months. Calibrate monthly against standard calcium solution by titration. Store in polyethylene bottle.

7.1.10.1. Standardization Titration Procedure: Place 10.0 mL of 1000 ppm standard calcium solution in a vessel containing about 50 mL of reagent water. Add 1 mL of buffer solution. Add about 0.5 - 1 g of dry indicator. Titrate slowly with continuous stirring until the last reddish tinge disappears, adding the last few drops at 3 - 5 second intervals. At the end point, the color is blue. Repeat the standarization procedure two more times and average the values.

$$\text{N of EDTA} = \frac{0.2}{\text{mL of EDTA}}$$

7.2. Standards

7.2.1. Calcium Carbonate Standard Solution, 1000 mg/L: Purchased standard (Hach or other supplier). Alternately, a standard may be made: Place 1.0 g of anhydrous calcium carbonate (primary standard grade) in a 500 mL Erlenmeyer flask. Slowly add 6 N HCl until all the $CaCO_3$ has dissolved. Add 200 mL of reagent water and boil for five minutes. Cool the solution and add several drops of methyl red indicator. Adjust the solution to an intermediate orange color with 3 N NH_4 OH or 6 N HCl as required. Quantitatively transfer the solution to a 1 liter volumetric flask and dilute to volume with reagent water. This solution is stable for six months.

8. SAMPLE COLLECTION, PRESERVATION AND STORAGE

8.1. Samples are preserved to a pH < 2 with concentrated nitric acid.

8.2. Samples are stored in plastic or glass containers at 4°C ± 2°C.

8.3. The holding time is six months from sampling to the completion of analysis.

9. QUALITY CONTROL

9.1. Batch Definition

9.1.1. A batch is a group of no greater than 20 samples excluding QC samples (LCS, Method Blank, MS, MSD) which are processed similarly, with respect to the procedure. All sample setups must be initiated within a 24 hour period from the initial preparation or extraction and without interruption of the process. All samples within the batch must be treated with the same lots of reagents and the same processes.

9.2. Method Blank

9.2.1. One method blank (MB) must be processed with each preparation batch. The method blank consists of reagent water containing all reagents specific to the method that is carried through the entire analytical procedure, including preparation and analysis. The method blank is used to identify any system and

process interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. The method blank should not contain any analyte of interest at or above the reporting limit.

9.2.2. A reagent water blank consisting of 50 mL of reagent water and all other reagents added to samples must be analyzed with each analytical batch of samples.

9.2.3. Corrective Action for Blanks

9.2.3.1. If the analyte level in the method blank exceeds the reporting limit for the analytes of interest in the sample, all associated samples are reprepared and reanalyzed. If this is not possible due to limited sample quantity or holding time considerations, the corresponding sample data **must be addressed in the project narrative.**

9.2.3.2. If there is no analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. **Such action must be taken in consultation with the client and must be addressed in the project narrative.**

9.3. Laboratory Control Sample (LCS)

9.3.1. One aqueous LCS must be processed with each preparation batch. The LCS must be carried through the entire analytical procedure. The LCS is used to monitor the accuracy of the analytical process. On-going monitoring of the LCS results provides evidence that the laboratory is performing the method within acceptable accuracy and precision guidelines.

9.3.2. A midrange LCS must be analyzed with each analytical batch of samples. The LCS is made of 50 mL reagent water and 1.0 mL 1000 ppm $CaCO_3$ standard.

9.3.3. Corrective Active for LCS

9.3.3.1. If any analyte is outside established control limits the system is out of control and corrective action must occur.

9.3.3.2. Corrective action will be repreparation and reanalysis of the batch unless the client agrees that other corrective action is acceptable.

9.4. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

9.4.1. One MS/MSD pair must be processed for each batch. A matrix spike (MS) is a field sample to which known concentrations of target analytes have been added. A matrix spike duplicate (MSD) is a second aliquot of the same sample (spiked identically as the MS) prepared and analyzed along with the sample and matrix spike. Some client specific data quality objectives (DQO's) may require the use of sample duplicates in place of or in addition to MS/MSD's. The MS/MSD results are used to determine the effect of a matrix on the precision and accuracy of the analytical process. Due to the potential variability of the matrix of each sample, these results may have immediate bearing only on the specific sample spiked. Samples identified as field blanks cannot be used for MS/MSD analysis.

9.4.2. An MS/MSD must be analyzed per analytical batch. The MS/MSD is composed of 25 mL reagent water, 25 mL sample, and 1.0 mL 1000 ppm $CaCO_3$.

9.4.3. Corrective Action for MS/MSDs

9.4.3.1. If the analyte recovery or RPD falls outside the acceptance range, the recovery of that analyte must be in control for the LCS. If the LCS recovery is within limits, then the laboratory operation is in control and the results may be accepted. If the recovery of the LCS is outside limits, corrective action must be taken. Corrective action will include repreparation and reanalysis of the batch.

9.4.3.2. If the native analyte concentration in the MS/MSD exceeds 4x the spike level for that analyte, the recovery data is reported as DIL (diluted out).

9.4.3.3. In an MS/MSD is not possible due to limited sample volume then a laboratory control sample duplicate (LCSD) should be analyzed. The RPD of the LCS and LCSD must be compared to the matrix spike RPD limits.

9.5. Duplicates

9.5.1. If samples are analyzed for drinking waters, a duplicate sample is prepared and analyzed per batch.

10. CALIBRATION AND STANDARDIZATION

10.1. Not applicable

11. PROCEDURE

11.1. One time procedural variations are allowed only if deemed necessary in the professional judgment of supervision to accommodate variation in sample matrix, radioactivity, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Nonconformance Memo and is approved by a Technical Specialist and QA Manager. If contractually required, the client shall be notified. The Nonconformance Memo shall be filed in the project file.

11.2. Any unauthorized deviations from this procedure must also be documents as a nonconformance, with a cause and corrective action described.

11.3. Sample Preparation - Not Applicable

11.4. Sample Analysis Procedure

11.4.1. Rinse the buret with reagent water once and with EDTA titrant once. Fill with EDTA titrant and be sure all air bubbles are removed.

11.4.2. Place 25 mL of sample and 25 mL of reagent water in an Erlenmeyer flask. Add 1 to 2 mL of 1 N NH_4OH, 1 to 2 mL of EDTA buffer, and 0.5 to 1 g of Indicator. Titration should be completed within 5 minutes of the addition of the buffer.

11.4.3. While stirring, slowly titrate with EDTA titrant until the last reddish tint disappears. The end point is blue. Record the volume of titrant used and its true normality on the analytical logsheet.

NOTE: Samples requiring more than 10 mL of titrant must be diluted. An aliquot is diluted to a final volume of 50 mL with reagent water.

All reagents and samples must be at ambient temperature prior to analysis.

11.5. Report Documentation

11.5.1. Record all analytical information on the analytical logsheet, including the analytical data from Standards, blanks, LCSs, and MS/MSDs.

11.5.2. All standards are logged into the departmental standard logbook.

12. DATA ANALYSIS AND CALCULATIONS

12.1.1. **Hardness, mg/L $CaCO_3$ =** $\frac{(A - B) \times N \times 50{,}000}{C} \times D$

Where:

A = Volume of EDTA titrant used for sample, mL

B = Volume of EDTA titrant used for blank, mL

C = Volume of sample used, mL (not total volume after addition of DI water)

D = Dilution Factor = $\frac{\text{Final Dilution Volume, mL}}{\text{Initial Sample Volume Used For Dilution, mL}}$

N = Normality of EDTA titrant

50,000 = 50 (Equivalent weight of Calcium) x 1000 mg/g

12.1.2. **LCS Recovery:**

$$\frac{\text{mL titrant} \times .02 \times 50{,}000}{20 \text{ (true)}} \times 100 = \% \text{ Recovery}$$

12.1.3. **MS/MSD Calculation:**

$$\frac{(A - B)}{1000} \times 100 = \% \text{ Recovery}$$

Where:

A = mL titrant for MS/MSD x .02 x 50,000

B = mL titrant for sample x .02 x 50,000 (unless sample mg/L = ND, then subtract zero)

13. METHOD PERFORMANCE

13.1. Each laboratory must have initial demonstration of performance data on file and corresponding method detection limit files.

13.2. Training Qualifications.

13.2.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. POLLUTION PREVENTION

14.1. This method does not contain any specific modifications that serve to minimize or prevent pollution.

15. WASTE MANAGEMENT

15.1. Solid materials (gloves, soiled paper products, etc.) are placed in the solid debris container. Do not put liquids in the solid waste containers.

15.2. Refer to the Laboratory Sample and Waste Disposal plan.

15.3. Laboratory personnel assigned to perform hazardous waste disposal procedures must have a working knowledge of the established procedures and practices of Quanterra. They must have training on the hazardous waste disposal practices upon initial assignment to these tasks, followed by an annual refresher training.

16. REFERENCES

16.1. References

16.1.1. EPA 600, Methods for Chemical Analysis of Water and Wastes, Hardness, Total (Mg/L as $CaCO_3$, Titrimetric, EDTA), Method 130.2

17. MISCELLANEOUS (TABLES, APPENDICES, ETC...)

17.1. Reporting Limits

17.1.1. The lower reporting limit (RL) for undiluted samples is 2 mg/L $CaCO_3$.

17.1.2. If samples require dilution or smaller volumes than specified in this method, the RL will be elevated.

QUANTERRA STANDARD OPERATING PROCEDURE

TITLE: TOTAL DISSOLVED SOLIDS (TDS)

(SUPERSEDES: ENSECO SOP #LM-WALN-1302 (REVISION 0))

Prepared by: Joanne Hancock

Reviewed by: _____
Technology Specialist

Approved by: _____
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Approved by: _____
Laboratory Director

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1. SCOPE AND APPLICATION

1.1. This method is applicable to the determination of Total Dissolved Solids in waters and wastewaters. It is based on EPA Method 160.1 and Standard Method 2540C. The approximate working range is 10 mg/L to 2,000 mg/L.

1.2. This document accurately reflects current laboratory standard operating procedures (SOP) as of the date above. All facility SOPs are maintained and updated as necessary by the laboratory QA department.

2. SUMMARY OF METHOD

2.1. The homogenized sample is filtered through a standard glass fiber filter. The filtrate is evaporated and dried to a constant weight at 180°C.

2.2. If Total Suspended Solids is being determined, the filtrate from that method may be used to determine Total Dissolved Solids.

3. DEFINITIONS

3.1. Refer to the glossary in the Quality Assurance Management Plan (QAMP).

4. INTERFERENCES

4.1. Method interferences may be caused by contaminants in solvents, reagents, glassware, and other processing apparatus that lead to discrete artifacts. All of these materials must be routinely demonstrated to be free from interferences under conditions of the analysis by running laboratory method blanks as described in the Quality Control section. Specific selection of reagents may be required to avoid introduction of contaminants.

4.2. Mineralized waters may be hygroscopic and require extra drying time, desiccation, and rapid weighing.

4.3. Samples containing high concentrations of bicarbonate will require prolonged drying at 180°C to complete the bicarbonate to carbonate conversion.

4.4. Limit the dried residue to about 200 mg to avoid water being trapped in a thick crust of dried sample.

5. SAFETY

5.1. Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2. Eye protection that satisfies ANSI Z87.1 (as per the Chemical Hygiene Plan), laboratory coat, and appropriate gloves must be worn while samples, standards, solvents, and reagents are being handled. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

5.3. The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the Material Safety Data Sheets (MSDS) maintained in the laboratory.

5.4. Exposure to chemicals must be maintained **as low as reasonably achievable**, therefore, unless they are known to be non-hazardous, all samples must be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent and waste containers will be kept closed unless transfers are being made.

5.5. The preparation of standards and reagents will be conducted in a fume hood with the sash closed as far as the operation will permit.

5.6. All work must be stopped in the event of a known or potential compromise to the health and safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

5.7. Caution should be used when handling apparatus treated in the oven. Items will be hot.

6. EQUIPMENT AND SUPPLIES

6.1. Drying oven(s): 104°C ± 1°C and 180° ± 2° C

6.2. Dessicator(s)

6.3. Whatman 934 AH glass fiber filter paper or equivalent

6.4. Analytical balance: capable of weighing to the nearest 0.1 mg

6.5. Graduated cylinders: various

6.6. Vacuum pump

6.7. Glass beakers: various

6.8. Vacuum flask and filtering apparatus

6.9. Conductivity meter and cell

7. REAGENTS AND STANDARDS

7.1. Standards

7.1.1. Potassium Chloride (KCl): reagent grade

7.1.2. 5000 mg/L TDS Standard: Add 0.5 g of potassium chloride to a 100 mL volumetric flask and dilute to volume with reagent water. Prepare fresh every six months.

8. SAMPLE COLLECTION, PRESERVATION AND STORAGE

8.1. Samples are not chemically preserved.

8.2. Samples are stored in plastic or glass containers at 4°C ± 2°C.

8.3. The holding time is seven days from sampling to the completion of analysis.

9. QUALITY CONTROL

9.1. Batch Definition

9.1.1. A batch is a group of no greater than 20 samples excluding QC samples (LCS, Method Blank, MS, MSD) which are processed similarly, with respect to the procedure. All sample setups must be initiated within a 24 hour period from the initial preparation or extraction and without interruption of the process. All samples within the batch must be treated with the same lots of reagents and the same processes.

9.2. Method Blank

9.2.1. One method blank (MB) must be processed with each preparation batch. The method blank consists of reagent water containing all reagents specific to the method that is carried through the entire analytical procedure, including

preparation and analysis. The method blank is used to identify any system and process interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. The method blank should not contain any analyte of interest at or above the reporting limit.

9.2.2. A reagent water blank consisting of 100 mL of reagent water is prepared and analyzed with each analytical batch of samples.

9.2.3. Corrective Action for Blanks

9.2.3.1. If the analyte level in the method blank exceeds the reporting limit for the analytes of interest in the sample, all associated samples are reprepared and reanalyzed. If this is not possible due to limited sample quantity or other considerations, the corresponding sample data **must be addressed in the project narrative.**

9.2.3.2. If there is no analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. **Such action must be taken in consultation with the client and must be addressed in the project narrative.**

9.3. Laboratory Control Sample (LCS)

9.3.1. One aqueous LCS must be processed with each preparation batch. The LCS must be carried through the entire analytical procedure. The LCS is used to monitor the accuracy of the analytical process. On-going monitoring of the LCS results provides evidence that the laboratory is performing the method within acceptable accuracy and precision guidelines.

9.3.2. A LCS consisting of 100 mL of reagent water and 1.0 mL of the 5000 mg/L standard is prepared and analyzed with each analytical batch of samples.

9.3.3. Corrective Action for LCS

9.3.3.1. If any analyte is outside established control limits the system is out of control and corrective action must occur.

9.3.3.2. Corrective action will be reprepration and reanalysis of the batch unless the client agrees that other corrective action is acceptable.

9.4. Duplicates

9.4.1. Sample duplicates are performed at a minimum frequency of 10% or one per analytical batch whichever is more frequent.

10. CALIBRATION AND STANDARDIZATION

10.1. Not Applicable

11. PROCEDURE

11.1. One time procedural variations are allowed only if deemed necessary in the professional judgment of supervision to accommodate variation in sample matrix, radioactivity, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Nonconformance Memo and is approved by a Technical Specialist and QA Manager. If contractually required, the client shall be notified. The Nonconformance Memo shall be filed in the project file.

11.2. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

11.3. Sample Preparation

11.3.1. Beaker Preparation

11.3.1.1. Dry a clean beaker at 180°C (± 2°C) for a minimum of one hour. Remove the beaker from the oven and place it in a desiccator for at least one hour before use.

11.3.2. Sample Screening

11.3.2.1. Measure and record the conductivity of all the samples prior to analysis on the analytical logsheet. If the conductivity is > 2000 umhos, use less sample volume to be sure that the final weight gain is 0.2 g or less.

11.3.2.2. To determine proper dilutions:

$$\frac{2000 \times 100}{Conductance} = mL\ of\ sample\ to\ use$$

NOTE: The conductivity has not been corrected and should not be used as analytical data.

11.3.3. Sample Preparation Procedure

11.3.3.1. Make sure the samples are at room temperature before starting the analysis.

11.3.3.2. Label the beaker with the sample ID and weigh the beaker to the nearest 0.1 mg. Record the weight on the analytical logsheet.

NOTE: Always transfer the beaker with gloves or forceps to prevent added weight due to fingerprints.

11.3.3.3. Shake the sample vigorously and immediately measure 100 mL, or a desired aliquot, into a graduated cylinder.

11.3.3.4. Place a glass fiber filter in the filtering apparatus and pre-wet using reagent water. (Be sure that the filter holder and flask have been carefully cleaned between samples with reagent water to assure that no contamination is present).

NOTE: If the sample also requires a TSS, preweigh the prepared filter and follow that method (NC-WC-0054) for the procedure.

11.3.3.5. Pour the sample into the filtering apparatus. Apply a vacuum. Rinse the graduated cylinder, funnel walls, and the filter with reagent water. Filter all washings into the vacuum flask. Total washings should be between 5 - 10 mL.

11.3.3.6. Transfer the filtrate to the weighed and labeled beaker. Rinse the flask with 10 - 25 mL of reagent water and transfer to the beaker.

11.3.3.7. Place the sample in the 103°C - 105°C drying oven overnight or until dry.

11.3.3.8. When the sample appears to be dry, place in a drying oven for a minimum of two hours at 180°C.

NOTE: If samples don't remain in 180°C oven for a minimum of two hours, multiply weighings and drying are required.

11.3.3.9. Remove the beaker from the oven and place in a desiccator at least one hour.

11.4. Sample Analysis Procedure

11.4.1. Weigh the beaker to the nearest 0.1 mg and record the final weight on the analytical logsheet. If the beaker was not dried for a minimum of two hours at 180°C, repeat the drying cycle until the weight loss is less than 0.5 mg.

11.4.2. If the final weight gain difference is > 0.2 g, repreparation and reanalysis is necessary, using less sample volume.

11.4.3. If the TDS value is not within 50-70% of the conductivity, repreparation is recommended.

NOTE: Dissolved organics may lead to high TDS results which are not detected by conductivity.

11.5. Analytical Documentation

11.5.1. Record all analytical information in the analytical logbook/logsheet, including the analytical data from standards, blanks, LCSs, MS/MSDs, and any corrective actions or modifications to the method.

11.5.2. All standards are logged into a department standard logbook. All standards are assigned an unique number for identification. Logbooks are reviewed by the supervisor or designee.

11.5.3. Documentation such as all associated instrument printouts (final runs, screens, reruns, QC samples, etc.) and daily calibration data corresponding to all final runs is available for each data file.

11.5.4. Sample results and associated QC are entered into the LIMs after final technical review.

12. DATA ANALYSIS AND CALCULATIONS

12.1. $$\textit{Total Dissolved Solids, mg / L} = \frac{(A - B) \times 1000 \times 1000}{C}$$

Where:

A = *Weight of dried residue and beaker, g*

B = *Tare weight of beaker, g*

C = *Sample volume, mL*

12.2. $$\textit{LCS \% Recovery} = \frac{mg / L \times 100}{50\ (true)}$$

13. METHOD PERFORMANCE

13.1. Each laboratory must have initial demonstration of performance data on file and corresponding method detection limit files.

13.2. Training Qualifications:

13.2.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. POLLUTION PREVENTION

14.1. This method does not contain any specific modifications that serve to minimize or prevent pollution.

15. WASTE MANAGEMENT

15.1. Solid materials (gloves, soiled paper products, etc.) are placed in the solid debris container. Do not put liquids in the solid waste container.

15.2. Refer to the Laboratory Sample and Waste Disposal plan.

15.3. Laboratory personnel assigned to perform hazardous waste disposal procedures must have a working knowledge of the established procedures and practices of Quanterra.

They must have training on the hazardous waste disposal practices upon initial assignment to these tasks, followed by an annual refresher training.

16. REFERENCES

16.1. References

16.1.1. EPA 600, Methods for Chemical Analysis of Water and Wastes, Residue, Filterable (Gravimetric, Dried at 180°C), Method 160.1

16.1.2. Standard Methods for the Examination of Water and Wastewater, 18th Edition, Total Dissolved Solids Dried at 180°C, Method 2540C

16.2. Associated SOPs

16.2.1. Conductivity, NC-WC-0079

16.2.2. Total Suspended Solids, NC-WC-0054

17. MISCELLANEOUS (TABLES, APPENDICES, ETC...)

17.1. Reporting limits

17.1.1. The lower reporting limit (RL) is 10 mg/L.

17.1.2. If samples require dilution or smaller volumes than specified in this method, the RL will be elevated.

QUANTERRA® STANDARD OPERATING PROCEDURE

TITLE: TOTAL SOLIDS, PERCENT MOISTURE, ASH AND TOTAL VOLATILE SOLIDS

(SUPERSEDES: REVISION 1)

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1. SCOPE AND APPLICATION

1.1. This method is applicable to the determination of Total Solids in waters, wastewaters, sludges, and solids. It is based on EPA 160.3, EPA 160.4, ASTM D2216-80, SM 2540B, USEPA CLP Statements of Work OLM01.9, OLM03.1, ILM02.1 and ILM03.0. The approximate working range for Total Solids is 10 - 20,000 mg/L for waters and 0.5 to 100% for non-waters.

1.2. This document accurately reflects current laboratory standard operating procedures (SOP) as of the date above. All facility SOPs are maintained and updated as necessary by the laboratory QA department.

2. SUMMARY OF METHOD

2.1. A homogenous sample is dried at 104 °C ± 1°C and the difference in the weight loss of the sample (non-water) or the weight gain of the vessel (water) represents the Total Solids.

3. DEFINITIONS

3.1. Refer to the glossary in the Quality Assurance Management Plan (QAMP).

4. INTERFERENCES

4.1. Method interferences may be caused by contaminants in solvents, reagents, glassware, and other processing apparatus that lead to discrete artifacts. All of these materials must be routinely demonstrated to be free from interferences under conditions of the analysis by running laboratory method blanks as described in the Quality Control section. Specific selection of reagents may be required to avoid introduction of contaminants.

4.2. Samples high in concentrations of minerals must be dried longer, desiccated, and weighed quickly to prevent any excess weight added due to absorption of water from the atmosphere.

4.3. Non-homogeneous samples may give erratic results.

5. SAFETY

5.1. Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2. Eye protection that satisfies ANSI Z87.1 (as per the Chemical Hygiene Plan), laboratory coat, and appropriate gloves must be worn while samples, standards, solvents, and reagents are being handled. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

5.3. The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the Material Safety Data Sheets (MSDS) maintained in the laboratory.

5.4. Exposure to chemicals must be maintained **as low as reasonably achievable**, therefore, unless they are known to be non-hazardous, all samples must be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent and waste containers will be kept closed unless transfers are being made.

5.5. The preparation of standards and reagents will be conducted in a fume hood with the sash closed as far as the operation will permit.

5.6. All work must be stopped in the event of a known or potential compromise to the health and safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

6. EQUIPMENT AND SUPPLIES

6.1. Analytical balance: capable of accurately weighing ± 0.0001 g

6.2. Drying Oven

6.3. Desiccators

6.4. Evaporating dishes: various

6.5. Tongue blades

6.6. Graduated cylinders: various

6.7. Sample containers

6.8. Top loading balance: capable of accurately weighing ± 0.01 g

6.9. Aluminum pans

6.10. Beakers: glass, various

6.11. Muffle furnace

6.12. Conductivity meter

6.13. Volumetric flasks: various

7. REAGENTS AND STANDARDS

7.1. Reagents

7.1.1. Reagent water

7.2. Standards

7.2.1. Sodium Chloride (NaCl): reagent grade

7.2.2. Total Solid Standard, 2,500 mg/L: Add 2.5 g sodium chloride (NaCl) to a 1000 mL volumetric flask and dilute to volume with reagent water. Mix well. Replace after three months or as needed.

8. SAMPLE COLLECTION, PRESERVATION AND STORAGE

8.1. Samples are not chemically preserved.

8.2. Samples are stored in plastic or glass containers at 4°C ± 2°C.

8.3. The holding time is seven days from sampling to the completion of analysis for water samples.

8.4. There is no recommended holding time for non-water samples.

9. QUALITY CONTROL

9.1. Batch Definition

9.1.1. A batch is a group of no greater than 20 samples excluding QC samples (LCS, Method Blank, MS, MSD) which are processed similarly, with respect to the procedure. All sample setups must be initiated within a 24 hour period from the

initial preparation or extraction and without interruption of the process. All samples within the batch must be treated with the same lots of reagents and the same processes.

9.2. Method Blank

9.2.1. One method blank (MB) must be processed with each preparation batch. The method blank consists of reagent water containing all reagents specific to the method that is carried through the entire analytical procedure, including preparation and analysis. The method blank is used to identify any system and process interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. The method blank should not contain any analyte of interest at or above the reporting limit.

9.2.2. Corrective Action for Blanks

9.2.2.1. If the analyte level in the method blank exceeds the reporting limit for the analytes of interest in the sample, all associated samples are reprepared and reanalyzed. If this is not possible due to limited sample quantity or other considerations, the corresponding sample data **must be addressed in the project narrative.**

9.2.2.2. If there is no analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. **Such action must be taken in consultation with the client and must be addressed in the project narrative.**

9.3. Laboratory Control Sample (LCS) (Water Samples Only)

9.3.1. One aqueous LCS must be processed with each preparation batch. The LCS must be carried through the entire analytical procedure. The LCS is used to monitor the accuracy of the analytical process. On-going monitoring of the LCS results provides evidence that the laboratory is performing the method within acceptable accuracy and precision guidelines.

9.3.2. A LCS consisting of 25 mL of the 2500 mg/L TS standard is analyzed with each analytical batch of samples.

9.3.3. Corrective Action for LCS

9.3.3.1. If any analyte is outside established control limits the system is out of control and corrective action must occur.

9.3.3.2. Corrective action will be repreparation and reanalysis of the batch unless the client agrees that other corrective action is acceptable.

9.4. Duplicates

9.4.1. Sample duplicates are performed at a frequency of 10% and must meet laboratory-specific limits for precision.

10. CALIBRATION AND STANDARDIZATION

10.1. Not Applicable

11. PROCEDURE

11.1. One time procedural variations are allowed only if deemed necessary in the professional judgment of supervision to accommodate variation in sample matrix, radioactivity, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Nonconformance Memo and is approved by a Technical Specialist and QA Manager. If contractually required, the client shall be notified. The Nonconformance Memo shall be filed in the project file.

11.2. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

11.3. Vessel Preparation - Water Samples

11.3.1. Place glass beakers or evaporating dishes in the drying oven (103°C - 105°C) for at least one hour and in the desiccator for at least one hour.

11.4. Sample Analysis - Water Samples

11.4.1. Label and accurately weigh the beaker or evaporating dish on an analytical balance to the nearest 0.1 mg. Record weight on the analytical logsheet.

11.4.2. Tare the vessel and add approximately 100 mL of the homogenized sample. Record the volume of the sample on the analytical logsheet.

NOTE: If the sample is known to contain > 2000 mg/L dissolved solids, it should be diluted. A prescreening may be performed using a conductivity meter in which any results >2000 umhos should require a dilution.

11.5. To determine proper dilutions:

$$\frac{2000 \times 100}{Conductivity} = mL\ Sample\ to\ Use$$

11.5.1. Place the vessel with sample in the drying oven (103° - 105°C) overnight or until dry and then place the vessel in the desiccator for at least one hour.

11.5.2. If the sample was not dried overnight, place the dish in the oven for one hour, the desiccator for one hour, and reweigh. Continue this process until a constant weight is reached, until loss of weight is less than 4% of the previous weight, or 0.5 mg, whichever is less.

11.5.3. If a TVS or Ash is required, go to Section 11.7

11.6. Non-water Samples

11.6.1. Label and weigh on a top loading balance an aluminum pan. For liquid, sludge, TVS and ash samples, label and weigh an evaporating dish on a top loading balance. Record the weight on the analytical logsheet.

11.6.2. For solid samples, tare and transfer approximately 10 g to the aluminum pan, weigh and record the actual weight on the analytical logsheet or computer spreadsheet. For liquids and sludges, transfer approximately 50 mL to the tared evaporating dish then weigh and record the actual weight on the analytical logsheet.

11.6.3. Place dishes with sample in the drying oven (103° - 105°C) until dry (minimum of 12 hours). Document the time samples were placed in the oven on the logsheet or spreadsheet.

11.6.4. Remove the samples from the drying oven when they are dry. Document the time samples were removed from the oven on the logsheet or spreadsheet.

11.6.5. Place the dishes in the desiccator for at least one hour. Weigh the sample and dish on the top loading balance. Record the weight on the analytical logsheet.

NOTE: If the drying time was not overnight, it may be necessary to repeat the drying, desiccating, and weighing cycle until a constant weight is achieved as described in Section 11.5.2.

11.6.6. Obtain the tare weight of an empty drying pan for use as a method blank. Record the weight on the logsheet or computer spreadsheet.

11.6.7. If a Total Volatile Solid or Ash is required, go to Section 11.7. All other samples may be properly disposed in the solid hazardous waste container.

11.7. Total Volatile Solids (TVS) and Ash Samples

11.7.1. Follow Section 11.6 for non-water samples

11.7.2. After the final dried weight has been taken, place the evaporating dish and dried sample in the muffle furnace. Muffle the sample for one hour at 550°C ± 50°C.

NOTE: Open the oven slowly and allow to cool for at least one hour before removing the samples.

11.7.3. Remove the dish with sample and place it in the desiccator for at least one hour, then weigh it on the top loading balance. Record the weight on the analytical logsheet or computer spreadsheet.

11.8. Percent Moisture

11.8.1. Follow Section 11.6

11.9. Analytical Documentation

11.9.1. Record all analytical information in the analytical logbook/logsheet or computer spreadsheet, including the analytical data from standards, blanks, LCSs, MS/MSDs, and any corrective actions or modifications to the method.

11.9.2. All standards are logged into a department standard logbook. All standards are assigned an unique number for identification. Logbooks are reviewed by the supervisor or designee.

11.9.3. Documentation such as all associated instrument printouts (final runs, screens, reruns, QC samples, etc.) and daily calibration data corresponding to all final runs is available for each data file.

11.9.4. Sample results and associated QC are entered into the LIMs after final technical review.

12. DATA ANALYSIS AND CALCULATIONS

12.1. Total Solids

$$\textit{Total Solids, mg/L (waters)} = \frac{(A - B) \times 1000 \times 1000}{C}$$

Where: ***A =*** ***Final weight of dried sample and dish, g***

B = ***Initial weight of dish, g***

C = ***Sample volume, mL***

D = ***Sample weight, g***

$$\textit{Total Solids, \% (non-waters)} = \frac{(A - B) \times 100}{(C - B)}$$

Where: ***A = Final weight of dried sample and dish, g***

B = ***Initial weight of dish, g***

C = Inital weight of wet sample and dish, g

12.2. Ash

$$\textit{Ash, mg / L (waters)} = \frac{(D - B) \times 1000 \times 1000}{\textit{Sample Volume, mL}}$$

$$\textit{Ash, \% (non - waters)} = \frac{(D - B) \times 100}{A - B}$$

Where: ***A = Weight of dried sample and dish (after Total Solid), g***

B = Weight of dish only, g

C = Weight of wet sample and dish, g

D = Weight of muffled sample and dish, g

12.3. Total Volatile Solids (TVS)

$$\frac{(A - D) \times 1000 \times 1000}{\text{Sample Volume, mL}} = TVS, mg / L \text{ (waters)}$$

$$\frac{(A - D) \times 100}{(A - B)} = TVS, \% \text{ (non - waters)}$$

Where: ***A = Weight of dried sample and dish (after Total Solid), g***

B = Weight of dish only, g

C = Weight of wet sample and dish, g

D = Weight of muffled sample and dish, g

12.4. LCS % Recovery

$$LCS \% \text{ Recovery} = \frac{mg / L}{2{,}500 \text{ (true)}} \times 100$$

12.5. Dry Weight

$$\text{Dry Weight} = \frac{\text{Sample Test Result} \times 100}{(\%) \text{ Total Solid Results}} = \text{Dry Weight}$$

12.6. Percent Moisture

$$\%Moisture = 100 - \%TS \text{ (Section 12.1)}$$

13. METHOD PERFORMANCE

13.1. Each laboratory must have initial demonstration of performance data on file and corresponding method detection limit files.

13.2. Training Qualifications:

13.2.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. POLLUTION PREVENTION

14.1. This method does not contain any specific modifications that serve to minimize or prevent pollution.

15. WASTE MANAGEMENT

15.1. Solid materials (gloves, soiled paper products, etc.) are placed in the solid debris container. Do not put liquids in the solid waste container.

15.2. Refer to the Laboratory Sample and Waste Disposal plan.

15.3. Laboratory personnel assigned to perform hazardous waste disposal procedures must have a working knowledge of the established procedures and practices of Quanterra. They must have training on the hazardous waste disposal practices upon initial assignment to these tasks, followed by an annual refresher training.

16. REFERENCES

16.1. References

16.1.1. Standard Methods for the Examination of Water and Wastewater, Eighteenth Edition, Solids, Method 2540B.

16.1.2. EPA 600, 1984, Total Residual Solids, Method 160.3

16.1.3. EPA 600, Total Volatile Residue, Method 160.4

16.1.4. Annual Book of ASTM Standards, Volume 04.08, 1990

16.1.5. USEPA Contract Laboratory Program, Statement of Work for Inorganics Analysis, Multi-media Multi-concentration, ILM02.1 and ILM03.0

16.1.6. USEPA Contract Laboratory Program, Statement of Work for Organics Analysis, Multi-media Multi-concentration, OLM01.9 and OLM03.1

17. MISCELLANEOUS (TABLES, APPENDICES, ETC...)

17.1. Reporting limits

17.1.1. The lower reporting limit (RL) for Total Solids, TVS, and Ash is 10 mg/L for water and 0.5% for non-waters.

17.1.2. If samples require dilution or smaller volumes than specified in this method, the RL will be elevated.

LABORATORY-SPECIFIC

QUANTERRA® STANDARD OPERATING PROCEDURE

TITLE: CHEMICAL OXYGEN DEMAND, COLORIMETRIC

(SUPERSEDES: REVISION 2, DATED 12/06/95)

Prepared by: Ruby Weber 6/11/98
Dated

Reviewed by: Patrick O'Mea 6/11/98
Technology Specialist Dated

Approved by: [signature] 6/12/98
Quality Assurance Manager Dated

Approved by: [signature] 6-16-98
Environmental Health and Safety Coordinator Dated

Approved by: [signature] 6-18-98
Laboratory Director Dated

Proprietary Information Statement:

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1. SCOPE AND APPLICATION

1.1. This method is applicable to the determination of Chemical Oxygen Demand in waters and wastewaters. It is based on Standard Methods 5220D and EPA 410.4 The working linear range is 20 to 1000 mg/L.

1.2. This document accurately reflects current laboratory standard operating procedures (SOP) as of the date above. All facility SOPs are maintained and updated as necessary.

2. SUMMARY OF METHOD

2.1. Organic matter is oxidized by a boiling mixture of chromic and sulfuric acid and then the solution is analyzed colorimetrically at 600 nm against digested standards.

3. DEFINITIONS

3.1. Refer to the glossary in the Quality Assurance Management Plan (QAMP), current version.

4. INTERFERENCES

4.1. Method interferences may be caused by contaminants in solvents, reagents, glassware, and other processing apparatus that lead to discrete artifacts. All of these materials must be routinely demonstrated to be free from interferences under conditions of the analysis by running laboratory method blanks as described in the Quality Control section. Specific selection of reagents may be required to avoid introduction of contaminants.

4.2. Halides such as chloride, bromide, and iodide interfere causing negative biased results, but can be eliminated by the addition of mercuric sulfate. Concentration of chloride greater than 2000 mg/L cannot be eliminated without dilution.

4.3. Reduced inorganic species such as ferrous iron, sulfide, and manganese may also interfere.

5. SAFETY

5.1. Procedures shall be carried out in a manner that protects the health and safety of all Quanterra associates.

5.2. Eye protection that satisfies ANSI Z87.1 (per the Chemical Hygiene Plan), Laboratory coat, and appropriate gloves must be worn while samples, standards, solvents, and reagents are being handled. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

5.3. The health and safety hazards of many of the chemicals used in this procedure have not been fully defined. Additional health and safety information can be obtained from the Material Safety Data Sheets (MSDS) maintained in the laboratory. The following specific hazards are known:

5.3.1. **Mercury** is a highly toxic compound that must be handled with care. The analyst must be aware of the handling and clean-up techniques before using this material.

5.3.2. The following materials are known to be **corrosive: Sulfuric Acid**

5.4. Exposure to chemicals must be maintained **as low as reasonably achievable,** therefore, unless they are known to be non-hazardous, all samples must be opened, transferred and prepared in a fume hood, or under other means of mechanical ventilation. Solvent and waste containers will be kept closed unless transfers are being made.

5.5. The preparation of standards and reagents will be conducted in a fume hood with the sash closed as far as the operation will permit.

5.6. All work must be stopped in the event of a known or potential compromise to the health and safety of a Quanterra associate. The situation must be reported **immediately** to a laboratory supervisor.

6. EQUIPMENT AND SUPPLIES

6.1. Culture Tubes: Borosilicate Glass 16 x 100 mm (10mL) with TFE caps

6.2. Chemical Oxygen Demand Reactor (HACH): Operate at 150°C (± 2°C)

6.3. Autopipettor and disposable tips

6.4. Test tube rack

6.5. Spectrophotometer: set at 600 nm

6.6. Volumetric flasks: various

6.7. Analytical balance: capable of accurately weighing ± 0.0001 g

7. REAGENTS AND STANDARDS

7.1. Reagent

7.1.1. Bioscience prepared COD vials (20 - 900 mg/L range)

7.1.2. Mercuric Sulfate ($HgSO_4$): reagent grade

7.1.3. Sulfuric Acid (H_2SO_4): concentrated, reagent grade

7.1.4. Potassium Dichromate ($K_2Cr_2O_7$): primary standard grade

7.1.5. Potassium Dichromate Solution: Add 10.216 g of pre-dried $K_2Cr_2O_7$, 167 mL concentrated H_2SO_4 and 33.3 g $HgSO_4$ to 500 mL reagent water, mix, cool and dilute to 1000 mL in a volumetric flask.

7.1.6. Silver Sulfate ($AgSO_4$): reagent grade

7.1.7. Sulfuric Acid Solution: Add 22 g silver sulfate to a full 2.5 L bottle of concentrated H_2SO_4. Mix and label well.

7.1.8. Potassium Acid Phthalate (KHP): primary standard grade

7.2. Standards

7.2.1. 1000 mg/L Chemical Oxygen Demand Standard, HACH Primary Standard.

7.2.1.1. Calibration Standards: Add the following suggested volumes to each vial using primary standard.

Concentration (mg/L)	1000 mg/L (mL)	Reagent Water (mL)
0	0	2.50
20	0.05	2.45
80	0.20	2.30
200	0.50	2.00
400	1.00	1.50
800	2.00	0.50

7.2.1.2.1000 mg/L Chemical Oxygen Demand Standard, Hach Secondary Standard or add 0.850 g Potassium Acid Phthalate (KHP) to 800 mL reagent water, mix and dilute to 1000 mL in a volumetric flask.

7.2.1.3. Verification standards: Add the following suggested volumes to each vial using secondary standard.

QC	Concentration (mg/L)	1000 mg/L (mL)	Reagent Water (mL)	Sample (mL)
LCS	100	0.25	2.25	0
CCV	200	0.50	2.00	0
MS/MSD	200	0.50	0	2.00

8. SAMPLE PRESERVATION AND STORAGE

8.1. Samples are preserved to a pH < 2 with H_2SO_4 and stored in plastic or glass containers at 4°C ± 2°C.

8.2. The holding time is twenty-eight days from sampling to analysis.

9. QUALITY CONTROL

9.1. Batch Definition

9.1.1. A batch is a group of no greater than 20 samples excluding QC samples (LCS, MS, MSD, Method Blanks) which are processed similarly, with respect to the procedure. All samples within the batch must be treated with the same lots of reagents and the same processes. All samples within the batch must be treated with the same processes.

9.2. Method Blank (MB)

9.2.1. One method blank (MB) must be processed with each preparation batch. The method blank consists of reagent water containing all reagents specific to the method that is carried through the entire analytical procedure, including preparation and analysis. The method blank is used to identify any system and process interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. The method blank should not contain any analyte of interest at or above the reporting limit.

9.2.2. A reagent water blank consisting of 2.5 mL of reagent water must be digested with each analytical batch of samples. This may also be used as a continuing calibration blank.

9.2.3. Corrective Action for Blanks

9.2.3.1. If the analyte level in the method blank exceeds the reporting limit for the analytes of interest in the sample, all associated samples are reprepared and reanalyzed. If this is not possible due to limited sample quantity or other considerations, the corresponding sample data **must be taken in consultation with the client and must be addressed in the project narrative.**

9.2.3.2. If there is no analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. **Such action must be taken in consultation with the client and must be addressed in the project narrative.**

9.3. Laboratory Control Samples (LCS)

9.3.1. One aqueous LCS must be processed with each preparation batch. The LCS must contain all analytes of interest and must be carried through the entire analytical procedure. The LCS is used to monitor the accuracy of the analytical process. On-going monitoring of the LCS results provides evidence that the laboratory is performing the method within acceptable accuracy and precision guidelines.

9.3.2. A midrange LCS consisting of 0.25 mL of the secondary 1000 mg/L standard and 2.25 mL of reagent water is digested with each analytical batch of samples.

9.3.3. Corrective Action for LCSs

9.3.3.1. If any analyte is outside established control limits, the system is out of control and corrective action must occur.

9.3.3.2. Corrective action will be repreparation and reanalysis of the batch unless the client agrees that other corrective action is acceptable.

9.4. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

9.4.1. One MS/MSD pair must be processed for each batch. A matrix spike (MS) is a field sample to which known concentrations of target analytes have been added. A matrix spike duplicate (MSD) is a second aliquot of the same sample (spiked identically as the MS) prepared and analyzed along with the sample and matrix spike. Some client specific data quality objectives (DQOs) may require the use of sample duplicates in place of or in additional to MS/MSD's. The MS/MSD results are used to determine the effect of a matrix on the precision and accuracy of the analytical process. Due to the potential variability of the matrix of each sample, these results may have immediate bearing only on the specific sample spiked. Samples identified as field blanks cannot be used for MS/MSD analysis.

9.4.2. A MS/MSD consisting of 2.0 mL of sample and 0.5 mL of 1000 mg/L standard (either source) is digested with each analytical batch of samples.

9.4.3. Corrective action for MS/MSDs

9.4.3.1. If any analyte recovery or RPD falls outside the acceptance range, the recovery of that analyte must be in control for the LCS. If the LCS recovery is within limits, then the laboratory operation is in control and the results may be accepted. If the recovery of the LCS is outside limits, corrective action must be taken. Corrective action will include repreparation and reanalysis of the batch.

9.4.3.2. If the native analyte concentration in the MS/MSD exceeds 4x the spike level for that analyte, the recovery data are reported as DIL (diluted out).

9.4.3.3. If an MS/MSD is not possible due to limited sample volume then a laboratory control sample duplicate (LCSD) should be analyzed. The RPD of the LCS and LCSD must be compared to the matrix spike RPD limits.

9.5. QC Acceptance Criteria

9.5.1. Control limits are established by the laboratory as described in NC-QA-0018.

10. CALIBRATION AND STANDARDIZATION

10.1. Colorimetric Method

10.1.1. Prepare standards as in Section 7.2.1 and then follow Sections 11 and 12. The correlation coefficient of the standard curve must be ≥ 0.995 or recalibration is required.

10.2. Continuing Calibration: valid sample results must be bracketed by acceptable CCVs and CCBs.

10.2.1. A CCV should be analyzed at the beginning, every 10 readings, and at the end to ensure that linearity is maintained. A CCV cannot vary by more than $\pm$ 10% of the true value or recalibration and reanalysis of all readings following the last acceptable CCV is required.

10.2.2. A CCB should be analyzed at the beginning, every 10 readings, and at the end to ensure system cleanliness. A CCB cannot contain the analyte of interest above

the reporting limit or recalibration and reanalysis of all readings following the last acceptable CCB is required.

11. PROCEDURE

11.1. One time procedural variations are allowed only if deemed necessary in the professional judgment of supervision to accommodate variation in sample matrix, radioactivity, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Nonconformance Memo and is approved by a Technical Specialist and QA Manager. If contractually required, the client shall be notified. The Nonconformance Memo shall be filed in the project file.

11.2. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

11.3. Sample Preparation Procedure (Prepared Bioscience Vials)

11.3.1. Turn on COD reactor to 150°C at least fifteen minutes prior to digestion.

11.3.2. Add 2.5 mL of sample, blank, standard (see Section 7) or an aliquot brought up to 2.5 mL to a prepared COD digestion vial and reagents.

11.3.3. Tightly cap the vial and invert to mix. If any samples turn a darker color (green/blue) than the 1000 mg/L standard, a dilution is needed. See Section 11.3.2.

11.3.4. Place the vials in the COD reactor for two hours.

11.3.5. Remove the vials from the reactor and place it in the test tube rack to cool for at least fifteen minutes.

11.3.6. Continue with sample analysis (Section 11.6).

11.4. Sample Preparation Procedure (Unprepared Vials)

11.4.1. Turn on the COD reactor to 150°C at least fifteen minutes prior to digestion.

11.4.2. Add 2.5 mL of sample, blank standard (see Section 7) or an aliquot brought up to 2.5 mL to a 10 mL vial and label.

11.4.3. Add approximately 0.1 g of HgSO4 to the vial (for samples known to be high in chloride).

11.4.4. Add 1.5 mL of potassium dichromate solution.

11.4.5. Slowly, add 3.5 mL sulfuric acid reagent.

11.4.6. Tightly cap the vial and invert to mix. If any of the samples turn a darker color than the 1000 mg/L standard, a dilution is necessary. Refer to 11.4.2 for repreparation.

CAUTION: Wear safety glasses with side shields and protect hands from the heat produced when the contents of the tubes are mixed. Mix thoroughly before applying heat to prevent local heating of vessel bottom and explosive reaction.

11.4.7. Place the vial in the COD reactor for two hours.

11.4.8. Remove the vial from the reactor and place it in the test tube rack to cool for at least fifteen minutes.

11.4.9. Continue with sample analysis (Section 11.6).

11.5. Summary

11.5.1. The digested sample is analyzed against a standard curve on a spectrophotometer at 600 nm.

11.6. Sample Analysis Procedure

11.6.1. Colorimetric Method

11.6.1.1. Allows vial to cool and precipitate to settle.

11.6.1.2. Set the spectrophotometer to 600 nm in the absorbance mode.

11.6.1.3. Zero the spectrophotometer with the "O" calibration standard. Be sure to wipe off any residue on the outside of the vials.

NOTE: Scratches or marks on the vial may cause erroneously high results. It may be necessary to turn the vial while in the spectrophotometer chamber to achieve the lowest absorbance value possible.

11.6.1.4. Analyze the remaining calibration standards and derive the correlation coefficient of the calibration curve. The correlation coefficient must be ≥0.995 to continue.

11.7. Analyze the samples and associated QC. Be sure to analyze a CCV and CCB at a minimum of every 10 readings (section 10.2). Record all absorbances on the analytical logsheet.

11.8. Analytical Documentation

11.8.1. Record all analytical information in the analytical logbook/logsheet, including the analytical data from standards, blanks, LCSs, MS/MSDs, and any corrective actions or modifications to the method.

11.8.2. All standards are logged into a departmental standard logbook. All standards are assigned a traceable number for identification. Logbooks are reviewed by the supervisor or designee.

11.8.3. Documentation such as all associated instrument printouts final runs, screens, reruns, QC samples, etc.) and daily calibration data corresponding to all final runs is available for each data file.

11.8.4. Sample results and associated QC are entered into the LIMs after final technical review.

12. DATA ANALYSIS AND CALCULATIONS

12.1. Using calibration curve information from 11.6.1.4, calculate as follows, or derive the corresponding concentration values from their absorbance values.

$$\frac{Absorbance - A}{B} \times Dilution = COD,\ mg / L$$

Where: A = *Intercept*

B = *Slope*

$$\frac{COD, mg / L (from\ 12.1)}{100 (True)} \times 100 = LCS\ \%\ Recovery$$

$$\frac{A - B}{200} \times 100 = MS / MSD\ \%\ Recovery$$

Where: $A =$ *MS/MSD mg/L*

$B =$ *(Sample mg/L x 2.0) ÷ 2.5*

(2.0 = sample volume; 2.5 = final volume)

$$\frac{COD, mg / L (from\ 12.1)}{200 (True)} \times 100 = CCV\ \%\ Recovery$$

13. METHOD PERFORMANCE

13.1. Each laboratory must have initial demonstration of performance data on file and corresponding method detection limit files.

13.2. Training Qualifications:

13.2.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required experience.

14. POLLUTION PREVENTION

14.1. This method does not contain any specific modifications that serve to minimize or prevent pollution.

15. WASTE MANAGEMENT

15.1. Acid waste must be collected in the clearly labeled acid waste containers.

15.2. Solid materials (gloves, soiled paper products) are placed in the solid debris container. Do not put liquids in the solid waste container.

15.3. Refer to the Laboratory Sample and Waste Disposal plan.

15.4. Laboratory personnel assigned to perform hazardous waste disposal procedures must have a working knowledge of the established procedures and practices of Quanterra. They must have training on the hazardous waste disposal practices upon initial assignment to these tasks, followed by annual refresher training.

15.5. All COD digestates must be collected in a mercury disposal container for periodic purging by the Safety and Health department.

16. REFERENCES

16.1. References.

16.1.1. USEPA 600 Method 410.4

16.1.2. Standard Methods for Examination of Water and Wastewater, Eighteenth Edition, Closed Reflux Colorimetric Method, Method 5220D.

16.1.3. Quanterra® Quality Assurance Management Plan (QAMP), current version.

16.2. Associated SOP

16.2.1. Statistical Evaluation of Data and Development of Control Charts, NC-QA-0018.

17. MISCELLANEOUS (TABLES, APPENDICES, ETC...)

17.1. Troubleshooting Guide

17.1.1. Mercuric sulfate is added to remove chloride from the samples. Samples containing greater than 2000 mg/L of chloride should be analyzed using alternate methods.

17.1.2. Samples that contain high levels of chloride may be cloudy and difficult to analyze photometrically. These should be prepared and analyzed by COD Method 5220B or 5220D in Standard Methods.

QUALITY ASSURANCE REVIEW OF THE SAMPLE DATA

APPENDIX G

to the

RCRA CORRECTIVE MEASURES STUDY
FIELD PROGRAM REPORT

for the

BASF NORTH WORKS FACILITY
WYANDOTTE, MICHIGAN
USEPA ID NUMBER MID 064197742

Prepared for:

BASF CORPORATION
1609 BIDDLE AVENUE
WYANDOTTE, MICHIGAN

March 2000

Prepared by:

PARSONS ENGINEERING SCIENCE, INC.
1000 JORIE BOULEVARD, SUITE 250
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Parsons ES Project No. 733893

QUALITY ASSURANCE REVIEW OF THE SAMPLE DATA

APPENDIX G

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Parsons ES Project No. 733893

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

QUALITY ASSURANCE REVIEW

OF THE BASF RCRA FACILITY INVESTIGATION

SAMPLES COLLECTED ON AUGUST 12-25, 1999

IN WYANDOTTE, MICHIGAN

November 15, 1999

Prepared for:

BASF CORPORATION
1609 Biddle Ave.
Wyandotte, MI 48192

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1140 Valley Forge Road
P.O. Box 810
Valley Forge, PA 19482-0810

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

November 15, 1999

Mr. John C. Lanigan
BASF Corporation
1609 Biddle Ave.
Wyandotte, MI 48192

Dear Mr. Lanigan:

Enclosed is the quality assurance review for the samples collected on August 12-25, 1999, as part of the BASF RCRA Facility Investigation in Wyandotte, Michigan. The samples were grouped by the laboratory into five sample delivery groups and were collectively analyzed for volatile organic compounds, semivolatile organic compounds, calcium, chemical oxygen demand (COD), hardness, total alkalinity, total dissolved solids (TDS), total organic carbon (TOC), and total solids.

Several of the analytical organic data results have been qualified due to blank contamination, exceeded holding times, low surrogate recoveries, low internal standard areas, calibration issues, low instrument response, and quantitation of positive results below the reporting limits. In addition, several of the analytical wet chemistry data results have been qualified due to exceeded holding times, TDS results greater than total solids results, low matrix spike and matrix spike duplicate recoveries, and poor field duplicate precision.

If you have any questions or comments, please do not hesitate to call.

Sincerely,

Konstadina Vlahogiani
Senior Quality Assurance Chemist II

Rock J. Vitale, CEAC, CPC
Technical Director of Chemistry/
Principal

KV:hb
Enc.

cc: Ms. Mona Sutherland – Parsons Engineering Science, Inc.

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Introduction

This quality assurance review is based upon a rigorous examination of all data generated from the analyses of the samples collected on August 12-25, 1999, as part of the BASF RCRA Facility Investigation in Wyandotte, Michigan. The samples included in this quality assurance review are presented on Table 1.

This review has been performed with guidance from the "National Functional Guidelines for Organic Data Review" (US EPA, 2/94) and the "National Functional Guidelines for Inorganic Data Review" (US EPA, 2/94).

The reported analytical results are presented as a summary of the data in Section 2. Data were examined to determine the usability of the analytical results and the compliance relative to the requirements specified in the respective laboratory standard operating procedures (SOPs), the BASF RCRA Facility Investigation Quality Assurance Project Plan (QAPP, Revision 2, May 1996) and the QAPP Addendum No. 1 (February 1999). Qualifier codes have been placed next to results to enable the data user to quickly assess the qualitative and/or quantitative reliability of any result. This critical quality assurance review identifies data quality issues for specific samples and specific evaluation criteria. The data qualifications allow the data end-user to best understand the usability of the analytical results. Data not qualified in this report should be considered valid based on the quality control criteria that have been reviewed. Details of this quality assurance review are presented in Section 1 of this report. This report was prepared to provide a critical review of the laboratory analyses and reported analytical results. Rigorous quality assurance reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories.

TABLE 1

SAMPLES INCLUDED IN THIS QUALITY ASSURANCE REVIEW

BASF Sample Number	Laboratory Sample Number	SDG	Date Sample Collected	Parameter(s) Examined	Validation Level
BASF-Ambient (Ambient Blank)	H9H160123-01	H9H160123	8/12/99	V*	Full
BASF-1-1	H9H160123-02	H9H160123	8/12/99	V*	Limited
BASF-2-1	H9H160123-03	H9H160123	8/12/99	V*	Limited
BASF-3-1	H9H160123-04	H9H160123	8/12/99	V*	Limited
BASF-3-2	H9H160124-01	H9H160124	8/13/99	V*	Full
BASF-2-2	H9H160124-02	H9H160124	8/13/99	V*	Limited
BASF-1-2	H9H160124-03	H9H160124	8/13/99	V*	Limited
BASF-Carrier Air (Carrier Air Blank)	H9H160124-04	H9H160124	8/13/99	V*	Limited
BASF-3-3	H9H170116-01	H9H170116	8/16/99	V*	Full
BASF-2-3	H9H170116-02	H9H170116	8/16/99	V*	Limited
BASF-1-3	H9H170116-03	H9H170116	8/16/99	V*	Limited
BASF-Trip Blank (Trip Blank)	H9H170116-04	H9H170116	8/16/99	V*	Full
BASF-4-3	H9H170116-05	H9H170116	8/16/99	V*	Limited
CMSMW-1	A9H210120-01	H21120	8/19/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Full
CMSMW-1MS (Matrix Spike)	A9H210120-01MS	H21120	8/19/99	V	Full
CMSMW-1MSD (Matrix Spike Duplicate)	A9H210120-01MSD	H21120	8/19/99	V	Full
CMSMW-1DUP (Laboratory Duplicate)	A9H210120-01DUP	H21120	8/19/99	TS	Full
RFIMW-23	A9H210120-02	H21120	8/19/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Full
RFIMW-23RE (Reanalysis)	A9H210120-02RE	H21120	8/19/99	TS	Full
RFIMW-23REDUP (Laboratory Duplicate)	A9H210120-02REDUP	H21120	8/19/99	TS	Full

TABLE 1 (Cont.)

BASF Sample Number	Laboratory Sample Number	SDG	Date Sample Collected	Parameter(s) Examined	Validation Level
CMSMW-2	A9H210120-03	H21120	8/19/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-22	A9H210120-04	H21120	8/19/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-22RE (Reanalysis)	A9H210120-04RE	H21120	8/19/99	TS	Limited
CMSMW-15	A9H210120-05	H21120	8/19/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-1	A9H210120-06	H21120	8/19/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-3	A9H210120-07	H21120	8/19/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-13	A9H210120-08	H21120	8/19/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
Trip Blank	A9H210120-09	H21120	8/19/99	V	Full
CMSMW-4	A9H240148-01	H21120	8/20/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-14 (Field Duplicate of RFIMW-39)	A9H240148-02	H21120	8/20/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Full
RFIMW-14DUP (Laboratory Duplicate)	A9H240148-02DUP	H21120	8/20/99	TS	Full
RFIMW-39 (Field Duplicate of RFIMW-14)	A9H240148-03	H21120	8/20/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Full
RFIMW-4	A9H240148-04	H21120	8/20/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Full

TABLE 1 (Cont.)

BASF Sample Number	Laboratory Sample Number	SDG	Date Sample Collected	Parameter(s) Examined	Validation Level
RFIMW-4RE (Reanalysis)	A9H240148-04RE	H21120	8/20/99	TS	Full
RFIMW-4MS (Matrix Spike)	A9H240148-04MS	H21120	8/20/99	COD	Full
RFIMW-4MSD (Matrix Spike Duplicate)	A9H240148-04MSD	H21120	8/20/99	COD	Full
RFIMW-5 (Field Duplicate of RFIMW-30)	A9H240148-05	H21120	8/20/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-5RE (Reanalysis)	A9H240148-05RE	H21120	8/20/99	TS	Limited
RFIMW-30 (Field Duplicate of RFIMW-5)	A9H240148-06	H21120	8/20/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-29	A9H250128-01	H25128	8/23/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Full
RFIMW-29RE (Reextraction)	A9H250128-01RE	H25128	8/23/99	S	Full
RFIMW-29MS (Matrix Spike)	A9H250128-01MS	H25128	8/23/99	V, S, Ca, ALK, Hard, COD, TOC	Full
RFIMW-29MSD (Matrix Spike Duplicate)	A9H250128-01MSD	H25128	8/23/99	V, S, Ca, ALK, Hard, COD, TOC	Full
RFIMW-29DUP (Laboratory Duplicate)	A9H250128-01DUP	H25128	8/23/99	TDS, TS	Full
PM4NA	A9H250128-02	H25128	8/23/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-6	A9H250128-03	H25128	8/23/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Full
RFIMW-6MS (Matrix Spike)	A9H250128-03MS	H25128	8/23/99	Ca, ALK, Hard, COD, TOC	Full
RFIMW-6MSD (Matrix Spike Duplicate)	A9H250128-03MSD	H25128	8/23/99	Ca, ALK, Hard, COD, TOC	Full

TABLE 1 (Cont.)

BASF Sample Number	Laboratory Sample Number	SDG	Date Sample Collected	Parameter(s) Examined	Validation Level
RFIMW-6DUP (Laboratory Duplicate)	A9H250128-03DUP	H25128	8/23/99	TDS, TS	Full
CMSMW-5	A9H250128-04	H25128	8/23/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-6	A9H250128-05	H25128	8/23/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
RFIMW-7	A9H250128-06	H25128	8/23/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-13F	A9H250128-07	H25128	8/23/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-13S	A9H250128-08	H25128	8/23/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-7	A9H260105-01	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-8	A9H260105-02	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-9	A9H260105-03	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-18	A9H260105-04	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-10	A9H260105-05	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-11	A9H260105-06	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Limited

TABLE 1 (Cont.)

BASF Sample Number	Laboratory Sample Number	SDG	Date Sample Collected	Parameter(s) Examined	Validation Level
CMSMW-16F	A9H260105-07	H25128	8/24/99	Ca, ALK, Hard, TDS, TS, COD, TOC	Full
CMSMW-16FMS (Matrix Spike)	A9H260105-07MS	H25128	8/24/99	ALK	Full
CMSMW-16FMSD (Matrix Spike Duplicate)	A9H260105-07MSD	H25128	8/24/99	ALK	Full
CMSMW-12	A9H270119-01	H25128	8/25/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Limited
CMSMW-14S (Field Duplicate of CMSMW-39S)	A9H270119-02	H25128	8/25/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Full
CMSMW-39S (Field Duplicate of CMSMW-14S)	A9H270119-03	H25128	8/25/99	V, S, Ca, ALK, Hard, TDS, TS, COD, TOC	Full
ERB-1 (Equipment Blank)	A9H270119-04	H25128	8/25/99	V, S, Ca	Full
Trip Blank	A9H270119-05	H25128	8/25/99	V	Full

NOTES:

V* Volatile Organic Compounds by Quanterra SOP for VOA Canister Analysis (SOP No. KNOX-MS-0001).

V Volatile Organic Compounds by Quanterra SOP for Determination of Volatile Organics by GC/MS Based on Methods 8240B and 8260A (SOP No. CORP-MS-0002NC).

S Semivolatile Organic Compounds by Quanterra SOP for GC/MS Analysis Based on Method 8270B, SW-846 (SOP No. CORP-MS-0001NC).

Ca Total Calcium by Quanterra SOP for Inductively Coupled Plasma-Atomic Emission Spectroscopy, Spectrometric Method for Trace Element Analysis, Method 6010A and Method 200.7 (SOP No. CORP-MT-0001NC).

ALK Total Alkalinity by Quanterra SOP for Alkalinity (Total) (SOP No. NC-WC-0006).

TABLE 1 (Cont.)

Hard Hardness by Quanterra SOP for Total Hardness (MG/L CACO3), Titrimetric (SOP No. NC-WC-0036).

TDS Total Dissolved Solids by Quanterra SOP for Total Dissolved Solids (TDS) (SOP No. NC-WC-0055).

TS Total Solids by Quanterra SOP for Total Solids, Percent Moisture, Ash and Total Volatile Solids (SOP No. NC-WC-0004).

COD Chemical Oxygen Demand by Quanterra SOP for Chemical Oxygen Demand, Colorimetric (SOP No. NC-WC-0019).

TOC Total Organic Carbon by Quanterra SOP for Total Organic Carbon (TOC) and Total Inorganic Carbon (TIC) (SOP No. NC-WC-0017).

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 32 samples (including quality control [QC] samples and one reextraction) were performed by Quanterra Incorporated (Quanterra) of North Canton, Ohio, and Quanterra of Knoxville, Tennessee. The samples were collectively analyzed for volatile organic compounds by Quanterra SOP Nos. KNOX-MS-0001 and CORP-MS-0002NC and for semivolatile organic compounds by Quanterra SOP No. CORP-MS-0001NC, as indicated on Table 1. The data were received in five data packages. The analytical results are presented in Section 2 of this report.

The level of data validated (full versus limited) for each sample is specified on Table 1. The findings offered in this report for analyses that underwent full validation are based on a review of the holding times, condition of samples upon receipt, blank analysis results, field duplicate results, matrix spike/matrix spike duplicate (MS/MSD) results, laboratory control sample (LCS) recoveries, surrogate recoveries, gas chromatography/mass spectroscopy (GC/MS) system performance checks, calibrations, internal standard areas, target compound matching, and the quantitation of positive results. Full validation includes an evaluation of all raw instrument data. The findings offered in this report for analyses that underwent limited validation are based on a review of the holding times, condition of samples upon receipt, blank analysis results, field duplicate results, MS/MSD results, LCS recoveries, surrogate recoveries, GC/MS system performance checks, calibrations, and internal standard areas. Limited validation does not include an evaluation of any raw instrument data.

Several deficiencies were identified as detailed below. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data package in the Organic Data Support Documentation (Section 3) of this report. The following items do not necessarily affect data usability. Usability issues are addressed in a subsequent section.

Correctable Deficiencies

1. In the volatile fraction of sample delivery groups (SDGs) H25128 and H21120, the laboratory incorrectly reported the start time for the initial calibration performed on 6/7/99 on instrument A3UX3 as "10:10" on the Calibration History summary forms, the Initial Calibration Data summary form, and all associated Continuing Calibration Compounds summary forms. According to the raw data, the correct start time for this initial calibration is 10:41. There is no impact on data quality due to this deficiency.

2. In the volatile and semivolatile fractions, the laboratory incorrectly reported on the Form I's a "date received" for all check samples and method blanks. The "date received" is not

applicable because these are laboratory quality control samples. There is no impact on data quality due to this deficiency.

3. On the Volatile and Semivolatile Continuing Calibration Check summary forms for all SDGs, the laboratory reported all percent differences and percent drifts as positive values; however, the percent drift equations in Quanterra SOP Nos. CORP-MS-0002NC (Section 12.3.4) and CORP-MS-0001NC (Section 12.5.2) suggest that an increase in instrument sensitivity would produce a negative percent difference. There is no impact on data quality due to this deficiency.

4. The laboratory did not report in the Case Narrative for SDG H21120 that the project samples in cooler No. J468 were received at the laboratory at 0.3°C. There is no impact on data quality due to this deficiency.

5. In the volatile fraction of SDG H21120, the laboratory incorrectly reported the start date and time for the initial calibration performed between 7/12/99 at 10:17 and 8/25/99 at 11:10 on instrument A3UX7 as "7/2/99" and "13:26", respectively, on the Calibration History summary forms, the Initial Calibration Data summary forms, and all associated Continuing Calibration Compounds summary forms. There is no impact on data quality due to this deficiency.

6. In the volatile fraction of SDG H21120, the laboratory incorrectly reported the client IDs for samples RFIMW-23 and CMSMW-1 (matrix spike duplicate) as "FRIMW-23" and "A9H210120," respectively, on the Volatile Organic GC/MS Tuning and Mass Calibration summary (Form V) and on the Volatile Internal Standard Area Summary (Form VIII). There is no impact on data quality due to this deficiency.

7. In the volatile and semivolatile fractions of SDGs H21120 and 25128, the laboratory did not summarize the internal standard areas and the retention times (RTs) for the Appendix IX compounds continuing calibration standards on the Volatile Internal Standard Area Summary (Form VIII). The reviewer summarized the internal standard areas and RTs for all Appendix IX compounds continuing calibration standards on the Form VIII and compared them to the internal standard areas and RTs of the project samples.

8. In the semivolatile fractions of SDGs H21120 and H25128, the laboratory incorrectly identified the 20-ppb initial calibration standard analyzed on 9/10/99 at 15:54 on instrument A4HP7 as "SSTD050" instead of SSTD020 on the Semivolatile Organic GC/MS Tuning and Mass Calibration summary form (Form V) and the raw data. There is no impact on data quality due to this deficiency.

9. In the semivolatile fraction of SDG H21120, the laboratory incorrectly reported the client identification (ID) for sample RFIMW-23 as "FRIMW-23" on the Form V and on the

Semivolatile Internal Standard Area Summary (Form VIII). There is no impact on data quality due to this deficiency.

10. In the semivolatile fraction of SDG H21120, the DFTPP percent relative abundance values reported on the Form V for the DFTPP standard analyzed on 9/13/99 at 9:40 did not match the raw data. The raw data provided the DFTPP percent relative abundance values from the continuing calibration standard analyzed on 9/13/99 at 10:00. There is no impact on data quality due to this deficiency because the DFTPP percent relative abundance values from the continuing calibration standard analyzed on 9/13/99 at 10:00 were within the ion abundance criteria.

11. In the semivolatile fraction of SDG H25128, the DFTPP percent relative abundance values reported on the Form V for the DFTPP standard analyzed on 9/16/99 at 9:45 did not match the raw data. The raw data provided the DFTPP percent relative abundance values from the continuing calibration standard analyzed on 9/16/99 at 10:09. There is no impact on data quality due to this deficiency because the DFTPP percent relative abundance values from the continuing calibration standard analyzed on 9/16/99 at 10:09 were within the ion abundance criteria.

12. In the semivolatile fractions for all SDGs, the average relative response factors (RRFs) for the compounds quantitated from a quadratic curve were incorrectly reported on the Continuing Calibration Compounds summary forms for all continuing calibrations. There is no impact on data quality due to this deficiency because the concentrations for these compounds were determined from the quadratic curves and not from the average RRFs.

13. In the semivolatile fraction of SDG H25128, the laboratory incorrectly reported the ending date and time for the initial calibration performed between 6/29/99 at 10:41 and 9/8/99 at 18:42 on instrument A4HP8 as "9/9/99" and "12:18," respectively, on the Calibration History summary forms, the Initial Calibration Data summary forms. There is no impact on data quality due to this deficiency.

Noncorrectable Deficiencies

1. According to the laboratory Case Narrative for SDG H25128, the pH of the volatile samples PM4NA and CMSMW-12 was greater than 2 upon laboratory receipt. A pH less than 2 is required for aqueous volatile sample preservation (QAPP Addendum, Table 4-1). There is no impact on data quality due to the elevated pH because these samples were analyzed within 7-days of sample collection.

2. According to the laboratory Case Narrative for SDG H21120, the pH of the volatile sample RFIMW-22 was greater than 2 upon laboratory receipt. A pH less than 2 is required for

aqueous volatile sample preservation (QAPP Addendum, Table 4-1). Sample RFIMW-22 was analyzed 4 days beyond the 7-day holding time from sample collection to analysis for unpreserved samples. The impact of this deficiency on data quality is addressed in the Organic Data Qualifiers section.

3. According to the laboratory Cooler Receipt Forms for SDG H25128, several project samples were received at the laboratory at 0.3°C, 0.6°C, and 1.4°C. In addition, according to the laboratory Cooler Receipt Forms for SDG H21120, several project samples were received at the laboratory at 0.2°C and 0.3°C. These temperatures are below the 4°C required for sample preservation (QAPP Addendum, Table 4-1); however, the data reviewer does not consider the data to have been impacted because it was not indicated that any of the samples was received frozen at the laboratory.

4. In SDG H25128, the semivolatile sample RFIMW-29RE was extracted 14-days beyond the 7-day holding time from sample collection to extraction required for aqueous samples (QAPP Addendum, Table 4-1). The impact of this deficiency on data quality is addressed in the Organic Data Qualifiers section.

5. All samples in SDG H9H160124 were analyzed 3 days beyond the 14-day holding time from sample collection to analysis required for air samples (QAPP Addendum, Table 4-1). The impact of this deficiency on data quality is addressed in the Organic Data Qualifiers section.

Comments

1. In the volatile fraction, SDG H25128 samples PM4NA, CMSMW-12, CMSMW-13F, and CMSMW-13S and SDG H21120 samples CMSMW-2, CMSMW-15, RFIMW-22, and RFIMW-1 were analyzed at dilutions due to foaming. The reporting limits for all volatile compounds in these samples were raised accordingly.

2. In the semivolatile fraction, SDG H25128 samples PM4NA and CMSMW-12 and SDG H21120 samples RFIMW-22 and RFIMW-1 were analyzed at dilutions due to matrix interference or high levels of non-target analytes present in the samples. The reporting limits for all semivolatile compounds in these samples were raised accordingly.

3. According to the laboratory Cooler Receipt Forms for SDG H25128, the lid of the sample bottle for sample PM4NA was broken upon laboratory receipt. The laboratory personnel replaced the broken lid for sample PM4NA.

4. According to the Chain-of-Custody Records for SDGs H9H160123, H9H160124, and H9H170116, there were no custody seals present upon laboratory receipt of the samples. There is no impact on data quality due to this issue.

5. In SDGs H21120 and H25128, the client sample IDs appearing on the Chain-of-Custody Records for the trip blanks were not unique. The IDs were given as "Trip Blank." For clarity, the trip blanks are referenced throughout this report along with the SDG to which they were assigned.

6. In SDGs H21120 and H25128, the collection dates and times for the trip blanks were not listed on the Chain-of-Custody Records. There is no impact on data quality due to this issue because the trip blank samples are not actually collected in the field but they are prepared in the laboratory. The data reviewer used the collection date reported for the samples associated with each trip blank to verify that these QC samples were analyzed within the required holding time.

7. During the data validation of SDG H25128, it was observed that several pages were missing from the data package. The laboratory was contacted, and the missing deliverables were submitted for review. The resubmittals are supplied in the Project Correspondence (Section 6).

With regard to data usability, the principal areas of concern include blank contamination, exceeded holding times, low surrogate recoveries, low internal standard areas, calibration issues, low instrument response, and quantitation of positive results below the reporting limits. Based upon a review of the data packages provided, the following data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should <u>not</u> necessarily be construed as an indication of laboratory performance.

<u>Organic Data Qualifiers</u>

- Due to the presence of the following compounds in associated laboratory, ambient, and/or carrier air blanks, the reported positive results for the compounds in the samples listed below should be considered "not-detected" and have been flagged "U*" on the data tables. Dilution factors were taken into consideration when evaluating blank contamination.

Compound	SDG	Sample(s)
n-butane	H9H160123	BASF-2-1
n-butane, *n*-undecane, and *n*-dodecane	H9H160123	BASF-1-1 and BASF-3-1
n-decane, *n*-undecane, and *n*-dodecane	H9H170116	BASF-1-3

- Due to the presence of the following compounds in associated laboratory, equipment, and/or trip blanks, the reported positive results for the compounds in the samples listed below should be considered "not-detected" and have been flagged "U*" on the data tables. Dilution factors and sample volumes were taken into consideration when evaluating blank contamination.

Compound	SDG	Sample(s)
methylene chloride	H21120	All samples, except sample Trip Blank
	H25128	All samples, except samples ERB-1 and Trip Blank
benzene	H21120	CMSMW-2, CMSMW-15, and RFIMW-23
	H25128	CMSMW-13F, CMSMW-12, CMSMW-14S, and CMSMW-39S
bromodichloromethane	H25128	CMSMW-13F
chlorobenzene	H21120	RFIMW-1, RFIMW-22, and RFIMW-23
toluene	H21120	CMSMW-15, RFIMW-1, RFIMW-22
	H25128	CMSMW-13S
bis(2-ethylhexyl)phthalate	H25128	RFIMW-29RE

- Although there is no direct reason to qualitatively question the reported positive results for acetone in several samples in SDGs H21120 and H25128, this compound is a common field and/or laboratory contaminant. Accordingly, caution should be exercised when using these results.

- The analyses for acetone, methyl ethyl ketone, acrolein, acrylonitrile, acetonitrile, isobutyl alcohol, and propionitrile in all samples in SDG H25128 and in samples RFIMW-1, RFIMW-22, and Trip Blank in SDG H21120 and for acrolein, acetonitrile, isobutyl alcohol,

and propionitrile in SDG H21120 samples CMSMW-1, CMSMW-2, CMSMW-15, and RFIMW-23 are unusable, and the "not-detected" results have been flagged "UR" on the data tables. In addition, the reported positive results for acetone in SDG H25128 samples CMSMW-13S, CMSMW-39S, and CMSMW-14S and in SDG H21120 samples RFIMW-1 and RFIMW-22 should be considered estimated and have been flagged "J" on the data tables. Very low (<0.05) relative response factors (RRFs) were observed for these compounds in the associated initial and continuing calibration standards.

- The analyses for 4-nitroquinilone-1-oxide in all samples in SDG H21120 and for 4-nitroquinilone-1-oxide and 1,3,5-trinitrobenzene in SDG H25128 sample RFIMW-29RE are unusable, and the "not-detected" results have been flagged "UR" on the data tables. Very low (<0.05) RRFs were observed for these compounds in the associated initial and/or continuing calibration standards.

- The analyses for methapyrilene in all samples in SDG H25128, except sample RFIMW-29RE, are unusable, and the "not-detected" results have been flagged "UR" on the data tables. Very high percent differences (>90%) were observed for this compound in the associated continuing calibration standards.

- The analyses for all semivolatile compounds in sample RFIMW-29RE in SDG H25128 are unusable, and the "not-detected" results have been flagged "UR" on the data tables. In addition, any reported positive results for semivolatile compounds in sample RFIMW-29RE in SDG H25128 should be considered estimated and have been flagged "J" (unless flagged "U*") on the data tables. This sample was extracted 14 days beyond the project-required 7-day holding time from sample collection to extraction.

- The analyses for all acid semivolatile compounds in sample RFIMW-29 in SDG H25128 are unusable, and the "not-detected" results have been flagged "UR" on the data tables. Very low recoveries (<10%) were observed for all acid surrogate compounds in the semivolatile analysis of this sample.

- The actual reporting limits for all volatile compounds in all samples in SDG H9H160124 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for volatile compounds in all samples in SDG H9H160124 should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed 3 days beyond the project-required 14-day holding time from sample collection to analysis.

- The actual reporting limits for all aromatic volatile compounds in SDG H21120 sample RFIMW-22 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for all aromatic volatile compounds in SDG H21120 sample RFIMW-22 should be considered estimated and have

been flagged "J" (unless flagged "U*") on the data tables. This sample was analyzed 4 days beyond the required 7-day holding time from sample collection to analysis for unpreserved samples (pH>2).

- The reported positive results for acetone in SDG H21120 samples CMSMW-1 and CMSMW-2 should be considered estimated and have been flagged "J" on the data tables. A high relative standard deviation (>30%) was observed for acetone in the associated initial calibration.

- The actual reporting limits for chlorodifluoromethane, chloromethane, methanol, 1,3-butadiene, acetonitrile, methyl-*tert*-butyl ether, *n*-hexane, cyclohexane, 1-butanol, *n*-heptane, 1,2-dichloropropane, and 4-methyl-2-pentanone in all samples in SDG H9H160123 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for *n*-butane in all samples in SDG H9H160123 and for *n*-heptane and 4-methyl-2-pentanone in SDG H9H160123 sample BASF-2-1 should be considered estimated and have been flagged "J" (unless previously flagged "U*") on the data tables. High percent differences (>25%) were observed for these compounds in the associated continuing calibration standard.

- The actual reporting limits for the volatile compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for acetone in SDG H25128 sample CMSMW-13S and in SDG H21120 samples RFIMW-1 and RFIMW-22 should be considered estimated and have been flagged "J" on the data tables. High percent differences (>25%) were observed for these compounds in the associated continuing calibration standards.

Compound(s)	SDG	Sample(s)
1,2-dibromo-3-chloropropane and iodomethane	H25128	All samples
1,2-dichloroethane	H25128	RFIMW-29, CMSMW-13F, CMSMW-13S, PM4NA, and ERB-1
bromomethane, bromoform, and vinyl acetate	H25128	CMSMW-12, CMSMW-14S, CMSMW-39S, ERB-1, and Trip Blank
1,2-dichloroethane, 1,2-dibromo-3-chloropropane, and iodomethane	H21120	RFIMW-1, RFIMW-22, and Trip Blank

Compound(s)	SDG	Sample(s)
2-chloro-1,3-butadiene, methacrylonitrile, and methyl methacrylate	H21120	CMSMW-1, CMSMW-2, CMSMW-15, and RFIMW-23

- The actual reporting limits for the semivolatile compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for 1,4-dioxane in SDG H21120 samples CMSMW-15, RFIMW-1, and RFIMW-22 should be considered estimated and have been flagged "J" on the data tables. High percent differences (>25%) were observed for these compounds in the associated continuing calibration standards.

Compound(s)	SDG	Sample(s)
4-nitrophenol, 1-naphthylamine, 2-naphthylamine, diallate, 4-aminobiphenyl, and 7,12-dimethybenz[a]anthracene	H21120	RFIMW-1, RFIMW-22, CMSMW-2, CMSMW-15, and RFIMW-23
1,4-dioxane	H21120	CMSMW-2 and RFIMW-23
2,4-dinitrophenol, 1,3,5-trinitrobenzene, and *p*-chlorobenzilate	H21120	CMSMW-1
hexachlorocyclopentadiene, 3-methylphenol, 2,3,4,6-tetrachlorophenol, hexachloropropene, 1,4-naphthoquinone, pentachlorobenzene, dimethoate, and 3,3′-dimethylbenzidine	H25128	CMSMW-12, CMSMW-14S, CMSMW-39S, and ERB-1
1,4-naphthoquinone, pentachlorobenzene, and dimethoate	H25128	RFIMW-29
3-methylphenol and pentachlorobenzene	H25128	CMSMW-13F, CMSMW-13S, and PM4NA

- The actual reporting limits for all volatile compounds in SDG H21120 sample RFIMW-22 may be higher than reported, and the "not-detected" results have been flagged "UJ" (unless previously flagged "UR") on the data tables. In addition, any reported positive results for volatile compounds in SDG H21120 sample RFIMW-22 should be considered estimated and have been flagged "J" (unless previously flagged "U*") on the data tables. A low

recovery (<90%) was observed for the surrogate compound toluene-d_8 in the volatile analysis of this sample.

- The actual reporting limits for all volatile compounds quantitated with the internal standard fluorobenzene in SDG H21120 sample RFIMW-22 may be higher than reported, and the "not-detected" results have been flagged "UJ" (unless previously flagged "UR") on the data tables. In addition, the reported positive results for all volatile compounds quantitated with the internal standard fluorobenzene in SDG H21120 sample RFIMW-22 should be considered estimated and have been flagged "J" (unless previously flagged "U*") on the data tables. A low area count (<50% of the area of the internal standard in the associated continuing calibration standard) was obtained for this internal standard in the analysis of this sample.

- The actual reporting limits for all Appendix IX semivolatile compounds quantitated with the internal standards chrysene-d_{12} and perylene-d_{12} in SDG H21120 samples CMSMW-15, RFIMW-1, and RFIMW-22 and for all Appendix IX semivolatile compounds quantitated with the internal standard chrysene-d_{12} in SDG H21120 sample CMSMW-2 may be higher than reported, and the "not-detected results have been flagged "UJ" on the data tables. Low area counts (<50% of the area of the internal standard in the associated continuing calibration standard) were obtained for these internal standards in the analyses of these samples.

- One field duplicate pair (sample CMSMW-14S and its field duplicate CMSMW-39S) was submitted to the laboratory for volatile and semivolatile analyses. Acceptable precision and sample representativeness were demonstrated between all reported qualitatively confident positive results in these field QC samples. A complete comparison of all reported positive results is included in the Organic Data Support Documentation (Section 3).

- As per reporting conventions, all positive results reported below the sample-specific reporting limits should be considered estimated and have been flagged "J" (unless previously flagged "U*") on the data tables.

A complete data support documentation of this organic quality assurance review is provided in Section 3 of this report. The cover sheet for this section is a checklist of all quality assurance procedures required by the analytical protocols and examined in this data review.

B. Inorganic and Wet Chemistry Data

The inorganic and wet chemistry analyses of 50 samples (including QC samples and reanalyses) were performed by Quanterra of North Canton, Ohio. These samples were collectively analyzed for

total calcium by Quanterra SOP No. CORP-MT-0001NC, for total alkalinity by Quanterra SOP No. NC-WC-0006, for hardness by Quanterra SOP No. NC-WC-0036, for total dissolved solids (TDS) by Quanterra SOP No. NC-WC-0055, for total solids by Quanterra SOP No. NC-WC-0004, for chemical oxygen demand (COD) by Quanterra SOP No. NC-WC-0019, and for total organic carbon (TOC) by Quanterra SOP No. NC-WC-0017, as specified on Table 1. The data were received in two data packages. The analytical results are presented in Section 2 of this report.

The level of data validated (full versus limited) for each sample is specified on Table 1. The findings offered in this report for analyses that underwent full validation are based on a review of the holding times, condition of samples upon receipt, blank analysis results, matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision, laboratory and field duplicate analyses, quantitation of positive results, instrument sensitivity, calibrations, contract-required detection limit (CRDL) standards, laboratory control samples (LCSs), inductively coupled plasma (ICP) linear ranges, ICP interference checks, ICP serial dilution results, sample preparation, and overall system performance. Full validation includes an evaluation of all raw instrument data. The findings offered in this report for analyses that underwent limited validation are based on a review of the holding times, condition of samples upon receipt, blank analysis results, MS/MSD recoveries and precision, post-digestion matrix spike recoveries, laboratory and field duplicate analyses, instrument sensitivity, calibrations, CRDL standards, LCSs, ICP linear ranges, ICP interference checks, ICP serial dilution results, and sample preparation. Limited validation does not include an evaluation of any raw instrument data.

Several deficiencies were identified as detailed below. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data package in the Inorganic and Wet Chemistry Data Support Documentation (Section 4) of this report. The following items do not necessarily affect data usability. Usability issues are addressed in a subsequent section.

Correctable Deficiencies

1. In SDG H25128, the laboratory incorrectly reported the TDS analysis date for sample RFIMW-29 as "9/1/99" on the associated analysis report. According to the raw data, the correct TDS analysis date for sample RFIMW-29 is 8/31/99. There is no impact on data quality due to this deficiency.

2. In SDG H25128, the laboratory incorrectly reported the TDS analysis date for the LCS D207K102 as "8/30/99" on the Laboratory Control Sample Evaluation Reports. According to the raw data, the correct TDS analysis date for this LCS is 8/31/99. There is no impact on data quality due to this deficiency.

3. In SDG H25128, the laboratory incorrectly reported the TOC found concentration and percent recovery for the continuing calibration standard analyzed on 9/1/99 at 11:53 as "24.4028 mg/L" and "98%," respectively, on the Initial and Continuing Calibration Verification summary form. According to the raw data, the correct TOC found concentration and percent recovery for the continuing calibration standard analyzed on 9/1/99 at 11:53 are 25.4028 mg/L and 102%, respectively. There is no impact on data quality due to this deficiency.

4. In SDG H21120, the laboratory incorrectly reported the reporting limit for total solids in samples RFIMW-23RE, RFIMW-22RE, RFIMW-5RE, and RFIMW-4RE as "10 mg/L" on the associated analysis reports. According to the raw data, total solids were reported from the two-fold, ten-fold, ten-fold, and four-fold dilution analyses, respectively, of the aforementioned samples; therefore, the correct raised reporting limits for total solids in these samples are 20 mg/L, 100 mg/L, 100 mg/L, and 40 mg/L, respectively. There is no impact on data quality due to this deficiency.

5. In SDG H25128, the laboratory incorrectly reported the dilution factor for the serial dilution analysis as "1.0" on the analysis run log. According to the raw data, the correct dilution factor for the serial dilution analysis was 5.0. There is no impact on data quality due to this deficiency.

6. The laboratory analyzed CRDL standards for calcium; however, the CRDL standard recoveries were not summarized on the QC summary forms. The data reviewer was able to evaluate the analytical data based on the CRDL standard recoveries using the raw data for these standards provided in the data packages.

7. In SDG H21120, the laboratory did not summarize the results of the ICP interference check solutions A and AB analyzed on 9/16/99 at 14:50 and 14:53 on the ICP Interference Check Sample summary (Form IV). In addition, the laboratory did not provide the raw data and did not summarize the results of the ICP interference check solutions A and AB analyzed on 9/16/99 at 21:25 and 21:28 on the Form IV. The data reviewer was able to evaluate the analytical data using the raw data for the ICP interference check samples analyzed on 9/16/99 at 14:50 and 14:53 provided in the data package.

8. As noted in the laboratory Case Narrative for SDG H21120, the laboratory performed a serial dilution analysis for calcium; however, the raw data and ICP Serial Dilution summary (Form IX) for this serial dilution analysis were not included in the data package. There is no impact on data quality due to this deficiency because the serial dilution analysis was performed on a non-project sample.

9. The laboratory did not report in the Case Narrative for SDG H21120 that the project samples in cooler No. J468 were received at the laboratory at 0.3°C. There is no impact on data quality due to this deficiency.

Noncorrectable Deficiencies

1. SDG H21120 samples CMSMW-1, RFIMW-23RE, RFIMW-22RE, RFIMW-1, RFIMW-13, RFIMW-4RE, and RFIMW-5RE were analyzed for total solids 1-29 days beyond the 7-day holding time from sample collection to analysis; SDG H25128 samples RFIMW-29, PM4NA, RFIMW-6, CMSMW-5, CMSMW-6, RFIMW-7, CMSMW-13F, and CMSMW-13S were analyzed for TDS and total solids 1 day beyond the 7-day holding time from sample collection to analysis (QAPP Addendum, Table 4-1). The impact of this deficiency on data quality is addressed in the Inorganic and Wet Chemistry Data Qualifiers section.

2. According to the laboratory Cooler Receipt Forms for SDG H25128, the pH of samples PM4NA, CMSMW-9, CMSMW-18, CMSMW-11, CMSMW-12, and ERB-1 submitted for calcium and hardness analyses and for samples CMSMW-18 and CMSMW-39S submitted for COD and TOC analyses was greater than 2 upon laboratory receipt. In addition, according the laboratory Cooler Receipt Forms for SDG H21120, the pH of samples RFIMW-22 and CMSMW-15 submitted for calcium analyses and of sample CMSMW-15 submitted for COD analysis was greater than 2 upon laboratory receipt. A pH less than 2 is required for the preservation of samples collected for calcium, hardness, COD, and TOC analyses (QAPP Addendum, Table 4-1). The laboratory personnel adjusted the pH of these samples prior to analysis.

3. According to the laboratory Cooler Receipt Forms for SDG H25128, several project samples were received at the laboratory at 0.3°C, 0.6°C, and 1.4°C. In addition, according to the laboratory Cooler Receipt Forms for SDG H21120, several project samples were received at the laboratory at 0.2°C and 0.3°C. These temperatures are below the 4°C required for sample preservation (QAPP Addendum, Table 4-1); however, the data reviewer does not consider the data to have been impacted because it was not indicated that any of the samples was received frozen at the laboratory.

4. According to the laboratory Cooler Receipt Forms for SDG H25128, several project samples were received at the laboratory at 3.4°C. This temperature is below the 4°C required for sample preservation (QAPP Addendum, Table 4-1); however, the data reviewer does not consider the data to have been impacted because it is customary for the acceptable preservation temperature to be 4±2°C (SW-846, Chapter Two, Table 2-16).

5. In SDG H25128, the laboratory analyzed the serial dilution sample at a five-fold dilution. According to Quanterra SOP No. CORP-MT-0001NC (Section 9.5), the serial dilution analysis is performed at a four-fold dilution. There is no impact on data quality due to this deficiency.

Comments

1. According to the laboratory Cooler Receipt Forms for SDG H25128, the lid of the sample bottle for sample PM4NA was broken upon laboratory receipt. The laboratory personnel replaced the broken lid for sample PM4NA.

2. Several project samples were analyzed for various inorganic and wet chemistry analytes at dilutions. The reporting limits for these analytes in the project samples were raised accordingly.

3. The laboratory used the instrument detection limits (IDLs) to determine the "not-detected" results for the calibration blanks and the project-required reporting limits to determine the "not-detected" results for the laboratory preparation blanks and the project samples.

4. As noted in the laboratory Case Narrative for SDG H21120, the TDS results for samples RFIMW-23, RFIMW-22, RFIMW-4, and RFIMW-5 were greater than the total solids results. The laboratory reanalyzed these samples for total solids; however, the reanalyses were performed outside of the holding time (see Noncorrectable Deficiency No. 1). The laboratory reported both sets of data for these samples. The impact of the exceeded holding time and the TDS results that are greater than the total solids results on data quality is addressed in the Inorganic and Wet Chemistry Data Qualifiers section.

With regard to data usability, the principal areas of concern include exceeded holding times, TDS results greater than total solids results, low matrix spike and matrix spike duplicate recoveries, and poor field duplicate precision. Based upon a review of the data package provided, the following data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance.

Inorganic and Wet Chemistry Data Qualifiers

- The analyses for total solids in SDG H21120 samples RFIMW-23, RFIMW-22, RFIMW-4, and RFIMW-5 are unusable, and the reported positive results have been flagged "R" on the data tables. The TDS results for samples RFIMW-23, RFIMW-22, RFIMW-4, and RFIMW-5 were significantly greater than the total solids results for these samples. In addition, large discrepancies were observed between the total solids results from the original analyses of samples RFIMW-23, RFIMW-22, RFIMW-4, and RFIMW-5 and the reanalyses of these samples (samples RFIMW-23RE, RFIMW-22RE, RFIMW-4RE, and RFIMW-5RE). The total solids results for samples RFIMW-23RE, RFIMW-22RE, RFIMW-4RE, and RFIMW-5RE compare well with the TDS results of samples RFIMW-23, RFIMW-22, RFIMW-4, and RFIMW-5.

- The reported positive results for total solids in SDG H21120 samples CMSMW-1, RFIMW-23RE, RFIMW-22RE, RFIMW-1, RFIMW-13, RFIMW-4RE, and RFIMW-5RE and for TDS and total solids in SDG H25128 samples RFIMW-29, PM4NA, RFIMW-6, CMSMW-5, CMSMW-6, RFIMW-7, CMSMW-13F, and CMSMW-13S should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed 1-29 days beyond the project-required 7-day holding time from sample collection to analysis.

TDS & TS reanalyzed

- The reported positive results for TOC in all samples in SDG H21120 and in all samples in SDG H25128, except sample RFIMW-6, should be considered estimated and have been flagged "J" on the data tables. Low percent recoveries (<90%) were obtained for TOC in the associated matrix spike and matrix spike duplicate analyses.

- Three field duplicate pairs (sample RFIMW-14 and its field duplicate, sample RFIMW-39 sample RFIMW-5 and its field duplicate, sample RFIMW-30 in SDG H21120 and sample CMSMW-14S and its field duplicate, sample CMSMW-39S in SDG H25128) were submitted to the laboratory for inorganic and wet chemistry analyses. Acceptable precision and sample representativeness were demonstrated between all reported positive results in these field QC samples, with the exception of total alkalinity and TOC in samples RFIMW-5 and RFIMW-30 and total solids in samples CMSMW-14S and CMSMW-39S; consequently, the reported positive results for total alkalinity and TOC in samples RFIMW-5 and RFIMW-30 and for total solids in samples CMSMW-14S and CMSMW-39S should be considered estimated and have been flagged "J" on the data tables. Complete comparisons of all reported positive results in the field duplicate pairs are included in the Inorganic and Wet Chemistry Data Support Documentation (Section 4).

A complete data support documentation of this inorganic and wet chemistry quality assurance review is provided in Section 4 of this report. The cover sheet for this section is a checklist of all quality assurance procedures required by the analytical protocols and examined in this data review.

C. Conclusions

This quality assurance review has identified several aspects of the analytical data that required qualification. Several of the organic data results were qualified due to blank contamination, exceeded holding times, low surrogate recoveries, low internal standard areas, calibration issues, low instrument response, and quantitation of positive results below the reporting limits. In addition, several of the wet chemistry data results were qualified due to exceeded holding times, TDS results greater than total solids results, low matrix spike and matrix spike duplicate recoveries, and poor field duplicate precision. To confidently use any of the analytical data within this sample set, the data user should understand the limitations of the results. The Laboratory Case Narratives and Project Chain-of-Custody Records are presented in Section 5. The Project Correspondence is presented in Section 6.

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SECTION 2

ANALYTICAL RESULTS

A. ORGANIC DATA

ORGANIC DATA TABLE NOTES

U	This compound was not detected at or above the associated numerical value.
U*	This compound should be considered "not-detected" since it was detected in a blank at a similar level.
J	Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
R	Unusable result; compound may or may not be present in this sample.
UJ	This compound was not detected, but the reporting limit is probably higher due to a low bias identified during the quality assurance review.
UR	Unusable "not-detected" result; compound may or may not be present in this sample.
N	This result should be considered a tentative qualitative identification.

BASF - Final, Volatile Analytical Results

					BASF					
					H9H160123					
					BASF-1-1			BASF-2-1		
					H9H160123002			H9H160123003		
					08/12/99			08/12/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.83	U		0.66	U
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.83	U	0.71	0.66	
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.83	U		0.66	U
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.83	UJ		0.66	UJ
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.83	UJ		0.66	UJ
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
19	71363	1-Butanol	TO-14	ppb(v/v)		2.1	UJ		1.6	U
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		2.1	U		1.6	U
21	591786	2-Hexanone	TO-14	ppb(v/v)		2.1	U		1.6	U
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.83	U		0.66	U
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)		2.1	UJ	3.5	1.6	J
25	67641	Acetone	TO-14	ppb(v/v)		21	U		16	U
26	75058	Acetonitrile	TO-14	ppb(v/v)		4.2	UJ		3.3	UJ
27	107028	Acrolein	TO-14	ppb(v/v)		2.1	U	1.8	1.6	
28	107131	Acrylonitrile	TO-14	ppb(v/v)		2.1	U		1.6	U
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.83	U		0.66	U
30	71432	Benzene	TO-14	ppb(v/v)		0.83	U		0.66	U
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.83	U		0.66	U

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					BASF					
					H9H160123					
					BASF-1-1			BASF-2-1		
					H9H160123002			H9H160123003		
					08/12/99			08/12/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.83	U		0.66	U
33	75252	Bromoform	TO-14	ppb(v/v)		0.83	U		0.66	U
34	74839	Bromomethane	TO-14	ppb(v/v)		0.83	U		0.66	U
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.83	U		0.66	U
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.83	U		0.66	U
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.83	UJ		0.66	UJ
39	75003	Chloroethane	TO-14	ppb(v/v)		0.83	U		0.66	U
40	67663	Chloroform	TO-14	ppb(v/v)		0.83	U		0.66	U
41	74873	Chloromethane	TO-14	ppb(v/v)		2.1	UJ		1.6	UJ
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.83	U		0.66	U
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.83	U		0.66	U
44	98828	Cumene	TO-14	ppb(v/v)		0.83	U		0.66	U
45	110827	Cyclohexane	TO-14	ppb(v/v)		2.1	UJ		1.6	UJ
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.83	U		0.66	U
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.83	U		0.66	U
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.83	U		0.66	U
49	60297	Ethyl ether	TO-14	ppb(v/v)		2.1	U		1.6	U
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.83	U		0.66	U
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.83	U		0.66	U
53	67561	Methanol	TO-14	ppb(v/v)		42	UJ		33	UJ
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		2.1	UJ		1.6	UJ
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.83	U		0.66	U
56	106978	n-Butane	TO-14	ppb(v/v)	1.4	0.83	U*	4.6	0.66	U*
57	124185	n-Decane	TO-14	ppb(v/v)		0.83	U	5.5	0.66	
58	112403	n-Dodecane	TO-14	ppb(v/v)	0.84	0.83	U*	9.7	0.66	
59	142825	n-Heptane	TO-14	ppb(v/v)		0.83	UJ	1.1	0.66	J
60	110543	n-Hexane	TO-14	ppb(v/v)		0.83	UJ		0.66	UJ

BASF - Final, Volatile Analytical Results

					BASF					
					H9H160123					
					BASF-1-1			BASF-2-1		
					H9H160123002			H9H160123003		
					08/12/99			08/12/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.83	U		0.66	U
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.83	U		0.66	U
63	1120214	n-Undecane	TO-14	ppb(v/v)	0.91	0.83	U*	11	0.66	
64	91203	Naphthalene	TO-14	ppb(v/v)		0.83	U		0.66	U
65	111842	Nonane	TO-14	ppb(v/v)		0.83	U	1.6	0.66	
66	95476	o-Xylene	TO-14	ppb(v/v)		0.83	U		0.66	U
67	109660	Pentane	TO-14	ppb(v/v)		2.1	U		1.6	U
68	100425	Styrene	TO-14	ppb(v/v)		0.83	U		0.66	U
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.83	U		0.66	U
70	108883	Toluene	TO-14	ppb(v/v)		0.83	U		0.66	U
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.83	U		0.66	U
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.83	U		0.66	U
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.83	U		0.66	U
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.83	U		0.66	U
76	108054	Vinyl acetate	TO-14	ppb(v/v)		2.1	U		1.6	U
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.83	U		0.66	U

					BASF-3-1			BASF-AMBIENT		
					H9H160123004			H9H160123001		
					08/12/99			08/12/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.71	U		0.57	U
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.71	U		0.57	U
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.71	UJ		0.57	UJ
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.71	UJ		0.57	UJ
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
19	71363	1-Butanol	TO-14	ppb(v/v)		1.8	UJ		1.4	UJ
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		1.8	U		1.4	U
21	591786	2-Hexanone	TO-14	ppb(v/v)		1.8	U		1.4	U
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.71	U		0.57	U
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)		1.8	UJ		1.4	UJ
25	67641	Acetone	TO-14	ppb(v/v)		18	U		14	U
26	75058	Acetonitrile	TO-14	ppb(v/v)		3.6	UJ		2.9	UJ
27	107028	Acrolein	TO-14	ppb(v/v)		1.8	U		1.4	U
28	107131	Acrylonitrile	TO-14	ppb(v/v)		1.8	U		1.4	U
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.71	U		0.57	U
30	71432	Benzene	TO-14	ppb(v/v)		0.71	U	0.62	0.57	
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.71	U		0.57	U

BASF - Final, Volatile Analytical Results

					BASF-3-1			BASF-AMBIENT		
					H9H160123004			H9H160123001		
					08/12/99			08/12/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.71	U		0.57	U
33	75252	Bromoform	TO-14	ppb(v/v)		0.71	U		0.57	U
34	74839	Bromomethane	TO-14	ppb(v/v)		0.71	U		0.57	U
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.71	U		0.57	U
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.71	U		0.57	U
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.71	UJ		0.57	UJ
39	75003	Chloroethane	TO-14	ppb(v/v)		0.71	U		0.57	U
40	67663	Chloroform	TO-14	ppb(v/v)		0.71	U		0.57	U
41	74873	Chloromethane	TO-14	ppb(v/v)		1.8	UJ		1.4	UJ
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.71	U		0.57	U
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.71	U		0.57	U
44	98828	Cumene	TO-14	ppb(v/v)		0.71	U		0.57	U
45	110827	Cyclohexane	TO-14	ppb(v/v)		1.8	UJ		1.4	UJ
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.71	U		0.57	U
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.71	U		0.57	U
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.71	U	0.62	0.57	
49	60297	Ethyl ether	TO-14	ppb(v/v)		1.8	U		1.4	U
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.71	U		0.57	U
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.71	U	0.79	0.57	
53	67561	Methanol	TO-14	ppb(v/v)		36	UJ		29	UJ
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		1.8	UJ		1.4	UJ
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.71	U		0.57	U
56	106978	n-Butane	TO-14	ppb(v/v)	2	0.71	U*	2.5	0.57	J
57	124185	n-Decane	TO-14	ppb(v/v)		0.71	U		0.57	U
58	112403	n-Dodecane	TO-14	ppb(v/v)	1.1	0.71	U*		0.57	U
59	142825	n-Heptane	TO-14	ppb(v/v)		0.71	UJ		0.57	UJ
60	110543	n-Hexane	TO-14	ppb(v/v)		0.71	UJ		0.57	UJ

BASF - Final, Volatile Analytical Results

					BASF-3-1			BASF-AMBIENT		
					H9H160123004			H9H160123001		
					08/12/99			08/12/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.71	U		0.57	U
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.71	U		0.57	U
63	1120214	n-Undecane	TO-14	ppb(v/v)	1	0.71	U*		0.57	U
64	91203	Naphthalene	TO-14	ppb(v/v)		0.71	U		0.57	U
65	111842	Nonane	TO-14	ppb(v/v)		0.71	U		0.57	U
66	95476	o-Xylene	TO-14	ppb(v/v)		0.71	U		0.57	U
67	109660	Pentane	TO-14	ppb(v/v)		1.8	U	1.8	1.4	
68	100425	Styrene	TO-14	ppb(v/v)		0.71	U		0.57	U
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.71	U		0.57	U
70	108883	Toluene	TO-14	ppb(v/v)		0.71	U	1.8	0.57	
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.71	U		0.57	U
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.71	U		0.57	U
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.71	U		0.57	U
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.71	U		0.57	U
76	108054	Vinyl acetate	TO-14	ppb(v/v)		1.8	U		1.4	U
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.71	U		0.57	U

BASF - Final, Volatile Analytical Results

					BASF					
					H9H160124					
					BASF-1-2			BASF-2-2		
					H9H160124003			H9H160124002		
					08/13/99			08/13/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
19	71363	1-Butanol	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
21	591786	2-Hexanone	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
25	67641	Acetone	TO-14	ppb(v/v)		17	UJ		17	UJ
26	75058	Acetonitrile	TO-14	ppb(v/v)		3.3	UJ		3.4	UJ
27	107028	Acrolein	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
28	107131	Acrylonitrile	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
30	71432	Benzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ

BASF - Final, Volatile Analytical Results

					BASF					
					H9H160124					
					BASF-1-2			BASF-2-2		
					H9H160124003			H9H160124002		
					08/13/99			08/13/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
33	75252	Bromoform	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
34	74839	Bromomethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
39	75003	Chloroethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
40	67663	Chloroform	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
41	74873	Chloromethane	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
44	98828	Cumene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
45	110827	Cyclohexane	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
49	60297	Ethyl ether	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
53	67561	Methanol	TO-14	ppb(v/v)		33	UJ		34	UJ
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
56	106978	n-Butane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
57	124185	n-Decane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
58	112403	n-Dodecane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
59	142825	n-Heptane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
60	110543	n-Hexane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ

BASF - Final, Volatile Analytical Results

					BASF					
					H9H160124					
					BASF-1-2			BASF-2-2		
					H9H160124003			H9H160124002		
					08/13/99			08/13/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
63	1120214	n-Undecane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
64	91203	Naphthalene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
65	111842	Nonane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
66	95476	o-Xylene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
67	109660	Pentane	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
68	100425	Styrene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
70	108883	Toluene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ
76	108054	Vinyl acetate	TO-14	ppb(v/v)		1.7	UJ		1.7	UJ
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.67	UJ		0.67	UJ

BASF - Final, Volatile Analytical Results

					BASF-3-2			BASF-CARRIER AIR		
					H9H160124001			H9H160124004		
					08/13/99			08/13/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
19	71363	1-Butanol	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
21	591786	2-Hexanone	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
25	67641	Acetone	TO-14	ppb(v/v)		17	UJ		14	UJ
26	75058	Acetonitrile	TO-14	ppb(v/v)		3.4	UJ		2.8	UJ
27	107028	Acrolein	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
28	107131	Acrylonitrile	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
30	71432	Benzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ

BASF - Final, Volatile Analytical Results

					BASF-3-2			BASF-CARRIER AIR		
					H9H160124001			H9H160124004		
					08/13/99			08/13/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
33	75252	Bromoform	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
34	74839	Bromomethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
39	75003	Chloroethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
40	67663	Chloroform	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
41	74873	Chloromethane	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
44	98828	Cumene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
45	110827	Cyclohexane	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
49	60297	Ethyl ether	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
53	67561	Methanol	TO-14	ppb(v/v)		34	UJ		28	UJ
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
56	106978	n-Butane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
57	124185	n-Decane	TO-14	ppb(v/v)		0.69	UJ	0.88	0.56	J
58	112403	n-Dodecane	TO-14	ppb(v/v)		0.69	UJ	0.61	0.56	J
59	142825	n-Heptane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
60	110543	n-Hexane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ

BASF - Final, Volatile Analytical Results

					BASF-3-2			BASF-CARRIER AIR		
					H9H160124001			H9H160124004		
					08/13/99			08/13/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
63	1120214	n-Undecane	TO-14	ppb(v/v)		0.69	UJ	1.4	0.56	J
64	91203	Naphthalene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
65	111842	Nonane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
66	95476	o-Xylene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
67	109660	Pentane	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
68	100425	Styrene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
70	108883	Toluene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ
76	108054	Vinyl acetate	TO-14	ppb(v/v)		1.7	UJ		1.4	UJ
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.69	UJ		0.56	UJ

BASF - Final, Volatile Analytical Results

					BASF					
					H9H170116					
					BASF-1-3			BASF-2-3		
					H9H170116003			H9H170116002		
					08/16/99			08/16/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.69	U		0.7	U
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.69	U		0.7	U
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.69	U		0.7	U
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.69	U		0.7	U
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
19	71363	1-Butanol	TO-14	ppb(v/v)		1.7	U		1.7	U
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		1.7	U		1.7	U
21	591786	2-Hexanone	TO-14	ppb(v/v)		1.7	U		1.7	U
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.69	U		0.7	U
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)		1.7	U		1.7	U
25	67641	Acetone	TO-14	ppb(v/v)		17	U		17	U
26	75058	Acetonitrile	TO-14	ppb(v/v)		3.4	U		3.5	U
27	107028	Acrolein	TO-14	ppb(v/v)		1.7	U		1.7	U
28	107131	Acrylonitrile	TO-14	ppb(v/v)		1.7	U		1.7	U
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.69	U		0.7	U
30	71432	Benzene	TO-14	ppb(v/v)		0.69	U		0.7	U
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.69	U		0.7	U

BASF - Final, Volatile Analytical Results

					BASF					
					H9H170116					
					BASF-1-3			BASF-2-3		
					H9H170116003			H9H170116002		
					08/16/99			08/16/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.69	U		0.7	U
33	75252	Bromoform	TO-14	ppb(v/v)		0.69	U		0.7	U
34	74839	Bromomethane	TO-14	ppb(v/v)		0.69	U		0.7	U
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.69	U		0.7	U
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.69	U		0.7	U
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.69	U		0.7	U
39	75003	Chloroethane	TO-14	ppb(v/v)		0.69	U		0.7	U
40	67663	Chloroform	TO-14	ppb(v/v)		0.69	U		0.7	U
41	74873	Chloromethane	TO-14	ppb(v/v)		1.7	U		1.7	U
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.69	U		0.7	U
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.69	U		0.7	U
44	98828	Cumene	TO-14	ppb(v/v)		0.69	U		0.7	U
45	110827	Cyclohexane	TO-14	ppb(v/v)		1.7	U		1.7	U
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.69	U		0.7	U
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.69	U		0.7	U
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.69	U		0.7	U
49	60297	Ethyl ether	TO-14	ppb(v/v)		1.7	U		1.7	U
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.69	U		0.7	U
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.69	U		0.7	U
53	67561	Methanol	TO-14	ppb(v/v)		34	U		35	U
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		1.7	U		1.7	U
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.69	U		0.7	U
56	106978	n-Butane	TO-14	ppb(v/v)		0.69	U		0.7	U
57	124185	n-Decane	TO-14	ppb(v/v)	1.4	0.69	U*		0.7	U
58	112403	n-Dodecane	TO-14	ppb(v/v)	1.8	0.69	U*		0.7	U
59	142825	n-Heptane	TO-14	ppb(v/v)		0.69	U		0.7	U
60	110543	n-Hexane	TO-14	ppb(v/v)		0.69	U		0.7	U

BASF - Final, Volatile Analytical Results

					BASF					
					H9H170116					
					BASF-1-3			BASF-2-3		
					H9H170116003			H9H170116002		
					08/16/99			08/16/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.69	U		0.7	U
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.69	U		0.7	U
63	1120214	n-Undecane	TO-14	ppb(v/v)	2.1	0.69	U*		0.7	U
64	91203	Naphthalene	TO-14	ppb(v/v)		0.69	U		0.7	U
65	111842	Nonane	TO-14	ppb(v/v)		0.69	U		0.7	U
66	95476	o-Xylene	TO-14	ppb(v/v)		0.69	U		0.7	U
67	109660	Pentane	TO-14	ppb(v/v)		1.7	U		1.7	U
68	100425	Styrene	TO-14	ppb(v/v)		0.69	U		0.7	U
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.69	U		0.7	U
70	108883	Toluene	TO-14	ppb(v/v)		0.69	U		0.7	U
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.69	U		0.7	U
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.69	U		0.7	U
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.69	U		0.7	U
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.69	U		0.7	U
76	108054	Vinyl acetate	TO-14	ppb(v/v)		1.7	U		1.7	U
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.69	U		0.7	U

					BASF-3-3			BASF-4-3		
					H9H170116001			H9H170116005		
					08/16/99			08/16/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.67	U		0.74	U
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.67	U		0.74	U
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.67	U		0.74	U
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.67	U		0.74	U
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)	0.94	0.67			0.74	U
19	71363	1-Butanol	TO-14	ppb(v/v)		1.7	U		1.9	U
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		1.7	U		1.9	U
21	591786	2-Hexanone	TO-14	ppb(v/v)		1.7	U		1.9	U
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.67	U		0.74	U
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)	2.3	1.7			1.9	U
25	67641	Acetone	TO-14	ppb(v/v)		17	U		19	U
26	75058	Acetonitrile	TO-14	ppb(v/v)		3.4	U		3.7	U
27	107028	Acrolein	TO-14	ppb(v/v)		1.7	U		1.9	U
28	107131	Acrylonitrile	TO-14	ppb(v/v)		1.7	U		1.9	U
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.67	U		0.74	U
30	71432	Benzene	TO-14	ppb(v/v)		0.67	U		0.74	U
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.67	U		0.74	U

BASF - Final, Volatile Analytical Results

					BASF-3-3			BASF-4-3		
					H9H170116001			H9H170116005		
					08/16/99			08/16/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.67	U		0.74	U
33	75252	Bromoform	TO-14	ppb(v/v)		0.67	U		0.74	U
34	74839	Bromomethane	TO-14	ppb(v/v)		0.67	U		0.74	U
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.67	U		0.74	U
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.67	U	1.2	0.74	
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.67	U		0.74	U
39	75003	Chloroethane	TO-14	ppb(v/v)		0.67	U		0.74	U
40	67663	Chloroform	TO-14	ppb(v/v)		0.67	U		0.74	U
41	74873	Chloromethane	TO-14	ppb(v/v)		1.7	U		1.9	U
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.67	U		0.74	U
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.67	U		0.74	U
44	98828	Cumene	TO-14	ppb(v/v)		0.67	U		0.74	U
45	110827	Cyclohexane	TO-14	ppb(v/v)		1.7	U		1.9	U
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.67	U		0.74	U
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.67	U		0.74	U
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.67	U		0.74	U
49	60297	Ethyl ether	TO-14	ppb(v/v)		1.7	U		1.9	U
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.67	U		0.74	U
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.67	U		0.74	U
53	67561	Methanol	TO-14	ppb(v/v)		34	U		37	U
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		1.7	U		1.9	U
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.67	U		0.74	U
56	106978	n-Butane	TO-14	ppb(v/v)		0.67	U		0.74	U
57	124185	n-Decane	TO-14	ppb(v/v)		0.67	U		0.74	U
58	112403	n-Dodecane	TO-14	ppb(v/v)		0.67	U		0.74	U
59	142825	n-Heptane	TO-14	ppb(v/v)		0.67	U		0.74	U
60	110543	n-Hexane	TO-14	ppb(v/v)		0.67	U		0.74	U

					BASF-3-3			BASF-4-3		
					H9H170116001			H9H170116005		
					08/16/99			08/16/99		
					U			U		
					AIR			AIR		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.67	U		0.74	U
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.67	U		0.74	U
63	1120214	n-Undecane	TO-14	ppb(v/v)		0.67	U		0.74	U
64	91203	Naphthalene	TO-14	ppb(v/v)		0.67	U		0.74	U
65	111842	Nonane	TO-14	ppb(v/v)		0.67	U		0.74	U
66	95476	o-Xylene	TO-14	ppb(v/v)		0.67	U		0.74	U
67	109660	Pentane	TO-14	ppb(v/v)		1.7	U		1.9	U
68	100425	Styrene	TO-14	ppb(v/v)		0.67	U		0.74	U
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.67	U	1.9	0.74	
70	108883	Toluene	TO-14	ppb(v/v)		0.67	U		0.74	U
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.67	U		0.74	U
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.67	U		0.74	U
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.67	U	3.6	0.74	
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.67	U		0.74	U
76	108054	Vinyl acetate	TO-14	ppb(v/v)		1.7	U		1.9	U
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.67	U		0.74	U

BASF - Final, Volatile Analytical Results

					BASF-TRIP BLANK		
					H9H170116004		
					08/16/99		
					U		
					AIR		
					Result	Detect Limit	Final Qual
1	71556	1,1,1-Trichloroethane	TO-14	ppb(v/v)		0.2	U
2	79345	1,1,2,2-Tetrachloroethane	TO-14	ppb(v/v)		0.2	U
3	76131	1,1,2-Trichloro-1,2,2-trifluoroethane	TO-14	ppb(v/v)		0.2	U
4	79005	1,1,2-Trichloroethane	TO-14	ppb(v/v)		0.2	U
5	75343	1,1-Dichloroethane	TO-14	ppb(v/v)		0.2	U
6	75354	1,1-Dichloroethene	TO-14	ppb(v/v)		0.2	U
7	120821	1,2,4-Trichlorobenzene	TO-14	ppb(v/v)		0.2	U
8	95636	1,2,4-Trimethylbenzene	TO-14	ppb(v/v)		0.2	U
9	106934	1,2-Dibromoethane (EDB)	TO-14	ppb(v/v)		0.2	U
10	76142	1,2-Dichloro-1,1,2,2-tetrafluoroethane	TO-14	ppb(v/v)		0.2	U
11	95501	1,2-Dichlorobenzene	TO-14	ppb(v/v)		0.2	U
12	107062	1,2-Dichloroethane	TO-14	ppb(v/v)		0.2	U
14	78875	1,2-Dichloropropane	TO-14	ppb(v/v)		0.2	U
15	108678	1,3,5-Trimethylbenzene	TO-14	ppb(v/v)		0.2	U
16	106990	1,3-Butadiene	TO-14	ppb(v/v)		0.2	U
17	541731	1,3-Dichlorobenzene	TO-14	ppb(v/v)		0.2	U
18	106467	1,4-Dichlorobenzene	TO-14	ppb(v/v)		0.2	U
19	71363	1-Butanol	TO-14	ppb(v/v)		0.5	U
20	78933	2-Butanone (MEK)	TO-14	ppb(v/v)		0.5	U
21	591786	2-Hexanone	TO-14	ppb(v/v)		0.5	U
22	107051	3-Chloropropene	TO-14	ppb(v/v)		0.2	U
24	108101	4-Methyl-2-pentanone (MIBK)	TO-14	ppb(v/v)		0.5	U
25	67641	Acetone	TO-14	ppb(v/v)		5	U
26	75058	Acetonitrile	TO-14	ppb(v/v)		1	U
27	107028	Acrolein	TO-14	ppb(v/v)		0.5	U
28	107131	Acrylonitrile	TO-14	ppb(v/v)		0.5	U
29	98839	alpha-Methylstyrene	TO-14	ppb(v/v)		0.2	U
30	71432	Benzene	TO-14	ppb(v/v)		0.2	U
31	100447	Benzyl chloride	TO-14	ppb(v/v)		0.2	U

BASF - Final, Volatile Analytical Results

					BASF-TRIP BLANK		
					H9H170116004		
					08/16/99		
					U		
					AIR		
					Result	Detect Limit	Final Qual
32	75274	Bromodichloromethane	TO-14	ppb(v/v)		0.2	U
33	75252	Bromoform	TO-14	ppb(v/v)		0.2	U
34	74839	Bromomethane	TO-14	ppb(v/v)		0.2	U
35	75150	Carbon disulfide	TO-14	ppb(v/v)		0.2	U
36	56235	Carbon tetrachloride	TO-14	ppb(v/v)		0.2	U
37	108907	Chlorobenzene	TO-14	ppb(v/v)		0.2	U
38	75456	Chlorodifluoromethane	TO-14	ppb(v/v)		0.2	U
39	75003	Chloroethane	TO-14	ppb(v/v)		0.2	U
40	67663	Chloroform	TO-14	ppb(v/v)		0.2	U
41	74873	Chloromethane	TO-14	ppb(v/v)		0.5	U
42	156592	cis-1,2-Dichloroethene	TO-14	ppb(v/v)		0.2	U
43	10061015	cis-1,3-Dichloropropene	TO-14	ppb(v/v)		0.2	U
44	98828	Cumene	TO-14	ppb(v/v)		0.2	U
45	110827	Cyclohexane	TO-14	ppb(v/v)		0.5	U
46	124481	Dibromochloromethane	TO-14	ppb(v/v)		0.2	U
47	74953	Dibromomethane	TO-14	ppb(v/v)		0.2	U
48	75718	Dichlorodifluoromethane	TO-14	ppb(v/v)		0.2	U
49	60297	Ethyl ether	TO-14	ppb(v/v)		0.5	U
50	100414	Ethylbenzene	TO-14	ppb(v/v)		0.2	U
51	87683	Hexachlorobutadiene	TO-14	ppb(v/v)		0.2	U
52	13677761	m-Xylene & p-Xylene	TO-14	ppb(v/v)		0.2	U
53	67561	Methanol	TO-14	ppb(v/v)		10	U
54	1634044	Methyl tert-butyl ether	TO-14	ppb(v/v)		0.5	U
55	75092	Methylene chloride	TO-14	ppb(v/v)		0.2	U
56	106978	n-Butane	TO-14	ppb(v/v)		0.2	U
57	124185	n-Decane	TO-14	ppb(v/v)		0.2	U
58	112403	n-Dodecane	TO-14	ppb(v/v)		0.2	U
59	142825	n-Heptane	TO-14	ppb(v/v)		0.2	U
60	110543	n-Hexane	TO-14	ppb(v/v)		0.2	U

BASF - Final, Volatile Analytical Results

					BASF-TRIP BLANK		
					H9H170116004		
					08/16/99		
					U		
					AIR		
					Result	Detect Limit	Final Qual
61	111659	n-Octane	TO-14	ppb(v/v)		0.2	U
62	103651	n-Propylbenzene	TO-14	ppb(v/v)		0.2	U
63	1120214	n-Undecane	TO-14	ppb(v/v)		0.2	U
64	91203	Naphthalene	TO-14	ppb(v/v)		0.2	U
65	111842	Nonane	TO-14	ppb(v/v)		0.2	U
66	95476	o-Xylene	TO-14	ppb(v/v)		0.2	U
67	109660	Pentane	TO-14	ppb(v/v)		0.5	U
68	100425	Styrene	TO-14	ppb(v/v)		0.2	U
69	127184	Tetrachloroethene	TO-14	ppb(v/v)		0.2	U
70	108883	Toluene	TO-14	ppb(v/v)		0.2	U
72	156605	trans-1,2-Dichloroethene	TO-14	ppb(v/v)		0.2	U
73	10061026	trans-1,3-Dichloropropene	TO-14	ppb(v/v)		0.2	U
74	79016	Trichloroethene	TO-14	ppb(v/v)		0.2	U
75	75694	Trichlorofluoromethane	TO-14	ppb(v/v)		0.2	U
76	108054	Vinyl acetate	TO-14	ppb(v/v)		0.5	U
77	75014	Vinyl chloride	TO-14	ppb(v/v)		0.2	U

BASF - Final, Volatile Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		33	UJ		5	UJ
2	107051	3-Chloropropene	8260A	ug/L		330	U		50	U
3	67641	Acetone	8260A	ug/L	940	330	J		50	U
4	75058	Acetonitrile	8260A	ug/L		3,300	UR		500	UR
5	107028	Acrolein	8260A	ug/L		330	UR		50	UR
6	107131	Acrylonitrile	8260A	ug/L		330	U		50	U
7	71432	Benzene	8260A	ug/L		33	U		5	U*
8	75274	Bromodichloromethane	8260A	ug/L		33	U		5	U
9	75252	Bromoform	8260A	ug/L		33	U		5	U
10	74839	Bromomethane	8260A	ug/L		33	U		5	U
11	75150	Carbon disulfide	8260A	ug/L		33	U		5	U
12	56235	Carbon tetrachloride	8260A	ug/L		33	U		5	U
13	108907	Chlorobenzene	8260A	ug/L		33	U		5	U
14	124481	Chlorodibromomethane	8260A	ug/L		33	U		5	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		670	U		100	U
16	75003	Chloroethane	8260A	ug/L		33	U		5	U
17	67663	Chloroform	8260A	ug/L		33	U		5	U
18	74873	Chloromethane	8260A	ug/L		33	U		5	U
19	74953	Dibromomethane	8260A	ug/L		33	U		5	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		33	U		5	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		33	U		5	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		33	U		5	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		33	U		5	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		67	U		10	U
25	75343	1,1-Dichloroethane	8260A	ug/L		33	U		5	U
26	107062	1,2-Dichloroethane	8260A	ug/L		33	U		5	U
27	75354	1,1-Dichloroethene	8260A	ug/L		33	U		5	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		33	U		5	U
29	78875	1,2-Dichloropropane	8260A	ug/L		33	U		5	U

BASF - Final, Volatile Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		33	U		5	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		33	U		5	U
32	100414	Ethylbenzene	8260A	ug/L		33	U	2.8	5	J
33	97632	Ethyl methacrylate	8260A	ug/L		33	U		5	U
34	75694	Trichlorofluoromethane	8260A	ug/L		33	U		5	U
35	591786	2-Hexanone	8260A	ug/L		330	U		50	U
36	74884	Iodomethane	8260A	ug/L		330	U		50	U
37	78831	Isobutyl alcohol	8260A	ug/L		17,000	UR		2,500	UR
38	126987	Methacrylonitrile	8260A	ug/L		670	UJ		100	UJ
39	75092	Methylene chloride	8260A	ug/L		33	U*		5	U*
40	80626	Methyl methacrylate	8260A	ug/L		33	UJ		5	UJ
41	107120	Propionitrile	8260A	ug/L		3,300	UR		500	UR
42	100425	Styrene	8260A	ug/L		33	U	3.6	5	J
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		33	U		5	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		33	U		5	U
45	127184	Tetrachloroethene	8260A	ug/L		33	U		5	U
46	108883	Toluene	8260A	ug/L		33	U		5	U*
47	71556	1,1,1-Trichloroethane	8260A	ug/L		33	U		5	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		33	U		5	U
49	79016	Trichloroethene	8260A	ug/L		33	U		5	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		33	U		5	U
51	108054	Vinyl acetate	8260A	ug/L		330	U		50	U
52	75014	Vinyl chloride	8260A	ug/L		33	U		5	U
53	95476	o-Xylene	8260A	ug/L		33	U		5	U
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		33	U		5	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		330	U		50	U
56	78933	Methyl ethyl ketone	8260A	ug/L		330	U		50	U
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		33	U		5	U

BASF - Final, Volatile Analytical Results

					CMSMW-2			RFIMW-1		
					A9H210120003			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		5	UJ		20	U
2	107051	3-Chloropropene	8260A	ug/L		50	U		200	U
3	67641	Acetone	8260A	ug/L	27	50	J	240	200	J
4	75058	Acetonitrile	8260A	ug/L		500	U		2,000	UR
5	107028	Acrolein	8260A	ug/L		50	UR		200	UR
6	107131	Acrylonitrile	8260A	ug/L		50	UR		200	UR
7	71432	Benzene	8260A	ug/L		5	U*	120	20	
8	75274	Bromodichloromethane	8260A	ug/L		5	U		20	U
9	75252	Bromoform	8260A	ug/L		5	U		20	U
10	74839	Bromomethane	8260A	ug/L		5	U	2.7	20	J
11	75150	Carbon disulfide	8260A	ug/L		5	U		20	U
12	56235	Carbon tetrachloride	8260A	ug/L		5	U		20	U
13	108907	Chlorobenzene	8260A	ug/L		5	U		20	U*
14	124481	Chlorodibromomethane	8260A	ug/L		5	U		20	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		100	U		400	UJ
16	75003	Chloroethane	8260A	ug/L		5	U		20	U
17	67663	Chloroform	8260A	ug/L		5	U		20	U
18	74873	Chloromethane	8260A	ug/L		5	U		20	U
19	74953	Dibromomethane	8260A	ug/L		5	U		20	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		5	U		20	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		5	U		20	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		5	U		20	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		5	U		20	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		10	U		40	U
25	75343	1,1-Dichloroethane	8260A	ug/L		5	U		20	U
26	107062	1,2-Dichloroethane	8260A	ug/L		5	U		20	UJ
27	75354	1,1-Dichloroethene	8260A	ug/L		5	U		20	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		5	U		20	U
29	78875	1,2-Dichloropropane	8260A	ug/L		5	U		20	U

BASF - Final, Volatile Analytical Results

					CMSMW-2			RFIMW-1		
					A9H210120003			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		5	U		20	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		5	U		20	U
32	100414	Ethylbenzene	8260A	ug/L		5	U		20	U
33	97632	Ethyl methacrylate	8260A	ug/L		5	U		20	U
34	75694	Trichlorofluoromethane	8260A	ug/L		5	U		20	U
35	591786	2-Hexanone	8260A	ug/L		50	U		200	U
36	74884	Iodomethane	8260A	ug/L		50	U		200	UJ
37	78831	Isobutyl alcohol	8260A	ug/L		2,500	UR		10,000	UR
38	126987	Methacrylonitrile	8260A	ug/L		100	UJ		400	U
39	75092	Methylene chloride	8260A	ug/L		5	U*		20	U*
40	80626	Methyl methacrylate	8260A	ug/L		5	UJ		20	U
41	107120	Propionitrile	8260A	ug/L		500	UR		2,000	UR
42	100425	Styrene	8260A	ug/L		5	U		20	U
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		5	U		20	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		5	U		20	U
45	127184	Tetrachloroethene	8260A	ug/L		5	U		20	U
46	108883	Toluene	8260A	ug/L		5	U		20	U*
47	71556	1,1,1-Trichloroethane	8260A	ug/L		5	U		20	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		5	U		20	U
49	79016	Trichloroethene	8260A	ug/L		5	U		20	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		5	U		20	U
51	108054	Vinyl acetate	8260A	ug/L		50	U		200	U
52	75014	Vinyl chloride	8260A	ug/L		5	U	9.4	20	J
53	95476	o-Xylene	8260A	ug/L		5	U		20	U
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		5	U		20	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		50	U		200	U
56	78933	Methyl ethyl ketone	8260A	ug/L		50	U		200	UR
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		5	U		20	U

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		100	UJ		1	UJ
2	107051	3-Chloropropene	8260A	ug/L		1,000	UJ		10	U
3	67641	Acetone	8260A	ug/L	9,000	1,000	J		10	U
4	75058	Acetonitrile	8260A	ug/L		10,000	UR		100	UR
5	107028	Acrolein	8260A	ug/L		1,000	UR		10	UR
6	107131	Acrylonitrile	8260A	ug/L		1,000	UR		10	U
7	71432	Benzene	8260A	ug/L	2,600	100	J		1	U*
8	75274	Bromodichloromethane	8260A	ug/L		100	UJ		1	U
9	75252	Bromoform	8260A	ug/L		100	UJ		1	U
10	74839	Bromomethane	8260A	ug/L		100	UJ		1	U
11	75150	Carbon disulfide	8260A	ug/L		100	UJ		1	U
12	56235	Carbon tetrachloride	8260A	ug/L		100	UJ		1	U
13	108907	Chlorobenzene	8260A	ug/L		100	U*		1	U*
14	124481	Chlorodibromomethane	8260A	ug/L		100	UJ		1	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		2,000	UJ		20	U
16	75003	Chloroethane	8260A	ug/L		100	UJ		1	U
17	67663	Chloroform	8260A	ug/L		100	UJ		1	U
18	74873	Chloromethane	8260A	ug/L		100	UJ		1	U
19	74953	Dibromomethane	8260A	ug/L		100	UJ		1	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		100	UJ		1	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		100	UJ		1	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		100	UJ		11	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		100	UJ		1	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		200	UJ		2	U
25	75343	1,1-Dichloroethane	8260A	ug/L		100	UJ		1	U
26	107062	1,2-Dichloroethane	8260A	ug/L		100	UJ		1	U
27	75354	1,1-Dichloroethene	8260A	ug/L		100	UJ		1	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		100	UJ		1	U
29	78875	1,2-Dichloropropane	8260A	ug/L		100	UJ		1	U

BASF - Final, Volatile Analytical Results

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		100	UJ		1	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		100	UJ		1	U
32	100414	Ethylbenzene	8260A	ug/L		100	UJ		1	U
33	97632	Ethyl methacrylate	8260A	ug/L		100	UJ		1	U
34	75694	Trichlorofluoromethane	8260A	ug/L		100	UJ		1	U
35	591786	2-Hexanone	8260A	ug/L		1,000	UJ		10	U
36	74884	Iodomethane	8260A	ug/L		1,000	UJ		10	U
37	78831	Isobutyl alcohol	8260A	ug/L		50,000	UR		500	UR
38	126987	Methacrylonitrile	8260A	ug/L		2,000	UJ		20	UJ
39	75092	Methylene chloride	8260A	ug/L		100	U*		1	U*
40	80626	Methyl methacrylate	8260A	ug/L		100	UJ		1	UJ
41	107120	Propionitrile	8260A	ug/L		10,000	UR		100	UR
42	100425	Styrene	8260A	ug/L		100	UJ		1	U
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		100	UJ		1	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		100	UJ		1	U
45	127184	Tetrachloroethene	8260A	ug/L		100	UJ		1	U
46	108883	Toluene	8260A	ug/L	110	100	U*		1	U
47	71556	1,1,1-Trichloroethane	8260A	ug/L		100	UJ		1	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		100	UJ		1	U
49	79016	Trichloroethene	8260A	ug/L		100	UJ		1	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		100	UJ		1	U
51	108054	Vinyl acetate	8260A	ug/L		1,000	UJ		10	U
52	75014	Vinyl chloride	8260A	ug/L	370	100	J		1	U
53	95476	o-Xylene	8260A	ug/L		100	UJ		1	U
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		100	UJ		1	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		1,000	UJ		10	U
56	78933	Methyl ethyl ketone	8260A	ug/L		1,000	UR		10	U
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		100	UJ		1	U

					TRIP BLANK		
					A9H210120009		
					08/19/99		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		1	U
2	107051	3-Chloropropene	8260A	ug/L		10	U
3	67641	Acetone	8260A	ug/L		10	UR
4	75058	Acetonitrile	8260A	ug/L		100	UR
5	107028	Acrolein	8260A	ug/L		10	UR
6	107131	Acrylonitrile	8260A	ug/L		10	UR
7	71432	Benzene	8260A	ug/L	0.25	1	J
8	75274	Bromodichloromethane	8260A	ug/L		1	U
9	75252	Bromoform	8260A	ug/L		1	U
10	74839	Bromomethane	8260A	ug/L		1	U
11	75150	Carbon disulfide	8260A	ug/L		1	U
12	56235	Carbon tetrachloride	8260A	ug/L		1	U
13	108907	Chlorobenzene	8260A	ug/L		1	U
14	124481	Chlorodibromomethane	8260A	ug/L		1	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		20	UJ
16	75003	Chloroethane	8260A	ug/L		1	U
17	67663	Chloroform	8260A	ug/L		1	U
18	74873	Chloromethane	8260A	ug/L		1	U
19	74953	Dibromomethane	8260A	ug/L		1	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		1	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		1	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		1	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		1	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		2	U
25	75343	1,1-Dichloroethane	8260A	ug/L		1	U
26	107062	1,2-Dichloroethane	8260A	ug/L		1	UJ
27	75354	1,1-Dichloroethene	8260A	ug/L		1	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		1	U
29	78875	1,2-Dichloropropane	8260A	ug/L		1	U

BASF - Final, Volatile Analytical Results

					TRIP BLANK		
					A9H210120009		
					08/19/99		
					U		
					WATER		
					Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		1	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		1	U
32	100414	Ethylbenzene	8260A	ug/L		1	U
33	97632	Ethyl methacrylate	8260A	ug/L		1	U
34	75694	Trichlorofluoromethane	8260A	ug/L		1	U
35	591786	2-Hexanone	8260A	ug/L		10	U
36	74884	Iodomethane	8260A	ug/L		10	UJ
37	78831	Isobutyl alcohol	8260A	ug/L		500	UR
38	126987	Methacrylonitrile	8260A	ug/L		20	U
39	75092	Methylene chloride	8260A	ug/L	8	1	
40	80626	Methyl methacrylate	8260A	ug/L		1	U
41	107120	Propionitrile	8260A	ug/L		100	UR
42	100425	Styrene	8260A	ug/L		1	U
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		1	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		1	U
45	127184	Tetrachloroethene	8260A	ug/L		1	U
46	108883	Toluene	8260A	ug/L		1	U
47	71556	1,1,1-Trichloroethane	8260A	ug/L		1	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		1	U
49	79016	Trichloroethene	8260A	ug/L		1	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		1	U
51	108054	Vinyl acetate	8260A	ug/L		10	U
52	75014	Vinyl chloride	8260A	ug/L		1	U
53	95476	o-Xylene	8260A	ug/L		1	U
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		1	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		10	UR
56	78933	Methyl ethyl ketone	8260A	ug/L		10	UR
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		1	U

BASF - Final, Volatile Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		25	U		5	U
2	107051	3-Chloropropene	8260A	ug/L		250	U		50	U
3	67641	Acetone	8260A	ug/L		250	UR	83	50	J
4	75058	Acetonitrile	8260A	ug/L		2,500	UR		500	UR
5	107028	Acrolein	8260A	ug/L		250	UR		50	UR
6	107131	Acrylonitrile	8260A	ug/L		250	UR		50	UR
7	71432	Benzene	8260A	ug/L		25	U*	66	5	
8	75274	Bromodichloromethane	8260A	ug/L		25	U*		5	U
9	75252	Bromoform	8260A	ug/L		25	U		5	U
10	74839	Bromomethane	8260A	ug/L		25	U		5	U
11	75150	Carbon disulfide	8260A	ug/L		25	U		5	U
12	56235	Carbon tetrachloride	8260A	ug/L		25	U		5	U
13	108907	Chlorobenzene	8260A	ug/L		25	U		5	U
14	124481	Chlorodibromomethane	8260A	ug/L		25	U		5	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		500	UJ		100	UJ
16	75003	Chloroethane	8260A	ug/L		25	U		5	U
17	67663	Chloroform	8260A	ug/L		25	U		5	U
18	74873	Chloromethane	8260A	ug/L		25	U		5	U
19	74953	Dibromomethane	8260A	ug/L		25	U		5	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		25	U		5	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		25	U		5	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		25	U		5	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		25	U		5	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		50	U		10	U
25	75343	1,1-Dichloroethane	8260A	ug/L		25	U		5	U
26	107062	1,2-Dichloroethane	8260A	ug/L		25	UJ		5	UJ
27	75354	1,1-Dichloroethene	8260A	ug/L		25	U		5	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		25	U		5	U
29	78875	1,2-Dichloropropane	8260A	ug/L		25	U		5	U

BASF - Final, Volatile Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		25	U		5	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		25	U		5	U
32	100414	Ethylbenzene	8260A	ug/L		25	U		5	U
33	97632	Ethyl methacrylate	8260A	ug/L		25	U		5	U
34	75694	Trichlorofluoromethane	8260A	ug/L		25	U		5	U
35	591786	2-Hexanone	8260A	ug/L		250	U		50	U
36	74884	Iodomethane	8260A	ug/L		250	UJ		50	UJ
37	78831	Isobutyl alcohol	8260A	ug/L		12,000	UR		2,500	UR
38	126987	Methacrylonitrile	8260A	ug/L		500	U		100	U
39	75092	Methylene chloride	8260A	ug/L	39	25	U*	7.6	5	U*
40	80626	Methyl methacrylate	8260A	ug/L		25	U		5	U
41	107120	Propionitrile	8260A	ug/L		2,500	UR		500	UR
42	100425	Styrene	8260A	ug/L		25	U		5	U
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		25	U		5	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		25	U		5	U
45	127184	Tetrachloroethene	8260A	ug/L		25	U		5	U
46	108883	Toluene	8260A	ug/L		25	U		5	U*
47	71556	1,1,1-Trichloroethane	8260A	ug/L		25	U		5	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		25	U		5	U
49	79016	Trichloroethene	8260A	ug/L		25	U		5	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		25	U		5	U
51	108054	Vinyl acetate	8260A	ug/L		250	U		50	U
52	75014	Vinyl chloride	8260A	ug/L		25	U		5	U
53	95476	o-Xylene	8260A	ug/L		25	U	0.68	5	J
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		25	U		5	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		250	U		50	U
56	78933	Methyl ethyl ketone	8260A	ug/L		250	UR		50	UR
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		25	U		5	U

BASF - Final, Volatile Analytical Results

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		25	U		1	U
2	107051	3-Chloropropene	8260A	ug/L		250	U		10	U
3	67641	Acetone	8260A	ug/L		250	UR		10	UR
4	75058	Acetonitrile	8260A	ug/L		2,500	UR		100	UR
5	107028	Acrolein	8260A	ug/L		250	UR		10	UR
6	107131	Acrylonitrile	8260A	ug/L		250	UR		10	UR
7	71432	Benzene	8260A	ug/L		25	U		1	U
8	75274	Bromodichloromethane	8260A	ug/L		25	U		1	U
9	75252	Bromoform	8260A	ug/L		25	U		1	U
10	74839	Bromomethane	8260A	ug/L		25	U		1	U
11	75150	Carbon disulfide	8260A	ug/L		25	U		1	U
12	56235	Carbon tetrachloride	8260A	ug/L		25	U		1	U
13	108907	Chlorobenzene	8260A	ug/L		25	U		1	U
14	124481	Chlorodibromomethane	8260A	ug/L		25	U		1	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		500	UJ		20	UJ
16	75003	Chloroethane	8260A	ug/L		25	U		1	U
17	67663	Chloroform	8260A	ug/L		25	U		1	U
18	74873	Chloromethane	8260A	ug/L		25	U		1	U
19	74953	Dibromomethane	8260A	ug/L		25	U		1	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		25	U		1	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		25	U		1	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		25	U		1	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		25	U		1	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		50	U		2	U
25	75343	1,1-Dichloroethane	8260A	ug/L		25	U		1	U
26	107062	1,2-Dichloroethane	8260A	ug/L		25	UJ		1	UJ
27	75354	1,1-Dichloroethene	8260A	ug/L		25	U		1	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		25	U		1	U
29	78875	1,2-Dichloropropane	8260A	ug/L		25	U		1	U

BASF - Final, Volatile Analytical Results

					PM4NA			RFIMW-29			
					A9H250128002			A9H250128001			
					08/23/99			08/23/99			
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		25	U		1	U	
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		25	U		1	U	
32	100414	Ethylbenzene	8260A	ug/L		25	U		1	U	
33	97632	Ethyl methacrylate	8260A	ug/L		25	U		1	U	
34	75694	Trichlorofluoromethane	8260A	ug/L		25	U		1	U	
35	591786	2-Hexanone	8260A	ug/L		250	U		10	U	
36	74884	Iodomethane	8260A	ug/L		250	UJ		10	UJ	
37	78831	Isobutyl alcohol	8260A	ug/L		12,000	UR		500	UR	
38	126987	Methacrylonitrile	8260A	ug/L		500	U		20	U	
39	75092	Methylene chloride	8260A	ug/L	30	25	U*	4.6	1	U*	
40	80626	Methyl methacrylate	8260A	ug/L		25	U		1	U	
41	107120	Propionitrile	8260A	ug/L		2,500	UR		100	UR	
42	100425	Styrene	8260A	ug/L		25	U		1	U	
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		25	U		1	U	
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		25	U		1	U	
45	127184	Tetrachloroethene	8260A	ug/L		25	U		1	U	
46	108883	Toluene	8260A	ug/L		25	U		1	U	
47	71556	1,1,1-Trichloroethane	8260A	ug/L		25	U		1	U	
48	79005	1,1,2-Trichloroethane	8260A	ug/L		25	U		1	U	
49	79016	Trichloroethene	8260A	ug/L		25	U		1	U	
50	96184	1,2,3-Trichloropropane	8260A	ug/L		25	U		1	U	
51	108054	Vinyl acetate	8260A	ug/L		250	U		10	U	
52	75014	Vinyl chloride	8260A	ug/L		25	U		1	U	
53	95476	o-Xylene	8260A	ug/L		25	U		1	U	
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		25	U		1	U	
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		250	U		10	U	
56	78933	Methyl ethyl ketone	8260A	ug/L		250	UR		10	UR	
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		25	U		1	U	

BASF - Final, Volatile Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		12	U		5	U
2	107051	3-Chloropropene	8260A	ug/L		120	U		50	U
3	67641	Acetone	8260A	ug/L		120	UR	420	50	J
4	75058	Acetonitrile	8260A	ug/L		1,200	UR		500	UR
5	107028	Acrolein	8260A	ug/L		120	UR		50	UR
6	107131	Acrylonitrile	8260A	ug/L		120	UR		50	UR
7	71432	Benzene	8260A	ug/L		12	U*		5	U*
8	75274	Bromodichloromethane	8260A	ug/L		12	U		5	U
9	75252	Bromoform	8260A	ug/L		12	UJ		5	UJ
10	74839	Bromomethane	8260A	ug/L		12	UJ		5	UJ
11	75150	Carbon disulfide	8260A	ug/L	1.5	12	J		5	U
12	56235	Carbon tetrachloride	8260A	ug/L		12	U		5	U
13	108907	Chlorobenzene	8260A	ug/L		12	U		5	U
14	124481	Chlorodibromomethane	8260A	ug/L		12	U		5	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		250	UJ		100	UJ
16	75003	Chloroethane	8260A	ug/L		12	U		5	U
17	67663	Chloroform	8260A	ug/L		12	U		5	U
18	74873	Chloromethane	8260A	ug/L		12	U		5	U
19	74953	Dibromomethane	8260A	ug/L		12	U		5	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		12	U		5	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		12	U		5	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		12	U		15	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		12	U		5	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		25	U		10	U
25	75343	1,1-Dichloroethane	8260A	ug/L		12	U		5	U
26	107062	1,2-Dichloroethane	8260A	ug/L		12	U		5	U
27	75354	1,1-Dichloroethene	8260A	ug/L		12	U		5	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		12	U		5	U
29	78875	1,2-Dichloropropane	8260A	ug/L		12	U	0.48	5	J

BASF - Final, Volatile Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		12	U		5	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		12	U		5	U
32	100414	Ethylbenzene	8260A	ug/L		12	U		5	U
33	97632	Ethyl methacrylate	8260A	ug/L		12	U		5	U
34	75694	Trichlorofluoromethane	8260A	ug/L		12	U		5	U
35	591786	2-Hexanone	8260A	ug/L		120	U		50	U
36	74884	Iodomethane	8260A	ug/L		120	UJ		50	UJ
37	78831	Isobutyl alcohol	8260A	ug/L		6,200	UR		2,500	UR
38	126987	Methacrylonitrile	8260A	ug/L		250	U		100	U
39	75092	Methylene chloride	8260A	ug/L	14	12	U*		5	U*
40	80626	Methyl methacrylate	8260A	ug/L		12	U		5	U
41	107120	Propionitrile	8260A	ug/L		1,200	UR		500	UR
42	100425	Styrene	8260A	ug/L		12	U		5	U
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		12	U		5	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		12	U		5	U
45	127184	Tetrachloroethene	8260A	ug/L		12	U		5	U
46	108883	Toluene	8260A	ug/L		12	U		5	U
47	71556	1,1,1-Trichloroethane	8260A	ug/L		12	U		5	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		12	U		5	U
49	79016	Trichloroethene	8260A	ug/L		12	U		5	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		12	U		5	U
51	108054	Vinyl acetate	8260A	ug/L		120	UJ		50	UJ
52	75014	Vinyl chloride	8260A	ug/L		12	U		5	U
53	95476	o-Xylene	8260A	ug/L		12	U		5	U
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		12	U		5	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		120	U		50	U
56	78933	Methyl ethyl ketone	8260A	ug/L		120	UR		50	UR
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		12	U		5	U

BASF - Final, Volatile Analytical Results

					CMSMW-39S			ERB-1		
					A9H270119003			A9H270119004		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		5	U		2	U
2	107051	3-Chloropropene	8260A	ug/L		50	U		20	U
3	67641	Acetone	8260A	ug/L	510	50	J		20	UR
4	75058	Acetonitrile	8260A	ug/L		500	UR		200	UR
5	107028	Acrolein	8260A	ug/L		50	UR		20	UR
6	107131	Acrylonitrile	8260A	ug/L		50	UR		20	UR
7	71432	Benzene	8260A	ug/L		5	U*	0.25	2	J
8	75274	Bromodichloromethane	8260A	ug/L		5	U	1.2	2	J
9	75252	Bromoform	8260A	ug/L		5	UJ		2	UJ
10	74839	Bromomethane	8260A	ug/L		5	UJ		2	UJ
11	75150	Carbon disulfide	8260A	ug/L		5	U		2	U
12	56235	Carbon tetrachloride	8260A	ug/L		5	U		2	U
13	108907	Chlorobenzene	8260A	ug/L		5	U	0.34	2	J
14	124481	Chlorodibromomethane	8260A	ug/L		5	U		2	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		100	UJ		40	UJ
16	75003	Chloroethane	8260A	ug/L		5	U		2	U
17	67663	Chloroform	8260A	ug/L		5	U	38	2	
18	74873	Chloromethane	8260A	ug/L		5	U		2	U
19	74953	Dibromomethane	8260A	ug/L		5	U		2	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		5	U		2	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		5	U		2	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		5	U		2	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		5	U		2	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		10	U		4	U
25	75343	1,1-Dichloroethane	8260A	ug/L		5	U		2	U
26	107062	1,2-Dichloroethane	8260A	ug/L		5	U		2	UJ
27	75354	1,1-Dichloroethene	8260A	ug/L		5	U		2	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		5	U		2	U
29	78875	1,2-Dichloropropane	8260A	ug/L	0.56	5	J		2	U

BASF - Final, Volatile Analytical Results

					CMSMW-39S			ERB-1		
					A9H270119003			A9H270119004		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		5	U		2	U
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		5	U		2	U
32	100414	Ethylbenzene	8260A	ug/L		5	U		2	U
33	97632	Ethyl methacrylate	8260A	ug/L		5	U		2	U
34	75694	Trichlorofluoromethane	8260A	ug/L		5	U		2	U
35	591786	2-Hexanone	8260A	ug/L		50	U		20	U
36	74884	Iodomethane	8260A	ug/L		50	UJ		20	UJ
37	78831	Isobutyl alcohol	8260A	ug/L		2,500	UR		1,000	UR
38	126987	Methacrylonitrile	8260A	ug/L		100	U		40	U
39	75092	Methylene chloride	8260A	ug/L		5	U*	13	2	
40	80626	Methyl methacrylate	8260A	ug/L		5	U		2	U
41	107120	Propionitrile	8260A	ug/L		500	UR		200	UR
42	100425	Styrene	8260A	ug/L		5	U	0.28	2	J
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		5	U		2	U
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		5	U		2	U
45	127184	Tetrachloroethene	8260A	ug/L		5	U		2	U
46	108883	Toluene	8260A	ug/L		5	U	0.6	2	J
47	71556	1,1,1-Trichloroethane	8260A	ug/L		5	U		2	U
48	79005	1,1,2-Trichloroethane	8260A	ug/L		5	U		2	U
49	79016	Trichloroethene	8260A	ug/L		5	U		2	U
50	96184	1,2,3-Trichloropropane	8260A	ug/L		5	U		2	U
51	108054	Vinyl acetate	8260A	ug/L		50	UJ		20	UJ
52	75014	Vinyl chloride	8260A	ug/L		5	U		2	U
53	95476	o-Xylene	8260A	ug/L		5	U		2	U
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		5	U		2	U
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		50	UR		20	U
56	78933	Methyl ethyl ketone	8260A	ug/L		50	U		20	UR
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		5	U		2	U

					TRIP BLANK		
					A9H270119005		
					08/25/99		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	126998	2-Chloro-1,3-butadiene	8260A	ug/L		1	U
2	107051	3-Chloropropene	8260A	ug/L		10	U
3	67641	Acetone	8260A	ug/L		10	UR
4	75058	Acetonitrile	8260A	ug/L		100	UR
5	107028	Acrolein	8260A	ug/L		10	UR
6	107131	Acrylonitrile	8260A	ug/L		10	UR
7	71432	Benzene	8260A	ug/L		1	U
8	75274	Bromodichloromethane	8260A	ug/L		1	U
9	75252	Bromoform	8260A	ug/L		1	UJ
10	74839	Bromomethane	8260A	ug/L		1	UJ
11	75150	Carbon disulfide	8260A	ug/L		1	U
12	56235	Carbon tetrachloride	8260A	ug/L		1	U
13	108907	Chlorobenzene	8260A	ug/L		1	U
14	124481	Chlorodibromomethane	8260A	ug/L		1	U
15	96128	1,2-Dibromo-3-chloropropan	8260A	ug/L		20	UJ
16	75003	Chloroethane	8260A	ug/L		1	U
17	67663	Chloroform	8260A	ug/L		1	U
18	74873	Chloromethane	8260A	ug/L		1	U
19	74953	Dibromomethane	8260A	ug/L		1	U
20	95501	1,2-Dichlorobenzene	8260A	ug/L		1	U
21	541731	1,3-Dichlorobenzene	8260A	ug/L		1	U
22	106467	1,4-Dichlorobenzene	8260A	ug/L		1	U
23	110576	trans-1,4-Dichloro-2-butene	8260A	ug/L		1	U
24	75718	Dichlorodifluoromethane	8260A	ug/L		2	U
25	75343	1,1-Dichloroethane	8260A	ug/L		1	U
26	107062	1,2-Dichloroethane	8260A	ug/L		1	U
27	75354	1,1-Dichloroethene	8260A	ug/L		1	U
28	156592	cis-1,2-Dichloroethene	8260A	ug/L		1	U
29	78875	1,2-Dichloropropane	8260A	ug/L		1	U

BASF - Final, Volatile Analytical Results

					TRIP BLANK			
					A9H270119005			
					08/25/99			
					U			
					WATER			
					Result	Detect Limit	Final Qual	
30	10061015	cis-1,3-Dichloropropene	8260A	ug/L		1	U	
31	10061026	trans-1,3-Dichloropropene	8260A	ug/L		1	U	
32	100414	Ethylbenzene	8260A	ug/L		1	U	
33	97632	Ethyl methacrylate	8260A	ug/L		1	U	
34	75694	Trichlorofluoromethane	8260A	ug/L		1	U	
35	591786	2-Hexanone	8260A	ug/L		10	U	
36	74884	Iodomethane	8260A	ug/L		10	UJ	
37	78831	Isobutyl alcohol	8260A	ug/L		500	UR	
38	126987	Methacrylonitrile	8260A	ug/L		20	U	
39	75092	Methylene chloride	8260A	ug/L	0.98	1	J	
40	80626	Methyl methacrylate	8260A	ug/L		1	U	
41	107120	Propionitrile	8260A	ug/L		100	UR	
42	100425	Styrene	8260A	ug/L		1	U	
43	630206	1,1,1,2-Tetrachloroethane	8260A	ug/L		1	U	
44	79345	1,1,2,2-Tetrachloroethane	8260A	ug/L		1	U	
45	127184	Tetrachloroethene	8260A	ug/L		1	U	
46	108883	Toluene	8260A	ug/L		1	U	
47	71556	1,1,1-Trichloroethane	8260A	ug/L		1	U	
48	79005	1,1,2-Trichloroethane	8260A	ug/L		1	U	
49	79016	Trichloroethene	8260A	ug/L		1	U	
50	96184	1,2,3-Trichloropropane	8260A	ug/L		1	U	
51	108054	Vinyl acetate	8260A	ug/L		10	UJ	
52	75014	Vinyl chloride	8260A	ug/L		1	U	
53	95476	o-Xylene	8260A	ug/L		1	U	
54	106934	1,2-Dibromoethane (EDB)	8260A	ug/L		1	U	
55	108101	4-Methyl-2-pentanone (MIBK)	8260A	ug/L		10	U	
56	78933	Methyl ethyl ketone	8260A	ug/L		10	UR	
57	13677761	m-Xylene & p-Xylene	8260A	ug/L		1	U	

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		50	U		50	UJ
2	60515	Dimethoate	8270B	ug/L		200	U		200	U
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		20	U		20	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		100	U		100	UJ
5	1888717	Hexachloropropene	8270B	ug/L		100	U		100	U
6	62442	Phenacetin	8270B	ug/L		50	U		50	U
7	23950585	Pronamide	8270B	ug/L		20	U		20	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		50	U		50	U
9	2303164	Diallate	8270B	ug/L		10	U		10	UJ
11	83329	Acenaphthene	8270B	ug/L		5	U		5	U
12	208968	Acenaphthylene	8270B	ug/L		5	U		5	U
13	98862	Acetophenone	8270B	ug/L		10	U		10	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		20	U		20	UJ
15	62533	Aniline	8270B	ug/L		10	U		10	U
16	120127	Anthracene	8270B	ug/L		5	U		5	U
17	56553	Benzo(a)anthracene	8270B	ug/L		5	U		5	U
18	205992	Benzo(b)fluoranthene	8270B	ug/L		5	U		5	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		5	U		5	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		5	U		5	U
21	50328	Benzo(a)pyrene	8270B	ug/L		5	U		5	U
22	100516	Benzyl alcohol	8270B	ug/L		10	U		10	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		10	U		10	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		5	U		5	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		5	U		5	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		5	U		5	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		5	U		5	U
28	106478	4-Chloroaniline	8270B	ug/L		10	U		10	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		5	U		5	U
30	91587	2-Chloronaphthalene	8270B	ug/L		10	U		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		5	U		5	U
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		10	U		10	U
33	218019	Chrysene	8270B	ug/L		5	U		5	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		5	U		5	U
35	132649	Dibenzofuran	8270B	ug/L		5	U		5	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		5	U		5	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		20	U		20	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		5	U		5	U
39	87650	2,6-Dichlorophenol	8270B	ug/L		10	U		10	U
40	84662	Diethyl phthalate	8270B	ug/L		5	U		5	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		50	U		50	UJ
42	105679	2,4-Dimethylphenol	8270B	ug/L		5	U		5	U
43	131113	Dimethyl phthalate	8270B	ug/L		5	U		5	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		10	U		10	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		10	U		10	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		50	U		50	U
47	51285	2,4-Dinitrophenol	8270B	ug/L		50	UJ		50	U
48	121142	2,4-Dinitrotoluene	8270B	ug/L		5	U		5	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		5	U		5	U
50	122394	Diphenylamine	8270B	ug/L		10	U		10	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		10	U		10	U
52	206440	Fluoranthene	8270B	ug/L		5	U		5	U
53	86737	Fluorene	8270B	ug/L		5	U		5	U
54	118741	Hexachlorobenzene	8270B	ug/L		5	U		5	U
55	87683	Hexachlorobutadiene	8270B	ug/L		5	U		5	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		5	U		5	U
57	67721	Hexachloroethane	8270B	ug/L		5	U		5	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		5	U		5	U
59	78591	Isophorone	8270B	ug/L		5	U		5	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		10	U		10	U
61	91805	Methapyrilene	8270B	ug/L		100	U		100	U
62	95534	o-Toluidine	8270B	ug/L		10	U		10	U
63	56495	3-Methylcholanthrene	8270B	ug/L		100	U		100	UJ
64	66273	Methyl methanesulfonate	8270B	ug/L		10	U		10	U
65	91576	2-Methylnaphthalene	8270B	ug/L		5	U		5	U
66	95487	2-Methylphenol	8270B	ug/L		5	U		5	U
67	108394	3-Methylphenol	8270B	ug/L		10	U		10	U
68	106445	4-Methylphenol	8270B	ug/L		10	U		10	U
69	91203	Naphthalene	8270B	ug/L		5	U		5	U
70	130154	1,4-Naphthoquinone	8270B	ug/L		200	U		200	U
71	134327	1-Naphthylamine	8270B	ug/L		10	U		10	UJ
72	91598	2-Naphthylamine	8270B	ug/L		10	U		10	UJ
73	88744	2-Nitroaniline	8270B	ug/L		50	U		50	U
74	99092	3-Nitroaniline	8270B	ug/L		50	U		50	U
75	100016	4-Nitroaniline	8270B	ug/L		50	U		50	U
76	98953	Nitrobenzene	8270B	ug/L		5	U		5	U
77	88755	2-Nitrophenol	8270B	ug/L		10	U		10	U
78	100027	4-Nitrophenol	8270B	ug/L		50	U		50	UJ
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		100	UR		100	UR
80	88857	Dinoseb	8270B	ug/L		10	U		10	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		10	U		10	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		10	U		10	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		10	U		10	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		5	U		5	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		5	U		5	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		10	U		10	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		10	U		10	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		10	U		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		10	U		10	U
90	99558	5-Nitro-o-toluidine	8270B	ug/L		10	U		10	U
91	608935	Pentachlorobenzene	8270B	ug/L		5	U		5	U
92	76017	Pentachloroethane	8270B	ug/L		50	U		50	U
93	82688	Pentachloronitrobenzene	8270B	ug/L		50	U		50	U
94	87865	Pentachlorophenol	8270B	ug/L		50	U		50	U
95	85018	Phenanthrene	8270B	ug/L		5	U		5	U
96	108952	Phenol	8270B	ug/L		5	U		5	U
97	109068	2-Picoline	8270B	ug/L		20	U		20	U
98	129000	Pyrene	8270B	ug/L		5	U		5	U
99	110861	Pyridine	8270B	ug/L		10	U		10	U
100	94597	Safrole	8270B	ug/L		10	U		10	U
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		5	U		5	U
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		50	U		50	U
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		5	U		5	U
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		10	U		10	U
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		5	U		5	U
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		50	UJ		50	U
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		10	U		10	U
108	123911	1,4-Dioxane	8270B	ug/L		50	U	4.8	50	J
222	510156	p-Chlorobenzilate	8270B	ug/L		10	UJ		10	UJ

					CMSMW-2			RFIMW-1		
					A9H210120003			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		50	UJ		250	UJ
2	60515	Dimethoate	8270B	ug/L		200	U		1,000	U
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		20	U		100	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		100	UJ		500	UJ
5	1888717	Hexachloropropene	8270B	ug/L		100	U		500	U
6	62442	Phenacetin	8270B	ug/L		50	U		250	U
7	23950585	Pronamide	8270B	ug/L		20	U		100	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		50	U		250	U
9	2303164	Diallate	8270B	ug/L		10	UJ		50	UJ
11	83329	Acenaphthene	8270B	ug/L		5	U		25	U
12	208968	Acenaphthylene	8270B	ug/L		5	U		25	U
13	98862	Acetophenone	8270B	ug/L		10	U		50	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		20	UJ		100	UJ
15	62533	Aniline	8270B	ug/L		10	U		50	U
16	120127	Anthracene	8270B	ug/L		5	U		25	U
17	56553	Benzo(a)anthracene	8270B	ug/L		5	U		25	U
18	205992	Benzo(b)fluoranthene	8270B	ug/L		5	U		25	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		5	U		25	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		5	U		25	U
21	50328	Benzo(a)pyrene	8270B	ug/L		5	U		25	U
22	100516	Benzyl alcohol	8270B	ug/L		10	U		50	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		10	U		50	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		5	U		25	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		5	U		25	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		5	U		25	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		5	U		25	U
28	106478	4-Chloroaniline	8270B	ug/L		10	U		50	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		5	U		25	U
30	91587	2-Chloronaphthalene	8270B	ug/L		10	U		50	U

					CMSMW-2			RFIMW-1		
					A9H210120003			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		5	U		25	U
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		10	U		50	U
33	218019	Chrysene	8270B	ug/L		5	U		25	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		5	U		25	U
35	132649	Dibenzofuran	8270B	ug/L		5	U		25	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		5	U		25	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		20	U		100	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		5	U		25	U
39	87650	2,6-Dichlorophenol	8270B	ug/L		10	U		50	U
40	84662	Diethyl phthalate	8270B	ug/L		5	U		25	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		50	UJ		250	UJ
42	105679	2,4-Dimethylphenol	8270B	ug/L		5	U		25	U
43	131113	Dimethyl phthalate	8270B	ug/L		5	U		25	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		10	U		50	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		10	U		50	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		50	U		250	U
47	51285	2,4-Dinitrophenol	8270B	ug/L		50	U		250	U
48	121142	2,4-Dinitrotoluene	8270B	ug/L		5	U		25	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		5	U		25	U
50	122394	Diphenylamine	8270B	ug/L		10	U		50	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		10	U		50	U
52	206440	Fluoranthene	8270B	ug/L		5	U		25	U
53	86737	Fluorene	8270B	ug/L		5	U		25	U
54	118741	Hexachlorobenzene	8270B	ug/L		5	U		25	U
55	87683	Hexachlorobutadiene	8270B	ug/L		5	U		25	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		5	U		25	U
57	67721	Hexachloroethane	8270B	ug/L		5	U		25	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		5	U		25	U
59	78591	Isophorone	8270B	ug/L		5	U		25	U

					CMSMW-2			RFIMW-1		
					A9H210120003			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		10	U		50	U
61	91805	Methapyrilene	8270B	ug/L		100	U		500	U
62	95534	o-Toluidine	8270B	ug/L		10	U		50	U
63	56495	3-Methylcholanthrene	8270B	ug/L		100	U		500	UJ
64	66273	Methyl methanesulfonate	8270B	ug/L		10	U		50	U
65	91576	2-Methylnaphthalene	8270B	ug/L		5	U		25	U
66	95487	2-Methylphenol	8270B	ug/L		5	U		25	U
67	108394	3-Methylphenol	8270B	ug/L		10	U		50	U
68	106445	4-Methylphenol	8270B	ug/L		10	U		50	U
69	91203	Naphthalene	8270B	ug/L		5	U		25	U
70	130154	1,4-Naphthoquinone	8270B	ug/L		200	U		1,000	U
71	134327	1-Naphthylamine	8270B	ug/L		10	UJ		50	UJ
72	91598	2-Naphthylamine	8270B	ug/L		10	UJ		50	UJ
73	88744	2-Nitroaniline	8270B	ug/L		50	U		250	U
74	99092	3-Nitroaniline	8270B	ug/L		50	U		250	U
75	100016	4-Nitroaniline	8270B	ug/L		50	U		250	U
76	98953	Nitrobenzene	8270B	ug/L		5	U		25	U
77	88755	2-Nitrophenol	8270B	ug/L		10	U		50	U
78	100027	4-Nitrophenol	8270B	ug/L		50	UJ		250	UJ
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		100	UR		500	UR
80	88857	Dinoseb	8270B	ug/L		10	U		50	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		10	U		50	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		10	U		50	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		10	U		50	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		5	U		25	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		5	U		25	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		10	U		50	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		10	U		50	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		10	U		50	U

BASF - Final, Semivolatile Analytical Results

					CMSMW-2			RFIMW-1		
					A9H210120003			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		10	U		50	U
90	99558	5-Nitro-o-toluidine	8270B	ug/L		10	U		50	U
91	608935	Pentachlorobenzene	8270B	ug/L		5	U		25	U
92	76017	Pentachloroethane	8270B	ug/L		50	U		250	U
93	82688	Pentachloronitrobenzene	8270B	ug/L		50	U		250	U
94	87865	Pentachlorophenol	8270B	ug/L		50	U		250	U
95	85018	Phenanthrene	8270B	ug/L		5	U		25	U
96	108952	Phenol	8270B	ug/L	24	5			25	U
97	109068	2-Picoline	8270B	ug/L		20	U		100	U
98	129000	Pyrene	8270B	ug/L		5	U		25	U
99	110861	Pyridine	8270B	ug/L		10	U		50	U
100	94597	Safrole	8270B	ug/L		10	U		50	U
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		5	U		25	U
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		50	U		250	U
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		5	U		25	U
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		10	U		50	U
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		5	U		25	U
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		50	U		250	U
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		10	U		50	U
108	123911	1,4-Dioxane	8270B	ug/L		50	UJ	120	250	J
222	510156	p-Chlorobenzilate	8270B	ug/L		10	UJ		50	UJ

BASF - Final, Semivolatile Analytical Results

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		3,000	UJ		50	UJ
2	60515	Dimethoate	8270B	ug/L		12,000	U		200	U
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		1,200	U		20	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		6,000	UJ		100	UJ
5	1888717	Hexachloropropene	8270B	ug/L		6,000	U		100	U
6	62442	Phenacetin	8270B	ug/L		3,000	U		50	U
7	23950585	Pronamide	8270B	ug/L		1,200	U		20	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		3,000	U		50	U
9	2303164	Diallate	8270B	ug/L		600	UJ		10	UJ
11	83329	Acenaphthene	8270B	ug/L		300	U		5	U
12	208968	Acenaphthylene	8270B	ug/L		300	U		5	U
13	98862	Acetophenone	8270B	ug/L		600	U		10	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		1,200	UJ		20	U
15	62533	Aniline	8270B	ug/L		600	U		10	U
16	120127	Anthracene	8270B	ug/L		300	U		5	U
17	56553	Benzo(a)anthracene	8270B	ug/L		300	U	3.3	5	J
18	205992	Benzo(b)fluoranthene	8270B	ug/L		300	U		5	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		300	U		5	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		300	U		5	U
21	50328	Benzo(a)pyrene	8270B	ug/L		300	U		5	U
22	100516	Benzyl alcohol	8270B	ug/L		600	U		10	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		600	U		10	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		300	U		5	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		300	U		5	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		300	U		5	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		300	U		5	U
28	106478	4-Chloroaniline	8270B	ug/L		600	U		10	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		300	U		5	U
30	91587	2-Chloronaphthalene	8270B	ug/L		600	U		10	U

BASF - Final, Semivolatile Analytical Results

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		300	U		5	U
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		600	U		10	U
33	218019	Chrysene	8270B	ug/L		300	U		5	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		300	U		5	U
35	132649	Dibenzofuran	8270B	ug/L		300	U		5	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		300	U		5	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		1,200	U		20	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		300	U		5	U
39	87650	2,6-Dichlorophenol	8270B	ug/L		600	U		10	U
40	84662	Diethyl phthalate	8270B	ug/L		300	U		5	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		3,000	UJ		50	U
42	105679	2,4-Dimethylphenol	8270B	ug/L		300	U		5	U
43	131113	Dimethyl phthalate	8270B	ug/L		300	U		5	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		600	U		10	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		600	U		10	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		3,000	U		50	U
47	51285	2,4-Dinitrophenol	8270B	ug/L		3,000	U		50	U
48	121142	2,4-Dinitrotoluene	8270B	ug/L		300	U		5	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		300	U		5	U
50	122394	Diphenylamine	8270B	ug/L		600	U		10	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		600	U		10	U
52	206440	Fluoranthene	8270B	ug/L		300	U	4.5	5	J
53	86737	Fluorene	8270B	ug/L		300	U		5	U
54	118741	Hexachlorobenzene	8270B	ug/L		300	U		5	U
55	87683	Hexachlorobutadiene	8270B	ug/L		300	U		5	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		300	U		5	U
57	67721	Hexachloroethane	8270B	ug/L		300	U		5	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		300	U		5	U
59	78591	Isophorone	8270B	ug/L		300	U		5	U

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		600	U		10	U
61	91805	Methapyrilene	8270B	ug/L		6,000	U		100	U
62	95534	o-Toluidine	8270B	ug/L		600	U		10	U
63	56495	3-Methylcholanthrene	8270B	ug/L		6,000	UJ		100	U
64	66273	Methyl methanesulfonate	8270B	ug/L		600	U		10	U
65	91576	2-Methylnaphthalene	8270B	ug/L		300	U		5	U
66	95487	2-Methylphenol	8270B	ug/L		300	U		5	U
67	108394	3-Methylphenol	8270B	ug/L		600	U		10	U
68	106445	4-Methylphenol	8270B	ug/L		600	U		10	U
69	91203	Naphthalene	8270B	ug/L		300	U		5	U
70	130154	1,4-Naphthoquinone	8270B	ug/L		12,000	U		200	U
71	134327	1-Naphthylamine	8270B	ug/L		600	UJ		10	UJ
72	91598	2-Naphthylamine	8270B	ug/L		600	UJ		10	UJ
73	88744	2-Nitroaniline	8270B	ug/L		3,000	U		50	U
74	99092	3-Nitroaniline	8270B	ug/L		3,000	U		50	U
75	100016	4-Nitroaniline	8270B	ug/L		3,000	U		50	U
76	98953	Nitrobenzene	8270B	ug/L		300	U		5	U
77	88755	2-Nitrophenol	8270B	ug/L		600	U		10	U
78	100027	4-Nitrophenol	8270B	ug/L		3,000	UJ		50	UJ
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		6,000	UR		100	UR
80	88857	Dinoseb	8270B	ug/L		600	U		10	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		600	U		10	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		600	U		10	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		600	U		10	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		300	U		5	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		300	U		5	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		600	U		10	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		600	U		10	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		600	U		10	U

BASF - Final, Semivolatile Analytical Results

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		600	U		10	U
90	99558	5-Nitro-o-toluidine	8270B	ug/L		600	U		10	U
91	608935	Pentachlorobenzene	8270B	ug/L		300	U		5	U
92	76017	Pentachloroethane	8270B	ug/L		3,000	U		50	U
93	82688	Pentachloronitrobenzene	8270B	ug/L		3,000	U		50	U
94	87865	Pentachlorophenol	8270B	ug/L		3,000	U		50	U
95	85018	Phenanthrene	8270B	ug/L		300	U		5	U
96	108952	Phenol	8270B	ug/L	220	300	J		5	U
97	109068	2-Picoline	8270B	ug/L		1,200	U		20	U
98	129000	Pyrene	8270B	ug/L		300	U	9.6	5	
99	110861	Pyridine	8270B	ug/L		600	U		10	U
100	94597	Safrole	8270B	ug/L		600	U		10	U
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		300	U		5	U
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		3,000	U		50	U
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		300	U		5	U
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		600	U		10	U
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		300	U		5	U
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		3,000	U		50	U
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		600	U		10	U
108	123911	1,4-Dioxane	8270B	ug/L	87	3,000	J		50	UJ
222	510156	p-Chlorobenzilate	8270B	ug/L		600	UJ		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		50	U		50	U
2	60515	Dimethoate	8270B	ug/L		200	U		200	U
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		20	U		20	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		100	U		100	U
5	1888717	Hexachloropropene	8270B	ug/L		100	U		100	U
6	62442	Phenacetin	8270B	ug/L		50	U		50	U
7	23950585	Pronamide	8270B	ug/L		20	U		20	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		50	U		50	U
9	2303164	Diallate	8270B	ug/L		10	U		10	U
11	83329	Acenaphthene	8270B	ug/L		5	U		5	U
12	208968	Acenaphthylene	8270B	ug/L		5	U		5	U
13	98862	Acetophenone	8270B	ug/L		10	U		10	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		20	U		20	U
15	62533	Aniline	8270B	ug/L		10	U		10	U
16	120127	Anthracene	8270B	ug/L		5	U		5	U
17	56553	Benzo(a)anthracene	8270B	ug/L		5	U		5	U
18	205992	Benzo(b)fluoranthene	8270B	ug/L		5	U		5	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		5	U		5	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		5	U		5	U
21	50328	Benzo(a)pyrene	8270B	ug/L		5	U		5	U
22	100516	Benzyl alcohol	8270B	ug/L		10	U		10	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		10	U		10	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		5	U		5	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		5	U		5	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		5	U		5	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		5	U		5	U
28	106478	4-Chloroaniline	8270B	ug/L		10	U		10	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		5	U		5	U
30	91587	2-Chloronaphthalene	8270B	ug/L		10	U		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		5	U		5	U
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		10	U		10	U
33	218019	Chrysene	8270B	ug/L		5	U		5	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		5	U		5	U
35	132649	Dibenzofuran	8270B	ug/L		5	U		5	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		5	U		5	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		20	U		20	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		5	U		5	U
39	87650	2,6-Dichlorophenol	8270B	ug/L		10	U		10	U
40	84662	Diethyl phthalate	8270B	ug/L		5	U		5	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		50	U		50	U
42	105679	2,4-Dimethylphenol	8270B	ug/L		5	U	5.5	5	
43	131113	Dimethyl phthalate	8270B	ug/L		5	U		5	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		10	U		10	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		10	U		10	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		50	U		50	U
47	51285	2,4-Dinitrophenol	8270B	ug/L		50	U		50	U
48	121142	2,4-Dinitrotoluene	8270B	ug/L		5	U		5	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		5	U		5	U
50	122394	Diphenylamine	8270B	ug/L		10	U		10	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		10	U		10	U
52	206440	Fluoranthene	8270B	ug/L		5	U		5	U
53	86737	Fluorene	8270B	ug/L		5	U		5	U
54	118741	Hexachlorobenzene	8270B	ug/L		5	U		5	U
55	87683	Hexachlorobutadiene	8270B	ug/L		5	U		5	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		5	U		5	U
57	67721	Hexachloroethane	8270B	ug/L		5	U		5	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		5	U		5	U
59	78591	Isophorone	8270B	ug/L		5	U		5	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		10	U		10	U
61	91805	Methapyrilene	8270B	ug/L		100	UR		100	UR
62	95534	o-Toluidine	8270B	ug/L		10	U		10	U
63	56495	3-Methylcholanthrene	8270B	ug/L		100	U		100	U
64	66273	Methyl methanesulfonate	8270B	ug/L		10	U		10	U
65	91576	2-Methylnaphthalene	8270B	ug/L		5	U		5	U
66	95487	2-Methylphenol	8270B	ug/L		5	U		5	U
67	108394	3-Methylphenol	8270B	ug/L		10	UJ		10	UJ
68	106445	4-Methylphenol	8270B	ug/L		10	U		10	U
69	91203	Naphthalene	8270B	ug/L	19	5			5	U
70	130154	1,4-Naphthoquinone	8270B	ug/L		200	U		200	U
71	134327	1-Naphthylamine	8270B	ug/L		10	U		10	U
72	91598	2-Naphthylamine	8270B	ug/L		10	U		10	U
73	88744	2-Nitroaniline	8270B	ug/L		50	U		50	U
74	99092	3-Nitroaniline	8270B	ug/L		50	U		50	U
75	100016	4-Nitroaniline	8270B	ug/L		50	U		50	U
76	98953	Nitrobenzene	8270B	ug/L		5	U		5	U
77	88755	2-Nitrophenol	8270B	ug/L		10	U		10	U
78	100027	4-Nitrophenol	8270B	ug/L		50	U		50	U
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		100	U		100	U
80	88857	Dinoseb	8270B	ug/L		10	U		10	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		10	U		10	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		10	U		10	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		10	U		10	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		5	U		5	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		5	U		5	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		10	U		10	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		10	U		10	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		10	U		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		10	U		10	U
90	99558	5-Nitro-o-toluidine	8270B	ug/L		10	U		10	U
91	608935	Pentachlorobenzene	8270B	ug/L		5	UJ		5	UJ
92	76017	Pentachloroethane	8270B	ug/L		50	U		50	U
93	82688	Pentachloronitrobenzene	8270B	ug/L		50	U		50	U
94	87865	Pentachlorophenol	8270B	ug/L		50	U		50	U
95	85018	Phenanthrene	8270B	ug/L		5	U		5	U
96	108952	Phenol	8270B	ug/L		5	U		5	U
97	109068	2-Picoline	8270B	ug/L		20	U	29	20	
98	129000	Pyrene	8270B	ug/L		5	U		5	U
99	110861	Pyridine	8270B	ug/L		10	U	3.6	10	J
100	94597	Safrole	8270B	ug/L		10	U		10	U
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		5	U		5	U
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		50	U		50	U
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		5	U		5	U
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		10	U		10	U
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		5	U		5	U
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		50	U		50	U
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		10	U		10	U
108	123911	1,4-Dioxane	8270B	ug/L		50	U		50	U
222	510156	p-Chlorobenzilate	8270B	ug/L		10	U		10	U

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		1,000	U		50	U
2	60515	Dimethoate	8270B	ug/L		4,000	U		200	UJ
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		400	U		20	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		2,000	U		100	U
5	1888717	Hexachloropropene	8270B	ug/L		2,000	U		100	U
6	62442	Phenacetin	8270B	ug/L		1,000	U		50	U
7	23950585	Pronamide	8270B	ug/L		400	U		20	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		1,000	U		50	U
9	2303164	Diallate	8270B	ug/L		200	U		10	U
11	83329	Acenaphthene	8270B	ug/L		100	U		5	U
12	208968	Acenaphthylene	8270B	ug/L		100	U		5	U
13	98862	Acetophenone	8270B	ug/L		200	U		10	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		400	U		20	U
15	62533	Aniline	8270B	ug/L		200	U		10	U
16	120127	Anthracene	8270B	ug/L		100	U		5	U
17	56553	Benzo(a)anthracene	8270B	ug/L		100	U		5	U
18	205992	Benzo(b)fluoranthene	8270B	ug/L		100	U		5	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		100	U		5	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		100	U		5	U
21	50328	Benzo(a)pyrene	8270B	ug/L		100	U		5	U
22	100516	Benzyl alcohol	8270B	ug/L		200	U		10	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		200	U		10	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		100	U		5	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		100	U		5	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		100	U		5	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		100	U		5	U
28	106478	4-Chloroaniline	8270B	ug/L		200	U		10	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		100	U		5	UR
30	91587	2-Chloronaphthalene	8270B	ug/L		200	U		10	U

BASF - Final, Semivolatile Analytical Results

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		100	U		5	UR
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		200	U		10	U
33	218019	Chrysene	8270B	ug/L		100	U		5	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		100	U		5	U
35	132649	Dibenzofuran	8270B	ug/L		100	U		5	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		100	U		5	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		400	U		20	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		100	U		5	UR
39	87650	2,6-Dichlorophenol	8270B	ug/L		200	U		10	UR
40	84662	Diethyl phthalate	8270B	ug/L		100	U		5	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		1,000	U		50	U
42	105679	2,4-Dimethylphenol	8270B	ug/L		100	U		5	UR
43	131113	Dimethyl phthalate	8270B	ug/L		100	U		5	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		200	U		10	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		200	U		10	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		1,000	U		50	UR
47	51285	2,4-Dinitrophenol	8270B	ug/L		1,000	U		50	UR
48	121142	2,4-Dinitrotoluene	8270B	ug/L		100	U		5	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		100	U		5	U
50	122394	Diphenylamine	8270B	ug/L		200	U		10	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		200	U		10	U
52	206440	Fluoranthene	8270B	ug/L		100	U		5	U
53	86737	Fluorene	8270B	ug/L		100	U		5	U
54	118741	Hexachlorobenzene	8270B	ug/L		100	U		5	U
55	87683	Hexachlorobutadiene	8270B	ug/L		100	U		5	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		100	U		5	U
57	67721	Hexachloroethane	8270B	ug/L		100	U		5	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		100	U		5	U
59	78591	Isophorone	8270B	ug/L		100	U		5	U

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		200	U		10	U
61	91805	Methapyrilene	8270B	ug/L		2,000	UR		100	UR
62	95534	o-Toluidine	8270B	ug/L		200	U		10	U
63	56495	3-Methylcholanthrene	8270B	ug/L		2,000	U		100	U
64	66273	Methyl methanesulfonate	8270B	ug/L		200	U		10	U
65	91576	2-Methylnaphthalene	8270B	ug/L		100	U		5	U
66	95487	2-Methylphenol	8270B	ug/L		100	U		5	UR
67	108394	3-Methylphenol	8270B	ug/L		200	UJ		10	UR
68	106445	4-Methylphenol	8270B	ug/L		200	U		10	UR
69	91203	Naphthalene	8270B	ug/L		100	U		5	U
70	130154	1,4-Naphthoquinone	8270B	ug/L		4,000	U		200	UJ
71	134327	1-Naphthylamine	8270B	ug/L		200	U		10	U
72	91598	2-Naphthylamine	8270B	ug/L		200	U		10	U
73	88744	2-Nitroaniline	8270B	ug/L		1,000	U		50	U
74	99092	3-Nitroaniline	8270B	ug/L		1,000	U		50	U
75	100016	4-Nitroaniline	8270B	ug/L		1,000	U		50	U
76	98953	Nitrobenzene	8270B	ug/L		100	U		5	U
77	88755	2-Nitrophenol	8270B	ug/L		200	U		10	UR
78	100027	4-Nitrophenol	8270B	ug/L		1,000	U		50	UR
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		2,000	U		100	U
80	88857	Dinoseb	8270B	ug/L		200	U		10	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		200	U		10	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		200	U		10	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		200	U		10	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		100	U		5	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		100	U		5	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		200	U		10	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		200	U		10	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		200	U		10	U

BASF - Final, Semivolatile Analytical Results

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		200	U		10	U
90	99558	5-Nitro-o-toluidine	8270B	ug/L		200	U		10	U
91	608935	Pentachlorobenzene	8270B	ug/L		100	UJ		5	UJ
92	76017	Pentachloroethane	8270B	ug/L		1,000	U		50	U
93	82688	Pentachloronitrobenzene	8270B	ug/L		1,000	U		50	U
94	87865	Pentachlorophenol	8270B	ug/L		1,000	U		50	UR
95	85018	Phenanthrene	8270B	ug/L		100	U		5	U
96	108952	Phenol	8270B	ug/L		100	U		5	UR
97	109068	2-Picoline	8270B	ug/L		400	U		20	U
98	129000	Pyrene	8270B	ug/L		100	U		5	U
99	110861	Pyridine	8270B	ug/L		200	U		10	U
100	94597	Safrole	8270B	ug/L		200	U		10	U
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		100	U		5	U
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		1,000	U		50	UR
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		100	U		5	U
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		200	U		10	UR
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		100	U		5	UR
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		1,000	U		50	U
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		200	U		10	U
108	123911	1,4-Dioxane	8270B	ug/L		1,000	U		50	U
222	510156	p-Chlorobenzilate	8270B	ug/L		200	U		10	U

					X1		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		50	UR
2	60515	Dimethoate	8270B	ug/L		200	UR
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		20	UR
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		100	UR
5	1888717	Hexachloropropene	8270B	ug/L		100	UR
6	62442	Phenacetin	8270B	ug/L		50	UR
7	23950585	Pronamide	8270B	ug/L		20	UR
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		50	UR
9	2303164	Diallate	8270B	ug/L		10	UR
11	83329	Acenaphthene	8270B	ug/L		5	UR
12	208968	Acenaphthylene	8270B	ug/L		5	UR
13	98862	Acetophenone	8270B	ug/L		10	UR
14	53963	2-Acetylaminofluorene	8270B	ug/L		20	UR
15	62533	Aniline	8270B	ug/L		10	UR
16	120127	Anthracene	8270B	ug/L		5	UR
17	56553	Benzo(a)anthracene	8270B	ug/L		5	UR
18	205992	Benzo(b)fluoranthene	8270B	ug/L		5	UR
19	207089	Benzo(k)fluoranthene	8270B	ug/L		5	UR
20	191242	Benzo(ghi)perylene	8270B	ug/L		5	UR
21	50328	Benzo(a)pyrene	8270B	ug/L		5	UR
22	100516	Benzyl alcohol	8270B	ug/L		10	UR
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		10	UR
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		5	UR
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		5	U*
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		5	UR
27	85687	Butyl benzyl phthalate	8270B	ug/L		5	UR
28	106478	4-Chloroaniline	8270B	ug/L		10	UR
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		5	UR
30	91587	2-Chloronaphthalene	8270B	ug/L		10	UR

BASF - Final, Semivolatile Analytical Results

					X1		
					U		
					WATER		
					Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		5	UR
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		10	UR
33	218019	Chrysene	8270B	ug/L		5	UR
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		5	UR
35	132649	Dibenzofuran	8270B	ug/L		5	UR
36	84742	Di-n-butyl phthalate	8270B	ug/L		5	UR
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		20	UR
38	120832	2,4-Dichlorophenol	8270B	ug/L		5	UR
39	87650	2,6-Dichlorophenol	8270B	ug/L		10	UR
40	84662	Diethyl phthalate	8270B	ug/L		5	UR
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		50	UR
42	105679	2,4-Dimethylphenol	8270B	ug/L		5	UR
43	131113	Dimethyl phthalate	8270B	ug/L		5	UR
44	117840	Di-n-octyl phthalate	8270B	ug/L		10	UR
45	99650	1,3-Dinitrobenzene	8270B	ug/L		10	UR
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		50	UR
47	51285	2,4-Dinitrophenol	8270B	ug/L		50	UR
48	121142	2,4-Dinitrotoluene	8270B	ug/L		5	UR
49	606202	2,6-Dinitrotoluene	8270B	ug/L		5	UR
50	122394	Diphenylamine	8270B	ug/L		10	UR
51	62500	Ethyl methanesulfonate	8270B	ug/L		10	UR
52	206440	Fluoranthene	8270B	ug/L		5	UR
53	86737	Fluorene	8270B	ug/L		5	UR
54	118741	Hexachlorobenzene	8270B	ug/L		5	UR
55	87683	Hexachlorobutadiene	8270B	ug/L		5	UR
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		5	UR
57	67721	Hexachloroethane	8270B	ug/L		5	UR
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		5	UR
59	78591	Isophorone	8270B	ug/L		5	UR

					X1		
					U		
					WATER		
					Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		10	UR
61	91805	Methapyrilene	8270B	ug/L		100	UR
62	95534	o-Toluidine	8270B	ug/L		10	UR
63	56495	3-Methylcholanthrene	8270B	ug/L		100	UR
64	66273	Methyl methanesulfonate	8270B	ug/L		10	UR
65	91576	2-Methylnaphthalene	8270B	ug/L		5	UR
66	95487	2-Methylphenol	8270B	ug/L		5	UR
67	108394	3-Methylphenol	8270B	ug/L		10	UR
68	106445	4-Methylphenol	8270B	ug/L		10	UR
69	91203	Naphthalene	8270B	ug/L		5	UR
70	130154	1,4-Naphthoquinone	8270B	ug/L		200	UR
71	134327	1-Naphthylamine	8270B	ug/L		10	UR
72	91598	2-Naphthylamine	8270B	ug/L		10	UR
73	88744	2-Nitroaniline	8270B	ug/L		50	UR
74	99092	3-Nitroaniline	8270B	ug/L		50	UR
75	100016	4-Nitroaniline	8270B	ug/L		50	UR
76	98953	Nitrobenzene	8270B	ug/L		5	UR
77	88755	2-Nitrophenol	8270B	ug/L		10	UR
78	100027	4-Nitrophenol	8270B	ug/L		50	UR
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		100	UR
80	88857	Dinoseb	8270B	ug/L		10	UR
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		10	UR
82	55185	N-Nitrosodiethylamine	8270B	ug/L		10	UR
83	62759	N-Nitrosodimethylamine	8270B	ug/L		10	UR
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		5	UR
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		5	UR
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		10	UR
87	59892	N-Nitrosomorpholine	8270B	ug/L		10	UR
88	100754	N-Nitrosopiperidine	8270B	ug/L		10	UR

BASF - Final, Semivolatile Analytical Results

					X1		
					U		
					WATER		
					Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		10	UR
90	99558	5-Nitro-o-toluidine	8270B	ug/L		10	UR
91	608935	Pentachlorobenzene	8270B	ug/L		5	UR
92	76017	Pentachloroethane	8270B	ug/L		50	UR
93	82688	Pentachloronitrobenzene	8270B	ug/L		50	UR
94	87865	Pentachlorophenol	8270B	ug/L		50	UR
95	85018	Phenanthrene	8270B	ug/L		5	UR
96	108952	Phenol	8270B	ug/L		5	UR
97	109068	2-Picoline	8270B	ug/L		20	UR
98	129000	Pyrene	8270B	ug/L		5	UR
99	110861	Pyridine	8270B	ug/L		10	UR
100	94597	Safrole	8270B	ug/L		10	UR
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		5	UR
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		50	UR
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		5	UR
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		10	UR
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		5	UR
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		50	UR
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		10	UR
108	123911	1,4-Dioxane	8270B	ug/L		50	UR
222	510156	p-Chlorobenzilate	8270B	ug/L		10	UR

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		1,000	U		50	U
2	60515	Dimethoate	8270B	ug/L		4,000	UJ		200	UJ
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		400	U		20	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		2,000	U		100	U
5	1888717	Hexachloropropene	8270B	ug/L		2,000	UJ		100	UJ
6	62442	Phenacetin	8270B	ug/L		1,000	U		50	U
7	23950585	Pronamide	8270B	ug/L		400	U		20	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		1,000	U		50	U
9	2303164	Diallate	8270B	ug/L		200	U		10	U
11	83329	Acenaphthene	8270B	ug/L		100	U		5	U
12	208968	Acenaphthylene	8270B	ug/L		100	U		5	U
13	98862	Acetophenone	8270B	ug/L		200	U		10	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		400	U		20	U
15	62533	Aniline	8270B	ug/L		200	U		10	U
16	120127	Anthracene	8270B	ug/L		100	U		5	U
17	56553	Benzo(a)anthracene	8270B	ug/L		100	U		5	U
18	205992	Benzo(b)fluoranthene	8270B	ug/L		100	U		5	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		100	U		5	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		100	U		5	U
21	50328	Benzo(a)pyrene	8270B	ug/L		100	U		5	U
22	100516	Benzyl alcohol	8270B	ug/L		200	U		10	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		200	U		10	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		100	U		5	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		100	U		5	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		100	U		5	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		100	U		5	U
28	106478	4-Chloroaniline	8270B	ug/L		200	U		10	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		100	U		5	U
30	91587	2-Chloronaphthalene	8270B	ug/L		200	U		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		100	U		5	U
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		200	U		10	U
33	218019	Chrysene	8270B	ug/L		100	U		5	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		100	U		5	U
35	132649	Dibenzofuran	8270B	ug/L		100	U		5	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		100	U		5	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		400	U		20	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		100	U		5	U
39	87650	2,6-Dichlorophenol	8270B	ug/L		200	U		10	U
40	84662	Diethyl phthalate	8270B	ug/L		100	U		5	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		1,000	UJ		50	UJ
42	105679	2,4-Dimethylphenol	8270B	ug/L		100	U		5	U
43	131113	Dimethyl phthalate	8270B	ug/L		100	U		5	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		200	U		10	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		200	U		10	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		1,000	U		50	U
47	51285	2,4-Dinitrophenol	8270B	ug/L		1,000	U		50	U
48	121142	2,4-Dinitrotoluene	8270B	ug/L		100	U		5	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		100	U		5	U
50	122394	Diphenylamine	8270B	ug/L		200	U		10	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		200	U		10	U
52	206440	Fluoranthene	8270B	ug/L		100	U		5	U
53	86737	Fluorene	8270B	ug/L		100	U		5	U
54	118741	Hexachlorobenzene	8270B	ug/L		100	U		5	U
55	87683	Hexachlorobutadiene	8270B	ug/L		100	U		5	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		100	UJ		5	UJ
57	67721	Hexachloroethane	8270B	ug/L		100	U		5	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		100	U		5	U
59	78591	Isophorone	8270B	ug/L		100	U		5	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		200	U		10	U
61	91805	Methapyrilene	8270B	ug/L		2,000	UR		100	UR
62	95534	o-Toluidine	8270B	ug/L		200	U		10	U
63	56495	3-Methylcholanthrene	8270B	ug/L		2,000	U		100	U
64	66273	Methyl methanesulfonate	8270B	ug/L		200	U		10	U
65	91576	2-Methylnaphthalene	8270B	ug/L		100	U		5	U
66	95487	2-Methylphenol	8270B	ug/L		100	U		5	U
67	108394	3-Methylphenol	8270B	ug/L		200	UJ		10	UJ
68	106445	4-Methylphenol	8270B	ug/L		200	U		10	U
69	91203	Naphthalene	8270B	ug/L		100	U	5.9	5	
70	130154	1,4-Naphthoquinone	8270B	ug/L		4,000	UJ		200	UJ
71	134327	1-Naphthylamine	8270B	ug/L		200	U		10	U
72	91598	2-Naphthylamine	8270B	ug/L		200	U		10	U
73	88744	2-Nitroaniline	8270B	ug/L		1,000	U		50	U
74	99092	3-Nitroaniline	8270B	ug/L		1,000	U		50	U
75	100016	4-Nitroaniline	8270B	ug/L		1,000	U		50	U
76	98953	Nitrobenzene	8270B	ug/L		100	U		5	U
77	88755	2-Nitrophenol	8270B	ug/L		200	U		10	U
78	100027	4-Nitrophenol	8270B	ug/L		1,000	U		50	U
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		2,000	U		100	U
80	88857	Dinoseb	8270B	ug/L		200	U		10	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		200	U		10	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		200	U		10	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		200	U		10	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		100	U		5	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		100	U		5	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		200	U		10	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		200	U		10	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		200	U		10	U

BASF - Final, Semivolatile Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		200	U		10	U
90	99558	5-Nitro-o-toluidine	8270B	ug/L		200	U		10	U
91	608935	Pentachlorobenzene	8270B	ug/L		100	UJ		5	UJ
92	76017	Pentachloroethane	8270B	ug/L		1,000	U		50	U
93	82688	Pentachloronitrobenzene	8270B	ug/L		1,000	U		50	U
94	87865	Pentachlorophenol	8270B	ug/L		1,000	U		50	U
95	85018	Phenanthrene	8270B	ug/L		100	U		5	U
96	108952	Phenol	8270B	ug/L		100	U		5	U
97	109068	2-Picoline	8270B	ug/L		400	U		20	U
98	129000	Pyrene	8270B	ug/L		100	U		5	U
99	110861	Pyridine	8270B	ug/L		200	U		10	U
100	94597	Safrole	8270B	ug/L		200	U		10	U
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		100	U		5	U
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		1,000	UJ		50	UJ
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		100	U		5	U
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		200	U		10	U
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		100	U		5	U
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		1,000	U		50	U
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L		200	U	6.5	10	J
108	123911	1,4-Dioxane	8270B	ug/L		1,000	U		50	U
222	510156	p-Chlorobenzilate	8270B	ug/L		200	U		10	U

BASF - Final, Semivolatile Analytical Results

					CMSMW-39S			ERB-1		
					A9H270119003			A9H270119004		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	92671	4-Aminobiphenyl	8270B	ug/L		50	U		50	U
2	60515	Dimethoate	8270B	ug/L		200	UJ		200	UJ
3	60117	p-Dimethylaminoazobenzene	8270B	ug/L		20	U		20	U
4	57976	7,12-Dimethylbenz(a)anthracene	8270B	ug/L		100	U		100	U
5	1888717	Hexachloropropene	8270B	ug/L		100	UJ		100	UJ
6	62442	Phenacetin	8270B	ug/L		50	U		50	U
7	23950585	Pronamide	8270B	ug/L		20	U		20	U
8	122098	a,a-Dimethylphenethylamine	8270B	ug/L		50	U		50	U
9	2303164	Diallate	8270B	ug/L		10	U		10	U
11	83329	Acenaphthene	8270B	ug/L		5	U		5	U
12	208968	Acenaphthylene	8270B	ug/L		5	U		5	U
13	98862	Acetophenone	8270B	ug/L		10	U		10	U
14	53963	2-Acetylaminofluorene	8270B	ug/L		20	U		20	U
15	62533	Aniline	8270B	ug/L		10	U		10	U
16	120127	Anthracene	8270B	ug/L		5	U		5	U
17	56553	Benzo(a)anthracene	8270B	ug/L		5	U		5	U
18	205992	Benzo(b)fluoranthene	8270B	ug/L		5	U		5	U
19	207089	Benzo(k)fluoranthene	8270B	ug/L		5	U		5	U
20	191242	Benzo(ghi)perylene	8270B	ug/L		5	U		5	U
21	50328	Benzo(a)pyrene	8270B	ug/L		5	U		5	U
22	100516	Benzyl alcohol	8270B	ug/L		10	U		10	U
23	111911	bis(2-Chloroethoxy)methane	8270B	ug/L		10	U		10	U
24	111444	bis(2-Chloroethyl) ether	8270B	ug/L		5	U		5	U
25	117817	bis(2-Ethylhexyl) phthalate	8270B	ug/L		5	U		5	U
26	101553	4-Bromophenyl phenyl ether	8270B	ug/L		5	U		5	U
27	85687	Butyl benzyl phthalate	8270B	ug/L		5	U		5	U
28	106478	4-Chloroaniline	8270B	ug/L		10	U		10	U
29	59507	4-Chloro-3-methylphenol	8270B	ug/L		5	U		5	U
30	91587	2-Chloronaphthalene	8270B	ug/L		10	U		10	U

BASF - Final, Semivolatile Analytical Results

					CMSMW-39S			ERB-1		
					A9H270119003			A9H270119004		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
31	95578	2-Chlorophenol	8270B	ug/L		5	U		5	U
32	7005723	4-Chlorophenyl phenyl ether	8270B	ug/L		10	U		10	U
33	218019	Chrysene	8270B	ug/L		5	U		5	U
34	53703	Dibenz(a,h)anthracene	8270B	ug/L		5	U		5	U
35	132649	Dibenzofuran	8270B	ug/L		5	U		5	U
36	84742	Di-n-butyl phthalate	8270B	ug/L		5	U		5	U
37	91941	3,3'-Dichlorobenzidine	8270B	ug/L		20	U		20	U
38	120832	2,4-Dichlorophenol	8270B	ug/L		5	U		5	U
39	87650	2,6-Dichlorophenol	8270B	ug/L		10	U		10	U
40	84662	Diethyl phthalate	8270B	ug/L		5	U		5	U
41	119937	3,3'-Dimethylbenzidine	8270B	ug/L		50	UJ		50	UJ
42	105679	2,4-Dimethylphenol	8270B	ug/L		5	U		5	U
43	131113	Dimethyl phthalate	8270B	ug/L		5	U		5	U
44	117840	Di-n-octyl phthalate	8270B	ug/L		10	U		10	U
45	99650	1,3-Dinitrobenzene	8270B	ug/L		10	U		10	U
46	534521	4,6-Dinitro-2-methylphenol	8270B	ug/L		50	U		50	U
47	51285	2,4-Dinitrophenol	8270B	ug/L		50	U		50	U
48	121142	2,4-Dinitrotoluene	8270B	ug/L		5	U		5	U
49	606202	2,6-Dinitrotoluene	8270B	ug/L		5	U		5	U
50	122394	Diphenylamine	8270B	ug/L		10	U		10	U
51	62500	Ethyl methanesulfonate	8270B	ug/L		10	U		10	U
52	206440	Fluoranthene	8270B	ug/L		5	U		5	U
53	86737	Fluorene	8270B	ug/L		5	U		5	U
54	118741	Hexachlorobenzene	8270B	ug/L		5	U		5	U
55	87683	Hexachlorobutadiene	8270B	ug/L		5	U		5	U
56	77474	Hexachlorocyclopentadiene	8270B	ug/L		5	UJ		5	UJ
57	67721	Hexachloroethane	8270B	ug/L		5	U		5	U
58	193395	Indeno(1,2,3-cd)pyrene	8270B	ug/L		5	U		5	U
59	78591	Isophorone	8270B	ug/L		5	U		5	U

					CMSMW-39S			ERB-1		
					A9H270119003			A9H270119004		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
60	120581	Isosafrole	8270B	ug/L		10	U		10	U
61	91805	Methapyrilene	8270B	ug/L		100	UR		100	UR
62	95534	o-Toluidine	8270B	ug/L		10	U		10	U
63	56495	3-Methylcholanthrene	8270B	ug/L		100	U		100	U
64	66273	Methyl methanesulfonate	8270B	ug/L		10	U		10	U
65	91576	2-Methylnaphthalene	8270B	ug/L		5	U		5	U
66	95487	2-Methylphenol	8270B	ug/L		5	U		5	U
67	108394	3-Methylphenol	8270B	ug/L		10	UJ		10	UJ
68	106445	4-Methylphenol	8270B	ug/L		10	U		10	U
69	91203	Naphthalene	8270B	ug/L	5.4	5			5	U
70	130154	1,4-Naphthoquinone	8270B	ug/L		200	UJ		200	UJ
71	134327	1-Naphthylamine	8270B	ug/L		10	U		10	U
72	91598	2-Naphthylamine	8270B	ug/L		10	U		10	U
73	88744	2-Nitroaniline	8270B	ug/L		50	U		50	U
74	99092	3-Nitroaniline	8270B	ug/L		50	U		50	U
75	100016	4-Nitroaniline	8270B	ug/L		50	U		50	U
76	98953	Nitrobenzene	8270B	ug/L		5	U		5	U
77	88755	2-Nitrophenol	8270B	ug/L		10	U		10	U
78	100027	4-Nitrophenol	8270B	ug/L		50	U		50	U
79	56575	4-Nitroquinoline-1-oxide	8270B	ug/L		100	U		100	U
80	88857	Dinoseb	8270B	ug/L		10	U		10	U
81	924163	N-Nitrosodi-n-butylamine	8270B	ug/L		10	U		10	U
82	55185	N-Nitrosodiethylamine	8270B	ug/L		10	U		10	U
83	62759	N-Nitrosodimethylamine	8270B	ug/L		10	U		10	U
84	621647	N-Nitrosodi-n-propylamine	8270B	ug/L		5	U		5	U
85	86306	N-Nitrosodiphenylamine	8270B	ug/L		5	U		5	U
86	10595956	N-Nitrosomethylethylamine	8270B	ug/L		10	U		10	U
87	59892	N-Nitrosomorpholine	8270B	ug/L		10	U		10	U
88	100754	N-Nitrosopiperidine	8270B	ug/L		10	U		10	U

BASF - Final, Semivolatile Analytical Results

					CMSMW-39S			ERB-1			
					A9H270119003			A9H270119004			
					08/25/99			08/25/99			
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
89	930552	N-Nitrosopyrrolidine	8270B	ug/L		10	U		10	U	
90	99558	5-Nitro-o-toluidine	8270B	ug/L		10	U		10	U	
91	608935	Pentachlorobenzene	8270B	ug/L		5	UJ		5	UJ	
92	76017	Pentachloroethane	8270B	ug/L		50	U		50	U	
93	82688	Pentachloronitrobenzene	8270B	ug/L		50	U		50	U	
94	87865	Pentachlorophenol	8270B	ug/L		50	U		50	U	
95	85018	Phenanthrene	8270B	ug/L		5	U		5	U	
96	108952	Phenol	8270B	ug/L		5	U		5	U	
97	109068	2-Picoline	8270B	ug/L		20	U		20	U	
98	129000	Pyrene	8270B	ug/L		5	U		5	U	
99	110861	Pyridine	8270B	ug/L		10	U		10	U	
100	94597	Safrole	8270B	ug/L		10	U		10	U	
101	95943	1,2,4,5-Tetrachlorobenzene	8270B	ug/L		5	U		5	U	
102	58902	2,3,4,6-Tetrachlorophenol	8270B	ug/L		50	UJ		50	UJ	
103	120821	1,2,4-Trichlorobenzene	8270B	ug/L		5	U		5	U	
104	95954	2,4,5-Trichlorophenol	8270B	ug/L		10	U		10	U	
105	88062	2,4,6-Trichlorophenol	8270B	ug/L		5	U		5	U	
106	99354	1,3,5-Trinitrobenzene	8270B	ug/L		50	U		50	U	
107	108601	bis(2-Chloroisopropyl) ether	8270B	ug/L	5.3	10	J		10	U	
108	123911	1,4-Dioxane	8270B	ug/L		50	U		50	U	
222	510156	p-Chlorobenzilate	8270B	ug/L		10	U		10	U	

B. INORGANIC AND WET CHEMISTRY DATA

BASF - Final, Metal Analytical Results

					BASF					
					A9H210120					
					CMSMW-1			CMSMW-15		
					A9H210120001			A9H210120005		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	539	5		1,630	50	

BASF - Final, Metal Analytical Results

					CMSMW-2			CMSMW-3		
					A9H210120003			A9H210120007		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	420	5		404	5	

BASF - Final, Metal Analytical Results

					RFIMW-1			RFIMW-13		
					A9H210120006			A9H210120008		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	573	5		482	5	

BASF - Final, Metal Analytical Results

					RFIMW-22			RFIMW-23		
					A9H210120004			A9H210120002		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	103	5		271	5	

BASF - Final, Metal Analytical Results

					BASF					
					A9H240148					
					CMSMW-4			RFIMW-14		
					A9H240148001			A9H240148002		
					08/20/99			08/20/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	857	5		2,040	50	

BASF - Final, Metal Analytical Results

					RFIMW-30			RFIMW-39		
					A9H240148006			A9H240148003		
					08/20/99			08/20/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	3,290	50		1,850	50	

BASF - Final, Metal Analytical Results

					RFIMW-4			RFIMW-5		
					A9H240148004			A9H240148005		
					08/20/99			08/20/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	463	50		3,330	50	

BASF - Final, Metal Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	187	5		46.5	5	

BASF - Final, Metal Analytical Results

					CMSMW-5			CMSMW-6		
					A9H250128004			A9H250128005		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	1,710	25		2,230	25	

BASF - Final, Metal Analytical Results

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	108	5		556	5	

BASF - Final, Metal Analytical Results

					RFIMW-6			RFIMW-7			
					A9H250128003			A9H250128006			
					08/23/99			08/23/99			
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	7440702	Calcium	6010A	mg/L	640	5		881	5		

BASF - Final, Metal Analytical Results

					BASF					
					A9H260105					
					CMSMW-10			CMSMW-11		
					A9H260105005			A9H260105006		
					08/24/99			08/24/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	612	5		340	5	

BASF - Final, Metal Analytical Results

					CMSMW-9		
					A9H260105003		
					08/24/99		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	938	5	

BASF - Final, Metal Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	73.1	5		550	5	

BASF - Final, Metal Analytical Results

					CMSMW-39S			ERB-1			
					A9H270119003			A9H270119004			
					08/25/99			08/25/99			
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	7440702	Calcium	6010A	mg/L	551	5			5	U	

BASF - Final, Wet Chemistry Analytical Results

					BASF					
					A9H210120					
					CMSMW-1					
					A9H210120001					
					08/19/99					
								X1		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	49.2	5				
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,700	10				
3	Q18	Total Alkalinity	310.1	mg/L	53	5				
4	Q594	Total Dissolved Solids	160.1	mg/L	3,200	40				
5	7440440	Total Organic Carbon	9060	mg/L	12	1	J			
6	Q597	Total Solids (Residue)	160.3	mg/L				7,800	40	J

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-15			CMSMW-2		
					A9H210120005			A9H210120003		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	373	50		147	10	
2	Q356	Hardness, as CaCO3	130.2	mg/L	4,300	50		1,000	20	
3	Q18	Total Alkalinity	310.1	mg/L	200	5		880	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	740	200		2,000	40	
5	7440440	Total Organic Carbon	9060	mg/L	16	1	J	39	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	1,400	10		2,100	20	

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-3			RFIMW-1		
					A9H210120007			A9H210120006		
					08/19/99			08/19/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	247	50		261	25	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,300	20		2,200	20	
3	Q18	Total Alkalinity	310.1	mg/L	370	5		630	5	
4	Q594	Total Dissolved Solids	160.1	mg/L	3,100	40		30,000	200	
5	7440440	Total Organic Carbon	9060	mg/L	33	1	J	23	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	3,800	20				

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-13			
								A9H210120008			
								08/19/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				61.4	5		
2	Q356	Hardness, as CaCO3	130.2	mg/L				2,000	20		
3	Q18	Total Alkalinity	310.1	mg/L				620	5		
4	Q594	Total Dissolved Solids	160.1	mg/L				31,000	200		
5	7440440	Total Organic Carbon	9060	mg/L				160	4	J	
6	Q597	Total Solids (Residue)	160.3	mg/L	31,000	200	J				

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-22			
								A9H210120004			
								08/19/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				300	25		
2	Q356	Hardness, as CaCO3	130.2	mg/L				340	20		
3	Q18	Total Alkalinity	310.1	mg/L				6,200	250		
4	Q594	Total Dissolved Solids	160.1	mg/L				15,000	100		
5	7440440	Total Organic Carbon	9060	mg/L				740	40	J	
6	Q597	Total Solids (Residue)	160.3	mg/L	30,000	200	J	5,000	40	R	

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-23			
								A9H210120002			
								08/19/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				64.4	5		
2	Q356	Hardness, as CaCO3	130.2	mg/L				790	20		
3	Q18	Total Alkalinity	310.1	mg/L				150	5		
4	Q594	Total Dissolved Solids	160.1	mg/L				3,200	40		
5	7440440	Total Organic Carbon	9060	mg/L				10	1	J	
6	Q597	Total Solids (Residue)	160.3	mg/L	15,000	100	J	2,600	20	R	

BASF - Final, Wet Chemistry Analytical Results

					X1		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L			
2	Q356	Hardness, as CaCO3	130.2	mg/L			
3	Q18	Total Alkalinity	310.1	mg/L			
4	Q594	Total Dissolved Solids	160.1	mg/L			
5	7440440	Total Organic Carbon	9060	mg/L			
6	Q597	Total Solids (Residue)	160.3	mg/L	3,200	20	J

BASF - Final, Metal Analytical Results

					CMSMW-16F			CMSMW-18		
					A9H260105007			A9H260105004		
					08/24/99			08/24/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	117	5		1,020	25	

BASF - Final, Metal Analytical Results

					CMSMW-7			CMSMW-8		
					A9H260105001			A9H260105002		
					08/24/99			08/24/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	7440702	Calcium	6010A	mg/L	451	5		112	5	

BASF - Final, Wet Chemistry Analytical Results

					BASF					
					A9H240148					
					CMSMW-4			RFIMW-14		
					A9H240148001			A9H240148002		
					08/20/99			08/20/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	127	5		117	5	
2	Q356	Hardness, as CaCO3	130.2	mg/L	2,700	20		7,000	50	
3	Q18	Total Alkalinity	310.1	mg/L	300	5		700	5	
4	Q594	Total Dissolved Solids	160.1	mg/L	2,900	40		77,000	500	
5	7440440	Total Organic Carbon	9060	mg/L	49	1	J	7	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	3,800	20				

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-30			
								A9H240148006			
								08/20/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				71.5	25		
2	Q356	Hardness, as CaCO3	130.2	mg/L				8,500	50		
3	Q18	Total Alkalinity	310.1	mg/L				79	5	J	
4	Q594	Total Dissolved Solids	160.1	mg/L				15,000	100		
5	7440440	Total Organic Carbon	9060	mg/L				8	1	J	
6	Q597	Total Solids (Residue)	160.3	mg/L	77,000	500					

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-39			
								A9H240148003			
								08/20/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				100	5		
2	Q356	Hardness, as CaCO3	130.2	mg/L				6,800	50		
3	Q18	Total Alkalinity	310.1	mg/L				730	5		
4	Q594	Total Dissolved Solids	160.1	mg/L				76,000	500		
5	7440440	Total Organic Carbon	9060	mg/L				7	1	J	
6	Q597	Total Solids (Residue)	160.3	mg/L	16,000	100					

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-4			
								A9H240148004			
								08/20/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual	
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				84.8	5		
2	Q356	Hardness, as CaCO3	130.2	mg/L				1,400	50		
3	Q18	Total Alkalinity	310.1	mg/L				700	5		
4	Q594	Total Dissolved Solids	160.1	mg/L				4,100	50		
5	7440440	Total Organic Carbon	9060	mg/L				10	1	J	
6	Q597	Total Solids (Residue)	160.3	mg/L	78,000	500		1,800	40	R	

BASF - Final, Wet Chemistry Analytical Results

								RFIMW-5			
								A9H240148005			
								08/20/99			
					X1						
					U			U			
					WATER			WATER			
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L				69.9	25	
2	Q356	Hardness, as CaCO3	130.2	mg/L				8,400	50	
3	Q18	Total Alkalinity	310.1	mg/L				880	25	J
4	Q594	Total Dissolved Solids	160.1	mg/L				15,000	100	
5	7440440	Total Organic Carbon	9060	mg/L				6	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	3,900	40	J	7,500	40	R

BASF - Final, Wet Chemistry Analytical Results

					X1		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L			
2	Q356	Hardness, as CaCO3	130.2	mg/L			
3	Q18	Total Alkalinity	310.1	mg/L			
4	Q594	Total Dissolved Solids	160.1	mg/L			
5	7440440	Total Organic Carbon	9060	mg/L			
6	Q597	Total Solids (Residue)	160.3	mg/L	14,000	100	J

BASF - Final, Wet Chemistry Analytical Results

					BASF					
					A9H250128					
					CMSMW-13F			CMSMW-13S		
					A9H250128007			A9H250128008		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	206	25		910	50	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,000	50		250	50	
3	Q18	Total Alkalinity	310.1	mg/L	820	25		2,200	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	5,000	40	J	7,900	50	J
5	7440440	Total Organic Carbon	9060	mg/L	26	2	J	110	4	J
6	Q597	Total Solids (Residue)	160.3	mg/L	5,300	40	J	8,100	50	J

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-5			CMSMW-6		
					A9H250128004			A9H250128005		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	125	10		204	10	
2	Q356	Hardness, as CaCO3	130.2	mg/L	4,900	50		6,700	50	
3	Q18	Total Alkalinity	310.1	mg/L	1,300	10		710	10	
4	Q594	Total Dissolved Solids	160.1	mg/L	4,400	40	J	21,000	200	J
5	7440440	Total Organic Carbon	9060	mg/L	19	1	J	7	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	7,400	40	J	25,000	200	J

					PM4NA			RFIMW-29		
					A9H250128002			A9H250128001		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	1,470	100		53.3	5	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,000	20		1,100	50	
3	Q18	Total Alkalinity	310.1	mg/L	8,600	50		430	5	
4	Q594	Total Dissolved Solids	160.1	mg/L	43,000	500	J	7,300	50	J
5	7440440	Total Organic Carbon	9060	mg/L	360	20	J	5	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	42,000	500	J	7,800	50	J

BASF - Final, Wet Chemistry Analytical Results

					RFIMW-6			RFIMW-7		
					A9H250128003			A9H250128006		
					08/23/99			08/23/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	30	5		118	5	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,500	10		2,300	50	
3	Q18	Total Alkalinity	310.1	mg/L	540	25		1,100	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	3,000	20	J	13,000	100	J
5	7440440	Total Organic Carbon	9060	mg/L	7	1		7	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	2,900	20	J	13,000	100	J

BASF - Final, Wet Chemistry Analytical Results

					BASF					
					A9H260105					
					CMSMW-10			CMSMW-11		
					A9H260105005			A9H260105006		
					08/24/99			08/24/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	169	10		276	10	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,800	50		1,400	50	
3	Q18	Total Alkalinity	310.1	mg/L	2,500	25		5,400	50	
4	Q594	Total Dissolved Solids	160.1	mg/L	4,600	100		16,000	200	
5	7440440	Total Organic Carbon	9060	mg/L	65	4	J	100	4	J
6	Q597	Total Solids (Residue)	160.3	mg/L	5,200	100		22,000	200	

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-16F			CMSMW-18		
					A9H260105007			A9H260105004		
					08/24/99			08/24/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	2,500	100		1,600	100	
2	Q356	Hardness, as CaCO3	130.2	mg/L	450	50		3,100	20	
3	Q18	Total Alkalinity	310.1	mg/L	910	25		2,400	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	5,600	100		4,500	100	
5	7440440	Total Organic Carbon	9060	mg/L	300	10	J	38	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	6,000	40		6,200	40	

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-7			CMSMW-8		
					A9H260105001			A9H260105002		
					08/24/99			08/24/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	1,560	100		250	25	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,500	50		400	50	
3	Q18	Total Alkalinity	310.1	mg/L	1,900	25		3,200	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	5,700	100		12,000	100	
5	7440440	Total Organic Carbon	9060	mg/L	98	4	J	57	2	J
6	Q597	Total Solids (Residue)	160.3	mg/L	7,800	40		12,000	100	

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-9		
					A9H260105003		
					08/24/99		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	2,000	100	
2	Q356	Hardness, as CaCO3	130.2	mg/L	2,900	20	
3	Q18	Total Alkalinity	310.1	mg/L	1,100	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	5,000	100	
5	7440440	Total Organic Carbon	9060	mg/L	47	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	7,200	40	

BASF - Final, Wet Chemistry Analytical Results

					BASF					
					A9H270119					
					CMSMW-12			CMSMW-14S		
					A9H270119001			A9H270119002		
					08/25/99			08/25/99		
					U			U		
					WATER			WATER		
					Result	Detect Limit	Final Qual	Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	844	50		97.4	10	
2	Q356	Hardness, as CaCO3	130.2	mg/L	590	20		1,700	20	
3	Q18	Total Alkalinity	310.1	mg/L	4,200	25		560	25	
4	Q594	Total Dissolved Solids	160.1	mg/L	11,000	100		2,900	20	
5	7440440	Total Organic Carbon	9060	mg/L	87	10	J	24	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	11,000	100		4,400	20	J

BASF - Final, Wet Chemistry Analytical Results

					CMSMW-39S		
					A9H270119003		
					08/25/99		
					U		
					WATER		
					Result	Detect Limit	Final Qual
1	Q132	Chemical Oxygen Demand (COD)	410.4	mg/L	101	10	
2	Q356	Hardness, as CaCO3	130.2	mg/L	1,800	20	
3	Q18	Total Alkalinity	310.1	mg/L	530	5	
4	Q594	Total Dissolved Solids	160.1	mg/L	3,000	20	
5	7440440	Total Organic Carbon	9060	mg/L	23	1	J
6	Q597	Total Solids (Residue)	160.3	mg/L	3,100	20	J

ORGANIC DATA TABLE NOTES

U	This compound was not detected at or above the associated numerical value.
U*	This compound should be considered "not-detected" since it was detected in a blank at a similar level.
J	Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
R	Unusable result; compound may or may not be present in this sample.
UJ	This compound was not detected, but the reporting limit is probably higher due to a low bias identified during the quality assurance review.
UR	Unusable "not-detected" result; compound may or may not be present in this sample.
N	This result should be considered a tentative qualitative identification.

INORGANIC AND WET CHEMISTRY DATA TABLE NOTES

U	This analyte was not detected at or above the associated numerical value.
U*	This analyte should be considered "not-detected" since it was detected in a blank at a similar level.
J	Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
R	Unusable result; analyte may or may not be present in this sample.
UJ	This analyte was not detected, but the reporting limit is probably higher due to a low bias identified during the quality assurance review.
UR	Unusable "not-detected" result; analyte may or may not be present in this sample.

SECTION 3

ORGANIC DATA SUPPORT DOCUMENTATION

A. SDG H9H160123

Organic Analyses Support Documentation

Environmental Standards Project Name: Basf/Wyandotte
Sample Collection Dates: 8/12/99
Job Number: 9901092S
Project Manager: Kendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: K. Grega
Completion Date: 11/99

Applicable Sample No's.: ☑ Refer to Table 1 in the Quality Assurance Review

Deliverables: CLP ☑ like
Tier I ☐
Tier II ☐
Limited ☐
Other ____

Sample No.	Lab. Control No.
SDG H9H160123	

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail (Check (✓) If Yes or Footnote Letter for Comments Below)				Problems Identified (Check (✓) If Yes or Footnote Number for Comments Below)				Support Documentation Attachments (Check (✓) If Yes -- or Identify Attachment No.)			
	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)
Holding Times	✓								✓			
Blank Analysis Results: Target Compounds	✓				✓				✓			
Blank Analysis Results: TICs												
System Mntr. Cmpds. &/or Surrogate Spike Rslts.	✓								✓			
Matrix Spike / Matrix Spike Duplicate Results												
Blank Spike Results	✓								✓			
Duplicate Analysis Results ☐ Field ☐ Lab												
Qualitative Identification: Target Compounds	✓											
Qualitative Identification: TICs												
DFTPP & BFB Mass Tuning	✓								✓			
GC Instrument Performance	•											
Initial Calibrations	✓								✓			
Continuing Calibrations	✓				✓				✓			
Quantitation of Results	✓											
DDT / Endrin Breakdown												
Surrogate Retention Time Shifts												
Internal Standards Performance	✓								✓			
Resolution Check Standards												
Analytical Sequence												
Florisil Cartridge Check & GPC Calibration												
GC Column Agreement												
Others:												

Comments: Data is acceptable for use unless otherwise qualified

BLANK ANALYSIS RESULTS FOR TARGET ORGANIC COMPOUNDS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (units) ppb✓	Qualification Limit 5x	Qualification Limit 10x
TO-14	Air	MB	method blank	none			
↓	↓		ambient blank	dichlorodifluoromethane	0.62		
				n-butane	2.5	12.5	
				pentane	1.8		
				benzene	0.62		
				toluene	1.8		
				m/p xylene	0.79		
				—			

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

Aq. = Aqueous; S = Solid

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Rinse Blank; FB = Field Blank
IB = Instrument Blank; SB = Storage Blank

• = Inferred from instrument printouts and/or supporting data; mass spectra not provided.

+ = Contaminant observed on one column only.

Notes: _____

EPA-19 TO-14 SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESKNX QESSDG:

Lot #: H9H160123

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	BASF-AMBIENT	105	100	101	00
02	BASF-1-1	107	101	100	00
03	BASF-2-1	108	102	103	00
04	BASF-3-1	107	103	103	00
05	METHOD BLK. D1MD8101	105	102	100	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(70-130)
SRG02	= Toluene-d8	(70-130)
SRG03	= 4-Bromofluorobenzene	(70-130)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

BLANK WORKORDER NO.

D1MD8101

EPA-19 TO-14 METHOD BLANK SUMMARY

Lab Name: QUANTERRA

Lab Code: QESKNX SDG Number:

Lab File ID: ablka8.d Lot Number: H9H160123

Date Analyzed: 08/22/99 Time Analyzed: 17:58

Matrix: AIR Date Extracted: 08/22/99

GC Column: ID: .00 Extraction Method: TO-14

Instrument ID: MT Level: (low/med) LOW

LCS not provided

QAPP - 1 LCS/batch up to 20 samples

(LCS provided in the other SDGs)

<20 samples

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BASF-AMBIENT	D1DPK101	d1dpk.d	08/22/99	18:32
02	BASF-1-1	D1DPM101	d1dpm.d	08/22/99	19:05
03	BASF-2-1	D1DPN101	d1dpn.d	08/22/99	19:38
04	BASF-3-1	D1DPP101	d1dpp.d	08/22/99	20:12
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: T081799 SAS No.: NA SDG No.: T081799

Lab File ID: BF0817T BFB Injection Date: 08/17/99

Instrument ID: MT BFB Injection Time: 2046

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	52.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	88.5
175	5.0 - 9.0% of mass 174	6.9 (7.8)1
176	95.0 - 101.0% of mass 174	86.8 (98.0)1
177	5.0 - 9.0% of mass 176	5.8 (6.7)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	HI0817T	HI0817T	HI0817T	08/17/99	2244
02	MH0817M	MH0817T	MH0818T	08/17/99	2315
03	MD0817T	MD0817T	MD0819T	08/17/99	2345
04	ML0817M	ML0817T	ML0820T	08/18/99	0016
05	LW0817M	LW0817T	LW0821T	08/18/99	0046
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date : 18-Aug-1999 19:13

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 17-AUG-1999 22:44
End Cal Date : 18-AUG-1999 00:46
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mt.i/T081799I.b/TO14.m
Cal Date : 18-Aug-1999 19:13 codyd
Curve Type : Average

Calibration File Names:
Level 1: /var/chem/gcms/mt.i/T081799I.b/lw0821t.d
Level 2: /var/chem/gcms/mt.i/T081799I.b/ml0820t.d
Level 3: /var/chem/gcms/mt.i/T081799I.b/md0819t.d
Level 4: /var/chem/gcms/mt.i/T081799I.b/mh0818t.d
Level 5: /var/chem/gcms/mt.i/T081799I.b/hi0817t.d

Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
7 Dichlorodifluoromethane	4.36174	4.16888	4.13021	4.39383	4.38253	4.28744	2.965
8 Chlorodifluoromethane	2.32214	2.36372	2.34741	2.51894	2.50726	2.41190	3.883
9 1,2-Dichlorotetrafluoroethane	2.40911	2.32176	2.18562	2.33065	2.01997	2.25342	6.802
10 Chloromethane	0.21712	0.20478	0.19707	0.20958	0.18232	0.20217	6.568
11 Vinyl Chloride	0.59161	0.57958	0.59226	0.61341	0.61158	0.59769	2.417
12 n-Butane	1.09696	0.90069	0.93254	0.97439	0.99842	0.98060	7.664
13 1,3-Butadiene	0.43312	0.39190	0.40221	0.42525	0.43837	0.41817	4.822
14 Bromomethane	0.63967	0.60403	0.62635	0.66222	0.69993	0.64644	5.662
15 Chloroethane	0.31658	0.32706	0.33642	0.35295	0.37729	0.34206	6.958
16 Trichlorofluoromethane	2.18224	2.10772	2.07840	2.13865	2.21830	2.14506	2.619
17 Pentane	0.28661	0.24232	0.24461	0.23298	0.24066	0.24944	8.513
18 1,1-Dichloroethene	0.66496	0.63306	0.62861	0.65983	0.70363	0.65802	4.572
19 1,1,2-Trichlorotrifluoroethan	1.40359	1.39404	1.38242	1.46246	1.53277	1.43505	4.371
20 Carbon Disulfide	2.17412	2.18133	2.16684	2.29564	2.48926	2.26144	6.098
21 3-Chloropropene	1.32170	1.22238	1.23907	1.28449	1.40229	1.29399	5.564
22 Methylene Chloride	0.58765	0.53306	0.53864	0.55671	0.61750	0.56671	6.263
23 trans-1,2-Dichloroethene	0.66222	0.60665	0.61692	0.64020	0.69896	0.64499	5.744
24 Hexane	1.01040	0.99915	0.96177	0.92977	0.82885	0.94599	7.697
25 1,1-Dichloroethane	1.62010	1.52178	1.73433	1.50870	1.52983	1.58295	6.024
26 cis 1,2-Dichloroethene	1.46181	1.39944	1.34255	1.36576	1.32727	1.37936	3.879
27 Chloroform	3.38771	3.19781	3.14316	3.18049	3.27868	3.23757	3.010
28 1,1,1-Trichloroethane	3.77288	3.59938	3.52118	3.63314	3.67020	3.63936	2.547
29 Cyclohexane	0.13619	0.11985	0.10486	0.09412	0.07567	0.10614	21.920
30 Carbon Tetrachloride	3.67869	3.54820	3.45668	3.49247	3.46082	3.52737	2.613
31 Benzene	0.82407	0.74017	0.65986	0.60031	0.48449	0.66178	19.658
32 1,2-Dichloroethane	0.59905	0.56366	0.54218	0.53831	0.52666	0.55397	5.150

eport Date : 18-Aug-1999 19:13

Quanterra Knoxville

INITIAL CALIBRATION DATA

tart Cal Date : 17-AUG-1999 22:44
nd Cal Date : 18-AUG-1999 00:46
uant Method : ISTD
rigin : Disabled
arget Version : 3.40
ntegrator : HP RTE
ethod file : /var/chem/gcms/mt.i/T081799I.b/TO14.m
al Date : 18-Aug-1999 19:13 codyd
urve Type : Average

Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
33 Heptane	0.53429	0.47475	0.44552	0.41694	0.36520	0.44734	14.131
34 Trichloroethene	0.46655	0.41899	0.38037	0.35379	0.29600	0.38314	16.867
35 1,2-Dichloropropane	0.27241	0.25298	0.23349	0.21715	0.18363	0.23193	14.678
36 Dibromomethane	0.34970	0.30299	0.28649	0.28297	0.25434	0.29530	11.884
37 Bromodichloromethane	0.68916	0.62334	0.60611	0.60321	0.57515	0.61939	6.887
38 cis-1,3-Dichloropropene	0.60653	0.54778	0.51780	0.51555	0.47430	0.53239	9.205
[illegible] Toluene	1.19111	1.03389	0.89563	0.84633	0.68602	0.93060	20.577
[illegible]ctane	0.39950	0.34846	0.31316	0.30851	0.25137	0.32420	16.846
41 trans-1,3-Dichloropropene	0.51897	0.50577	0.49038	0.49889	0.47031	0.49686	3.655
42 1,1,2-Trichloroethane	0.41541	0.34672	0.30841	0.29874	0.23907	0.32167	20.230
43 Tetrachloroethene	0.50583	0.45212	0.41968	0.42311	0.36794	0.43374	11.628
44 Dibromochloromethane	0.84234	0.77132	0.73464	0.74696	0.66984	0.75302	8.295
45 1,2-Dibromoethane	0.66707	0.60295	0.56419	0.58117	0.50371	0.58382	10.172
46 Chlorobenzene	1.07696	0.96890	0.90183	0.88901	0.74581	0.91650	13.206
47 Ethylbenzene	1.64611	1.51590	1.37646	1.36846	1.17264	1.41591	12.534
48 m-Xylene (For p-)	1.34788	1.22954	1.13642	1.11829	0.96542	1.15951	12.219
49 Nonane	0.76183	0.67318	0.59982	0.57827	0.47604	0.61783	17.319
50 o-Xylene	1.36047	1.26938	1.14717	1.14144	0.99186	1.18206	11.851
51 Styrene	0.87294	0.75676	0.64143	0.59416	0.48794	0.67065	22.169
52 Bromoform	0.87180	0.80131	0.73330	0.72211	0.62583	0.75087	12.268
53 Cumene	1.78361	1.60230	1.45095	1.41320	1.20517	1.49105	14.515
54 1,1,2,2-Tetrachloroethane	0.84334	0.76619	0.70029	0.67988	0.56272	0.71049	14.700
55 n-Propylbenzene	2.31176	2.08086	1.87088	1.81671	1.52644	1.92133	15.337
56 1,3,5-Trimethylbenzene	1.80259	1.49723	1.34559	1.34085	1.08746	1.41474	18.519
57 Decane	0.97768	0.92369	0.79322	0.73798	0.59638	0.80579	18.827
58 Alpha-Methylstyrene	0.75288	0.69877	0.62469	0.59483	0.49048	0.63233	15.919
59 1,2,4-Trimethylbenzene	1.69226	1.51045	1.34670	1.31690	1.10659	1.39458	15.763
60 1,3-Dichlorobenzene	1.16079	1.08192	0.97533	0.95287	0.80101	0.99438	13.755
61 1,4-Dichlorobenzene	1.22564	1.06822	0.94245	0.92093	0.76034	0.98352	17.699
62 Benzyl Chloride	1.48037	1.33835	1.19967	1.18172	1.01448	1.24292	14.125
63 1,2-Dichlorobenzene	1.13240	1.04231	0.94841	0.93699	0.78763	0.96955	13.290
64 Undecane	1.10440	0.99748	0.88088	0.81709	0.64997	0.88996	19.505
65 Dodecane	1.08028	0.98986	0.89789	0.82822	0.52186	0.86362	24.706

eport Date : 18-Aug-1999 19:13

Quanterra Knoxville

INITIAL CALIBRATION DATA

tart Cal Date : 17-AUG-1999 22:44
nd Cal Date : 18-AUG-1999 00:46
uant Method : ISTD
rigin : Disabled
'arget Version : 3.40
ntegrator : HP RTE
ethod file : /var/chem/gcms/mt.i/T081799I.b/TO14.m
al Date : 18-Aug-1999 19:13 codyd
urve Type : Average

	Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
66	1,2,4-Trichlorobenzene	1.02089	0.94163	0.87072	0.87174	0.74393	0.88978	11.494
67	Hexachlorobutadiene	1.17647	1.05764	0.98243	0.97961	0.84965	1.00916	11.868
68	Napthalene	2.27739	2.02551	1.89148	1.84913	1.56822	1.92235	13.475
69	Methanol	0.12144	0.12542	0.13308	0.13692	0.13574	0.13052	5.186
70	Ethyl Ether	0.94101	0.93382	0.94898	1.02231	1.15263	0.99975	9.256
71	Acetone	0.28031	0.25974	0.25515	0.26971	0.29812	0.27260	6.324
72	Acrylonitrile	0.45521	0.44850	0.45051	0.47371	0.52877	0.47134	7.131
73	Vinyl Acetate	2.39966	2.04252	2.06745	2.29866	2.51841	2.26534	9.154
74	2-Butanone	0.49321	0.48555	0.47734	0.46361	0.41694	0.46733	6.468
75	1-Butanol	0.12568	0.11992	0.11813	0.11851	0.10352	0.11715	6.998
76	4-Methyl-2-pentanone	0.58307	0.52902	0.49301	0.48075	0.43715	0.50460	10.858
77	2-Hexanone	0.35401	0.32398	0.30289	0.30485	0.26492	0.31013	10.499
78	Methyl-t-Butyl Ether	2.16837	1.75091	1.77112	1.80353	1.97617	1.89402	9.363
79	Acrolein	0.22941	0.21083	0.21613	0.22309	0.25000	0.22589	6.727
80	Acetonitrile	0.36855	0.29761	0.30182	0.32168	0.35917	0.32977	9.884
81	4-Ethyltoluene	2.02547	1.88222	1.65829	1.59460	1.36244	1.70460	15.123
82	1,2,3-Trichloropropane	0.27303	0.25118	0.23721	0.24053	0.21797	0.24399	8.273
$ 4	1,2-Dichloroethane-d4	0.19808	0.19718	0.19829	0.19183	0.19451	0.19598	1.411
$ 5	Toluene-d8	0.87974	0.89927	0.87953	0.90348	0.91091	0.89459	1.595
$ 6	4-Bromofluorobenzene	0.78455	0.80439	0.77332	0.76813	0.72150	0.77038	3.980

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: H9H160123

Lab File ID: BF0822T BFB Injection Date: 08/22/99

Instrument ID: MT BFB Injection Time: 1550

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.3
75	30.0 - 60.0% of mass 95	51.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	95.7
175	5.0 - 9.0% of mass 174	7.7 (8.1)1
176	95.0 - 101.0% of mass 174	93.1 (97.3)1
177	5.0 - 9.0% of mass 176	6.0 (6.4)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	MD0822T	MD0822T	MD0822T	08/22/99	1621
02	INTRA-LAB BLANK	D1MD8101	ABLKA8	08/22/99	1758
03	BASF-AMBIENT	D1DPK101	D1DPK	08/22/99	1832
04	BASF-1-1	D1DPM101	D1DPM	08/22/99	1905
05	BASF-2-1	D1DPN101	D1DPN	08/22/99	1938
06	BASF-3-1	D1DPP101	D1DPP	08/22/99	2012
07					
08					
09					
10					
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14					
15					
16					
17					
18					
19					
20					
21					
22					

Data File: /var/chem/gcms/mt.i/T082299.b/md0822t.d
Report Date: 22-Aug-1999 16:35

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mt.i
Lab File ID: md0822t.d
Analysis Type: AIR
Lab Sample ID: MD0822T
Quant Type: ISTD

Injection Date: 22-AUG-1999 16:21
Init. Calibration Date(s): 08/17/99 08/18/99
Init. Calibration Times: 22:44 00:46
Method File: /chem/gcms/mt.i/T082299.b/TO14.m

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
$ 4 1,2-Dichloroethane-d4	0.196	0.186	0.000	5.3	25.0	
$ 5 Toluene-d8	0.895	0.845	0.000	5.5	25.0	
$ 6 4-Bromofluorobenzene	0.770	0.781	0.000	-1.4	25.0	
8 Chlorodifluoromethane	2.412	1.776	0.000	26.4	999.0	
7 Dichlorodifluoromethane	4.287	3.770	0.000	12.1	25.0	
9 1,2-Dichlorotetrafluoroetha	2.253	2.157	0.000	4.3	25.0	
10 Chloromethane	0.202	0.139	0.000	31.3	25.0	<-
11 Vinyl Chloride	0.598	0.462	0.000	22.6	25.0	
69 Methanol	0.131	0.077	0.000	41.4	999.0	
12 n-Butane	0.981	0.622	0.000	36.6	999.0	
13 1,3-Butadiene	0.418	0.292	0.000	30.2	999.0	
14 Bromomethane	0.646	0.598	0.000	7.5	25.0	
15 Chloroethane	0.342	0.261	0.000	23.7	25.0	
16 Trichlorofluoromethane	2.145	2.204	0.000	-2.8	25.0	
79 Acrolein	0.226	0.178	0.000	21.2	40.0	
80 Acetonitrile	0.330	0.234	0.000	29.2	40.0	
71 Acetone	0.273	0.237	0.000	13.1	40.0	
17 Pentane	0.249	0.201	0.000	19.3	999.0	
70 Ethyl Ether	1.000	0.815	0.000	18.5	40.0	
18 1,1-Dichloroethene	0.658	0.598	0.000	9.1	25.0	
72 Acrylonitrile	0.471	0.395	0.000	16.2	40.0	
19 1,1,2-Trichlorotrifluoroeth	1.435	1.311	0.000	8.6	25.0	
22 Methylene Chloride	0.567	0.514	0.000	9.3	25.0	
21 3-Chloropropene	1.294	1.039	0.000	19.7	999.0	
20 Carbon Disulfide	2.261	2.090	0.000	7.6	999.0	
23 trans-1,2-Dichloroethene	0.645	0.726	0.000	-12.6	999.0	
78 Methyl-t-Butyl Ether	1.894	2.503	0.000	-32.1	40.0	
25 1,1-Dichloroethane	1.583	1.681	0.000	-6.2	25.0	
73 Vinyl Acetate	2.265	1.691	0.000	25.4	40.0	
24 Hexane	0.946	0.686	0.000	27.5	999.0	
74 2-Butanone	0.467	0.357	0.000	23.6	40.0	
26 cis 1,2-Dichloroethene	1.379	1.177	0.000	14.7	25.0	
27 Chloroform	3.238	2.857	0.000	11.8	25.0	
28 1,1,1-Trichloroethane	3.639	3.443	0.000	5.4	25.0	
32 1,2-Dichloroethane	0.554	0.485	0.000	12.5	25.0	

Data File: /var/chem/gcms/mt.i/T082299.b/md0822t.d
Report Date: 22-Aug-1999 16:35

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mt.i
Lab File ID: md0822t.d
Analysis Type: AIR
Lab Sample ID: MD0822T
Quant Type: ISTD

Injection Date: 22-AUG-1999 16:21
Init. Calibration Date(s): 08/17/99 08/18/99
Init. Calibration Times: 22:44 00:46
Method File: /chem/gcms/mt.i/T082299.b/TO14.m

COMPOUND	$\overline{RRF}$	RF10	MIN RRF	%D	MAX %D	
29 Cyclohexane X	0.106	0.078	0.000	27.0	999.0	
75 1-Butanol X	0.117	0.076	0.000	35.1	999.0	
31 Benzene	0.662	0.506	0.000	23.5	25.0	
30 Carbon Tetrachloride	3.527	3.266	0.000	7.4	25.0	
33 Heptane X	0.447	0.286	0.000	36.0	999.0	
35 1,2-Dichloropropane X	0.232	0.168	0.000	27.4	25.0	<-
34 Trichloroethene	0.383	0.338	0.000	11.7	25.0	
36 Dibromomethane	0.295	0.267	0.000	9.4	999.0	
37 Bromodichloromethane	0.619	0.554	0.000	10.5	999.0	
76 4-Methyl-2-pentanone X	0.505	0.355	0.000	29.7	40.0	
38 cis-1,3-Dichloropropene	0.532	0.421	0.000	20.9	25.0	
41 trans-1,3-Dichloropropene	0.497	0.421	0.000	15.3	25.0	
39 Toluene	0.931	0.790	0.000	15.1	25.0	
42 1,1,2-Trichloroethane	0.322	0.288	0.000	10.5	25.0	
77 2-Hexanone	0.310	0.240	0.000	22.6	40.0	
40 Octane	0.324	0.274	0.000	15.4	999.0	
44 Dibromochloromethane	0.753	0.727	0.000	3.4	999.0	
45 1,2-Dibromoethane	0.584	0.568	0.000	2.7	25.0	
43 Tetrachloroethene	0.434	0.404	0.000	6.9	25.0	
46 Chlorobenzene	0.917	0.837	0.000	8.7	25.0	
47 Ethylbenzene	1.416	1.300	0.000	8.2	25.0	
48 m-Xylene (For p-)	1.160	1.088	0.000	6.2	25.0	
52 Bromoform	0.751	0.684	0.000	8.8	999.0	
49 Nonane	0.618	0.465	0.000	24.7	999.0	
51 Styrene	0.671	0.621	0.000	7.4	25.0	
50 o-Xylene	1.182	1.120	0.000	5.3	25.0	
54 1,1,2,2-Tetrachloroethane	0.710	0.635	0.000	10.6	25.0	
82 1,2,3-Trichloropropane	0.244	0.247	0.000	-1.4	999.0	
53 Cumene	1.491	1.469	0.000	1.5	999.0	
55 n-Propylbenzene	1.921	1.801	0.000	6.3	999.0	
81 4-Ethyltoluene	1.705	1.685	0.000	1.2	999.0	
56 1,3,5-Trimethylbenzene	1.415	1.377	0.000	2.6	25.0	
58 Alpha-Methylstyrene	0.632	0.602	0.000	4.9	999.0	
57 Decane	0.806	0.632	0.000	21.6	999.0	
59 1,2,4-Trimethylbenzene	1.395	1.391	0.000	0.2	25.0	

Data File: /var/chem/gcms/mt.i/T082299.b/md0822t.d
Report Date: 22-Aug-1999 16:35

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mt.i
Lab File ID: md0822t.d
Analysis Type: AIR
Lab Sample ID: MD0822T
Quant Type: ISTD

Injection Date: 22-AUG-1999 16:21
Init. Calibration Date(s): 08/17/99 08/18/99
Init. Calibration Times: 22:44 00:46
Method File: /chem/gcms/mt.i/T082299.b/TO14.m

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
60 1,3-Dichlorobenzene	0.994	0.983	0.000	1.1	25.0
61 1,4-Dichlorobenzene	0.984	0.945	0.000	3.9	25.0
62 Benzyl Chloride	1.243	1.178	0.000	5.2	25.0
63 1,2-Dichlorobenzene	0.970	0.956	0.000	1.4	25.0
64 Undecane	0.890	0.722	0.000	18.9	999.0
65 Dodecane	0.864	0.772	0.000	10.7	999.0
66 1,2,4-Trichlorobenzene	0.890	0.938	0.000	-5.4	30.0
68 Napthalene	1.922	2.008	0.000	-4.5	999.0
67 Hexachlorobutadiene	1.009	1.084	0.000	-7.5	30.0

FORM 8
OTHER INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: H9H160123

Lab File ID (Standard): MD0822T Date Analyzed: 08/22/99

Instrument ID: MT Time Analyzed: 1621

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	108739	7.49	598358	8.56	529469	11.86
	UPPER LIMIT	217478	7.99	1196716	9.06	1058938	12.36
	LOWER LIMIT	54370	6.99	299179	8.06	264734	11.36
	CLIENT SAMPLE NO.						
01	INTRA-LAB BLANK	106222	7.48	547253	8.55	482691	11.85
02	BASF-AMBIENT	107332	7.47	524057	8.55	468686	11.85
03	BASF-1-1	103627	7.47	520094	8.54	461096	11.85
04	BASF-2-1	101849	7.47	509793	8.54	447816	11.85
05	BASF-3-1	104412	7.47	517369	8.55	457262	11.85
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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 used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H220000 117
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/13/99
Work Order: D1MD8101 Date Extracted:08/22/99
Dilution factor: 1 Date Analyzed: 08/22/99

QC Batch: 9234117

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	0.20	U
75-45-6	Chlorodifluoromethane	0.20	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	0.20	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.20	U
106-97-8	n-Butane	0.20	U
106-99-0	1,3-Butadiene	0.20	U
74-83-9	Bromomethane	0.20	U
75-00-3	Chloroethane	0.20	U
75-69-4	Trichlorofluoromethane	0.20	U
109-66-0	Pentane	0.50	U
75-35-4	1,1-Dichloroethene	0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	0.20	U
75-15-0	Carbon disulfide	0.20	U
107-05-1	3-Chloropropene	0.20	U
75-09-2	Methylene chloride	0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	U
110-54-3	n-Hexane	0.20	U
75-34-3	1,1-Dichloroethane	0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	U
67-66-3	Chloroform	0.20	U
71-55-6	1,1,1-Trichloroethane	0.20	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.20	U
71-43-2	Benzene	0.20	U
107-06-2	1,2-Dichloroethane	0.20	U
142-82-5	n-Heptane	0.20	U
79-01-6	Trichloroethene	0.20	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H220000 117
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/13/99
Work Order: D1MD8101 Date Extracted:08/22/99
Dilution factor: 1 Date Analyzed: 08/22/99

QC Batch: 9234117

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	0.20	U
74-95-3	Dibromomethane	0.20	U
75-27-4	Bromodichloromethane	0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	U
108-88-3	Toluene	0.20	U
111-65-9	n-Octane	0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	U
127-18-4	Tetrachloroethene	0.20	U
124-48-1	Dibromochloromethane	0.20	U
106-93-4	1,2-Dibromoethane (EDB)	0.20	U
108-90-7	Chlorobenzene	0.20	U
100-41-4	Ethylbenzene	0.20	U
136777-61-2	m-Xylene & p-Xylene	0.20	U
111-84-2	Nonane	0.20	U
95-47-6	o-Xylene	0.20	U
100-42-5	Styrene	0.20	U
75-25-2	Bromoform	0.20	U
98-82-8	Cumene	0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U
103-65-1	n-Propylbenzene	0.20	U
108-67-8	1,3,5-Trimethylbenzene	0.20	U
124-18-5	n-Decane	0.20	U
98-83-9	alpha-Methylstyrene	0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
100-44-7	Benzyl chloride	0.20	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H220000 117
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/13/99
Work Order: D1MD8101 Date Extracted:08/22/99
Dilution factor: 1 Date Analyzed: 08/22/99

QC Batch: 9234117

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	0.20	U
1120-21-4	n-Undecane	0.20	U
112-40-3	n-Dodecane	0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.20	U
87-68-3	Hexachlorobutadiene	0.20	U
91-20-3	Naphthalene	0.20	U
67-56-1	Methanol	10	U
60-29-7	Ethyl ether	0.50	U
67-64-1	Acetone	5.0	U
107-13-1	Acrylonitrile	0.50	U
108-05-4	Vinyl acetate	0.50	U
78-93-3	2-Butanone (MEK)	0.50	U
71-36-3	1-Butanol	0.50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	0.50	U
591-78-6	2-Hexanone	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
107-02-8	Acrolein	0.50	U
75-05-8	Acetonitrile	1.0	U

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

CMS Analysis: TO-14 Canisters

Inst: MT

Analyst: [illegible]

Date: 8/17/99 System Date ok (y/n): Y Reset Date (y/n): N

Time: 1200 System Time ok (y/n): Y Reset Time (y/n): N

~~AIO~~ I081799

Preventive Maintenance Performed ☑

Lot: NA Lot: Lot: Lot: Lot:

Batch: NA Batch: Batch: Batch: Batch:

ICAL Date: 8/17/99 Multiplier Setting (Volts): STD ID: CX-768

CCAL Date: NA Surr/IS ID: CX-664

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	2046	Tune	BF0817T	—	Tune	—	100	✓	NA	NA
	2244	IC-030	HI0817T	—	CX-768	—	300	✓		
	2315	IC-015	MH0817T	—		—	150	✓		
	2345	IC-010	MD0817T	—		—	100	✓		
	0016	IC-005	ML0817T	—		—	50	✓		
	0046	IC-001	LW0817T	—		—	10	✓		
	0116	QC Init	QCREP1	—		—	100	✓		
	0147		2	—		—		✓		
	0217		3	—		—		✓		
	0248		4	—		—		✓		

8/17/99 [illegible]

Analyst: [illegible] Date: 8/18/99 Approved by: Date:

MS027R2.DOC, 3/23/99

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

GCMS Analysis: TO-14 Canisters Inst: MT

Analyst: CMT

Date: 8/22/99 System Date ok (y/n): y Reset Date (y/n): n

Time: 1200 System Time ok (y/n): y Reset Time (y/n): n

AREA=108759

Preventive Maintenance Performed ☑

Lot: HGH160123 Lot: Lot: Lot: Lot:

Batch: 92341/7 Batch: Batch: Batch: Batch:

ICAL Date: 8/17/99 Multiplier Setting (Volts): 1918 STD ID: CX-768

CCAL Date: 8/22/99 Surr/IS ID: CX-664

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1550	Tune	BFO822T	—	Tune	—	—	✓	—	—
	1621	CCC	WA08822T	—	CCC CX-768	—	100	✓	—	—
	1651	REF	RFO822T	—	REF CX-767	—	100	—	—	—
	1725	BLK 8/23/99	ABLKA97	—	BLK	—	500	—	—	—
	1758	BLK JM	ABLKA98	—	BLK	—	500	✓	—	—
	1832	HGH160123	A1DPK	0177	MA	—	500	✓	2	15
	1905		D1DPM	93063		—	500	✓	3	16
	1938		D1DPN	12882		—	500	✓	4	17
			D1DPP	1456		—	500	✓	5	18

8/23/99 JM

Analyst: JM Date: 8/23/99 Approved by: Date:

Quanterra GC/MS Air Continuing Calibration Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1

Analysis Date:	8/23/99	CCAL Batch:	TO82399	Instrument:	MT	ICAL Batch:	TO81799

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd ✓
1. Did BFB meet tune criteria?		✓			✓
2. Were all standards injected within 12 hr of BFB?		✓			
3. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars ±40%R; polar analytes ±40%R and ≤2 polars ±55%R)		✓			
4. Was date/time of analysis verified between analysis header and logbook as correct?		✓			
5. Was the CCAL compared to the correct ICAL?		✓			
6. Was a mid-level standard used for CCAL?		✓			
7. Is the %D ≤ 25% for all TO-14 analytes? (1,2,4-Trichloro-benzene and hexachlorobutadiene %D ≤ 30% and up to 4 analytes %D ≤ 40%)		✓		2 out <40%	
8. Is the %D ≤ 40% for all polar analytes? (No criteria for methanol and n-butanol, and up to 2 polar analytes %D ≤ 50%.)		✓			
9. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
10. Have alternate hits/manual integrations been verified as correct and are correct RFs listed in CCAL summary?		✓			
11. Elution order checked on isomeric pairs/coeluters?					
• cis- and trans- isomers		✓			
• ethyl benzene / m/p-xylene / o-xylene		✓			
• 1,3,5-trimethylbenzene / 1,2,4-trimethylbenzene / 4-ethyl toluene		✓			
• 1,3- , 1,4- , and 1,2-dichlorobenzene		✓			
12. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				
13. Does the CCAL folder contain **complete** data in the following order? Data review checklist, a **complete** runlog, tune pass/fail page, m/z list, tune chromatogram, Target CCAL summary, Quan report, chromatogram, manual integrations, Entech report and leak check report.		✓			✓

Analyst:	Date: 8/23/99	2nd Level Reviewer:	Date: 8/24/99
Comments:		Comments:	

Quanterra GC/MS Air Initial Calibration Data Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1

Analysis Date:	8/17/99	Instrument:	MT	ICAL Batch	TO81799

Review Items	N/A	Yes	No	If No, why is data reportable?	2
1. Did BFB meet tune criteria?		✓			✓
2. Were all standards injected within 12 hr of BFB?		✓			
3. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars +40%R; polar analytes ±40%R and ≤2 polars +55%R)		✓			
4. Was date/time of analysis verified between analysis header and logbook as correct?		✓			
5. Were at least 5 levels of each compound analyzed?		✓			
6. Is %RSD for all nonpolar analytes ≤ 30%?		✓			
7. Is %RSD for all polar analytes ≤ 40%? (No criteria for methanol and n-butanol.)		✓			
8. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
9. Have alternate hits/manual integrations been verified as correct and are correct RFs listed in ICAL summary?		✓			
10. Was ICAL summary form processed using correct result files? (Analyst and 2nd reviewer should compare 2-3 RFs from each standard quan report to ICAL summary.)		✓			
11. Are the ICAL start and end dates/times correct on ICAL summary?		✓			
12. Elution order checked on isomeric pairs?		✓			
• cis- and trans- isomers		✓			
• ethyl benzene / m/p-xylene / o-xylene		✓			
• 1,3,5-trimethylbenzene / 1,2,4-trimethylbenzene / 4-ethyl toluene		✓			
• 1,3- , 1,4- , and 1,2-dichlorobenzene		✓			
13. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				
14. Does the ICAL folder contain complete data in the following order? Data review checklist, a complete runlog, [weekly reference check recovery, Quan report, IS summary, chromatogram and Entech report], tune pass/fail page, m/z list, tune chromatogram, Target ICAL summary, followed by [Quan reports, chromatograms, manual integrations and Entech reports for all standards, in order from low to high standard], leak check report, Calibration Standard summary.		✓			✓

Analyst:	Date: 8/19/99	2nd Level Reviewer :	Date: 8/24/99
Comments:		Comments:	

Quanterra GC/MS Air Data Review / Narrative Checklist **LOT/Project #** H9H160123

Method: TO-14 - KNOX-MS-0001 Rev 1 **Page 1 of 1**

Analysis Date:	8/22/99		
Instrument:	MT		
ICAL Batch:	T081799		
CCAL:	MT08227		

Review Items	N/A	Yes	No	Why is data reportable?	Init ✓
A. Tune / Continuing Calibration					
1. Were all samples injected within 12 hr of BFB?		✓			✓
2. Has a Continuing Calibration Checklist been completed for each analytical batch?		✓			
3. Was the correct CCAL used for quantitation? (Manually calculate 1-2 compounds for batch.)		✓			
B. CLIENT SAMPLE AND QC SAMPLE Results					
1. Were all special project requirements met?		✓			
2. Were dilution factors/header information verified?		✓			
3. Are surrogates and internal standards within QC limits? (70-130% R for surr.; 50-150%R from CCAL for IS) *If no, list samples/reason (e.g., sur1):* Sample / Reason / Sample / Reason		✓		☐[sur1] DUP surr. %R demonstrated same effect. ☐[sur2] Reanalysis demonstrated same effect. ☐[sur5] At the client's request, data was flagged as estimated and released without further investigation. * ☐[is1] Per client, reanalysis was not performed * ☐[is2] Reanalysis confirmed a matrix effect. ☐ See Comment no.	
4. Were positive hits evaluated using qualitative identification criteria and technical judgement?		✓			
5. Are positive results within calibration range?		✓			
6. For dilutions, is highest concentration hit > 5 ppb?		✓			
7. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
8. Have alternate hits/manual integrations been verified as correct?		✓			
9. Final report acceptable? (Results correct, RLs calculated correctly, units correct, surrogate %R correct, appropriate flags used, dilution factor correct, analysis dates correct.)		✓			
10. Was a narrative prepared and all deviations noted?		✓			
C. Preparation/Matrix QC					
1. System blank run every 12 hours prior to samples?		✓			
2. System blank surrogate recoveries within QC limits (70-130% R) ?		✓		☐[mb1] All sample surrogates OK and there is no analyte >RL in samples associated with blank.*	
3. Are all analytes present in the system blank ≤ RL? *If no, list blank ID:*		✓		☐[mb3] There is no analyte > RL in the samples associated with method blank.* ☐[mb4] Sample results are > 20x higher than blank. ☐[mb6] Common lab contaminant (methylene chloride/Freon) ≤2x RL.*	
4. DUP done per 20 samples and are all RPDs within limits? (≤30 RPD for nonpolars; ≤40 RPD for polars; no criteria for methanol and n-butanol) *If no, list DUP ID:*		✓			
5. Were MS run #'s assigned correctly?	✓				
D. Other					
1. Are all nonconformances documented appropriately and copy included with deliverable?	✓				✓

Analyst:	Date: 8/26/99	Analyst:	Date: 8/30/99
Comments: Unknown type of package providing ROI forms		Comments:	

* Such action must be taken in consultation with client

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/22/99
Time: 12:09:54

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
			_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGroup
_ Bench Sheet Copied per COC

Extractionist: _____

Concentrationist: _____

****
* *
* QC BATCH: 9234117 *
* *
****

PREP DATE: 8/22/99
COMP DATE: 8/22/99

Reviewer/Date: _____ / 0/00/00

Volatile Organics, (GCMS-TO14 Low Level)-Air
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	8/27/99	H9H160123-001 D1DPK-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/27/99	H9H160123-002 D1DPM-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/27/99	H9H160123-003 D1DPN-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/27/99	H9H160123-004 D1DPP-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	0/00/00	H9H220000-117 D1MD8-1-01B		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 5

Canister Dilution
Initial & In can

analyst : dwc client: ???

notebook: 1583 page: 77

barometer: 735.1 date: 8/21/99

wo #	sample	can	P init inches	P init Abs,mm	P final psig	P final Abs,mm	dilution factor
h9h160123	d1dpk	0177	-7.5	544.6	16.0	1562.5	2.87
	d1dpm	93063	-14.2	374.4	16.0	1562.5	4.17
	d1dpn	12882	-10.8	460.8	15.2	1521.2	3.30
	d1dpp	1456	-11.6	440.5	16.0	1562.5	3.55

1 psig = 2.036 inch Hg
Pinit(Abs,mm)=(Pinit(inch)*25.4mm/inch)+Pbar(mm)
Pfinal(Abs,mm)=(Pfinal(psig)*2.036 (inch Hg/psig)*25.4 (mm/inch))+Pbar(mm)
dilution factor = Pfinal(Abs,mm)/Pinit(Abs,mm)

candil.xls
rev.01

BLK = DUP08101

9234117

Lot # H9H160123 [illegible] 8/21/99 P_{BAR} = 735.1

Quant #	Can #	P_i (")	P_f psig	to can	vol (ml)	pf psig
D1DPK	0177	-7.5	16.0			
D1DPM	93063	-14.2	16.0			
D1DPN	12882	-10.8	15.2			
D1DPP	1456	-11.6	16.0			

Lot # H9H210143 [illegible] 8/21/99 P_{BAR} = 735.1

Quant #	Can #	P_i (")	P_f psig
D1LT5	93173	0.0	14.2
T8	1100	0.0	14.6
T9	775	-0.2	14.0
T9	0116	-0.2	14.8

8/23/99 P_{BAR} = 734.6

Lot # H9H110149 [illegible] 8/22/99 P_{BAR} = 734.6

Quant #	Can #	P_i (")	P_f psig	to can	vol (ml)	pf psig
D16NK	12290	-2.7	13.6	0 → 41.8		
D16NQ	04426	-2.1	13.6	0 → 43.8 / 0 → 42.6		
D16NW	93271	-1.8	13.6			
D16P0	92095	-2.5	13.6			
D16P3	04327	-2.3	14.0	0 → 41.0		
D16P5	12636	-2.5	13.2			
D16P7	11147	-2.3	14.0	0 → 42.2		
D16PA	12490	-2.6	13.6	12880	30 ml + 40 ml H_2O	16.0
D16PF	12346	-2.0	13.0			
D16PH	11205	-2.6	13.6	0 → 41.2		
D16PK	92091	-2.4	14.2			
D16PL	93219	-1.7	14.0	0 → 43.4		
D16PM	04218	-2.0	14.0	0 → 41.6		

Lot # H9H250152 [illegible] 8/25/99 P_{BAR} = 730.4

Quant #	Can #	P_i (")	P_f psig	to can	vol (ml)	pf psig
D1Q49	93104	-0.3	13.8			
D1Q4D	12612	-0.5	13.8			
D1Q4E	93164	-0.3	13.8			
D1Q4F	04407	0.0	13.6			
D1Q4G	12824	0.0	13.8			
D1Q4H	04733	0.0	13.8			

Continued on Page

Read and Understood By

[illegible] 8/25/99

Signed Date Signed Date

B. SDG H9H160124

Organic Analyses Support Documentation

Environmental Standards Project Name: Basf | Wyandotte
Sample Collection Dates: 8/13/99
Job Number: 9901092S
Project Manager: Kendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: K. Grega
Completion Date: 11/99

Applicable Sample No's.: ☑ Refer to Table 1 in the Quality Assurance Review

Deliverables: CLP ☑ like
Tier I ☐
Tier II ☐
Limited ☐
Other ☐

Sample No.	Lab. Control No.
SDG H9H160124	

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail (Check (✓) If Yes or Footnote Letter for Comments Below)				Problems Identified (Check (✓) If Yes or Footnote Number for Comments Below)				Support Documentation Attachments (Check (✓) If Yes -- or Identify Attachment No.)			
	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)
Holding Times	✓				✓				✓			
Blank Analysis Results: Target Compounds	✓								✓			
Blank Analysis Results: TICs												
System Mntr. Cmpds. &/or Surrogate Spike Rslts.	✓								✓			
Matrix Spike / Matrix Spike Duplicate Results												
Blank Spike Results	✓								✓			
Duplicate Analysis Results ☐ Field ☐ Lab												
Qualitative Identification: Target Compounds	✓											
Qualitative Identification: TICs												
DFTPP & BFB Mass Tuning	✓								✓			
GC Instrument Performance	•											
Initial Calibrations	✓								✓			
Continuing Calibrations	✓								✓			
Quantitation of Results	✓											
DDT / Endrin Breakdown												
Surrogate Retention Time Shifts												
Internal Standards Performance	✓								✓			
Resolution Check Standards												
Analytical Sequence												
Florisil Cartridge Check & GPC Calibration												
GC Column Agreement												
Others:												

Comments: Data is acceptable for use unless otherwise qualified

BLANK ANALYSIS RESULTS FOR TARGET ORGANIC COMPOUNDS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (units) ppbv	Qualification Limit 5x	10x
TO-14	Air	MB	method blank	naphthalene	0.21		
			carrier air	n-decane	0.88	4.4	
				n-undecane	1.4	7	
				n-dodecane	0.61	3.05	

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: ______

Aq. = Aqueous; S = Solid

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Rinse Blank; FB = Field Blank
IB = Instrument Blank; SB = Storage Blank

* = Inferred from instrument printouts and/or supporting data; mass spectra not provided.

+ = Contaminant observed on one column only.

Notes: ______

EPA-19 TO-14 SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESKNX QESSDG:

Lot #: H9H160124

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	BASF-3-2	99	99	98	00
02	BASF-2-2	99	100	99	00
03	BASF-1-2	99	99	99	00
04	BASF-CARRIER AIR	99	101	99	00
05	METHOD BLK. D1V68101	98	100	99	00
06	LCS D1V68102	98	97	98	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(70-130)
SRG02	= Toluene-d8	(70-130)
SRG03	= 4-Bromofluorobenzene	(70-130)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

EPA-19 TO-14 CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESKNX SDG No:

Lot #: H9H270000 WO #: D1V68102
BATCH: 9239325

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	10	101	70 - 130	
Chlorobenzene	10	10	101	70 - 130	
1,1-Dichloroethene	10	9.6	96	70 - 130	
Toluene	10	9.9	99	70 - 130	
Trichloroethene	10	10	102	70 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

Data File: /var/chem/gcms/mm.i/M083099.b/RF0830M.d
Report Date: 30-Aug-1999 16:01

Quanterra Knoxville

LCS full list

RECOVERY REPORT

Client Name:
Sample Matrix: GAS
Lab Smp Id: D1V68102
Level: LOW
Data Type: MS DATA
SpikeList File: to14.spk
Sublist File: RTall.sub
Method File: /chem/gcms/mm.i/M083099.b/TO14.m
Misc Info: M083099,,,100ML CX-767

Client SDG: H9H270000
Fraction: OTHER
Client Smp ID: INTRA-LAB CHECK
Operator: 13114
SampleType: METHSPIKE
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ppb(v/v)	CONC RECOVERED ppb(v/v)	% RECOVERED	LIMITS
7 Dichlorodifluorome	10.00	9.706	97.06	70-130
8 Chlorodifluorometh	10.00	9.683	96.83	70-130
9 1,2-Dichlorotetraf	10.00	9.705	97.05	70-130
10 Chloromethane	10.00	9.436	94.36	70-130
11 Vinyl Chloride	10.00	9.503	95.03	70-130
12 n-Butane	10.00	9.356	93.56	70-130
13 1,3-Butadiene	10.00	9.363	93.63	70-130
14 Bromomethane	10.00	9.387	93.87	70-130
15 Chloroethane	10.00	9.560	95.60	70-130
16 Trichlorofluoromet	10.00	9.461	94.61	70-130
17 Pentane	10.00	9.619	96.19	70-130
18 1,1-Dichloroethene	10.00	9.568	95.68	70-130
19 1,1,2-Trichlorotri	10.00	9.583	95.83	70-130
20 Carbon Disulfide	10.00	9.476	94.76	70-130
21 3-Chloropropene	10.00	9.478	94.78	70-130
22 Methylene Chloride	10.00	9.832	98.32	70-130
23 trans-1,2-Dichloro	10.00	10.15	101.49	70-130
24 Hexane	10.00	9.814	98.15	70-130
25 1,1-Dichloroethane	10.00	9.894	98.94	70-130
26 cis 1,2-Dichloroet	10.00	9.959	99.59	70-130
27 Chloroform	10.00	9.741	97.41	70-130
28 1,1,1-Trichloroeth	10.00	9.850	98.50	70-130
29 Cyclohexane	10.00	10.14	101.35	70-130
30 Carbon Tetrachlori	10.00	9.950	99.50	70-130
31 Benzene	10.00	10.10	101.04	70-130
32 1,2-Dichloroethane	10.00	9.964	99.64	70-130
33 Heptane	10.00	9.989	99.89	70-130
34 Trichloroethene	10.00	10.17	101.71	70-130
35 1,2-Dichloropropan	10.00	10.05	100.51	70-130
36 Dibromomethane	10.00	10.07	100.75	70-130
37 Bromodichlorometha	10.00	10.09	100.94	70-130
38 cis-1,3-Dichloropr	10.00	10.21	102.10	70-130
39 Toluene	10.00	9.921	99.21	70-130

Data File: /var/chem/gcms/mm.i/M083099.b/RF0830M.d
Report Date: 30-Aug-1999 16:01

SPIKE COMPOUND	CONC ADDED ppb(v/v)	CONC RECOVERED ppb(v/v)	% RECOVERED	LIMITS
40 Octane	10.00	10.01	100.14	70-130
41 trans-1,3-Dichloro	10.00	10.06	100.56	70-130
42 1,1,2-Trichloroeth	10.00	9.777	97.77	70-130
43 Tetrachloroethene	10.00	10.02	100.26	70-130
44 Dibromochlorometha	10.00	10.09	100.87	70-130
45 1,2-Dibromoethane	10.00	10.02	100.18	70-130
46 Chlorobenzene	10.00	10.11	101.09	70-130
47 Ethylbenzene	10.00	9.899	98.99	70-130
48 m-Xylene (For p-)	10.00	9.902	99.02	70-130
49 Nonane	10.00	10.08	100.85	70-130
50 o-Xylene	10.00	9.951	99.51	70-130
51 Styrene	10.00	9.948	99.48	70-130
52 Bromoform	10.00	10.07	100.71	70-130
53 Cumene	10.00	9.952	99.52	70-130
54 1,1,2,2-Tetrachlor	10.00	10.09	100.86	70-130
55 n-Propylbenzene	10.00	9.980	99.80	70-130
56 1,3,5-Trimethylben	10.00	9.812	98.12	70-130
57 Decane	10.00	10.19	101.95	70-130
58 Alpha-Methylstyren	10.00	10.05	100.51	70-130
59 1,2,4-Trimethylben	10.00	9.973	99.73	70-130
60 1,3-Dichlorobenzen	10.00	10.23	102.35	70-130
61 1,4-Dichlorobenzen	10.00	9.918	99.18	70-130
62 Benzyl Chloride	10.00	10.13	101.30	70-130
63 1,2-Dichlorobenzen	10.00	10.26	102.58	70-130
64 Undecane	10.00	10.66	106.55	70-130
65 Dodecane	10.00	10.43	104.32	70-130
66 1,2,4-Trichloroben	10.00	10.61	106.09	70-130
67 Hexachlorobutadien	10.00	10.42	104.24	70-130
68 Napthalene	10.00	11.58	115.83	70-130
69 Methanol	40.00	36.80	92.00	60-140
70 Ethyl Ether	20.00	18.84	94.19	60-140
71 Acetone	20.00	18.99	94.93	60-140
72 Acrylonitrile	20.00	18.94	94.71	60-140
73 Vinyl Acetate	20.00	19.68	98.38	60-140
74 2-Butanone	20.00	20.04	100.22	60-140
75 1-Butanol	20.00	20.80	104.02	60-140
76 4-Methyl-2-pentano	20.00	20.54	102.73	60-140
77 2-Hexanone	20.00	20.37	101.86	60-140
78 Methyl-t-Butyl Eth	20.00	20.00	100.00	60-140
79 Acrolein	20.00	19.55	97.76	60-140
80 Acetonitrile	20.00	19.23	96.15	60-140
81 4-Ethyltoluene	10.00	9.990	99.90	70-130
82 1,2,3-Trichloropro	10.00	9.977	99.77	70-130

Data File: /var/chem/gcms/mm.i/M083099.b/RF0830M.d
Report Date: 30-Aug-1999 16:01

Quanterra Knoxville

RECOVERY REPORT

Client Name:
Sample Matrix: GAS
Lab Smp Id: D1V68102
Level: LOW
Data Type: MS DATA
SpikeList File: to14.spk
Sublist File: RTall.sub
Method File: /chem/gcms/mm.i/M083099.b/TO14.m
Misc Info: M083099,,,100ML CX-767

Client SDG: H9H270000
Fraction: OTHER
Client Smp ID: INTRA-LAB CHECK
Operator: 13114
SampleType: METHSPIKE
Quant Type: ISTD

	SURROGATE COMPOUND	CONC ADDED ppb(v/v)	CONC RECOVERED ppb(v/v)	% RECOVERED	LIMITS
$ 4	1,2-Dichloroethane	8.000	7.879	98.48	70-130
$ 5	Toluene-d8	8.000	7.797	97.46	70-130
$ 6	4-Bromofluorobenze	4.000	3.921	98.03	70-130

BLANK WORKORDER NO.

D1V68101

EPA-19 TO-14 METHOD BLANK SUMMARY

Lab Name: QUANTERRA

Lab Code: QESKNX

SDG Number:

Lab File ID: ABLKX4.d

Lot Number: H9H160124

Date Analyzed: 08/30/99

Time Analyzed: 16:53

Matrix: AIR

Date Extracted: 08/26/99

GC Column: ID: .00

Extraction Method: TO-14

Instrument ID: MM

Level: (low/med) LOW

samples collected on 8/13/99

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BASF-3-2	D1DPV101	D1DPVR.d	08/30/99	19:54
02	BASF-2-2	D1DQ0101	D1DQ0R.d	08/30/99	20:24
03	BASF-1-2	D1DQ1101	D1DQ1R.d	08/30/99	20:54
04	BASF-CARRIER AIR	D1DQ2101	D1DQ2R.d	08/30/99	21:24
05	CHECK SAMPLE	D1V68102 C	RF0830M.d	08/30/99	14:55
06					
07					
08					
09					
10					
11					
12					
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14					
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16					
17					
18					
19					
20					
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28					
29					
30					

COMMENTS:

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: M082399

Lab File ID: BF0823M BFB Injection Date: 08/23/99

Instrument ID: MM BFB Injection Time: 1536

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	42.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	94.6
175	5.0 - 9.0% of mass 174	6.6 (7.0)1
176	95.0 - 101.0% of mass 174	92.3 (97.6)1
177	5.0 - 9.0% of mass 176	5.8 (6.3)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	LW0823M	LW0823M	LW0823M	08/23/99	1813
02	ML0823M	ML0823M	ML0823M	08/23/99	1842
03	MD0823M	MD0823M	MD0823M	08/23/99	1911
04	MH0823M	MH0823M	MH0823M	08/23/99	1940
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: M082399

Lab File ID: BF0824MX BFB Injection Date: 08/24/99

Instrument ID: MM BFB Injection Time: 1537

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.4
75	30.0 - 60.0% of mass 95	42.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	95.4
175	5.0 - 9.0% of mass 174	6.6 (6.9)1
176	95.0 - 101.0% of mass 174	94.3 (98.8)1
177	5.0 - 9.0% of mass 176	6.0 (6.3)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	HI0824M	HI0824M	HI0824M	08/24/99	1642
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date : 24-Aug-1999 18:18

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 23-AUG-1999 18:13
End Cal Date : 24-AUG-1999 16:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mm.i/M082499.b/TO14.m
Cal Date : 24-Aug-1999 18:00 m
Curve Type : Average

Calibration File Names:
Level 1: /var/chem/gcms/mm.i/M082399.b/LW0823M.d
Level 2: /var/chem/gcms/mm.i/M082399.b/ML0823M.d
Level 3: /var/chem/gcms/mm.i/M082399.b/MD0823M.d
Level 4: /var/chem/gcms/mm.i/M082399.b/MH0823M.d
Level 5: /var/chem/gcms/mm.i/M082499.b/HI0824M.d

Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
7 Dichlorodifluoromethane	2.60118	2.16058	2.07396	2.05528	2.00557	2.17931	11.122
8 Chlorodifluoromethane	1.71844	1.41515	1.37974	1.36366	1.35534	1.44647	10.630
9 1,2-Dichlorotetrafluoroethane	2.05050	1.65595	1.56111	1.52323	1.39808	1.63778	15.177
10 Chloromethane	0.36527	0.27151	0.25615	0.25173	0.22521	0.27398	19.598
11 Vinyl Chloride	1.05154	0.89626	0.85438	0.86696	0.84740	0.90331	9.404
12 n-Butane	1.60221	1.41515	1.30714	1.29898	1.20767	1.36623	11.054
13 1,3-Butadiene	0.76928	0.67302	0.63521	0.62256	0.58630	0.65728	10.629
14 Bromomethane	0.93255	0.94344	0.89381	0.87356	0.86557	0.90179	3.862
15 Chloroethane	0.35974	0.40590	0.37961	0.36826	0.37342	0.37738	4.643
16 Trichlorofluoromethane	1.86233	1.90058	1.92332	1.83305	1.88658	1.88117	1.852
17 Pentane	0.19370	0.20295	0.21536	0.19494	0.21397	0.20419	5.004
18 1,1-Dichloroethene	0.68627	0.72513	0.78613	0.71307	0.74858	0.73184	5.159
19 1,1,2-Trichlorotrifluoroethan	1.42511	1.39979	1.51978	1.36311	1.38164	1.41789	4.330
20 Carbon Disulfide	2.86406	2.61913	2.91230	2.66777	2.83434	2.77952	4.621
21 3-Chloropropene	0.73054	0.69277	0.74045	0.68595	0.72210	0.71436	3.339
22 Methylene Chloride	0.71394	0.63956	0.69667	0.63044	0.66155	0.66843	5.390
23 trans-1,2-Dichloroethene	1.14839	0.92479	0.94494	0.90874	0.92027	0.96942	10.408
24 Hexane	0.96299	0.78382	0.77226	0.76455	0.73114	0.80295	11.406
25 1,1-Dichloroethane	2.35766	1.94501	1.98314	1.91842	1.96164	2.03318	8.997
26 cis 1,2-Dichloroethene	1.28952	1.12719	1.11054	1.10423	1.07845	1.14198	7.383
27 Chloroform	2.77551	2.29277	2.26186	2.25535	2.21315	2.35973	9.923
28 1,1,1-Trichloroethane	2.57350	2.18910	2.14738	2.11868	2.10256	2.22624	8.844
29 Cyclohexane	0.14873	0.12129	0.11385	0.11070	0.10262	0.11944	14.812
30 Carbon Tetrachloride	2.55413	2.20281	2.12182	2.07159	1.96548	2.18317	10.283
31 Benzene	0.92140	0.72833	0.68726	0.65943	0.58865	0.71701	17.445
32 1,2-Dichloroethane	0.40387	0.33056	0.32737	0.32198	0.31446	0.33965	10.721

Report Date : 24-Aug-1999 18:18

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 23-AUG-1999 18:13
End Cal Date : 24-AUG-1999 16:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mm.i/M082499.b/TO14.m
Cal Date : 24-Aug-1999 18:00 m
Curve Type : Average

Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
33 Heptane	0.78718	0.64950	0.62703	0.61503	0.57895	0.65154	12.280
34 Trichloroethene	0.53628	0.39918	0.38233	0.36703	0.34245	0.40545	18.757
35 1,2-Dichloropropane	0.45707	0.37138	0.36311	0.35172	0.33123	0.37490	12.895
36 Dibromomethane	0.44740	0.37173	0.36177	0.35137	0.33062	0.37258	11.948
37 Bromodichloromethane	0.66808	0.57185	0.56439	0.55307	0.53169	0.57781	9.118
38 cis-1,3-Dichloropropene	0.71705	0.60352	0.59392	0.57602	0.55950	0.61000	10.193
39 Toluene	1.02597	0.84915	0.82677	0.78006	0.76139	0.84867	12.392
40 Octane	0.27526	0.24042	0.23687	0.22501	0.21216	0.23794	9.928
41 trans-1,3-Dichloropropene	0.38574	0.33719	0.33963	0.32259	0.32496	0.34202	7.467
42 1,1,2-Trichloroethane	0.37205	0.31300	0.30841	0.28865	0.28050	0.31252	11.488
43 Tetrachloroethene	0.46553	0.37419	0.36559	0.34304	0.30659	0.37099	15.893
44 Dibromochloromethane	0.72002	0.65484	0.64828	0.62178	0.58885	0.64675	7.500
45 1,2-Dibromoethane	0.68744	0.57287	0.56213	0.53439	0.50039	0.57144	12.364
46 Chlorobenzene	1.02125	0.83254	0.79995	0.78034	0.72457	0.83173	13.583
47 Ethylbenzene	1.62323	1.32144	1.26663	1.20092	1.14128	1.31070	14.298
48 m-Xylene (For p-)	1.30264	1.06698	1.04260	0.97781	0.92007	1.06202	13.770
49 Nonane	0.98206	0.79345	0.74478	0.67266	0.56169	0.75093	20.760
50 o-Xylene	1.36449	1.12799	1.10135	1.04556	0.96953	1.12179	13.249
51 Styrene	0.90321	0.74099	0.70440	0.65016	0.56128	0.71201	17.766
52 Bromoform	0.93626	0.86983	0.86691	0.79669	0.70564	0.83507	10.489
53 Cumene	1.85222	1.56660	1.50307	1.43330	1.28080	1.52720	13.786
54 1,1,2,2-Tetrachloroethane	1.13314	0.94981	0.93340	0.88974	0.81709	0.94464	12.410
55 n-Propylbenzene	2.56091	2.21708	2.17931	2.04395	1.81893	2.16404	12.529
56 1,3,5-Trimethylbenzene	1.78517	1.44611	1.41148	1.34258	1.17325	1.43172	15.630
57 Decane	1.39896	1.23017	1.22797	1.12935	0.92886	1.18306	14.540
58 Alpha-Methylstyrene	0.80878	0.69848	0.70507	0.68649	0.62529	0.70482	9.387
59 1,2,4-Trimethylbenzene	1.84561	1.50209	1.48760	1.40747	1.22971	1.49450	15.002
60 1,3-Dichlorobenzene	1.22852	1.04611	1.05367	1.02735	0.91212	1.05355	10.755
61 1,4-Dichlorobenzene	1.23938	1.04564	1.05276	0.98596	0.79014	1.02277	15.751
62 Benzyl Chloride	1.46695	1.20683	1.20725	1.13557	0.94172	1.19166	15.804
63 1,2-Dichlorobenzene	1.16195	1.00038	1.01449	0.98938	0.87773	1.00878	10.050
64 Undecane	1.37913	1.35427	1.36848	1.20397	0.94907	1.25098	14.645
65 Dodecane	1.44004	1.25873	1.36456	1.31281	0.94226	1.26368	15.172

Report Date : 24-Aug-1999 18:18

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 23-AUG-1999 18:13
End Cal Date : 24-AUG-1999 16:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mm.i/M082499.b/TO14.m
Cal Date : 24-Aug-1999 18:00 m
Curve Type : Average

	Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
66	1,2,4-Trichlorobenzene	1.01180	0.76224	0.85150	0.86839	0.71574	0.84193	13.532
67	Hexachlorobutadiene	0.93484	0.91822	0.92299	0.83389	0.59060	0.84011	17.274
68	Napthalene	1.99433	1.56499	1.76752	1.84931	1.47111	1.72945	12.258
69	Methanol	0.21653	0.17881	0.16526	0.15248	0.17043	0.17670	13.711
[illegible]	Ethyl Ether	0.46627	0.47254	0.51516	0.45730	0.49242	0.48074	4.819
[illegible]	Acetone	0.25043	0.26054	0.28035	0.25109	0.26461	0.26141	4.673
72	Acrylonitrile	0.40401	0.40014	0.44609	0.39208	0.39904	0.40827	5.285
73	Vinyl Acetate	2.73539	2.21981	2.24677	2.21505	2.21429	2.32626	9.848
74	2-Butanone	0.45521	0.37518	0.37362	0.37064	0.35726	0.38638	10.124
75	1-Butanol	0.11820	0.09196	0.08962	0.08908	0.08025	0.09382	15.278
76	4-Methyl-2-pentanone	0.86457	0.65085	0.63379	0.61137	0.57889	0.66789	16.948
77	2-Hexanone	0.32696	0.27054	0.27379	0.25952	0.25003	0.27617	10.829
78	Methyl-t-Butyl Ether	2.41854	1.93075	1.97729	1.89067	1.94032	2.03151	10.757
79	Acrolein	0.18402	0.21502	0.22950	0.21024	0.22301	0.21236	8.231
80	Acetonitrile	0.21861	0.26383	0.28321	0.25741	0.27274	0.25916	9.514
81	4-Ethyltoluene	2.22568	1.85493	1.83276	1.73709	1.52401	1.83490	13.877
82	1,2,3-Trichloropropane	0.22096	0.18245	0.17797	0.17022	0.15942	0.18220	12.822
$ 4	1,2-Dichloroethane-d4	0.19989	0.19795	0.19292	0.19360	0.19022	0.19492	2.015
$ 5	Toluene-d8	0.79615	0.80556	0.80826	0.77391	0.75878	0.78853	2.717
$ 6	4-Bromofluorobenzene	0.82224	0.83444	0.83701	0.81965	0.79400	0.82147	2.080

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: H9H160124

Lab File ID: BF0830M BFB Injection Date: 08/30/99

Instrument ID: MM BFB Injection Time: 1357

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.6
75	30.0 - 60.0% of mass 95	44.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	92.9
175	5.0 - 9.0% of mass 174	6.6 (7.1)1
176	95.0 - 101.0% of mass 174	91.3 (98.3)1
177	5.0 - 9.0% of mass 176	6.1 (6.7)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	MD0830M	MD0830M	MD0830M	08/30/99	1425
02	INTRA-LAB CHECK	D1V68102	RF0830M	08/30/99	1455
03	INTRA-LAB BLANK	D1V68101	ABLKX4	08/30/99	1653
04	BASF-3-2	D1DPV101	D1DPVR	08/30/99	1954
05	BASF-2-2	D1DQ0101	D1DQ0R	08/30/99	2024
06	BASF-1-2	D1DQ1101	D1DQ1R	08/30/99	2054
07	BASF-CARRIER AIR	D1DQ2101	D1DQ2R	08/30/99	2124
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Data File: /var/chem/gcms/mm.i/M083099.b/MD0830M.d
Report Date: 30-Aug-1999 14:36

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mm.i
Lab File ID: MD0830M.d
Analysis Type: AIR
Lab Sample ID: MD0830M
Quant Type: ISTD

Injection Date: 30-AUG-1999 14:25
Init. Calibration Date(s): 08/23/99 08/24/99
Init. Calibration Times: 18:13 16:42
Method File: /chem/gcms/mm.i/M083099.b/TO14.m

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
$	4 1,2-Dichloroethane-d4	0.195	0.215	0.000	-10.3	25.0
$	5 Toluene-d8	0.789	0.796	0.000	-0.9	25.0
$	6 4-Bromofluorobenzene	0.821	0.816	0.000	0.7	25.0
	8 Chlorodifluoromethane	1.446	1.721	0.000	-19.0	999.0
	7 Dichlorodifluoromethane	2.179	2.599	0.000	-19.3	25.0
	9 1,2-Dichlorotetrafluoroetha	1.638	1.834	0.000	-12.0	25.0
	10 Chloromethane	0.274	0.314	0.000	-14.7	25.0
	11 Vinyl Chloride	0.903	0.993	0.000	-9.9	25.0
	69 Methanol	0.177	0.199	0.000	-12.6	999.0
	12 n-Butane	1.366	1.510	0.000	-10.5	999.0
	13 1,3-Butadiene	0.657	0.726	0.000	-10.4	999.0
	14 Bromomethane	0.902	0.954	0.000	-5.7	25.0
	15 Chloroethane	0.377	0.408	0.000	-8.1	25.0
	16 Trichlorofluoromethane	1.881	2.177	0.000	-15.7	25.0
	79 Acrolein	0.212	0.240	0.000	-12.9	40.0
	80 Acetonitrile	0.259	0.303	0.000	-16.9	40.0
	71 Acetone	0.261	0.295	0.000	-12.9	40.0
	17 Pentane	0.204	0.233	0.000	-13.9	999.0
	70 Ethyl Ether	0.481	0.549	0.000	-14.1	40.0
	18 1,1-Dichloroethene	0.732	0.771	0.000	-5.3	25.0
	72 Acrylonitrile	0.408	0.455	0.000	-11.4	40.0
	19 1,1,2-Trichlorotrifluoroeth	1.418	1.504	0.000	-6.1	25.0
	22 Methylene Chloride	0.668	0.660	0.000	1.2	25.0
	21 3-Chloropropene	0.714	0.787	0.000	-10.1	999.0
	20 Carbon Disulfide	2.780	2.814	0.000	-1.2	999.0
	23 trans-1,2-Dichloroethene	0.969	1.036	0.000	-6.9	999.0
	78 Methyl-t-Butyl Ether	2.032	2.295	0.000	-13.0	40.0
	25 1,1-Dichloroethane	2.033	2.357	0.000	-15.9	25.0
	73 Vinyl Acetate	2.326	2.684	0.000	-15.4	40.0
	24 Hexane	0.803	0.916	0.000	-14.1	999.0
	74 2-Butanone	0.386	0.419	0.000	-8.4	40.0
	26 cis 1,2-Dichloroethene	1.142	1.252	0.000	-9.7	25.0
	27 Chloroform	2.360	2.692	0.000	-14.1	25.0
	28 1,1,1-Trichloroethane	2.226	2.545	0.000	-14.3	25.0
	32 1,2-Dichloroethane	0.340	0.405	0.000	-19.2	25.0

Data File: /var/chem/gcms/mm.i/M083099.b/MD0830M.d
Report Date: 30-Aug-1999 14:36

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mm.i
Lab File ID: MD0830M.d
Analysis Type: AIR
Lab Sample ID: MD0830M
Quant Type: ISTD

Injection Date: 30-AUG-1999 14:25
Init. Calibration Date(s): 08/23/99 08/24/99
Init. Calibration Times: 18:13 16:42
Method File: /chem/gcms/mm.i/M083099.b/TO14.m

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
29 Cyclohexane	0.119	0.130	0.000	-8.6	999.0
75 1-Butanol	0.094	0.103	0.000	-9.8	999.0
31 Benzene	0.717	0.779	0.000	-8.6	25.0
30 Carbon Tetrachloride	2.183	2.485	0.000	-13.8	25.0
33 Heptane	0.652	0.736	0.000	-12.9	999.0
35 1,2-Dichloropropane	0.375	0.421	0.000	-12.4	25.0
34 Trichloroethene	0.405	0.424	0.000	-4.5	25.0
36 Dibromomethane	0.373	0.415	0.000	-11.5	999.0
37 Bromodichloromethane	0.578	0.661	0.000	-14.4	999.0
76 4-Methyl-2-pentanone	0.668	0.724	0.000	-8.4	40.0
38 cis-1,3-Dichloropropene	0.610	0.672	0.000	-10.2	25.0
41 trans-1,3-Dichloropropene	0.342	0.386	0.000	-12.8	25.0
39 Toluene	0.849	0.927	0.000	-9.2	25.0
42 1,1,2-Trichloroethane	0.313	0.345	0.000	-10.5	25.0
77 2-Hexanone	0.276	0.296	0.000	-7.2	40.0
40 Octane	0.238	0.258	0.000	-8.5	999.0
44 Dibromochloromethane	0.647	0.716	0.000	-10.7	999.0
45 1,2-Dibromoethane	0.571	0.632	0.000	-10.6	25.0
43 Tetrachloroethene	0.371	0.407	0.000	-9.6	25.0
46 Chlorobenzene	0.832	0.909	0.000	-9.2	25.0
47 Ethylbenzene	1.311	1.491	0.000	-13.8	25.0
48 m-Xylene (For p-)	1.062	1.201	0.000	-13.1	25.0
52 Bromoform	0.835	0.970	0.000	-16.2	999.0
49 Nonane	0.751	0.826	0.000	-10.0	999.0
51 Styrene	0.712	0.790	0.000	-10.9	25.0
50 o-Xylene	1.122	1.253	0.000	-11.7	25.0
54 1,1,2,2-Tetrachloroethane	0.945	1.043	0.000	-10.4	25.0
82 1,2,3-Trichloropropane	0.182	0.202	0.000	-10.9	999.0
53 Cumene	1.527	1.721	0.000	-12.7	999.0
55 n-Propylbenzene	2.164	2.475	0.000	-14.4	999.0
81 4-Ethyltoluene	1.835	2.087	0.000	-13.8	999.0
56 1,3,5-Trimethylbenzene	1.432	1.591	0.000	-11.1	25.0
58 Alpha-Methylstyrene	0.705	0.767	0.000	-8.8	999.0
57 Decane	1.183	1.310	0.000	-10.8	999.0
59 1,2,4-Trimethylbenzene	1.494	1.647	0.000	-10.2	25.0

ata File: /var/chem/gcms/mm.i/M083099.b/MD0830M.d
eport Date: 30-Aug-1999 14:36

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

nstrument ID: mm.i
ab File ID: MD0830M.d
nalysis Type: AIR
ab Sample ID: MD0830M
)uant Type: ISTD

Injection Date: 30-AUG-1999 14:25
Init. Calibration Date(s): 08/23/99 08/24/99
Init. Calibration Times: 18:13 16:42
Method File: /chem/gcms/mm.i/M083099.b/TO14.m

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
60 1,3-Dichlorobenzene	1.054	1.150	0.000	-9.1	25.0
61 1,4-Dichlorobenzene	1.023	1.151	0.000	-12.5	25.0
62 Benzyl Chloride	1.192	1.320	0.000	-10.8	25.0
63 1,2-Dichlorobenzene	1.009	1.077	0.000	-6.7	25.0
64 Undecane	1.251	1.381	0.000	-10.4	999.0
65 Dodecane	1.264	1.403	0.000	-11.0	999.0
66 1,2,4-Trichlorobenzene	0.842	0.907	0.000	-7.7	30.0
68 Napthalene	1.729	1.683	0.000	2.7	999.0
67 Hexachlorobutadiene	0.840	1.024	0.000	-21.9	30.0

FORM 8
OTHER INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: H9H160124

Lab File ID (Standard): MD0830M Date Analyzed: 08/30/99

Instrument ID: MM Time Analyzed: 1425

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	2022	6.27	9472	8.16	11701	13.80
	UPPER LIMIT	4044	6.77	18944	8.66	23402	14.30
	LOWER LIMIT	1011	5.77	4736	7.66	5850	13.30
	CLIENT SAMPLE NO.						
01	INTRA-LAB CHECK	2070	6.27	9528	8.16	12034	13.79
02	INTRA-LAB BLANK	2082	6.26	9475	8.15	11660	13.79
03	BASF-3-2	1964	6.26	9007	8.15	11053	13.78
04	BASF-2-2	1928	6.27	8915	8.16	11004	13.78
05	BASF-1-2	1931	6.26	8873	8.14	10796	13.78
06	BASF-CARRIER AIR	1884	6.27	8621	8.15	10250	13.78
07							
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17							
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20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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 used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/17/99
Work Order: D1V68101 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	0.20	U
75-45-6	Chlorodifluoromethane	0.20	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	0.20	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.20	U
106-97-8	n-Butane	0.20	U
106-99-0	1,3-Butadiene	0.20	U
74-83-9	Bromomethane	0.20	U
75-00-3	Chloroethane	0.20	U
75-69-4	Trichlorofluoromethane	0.20	U
109-66-0	Pentane	0.50	U
75-35-4	1,1-Dichloroethene	0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	0.20	U
75-15-0	Carbon disulfide	0.20	U
107-05-1	3-Chloropropene	0.20	U
75-09-2	Methylene chloride	0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	U
110-54-3	n-Hexane	0.20	U
75-34-3	1,1-Dichloroethane	0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	U
67-66-3	Chloroform	0.20	U
71-55-6	1,1,1-Trichloroethane	0.20	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.20	U
71-43-2	Benzene	0.20	U
107-06-2	1,2-Dichloroethane	0.20	U
142-82-5	n-Heptane	0.20	U
79-01-6	Trichloroethene	0.20	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/17/99
Work Order: D1V68101 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	0.20	U
74-95-3	Dibromomethane	0.20	U
75-27-4	Bromodichloromethane	0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	U
108-88-3	Toluene	0.20	U
111-65-9	n-Octane	0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	U
127-18-4	Tetrachloroethene	0.20	U
124-48-1	Dibromochloromethane	0.20	U
106-93-4	1,2-Dibromoethane (EDB)	0.20	U
108-90-7	Chlorobenzene	0.20	U
100-41-4	Ethylbenzene	0.20	U
136777-61-2	m-Xylene & p-Xylene	0.20	U
111-84-2	Nonane	0.20	U
95-47-6	o-Xylene	0.20	U
100-42-5	Styrene	0.20	U
75-25-2	Bromoform	0.20	U
98-82-8	Cumene	0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U
103-65-1	n-Propylbenzene	0.20	U
108-67-8	1,3,5-Trimethylbenzene	0.20	U
124-18-5	n-Decane	0.20	U
98-83-9	alpha-Methylstyrene	0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
100-44-7	Benzyl chloride	0.20	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/17/99
Work Order: D1V68101 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	0.20	U
1120-21-4	n-Undecane	0.20	U
112-40-3	n-Dodecane	0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.20	U
87-68-3	Hexachlorobutadiene	0.20	U
91-20-3	Naphthalene	0.21	
67-56-1	Methanol	10	U
60-29-7	Ethyl ether	0.50	U
67-64-1	Acetone	5.0	U
107-13-1	Acrylonitrile	0.50	U
108-05-4	Vinyl acetate	0.50	U
78-93-3	2-Butanone (MEK)	0.50	U
71-36-3	1-Butanol	0.50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	0.50	U
591-78-6	2-Hexanone	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
107-02-8	Acrolein	0.50	U
75-05-8	Acetonitrile	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: 100 / mL Date Received: 08/16/99
Work Order: D1V68102 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
71-43-2	Benzene	10	
108-90-7	Chlorobenzene	10	
75-35-4	1,1-Dichloroethene	9.6	
108-88-3	Toluene	9.9	
79-01-6	Trichloroethene	10	

Quanterra GC/MS Air Initial Calibration Data Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1

Analysis Date:	8/23-24/99	Instrument:	MM	ICAL Batch	M082399

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd ✓
1. Did BFB meet tune criteria?		✓			✓
2. Were all standards injected within 12 hr of BFB?		✓			✓
3. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars ±40%R; polar analytes ±40%R and ≤2 polars ±55%R)		✓			✓
4. Was date/time of analysis verified between analysis header and logbook as correct?		✓			✓
5. Were at least 5 levels of each compound analyzed?		✓			✓
6. Is %RSD for all nonpolar analytes ≤ 30%?		✓			✓
7. Is %RSD for all polar analytes ≤ 40%? (No criteria for methanol and n-butanol.)		✓			✓
8. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	✓
9. Have alternate hits/manual integrations been verified as correct and are correct RFs listed in ICAL summary?		✓			✓
10. Was ICAL summary form processed using correct result files? (Analyst and 2nd reviewer should compare 2-3 RFs from each standard quan report to ICAL summary.)		✓			✓
11. Are the ICAL start and end dates/times correct on ICAL summary?		✓			✓
12. Elution order checked on isomeric pairs?					
• cis- and trans- isomers		✓			✓
• ethyl benzene / m/p-xylene / o-xylene		✓			✓
• 1,3,5-trimethylbenzene / 1,2,4-trimethylbenzene / 4-ethyl toluene		✓			✓
• 1,3- , 1,4- , and 1,2-dichlorobenzene		✓			✓
13. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				✓
14. Does the ICAL folder contain complete data in the following order? Data review checklist, a complete runlog, [weekly reference check recovery, Quan report, IS summary, chromatogram and Entech report], tune pass/fail page, m/z list, tune chromatogram, Target ICAL summary, followed by [Quan reports, chromatograms, manual integrations and Entech reports for all standards, in order from low to high standard], leak check report, Calibration Standard summary.		✓			✓

Analyst:	Date: 8/25/99	2nd Level Reviewer :	Date: 8/26/99
Comments: Curve RAN over two days.		Comments:	

Quanterra GC/MS Air Continuing Calibration Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1

MO82399

Analysis Date:	8/30/99	CCAL Batch:	MO83099	Instrument:	mm	ICAL Batch:	MO82499

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd ✓
1. Did BFB meet tune criteria?		✓			✓
2. Were all standards injected within 12 hr of BFB?		✓			
3. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars ±40%R; polar analytes ±40%R and ≤2 polars ±55%R)		✓			
4. Was date/time of analysis verified between analysis header and logbook as correct?		✓			
5. Was the CCAL compared to the correct ICAL?		✓			
6. Was a mid-level standard used for CCAL?		✓			
7. Is the %D ≤ 25% for all TO-14 analytes? (1,2,4-Trichloro-benzene and hexachlorobutadiene %D ≤ 30% and up to 4 analytes %D ≤ 40%)		✓			
8. Is the %D ≤ 40% for all polar analytes? (No criteria for methanol and n-butanol, and up to 2 polar analytes %D ≤ 50%.)		✓			
9. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
10. Have alternate hits/manual integrations been verified as correct and are correct RFs listed in CCAL summary?		✓			
11. Elution order checked on isomeric pairs/coeluters? • cis- and trans- isomers		✓			
• ethyl benzene / m/p-xylene / o-xylene		✓			
• 1,3,5-trimethylbenzene / 1,2,4-trimethylbenzene / 4-ethyl toluene		✓			
• 1,3- , 1,4- , and 1,2-dichlorobenzene		✓			
12. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				
13. Does the CCAL folder contain complete data in the following order? Data review checklist, a complete runlog, tune pass/fail page, m/z list, tune chromatogram, Target CCAL summary, Quan report, chromatogram, manual integrations, Entech report and leak check report.		✓			✓

Analyst:	Date: 8/31/99	2nd Level Reviewer:	Date: 9/1/99
Comments:		Comments:	

Quanterra GC/MS Air Data Review / Narrative Checklist

LOT/Project # HGH160124

Method: TO-14 - KNOX-MS-0001 Rev 1

Page 1 of 1

Analysis Date:	8/30/99 9/2/99		
Instrument:	MM		M082399
ICAL Batch:	M083099		M083099
CCAL:	M082399 M083099		

Review Items A. Tune / Continuing Calibration	N/A	Yes	No	Why is data reportable?	Init ✓
1. Were all samples injected within 12 hr of BFB?		✓			✓
2. Has a Continuing Calibration Checklist been completed for each analytical batch?		✓			
3. Was the correct CCAL used for quantitation? (Manually calculate 1-2 compounds for batch.)		✓			
B. CLIENT SAMPLE AND QC SAMPLE Results					
1. Were all special project requirements met?		✓			
2. Were dilution factors/header information verified?		✓			
3. Are surrogates and internal standards within QC limits? (70-130% R for surr.; 50-150%R from CCAL for IS) *If no, list samples/reason (e.g., sur1):* Sample Reason Sample Reason		✓		☐[sur1] DUP surr. %R demonstrated same effect. ☐[sur2] Reanalysis demonstrated same effect. ☐[sur5] At the client's request, data was flagged as estimated and released without further investigation. * ☐[is1] Per client, reanalysis was not performed * ☐[is2] Reanalysis confirmed a matrix effect. ☐ See Comment no.	
4. Were positive hits evaluated using qualitative identification criteria and technical judgement?		✓			
5. Are positive results within calibration range?		✓			
6. For dilutions, is highest concentration hit ≥ 5 psb?		✓			
7. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
8. Have alternate hits/manual integrations been verified as correct?		✓			
9. Final report acceptable? (Results correct, RLs calculated correctly, units correct, surrogate %R correct, appropriate flags used, dilution factor correct, analysis dates correct.)	✓			CLP like ??	
10. Was a narrative prepared and all deviations noted?		✓			
C. Preparation/Matrix QC					
1. System blank run every 12 hours prior to samples?		✓			
2. System blank surrogate recoveries within QC limits (70-130% R)?		✓		☐[mb1] All sample surrogates OK and there is no analyte >RL in samples associated with blank.*	
3. Are all analytes present in the system blank ≤ RL? *If no, list blank ID:*		✓		☐[mb3] There is no analyte > RL in the samples associated with method blank.* ☐[mb4] Sample results are > 20x higher than blank. ☐[mb6] Common lab contaminant (methylene chloride/Freon) ≤2x RL.*	
4. DUP done per 20 samples and are all RPDs within limits? (≤30 RPD for nonpolars; ≤40 RPD for polars; no criteria for methanol and n-butanol) *If no, list DUP ID:*		✓			
5. Were MS run #'s assigned correctly?	✓				
D. Other					
1. Are all nonconformances documented appropriately and copy included with deliverable?	✓				✓

Analyst:	Date: 9/2/99	Analyst:	Date: 9/2/99
Comments:		Comments:	

* Such action must be taken in consultation with client.

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

GCMS Analysis: TO-14 Canisters Inst: MM

Analyst: [signature]

Date: 8/23/99 System Date ok (y/n): N Reset Date (y/n): Y

Time: 1200 System Time ok (y/n): N Reset Time (y/n): Y

Preventive Maintenance Performed ☑

Lot: NA Lot: Lot: Lot: Lot:

Batch: NA Batch: Batch: Batch: Batch:

ICAL Date: 8/23-24/99 Multiplier Setting (Volts): 850 STD ID: CX-767

CCAL Date: NA Surr/IS ID: CX-66C

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1536 ~~1736~~	Tune	BF0823M	—	Tune	—	100	✓	4	—
	1813	IC-001	LW0823M	—	CX-768 (Low)	—	100	✓	3	—
	1842	IC-005	ML0823M	—	CX-767	—	50	✓	1	—
	1911	IC-010	MD0823M	—		—	100	✓	1	—
	1940	IC-015	MH0823M	—		—	150	✓	1	—
	2010	IC-030	HI0823M	—	Chloromethane +	—	300	—	1	—
					Rerun next day					

8/24/99 [signature]

Analyst: [signature] Date: 8/25/99 Approved by: Date:

Acquired as BK316.9A then renamed to tune.

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

GCMS Analysis: TO-14 Canisters Inst: MM

Analyst: [illegible]

Date: 8/24/99 System Date ok (y/n): ✓ Reset Date (y/n): N

Time: 1200 System Time ok (y/n): ✓ Reset Time (y/n): N

Preventive Maintenance Performed ☑

Lot: NA Lot: Lot: Lot: Lot:

Batch: NA Batch: Batch: Batch: Batch: Batch:

ICAL Date: 8/23/99 - 8/24/99 Multiplier Setting (Volts): 950 STD ID: CX-767

CCAL Date: NA Surr/IS ID: CX-664

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1537	Tune	BF0824MX	—	Tune	—	100	✓	4	—
|	1613	CCC	MB0824MX	—	CX-767	—	100	—	1	—
|	1642	IC-030	HI0824M		CX-767	—	300	✓	1	—

8/25/99 JH

Analyst: [illegible] Date: 8/25/99 Approved by: Date:

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

11

GCMS Analysis: TO-14 Canisters Inst: MM

Analyst: [illegible]

Date: 8/30/99 System Date ok (y/n): y Reset Date (y/n): n

Time: 1200 System Time ok (y/n): y Reset Time (y/n): n AREA = 2022

Preventive Maintenance Performed ☑

Lot: H9H170116 Lot: H9H160124 Lot: Lot: Lot:

Batch: 9239325 Batch: 9239325 Batch: Batch: Batch:

ICAL Date: 8/23-24/99 Multiplier Setting (Volts): 850 STD ID: CX-767

CCAL Date: 8/30/99 Surr/IS ID: CX-664

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1357	Tune	BF0830M	—	Tune	—	520	✓	4	
	1425	CCC	MD0830M	—	CX-767	—	100	✓	1	
	1455	REF	RF0830M	—	D1D68102 CX-768	—	100	✓	1	
	1523	BLK	X9LKX1	—	BLK	—	500	—	4	
	1553		X2	—		—		—		
	1623		X3	—		—		—		
	1653		X4	—	D1V68101 NAph @ 0.21ppbv(v/v)			✓		
	1723	H9H170116	D1EM4R	12484	3.37	—		✓	5	
	1753		D1EM6R	12878	3.48	—		✓	6	
	1824		D1EM7R	04745	3.44	—		✓	7	
	1854		D1EM9R	12433	3.71	—		✓	8	
	1924		D1EM8R	12873	1.0 TRIP BLANK	—		✓	16	
	1954	H9H160124	D1DPVR	104	3.45	—		✓	9	
	2024		D1DQ0R	93019	3.35	—		✓	10	
	2054		D1DQ1R	12212	3.34	—		✓	11	
	2124		D1DQ2R	04306	2.82	—		✓	12	

8/31/99

Analyst: [illegible] Date: 8/31/99 Approved by: Date:

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/27/99
Time: 15:35:57

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
			_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGroup
_ Bench Sheet Copied per COC

Extractionist: _____

Concentrationist: _____

****
* *
* QC BATCH: 9239325 *
* *
****

PREP DATE: 8/26/99
COMP DATE: 8/26/99

Reviewer/Date: _____ / 0/00/00

Volatile Organics, (GCMS-TO14 Low Level)-Air
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	8/30/99	H9H160124-001 D1DPV-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/30/99	H9H160124-002 D1DQ0-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/30/99	H9H160124-003 D1DQ1-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/30/99	H9H160124-004 D1DQ2-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-001 D1EM4-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-002 D1EM6-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-003 D1EM7-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/27/99
Time: 15:35:57

QC BATCH: 9239325

PREP DATE: 8/26/99
COMP DATE: 8/26/99

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	8/31/99	H9H170116-004 D1RM8-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-005 D1RM9-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	0/00/00	H9H270000-325 D1V68-1-01B		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	0/00/00	H9H270000-325 D1V68-1-02C		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 11

Canister Dilution
Initial & In can

analyst : dwc client: ???

notebook: 1583 page: 78

barometer: 730.4 date: 8/26/99

wo #	sample	can	P init inches	P init Abs,mm	P final psig	P final Abs,mm	dilution factor
h9h160124	d1dpv	12212	-10.6	461.2	16.6	1588.9	3.45
	d1dq0	04306	-10.3	468.8	16.2	1568.2	3.35
	d1dq1	04392	-10.4	466.2	16.0	1557.8	3.34
	d1dq2	04167	-6.6	562.8	16.6	1588.9	2.82

1 psig = 2.036 inch Hg
Pinit(Abs,mm)=(Pinit(inch)*25.4mm/inch)+Pbar(mm)
Pfinal(Abs,mm)=(Pfinal(psig)*2.036 (inch Hg/psig)*25.4 (mm/inch))+Pbar(mm)
dilution factor = Pfinal(Abs,mm)/Pinit(Abs,mm)

candil.xls
rev.01

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PROJECT

Notebook No.

Continued From Page

Lot# HGH170116		Alve	PBAR = 730.4		8/26/99	
Quant#	Can#	P. to	Pf psig	to can	vol(ml)	pBar
DIEM4	12984	-10.2	16.6			
DIEM6	12828	-11.0	16.2			
DIEM7	04745	-10.8	16.2			
DIEM8	12873	tri; ablank	D.F = 1			
DIEM9	12433	-11.8	16.8			
Lot# HGH110145		Alve	PBAR = 730.4		8/26/99	
Quant#	Can#	P. to	Pf psig	to can	vol(ml)	pBar
D16M3	104	-18.4	16.6			
D16M7	93019	-19.2	17.6			
Lot# HGH160124		Alve	PBAR = 730.4		8/26/99	
Quant#	Can#	P. to	Pf psig	to can	vol(ml)	pBar
D1DPV	12212	-10.6	16.6			
D1DQ0	04306	-10.3	16.2			
D1DQ1	04392	-10.4	16.0			
D1DQ2	04167	-6.6	16.6			
			PBAR 734.7		8/30/99	
Lot# HGH240111		Alve	PBAR = 730.4		8/26/99	pBar
Quant#	Can#	P. to	Pf psig 8/30/99	to can	vol(ml)	pBar
D1NF3	12523	-1.6	12.2 Dry 21.01		30ml + 40ml H2O to	
Dist in valve.						
Lot# HGH170171		Alve	PBAR 734.7		8/30/99	
Quant#	Can#	P. to	Pf psig	to can	vol(ml)	pBar
D1F34	92081	BLANK	D.F. = 1.6			
D1F3E	12488	-9.6	13.6			
D1F3J	93065	-0.5	13.8			
D1F3M	11367	-6.0	13.4			
D1F3P	11411	-11.2	13.6			
D1F3R	93005	-1.2	14.4			
D1F3V	12454	-12.4	14.6			
D1F41	0412	-9.1	14.2			
D1F44	12185	-0.4	14.0			
D1F46	93282	-11.3	14.4			

Continued on page

Read and Understood By

(1) valve to right [illegible] 8/30/99

Signed | Date | Signed | Date

C. SDG H9H170116

Organic Analyses Support Documentation

Environmental Standards Project Name: Basf | Wyandotte
Sample Collection Dates: 8/16/99
Job Number: 9901092S
Project Manager: Kendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: R. Grega
Completion Date: 11/990

Applicable Sample No's.: ☑ Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab. Control No.
SDG H9H170116	

Deliverables:
- CLP ☑ like
- Tier I ☐
- Tier II ☐
- Limited ☐
- Other ____

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail (Check (✓) If Yes or Footnote Letter for Comments Below)				Problems Identified (Check (✓) If Yes or Footnote Number for Comments Below)				Support Documentation Attachments (Check (✓) If Yes -- or Identify Attachment No.)			
	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)	VOA Method TO-14	BNA Method	PEST / PCB Method	Other Method(s)
Holding Times	✓								✓			
Blank Analysis Results: Target Compounds	✓				✓				✓			
Blank Analysis Results: TICs												
System Mntr. Cmpds. &/or Surrogate Spike Rslts.	✓								✓			
Matrix Spike / Matrix Spike Duplicate Results												
Blank Spike Results	✓								✓			
Duplicate Analysis Results ☐ Field ☐ Lab												
Qualitative Identification: Target Compounds	✓											
Qualitative Identification: TICs												
DFTPP & BFB Mass Tuning	✓								✓			
GC Instrument Performance	·											
Initial Calibrations	✓								✓			
Continuing Calibrations	✓								✓			
Quantitation of Results	✓											
DDT / Endrin Breakdown												
Surrogate Retention Time Shifts												
Internal Standards Performance	✓								✓			
Resolution Check Standards												
Analytical Sequence												
Florisil Cartridge Check & GPC Calibration												
GC Column Agreement												
Others:												

Comments: Data is acceptable for use unless otherwise qualified

BLANK ANALYSIS RESULTS FOR TARGET ORGANIC COMPOUNDS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (units) ppbv	Qualification Limit 5x	Qualification Limit 10x
TO-14	Air	MB	method blank	naphthalene	0.21		
			trip blank	none			
				—			

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

Aq. = Aqueous; S = Solid

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Rinse Blank; FB = Field Blank
IB = Instrument Blank; SB = Storage Blank

• = Inferred from instrument printouts and/or supporting data; mass spectra not provided.

+ = Contaminant observed on one column only.

Notes: _____

EPA-19 TO-14 SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Job Code: QESKNX QESSDG:

Lot #: H9H170116

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	BASF-3-3	98	99	99	00
02	BASF-2-3	99	100	98	00
03	BASF-1-3	99	99	98	00
04	BASF-TRIP BLANK	99	97	97	00
05	BASF-4-3	99	99	95	00
06	METHOD BLK. D1V68101	98	100	99	00
07	LCS D1V68102	98	97	98	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(70-130)
SRG02	= Toluene-d8	(70-130)
SRG03	= 4-Bromofluorobenzene	(70-130)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

EPA-19 TO-14 CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESKNX SDG No:

Lot #: H9H270000 WO #: D1V68102
BATCH: 9239325

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	10	101	70 - 130	
Chlorobenzene	10	10	101	70 - 130	
1,1-Dichloroethene	10	9.6	96	70 - 130	
Toluene	10	9.9	99	70 - 130	
Trichloroethene	10	10	102	70 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

Data File: /var/chem/gcms/mm.i/M083099.b/RF0830M.d
Report Date: 30-Aug-1999 16:01

LCS
full list

Quanterra Knoxville

RECOVERY REPORT

Client Name:
Sample Matrix: GAS
Lab Smp Id: D1V68102
Level: LOW
Data Type: MS DATA
SpikeList File: to14.spk
Sublist File: RTall.sub
Method File: /chem/gcms/mm.i/M083099.b/TO14.m
Misc Info: M083099,,,100ML CX-767

Client SDG: H9H270000
Fraction: OTHER
Client Smp ID: INTRA-LAB CHECK
Operator: 13114
SampleType: METHSPIKE
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ppb(v/v)	CONC RECOVERED ppb(v/v)	% RECOVERED	LIMITS
7 Dichlorodifluorome	10.00	9.706	97.06	70-130
8 Chlorodifluorometh	10.00	9.683	96.83	70-130
9 1,2-Dichlorotetraf	10.00	9.705	97.05	70-130
10 Chloromethane	10.00	9.436	94.36	70-130
11 Vinyl Chloride	10.00	9.503	95.03	70-130
12 n-Butane	10.00	9.356	93.56	70-130
13 1,3-Butadiene	10.00	9.363	93.63	70-130
14 Bromomethane	10.00	9.387	93.87	70-130
15 Chloroethane	10.00	9.560	95.60	70-130
16 Trichlorofluoromet	10.00	9.461	94.61	70-130
17 Pentane	10.00	9.619	96.19	70-130
18 1,1-Dichloroethene	10.00	9.568	95.68	70-130
19 1,1,2-Trichlorotri	10.00	9.583	95.83	70-130
20 Carbon Disulfide	10.00	9.476	94.76	70-130
21 3-Chloropropene	10.00	9.478	94.78	70-130
22 Methylene Chloride	10.00	9.832	98.32	70-130
23 trans-1,2-Dichloro	10.00	10.15	101.49	70-130
24 Hexane	10.00	9.814	98.15	70-130
25 1,1-Dichloroethane	10.00	9.894	98.94	70-130
26 cis 1,2-Dichloroet	10.00	9.959	99.59	70-130
27 Chloroform	10.00	9.741	97.41	70-130
28 1,1,1-Trichloroeth	10.00	9.850	98.50	70-130
29 Cyclohexane	10.00	10.14	101.35	70-130
30 Carbon Tetrachlori	10.00	9.950	99.50	70-130
31 Benzene	10.00	10.10	101.04	70-130
32 1,2-Dichloroethane	10.00	9.964	99.64	70-130
33 Heptane	10.00	9.989	99.89	70-130
34 Trichloroethene	10.00	10.17	101.71	70-130
35 1,2-Dichloropropan	10.00	10.05	100.51	70-130
36 Dibromomethane	10.00	10.07	100.75	70-130
37 Bromodichlorometha	10.00	10.09	100.94	70-130
38 cis-1,3-Dichloropr	10.00	10.21	102.10	70-130
39 Toluene	10.00	9.921	99.21	70-130

Data File: /var/chem/gcms/mm.i/M083099.b/RF0830M.d
Report Date: 30-Aug-1999 16:01

SPIKE COMPOUND	CONC ADDED ppb(v/v)	CONC RECOVERED ppb(v/v)	% RECOVERED	LIMITS
40 Octane	10.00	10.01	100.14	70-130
41 trans-1,3-Dichloro	10.00	10.06	100.56	70-130
42 1,1,2-Trichloroeth	10.00	9.777	97.77	70-130
43 Tetrachloroethene	10.00	10.02	100.26	70-130
44 Dibromochlorometha	10.00	10.09	100.87	70-130
45 1,2-Dibromoethane	10.00	10.02	100.18	70-130
46 Chlorobenzene	10.00	10.11	101.09	70-130
47 Ethylbenzene	10.00	9.899	98.99	70-130
48 m-Xylene (For p-)	10.00	9.902	99.02	70-130
49 Nonane	10.00	10.08	100.85	70-130
50 o-Xylene	10.00	9.951	99.51	70-130
51 Styrene	10.00	9.948	99.48	70-130
52 Bromoform	10.00	10.07	100.71	70-130
53 Cumene	10.00	9.952	99.52	70-130
54 1,1,2,2-Tetrachlor	10.00	10.09	100.86	70-130
55 n-Propylbenzene	10.00	9.980	99.80	70-130
56 1,3,5-Trimethylben	10.00	9.812	98.12	70-130
57 Decane	10.00	10.19	101.95	70-130
58 Alpha-Methylstyren	10.00	10.05	100.51	70-130
59 1,2,4-Trimethylben	10.00	9.973	99.73	70-130
60 1,3-Dichlorobenzen	10.00	10.23	102.35	70-130
61 1,4-Dichlorobenzen	10.00	9.918	99.18	70-130
62 Benzyl Chloride	10.00	10.13	101.30	70-130
63 1,2-Dichlorobenzen	10.00	10.26	102.58	70-130
64 Undecane	10.00	10.66	106.55	70-130
65 Dodecane	10.00	10.43	104.32	70-130
66 1,2,4-Trichloroben	10.00	10.61	106.09	70-130
67 Hexachlorobutadien	10.00	10.42	104.24	70-130
68 Napthalene	10.00	11.58	115.83	70-130
69 Methanol	40.00	36.80	92.00	60-140
70 Ethyl Ether	20.00	18.84	94.19	60-140
71 Acetone	20.00	18.99	94.93	60-140
72 Acrylonitrile	20.00	18.94	94.71	60-140
73 Vinyl Acetate	20.00	19.68	98.38	60-140
74 2-Butanone	20.00	20.04	100.22	60-140
75 1-Butanol	20.00	20.80	104.02	60-140
76 4-Methyl-2-pentano	20.00	20.54	102.73	60-140
77 2-Hexanone	20.00	20.37	101.86	60-140
78 Methyl-t-Butyl Eth	20.00	20.00	100.00	60-140
79 Acrolein	20.00	19.55	97.76	60-140
80 Acetonitrile	20.00	19.23	96.15	60-140
81 4-Ethyltoluene	10.00	9.990	99.90	70-130
82 1,2,3-Trichloropro	10.00	9.977	99.77	70-130

Data File: /var/chem/gcms/mm.i/M083099.b/RF0830M.d
Report Date: 30-Aug-1999 16:01

Quanterra Knoxville

RECOVERY REPORT

Client Name:
Sample Matrix: GAS
Lab Smp Id: D1V68102
Level: LOW
Data Type: MS DATA
SpikeList File: to14.spk
Sublist File: RTall.sub
Method File: /chem/gcms/mm.i/M083099.b/TO14.m
Misc Info: M083099,,,100ML CX-767

Client SDG: H9H270000
Fraction: OTHER
Client Smp ID: INTRA-LAB CHECK
Operator: 13114
SampleType: METHSPIKE
Quant Type: ISTD

SURROGATE COMPOUND	CONC ADDED ppb(v/v)	CONC RECOVERED ppb(v/v)	% RECOVERED	LIMITS
$ 4 1,2-Dichloroethane	8.000	7.879	98.48	70-130
$ 5 Toluene-d8	8.000	7.797	97.46	70-130
$ 6 4-Bromofluorobenze	4.000	3.921	98.03	70-130

EPA-19 TO-14 METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D1V68101

Lab Name: QUANTERRA

Lab Code: QESKNX SDG Number:

Lab File ID: ABLKX4.d Lot Number: H9H170116

Date Analyzed: 08/30/99 Time Analyzed: 16:53

Matrix: AIR Date Extracted:08/26/99

GC Column: ID: .00 Extraction Method: TO-14

Instrument ID: MM Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BASF-3-3	D1EM4101	D1EM4R.d	08/30/99	17:23
02	BASF-2-3	D1EM6101	D1EM6R.d	08/30/99	17:53
03	BASF-1-3	D1EM7101	D1EM7R.d	08/30/99	18:24
04	BASF-TRIP BLANK	D1EM8101	D1EM8R.d	08/30/99	19:24
05	BASF-4-3	D1EM9101	D1EM9R.d	08/30/99	18:54
06	CHECK SAMPLE	D1V68102 C	RF0830M.d	08/30/99	14:55
07					
08					
09					
10					
11					
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16					
17					
18					
19					
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30					

COMMENTS:

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: M082399

Lab File ID: BF0823M BFB Injection Date: 08/23/99

Instrument ID: MM BFB Injection Time: 1536

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	42.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	94.6
175	5.0 - 9.0% of mass 174	6.6 (7.0)1
176	95.0 - 101.0% of mass 174	92.3 (97.6)1
177	5.0 - 9.0% of mass 176	5.8 (6.3)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	LW0823M	LW0823M	LW0823M	08/23/99	1813
02	ML0823M	ML0823M	ML0823M	08/23/99	1842
03	MD0823M	MD0823M	MD0823M	08/23/99	1911
04	MH0823M	MH0823M	MH0823M	08/23/99	1940
05					
06					
07					
08					
09					
10					
11					
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22					

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: M082399

Lab File ID: BF0824MX BFB Injection Date: 08/24/99

Instrument ID: MM BFB Injection Time: 1537

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.4
75	30.0 - 60.0% of mass 95	42.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	95.4
175	5.0 - 9.0% of mass 174	6.6 (6.9)1
176	95.0 - 101.0% of mass 174	94.3 (98.8)1
177	5.0 - 9.0% of mass 176	6.0 (6.3)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	HI0824M	HI0824M	HI0824M	08/24/99	1642
02					
03					
04					
05					
06					
07					
08					
09					
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12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date : 24-Aug-1999 18:18

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 23-AUG-1999 18:13
End Cal Date : 24-AUG-1999 16:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mm.i/M082499.b/TO14.m
Cal Date : 24-Aug-1999 18:00 m
Curve Type : Average

Calibration File Names:
Level 1: /var/chem/gcms/mm.i/M082399.b/LW0823M.d
Level 2: /var/chem/gcms/mm.i/M082399.b/ML0823M.d
Level 3: /var/chem/gcms/mm.i/M082399.b/MD0823M.d
Level 4: /var/chem/gcms/mm.i/M082399.b/MH0823M.d
Level 5: /var/chem/gcms/mm.i/M082499.b/HI0824M.d

Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
7 Dichlorodifluoromethane	2.60118	2.16058	2.07396	2.05528	2.00557	2.17931	11.122
8 Chlorodifluoromethane	1.71844	1.41515	1.37974	1.36366	1.35534	1.44647	10.630
9 1,2-Dichlorotetrafluoroethane	2.05050	1.65595	1.56111	1.52323	1.39808	1.63778	15.177
10 Chloromethane	0.36527	0.27151	0.25615	0.25173	0.22521	0.27398	19.598
11 Vinyl Chloride	1.05154	0.89626	0.85438	0.86696	0.84740	0.90331	9.404
12 n-Butane	1.60221	1.41515	1.30714	1.29898	1.20767	1.36623	11.054
13 1,3-Butadiene	0.76928	0.67302	0.63521	0.62256	0.58630	0.65728	10.629
14 Bromomethane	0.93255	0.94344	0.89381	0.87356	0.86557	0.90179	3.862
15 Chloroethane	0.35974	0.40590	0.37961	0.36826	0.37342	0.37738	4.643
16 Trichlorofluoromethane	1.86233	1.90058	1.92332	1.83305	1.88658	1.88117	1.852
17 Pentane	0.19370	0.20295	0.21536	0.19494	0.21397	0.20419	5.004
18 1,1-Dichloroethene	0.68627	0.72513	0.78613	0.71307	0.74858	0.73184	5.159
19 1,1,2-Trichlorotrifluoroethan	1.42511	1.39979	1.51978	1.36311	1.38164	1.41789	4.330
20 Carbon Disulfide	2.86406	2.61913	2.91230	2.66777	2.83434	2.77952	4.621
21 3-Chloropropene	0.73054	0.69277	0.74045	0.68595	0.72210	0.71436	3.339
22 Methylene Chloride	0.71394	0.63956	0.69667	0.63044	0.66155	0.66843	5.390
23 trans-1,2-Dichloroethene	1.14839	0.92479	0.94494	0.90874	0.92027	0.96942	10.408
24 Hexane	0.96299	0.78382	0.77226	0.76455	0.73114	0.80295	11.406
25 1,1-Dichloroethane	2.35766	1.94501	1.98314	1.91842	1.96164	2.03318	8.997
26 cis 1,2-Dichloroethene	1.28952	1.12719	1.11054	1.10423	1.07845	1.14198	7.383
27 Chloroform	2.77551	2.29277	2.26186	2.25535	2.21315	2.35973	9.923
28 1,1,1-Trichloroethane	2.57350	2.18910	2.14738	2.11868	2.10256	2.22624	8.844
29 Cyclohexane	0.14873	0.12129	0.11385	0.11070	0.10262	0.11944	14.812
30 Carbon Tetrachloride	2.55413	2.20281	2.12182	2.07159	1.96548	2.18317	10.283
31 Benzene	0.92140	0.72833	0.68726	0.65943	0.58865	0.71701	17.445
32 1,2-Dichloroethane	0.40387	0.33056	0.32737	0.32198	0.31446	0.33965	10.721

Report Date : 24-Aug-1999 18:18

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 23-AUG-1999 18:13
End Cal Date : 24-AUG-1999 16:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mm.i/M082499.b/TO14.m
Cal Date : 24-Aug-1999 18:00 m
Curve Type : Average

Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
33 Heptane	0.78718	0.64950	0.62703	0.61503	0.57895	0.65154	12.280
34 Trichloroethene	0.53628	0.39918	0.38233	0.36703	0.34245	0.40545	18.757
35 1,2-Dichloropropane	0.45707	0.37138	0.36311	0.35172	0.33123	0.37490	12.895
36 Dibromomethane	0.44740	0.37173	0.36177	0.35137	0.33062	0.37258	11.948
37 Bromodichloromethane	0.66808	0.57185	0.56439	0.55307	0.53169	0.57781	9.118
38 cis-1,3-Dichloropropene	0.71705	0.60352	0.59392	0.57602	0.55950	0.61000	10.193
39 Toluene	1.02597	0.84915	0.82677	0.78006	0.76139	0.84867	12.392
40 Octane	0.27526	0.24042	0.23687	0.22501	0.21216	0.23794	9.928
41 trans-1,3-Dichloropropene	0.38574	0.33719	0.33963	0.32259	0.32496	0.34202	7.467
42 1,1,2-Trichloroethane	0.37205	0.31300	0.30841	0.28865	0.28050	0.31252	11.488
43 Tetrachloroethene	0.46553	0.37419	0.36559	0.34304	0.30659	0.37099	15.893
44 Dibromochloromethane	0.72002	0.65484	0.64828	0.62178	0.58885	0.64675	7.500
45 1,2-Dibromoethane	0.68744	0.57287	0.56213	0.53439	0.50039	0.57144	12.364
46 Chlorobenzene	1.02125	0.83254	0.79995	0.78034	0.72457	0.83173	13.583
47 Ethylbenzene	1.62323	1.32144	1.26663	1.20092	1.14128	1.31070	14.298
48 m-Xylene (For p-)	1.30264	1.06698	1.04260	0.97781	0.92007	1.06202	13.770
49 Nonane	0.98206	0.79345	0.74478	0.67266	0.56169	0.75093	20.760
50 o-Xylene	1.36449	1.12799	1.10135	1.04556	0.96953	1.12179	13.249
51 Styrene	0.90321	0.74099	0.70440	0.65016	0.56128	0.71201	17.766
52 Bromoform	0.93626	0.86983	0.86691	0.79669	0.70564	0.83507	10.489
53 Cumene	1.85222	1.56660	1.50307	1.43330	1.28080	1.52720	13.786
54 1,1,2,2-Tetrachloroethane	1.13314	0.94981	0.93340	0.88974	0.81709	0.94464	12.410
55 n-Propylbenzene	2.56091	2.21708	2.17931	2.04395	1.81893	2.16404	12.529
56 1,3,5-Trimethylbenzene	1.78517	1.44611	1.41148	1.34258	1.17325	1.43172	15.630
57 Decane	1.39896	1.23017	1.22797	1.12935	0.92886	1.18306	14.540
58 Alpha-Methylstyrene	0.80878	0.69848	0.70507	0.68649	0.62529	0.70482	9.387
59 1,2,4-Trimethylbenzene	1.84561	1.50209	1.48760	1.40747	1.22971	1.49450	15.002
60 1,3-Dichlorobenzene	1.22852	1.04611	1.05367	1.02735	0.91212	1.05355	10.755
61 1,4-Dichlorobenzene	1.23938	1.04564	1.05276	0.98596	0.79014	1.02277	15.751
62 Benzyl Chloride	1.46695	1.20683	1.20725	1.13557	0.94172	1.19166	15.804
63 1,2-Dichlorobenzene	1.16195	1.00038	1.01449	0.98938	0.87773	1.00878	10.050
64 Undecane	1.37913	1.35427	1.36848	1.20397	0.94907	1.25098	14.645
65 Dodecane	1.44004	1.25873	1.36456	1.31281	0.94226	1.26368	15.172

Report Date : 24-Aug-1999 18:18

Quanterra Knoxville

INITIAL CALIBRATION DATA

Start Cal Date : 23-AUG-1999 18:13
End Cal Date : 24-AUG-1999 16:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/gcms/mm.i/M082499.b/TO14.m
Cal Date : 24-Aug-1999 18:00 m
Curve Type : Average

	Compound	1.000 Level 1	5.000 Level 2	10.000 Level 3	15.000 Level 4	30.000 Level 5	RRF	% RSD
66	1,2,4-Trichlorobenzene	1.01180	0.76224	0.85150	0.86839	0.71574	0.84193	13.532
67	Hexachlorobutadiene	0.93484	0.91822	0.92299	0.83389	0.59060	0.84011	17.274
68	Napthalene	1.99433	1.56499	1.76752	1.84931	1.47111	1.72945	12.258
69	Methanol	0.21653	0.17881	0.16526	0.15248	0.17043	0.17670	13.711
[illegible]	Ethyl Ether	0.46627	0.47254	0.51516	0.45730	0.49242	0.48074	4.819
[illegible]	Acetone	0.25043	0.26054	0.28035	0.25109	0.26461	0.26141	4.673
72	Acrylonitrile	0.40401	0.40014	0.44609	0.39208	0.39904	0.40827	5.285
73	Vinyl Acetate	2.73539	2.21981	2.24677	2.21505	2.21429	2.32626	9.848
74	2-Butanone	0.45521	0.37518	0.37362	0.37064	0.35726	0.38638	10.124
75	1-Butanol	0.11820	0.09196	0.08962	0.08908	0.08025	0.09382	15.278
76	4-Methyl-2-pentanone	0.86457	0.65085	0.63379	0.61137	0.57889	0.66789	16.948
77	2-Hexanone	0.32696	0.27054	0.27379	0.25952	0.25003	0.27617	10.829
78	Methyl-t-Butyl Ether	2.41854	1.93075	1.97729	1.89067	1.94032	2.03151	10.757
79	Acrolein	0.18402	0.21502	0.22950	0.21024	0.22301	0.21236	8.231
80	Acetonitrile	0.21861	0.26383	0.28321	0.25741	0.27274	0.25916	9.514
81	4-Ethyltoluene	2.22568	1.85493	1.83276	1.73709	1.52401	1.83490	13.877
82	1,2,3-Trichloropropane	0.22096	0.18245	0.17797	0.17022	0.15942	0.18220	12.822
$ 4	1,2-Dichloroethane-d4	0.19989	0.19795	0.19292	0.19360	0.19022	0.19492	2.015
$ 5	Toluene-d8	0.79615	0.80556	0.80826	0.77391	0.75878	0.78853	2.717
$ 6	4-Bromofluorobenzene	0.82224	0.83444	0.83701	0.81965	0.79400	0.82147	2.080

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: H9H170116

Lab File ID: BF0830M BFB Injection Date: 08/30/99

Instrument ID: MM BFB Injection Time: 1357

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.6
75	30.0 - 60.0% of mass 95	44.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	92.9
175	5.0 - 9.0% of mass 174	6.6 (7.1)1
176	95.0 - 101.0% of mass 174	91.3 (98.3)1
177	5.0 - 9.0% of mass 176	6.1 (6.7)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	MD0830M	MD0830M	MD0830M	08/30/99	1425
02	INTRA-LAB CHECK	D1V68102	RF0830M	08/30/99	1455
03	INTRA-LAB BLANK	D1V68101	ABLKX4	08/30/99	1653
04	BASF-3-3	D1EM4101	D1EM4R	08/30/99	1723
05	BASF-2-3	D1EM6101	D1EM6R	08/30/99	1753
06	BASF-1-3	D1EM7101	D1EM7R	08/30/99	1824
07	BASF-4-3	D1EM9101	D1EM9R	08/30/99	1854
08	BASF-TRIP BLANK	D1EM8101	D1EM8R	08/30/99	1924
09					
10					
11					
12					
13					
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ata File: /var/chem/gcms/mm.i/M083099.b/MD0830M.d
eport Date: 30-Aug-1999 14:36

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

nstrument ID: mm.i
ab File ID: MD0830M.d
nalysis Type: AIR
ab Sample ID: MD0830M
uant Type: ISTD

Injection Date: 30-AUG-1999 14:25
Init. Calibration Date(s): 08/23/99 08/24/99
Init. Calibration Times: 18:13 16:42
Method File: /chem/gcms/mm.i/M083099.b/TO14.m

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
$	4 1,2-Dichloroethane-d4	0.195	0.215	0.000	-10.3	25.0
$	5 Toluene-d8	0.789	0.796	0.000	-0.9	25.0
$	6 4-Bromofluorobenzene	0.821	0.816	0.000	0.7	25.0
	8 Chlorodifluoromethane	1.446	1.721	0.000	-19.0	999.0
	7 Dichlorodifluoromethane	2.179	2.599	0.000	-19.3	25.0
	9 1,2-Dichlorotetrafluoroetha	1.638	1.834	0.000	-12.0	25.0
	10 Chloromethane	0.274	0.314	0.000	-14.7	25.0
	11 Vinyl Chloride	0.903	0.993	0.000	-9.9	25.0
	69 Methanol	0.177	0.199	0.000	-12.6	999.0
	12 n-Butane	1.366	1.510	0.000	-10.5	999.0
	13 1,3-Butadiene	0.657	0.726	0.000	-10.4	999.0
	14 Bromomethane	0.902	0.954	0.000	-5.7	25.0
	15 Chloroethane	0.377	0.408	0.000	-8.1	25.0
	16 Trichlorofluoromethane	1.881	2.177	0.000	-15.7	25.0
	79 Acrolein	0.212	0.240	0.000	-12.9	40.0
	80 Acetonitrile	0.259	0.303	0.000	-16.9	40.0
	71 Acetone	0.261	0.295	0.000	-12.9	40.0
	17 Pentane	0.204	0.233	0.000	-13.9	999.0
	70 Ethyl Ether	0.481	0.549	0.000	-14.1	40.0
	18 1,1-Dichloroethene	0.732	0.771	0.000	-5.3	25.0
	72 Acrylonitrile	0.408	0.455	0.000	-11.4	40.0
	19 1,1,2-Trichlorotrifluoroeth	1.418	1.504	0.000	-6.1	25.0
	22 Methylene Chloride	0.668	0.660	0.000	1.2	25.0
	21 3-Chloropropene	0.714	0.787	0.000	-10.1	999.0
	20 Carbon Disulfide	2.780	2.814	0.000	-1.2	999.0
	23 trans-1,2-Dichloroethene	0.969	1.036	0.000	-6.9	999.0
	78 Methyl-t-Butyl Ether	2.032	2.295	0.000	-13.0	40.0
	25 1,1-Dichloroethane	2.033	2.357	0.000	-15.9	25.0
	73 Vinyl Acetate	2.326	2.684	0.000	-15.4	40.0
	24 Hexane	0.803	0.916	0.000	-14.1	999.0
	74 2-Butanone	0.386	0.419	0.000	-8.4	40.0
	26 cis 1,2-Dichloroethene	1.142	1.252	0.000	-9.7	25.0
	27 Chloroform	2.360	2.692	0.000	-14.1	25.0
	28 1,1,1-Trichloroethane	2.226	2.545	0.000	-14.3	25.0
	32 1,2-Dichloroethane	0.340	0.405	0.000	-19.2	25.0

Data File: /var/chem/gcms/mm.i/M083099.b/MD0830M.d
Report Date: 30-Aug-1999 14:36

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mm.i
Lab File ID: MD0830M.d
Analysis Type: AIR
Lab Sample ID: MD0830M
Quant Type: ISTD

Injection Date: 30-AUG-1999 14:25
Init. Calibration Date(s): 08/23/99 08/24/99
Init. Calibration Times: 18:13 16:42
Method File: /chem/gcms/mm.i/M083099.b/TO14.m

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
29	Cyclohexane	0.119	0.130	0.000	-8.6	999.0
75	1-Butanol	0.094	0.103	0.000	-9.8	999.0
31	Benzene	0.717	0.779	0.000	-8.6	25.0
30	Carbon Tetrachloride	2.183	2.485	0.000	-13.8	25.0
33	Heptane	0.652	0.736	0.000	-12.9	999.0
35	1,2-Dichloropropane	0.375	0.421	0.000	-12.4	25.0
34	Trichloroethene	0.405	0.424	0.000	-4.5	25.0
36	Dibromomethane	0.373	0.415	0.000	-11.5	999.0
37	Bromodichloromethane	0.578	0.661	0.000	-14.4	999.0
76	4-Methyl-2-pentanone	0.668	0.724	0.000	-8.4	40.0
38	cis-1,3-Dichloropropene	0.610	0.672	0.000	-10.2	25.0
41	trans-1,3-Dichloropropene	0.342	0.386	0.000	-12.8	25.0
39	Toluene	0.849	0.927	0.000	-9.2	25.0
42	1,1,2-Trichloroethane	0.313	0.345	0.000	-10.5	25.0
77	2-Hexanone	0.276	0.296	0.000	-7.2	40.0
40	Octane	0.238	0.258	0.000	-8.5	999.0
44	Dibromochloromethane	0.647	0.716	0.000	-10.7	999.0
45	1,2-Dibromoethane	0.571	0.632	0.000	-10.6	25.0
43	Tetrachloroethene	0.371	0.407	0.000	-9.6	25.0
46	Chlorobenzene	0.832	0.909	0.000	-9.2	25.0
47	Ethylbenzene	1.311	1.491	0.000	-13.8	25.0
48	m-Xylene (For p-)	1.062	1.201	0.000	-13.1	25.0
52	Bromoform	0.835	0.970	0.000	-16.2	999.0
49	Nonane	0.751	0.826	0.000	-10.0	999.0
51	Styrene	0.712	0.790	0.000	-10.9	25.0
50	o-Xylene	1.122	1.253	0.000	-11.7	25.0
54	1,1,2,2-Tetrachloroethane	0.945	1.043	0.000	-10.4	25.0
82	1,2,3-Trichloropropane	0.182	0.202	0.000	-10.9	999.0
53	Cumene	1.527	1.721	0.000	-12.7	999.0
55	n-Propylbenzene	2.164	2.475	0.000	-14.4	999.0
81	4-Ethyltoluene	1.835	2.087	0.000	-13.8	999.0
56	1,3,5-Trimethylbenzene	1.432	1.591	0.000	-11.1	25.0
58	Alpha-Methylstyrene	0.705	0.767	0.000	-8.8	999.0
57	Decane	1.183	1.310	0.000	-10.8	999.0
59	1,2,4-Trimethylbenzene	1.494	1.647	0.000	-10.2	25.0

Data File: /var/chem/gcms/mm.i/M083099.b/MD0830M.d
Report Date: 30-Aug-1999 14:36

Quanterra Knoxville

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: mm.i
Lab File ID: MD0830M.d
Analysis Type: AIR
Lab Sample ID: MD0830M
Quant Type: ISTD

Injection Date: 30-AUG-1999 14:25
Init. Calibration Date(s): 08/23/99 08/24/99
Init. Calibration Times: 18:13 16:42
Method File: /chem/gcms/mm.i/M083099.b/TO14.m

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
60 1,3-Dichlorobenzene	1.054	1.150	0.000	-9.1	25.0
61 1,4-Dichlorobenzene	1.023	1.151	0.000	-12.5	25.0
62 Benzyl Chloride	1.192	1.320	0.000	-10.8	25.0
63 1,2-Dichlorobenzene	1.009	1.077	0.000	-6.7	25.0
64 Undecane	1.251	1.381	0.000	-10.4	999.0
65 Dodecane	1.264	1.403	0.000	-11.0	999.0
66 1,2,4-Trichlorobenzene	0.842	0.907	0.000	-7.7	30.0
68 Napthalene	1.729	1.683	0.000	2.7	999.0
67 Hexachlorobutadiene	0.840	1.024	0.000	-21.9	30.0

FORM 8
OTHER INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: QUANTERRA - KNOXVILLE Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: H9H170116

Lab File ID (Standard): MD0830M Date Analyzed: 08/30/99

Instrument ID: MM Time Analyzed: 1425

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	2022	6.27	9472	8.16	11701	13.80
	UPPER LIMIT	4044	6.77	18944	8.66	23402	14.30
	LOWER LIMIT	1011	5.77	4736	7.66	5850	13.30
	CLIENT SAMPLE NO.						
01	INTRA-LAB CHECK	2070	6.27	9528	8.16	12034	13.79
02	INTRA-LAB BLANK	2082	6.26	9475	8.15	11660	13.79
03	BASF-3-3	2086	6.26	9534	8.15	11727	13.78
04	BASF-2-3	2072	6.25	9511	8.13	11408	13.77
05	BASF-1-3	2050	6.26	9300	8.15	11308	13.79
06	BASF-4-3	1982	6.27	9012	8.16	11066	13.79
07	BASF-TRIP BLANK	1987	6.25	9139	8.14	11142	13.77
08							
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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 used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/17/99
Work Order: D1V68101 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	0.20	U
75-45-6	Chlorodifluoromethane	0.20	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	0.20	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.20	U
106-97-8	n-Butane	0.20	U
106-99-0	1,3-Butadiene	0.20	U
74-83-9	Bromomethane	0.20	U
75-00-3	Chloroethane	0.20	U
75-69-4	Trichlorofluoromethane	0.20	U
109-66-0	Pentane	0.50	U
75-35-4	1,1-Dichloroethene	0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	0.20	U
75-15-0	Carbon disulfide	0.20	U
107-05-1	3-Chloropropene	0.20	U
75-09-2	Methylene chloride	0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	U
110-54-3	n-Hexane	0.20	U
75-34-3	1,1-Dichloroethane	0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	U
67-66-3	Chloroform	0.20	U
71-55-6	1,1,1-Trichloroethane	0.20	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.20	U
71-43-2	Benzene	0.20	U
107-06-2	1,2-Dichloroethane	0.20	U
142-82-5	n-Heptane	0.20	U
79-01-6	Trichloroethene	0.20	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/17/99
Work Order: D1V68101 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	0.20	U
74-95-3	Dibromomethane	0.20	U
75-27-4	Bromodichloromethane	0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	U
108-88-3	Toluene	0.20	U
111-65-9	n-Octane	0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	U
127-18-4	Tetrachloroethene	0.20	U
124-48-1	Dibromochloromethane	0.20	U
106-93-4	1,2-Dibromoethane (EDB)	0.20	U
108-90-7	Chlorobenzene	0.20	U
100-41-4	Ethylbenzene	0.20	U
136777-61-2	m-Xylene & p-Xylene	0.20	U
111-84-2	Nonane	0.20	U
95-47-6	o-Xylene	0.20	U
100-42-5	Styrene	0.20	U
75-25-2	Bromoform	0.20	U
98-82-8	Cumene	0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U
103-65-1	n-Propylbenzene	0.20	U
108-67-8	1,3,5-Trimethylbenzene	0.20	U
124-18-5	n-Decane	0.20	U
98-83-9	alpha-Methylstyrene	0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
100-44-7	Benzyl chloride	0.20	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/17/99
Work Order: D1V68101 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	0.20	U
1120-21-4	n-Undecane	0.20	U
112-40-3	n-Dodecane	0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.20	U
87-68-3	Hexachlorobutadiene	0.20	U
91-20-3	Naphthalene	0.21	
67-56-1	Methanol	10	U
60-29-7	Ethyl ether	0.50	U
67-64-1	Acetone	5.0	U
107-13-1	Acrylonitrile	0.50	U
108-05-4	Vinyl acetate	0.50	U
78-93-3	2-Butanone (MEK)	0.50	U
71-36-3	1-Butanol	0.50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	0.50	U
591-78-6	2-Hexanone	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
107-02-8	Acrolein	0.50	U
75-05-8	Acetonitrile	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H270000 325
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: 100 / mL Date Received: 08/16/99
Work Order: D1V68102 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 08/30/99

QC Batch: 9239325

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
~~71~~-43-2	Benzene	10	
108-90-7	Chlorobenzene	10	
75-35-4	1,1-Dichloroethene	9.6	
108-88-3	Toluene	9.9	
79-01-6	Trichloroethene	10	

Quanterra GC/MS Air Initial Calibration Data Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1

Analysis Date:	8/23-24/99	Instrument:	MM	ICAL Batch	MO82399

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd ✓
1. Did BFB meet tune criteria?		✓			✓
2. Were all standards injected within 12 hr of BFB?		✓			✓
3. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars ±40%R; polar analytes ±40%R and ≤2 polars ±55%R)		✓			✓
4. Was date/time of analysis verified between analysis header and logbook as correct?		✓			✓
5. Were at least 5 levels of each compound analyzed?		✓			✓
6. Is %RSD for all nonpolar analytes ≤ 30%?		✓			✓
7. Is %RSD for all polar analytes ≤ 40%? (No criteria for methanol and n-butanol.)		✓			✓
8. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	✓
9. Have alternate hits/manual integrations been verified as correct and are correct RFs listed in ICAL summary?		✓			✓
10. Was ICAL summary form processed using correct result files? (Analyst and 2nd reviewer should compare 2-3 RFs from each standard quan report to ICAL summary.)		✓			✓
11. Are the ICAL start and end dates/times correct on ICAL summary?		✓			✓
12. Elution order checked on isomeric pairs?		✓			✓
• cis- and trans- isomers		✓			✓
• ethyl benzene / m/p-xylene / o-xylene		✓			✓
• 1,3,5-trimethylbenzene / 1,2,4-trimethylbenzene / 4-ethyl toluene		✓			✓
• 1,3-, 1,4-, and 1,2-dichlorobenzene		✓			✓
13. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				✓
14. Does the ICAL folder contain complete data in the following order? Data review checklist, a complete runlog, [weekly reference check recovery, Quan report, IS summary, chromatogram and Entech report], tune pass/fail page, m/z list, tune chromatogram, Target ICAL summary, followed by [Quan reports, chromatograms, manual integrations and Entech reports for all standards, in order from low to high standard], leak check report, Calibration Standard summary.		✓			✓

Analyst:	Date: 8/25/99	2nd Level Reviewer:	Date: 8/26/99
Comments:		Comments:	
Curve RAN over two days.			

Quanterra GC/MS Air Continuing Calibration Review / Narrative Checklist
Method: TO-14 - KNOX-MS-0001 Rev 1

MD82394

Analysis Date:	8/30/99	CCAL Batch:	M083099	Instrument:	MM	ICAL Batch:	M082499

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd ✓
1. Did BFB meet tune criteria?		✓			✓
2. Were all standards injected within 12 hr of BFB?		✓			
3. Is the weekly analysis of a reference standard within limits? (Nonpolar analytes ±30%R and ≤2 nonpolars +40%R; polar analytes +40%R and ≤2 polars +55%R)		✓			
4. Was date/time of analysis verified between analysis header and logbook as correct?		✓			
5. Was the CCAL compared to the correct ICAL?		✓			
6. Was a mid-level standard used for CCAL?		✓			
7. Is the %D ≤ 25% for all TO-14 analytes? (1,2,4-Trichloro-benzene and hexachlorobutadiene %D ≤ 30% and up to 4 analytes %D ≤ 40%)		✓			
8. Is the %D ≤ 40% for all polar analytes? (No criteria for methanol and n-butanol, and up to 2 polar analytes %D ≤ 50%.)		✓			
9. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
10. Have alternate hits/manual integrations been verified as correct and are correct RFs listed in CCAL summary?		✓			
11. Elution order checked on isomeric pairs/coeluters?		✓			
• cis- and trans- isomers		✓			
• ethyl benzene / m/p-xylene / o-xylene		✓			
• 1,3,5-trimethylbenzene / 1,2,4-trimethylbenzene / 4-ethyl toluene		✓			
• 1,3-, 1,4-, and 1,2-dichlorobenzene		✓			
12. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				
13. Does the CCAL folder contain complete data in the following order? Data review checklist, a complete runlog, tune pass/fail page, m/z list, tune chromatogram, Target CCAL summary, Quan report, chromatogram, manual integrations, Entech report and leak check report.		✓			✓

Analyst:	Date: 8/31/99	2nd Level Reviewer:	Date: 9/1/99
Comments:		Comments:	

Quanterra GC/MS Air Data Review / Narrative Checklist **LOT/Project #** HGH170116

Method: TO-14 - KNOX-MS-0001 Rev 1 **Page 1 of 1**

Analysis Date:	8/30/99		
Instrument:	M.M		
ICAL Batch:	M082399		
CCAL:	M0830M (scanned on M083099)		

Review Items A. Tune / Continuing Calibration	N/A	Yes	No	Why is data reportable?	Ind ✓
1. Were all samples injected within 12 hr of BFB?		✓			✓
2. Has a Continuing Calibration Checklist been completed for each analytical batch?		✓			
3. Was the correct CCAL used for quantitation? (Manually calculate 1-2 compounds for batch.)		✓			
B. CLIENT SAMPLE AND QC SAMPLE Results					
1. Were all special project requirements met?		✓			
2. Were dilution factors/header information verified?		✓			
3. Are surrogates and internal standards within QC limits? (70-130% R for surr.; 50-150%R from CCAL for IS) *If no, list samples/reason (e.g.,* **surl***):* Sample Reason Sample Reason		✓		☐[surl] DUP surr. %R demonstrated same effect. ☐[sur2] Reanalysis demonstrated same effect. ☐[sur5] At the client's request, data was flagged as estimated and released without further investigation. * ☐[is1] Per client, reanalysis was not performed * ☐[is2] Reanalysis confirmed a matrix effect. ☐ See Comment no.	
4. Were positive hits evaluated using qualitative identification criteria and technical judgement?		✓			
5. Are positive results within calibration range?		✓			
6. For dilutions, is highest concentration hit ≥ 5 ppb?		✓			
7. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?		✓		Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	
8. Have alternate hits/manual integrations been verified as correct?		✓			
9. Final report acceptable? (Results correct, RLs calculated correctly, units correct, surrogate %R correct, appropriate flags used, dilution factor correct, analysis dates correct.)	✓	✓		CLP Like ??	
10. Was a narrative prepared and all deviations noted?		✓			
C. Preparation/Matrix QC					
1. System blank run every 12 hours prior to samples?		✓			
2. System blank surrogate recoveries within QC limits (70-130% R) ?		✓		☐[mb1] All sample surrogates OK and there is no analyte >RL in samples associated with blank.*	
3. Are all analytes present in the system blank ≤ RL? *If no, list blank ID:*		✓		☐[mb3] There is no analyte > RL in the samples associated with method blank.* ☐[mb4] Sample results are > 20x higher than blank. ☐[mb6] Common lab contaminant (methylene chloride/Freon) ≤2x RL.*	
4. DUP done per 20 samples and are all RPDs within limits? (≤30 RPD for nonpolars; ≤40 RPD for polars; no criteria for methanol and n-butanol) *If no, list DUP ID:*		✓			
5. Were MS run #'s assigned correctly?	✓				
D. Other					
1. Are all nonconformances documented appropriately and copy included with deliverable?	✓				✓

Analyst:	Date:	Analyst:	Date:
Comments:		Comments:	

* Such action must be taken in consultation with client.

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

GCMS Analysis: TO-14 Canisters Inst: MM

Analyst: [signature]

Date: 8/23/99 System Date ok (y/n): N Reset Date (y/n): Y

Time: 1200 System Time ok (y/n): N Reset Time (y/n): Y

Preventive Maintenance Performed ☑

Lot: NA Lot: Lot: Lot: Lot:

Batch: NA Batch: Batch: Batch: Batch:

ICAL Date: 8/23-24/99 Multiplier Setting (Volts): 850 STD ID: CX-767

CCAL Date: NA Surr/IS ID: CX-66C

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1536 ~~1736~~	Tune	BF0823M	—	Tune	—	100	✓	4	—
	1873	IC-001	LW0823M	—	CX-768 (Low)	—	100	✓	3	—
	1842	IC-005	ML0823M	—	CX-767	—	50	✓	1	—
	1911	IC-010	MD0823M	—		—	100	✓	1	—
	1940	IC-015	MH0823M	—		—	150	✓	1	—
	2010	IC-030	HI0823M	—	Chloromethane ↓	—	300	—	1	—
					Rerun next day					

8/24/99 JM

Analyst: [signature] Date: 8/25/99 Approved by: Date:

Acquired at 8/31/99 then renamed to tune.

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

GCMS Analysis: TO-14 Canisters Inst: MM

Analyst: [illegible]

Date: 8/24/99 System Date ok (y/n): ✓ Reset Date (y/n): N

Time: 1200 System Time ok (y/n): ✓ Reset Time (y/n): N

Preventive Maintenance Performed ☑

Lot: MM Lot: Lot: Lot: Lot:

Batch: MM Batch: Batch: Batch: Batch:

ICAL Date: 8/23/99 - 8/24/99 Multiplier Setting (Volts): 950 STD ID: CX-767

CCAL Date: MM Surr/IS ID: CX-664

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1537	Tune	BF0824MX	—	Tune	—	100	✓	4	—
|	1603	CCC	MF0824MX	—	CX-767	—	100	—	1	—
|	1642	IC-030	HI0824M		CX-767	—	300	✓	1	—

8/25/99 JH

Analyst: [illegible] Date: 8/25/99 Approved by: Date:

QUANTERRA INC, KNOXVILLE LABORATORY
TO-14 RUN LOG

11

GCMS Analysis: TO-14 Canisters Inst: MM

Analyst: [signature]

Date: 8/30/99 System Date ok (y/n): y Reset Date (y/n): N

Time: 1200 System Time ok (y/n): y Reset Time (y/n): N AREA = 2022

Preventive Maintenance Performed ☑

Lot: H9H170116 Lot: H9H160124 Lot: Lot: Lot:

Batch: 9239325 Batch: 9239325 Batch: Batch: Batch:

ICAL Date: 8/23-24/99 Multiplier Setting (Volts): 850 STD ID: CX-767

CCAL Date: 8/30/99 Surr/IS ID: CX-664

Method	Time	Lot No.	File ID	Can #	Client ID	I/S	Vol (ml)	Use	Pos	DUP
JY	1357	Tune	BF0830M	—	Tun	—	500	✓	4	
	1425	CCC	MD0830M	—	CX-767	—	100	✓	1	
	1455	REF	RF0830M	—	D1D68102 CX-768	—	100	✓	1	
	1523	BLK	ABLKX1	—	BLK	—	500	—	4	
	1553		X2	—		—		—		
	1623		X3	—		—		—		
	1653		X4	—	D1U68101 Naph @ 0.21ppb (v/v)			✓		
	1723	H9H170116	D1EM4R	12484	3.37	—		✓	5	
	1753		D1EM6R	12878	3.48	—		✓	6	
	1824		D1EM7R	04745	3.44	—		✓	7	
	1854		D1EM9R	12433	3.71	—		✓	8	
	1924		D1EM8R	12873	1.0 TRIP BLANK	—		✓	16	
	1954	H9H160124	D1DPVR	104	3.45	—		✓	9	
	2024		D1DQ0R	93019	3.35	—		✓	10	
	2054		D1DQ1R	12212	3.34	—		✓	11	
	2124		D1DQ2R	04306	2.82	—		✓	12	

8/31/99 [signature]

Analyst: [signature] Date: 8/31/99 Approved by: Date:

MS027R2.DOC, 3/23/99

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/27/99
Time: 15:35:35

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
			_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGroup
_ Bench Sheet Copied per COC

Extractionist: _____
_____
Concentrationist: _____
_____

****
* *
* QC BATCH: 9239325 *
* *
****

PREP DATE: 8/26/99
COMP DATE: 8/26/99

Reviewer/Date: _____ / 0/00/00

Volatile Organics, (GCMS-TO14 Low Level)-Air
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	8/30/99	H9H160124-001 D1DPV-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/30/99	H9H160124-002 D1DQ0-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/30/99	H9H160124-003 D1DQ1-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/30/99	H9H160124-004 D1DQ2-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-001 D1EM4-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-002 D1EM6-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															
0/00/00	8/31/99	H9H170116-003 D1EM7-1-01		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-664
COMMENTS:															

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/27/99
Time: 15:35:35

****
* QC BATCH: 9239325 *
****

PREP DATE: 8/26/99
COMP DATE: 8/26/99

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION VOL	SOLVENTS EXCHANGE VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	8/31/99	H9H170116-004 D1KM8-1-01		88	JY	AIR	mL	NA	NA	NA	.0	.0	CX-664
COMMENTS:													
0/00/00	8/31/99	H9H170116-005 D1KM9-1-01		88	JY	AIR	mL	NA	NA	NA	.0	.0	CX-664
COMMENTS:													
0/00/00	0/00/00	H9H270000-325 D1V68-1-01B		88	JY	AIR	mL	NA	NA	NA	.0	.0	CX-664
COMMENTS:													
0/00/00	0/00/00	H9H270000-325 D1V68-1-02C		88	JY	AIR	mL	NA	NA	NA	.0	.0	CX-664
COMMENTS:													

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 11

Canister Dilution
Initial & In can

analyst : dwc client: ???

notebook: 1583 page: 78

barometer: 730.4 date: 8/26/99

wo #	sample	can	P init inches	P init Abs,mm	P final psig	P final Abs,mm	dilution factor
h9h170116	d1em4	12484	-10.2	471.3	16.6	1588.9	3.37
	d1em6	12878	-11.0	451.0	16.2	1568.2	3.48
	d1em7	04745	-10.8	456.1	16.2	1568.2	3.44
	d1em8	12873	trip blank				
	d1em9	12433	-11.8	430.7	16.8	1599.2	3.71

1 psig = 2.036 inch Hg
Pinit(Abs,mm)=(Pinit(inch)*25.4mm/inch)+Pbar(mm)
Pfinal(Abs,mm)=(Pfinal(psig)*2.036 (inch Hg/psig)*25.4 (mm/inch))+Pbar(mm)
dilution factor = Pfinal(Abs,mm)/Pinit(Abs,mm)

candil.xls
rev.01

Lot# HGH170116		dlw	PBAR = 730.4		8/26/99	
Quant#	Can#	P.CO	Pt psig	Tocan	vol(mL)	pAscent
DIEM4	12984	-10.2	16.6			
DIEM6	12828	-11.0	16.2			
DIEM7	04745	-10.8	16.2			
DIEM8	12873	tri; blank	D.F = 1			
DIEM9	12423	-11.8	16.8			
Lot# HGH110145		dlw	PBAR = 730.4		8/26/99	
Quant#	Can#	P.CO	Pt psig	Tocan	vol(mL)	pAscent
D16M3	104	-18.4	16.6			
D16M7	93019	-19.2	17.6			
Lot# HGH160124		dlw	PBAR = 730.4		8/26/99	
Quant#	Can#	P.CO	Pt psig	Tocan	vol(mL)	pAscent
D1DPV	12212	-10.6	16.6			
D1DQ0	04306	-10.3	16.2			
D1DQ1	04392	-10.4	16.0			
D1DQ2	04167	-6.6	16.6			
			PBAR 734.7		8/30/99	
Lot# HGH240111		dlw	PBAR = 730.4		8/26/99	pAscent
Quant#	Can#	P.CO	Pt psig 8/30/99	Tocan	vol(mL)	pAscent
D1NF3	12523	-1.6	12.2 Dly 2161		30 mL + 40 mL H2O	
Dirt in valve.						
Lot# HGH170171		dlw	PBAR 734.7		8/30/99	
Quant#	Can#	P.CO	Pt psig	Tocan	vol(mL)	pAscent
D1F34	92081	BLANK	D.F. = 1.6			
D1F3E	12082	-9.6	13.6			
D1F3J	93065	-0.5	13.8			
D1F3M	12307	-6.0	13.4			
D1F3P	12411	-11.2	13.6			
D1F3R	93005	-1.2	14.4			
D1F3V	12484	-12.4	14.6			
D1F4J	0112	-9.1	14.2			
D1F4M	12185	-0.4	14.0			
D1F4R	93202	-11.3	14.4			

Read and Understood By

valve to right 1.

dlw 8/30/99

Signed Date Signed Date

D. SDG H21120

Organic Analyses Support Documentation

Environmental Standards Project Name: Basf/Wyandott
Sample Collection Dates: 8/19/99
Job Number: 9010925
Project Manager: Kendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: K. Grega
Completion Date: 11/99

Applicable Sample No's.: ☑ Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab. Control No.
SDG H21120	

Deliverables: CLP ☑ like
Tier I ☐
Tier II ☐
Limited ☐
Other ____

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail				Problems Identified				Support Documentation Attachments			
	Check (✓) If Yes or Footnote Letter for Comments Below				Check (✓) If Yes or Footnote Number for Comments Below				Check (✓) If Yes -- or Identify Attachment No.			
	VOA Method 8260B	BNA Method 8270B	PEST / PCB Method	Other Method(s)	VOA Method 8260B	BNA Method 8270B	PEST / PCB Method	Other Method(s)	VOA Method 8260B	BNA Method 8270B	PEST / PCB Method	Other Method(s)
Holding Times	✓	✓			✓				✓	✓		
Blank Analysis Results: Target Compounds	✓	✓			✓				✓	✓		
Blank Analysis Results: TICs												
System Mntr. Cmpds. &/or Surrogate Spike Rslts.	✓	✓			✓				✓	✓		
Matrix Spike / Matrix Spike Duplicate Results	✓								✓			
Blank Spike Results	✓	✓							✓	✓		
Duplicate Analysis Results ☐ Field ☐ Lab												
Qualitative Identification: Target Compounds	✓	✓										
Qualitative Identification: TICs												
DFTPP & BFB Mass Tuning	✓	✓							✓	✓		
GC Instrument Performance												
Initial Calibrations	✓	✓			✓	✓			✓	✓		
Continuing Calibrations	✓	✓			✓	✓			✓	✓		
Quantitation of Results	✓	✓							✓	✓		
DDT / Endrin Breakdown												
Surrogate Retention Time Shifts												
Internal Standards Performance	✓	✓			✓	✓			✓	✓		
Resolution Check Standards												
Analytical Sequence												
Florisil Cartridge Check & GPC Calibration												
GC Column Agreement												
Others:												

Comments: Data is acceptable for use unless otherwise qualified

BLANK ANALYSIS RESULTS FOR TARGET ORGANIC COMPOUNDS

H21120

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (units) µg/L	Qualification Limit 5x	Qualification Limit 10x
V	Aq	MB	D1QQ4101	benzene	0.23	1.15	
				CH_2Cl_2	0.24		2.4
			D1XAJ101	CH_2Cl_2	0.64		6.4
			Trip blank	benzene	0.25	1.25	
				CH_2Cl_2	8		80
SV	↓	MB	D1QCM101	none			

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

Aq. = Aqueous; S = Solid

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Rinse Blank; FB = Field Blank
IB = Instrument Blank; SB = Storage Blank

* = Inferred from instrument printouts and/or supporting data; mass spectra not provided.

+ = Contaminant observed on one column only.

Notes: _____

EVALUATION OF ORGANIC DUPLICATE ANALYSIS PRECISION

PRECISION OBJECTIVES		Compound > or = 5 X CRQL/MDL	Compound < 5 X CRQL
	Aqueous	RPD < or = 20%	Difference < or = CRQL/MDL
All Parameters	Solid	RPD < or = 40%	Difference < or = 2 X CRQL/MDL
	Air	RPD < or = 20%	Difference < or = CRQL/MDL

Sample Identification #1: CMSMW-14S Units (enter one): ug/L, mg/l, ug/kg, mg/kg or ug/m

Sample Identification #2: CMSMW-39S UNITS: ug/L

COMPOUND	SAMPLE ANALYTE CONCENTRATION	Q	DUPLICATE SAMPLE ANALYTE CONCENTRATION	Q	RELATIVE PERCENT DIFFERENCE (RPD)	CRQL/MD	NOTES
acetone	420.00		510.00		19	50.00	1,IN
benzene	0.80		1.00		22	5.00	2,IN
1,2-dichloroethane	0.48		0.56		15	5.00	2,IN
methylene chloride	14.00	U*	1.70	U*	157	5.00	2,J blank contamination
naphthalene	5.90		5.40		9	5.00	2,IN
bis(2-chloroisopropyl)ether	6.50		5.30		20	10.00	2,IN

NOTES:

1 - When both results are > or = 5 X CRQL/MDL, the acceptance limit is the relative percent difference must be < or = 20% for aqueous and air samples and must be < or = 40% for solid samples.

2 - When at least one of the results is < 5 X CRQL/MDL, the acceptance limit is the difference between the results must be < or = CRQL/MDL for aqueous and air samples and < or = 2 X CRQL/MDL for solid samples.

Q - The column in which the qualifier is entered to indicate if the analyte was not-detected or qualitatively questionable in the sample.

U - The compound was not-detected in the sample at or above the associated numerical value. One-half of the numerical value will be used for comparison purposes.

N.C. - The RPD was not calculated because one of the results was not-detected; the acceptance limit used is the difference between the results must be < or = CRQL/MDL for aqueous and air samples and < or = 2 X CRQL/MDL for solid samples.

J - The positive results should be considered estimated.

U*/B - The result should be considered "not-detected" (U*) or qualitatively questionable (B) due to blank contamination. The numerical value will be used for comparison purposes.

IN - The results are acceptable.

Comments:

SW846 8260A SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN QESSDG: H21120

Lot #: A9H210120

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
1	RFIMW-23	92	91	90	00
2	CMSMW-2	93	90	89	00
3	RFIMW-22	88	82 *	88	01
4	CMSMW-15	92	90	90	00
5	RFIMW-1	123	95	102	00
6	CMSMW-1	94	90	90	00
7	TRIP BLANK	108	96	99	00
8	INTRA-LAB QC	115	93	100	00
9	METHOD BLK. D1QQ4101	92	91	89	00
0	METHOD BLK. D1XAJ101	118	92	98	00
1	LCS D1QQ4102	91	90	89	00
2	LCS D1XAJ102	113	94	99	00
3	CMSMW-1 D	95	91	90	00
4	LAB MS/MSD D	115	96	97	00
5	CMSMW-1 S	94	91	91	00
6	LAB MS/MSD S	119	94	98	00

J/UJ ~~SW 8260B (8.5)~~ ~~(SW 8000B (8.6.2.4) - sample must be reanalyzed)~~

not required by SOP

dibromofluoromethane spiked but %R not reported on this form

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(69-127)
SRG02	= Toluene-d8	(90-112)
SRG03	= Bromofluorobenzene	(87-114)

CMSMW-1 97%

RFIMW-23 95%

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8260A MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H21120

Matrix Spike ID: CMSMW-1

Lot #: A9H210120 WO #: D1LL110D
BATCH: 9238142

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	330	ND	310	92	75- 113	
Trichloroethene	330	ND	330	100	71- 110	
Chlorobenzene	330	ND	320	96	81- 115	
Toluene	330	ND	310	94	78- 126	
Benzene	330	ND	300	89	78- 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

b Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

b Code: QESCAN SDG No: H21120

trix Spike ID: CMSMW-1

)t #: A9H210120 WO #: D1LL110E
BATCH: 9238142

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	330	310	93	0.010	20	75- 113	
Trichloroethene	330	340	101	1.9	22	71- 110	
Chlorobenzene	330	320	97	0.85	18	81- 115	
Toluene	330	310	94	0.59	24	78- 126	
Benzene	330	300	90	0.68	17	78- 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

ab Code: QESCAN SDG No: H21120

atrix Spike ID: LAB MS/MSD

batch QC

ot #: A9H250128 WO #: D1PVN103
BATCH: 9243214

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	10	ND	9.1	91	75- 113	
Trichloroethene	10	ND	9.7	97	71- 110	
Chlorobenzene	10	ND	9.2	92	81- 115	
Toluene	10	ND	9.6	96	78- 126	
Benzene	10	ND	11	107	78- 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits

PD: 0 out of 0 outside limits
pike Recovery: 0 out of 5 outside limits

OMMENTS:

SW846 8260A MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H21120

Matrix Spike ID: LAB MS/MSD

Lot #: A9H250128 WO #: D1PVN104
BATCH: 9243214

batch QC

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	10	9.6	96	5.1	20	75- 113	
Trichloroethene	10	10	100	2.8	22	71- 110	
Chlorobenzene	10	9.8	98	5.9	18	81- 115	
Toluene	10	10	102	5.8	24	78- 126	
Benzene	10	11	109	1.4	17	78- 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A CHECK SAMPLE RECOVERY

ab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

ab Code: QESCAN SDG No: H21120

ot #: A9H260000 WO #: D1QQ4102
BATCH: 9238142

8/25/99

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
Toluene	10	9.3	93	81- 117	
Benzene	10	9.1	91	77- 126	
1,1-Dichloroethene	10	9.3	93	87- 113	
Trichloroethene	10	10	100	89- 115	
Chlorobenzene	10	9.7	97	89- 119	

NOTES(S):

Values outside of QC limits

pike Recovery: 0 out of 5 outside limits

OMMENTS:

SW846 8260A CHECK SAMPLE RECOVERY

Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Code: QESCAN SDG No: H21120

8/30/95

#: A9H310000 WO #: D1XAJ102
BATCH: 9243214

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	4.0	3.8	94	87- 113	
Trichloroethene	4.0	4.0	101	89- 115	
Chlorobenzene	4.0	3.8	94	89- 119	
Toluene	4.0	4.0	101	81- 117	
Benzene	4.0	4.4	110	77- 126	

NOTES(S):

Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A METHOD BLANK SUMMARY

BLANK WORKORDER NO.

D1QQ4101

Lab Name: QUANTERRA

Lab Code: QESCAN SDG Number:H21120

Lab File ID: ux77420.d Lot Number: A9H210120

Date Analyzed: 08/25/99 Time Analyzed: 14:14

Matrix: WATER Date Extracted:08/25/99

GC Column: DB 624 ID: .25 Extraction Method: 5030/8260A

Instrument ID: UX7 Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
RFIMW-23	D1LLH101	ux77423.d	08/25/99	15:36
CMSMW-2	D1LLK101	ux77424.d	08/25/99	16:02
CMSMW-15	D1LLR101	ux77426.d	08/25/99	16:55
CMSMW-1	D1LL110D S	ux77432.d	08/25/99	19:36
CMSMW-1	D1LL110E D	ux77433.d	08/25/99	20:02
CMSMW-1	D1LL1101	ux77434.d	08/25/99	20:29
CHECK SAMPLE	D1QQ4102 C	ux77419.d	08/25/99	13:47

COMMENTS:

SW846 8260A METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D1XAJ101

Name: QUANTERRA

Code: QESCAN — SDG Number: H21120

File ID: ux35588.d — Lot Number: A9H210120

Date Analyzed: 08/30/99 — Time Analyzed: 09:52

Matrix: WATER — Date Extracted: 08/30/99

Column: DB-624 ID: .53 — Extraction Method: 5030/8260A

Instrument ID: UX3 — Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

4 days past 7-days of collection for aromatics only

CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
RFIMW-22 PH >2	D1LLN101	ux35590.d	08/30/99	10:55
RFIMW-1	D1LLW101	ux35591.d	08/30/99	11:27
TRIP BLANK	D1LMD101	ux35592.d	08/30/99	11:59
INTRA-LAB QC	D1PVN102	ux35595.d	08/30/99	13:34
LAB MS/MSD	D1PVN103 S	ux35606.d	08/30/99	19:25
LAB MS/MSD	D1PVN104 D	ux35607.d	08/30/99	19:57
CHECK SAMPLE	D1XAJ102 C	ux35587.d	08/30/99	09:20

COMMENTS:

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: A9H210120

Lab File ID: BFB161 BFB Injection Date: 06/07/99

Instrument ID: A3UX3 BFB Injection Time: 0950

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.2
75	30.0 - 60.0% of mass 95	43.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	71.1
175	5.0 - 9.0% of mass 174	5.1 (7.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	69.3 (97.6)1
177	5.0 - 9.0% of mass 176	4.6 (6.6)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE 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	500NG-IC60	UX34001	06/07/99	1041
02	VSTD010	250NG-IC60	UX34002	06/07/99	1113
03	VSTD004	100NG-IC60	UX34003	06/07/99	1144
04	VSTD040	1000NG-A9IC25	UX34005	06/07/99	1248
05	VSTD020	500NG-A9IC25	UX34006	06/07/99	1319
06	VSTD010	250NG-A9IC25	UX34007	06/07/99	1351
07	VSTD004	100NG-A9IC25	UX34008	06/07/99	1423
08	VSTD002	50NG-A9IC25	UX34009	06/07/99	1455
09	VSTD001	25NG-IC25	UX34010	06/07/99	1527
10	VSTD040	1000NG-IC25	UX34011	06/07/99	1559
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 07-Jun-1999 16:49

Calibration History

Method : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Start Cal Date: 07-JUN-1999 10:10 10:41
End Cal Date : 07-JUN-1999 ~~15:59~~

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 2.000		
07-JUN-1999 14:55	3-IX	ux34009.d
07-JUN-1999 15:27	1-8260	ux34010.d
Cal Level: 2 , Cal Amount: 4.000		
07-JUN-1999 14:23	3-IX	ux34008.d
07-JUN-1999 11:44	1-8260	ux34003.d
Cal Level: 3 , Cal Amount: 10.000		
07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d
Cal Level: 4 , Cal Amount: 20.000		
07-JUN-1999 13:19	3-IX	ux34006.d
07-JUN-1999 10:41	1-8260	ux34001.d
Cal Level: 5 , Cal Amount: 40.000		
07-JUN-1999 12:48	3-IX	ux34005.d
07-JUN-1999 15:59	1-8260	ux34011.d

Continuing Calibration

07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10 10:41
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/msv/a3ux3.i/V90607A.b/ux34009.d
Level 2: /chem/can/msv/a3ux3.i/V90607A.b/ux34008.d
Level 3: /chem/can/msv/a3ux3.i/V90607A.b/ux34007.d
Level 4: /chem/can/msv/a3ux3.i/V90607A.b/ux34006.d
Level 5: /chem/can/msv/a3ux3.i/V90607A.b/ux34005.d

	Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD
7	Dichlorodifluoromethane	0.46124	0.41711	0.43125	0.41963	0.40548	0.42694	4.976
8	Chloromethane	0.32665	0.42690	0.32362	0.36384	0.29562	0.34732	14.587
9	Vinyl Chloride	0.39876	0.38566	0.36097	0.35092	0.35340	0.36994	5.724
10	Bromomethane	0.25798	0.30992	0.24842	0.22793	0.22285	0.25342	13.701
11	Chloroethane	0.24758	0.22912	0.21919	0.18684	0.16506	0.20956	15.859
12	Trichlorofluoromethane	0.61040	0.55967	0.56250	0.54522	0.52139	0.55984	5.826
13	1,1-Dichloroethene	0.36822	0.33667	0.31966	0.31282	0.29925	0.32732	8.108
14	Methylene Chloride	0.32174	0.27725	0.23948	0.23892	0.22673	0.26083	14.946
15	trans-1,2-Dichloroethene	0.38959	0.37319	0.35510	0.35112	0.33648	0.36110	5.709
16	1,1-Dichloroethane	0.70944	0.63005	0.59435	0.59322	0.60655	0.62672	7.748
17	2,2-Dichloropropane	0.51095	0.48996	0.49387	0.48451	0.47147	0.49015	2.934
18	cis-1,2-dichloroethene	0.30383	0.29923	0.27480	0.27851	0.26455	0.28419	5.883
M 19	1,2-Dichloroethene (total)	0.34671	0.33621	0.31495	0.31482	0.30052	0.32264	5.743
20	Bromochloromethane	0.12535	0.11987	0.10842	0.11023	0.10130	0.11303	8.456
21	Chloroform	0.61838	0.57181	0.53803	0.54105	0.51439	0.55673	7.194
22	1,1,1-Trichloroethane	0.55745	0.52102	0.51295	0.51130	0.49096	0.51874	4.687
23	Carbon Tetrachloride	0.48435	0.44733	0.45335	0.45011	0.43139	0.45330	4.257
24	1,1-Dichloropropene	0.53857	0.54866	0.54719	0.53405	0.51586	0.53687	2.461
25	Benzene	1.00949	1.04126	0.99815	1.01334	0.95136	1.00272	3.271
26	1,2-Dichloroethane	0.20369	0.19326	0.18039	0.18730	0.17142	0.18721	6.564
27	Trichloroethene	0.40432	0.42154	0.40389	0.40834	0.37294	0.40221	4.440
28	1,2-Dichloropropane	0.32944	0.33296	0.32329	0.33233	0.30589	0.32478	3.459
29	Dibromomethane	0.13365	0.13012	0.12386	0.12898	0.11810	0.12694	4.776
30	Bromodichloromethane	0.44623	0.43249	0.40889	0.42053	0.39050	0.41973	5.106
31	cis-1,3-Dichloropropene	0.35682	0.37883	0.36535	0.38134	0.35378	0.36723	3.408
32	Toluene	5.13548	5.51197	5.26604	5.16488	4.78669	5.17301	5.062

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD
33 trans-1,3-Dichloropropene	1.03501	1.19624	1.15424	1.20197	1.12953	1.14340	5.912
34 1,1,2-Trichloroethane	0.61382	0.72410	0.64564	0.68903	0.59353	0.65322	8.201
35 Tetrachloroethene	1.87838	2.00207	1.97453	1.87437	1.73708	1.89328	5.503
36 1,3-Dichloropropane	1.10967	1.23419	1.20979	1.26204	1.16843	1.19682	4.982
37 Dibromochloromethane	1.16068	1.18798	1.15781	1.19766	1.08460	1.15775	3.831
38 1,2-Dibromoethane	0.73109	0.78625	0.75258	0.80099	0.72137	0.75845	4.539
39 Chlorobenzene	3.26700	3.50766	3.30891	3.25361	2.94788	3.25701	6.163
40 1,1,1,2-Tetrachloroethane	1.21832	1.32133	1.31059	1.32851	1.20925	1.27760	4.594
41 Ethylbenzene	1.95033	2.00859	1.92151	1.84920	1.74068	1.89406	5.447
42 m + p-Xylene	2.41630	2.49267	2.41554	2.31808	2.19967	2.36845	4.766
43 Xylene-o	2.17206	2.26424	2.13483	2.08515	1.94476	2.12021	5.564
44 Xylenes (total)	1.75116	2.41653	2.32197	2.24044	2.11470	2.16896	11.919
45 Styrene	3.30191	3.52858	3.30108	3.24082	3.00297	3.27507	5.730
46 Bromoform	0.57453	0.68455	0.66902	0.67976	0.58187	0.63795	8.604
47 Bromobenzene	0.77092	0.92830	0.86270	0.86442	0.77090	0.83945	8.091
48 Isopropylbenzene	7.12268	6.84500	6.61874	6.20021	5.99364	6.55605	7.037
49 1,2,3-Trichloropropane	0.13069	0.10902	0.10623	0.10370	0.08829	0.10759	14.136
50 1,1,2,2-Tetrachloroethane	0.46372	0.52420	0.52154	0.48874	0.42980	0.48560	8.227
51 2-Chlorotoluene	0.81756	0.91151	0.85193	0.81931	0.76755	0.83357	6.356
52 n-Propylbenzene	1.00201	1.10007	1.05255	0.97812	0.95645	1.01784	5.721
53 4-Chlorotoluene	0.79541	0.89416	0.85370	0.81930	0.76110	0.82473	6.241
54 1,3,5-Trimethylbenzene	2.69277	2.99407	2.84555	2.66422	2.65532	2.77039	5.299
55 tert-Butylbenzene	3.01938	3.34518	3.20757	2.94363	2.92597	3.08835	5.888
56 1,2,4-Trimethylbenzene	2.45361	2.83050	2.65751	2.51957	2.48365	2.58897	6.023
57 1,3-Dichlorobenzene	1.64804	1.80981	1.72557	1.62337	1.49589	1.66053	7.072
58 sec-Butylbenzene	4.48136	4.68097	4.60689	4.08752	4.23894	4.41914	5.659
59 1,4-Dichlorobenzene	1.68634	1.91039	1.79399	1.66431	1.53779	1.71856	8.185
60 4-Isopropyltoluene	3.46737	3.74019	3.67145	3.28052	3.33189	3.49828	5.798
61 1,2-Dichlorobenzene	1.22674	1.43021	1.34373	1.26913	1.15120	1.28420	8.358
62 n-Butylbenzene	3.53390	3.78787	3.84343	3.31951	3.44220	3.58538	6.259
63 1,2-Dibromo-3-chloropropane	0.10596	0.10704	0.08802	0.09077	0.07304	0.09296	15.149
64 1,2,4-Trichlorobenzene	0.92929	1.12483	1.02242	0.99712	0.89316	0.99336	9.044
65 Naphthalene	0.46544	0.75921	0.71475	0.76067	0.62335	0.66468	18.740

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

	Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF		% RSD	
66	Hexachlorobutadiene	1.13026	0.92912	1.07261	0.88055	0.94089	0.99069		10.658	
67	1,2,3-Trichlorobenzene	0.67296	0.89338	0.74690	0.74522	0.65001	0.74169		12.822	
68	Acetone	0.01923	0.01817	0.01617	0.01847	0.01183	0.01677		17.797	
69	Carbon Disulfide	1.16729	1.05847	1.04514	1.02455	1.01234	1.06156		5.816	
70	2-Butanone	0.03486	0.03495	0.03265	0.03855	0.03225	0.03465		7.235	
71	Vinyl Acetate	0.07674	0.21617	0.23745	0.23048	0.23967	0.20010		34.766	no +'s
72	4-Methyl-2-Pentanone	0.63419	0.58126	0.47602	0.50293	0.43307	0.52549		15.468	
73	2-Hexanone	0.28452	0.37293	0.31130	0.33379	0.26271	0.31305		13.710	
74	Acrolein	0.01176	0.00964	0.00877	0.00894	0.00815	0.00945		14.791	<-
75	Acrylonitrile	0.01851	0.01900	0.01715	0.01769	0.01596	0.01766		6.736	
76	2-Chloroethyl vinyl ether	0.01944	0.03181	0.03635	0.04525	0.03496	0.03356	NT	27.821	
77	Iodomethane	0.59226	0.59727	0.56944	0.56309	0.57692	0.57980		2.522	
78	1,4-Dichloro-2-butene	0.07732	0.08634	0.08345	0.08870	0.08236	0.08363		5.163	
79	Acetonitrile	0.00743	0.00693	0.00582	0.00616	0.00589	0.00645		10.983	<-
80	2-Chloro-1,3-butadiene	0.64938	0.63032	0.55518	0.55518	0.54730	0.58747		8.237	
81	3-Chloro-1-propene	0.18488	0.20329	0.16523	0.16076	0.15776	0.17438		11.072	
82	1,4-Dioxane	0.00069	0.00075	0.00071	0.00076	0.00063	0.00071	NT	7.567	<-
83	Isobutanol	0.00410	0.00348	0.00261	0.00163	0.00187	0.00274		38.220	<- no +'s
84	Ethyl methacrylate	0.77314	1.03952	0.90253	0.93073	0.74511	0.87820		13.726	
85	Methyl methacrylate	0.09697	0.10803	0.09582	0.09783	0.08981	0.09769		6.731	
86	Methacrylonitrile	0.06981	0.05967	0.06480	0.05451	0.04880	0.05952		13.904	
87	Propionitrile	0.00734	0.00760	0.00679	0.00582	0.00612	0.00673		11.333	<-
88	Freon-113	0.50211	0.43262	0.44371	0.42699	0.40557	0.44220		8.198	
89	n-Butanol	0.00163	0.00138	0.00138	0.00144	0.00138	0.00144	NT	7.476	<-
90	Ethyl Acetate	1.14883	0.97752	0.98641	1.04630	1.02458	1.03673		6.621	
91	Cyclohexanone	0.05166	0.05045	0.03877	0.03464	0.03395	0.04189	NT	20.465	
92	Ethyl Ether	0.12809	0.13238	0.11060	0.10770	0.10647	0.11705		10.446	
93	Tetrahydrofuran	0.05912	0.02941	0.02559	0.02817	0.02182	0.03282	NT	45.657	NT
94	Methyl tert-butyl ether	0.30768	0.31563	0.29626	0.31095	0.27542	0.30119		5.338	
95	Dichlorofluoromethane	0.87950	0.99006	0.76934	0.74367	0.73094	0.82270		13.419	
96	1-Chlorohexane	+++++	+++++	+++++	+++++	+++++	+++++		+++++	<-
97	Ethanol	+++++	+++++	+++++	+++++	+++++	+++++		+++++	<-
98	tert-Butyl Alcohol	0.00456	0.00565	0.00480	0.00479	0.00416	0.00479	NT	11.415	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

	Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD	
	99 Hexane	0.65213	0.56198	0.57076	0.56193	0.56136	0.58163	6.809	
	100 Isopropyl Ether	0.17943	0.17166	0.16661	0.16870	0.16999	0.17128	2.871	
	101 2-Nitropropane	0.03254	0.01848	0.01592	0.01855	0.01550	0.02020 NT	34.872 NT	
	146 2-Methylfuran	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	147 Tetrahydrothiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	148 1,4-Dichlorobutane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	154 Paraldehyde	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	155 Thiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	156 Crotononitrile(1st Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	157 Crotononitrile(2nd Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M	158 Total Crotononitrile	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
S	150 1,2-Dichloroethane-d4	0.18502	0.17382	0.15788	0.16169	0.15206	0.16609	7.974	
S	151 Toluene-d8	4.79481	4.78517	4.66836	4.52477	4.20176	4.59497	5.342	
S	152 Bromoflourobenzene	1.54857	1.60417	1.50037	1.44327	1.31282	1.48184	7.531	
S	153 Dibromoflouromethane	0.42813	0.39432	0.37892	0.37385	0.34881	0.38481	7.596	

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34011.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 15:59
Lab Sample ID: 1000NG-IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/N826025

COMPOUND	%RSD
?,2-Dichloroethene (total)	5.7
?Xylenes (total)	11.9
Dichlorodifluoromethane	5.0
Chloromethane	14.6
Vinyl Chloride	5.7
Bromomethane	13.7
Chloroethane	15.9
Trichlorofluoromethane	5.8
Acrolein	14.8
?,1-Dichloroethene	8.1
Freon-113	8.2
Acetone	17.8
Iodomethane	2.5
Carbon Disulfide	5.8
Acetonitrile	11.0
Methylene Chloride	14.9
tert-Butyl Alcohol	11.4
Acrylonitrile	6.7
trans-1,2-Dichloroethene	5.7
Methyl tert-butyl ether	5.3
Hexane	6.8
?,1-Dichloroethane	7.7
Vinyl Acetate	34.8
cis-1,2-dichloroethene	5.9
2,2-Dichloropropane	2.9
2-Butanone	7.2
Bromochloromethane	8.5
Tetrahydrofuran	45.7
Chloroform	7.2
Dibromoflouromethane	7.6
?,1,1-Trichloroethane	4.7
?,1-Dichloropropene	2.5
Carbon Tetrachloride	4.3
?,2-Dichloroethane-d4	8.0
Benzene	3.3
?,2-Dichloroethane	6.6
Trichloroethene	4.4
?,2-Dichloropropane	3.5
Dibromomethane	4.8

Data File: /chem/can/msv/a3ux3.i/V90607A.b/ux34011.d
Report Date: 06/07/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34011.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 15:59
Lab Sample ID: 1000NG-IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b

COMPOUND	%RSD
1,4-Dioxane	7.6
Bromodichloromethane	5.1
2-Chloroethyl vinyl ether	27.8
cis-1,3-Dichloropropene	3.4
4-Methyl-2-Pentanone	15.5
Toluene-d8	5.3
Toluene	5.1
trans-1,3-Dichloropropene	5.9
Ethyl methacrylate	13.7
1,1,2-Trichloroethane	8.2
Tetrachloroethene	5.5
1,3-Dichloropropane	5.0
2-Hexanone	13.7
Dibromochloromethane	3.8
1,2-Dibromoethane	4.5
Chlorobenzene	6.2
1,1,1,2-Tetrachloroethane	4.6
Ethylbenzene	5.4
m + p-Xylene	4.8
Xylene-o	5.6
Styrene	5.7
Bromoform	8.6
Isopropylbenzene	7.0
Bromoflourobenzene	7.5
Bromobenzene	8.1
1,1,2,2-Tetrachloroethane	8.2
1,2,3-Trichloropropane	14.1
1,4-Dichloro-2-butene	5.2
n-Propylbenzene	5.7
2-Chlorotoluene	6.4
4-Chlorotoluene	6.2
1,3,5-Trimethylbenzene	5.3
tert-Butylbenzene	5.9
1,2,4-Trimethylbenzene	6.0
sec-Butylbenzene	5.7
1,3-Dichlorobenzene	7.1
4-Isopropyltoluene	5.8
1,4-Dichlorobenzene	8.2
1,2-Dichlorobenzene	8.4

Data File: /chem/can/msv/a3ux3.i/V90607A.b/ux34011.d
Report Date: 06/07/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34011.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 15:59
Lab Sample ID: 1000NG-IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/

COMPOUND	%RSD
n-Butylbenzene	6.3
1,2-Dibromo-3-chloropropane	15.1
1,2,4-Trichlorobenzene	9.0
Hexachlorobutadiene	10.7
Naphthalene	18.7
1,2,3-Trichlorobenzene	12.8

The average of all %RSD's in the initial calibration is 8.7

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34005.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 12:48
Lab Sample ID: 1000NG-A9IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/N8260

COMPOUND	%RSD
Dichlorofluoromethane	13.4
Ethyl Ether	10.4
3-Chloro-1-propene	11.1
2-Chloro-1,3-butadiene	8.2
Ethyl Acetate	6.6
Isopropyl Ether	2.9
Propionitrile	11.3
Methacrylonitrile	13.9
Isobutanol	38.2
n-Butanol	7.5
Methyl methacrylate	6.7
2-Nitropropane	34.9
Cyclohexanone	20.5

The average of all %RSD's in the initial calibration is 14.3

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Code: QESOH Case No.: SAS No.: SDG No.: A9E210120

Lab File ID: BFB234 BFB Injection Date: 08/30/99

Instrument ID: A3UX3 BFB Injection Time: 0804

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.1
75	30.0 - 60.0% of mass 95	51.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	59.4
175	5.0 - 9.0% of mass 174	4.2 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	56.7 (95.4)1
177	5.0 - 9.0% of mass 176	3.8 (6.7)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	250NG-CC60	UX35585	08/30/99	0816
02	VSTD010	250NG-A9CC25	UX35586	08/30/99	0848
03	D1XAJ-CHK	D1XAJ102	UX35587	08/30/99	0920
04	D1XAJ-BLK	D1XAJ101	UX35588	08/30/99	0952
05	RFIMW-22	D1LLN101	UX35590	08/30/99	1055
06	RFIMW-1	D1LLW101	UX35591	08/30/99	1127
07	TRIP BLANK	D1LMD101	UX35592	08/30/99	1159
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 31-Aug-1999 09:53

Calibration History

Method : /chem/can/msv/a3ux3.i/V90830A.b/N826025UX3-3.m
Start Cal Date: 07-JUN-1999 10:10 10:41
End Cal Date : 07-JUN-1999 15:59

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 2.000		
07-JUN-1999 14:55	3-IX	ux34009.d
07-JUN-1999 15:27	1-8260	ux34010.d
Cal Level: 2 , Cal Amount: 4.000		
07-JUN-1999 14:23	3-IX	ux34008.d
07-JUN-1999 11:44	1-8260	ux34003.d
Cal Level: 3 , Cal Amount: 10.000		
07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d
Cal Level: 4 , Cal Amount: 20.000		
07-JUN-1999 13:19	3-IX	ux34006.d
07-JUN-1999 10:41	1-8260	ux34001.d
Cal Level: 5 , Cal Amount: 40.000		
07-JUN-1999 12:48	3-IX	ux34005.d
07-JUN-1999 15:59	1-8260	ux34011.d

Continuing Calibration

30-AUG-1999 08:16	1-8260	ux35585.d
30-AUG-1999 08:48	3-IX	ux35586.d

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35585.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:16
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
0	m + p-Xylene	500.0000	438.7995	12.2	50.0
0	Xylene-o	250.0000	217.9494	12.8	50.0
1	Dichlorodifluoromethane	250.0000	289.6903	15.9	50.0
2	Chloromethane	250.0000	266.4300	6.6	50.0
3	Vinyl Chloride	250.0000	263.4380	5.4	20.0
4	Bromomethane	250.0000	219.9992	12.0	50.0
5	Chloroethane	250.0000	286.6570	14.7	50.0
6	Trichlorofluoromethane	250.0000	279.2262	11.7	50.0
9	1,1-Dichloroethene	250.0000	214.1577	14.3	20.0
10	Methylene Chloride	250.0000	228.2097	8.7	50.0
13	trans-1,2-Dichloroethene	250.0000	211.0642	15.6	50.0
15	1,1-Dichloroethane	250.0000	267.6493	7.1	50.0
17	cis-1,2-dichloroethene	250.0000	228.3612	8.7	50.0
18	Chloroform	250.0000	269.1185	7.6	20.0
19	Bromochloromethane	250.0000	231.1185	7.6	50.0
20	1,1,1-Trichloroethane	250.0000	281.7600	12.7	50.0
21	Carbon Tetrachloride	250.0000	294.2449	17.7	50.0
23	1,2-Dichloroethane	250.0000	325.9922	30.4	50.0
24	Benzene	250.0000	264.9454	6.0	50.0
26	Trichloroethene	250.0000	245.4240	1.8	50.0
27	1,2-Dichloropropane	250.0000	285.3431	14.1	20.0
28	Bromodichloromethane	250.0000	264.8897	6.0	50.0
31	cis-1,3-Dichloropropene	250.0000	273.7769	9.5	50.0
33	Toluene	250.0000	243.2145	2.7	20.0
34	trans-1,3-Dichloropropene	250.0000	276.3284	10.5	50.0
36	1,1,2-Trichloroethane	250.0000	236.3291	5.5	50.0
37	Tetrachloroethene	250.0000	218.4230	12.6	50.0
38	Dibromochloromethane	250.0000	243.6355	2.5	50.0
40	Chlorobenzene	250.0000	228.2512	8.7	50.0
41	Ethylbenzene	250.0000	222.2587	11.1	20.0
42	Xylenes (total)	750.0000	656.7488	12.4	50.0
44	Styrene	250.0000	216.0094	13.6	50.0
45	Bromoform	250.0000	196.6196	21.4	50.0
46	1,1,2,2-Tetrachloroethane	250.0000	249.3342	0.3	50.0
48	1,3-Dichlorobenzene	250.0000	230.2425	7.9	50.0
49	1,4-Dichlorobenzene	250.0000	227.5964	9.0	50.0
50	1,2-Dichlorobenzene	250.0000	226.3795	9.4	50.0
60	Dibromomethane	250.0000	237.9593	4.8	50.0
63	1,2-Dibromoethane	250.0000	240.0693	4.0	50.0

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35585.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:16
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
64	1,1,1,2-Tetrachloroethane	250.0000	268.5335	7.4	50.0	
65	1,2,3-Trichloropropane	250.0000	232.3954	7.0	50.0	
69	1,2-Dibromo-3-chloropropane	250.0000	185.7493	25.7	50.0	↓
74	2,2-Dichloropropane	250.0000	273.8426	9.5	50.0	
75	1,1-Dichloropropene	250.0000	258.0867	3.2	50.0	
77	1,3-Dichloropropane	250.0000	272.8028	9.1	50.0	
83	n-Propylbenzene	250.0000	257.9057	3.2	50.0	
84	Bromobenzene	250.0000	236.1818	5.5	50.0	
85	1,3,5-Trimethylbenzene	250.0000	255.2580	2.1	50.0	
86	2-Chlorotoluene	250.0000	255.8304	2.3	50.0	
87	4-Chlorotoluene	250.0000	254.1683	1.7	50.0	
88	tert-Butylbenzene	250.0000	265.6300	6.3	50.0	
89	1,2,4-Trimethylbenzene	250.0000	257.0952	2.8	50.0	
90	sec-Butylbenzene	250.0000	261.4193	4.6	50.0	
91	4-Isopropyltoluene	250.0000	256.6694	2.7	50.0	
94	n-Butylbenzene	250.0000	281.8405	12.7	50.0	
95	1,2,4-Trichlorobenzene	250.0000	204.6417	18.1	50.0	
96	Hexachlorobutadiene	250.0000	249.4456	0.2	50.0	
97	Naphthalene	250.0000	280.3560	12.1	50.0	
98	1,2,3-Trichlorobenzene	250.0000	201.9599	19.2	50.0	
101	Chlorobenzene-d5	250.0000	250.0000	0.0	50.0	
102	1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0	→ J (some R?)
106	Acetone	2500.0000	3224.4733	29.0	50.0	↑
107	Carbon Disulfide	250.0000	237.6898	4.9	50.0	
108	2-Butanone	2500.0000	3014.6291	20.6	50.0	
109	Vinyl Acetate	500.0000	410.1411	18.0	50.0	
110	4-Methyl-2-Pentanone	2500.0000	2508.2694	0.3	50.0	
111	2-Hexanone	2500.0000	2831.5029	13.3	50.0	
112	Acrolein	5000.0000	3296.3508	34.1	50.0	↓ → R
113	Acrylonitrile	5000.0000	5171.6910	3.4	50.0	
114	2-Chloroethyl vinyl ether	1000.0000	5.8364	99.4	50.0	MT ↓
115	Iodomethane	250.0000	150.3077	39.9	50.0	↓
116	1,4-Dichloro-2-butene	250.0000	275.5711	10.2	50.0	
117	Acetonitrile	2500.0000	2731.1668	9.2	50.0	
120	1,4-Dioxane	12500.0000	10872.4187	13.0	50.0	
122	Ethyl methacrylate	250.0000	237.6604	4.9	50.0	
126	Freon-113	250.0000	212.1027	15.2	50.0	
127	1,2-Dichloroethene (total)	500.0000	439.4253	12.1	50.0	
133	Tetrahydrofuran	250.0000	266.6993	6.7	50.0	

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35585.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:16
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
134 Methyl tert-butyl ether	250.0000	198.6413	20.5	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
140 tert-Butyl Alcohol	5000.0000	4313.8665	13.7	50.0
141 Hexane	250.0000	255.1890	2.1	50.0
144 Isopropylbenzene	250.0000	243.4519	2.6	50.0
150 1,2-Dichloroethane-d4	250.0000	320.2540	28.1	50.0
151 Toluene-d8	250.0000	228.3269	8.7	50.0
152 Bromoflourobenzene	250.0000	243.5846	2.6	50.0
153 Dibromoflouromethane	250.0000	243.7731	2.5	50.0

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QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 30-AUG-1999 08:16
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82

10:41

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
S	150 1,2-Dichloroethane-d4	0.166	0.213	0.010	-28.1	50.0
S	151 Toluene-d8	4.595	4.197	0.010	8.7	50.0
S	152 Bromoflourobenzene	1.482	1.444	0.010	2.6	50.0
S	153 Dibromoflouromethane	0.385	0.375	0.010	2.5	50.0
	7 Dichlorodifluoromethane	0.427	0.495	0.010	-15.9	50.0
	8 Chloromethane	0.347	0.370	0.100	-6.6	50.0
	9 Vinyl Chloride	0.370	0.390	0.010	-5.4	20.0
	10 Bromomethane	0.253	0.223	0.010	12.0	50.0
	11 Chloroethane	0.210	0.240	0.010	-14.7	50.0
	12 Trichlorofluoromethane	0.560	0.625	0.010	-11.7	50.0
	13 1,1-Dichloroethene	0.327	0.280	0.010	14.3	20.0
	14 Methylene Chloride	0.261	0.238	0.010	8.7	50.0
	15 trans-1,2-Dichloroethene	0.361	0.305	0.010	15.6	50.0
	16 1,1-Dichloroethane	0.627	0.671	0.100	-7.1	50.0
	18 cis-1,2-dichloroethene	0.284	0.260	0.010	8.7	50.0
M	19 1,2-Dichloroethene (total)	0.323	0.282	0.010	12.5	50.0
	21 Chloroform	0.557	0.599	0.010	-7.6	20.0
	22 1,1,1-Trichloroethane	0.519	0.585	0.010	-12.7	50.0
	23 Carbon Tetrachloride	0.453	0.534	0.010	-17.7	50.0
	25 Benzene	1.003	1.063	0.010	-6.0	50.0
	26 1,2-Dichloroethane	0.187	0.244	0.010	-30.4	50.0
	27 Trichloroethene	0.402	0.395	0.010	1.8	50.0
	28 1,2-Dichloropropane	0.325	0.371	0.010	-14.1	20.0
	29 Dibromomethane	0.127	0.121	0.010	4.8	50.0
	30 Bromodichloromethane	0.420	0.445	0.010	-6.0	50.0
	31 cis-1,3-Dichloropropene	0.367	0.402	0.010	-9.5	50.0
	32 Toluene	5.173	5.033	0.010	2.7	20.0
	33 trans-1,3-Dichloropropene	1.143	1.264	0.010	-10.5	50.0
	34 1,1,2-Trichloroethane	0.653	0.618	0.010	5.5	50.0
	35 Tetrachloroethene	1.893	1.654	0.010	12.6	50.0
	37 Dibromochloromethane	1.158	1.128	0.010	2.5	50.0
	38 1,2-Dibromoethane	0.758	0.728	0.010	4.0	50.0
	39 Chlorobenzene	3.257	2.974	0.300	8.7	50.0
	41 Ethylbenzene	1.894	1.684	0.010	11.1	20.0
	42 m + p-Xylene	2.368	2.079	0.010	12.2	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 30-AUG-1999 08:16
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
	43 Xylene-o	2.120	1.848	0.010	12.8	50.0	
M	44 Xylenes (total)	2.169	2.002	0.010	7.7	50.0	
	45 Styrene	3.275	2.830	0.010	13.6	50.0	
	46 Bromoform	0.638	0.502	0.100	21.4	50.0	
	49 1,2,3-Trichloropropane	0.108	0.100	0.010	7.0	50.0	
	50 1,1,2,2-Tetrachloroethane	0.486	0.484	0.300	0.3	50.0	
	57 1,3-Dichlorobenzene	1.661	1.529	0.010	7.9	50.0	
	59 1,4-Dichlorobenzene	1.719	1.565	0.010	9.0	50.0	
	61 1,2-Dichlorobenzene	1.284	1.163	0.010	9.4	50.0	
	68 Acetone	0.017	0.022	0.010	-29.0	50.0	↑
	69 Carbon Disulfide	1.062	1.009	0.010	4.9	50.0	
	70 2-Butanone	0.035	0.042	0.010	-20.6	50.0	
	71 Vinyl Acetate	0.200	0.164	0.010	18.0	50.0	
	72 4-Methyl-2-Pentanone	0.525	0.527	0.010	-0.3	50.0	
	73 2-Hexanone	0.313	0.355	0.010	-13.3	50.0	
	74 Acrolein	0.009	0.006	0.010	34.1	50.0	<- ↓
	75 Acrylonitrile	0.018	0.018	0.010	-3.4	50.0	
	76 2-Chloroethyl vinyl ether	0.034	0.000	0.010	99.4	50.0	<- ↓
	77 Iodomethane	0.580	0.349	0.010	39.9	50.0	
	78 1,4-Dichloro-2-butene	0.084	0.092	0.010	-10.2	50.0	↓
	82 1,4-Dioxane	0.001	0.001	0.010	13.0	50.0	<-
	84 Ethyl methacrylate	0.878	0.835	0.010	4.9	50.0	
	88 Freon-113	0.442	0.375	0.010	15.2	50.0	
	93 Tetrahydrofuran	0.033	0.035	0.010	-6.7	50.0	
	94 Methyl tert-butyl ether	0.301	0.239	0.010	20.5	50.0	
	98 tert-Butyl Alcohol	0.005	0.004	0.010	13.7	50.0	<-
	99 Hexane	0.582	0.594	0.010	-2.1	50.0	
	17 2,2-Dichloropropane	0.490	0.537	0.010	-9.5	50.0	
	20 Bromochloromethane	0.113	0.104	0.010	7.6	50.0	
	24 1,1-Dichloropropene	0.537	0.554	0.010	-3.2	50.0	
	36 1,3-Dichloropropane	1.197	1.306	0.010	-9.1	50.0	
	40 1,1,1,2-Tetrachloroethane	1.278	1.372	0.010	-7.4	50.0	
	47 Bromobenzene	0.839	0.793	0.010	5.5	50.0	
	48 Isopropylbenzene	6.556	6.384	0.010	2.6	50.0	
	51 2-Chlorotoluene	0.834	0.853	0.010	-2.3	50.0	
	52 n-Propylbenzene	1.018	1.050	0.010	-3.2	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 30-AUG-1999 08:16
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82

COMPOUND	$\overline{RRF}$	RF10	MIN RRF	%D	MAX %D	
53 4-Chlorotoluene	0.825	0.838	0.010	-1.7	50.0	
54 1,3,5-Trimethylbenzene	2.770	2.829	0.010	-2.1	50.0	
55 tert-Butylbenzene	3.088	3.281	0.010	-6.3	50.0	
56 1,2,4-Trimethylbenzene	2.589	2.662	0.010	-2.8	50.0	
58 sec-Butylbenzene	4.419	4.621	0.010	-4.6	50.0	
60 4-Isopropyltoluene	3.498	3.592	0.010	-2.7	50.0	
62 n-Butylbenzene	3.585	4.042	0.010	-12.7	50.0	
63 1,2-Dibromo-3-chloropropane	0.093	0.069	0.010	25.7	50.0	
64 1,2,4-Trichlorobenzene	0.993	0.813	0.010	18.1	50.0	
65 Naphthalene	0.665	0.745	0.010	-12.1	50.0	
66 Hexachlorobutadiene	0.991	0.988	0.010	0.2	50.0	
67 1,2,3-Trichlorobenzene	0.742	0.599	0.010	19.2	50.0	
79 Acetonitrile	0.006	0.007	0.010	-9.2	50.0	<-

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35586.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35586.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:48
Lab Sample ID: 250NG-A9CC25
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0
118 2-Chloro-1,3-butadiene	250.0000	263.0226	5.2	50.0
119 3-Chloro-1-propene	250.0000	220.5927	11.8	50.0
121 Isobutanol	5000.0000	3041.9426	39.2	50.0
123 Methyl methacrylate	250.0000	276.0708	10.4	50.0
124 Methacrylonitrile	250.0000	248.0900	0.8	50.0
125 Propionitrile	500.0000	524.8462	5.0	50.0
129 n-Butanol	5000.0000	4717.4038	5.7	50.0
130 Ethyl Acetate	500.0000	518.0070	3.6	50.0
131 Cyclohexanone	2500.0000	1509.2412	39.6	50.0
132 Ethyl Ether	250.0000	236.1567	5.5	50.0
135 Dichlorofluoromethane	250.0000	266.3416	6.5	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
143 Isopropyl Ether	1250.0000	999.2277	20.1	50.0
145 2-Nitropropane	500.0000	369.5535	26.1	50.0

R
NT
NT

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i Injection Date: 30-AUG-1999 08:48
Lab File ID: ux35586.d Init. Calibration Date(s): 06/07/99 06/07/99
Analysis Type: WATER Init. Calibration Times: 10:10 15:59
Lab Sample ID: 250NG-A9CC25 Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82
Quant Type: ISTD

10:41

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
80 2-Chloro-1,3-butadiene	0.587	0.618	0.010	-5.2	50.0	
81 3-Chloro-1-propene	0.174	0.154	0.010	11.8	50.0	
83 Isobutanol	0.003	0.002	0.010	39.2	50.0	<-
85 Methyl methacrylate	0.098	0.108	0.010	-10.4	50.0	
86 Methacrylonitrile	0.060	0.059	0.010	0.8	50.0	
87 Propionitrile	0.007	0.007	0.010	-5.0	50.0	<-
89 n-Butanol	0.001	0.001	0.010	5.7	50.0	<-
90 Ethyl Acetate	1.037	1.074	0.010	-3.6	50.0	
91 Cyclohexanone	0.042	0.025	0.010	39.6	50.0	
92 Ethyl Ether	0.117	0.111	0.010	5.5	50.0	
95 Dichlorofluoromethane	0.823	0.876	0.010	-6.5	50.0	
100 Isopropyl Ether	0.171	0.137	0.010	20.1	50.0	
101 2-Nitropropane	0.020	0.015	0.010	26.1	50.0	

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: A9H210120

Lab File ID (Standard): UX35585 Date Analyzed: 08/30/99

Instrument ID: A3UX3 Time Analyzed: 0816

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

→SW 8260B (7.4.6, 7.4.7) compare IS from CCAL to IS midpoint ICAL

	EPA SAMPLE NO.	IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 AREA #	RT
	12 HOUR STD	138166	17.25	217279	22.55	684038	10.10
	UPPER LIMIT	276332	17.75	434558	23.05	1368076	10.60
	LOWER LIMIT	69083	16.75	108640	22.05	342019	9.60
01	D1XAJ-CHK	132477	17.24	202948	22.55	671835	10.08
02	D1XAJ-BLK	127341	17.24	201135	22.55	628983	10.09
03	RFIMW-22	80540	17.25	171349	22.54	271736*	10.08
04	RFIMW-1	138276	17.25	194652	22.55	756897	10.09
05	TRIP BLANK	126684	17.26	186271	22.55	641847	10.10
06							
07							
08							
09	CCAL 8/30/99 8:49	137008	17.25	212632	22.55	701599	10.08
10							
11							
12							
13	ICAL ICGO 6/7/99 11:13	192933	17.05	316714	22.45	980746	9.90
14							
15							
16	ICAL A9 6/7/99 13:51	150613	17.07	295164	22.46	933320	9.92
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: AS210120

Lab File ID: BFB282 BFB Injection Date: 07/12/99

Instrument ID: A3UX7 BFB Injection Time: 0828

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.9
75	30.0 - 60.0% of mass 95	49.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	50.0 - 120.0% of mass 95	69.7
175	5.0 - 9.0% of mass 174	5.0 (7.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	66.6 (95.6)1
177	5.0 - 9.0% of mass 176	5.1 (7.7)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD040	200NG-A9IC	UX76620	07/12/99	1017
02	VSTD020	100NG-A9IC	UX76621	07/12/99	1044
03	VSTD010	50NG-A9IC	UX76622	07/12/99	1112
04	VSTD005	25NG-A9IC	UX76623	07/12/99	1140
05	VSTD001	5NG-A9IC	UX76624	07/12/99	1208
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: A9H210120

Lab File ID: BFB315 BFB Injection Date: 08/25/99

Instrument ID: A3UX7 BFB Injection Time: 0908

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.1
75	30.0 - 60.0% of mass 95	48.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	67.9
175	5.0 - 9.0% of mass 174	5.2 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	66.5 (98.0)1
177	5.0 - 9.0% of mass 176	4.1 (6.1)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	50NG-IC	UX77411	08/25/99	0923
02	VSTD040	200NG-IC	UX77412	08/25/99	0950
03	VSTD020	100NG-IC	UX77413	08/25/99	1017
04	VSTD005	25NG-IC	UX77414	08/25/99	1044
05	VSTD001	5NG-IC	UX77415	08/25/99	1110
06	VSTD010	50NG-A9CC	UX77418	08/25/99	1320
07	D1QQ4-CHK	D1QQ4102	UX77419	08/25/99	1347
08	D1QQ4-BLK	D1QQ4101	UX77420	08/25/99	1414
09	FRIMW-23	D1LLH101	UX77423	08/25/99	1536
10	CMSMW-2	D1LLK101	UX77424	08/25/99	1602
11	CMSMW-15	D1LLR101	UX77426	08/25/99	1655
12	CMSMW-1 (S)	D1LL110D	UX77432	08/25/99	1936
13	A9H210120	D1LL110E	UX77433	08/25/99	2002
14	CMSMW-1	D1LL1101	UX77434	08/25/99	2029
15					
16					
17					
18					
19					
20					
21					
22					

RFIMW-23

CMSMW-1 (D)

Report Date: 26-Aug-1999 08:44

Calibration History

Method : /chem/can/msv/a3ux7.i/U90825A.b/N8260UX7-3.m
Start Cal Date: 02-JUL-1999 13:26 → 7/12/1999 10:17
End Cal Date : 25-AUG-1999 11:10 ✓

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 5.000		
12-JUL-1999 12:08	3-IX	ux76624.d
25-AUG-1999 11:10	1-8260	ux77415.d
Cal Level: 2 , Cal Amount: 25.000		
12-JUL-1999 11:40	3-IX	ux76623.d
25-AUG-1999 10:44	1-8260	ux77414.d
Cal Level: 3 , Cal Amount: 50.000		
12-JUL-1999 11:12	3-IX	ux76622.d
25-AUG-1999 09:23	1-8260	ux77411.d
Cal Level: 4 , Cal Amount: 100.00		
12-JUL-1999 10:44	3-IX	ux76621.d
25-AUG-1999 10:17	1-8260	ux77413.d
Cal Level: 5 , Cal Amount: 200.00		
12-JUL-1999 10:17	3-IX	ux76620.d
25-AUG-1999 09:50	1-8260	ux77412.d

Continuing Calibration

25-AUG-1999 09:23	1-8260	ux77411.d
25-AUG-1999 13:20	3-IX	ux77418.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 02-JUL-1999 13:26 → 7/12/99 10:17
End Cal Date : 25-AUG-1999 11:10
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : Falcon
Method file : /chem/can/msv/a3ux7.i/U90825A.b/N8260UX7-3.m
Cal Date : 25-Aug-1999 12:36 evansl
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/msv/a3ux7.i/U90712A.b/ux76624.d
Level 2: /chem/can/msv/a3ux7.i/U90712A.b/ux76623.d
Level 3: /chem/can/msv/a3ux7.i/U90712A.b/ux76622.d
Level 4: /chem/can/msv/a3ux7.i/U90712A.b/ux76621.d
Level 5: /chem/can/msv/a3ux7.i/U90712A.b/ux76620.d

	Compound	5.000 Level 1	25.000 Level 2	50.000 Level 3	100.000 Level 4	200.000 Level 5	RRF	% RSD	
8	Dichlorodifluoromethane	0.33146	0.27131	0.26870	0.28729	0.29142	0.29004	8.674	
9	Chloromethane	0.33698	0.27895	0.25158	0.27713	0.24516	0.27796	13.043	
10	Vinyl Chloride	0.31594	0.28422	0.26804	0.28617	0.28190	0.28725	6.107	
11	Bromomethane	0.15781	0.10938	0.10880	0.08620	0.05925	0.10429	34.793	no ↓ >
12	Chloroethane	0.13590	0.10883	0.11714	0.09111	0.07481	0.10556	22.316	
13	Trichlorofluoromethane	0.16674	0.14894	0.15506	0.15780	0.16153	0.15802	4.241	
14	Dichlorofluoromethane	0.05505	0.05997	0.06592	0.07624	0.09081	0.06960	20.470	
15	Acrolein	0.03800	0.03119	0.02941	0.02977	0.02763	0.03120	12.843	
16	Acetone	0.30737	0.15863	0.14905	0.12822	0.12155	0.17296	44.304	J
17	1,1-Dichloroethene	0.25761	0.23284	0.23001	0.22365	0.19407	0.22764	10.003	
18	Freon-113	0.16073	0.14845	0.17478	0.15343	0.15251	0.15798	6.572	
19	Iodomethane	0.33603	0.32042	0.34195	0.33793	0.33179	0.33362	2.469	
20	Carbon Disulfide	0.84747	0.78083	0.76800	0.75586	0.75446	0.78132	4.925	
21	Methylene Chloride	0.37994	0.29221	0.28426	0.27271	0.27196	0.30022	15.108	
22	Acetonitrile	0.02710	0.02368	0.02232	0.02311	0.02154	0.02355	9.094	
23	Acrylonitrile	0.10110	0.09077	0.08133	0.08820	0.08535	0.08935	8.331	
24	Methyl tert-butyl ether	0.73610	0.67315	0.64535	0.66012	0.65711	0.67437	5.323	
25	trans-1,2-Dichloroethene	0.32032	0.28599	0.28621	0.28047	0.27405	0.28941	6.213	
26	Hexane	0.06301	0.05672	0.05655	0.05784	0.05699	0.05822	4.681	
27	Vinyl acetate	0.44317	0.40326	0.37984	0.40963	0.41146	0.40947	5.537	
28	1,1-Dichloroethane	0.56478	0.52885	0.50673	0.50896	0.49659	0.52118	5.186	
29	tert-Butyl Alcohol	0.02296	0.02165	0.01989	0.02112	0.02225	0.02157	5.402	NT
30	2-Butanone	0.23770	0.19361	0.16720	0.18541	0.18823	0.19443	13.446	
M 31	1,2-Dichloroethene (total)	0.30884	0.27956	0.27551	0.27033	0.26521	0.27989	6.096	
32	cis-1,2-dichloroethene	0.29737	0.27313	0.26481	0.26019	0.25637	0.27037	6.040	
33	2,2-Dichloropropane	0.28444	0.26826	0.22930	0.25868	0.24671	0.25748	8.134	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 02-JUL-1999 13:26
End Cal Date : 25-AUG-1999 11:10
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : Falcon
Method file : /chem/can/msv/a3ux7.i/U90825A.b/N8260UX7-3.m
Cal Date : 25-Aug-1999 12:36 evansl
Curve Type : Average

CCAL #02

	Compound	5.000 Level 1	25.000 Level 2	50.000 Level 3	100.000 Level 4	200.000 Level 5	RRF	% RSD	
34	Bromochloromethane	0.16110	0.13806	0.13772	0.13490	0.13195	0.14075	8.271	
35	Chloroform	0.57343	0.52160	0.50384	0.50312	0.49208	0.51882	6.228	
36	Tetrahydrofuran → %D: 40%	0.31452	0.10726	0.07401	0.06525	0.05886	0.12398	87.219	<- NT
37	1,1,1-Trichloroethane	0.44508	0.41766	0.41339	0.40690	0.39810	0.41623	4.261	
38	1,1-Dichloropropene	0.40401	0.36795	0.37065	0.35753	0.35050	0.37013	5.565	
39	Carbon Tetrachloride	0.26525	0.28320	0.39924	0.31736	0.35009	0.32303	16.597	
40	1,2-Dichloroethane	0.50633	0.45810	0.44001	0.44014	0.42706	0.45433	6.845	
41	Benzene	1.58959	1.15410	1.12335	1.04902 ✓	1.00486	1.18418 ✓	19.777 ✓	
42	Trichloroethene	0.31944	0.29636	0.29476	0.29041	0.28605	0.29740	4.356	
43	1,2-Dichloropropane	0.31174	0.28376	0.27567	0.27663	0.27193	0.28395	5.675	
44	1,4-Dioxane	0.00226	0.00228	0.00219	0.00217	0.00227	0.00223 NT	2.248	<-
45	Dibromomethane	0.18731	0.16584	0.15911	0.16259	0.16029	0.16702	6.961	
46	Bromodichloromethane	0.34916	0.35516	0.39106	0.36304	0.37407	0.36650	4.529	
47	2-Chloroethyl vinyl ether	0.17298	0.15371	0.14297	0.15236	0.15182	0.15477	7.127	
48	cis-1,3-Dichloropropene	0.45019	0.43123	0.44488	0.43456	0.43751	0.43967	1.761	
49	4-Methyl-2-pentanone	0.25666	0.24320	0.22660	0.24723	0.26245	0.24723	5.584	
50	Toluene	1.74036	1.53818	1.56426	1.44904	1.38595	1.53556	8.776	
51	trans-1,3-Dichloropropene	0.52814	0.52031	0.53191	0.52467	0.53610	0.52823	1.163	
52	Ethyl Methacrylate	0.44052	0.42594	0.40866	0.42272	0.42539	0.42464	2.668	
53	1,1,2-Trichloroethane	0.33963	0.31007	0.29904	0.30160	0.29706	0.30948	5.677	
54	1,3-Dichloropropane	0.58877	0.54122	0.52193	0.52285	0.49923	0.53480	6.291	
55	Tetrachloroethene	0.31189	0.27936	0.28050	0.26966	0.26488	0.28126	6.521	
56	2-Hexanone	0.37463	0.34510	0.30406	0.34719	0.36286	0.34677	7.713	
57	Dibromochloromethane	0.29709	0.30776	0.37947	0.34097	0.36840	0.33874	10.682	
58	1,2-Dibromoethane	0.35542	0.32549	0.31731	0.32085	0.31926	0.32767	4.824	
59	Chlorobenzene	1.15046	1.05427 ✓	1.03884	1.00990	0.97230	1.04515	6.376	
60	1,1,1,2-Tetrachloroethane	0.30896	0.30883	0.36802	0.33139	0.33775	0.33099	7.391	
61	Ethylbenzene	0.64089	0.57004	0.56134	0.54491	0.52755	0.56895	7.624	
62	m + p-Xylene	0.80273	0.69856	0.71382	0.65262	0.61317	0.69618	10.273	
M 63	Xylenes (total)	0.79168	0.69358	0.70380	0.65114	0.61586	0.69121	9.580	
64	Xylene-o	0.76957	0.68362	0.68377	0.64819	0.62124	0.68128	8.208	
65	Styrene	1.31295	1.19917	1.18501	1.12681	1.05383	1.17556	8.150	
66	Bromoform	0.13662	0.14796	0.20031	0.17617	0.20309	0.17283	17.385	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 02-JUL-1999 13:26
End Cal Date : 25-AUG-1999 11:10
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : Falcon
Method file : /chem/can/msv/a3ux7.i/U90825A.b/N8260UX7-3.m
Cal Date : 25-Aug-1999 12:36 evansl
Curve Type : Average

Compound	5.000 Level 1	25.000 Level 2	50.000 Level 3	100.000 Level 4	200.000 Level 5	RRF	% RSD	
67 Isopropylbenzene	3.76030	3.48392	3.42095	3.24840	3.11983	3.40668	7.169	
68 1,1,2,2-Tetrachloroethane	0.81649	0.69947	0.66512	0.66321	0.69364	0.70758	8.908	
69 1,4-Dichloro-2-butene	0.23359	0.21522	0.20394	0.20746	0.23310	0.21866	6.408	
70 1,2,3-Trichloropropane	0.27860	0.24913	0.23244	0.22859	0.22493	0.24274	9.097	
71 Bromobenzene	0.90917	0.81223	0.80778	0.77574	0.76760	0.81451	6.922	
72 n-Propylbenzene	1.06770	0.97197	0.94370	0.91356	0.92405	0.96420	6.429	
73 2-Chlorotoluene	0.98940	0.86297	0.85369	0.80665	0.80297	0.86314	8.755	
74 1,3,5-Trimethylbenzene	3.19671	2.90921	2.90197	2.72759	2.61195	2.86949	7.718	
75 4-Chlorotoluene	1.00913	0.89406	0.89122	0.84468	0.84513	0.89684	7.489	
76 tert-Butylbenzene	2.73679	2.48152	2.44943	2.31802	2.20050	2.43725	8.260	
77 1,2,4-Trimethylbenzene	3.50552	3.05363	3.10057	2.81972	2.67101	3.03009	10.498	
78 sec-Butylbenzene	3.86862	3.39943	3.28356	3.15031	2.94000	3.32838	10.424	
79 4-Isopropyltoluene	3.40957	3.04095	2.92017	2.79804	2.59933	2.95361	10.246	
80 1,3-Dichlorobenzene	1.89828	1.61526	1.54582	1.48335	1.43704	1.59595	11.392	
81 1,4-Dichlorobenzene	1.92038	1.65445	1.58476	1.52735	1.48099	1.63359	10.587	
82 n-Butylbenzene	3.10789	2.70636	2.51704	2.48184	2.23502	2.60963	12.459	
83 1,2-Dichlorobenzene	1.80906	1.54015	1.45435	1.38861	1.25681	1.48980	13.848	
84 1,2-Dibromo-3-chloropropane	0.13560	0.11721	0.10411	0.10881	0.08688	0.11052	16.164	
85 1,2,4-Trichlorobenzene	0.99943	0.79799	0.55706	0.65350	0.48585	0.69877	29.303	
86 Hexachlorobutadiene	0.40758	0.32201	0.22083	0.25869	0.20585	0.28299	29.273	
87 Naphthalene	2.85332	2.07191	1.30356	1.53884	1.12172	1.77787	39.330	NT
88 1,2,3-Trichlorobenzene	0.97466	0.71660	0.41605	0.52358	0.39893	0.60596	39.906	
89 Ethyl Ether	0.19814	0.20990	0.20837	0.20215	0.19465	0.20264	3.216	
90 Ethanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
91 3-Chloropropene	0.13233	0.14567	0.14635	0.14376	0.13894	0.14141	4.132	
92 Isopropyl Ether	0.20865	0.23569	0.22481	0.21543	0.19657	0.21623	6.925	
93 2-Chloro-1,3-butadiene	0.58478	0.63218	0.60805	0.57902	0.51714	0.58423	7.359	
94 Propionitrile	0.03979	0.04407	0.04533	0.04350	0.04418	0.04337	4.871	
95 Ethyl Acetate	0.26310	0.30749	0.30823	0.30072	0.30001	0.29591	6.328	
96 Methacrylonitrile	0.17451	0.19455	0.20678	0.20025	0.20087	0.19539	6.373	
97 Isobutanol	0.00873	0.01022	0.01021	0.01017	0.01060	0.00998	7.241	<-
98 Cyclohexane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
99 n-Butanol	0.00488	0.00606	0.00687	0.00705	0.00766	0.00650	NT 16.503	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 02-JUL-1999 13:26
End Cal Date : 25-AUG-1999 11:10
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : Falcon
Method file : /chem/can/msv/a3ux7.i/U90825A.b/N8260UX7-3.m
Cal Date : 25-Aug-1999 12:36 evansl
Curve Type : Average

	Compound	5.000 Level 1	25.000 Level 2	50.000 Level 3	100.000 Level 4	200.000 Level 5	RRF	% RSD	
	100 Methyl Methacrylate	0.26135	0.34051	0.36160	0.36285	0.36850	0.33896	13.178	
	101 2-Nitropropane	0.09166	0.10754	0.11222	0.11611	0.12495	0.11049	11.148	
	102 Chloropicrin	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	103 Cyclohexanone	0.03463	0.04685	0.04710	0.04892	0.05025	0.04555	13.746	
	104 Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	105 Benzyl Chloride	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	134 Thiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	135 Crotononitrile(1st Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	136 Crotononitrile(2nd Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M	137 Total Crotononitrile	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	138 Paraldehyde	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	139 3,3,5-Trimethylcyclohexanone	0.08052	0.10256	0.11943	0.13656	0.16453	0.12072	26.577	
	140 1-Chlorohexane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
$	4 Dibromofluoromethane	0.27448	0.25218	0.23404	0.25661	0.25064	0.25359	5.708	
$	5 1,2-Dichloroethane-d4	0.35164	0.32962	0.32396	0.35632	0.34823	0.34195	4.176	
$	6 Toluene-d8	1.33134	1.24806	1.13274	1.23731	1.17735	1.22536	6.158	
$	7 Bromofluorobenzene	1.21074	1.08312	0.97336	1.04245	1.04376	1.07069	8.191	

Data File: /chem/can/msv/a3ux7.i/U90825A.b/ux77411.d
Report Date: 08/25/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux7.i
Lab File ID: ux77411.d
Analysis Type: WATER

Injection Date: 25-AUG-1999 09:23
Lab Sample ID: 50NG-IC
Method File: /chem/can/msv/a3ux7.i/U90825A.b/N8260U

COMPOUND	%RSD
Dichlorodifluoromethane	8.7
Chloromethane	13.0
Vinyl Chloride	6.1
Bromomethane	34.8
Chloroethane	22.3
Trichlorofluoromethane	4.2
Acrolein	12.8
1,1-Dichloroethene	10.0
Acetone	44.3
Freon-113	6.6
Iodomethane	2.5
Carbon Disulfide	4.9
Acetonitrile	9.1
Methylene Chloride	15.1
tert-Butyl Alcohol	5.4
Acrylonitrile	8.3
Methyl tert-butyl ether	5.3
trans-1,2-Dichloroethene	6.2
Hexane	4.7
1,1-Dichloroethane	5.2
Vinyl acetate	5.5
2-Butanone	13.4
cis-1,2-dichloroethene	6.0
2,2-Dichloropropane	8.1
Bromochloromethane	8.3
1,2-Dichloroethene (total)	6.1
Tetrahydrofuran	87.2
Chloroform	6.2
Dibromofluoromethane	5.7
1,1,1-Trichloroethane	4.3
1,1-Dichloropropene	5.6
Carbon Tetrachloride	16.6
1,2-Dichloroethane-d4	4.2
1,2-Dichloroethane	6.8
Benzene	19.8
Trichloroethene	4.4
1,2-Dichloropropane	5.7
Dibromomethane	7.0
1,4-Dioxane	2.2

Data File: /chem/can/msv/a3ux7.i/U90825A.b/ux77411.d
Report Date: 08/25/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux7.i
Lab File ID: ux77411.d
Analysis Type: WATER

Injection Date: 25-AUG-1999 09:23
Lab Sample ID: 50NG-IC
Method File: /chem/can/msv/a3ux7.i/U90825A

COMPOUND	%RSD
Bromodichloromethane	4.5
2-Chloroethyl vinyl ether	7.1
cis-1,3-Dichloropropene	1.8
4-Methyl-2-pentanone	5.6
Toluene-d8	6.2
Toluene	8.8
trans-1,3-Dichloropropene	1.2
Ethyl Methacrylate	2.7
1,1,2-Trichloroethane	5.7
1,3-Dichloropropane	6.3
Tetrachloroethene	6.5
2-Hexanone	7.7
Dibromochloromethane	10.7
1,2-Dibromoethane	4.8
Chlorobenzene	6.4
1,1,1,2-Tetrachloroethane	7.4
Ethylbenzene	7.6
m + p-Xylene	10.3
Xylene-o	8.2
Styrene	8.2
Bromoform	17.4
Isopropylbenzene	7.2
Xylenes (total)	9.6
Bromofluorobenzene	8.2
1,1,2,2-Tetrachloroethane	8.9
Bromobenzene	6.9
1,2,3-Trichloropropane	9.1
1,4-Dichloro-2-butene	6.4
n-Propylbenzene	6.4
2-Chlorotoluene	8.8
1,3,5-Trimethylbenzene	7.7
4-Chlorotoluene	7.5
tert-Butylbenzene	8.3
1,2,4-Trimethylbenzene	10.5
sec-Butylbenzene	10.4
1,3-Dichlorobenzene	11.4
4-Isopropyltoluene	10.2
1,4-Dichlorobenzene	10.6
n-Butylbenzene	12.5

Data File: /chem/can/msv/a3ux7.i/U90825A.b/ux77411.d
Report Date: 08/25/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux7.i
Lab File ID: ux77411.d
Analysis Type: WATER

Injection Date: 25-AUG-1999 09:23
Lab Sample ID: 50NG-IC
Method File: /chem/can/msv/a3ux7.i/U90825A.b/

COMPOUND	%RSD
1,2-Dichlorobenzene	13.8
1,2-Dibromo-3-chloropropane	16.2
1,2,4-Trichlorobenzene	29.3
Hexachlorobutadiene	29.3
Naphthalene	39.3
1,2,3-Trichlorobenzene	39.9

The average of all %RSD's in the initial calibration is 11.0

Data File: /chem/can/msv/a3ux7.i/U90712A-A9.b/ux76620.d
Report Date: 07/12/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux7.i
Lab File ID: ux76620.d
Analysis Type: WATER

Injection Date: 12-JUL-1999 10:17
Lab Sample ID: 200NG-A9IC
Method File: /chem/can/msv/a3ux7.i/U90712A-A9.b/

COMPOUND	%RSD
Dichlorofluoromethane	20.5
Ethyl Ether	3.2
3-Chloropropene	4.1
Isopropyl Ether	6.9
2-Chloro-1,3-butadiene	7.4
Propionitrile	4.9
Ethyl Acetate	6.3
Methacrylonitrile	6.4
Isobutanol	7.2
n-Butanol	16.5
Methyl Methacrylate	13.2
2-Nitropropane	11.1
Cyclohexanone	13.7
3,3,5-Trimethylcyclohexanone	26.6

The average of all %RSD's in the initial calibration is 10.6

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux7.i
Lab File ID: ux77418.d
Analysis Type: WATER

Injection Date: 25-AUG-1999 13:20
Lab Sample ID: 50NG-A9CC
Method File: /chem/can/msv/a3ux7.i/U90825A.b/N8260UX

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
39 Chlorobenzene-d5	50.0000	50.0000	0.0	50.0	
53 3-Chloropropene	50.0000	39.3883	21.2	50.0	
54 2-Chloro-1,3-butadiene	50.0000	36.4904	27.0	50.0	↓ R
55 Propionitrile	100.0000	73.0331	27.0	50.0	↓
56 Methacrylonitrile	50.0000	29.1186	41.8	50.0	↓ R
57 Isobutanol	1000.0000	682.0870	31.8	50.0	↓
58 Methyl Methacrylate	50.0000	35.9805	28.0	50.0	↓
73 n-Butanol	1000.0000	960.2448	4.0	50.0	
74 Ethyl Acetate	100.0000	61.8827	38.1	50.0	NT ↓
75 Cyclohexanone	500.0000	582.7432	16.5	50.0	
76 Ethyl Ether	50.0000	35.7287	28.5	50.0	NT ↓
85 Dichlorofluoromethane	50.0000	45.7891	8.4	50.0	
86 2-Nitropropane	100.0000	67.8524	32.1	50.0	NT ↓
126 Isopropyl Ether	250.0000	244.0955	2.4	50.0	
130 Fluorobenzene	50.0000	50.0000	0.0	50.0	
132 1,4-Dichlorobenzene-d4	50.0000	50.0000	0.0	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux7.i
Lab File ID: ux77418.d
Analysis Type: WATER
Lab Sample ID: 50NG-A9CC
Quant Type: ISTD

Injection Date: 25-AUG-1999 13:20
Init. Calibration Date(s): 07/02/99 08/25/99
Init. Calibration Times: 13:26 11:10
Method File: /chem/can/msv/a3ux7.i/U90825A.b/N82

7/12/99 10:17

COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D	
14 Dichlorofluoromethane	0.070	0.064	0.010	8.4	50.0	
89 Ethyl Ether	0.203	0.145	0.010	28.5	50.0	↓
91 3-Chloropropene	0.141	0.111	0.010	21.2	50.0	
92 Isopropyl Ether	0.216	0.211	0.010	2.4	50.0	
93 2-Chloro-1,3-butadiene	0.584	0.426	0.010	27.0	50.0	↓
94 Propionitrile	0.043	0.032	0.010	27.0	50.0	↓ R
95 Ethyl Acetate	0.296	0.183	0.010	38.1	50.0	↓
96 Methacrylonitrile	0.195	0.114	0.010	41.8	50.0	↓
97 Isobutanol	0.010	0.007	0.010	31.8	50.0	<-↓
99 n-Butanol	0.007	NT 0.006	0.010	4.0	50.0	<-
100 Methyl Methacrylate	0.339	0.244	0.010	28.0	50.0	↓
101 2-Nitropropane	0.110	0.075	0.010	32.1	50.0	↓
103 Cyclohexanone	0.046	0.053	0.010	-16.5	50.0	

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: A9H210120

Lab File ID (Standard): UX77411 Date Analyzed: 08/25/99

Instrument ID: A3UX7 Time Analyzed: 0923

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	EPA SAMPLE NO.	IS1 (CBZ) AREA #	RT	IS2 AREA #	RT	IS3 (DCB) AREA #	RT
	12 HOUR STD	1391420	11.80	1853789	7.77	692537	15.59
	UPPER LIMIT	2782840	12.30	3707578	8.27	1385074	16.09
	LOWER LIMIT	695710	11.30	926894	7.27	346268	15.09
01	D1QQ4-CHK	1420885	11.79	1834609	7.77	701002	15.60
02	D1QQ4-BLK	1421295	11.80	1834601	7.77	698668	15.59
03	FRIMW-23	1415190	11.80	1832264	7.77	691999	15.59
04	CMSMW-2	1406440	11.79	1823753	7.77	689686	15.59
05	CMSMW-15	1405613	11.79	1824624	7.77	686225	15.59
06	CMSMW-16	1386859	11.79	1802201	7.77	684847	15.59
07	A9H210120	1390504	11.80	1800008	7.77	684692	15.59
08	CMSMW-1	1378034	11.80	1792395	7.77	671969	15.59
09							
10							
11							
12							
13							
14							
15	ICAL 8/25/99 13:20	1414261	11.79	1872875	7.77	701215	15.59
16							
17							
18	ICAL 8/12/99 11:12	1025626	11.84	1338533	7.82	515873	15.64
19							
20							
21							
22							

CMSMW-1D

IS1 (CBZ) = Chlorobenzene-d5
IS2 = Fluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H260000 142
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 5 / mL Date Received: 08/20/99
Work Order: D1QQ4101 Date Extracted:08/25/99
Dilution factor: 1 Date Analyzed: 08/25/99
Moisture %:NA

QC Batch: 9238142

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
75-05-8	Acetonitrile	100	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	0.23	J
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	3-Chloropropene	10	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H260000 142
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 5 / mL Date Received: 08/20/99
Work Order: D1QQ410I Date Extracted:08/25/99
Dilution factor: 1 Date Analyzed: 08/25/99
Moisture %:NA

QC Batch: 9238142

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	10	U
78-83-1	Isobutyl alcohol	500	U
126-98-7	Methacrylonitrile	20	U
75-09-2	Methylene chloride	0.24	J
78-93-3	Methyl ethyl ketone	10	U
80-62-6	Methyl methacrylate	1.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
107-12-0	Propionitrile	100	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	1.0	U
136777-61-2	m-Xylene & p-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H260000 142
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 5 / mL Date Received: 08/20/99
Work Order: D1QQ4101 Date Extracted:08/25/99
Dilution factor: 1 Date Analyzed: 08/25/99
Moisture %:NA

QC Batch: 9238142

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
95-47-6	o-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA
SDG Number: H21120

Matrix: (soil/water) WATER
Lab Sample ID: A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL
Date Received: 08/25/99
Work Order: D1XAJ101
Date Extracted: 08/30/99
Dilution factor: 1
Date Analyzed: 08/30/99
Moisture %: NA

QC Batch: 9243214

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
75-05-8	Acetonitrile	100	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	3-Chloropropene	10	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA
SDG Number: H21120

Matrix: (soil/water) WATER
Lab Sample ID: A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL
Date Received: 08/25/99
Work Order: D1XAJ101
Date Extracted: 08/30/99
Dilution factor: 1
Date Analyzed: 08/30/99
Moisture %: NA

QC Batch: 9243214

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	10	U
78-83-1	Isobutyl alcohol	500	U
126-98-7	Methacrylonitrile	20	U
75-09-2	Methylene chloride	0.64	J
78-93-3	Methyl ethyl ketone	10	U
80-62-6	Methyl methacrylate	1.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
107-12-0	Propionitrile	100	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	1.0	U
136777-61-2	m-Xylene & p-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/25/99
Work Order: D1XAJ101 Date Extracted:08/30/99
Dilution factor: 1 Date Analyzed: 08/30/99
Moisture %:NA

QC Batch: 9243214

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
95-47-6	o-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H260000 142
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 5 / mL Date Received: 08/20/99
Work Order: D1QQ4102 Date Extracted:08/25/99
Dilution factor: 1 Date Analyzed: 08/25/99
Moisture %:NA

QC Batch: 9238142

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	9.1	
108-90-7	Chlorobenzene	9.7	
75-35-4	1,1-Dichloroethene	9.3	
108-88-3	Toluene	9.3	
79-01-6	Trichloroethene	10	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/25/99
Work Order: D1XAJ102 Date Extracted:08/30/99
Dilution factor: 1 Date Analyzed: 08/30/99
Moisture %:NA

QC Batch: 9243214

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.4	
108-90-7	Chlorobenzene	3.8	
75-35-4	1,1-Dichloroethene	3.8	
108-88-3	Toluene	4.0	
79-01-6	Trichloroethene	4.0	

PARSONS ENGINEERING SCIENCE, INC.
MATRIX SPIKE COMPOUNDS

Lab Name:QUANTERRA | SDG Number: H21120

Matrix: (soil/water) WATER | Lab Sample ID:A9H210120 001
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 5 / mL | Date Received: 08/20/99
Work Order: D1LL110D | Date Extracted:08/25/99
Dilution factor: 33.33 | Date Analyzed: 08/25/99
Moisture %:NA

QC Batch: 9238142

Client Sample Id: CMSMW-1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	300	
108-90-7	Chlorobenzene	320	
75-35-4	1,1-Dichloroethene	310	
108-88-3	Toluene	310	
79-01-6	Trichloroethene	330	

PARSONS ENGINEERING SCIENCE, INC.
MATRIX SPIKE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H210120 001
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 5 / mL Date Received: 08/20/99
Work Order: D1LL110E Date Extracted:08/25/99
Dilution factor: 33.33 Date Analyzed: 08/25/99
Moisture %:NA

QC Batch: 9238142

Client Sample Id: CMSMW-1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	300	
108-90-7	Chlorobenzene	320	
75-35-4	1,1-Dichloroethene	310	
108-88-3	Toluene	310	
79-01-6	Trichloroethene	340	

UX3

Batch # _____

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

25 mL 5 pO

Date : 6/7/99

(A)

Column	BFB	Analysis	Purge & Trap
Type: DB624	100 °C for 0.1 min	40 °C for 2 min	Trap: T3000
Length: 75 m	to 220 °C @ 20 °C/min	to 150 °C @ 6 °C/min	Purge: 11 min
I.D. 0.53 mm	hold 1 min	to 220 °C @ 25 °C/min hold ___ min	Desorb: 2 min @ 250 °C
Flow rate: 15 mL/min			Bake: 6 (min) min @ 260 °C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		BFB161	50 mg		Initial (9:50) ok	[illegible]	[illegible]
9	Vol Std		UX3400	1000 mg	V6085 V6091 V6094 V6087 V6088 V6093 V6102 V6095 V6096	(A)		
10			01	500 mg		V90607-3 ok		
11			02	250 mg		ok		
12			03	100 mg		ok		
13			04	25 mg		(A)		
14	Appx IV Std		05	1000 mg	V6085 V6092	V90607-3 ok		
15			06	500 mg		ok		
16			07	250 mg		ok		
1			08	100 mg		ok		
2			09	50 mg		ok		
3	Vol Std		10	25 mg	V6085 V6091 V6094 V6087 V6088 V6093 V6102 V6095 V6096	ok		
4			11	1000 mg		ok		

262

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UX3 MS# 9243067

Batch # 9243214

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

MZ

Date : 8/30/99

Column	BFB	Analysis	Purge & Trap
Type: DB624	100°C for 0.1 min	40°C for 2 min	Trap: V3000
Length: 75 m	to 220°C @ 20°C/min	to 150°C @ 6°C/min	Purge: 11 min
I.D. 0.53 mm	hold 1 min	to 220°C @ 25°C/min hold ___ min	Desorb: 2 min @ 250°C
Flow rate: 15 mls/min			Bake: 6 (min) min @ 260°C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		BFB234	50 ng		Quick Ck. (8:04) OK	[illegible]	[illegible]
9	VH Std		UX3 5585	250 ng		V906073 OK		
10	Aqu IV Std		586	250 ng		V906073 OK		
11	Check	DIXAJ102	587	100 ng		OK		
12	VBLK	DIXAJ101	588	25ml/25ml		OK		
13	DIRKN-101		589		A9H270109	OK		
14	DILLN-101	E	590	0.25ml/25ml	A9H210120	[illegible] foams OK		
15	DILLW-101	E	591	1.25ml/25ml		foams OK		
16	DILMD-101	E	592	25ml/25ml		[illegible] OK		
1	DIMDN-104		593	1ml/25ml	A9H220102	foams OK		
2	DIMDR-102		594	25ml/25ml		OK		
3	DIPVN-102	E	595		A9H250128	OK		
4	DIPW4-102	E	596	1ml/25ml		foams OK		
5	DIPX6-102	E	597	1ml/25ml		foams OK		
6	DIPXF-102	E	598	5mls/25ml		foams OK		
7	DIRL2-101		599	25ml/25ml	A9H270111	OK		
8	DIRL3-101		600	0.75ml/25ml		OK		
9	DIRK0-101		601	12mls/25ml	A9H270103	foams OK		
10	DIRK2-101		602	25ml/25ml	A9H270105	SS ↑		
11	DIRK3-101		603			IN		
12	DIRK4-101		604			OK		
13	DIVXV-101		605		A9H290110	OK		
14	DIPVN-103 MS		606	25ml+250ng		OK		
15	DIPVN-104 MSD		607			OK		

2-1 16

203

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UX7

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

Batch # 9194134 GK

Date : 7/12/93

Column
Type: 624
Length: 30 m
I.D. 0.25 mm
Flow rate: 2ml/min

BFB
10°C for 0.1 min
to 220°C @ 20 °C/min
hold — min

Analysis
45°C for 3 min
to 140°C @ 10 °C/min
hold 10 min @ 25 °C/min

Purge & Trap
Trap: 10
Purge: 11 min
Desorb: 2 min @ 240°C
Bake: 6 (min) min @ 250 °C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		B00252	5ml	direct inj	8:28		
1	10LSTD		11X7667	5ml		LLG 07089-3		
2	Check	0006F 102	18	5ml				
3	Blank	~~0006F 101~~	19	5ml				
4	AG STD + 3,3-TMCyc.		20	200ng/400ng	VG1940 VG1x3			
5	AG STD + 3,3-TMCyc.		21	100ng/200ng				
6	AG STD + 3,3-TMCyc.		22	50ng/100ng		LLG 07212-3		
7	AG STD + 3,3-TMCyc		23	25ng/50ng				
8	AG STD + 3,3-TMCyc		24	5ng/25ng				
9	Blank	0006F 101	25	5ml				
10	CXGGB101		26	40ml/5ml		100ml 100ml 40ml		(7/14 33
11	CXGGE101		27	50ml/5ml		15ml		(GGGM 3
12	CXGG0101		28	5ml				
13	CXGQ401		29					
14	CXGQ701		30					
15	CXGQC101		31					
16	CXGQD101		32					
17	CXGQE101		33		(OV)	(P) 350ml (201		(4/6 3,3-TM
18	CXGQF101		34			(P) C/O		
19	CXGQH101		35			(1Mg)		
20	CXGQJ101		36					
21	CXGQ2101		37	20ml/5ml				
22	CXGQG101		38	15ml/5ml				
23	CXGQ2201		39	100ml/5ml				
24	CXGQG201		40	75ml/5ml				
25	CXGQ410 (S)		41	5ml	+50ng			

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9/2

UX7

Batch # 9238142

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

Date : 8/25/99

Column	BFB	Analysis	Purge & Trap
Type: 624	100°C for 0.1 min	45°C for 3 min	Trap: 10
Length: 30 m	to 220°C @ 20°C/min	to 140°C @ 10°C/min	Purge: 11 min
I.D. 0.25 mm	hold 1 min	hold to 230 min @ 25°C/min	Desorb: 2 min @ 240°C
Flow rate: 2ml/min			Bake: 6 (min) min @ 250°C

180181
210120
220102

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		BFB 315	50ng	diringeit	(9:08)	[illegible]	[illegible]
1	VOLSTD		UX77411	50ng	V6334, 35, 37			
2	VOLSTD		12	200ng	38, 39, 40, 42			
3	VOLSTD		13	100ng		U90825-3		
4	VOLSTD		14	25ng				
5	VOLSTD		15	5ng				
6	calcheck		16	50ng		(P)		
1	Calcheck		17	50ng		[illegible]		
2	AG STD		18	50ng		[illegible] U90712-3		
3	Check	DIQQ4 102	19	50ng		[illegible]		
4	Blank	DIQQ4 101	20	5ml		[illegible]		
5	DILLI 101	ED	21	400µl/5ml		(2) ~~15~~ 150µl 8/25/99	[illegible]	
6	DIGKC101		22	5ml		[illegible]		
D 7	DILLH101	ED	23	5ml		[illegible]		
D 8	DILLK101		24	1ml/5ml	(foamer!)	[illegible]		
9	DILLN101		25	50µl/5ml		SS ↓		
D 10	DILLR101		26	1ml/5ml	(foamer!)	[illegible]		
11	DILLW101		27	250µl/5ml	(foamer!)	SS ↓		
12	DILMD101		28	5ml		SS ↓		
13	DIMDE101		29	1ml/5ml	(foamer!)	[illegible]		
14	DIMDM104		30	0.5ml/5ml		[illegible]		
15	DIMDN104		31			(P) 0.25ml	(260ng MEK	
D 16	DILLI 10D ~~DIMDR104~~	8/25/99 (S) [illegible]	32	150µl/5ml	+50ng	[illegible]		
D 17	DILLI 10E	(D)	33	150µl/5ml	+50ng	[illegible]		
D 18	DILLI 101	(S)	34		8/25/99 [illegible] ~~+50ng~~	[illegible]		
19	~~DILLI~~	(D) 8/25/99 [illegible]	35		+50ng	285		003

20 36

SW846 8270B SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN QESSDG: H21120

Lot #: A9H210120

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	SRG05	SRG06	TOT OUT	
01	RFIMW-23	69	64	35	56	66	77	00	
02	CMSMW-2	84	85	50	65	71	93	00	
03	RFIMW-22	0.0D	0.0D	0.0D	0.0D	0.0D	0.0D	06	20X
04	CMSMW-15	74	62	40	71	78	99	00	
05	RFIMW-1	83 D	73 D	51 D	73 D	90 D	75 D	00	5X
06	CMSMW-1	61	64	31 *	35	37	82	01	
07	METHOD BLK. D1QCM101	69	66	84	62	67	61	00	
08	LCS D1QCM102	76	73	103	59	67	79	00	
09	LCSD D1QCM103	77	70	106	57	65	75	00	

~~8270D(8.9.5) reextract or flag data~~

~~8270C(8.8) 8000B(8.6.2.4) reextract~~

only one no impact

SURROGATES		QC LIMITS
SRG01	= Nitrobenzene-d5	(40-114)
SRG02	= 2-Fluorobiphenyl	(45-118)
SRG03	= Terphenyl-d14	(33-141)
SRG04	= Phenol-d5	(17-101)
SRG05	= 2-Fluorophenol	(21-100)
SRG06	= 2,4,6-Tribromophenol	(16-129)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8270B CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H21120

Lot #: A9H250000 WO #: D1QCM102
BATCH: 9237327

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	30	61	44- 142	
Acenaphthene	50	36	72	47- 145	
2,4-Dinitrotoluene	50	39	77	60- 134	
Pyrene	50	49	98	68- 131	
N-Nitrosodi-n-propylamine	50	30	60	10- 230	
1,4-Dichlorobenzene	50	26	52	20- 124	
Pentachlorophenol	75	56	75	14- 176	
Phenol	75	43	57	10- 112	
2-Chlorophenol	75	50	66	23- 134	
4-Chloro-3-methylphenol	75	54	71	22- 147	
4-Nitrophenol	75	72	96	30- 162	

No ms/MSD performed

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H21120

Lot #: A9H250000 WO #: D1QCM103
BATCH: 9237327

no %RPD calculated

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	30	60	44 - 142	
Acenaphthene	50	35	70	47 - 145	
2,4-Dinitrotoluene	50	37	74	60 - 134	
Pyrene	50	50 ✓	101 ✓	68 - 131	
N-Nitrosodi-n-propylamine	50	29	59	10 - 230	
1,4-Dichlorobenzene	50	25	51	20 - 124	
Pentachlorophenol	75	56 ✓	75	14 - 176	
Phenol	75	42	56	10 - 112	
2-Chlorophenol	75	50	67	23 - 134	
4-Chloro-3-methylphenol	75	55	74	22 - 147	
4-Nitrophenol	75	67	89	30 - 162	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D1QCM101

Lab Name: QUANTERRA

Lab Code: QESCAN

SDG Number: H21120

Lab File ID: d1qcm101.

Lot Number: A9H210120

Date Analyzed: 09/10/99

Time Analyzed: 18:04

Matrix: WATER

Date Extracted: 08/26/99

GC Column: DB-5.625 ID: .32

Extraction Method: 3520B

Instrument ID: HP7

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	RFIMW-23	D1LLH102	d111h102.	09/07/99	19:08
02	CMSMW-2	D1LLK102	d111k102.	09/07/99	17:52
03	RFIMW-22	D1LLN102	d111n102.	09/07/99	20:23
04	CMSMW-15	D1LLR102	d111r102.	09/07/99	17:15
05	RFIMW-1	D1LLW102	d111w102.	09/07/99	19:45
06	CMSMW-1	D1LL1102	d1111102.	09/13/99	21:54
07	CHECK SAMPLE	D1QCM102 C	d1qcm102.	09/07/99	12:15
08	DUPLICATE CHECK	D1QCM103 L	d1qcm103.	09/07/99	12:52
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0825A DFTPP Injection Date: 08/25/99

Instrument ID: A4HP7 DFTPP Injection Time: 1213

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	43.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	51.7
70	Less than 2.0% of mass 69	0.3 (0.6)1
127	40.0 - 60.0% of mass 198	40.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	25.0
365	Greater than 1.0% of mass 198	3.0
441	Present, but less than mass 443	6.2
442	40.0 - 100.0% of mass 198	44.1
443	17.0 - 23.0% of mass 442	7.6 (17.3)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	SSTD050	7SML0825	08/25/99	1232
02	SSTD020	SSTD020	7SL0825	08/25/99	1311
03	SSTD160	SSTD160	7SH0825	08/25/99	1349
04	SSTD120	SSTD120	7SMH0825	08/25/99	1427
05	SSTD080	SSTD080	7SM0825	08/25/99	1506
06					
07					
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15					
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20					
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22					

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0901C DFTPP Injection Date: 09/01/99

Instrument ID: A4HP7 DFTPP Injection Time: 1035

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	44.4
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	55.8
70	Less than 2.0% of mass 69	0.5 (1.0)1
127	40.0 - 60.0% of mass 198	44.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	27.1
365	Greater than 1.0% of mass 198	3.0
441	Present, but less than mass 443	7.2
442	40.0 - 100.0% of mass 198	48.6
443	17.0 - 23.0% of mass 442	9.6 (19.8)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	ASTD050	ASTD050	7AML0901	09/01/99	1322
02	ASTD080	ASTD080	7AM0901	09/01/99	1400
03	ASTD020	ASTD020	7AL0901	09/01/99	1437
04	ASTD120	ASTD120	7AMH0901	09/01/99	1513
05	ASTD050	ASTD160	7AH0901	09/01/99	1549
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 01-Sep-1999 16:13

Calibration History

Method : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Start Cal Date: 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 20.000		
01-SEP-1999 14:37	2-ap9	/chem/can/mss/a4hp7.i/90901a.b/7al0901.d
25-AUG-1999 13:11	1-8270	/chem/can/mss/a4hp7.i/90901a.b/7sl0825.d
Cal Level: 2 , Cal Amount: 50.000		
01-SEP-1999 13:22	2-ap9	7aml0901.d
25-AUG-1999 12:32	1-8270	7sml0825.d
Cal Level: 3 , Cal Amount: 80.000		
01-SEP-1999 14:00	2-ap9	/chem/can/mss/a4hp7.i/90901a.b/7am0901.d
25-AUG-1999 15:06	1-8270	/chem/can/mss/a4hp7.i/90901a.b/7sm0825.d
Cal Level: 4 , Cal Amount: 120.00		
01-SEP-1999 15:13	2-ap9	7amh0901.d
25-AUG-1999 14:27	1-8270	7smh0825.d
Cal Level: 5 , Cal Amount: 160.00		
01-SEP-1999 15:49	2-ap9	/chem/can/mss/a4hp7.i/90901a.b/7ah0901.d
25-AUG-1999 13:49	1-8270	/chem/can/mss/a4hp7.i/90901a.b/7sh0825.d

Continuing Calibration

01-SEP-1999 14:00	2-ap9	/chem/can/mss/a4hp7.i/90901a.b/7am0901.d
01-SEP-1999 10:54	1-8270	7sml0901.d
25-AUG-1999 15:06	1-8270	/chem/can/mss/a4hp7.i/90901a.b/7sm0825.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:07 ulmanm
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/mss/a4hp7.i/90901a.b/7al0901.d
Level 2: /chem/can/mss/a4hp7.i/90901a.b/7aml0901.d
Level 3: /chem/can/mss/a4hp7.i/90901a.b/7am0901.d
Level 4: /chem/can/mss/a4hp7.i/90901a.b/7amh0901.d
Level 5: /chem/can/mss/a4hp7.i/90901a.b/7ah0901.d

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
	198 1,4-Dioxane	0.66361	0.68033	0.76722	0.75066	0.70408	0.71318	6.249
	7 N-Nitrosomorpholine	0.90050	0.99995	1.10327	1.22243	1.65222	1.17567	24.839
	8 Ethyl methanesulfonate	0.95913	1.03238	1.07754	1.07861	1.17340	1.06421	7.333
	9 Pyridine	1.15291	0.94584	1.64119	1.70406	1.58397	1.40559	23.906
	10 N-Nitrosodimethylamine	0.94796	0.74627	1.20783	1.22304	1.18205	1.06143	19.666
	11 Ethyl methacrylate	1.56011	1.30235	1.80386	1.91738	1.73236	1.66321	14.418
	12 3-Chloropropionitrile	0.65222	0.59595	0.80132	0.84017	0.79640	0.73721	14.450
	13 Malononitrile	1.20011	1.18466	1.52119	1.58861	1.48364	1.39564	13.571
	14 2-Picoline	1.45688	1.52224	1.61336	1.54695	1.88733	1.60535	10.420
	15 N-Nitrosomethylethylamine	0.61855	0.65313	0.63625	0.62551	0.64227	0.63514	2.147
	16 Methyl methanesulfonate	1.06148	1.09109	1.07335	1.08317	1.21186	1.10419	5.543
	18 1,3-Dichloro-2-propanol	1.22268	1.35427	1.42394	1.46373	1.65510	1.42395	11.125
	19 N-Nitrosodiethylamine	0.63200	0.67715	0.69201	0.71051	0.77324	0.69698	7.400
	21 Aniline	1.60277	1.98685	2.18368	2.44605	2.48699	2.14127	16.968
	22 Phenol	1.65220	1.79037	2.02459	2.21320	2.30177	1.99643	13.763
	23 bis(2-Chloroethyl)ether	1.32076	1.26457	1.48832	1.59669	1.54282	1.44263	9.950
	24 2-Chlorophenol	1.08734	1.12991	1.24353	1.31334	1.34178	1.22318	9.118
	25 Pentachloroethane	0.61614	0.61222	0.60866	0.63827	0.71678	0.63841	7.096
	26 1,3-Dichlorobenzene	1.32492	1.34859	1.45808	1.51629	1.48793	1.42716	5.989
	27 1,4-Dichlorobenzene	1.40009	1.46616	1.55522	1.61954	1.62232	1.53267	6.367
	28 1,2-Dichlorobenzene	1.25789	1.34108	1.42064	1.52748	1.61883	1.43318	10.034
	29 Benzyl Alcohol	0.56860	0.73458	0.84052	0.96574	1.03358	0.82860	22.368
	30 2-Methylphenol	1.08634	1.12957	1.21196	1.33830	1.42793	1.23882	11.527
	31 bis(2-Chloroisopropyl)ether	1.07801	0.99634	1.29388	1.39613	1.42367	1.23760	15.468
	32 N-Nitroso-di-n-propylamine	1.11425	1.15502	1.21858	1.30501	1.31169	1.22091	7.215
M	195 Cresols, total	1.06593	1.14537	1.20099	1.35255	1.46749	1.24647	12.997

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:07 ulmanm
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
152 4-Methylphenol	1.04552	1.16118	1.19001	1.36681	1.50705	1.25411	14.536	
153 3-Methylphenol	1.19546	1.42029	1.62795	1.86200	2.63552	1.74824	31.691	NO 4's
34 Hexachloroethane	0.56716	0.59252	0.59867	0.62940	0.64174	0.60590	4.930	
35 Nitrobenzene	0.53829	0.57915	0.58673	0.59335	0.62197	0.58390	5.173	
36 N-Nitrosopyrrolidine	0.53557	0.58478	0.60961	0.66833	0.87184	0.65403	20.001	
37 Acetophenone	1.69874	1.84439	1.92460	2.06132	2.45821	1.99745	14.474	
39 o-Toluidine	1.86216	2.26758	2.61111	2.92124	3.82261	2.69694	27.536	
40 N-Nitrosopiperidine	0.16577	0.17508	0.18032	0.17842	0.19857	0.17963	6.668	
41 Isophorone	0.89779	0.91668	0.98791	1.01577	0.99195	0.96202	5.360	
42 2-Nitrophenol	0.18235	0.20105	0.20543	0.22889	0.25539	0.21462	13.129	
43 2,4-Dimethylphenol	0.36713	0.43157	0.43981	0.47200	0.48218	0.43854	10.308	
44 bis(2-Chloroethoxy)methane	0.44109	0.45167	0.50626	0.53420	0.55807	0.49826	10.220	
45 O,O,O-Triethyl phosphorothioa	0.24360	0.26609	0.28282	0.28629	0.33355	0.28247	11.745	
46 2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
47 1,3,5-Trichlorobenzene	0.39165	0.42964	0.42984	0.44616	0.46840	0.43314	6.486	
48 2,4-Dichlorophenol	0.28286	0.32449	0.31561	0.33596	0.36304	0.32439	9.027	
49 Benzoic Acid	0.04985	0.09587	0.08472	0.09544	0.16208	0.09759	41.660	NT
50 1,2,4-Trichlorobenzene	0.38000	0.40998	0.39753	0.41532	0.42833	0.40623	4.520	
51 Naphthalene	1.09814	1.12373	1.23257	1.27527	1.26547	1.19904	6.877	
52 4-Chloroaniline	0.25608	0.35195	0.35634	0.40187	0.42537	0.35832	18.134	
53 a,a-Dimethyl-phenethylamine	0.59399	0.63357	0.70705	0.72241	0.79353	0.69011	11.332	
54 2,6-Dichlorophenol	0.26669	0.27328	0.28864	0.30377	0.39458	0.30539	16.988	
55 Hexachloropropene	0.24827	0.26135	0.27181	0.31312	0.40014	0.29894	20.593	
56 Hexachlorobutadiene	0.29680	0.33407	0.29234	0.30282	0.31382	0.30797	5.412	
57 1,2,3-Trichlorobenzene	0.36874	0.40203	0.39072	0.40864	0.42618	0.39926	5.350	
58 N-Nitrosodi-n-butylamine	0.31891	0.35792	0.39292	0.40363	0.45927	0.38653	13.576	
59 4-Chloro-3-Methylphenol	0.34825	0.36676	0.38624	0.41840	0.43491	0.39091	9.149	
60 p-Phenylene diamine	0.13492	0.16824	0.21192	0.24133	0.26532	0.20475	26.096	
61 Safrole	0.29573	0.32649	0.34713	0.35082	0.42691	0.34942	13.888	
62 2-Methylnaphthalene	0.72020	0.78443	0.79164	0.83091	0.87006	0.79945	7.004	
63 1-Methylnaphthalene	0.71284	0.77743	0.77768	0.82491	0.85259	0.78909	6.764	
64 Hexachlorocyclopentadiene	0.09722	0.31832	0.21230	0.27722	0.32446	0.24590	38.381	NO x's
65 1,2,4,5-Tetrachlorobenzene	0.72142	0.75992	0.80269	0.79116	0.90241	0.79552	8.492	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:07 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
66	2,4,6-Trichlorophenol	0.39557	0.45004	0.42532	0.43986	0.42768	0.42769	4.799
67	2,4,5-Trichlorophenol	0.32729	0.44847	0.40904	0.44903	0.43923	0.41461	12.412
68	1,2,3,5-Tetrachlorobenzene	0.71743	0.78883	0.77133	0.79580	0.77703	0.77008	4.021
69	1,4-Dinitrobenzene	0.17197	0.17435	0.18349	0.18595	0.21091	0.18533	8.346
70	2-Chloronaphthalene	1.00250	1.08851	1.13425	1.15830	1.12966	1.10264	5.564
71	Isosafrole 1	0.13555	0.13276	0.13704	0.13099	0.14239	0.13574	3.241
M 188	Isosafrole, Total	0.51523	0.56049	0.61865	0.63608	0.77332	0.62075	15.760
72	Isosafrole 2	0.89492	0.98822	1.10026	1.14116	1.40426	1.10576	17.434
73	2-Nitroaniline	0.37554	0.44519	0.40234	0.43231	0.41916	0.41491	6.541
74	1,2,3,4-Tetrachlorobenzene	0.68749	0.72186	0.69046	0.70063	0.67456	0.69500	2.541
75	1,4-Naphthoquinone	0.37792	0.37498	0.38903	0.32931	0.25539	0.34533	15.991
76	Dimethylphthalate	1.28314	1.38088	1.39573	1.40397	1.30411	1.35357	4.125
77	m-Dinitrobenzene	0.19723	0.18911	0.20626	0.20628	0.22683	0.20514	6.862
78	2,6-Dinitrotoluene	0.28566	0.31365	0.30454	0.31242	0.29449	0.30215	3.965
79	Acenaphthylene	1.81558	1.95706	2.02351	2.05454	1.94813	1.95976	4.703
80	1,2-Dinitrobenzene	0.13704	0.16012	0.15322	0.15945	0.14822	0.15161	6.259
81	3-Nitroaniline	0.13875	0.20989	0.19431	0.23219	0.23639	0.20230	19.484
82	Acenaphthene	1.21402	1.26260	1.32441	1.35485	1.32133	1.29544	4.358
83	2,4-Dinitrophenol	0.07647	0.16154	0.11149	0.14601	0.16063	0.13123	27.973
84	Pentachlorobenzene	0.60290	0.65563	0.69384	0.70912	0.79720	0.69174	10.381
85	4-Nitrophenol	0.09680	0.22954	0.13196	0.17284	0.18780	0.16379	31.254
86	Dibenzofuran	1.60070	1.78745	1.72553	1.78630	1.69454	1.71891	4.492
87	2,4-Dinitrotoluene	0.35807	0.42769	0.39395	0.42849	0.41168	0.40397	7.250
88	2,3,4,6-Tetrachlorophenol	0.28929	0.32385	0.35615	0.37407	0.42653	0.35398	14.655
89	1-Naphthylamine	0.83557	0.80134	0.91359	0.96119	1.13954	0.93024	14.283
90	Zinophos	0.34016	0.36333	0.38579	0.39770	0.43665	0.38473	9.470
91	2,3,5,6-Tetrachlorophenol	0.31908	0.40831	0.37206	0.40308	0.39799	0.38010	9.695
92	2-Naphthylamine	0.59159	0.48682	0.60532	0.71062	0.95394	0.66966	26.520
93	Diethylphthalate	1.35323	1.46734	1.44887	1.45550	1.38607	1.42220	3.502
94	Fluorene	1.30665	1.46836	1.43337	1.48790	1.45828	1.43091	5.045
95	4-Chlorophenyl-phenylether	0.78071	0.87940	0.81770	0.86769	0.86679	0.84246	4.972
96	4-Nitroaniline	0.13800	0.19774	0.13549	0.18268	0.19521	0.16982	18.104
97	5-Nitro-o-toluidine	0.26263	0.26997	0.29387	0.30983	0.35772	0.29881	12.695

no 1's

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:07 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
	98 4,6-Dinitro-2-methylphenol	0.10599	0.14135	0.13703	0.15785	0.16289	0.14102	15.875	
	99 N-Nitrosodiphenylamine	0.49728	0.53913	0.58734	0.60924	0.62343	0.57128	9.150	
	100 1,2-Diphenylhydrazine	0.89403	0.93270	1.02272	1.03930	1.03241	0.98423	6.745	
	101 Diphenylamine	0.49728	0.53913	0.58734	0.60924	0.62343	0.57128	9.150	
	102 Tetraethyl dithiopyrophosphat	0.12374	0.14122	0.14677	0.14494	0.15841	0.14301	8.770	
	103 Diallate 1	0.28758	0.35678	0.37912	0.38900	0.44413	0.37132	15.294	
M	189 Diallate, Total	1.30226	1.54213	1.59661	1.76721	2.15907	1.67346	19.027	
	104 Phorate	0.10557	0.13334	0.14728	0.15998	0.19407	0.14805	22.100	
	105 1,3,5-Trinitrobenzene	0.08139	0.09077	0.10138	0.09898	0.12373	0.09925	15.888	
	106 4-Bromophenyl-phenylether	0.26878	0.27086	0.29035	0.30151	0.30094	0.28649	5.539	
	107 Hexachlorobenzene	0.26288	0.25078	0.28301	0.29020	0.28901	0.27518	6.360	
	108 Phenacetin	0.29905	0.30517	0.32444	0.32548	0.37646	0.32612	9.338	
	109 Diallate 2	0.35467	0.41009	0.41924	0.42902	0.50386	0.42337	12.622	
	110 Dimethoate	0.18707	0.20100	0.18133	0.16373	0.14777	0.17618	11.782	
	111 Pentachlorophenol	0.08267	0.12994	0.11981	0.14471	0.16073	0.12757	23.104	<-
	112 Pentachloronitrobenzene	0.14350	0.16243	0.16427	0.16053	0.17261	0.16067	6.626	
	113 4-Aminobiphenyl	0.37657	0.49365	0.61707	0.67995	0.84777	0.60300	29.811	
	114 Pronamide	0.35057	0.37543	0.38513	0.38227	0.40500	0.37968	5.174	
	115 Phenanthrene	1.09514	1.12481	1.18612	1.23569	1.22979	1.17431	5.336	
	116 Anthracene	1.03855	1.13415	1.18533	1.24625	1.23103	1.16706	7.206	
	117 Dinoseb	0.15539	0.19468	0.20646	0.22406	0.28277	0.21267	21.913	
	118 Disulfoton	0.30332	0.36729	0.39348	0.42727	0.52864	0.40400	20.588	
	119 Carbazole	0.58244	0.76051	0.74199	0.88107	0.91940	0.77708	17.080	
	120 Di-n-Butylphthalate	1.24937	1.25477	1.42136	1.44880	1.34434	1.34373	6.849	
	121 4-Nitroquinoline 1-oxide	0.02828	0.03726	0.04203	0.04687	0.06151	0.04319	28.541	
	122 Methapyrilene	0.36876	0.32120	0.25771	0.19343	0.12261	0.25274	38.879	no 4's
	123 Fluoranthene	1.32135	1.37342	1.34012	1.46730	1.39736	1.37991	4.131	
	124 Benzidine	0.04863	0.13895	0.14621	0.25204	0.24752	0.16667	51.038	<- NT
	125 Pyrene	1.51898	1.46505	1.46105	1.33027	1.22895	1.40086	8.464	
	126 Aramite 1	0.09962	0.10739	0.10084	0.10067	0.10009	0.10172	3.152	
M	191 Aramite, Total	0.36818	0.37794	0.37028	0.38762	0.43756	0.38832	7.356	
	127 Aramite 2	0.13597	0.14071	0.13640	0.13784	0.13887	0.13796	1.394	
	128 p-Dimethylamino azobenzene	0.32912	0.34964	0.35223	0.36715	0.39499	0.35863	6.812	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:07 ulmanm
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
129 p-Chlorobenzilate	0.58061	0.58801	0.60140	0.61308	0.65275	0.60717	4.671	
130 Famphur	0.37026	0.16333	0.06621	0.03009	0.02187	0.13035	111.553	NT
131 Butylbenzylphthalate	0.54000	0.50641	0.55447	0.51469	0.48007	0.51913	5.609	
132 3,3'-Dimethylbenzidine	0.22174	0.26962	0.30599	0.32062	0.37492	0.29858	19.175	
133 3,3'-Dimethoxybenzidine	0.04473	0.13213	0.14418	0.18569	0.17807	0.13696	41.055	NT
134 2-Acetylaminofluorene	0.34772	0.37734	0.39418	0.40384	0.45692	0.39600	10.145	
135 3,3'-Dichlorobenzidine	0.31209	0.40461	0.38997	0.42229	0.39791	0.38538	11.072	
136 Benzo(a)Anthracene	1.36832	1.37271	1.35998	1.35028	1.26399	1.34306	3.352	
137 Chrysene	1.23538	1.19908	1.21314	1.16968	1.05160	1.17377	6.163	
138 4,4'-Methylene bis(o-chloroan	0.18296	0.24008	0.22869	0.24157	0.22464	0.22359	10.661	
139 bis(2-ethylhexyl)Phthalate	0.79193	0.70164	0.78505	0.74671	0.69929	0.74492	5.920	
140 Di-n-octylphthalate	1.81907	1.78095	1.95464	1.91583	1.94258	1.88261	4.137	
141 Benzo(b)fluoranthene	1.62119	1.64333	1.70522	1.84002	1.89740	1.74143	7.000	
142 Benzo(k)fluoranthene	1.59142	1.64045	1.72961	1.72485	1.69043	1.67535	3.517	
143 7,12-dimethylbenz[a]anthracen	0.76375	0.80472	0.83266	0.83964	0.96046	0.84025	8.750	
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
146 Benzo(a)pyrene	1.37338	1.40145	1.46147	1.51932	1.50617	1.45236	4.394	
148 3-Methylcholanthrene	0.57049	0.60693	0.62043	0.61708	0.71392	0.62577	8.488	
149 Indeno(1,2,3-cd)pyrene	1.27243	1.43141	1.22394	1.30870	1.35473	1.31824	6.024	
150 Dibenz(a,h)anthracene	1.24539	1.19631	1.21667	1.30000	1.25054	1.24178	3.165	
151 Benzo(g,h,i)perylene	1.29798	1.19420	1.18355	1.24098	1.20040	1.22342	3.842	
199 3-Picoline	1.31318	1.42318	1.48840	1.55655	1.78548	1.51336	11.669	
200 N,N-Dimethylacetamide	0.83144	0.90378	0.94151	0.94764	1.04648	0.93417	8.348	
$ 154 Nitrobenzene-d5	0.53652	0.56673	0.57381	0.58451	0.58813	0.56994	3.601	
$ 155 2-Fluorobiphenyl	1.36502	1.45897	1.47403	1.49779	1.42879	1.44492	3.543	
$ 156 Terphenyl-d14	1.01048	0.97879	1.02862	0.94904	0.89448	0.97228	5.459	
$ 157 Phenol-d5	1.50636	1.57259	1.78434	1.94564	2.05487	1.77276	13.249	
$ 158 2-Fluorophenol	1.06863	1.03201	1.30140	1.34079	1.30768	1.21010	12.164	
$ 159 2,4,6-Tribromophenol	0.15356	0.17735	0.17327	0.18617	0.18286	0.17464	7.323	
$ 186 2-Chlorophenol-d4	1.08597	1.12192	1.19287	1.27123	1.29210	1.19282	7.551	
$ 187 1,2-Dichlorobenzene-d4	0.90044	0.96769	0.98447	1.05005	1.04007	0.98854	6.122	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Calibration File Names:
Level 1: /chem/can/mss/a4hp7.i/90901a.b/7al0901.d
Level 2: /chem/can/mss/a4hp7.i/90901a.b/7aml0901.d
Level 3: /chem/can/mss/a4hp7.i/90901a.b/7am0901.d
Level 4: /chem/can/mss/a4hp7.i/90901a.b/7amh0901.d
Level 5: /chem/can/mss/a4hp7.i/90901a.b/7ah0901.d

	20	50	80	120	160		Coefficients			%RSD
Compound	Level 1	Level 2	Level 3	Level 4	Level 5	Curve	b	m1	m2	or R^2
198 1,4-Dioxane	0.66361	0.68033	0.76722	0.75066	0.70408	AVRG		0.71318		6.24891
7 N-Nitrosomorpholine	189169	498015	902286	1344375	2729917	QUAD	0.000e+00	1.07735	-0.07143	0.99979
8 Ethyl methanesulfonate	0.95913	1.03238	1.07754	1.07861	1.17340	AVRG		1.06421		7.33325
9 Pyridine	232240	399596	1472076	2280906	3490648	QUAD	0.000e+00	0.71591	-0.01738	0.97174
10 N-Nitrosodimethylamine	190955	315283	1083372	1637056	2604913	QUAD	0.000e+00	0.96746	-0.03059	0.97940
11 Ethyl methacrylate	1.56011	1.30235	1.80386	1.91738	1.73236	AVRG		1.66321		14.41792
12 3-Chloropropionitrile	0.65222	0.59595	0.80132	0.84017	0.79640	AVRG		0.73721		14.45044
13 Malononitrile	1.20011	1.18466	1.52119	1.58861	1.48364	AVRG		1.39564		13.57092
14 2-Picoline	1.45688	1.52224	1.61336	1.54695	1.88733	AVRG		1.60535		10.42042
15 N-Nitrosomethylethylamine	0.61855	0.65313	0.63625	0.62551	0.64227	AVRG		0.63514		2.14696

> no r^2

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2
16	Methyl methanesulfonate	1.06148	1.09109	1.07335	1.08317	1.21186	AVRG		1.10419		5.54263
18	1,3-Dichloro-2-propanol	1.22268	1.35427	1.42394	1.46373	1.65510	AVRG		1.42395		11.12476
19	N-Nitrosodiethylamine	0.63200	0.67715	0.69201	0.71051	0.77324	AVRG		0.69698		7.39957
21	Aniline	322859	839398	1958673	3274073	5480661	QUAD	0.000e+00	0.50292	-0.01070	0.99731
22	Phenol	1.65220	1.79037	2.02459	2.21320	2.30177	AVRG		1.99643		13.76267
23	bis(2-Chloroethyl)ether	1.32076	1.26457	1.48832	1.59669	1.54282	AVRG		1.44263		9.95006
24	2-Chlorophenol	1.08734	1.12991	1.24353	1.31334	1.34178	AVRG		1.22318		9.11835
25	Pentachloroethane	0.61614	0.61222	0.60866	0.63827	0.71678	AVRG		0.63841		7.09579
26	1,3-Dichlorobenzene	1.32492	1.34859	1.45808	1.51629	1.48793	AVRG		1.42716		5.98855
27	1,4-Dichlorobenzene	1.40009	1.46616	1.55522	1.61954	1.62232	AVRG		1.53267		6.36712
28	1,2-Dichlorobenzene	1.25789	1.34108	1.42064	1.52748	1.61883	AVRG		1.43318		10.03430
29	Benzyl Alcohol	114537	310341	753909	1292657	2277724	QUAD	0.000e+00	1.35101	-0.09567	0.99724
30	2-Methylphenol	1.08634	1.12957	1.21196	1.33830	1.42793	AVRG		1.23882		11.52694
31	bis(2-Chloroisopropyl)ether	217152	420931	1160553	1868737	3137379	QUAD	0.000e+00	0.88518	-0.03403	0.99351
32	N-Nitroso-di-n-propylamine	1.11425	1.15502	1.21858	1.30501	1.31169	AVRG		1.22091		7.21481
M 195	Cresols, total	1.06593	1.14537	1.20099	1.35255	1.46749	AVRG		1.24647		12.99735
192	4-Methylphenol	1.04552	1.16118	1.19001	1.36681	1.50705	AVRG		1.25411		14.53608

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
193	3-Methylphenol	251132	707365	1331377	2047748	4354602	QUAD	0.000e+00	0.72853	-0.03320	0.99941	
34	Hexachloroethane	0.56716	0.59252	0.59867	0.62940	0.64174	AVRG		0.60590		4.93022	
35	Nitrobenzene	0.53829	0.57915	0.58673	0.59335	0.62197	AVRG		0.58390		5.17314	
36	N-Nitrosopyrrolidine	112509	291246	498558	735002	1440521	QUAD	0.000e+00	1.92162	-0.22138	0.99966	
37	Acetophenone	1.69874	1.84439	1.92460	2.06132	2.45821	AVRG		1.99745		14.47404	
39	o-Toluidine	391187	1129348	2135430	3212646	6316011	QUAD	0.000e+00	0.45711	-0.01283	0.99924	
40	N-Nitrosopiperidine	0.16577	0.17508	0.18032	0.17842	0.19857	AVRG		0.17963		6.66753	
41	Isophorone	0.89779	0.91668	0.98791	1.01577	0.99195	AVRG		0.96202		5.36013	
42	2-Nitrophenol	0.18235	0.20105	0.20543	0.22889	0.25539	AVRG		0.21462		13.12905	
43	2,4-Dimethylphenol	0.36713	0.43157	0.43981	0.47200	0.48218	AVRG		0.43854		10.30821	
44	bis(2-Chloroethoxy)methane	0.44109	0.45167	0.50626	0.53420	0.55807	AVRG		0.49826		10.21997	
45	O,O,O-Triethyl phosphorothioa	0.24360	0.26609	0.28282	0.28629	0.33355	AVRG		0.28247		11.74519	
46	2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
47	1,3,5-Trichlorobenzene	0.39165	0.42964	0.42984	0.44616	0.46840	AVRG		0.43314		6.48627	
48	2,4-Dichlorophenol	0.28286	0.32449	0.31561	0.33596	0.36304	AVRG		0.32439		9.02703	
49	Benzoic Acid	32767	133912	243820	418715	1140860	QUAD	0.000e+00	13.46401	-11.22961	0.99054	
50	1,2,4-Trichlorobenzene	0.38000	0.40998	0.39753	0.41532	0.42033	AVRG		0.40623		4.51993	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
51 Naphthalene	1.09814	1.12373	1.23257	1.27527	1.26547	AVRG		1.19904		6.87730
52 4-Chloroaniline	168330	491606	1025575	1763147	2994065	QUAD	0.000e+00	3.05946	-0.42628	0.99830
53 a,a-Dimethyl-phenethylamine	0.59399	0.63357	0.70705	0.72241	0.79353	AVRG		0.69011		11.33192
54 2,6-Dichlorophenol	174258	427032	732447	1068864	2130372	QUAD	0.000e+00	4.11110	-0.99179	0.99893
55 Hexachloropropene	162219	408391	689750	1101741	2160430	QUAD	0.000e+00	4.21579	-1.07337	0.99987
56 Hexachlorobutadiene	0.29680	0.33407	0.29234	0.30282	0.31382	AVRG		0.30797		5.41181
57 1,2,3-Trichlorobenzene	0.36874	0.40203	0.39072	0.40864	0.42618	AVRG		0.39926		5.34958
58 N-Nitrosodi-n-butylamine	0.31891	0.35792	0.39292	0.40363	0.45927	AVRG		0.38653		13.57585
59 4-Chloro-3-Methylphenol	0.34825	0.36676	0.38624	0.41840	0.43491	AVRG		0.39091		9.14907
60 p-Phenylene diamine	88154	262890	537766	856188	1432515	QUAD	0.000e+00	5.51571	-1.69584	0.99537
61 Safrole	0.29573	0.32649	0.34713	0.35082	0.42691	AVRG		0.34942		13.88810
62 2-Methylnaphthalene	0.72020	0.78443	0.79164	0.83091	0.87006	AVRG		0.79945		7.00436
63 1-Methylnaphthalene	0.71284	0.77743	0.77768	0.82491	0.85259	AVRG		0.78909		6.76430
64 Hexachlorocyclopentadiene	42730	308383	395676	812154	1612775	QUAD	0.000e+00	4.48787	-1.08116	0.96598
65 1,2,4,5-Tetrachlorobenzene	0.72142	0.75992	0.80269	0.79116	0.90241	AVRG		0.79552		8.49203
66 2,4,6-Trichlorophenol	0.39557	0.45004	0.42532	0.43986	0.42768	AVRG		0.42769		4.79895
67 2,4,5-Trichlorophenol	0.32729	0.44847	0.40904	0.44903	0.43923	AVRG		0.41461		12.41223

not ^2

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
68 1,2,3,5-Tetrachlorobenzene	0.71743	0.78883	0.77133	0.79580	0.77703	AVRG		0.77008		4.02110	
69 1,4-Dinitrobenzene	0.17197	0.17435	0.18349	0.18595	0.21091	AVRG		0.18533		8.34576	
70 2-Chloronaphthalene	1.00250	1.08851	1.13425	1.15830	1.12966	AVRG		1.10264		5.56369	
71 Isosafrole 1	0.13555	0.13276	0.13704	0.13099	0.14239	AVRG		0.13574		3.24089	ok. per sup
M 188 Isosafrole, Total	0.51523	0.56049	0.61865	0.63608	0.77332	AVRG		0.62075		15.75994	DCT
72 Isosafrole 2	396641	1068524	1883323	2770819	5328473	QUAD	0.000e+00	1.08724	-0.06644	0.99883	
73 2-Nitroaniline	0.37554	0.44519	0.40234	0.43231	0.41916	AVRG		0.41491		6.54078	
74 1,2,3,4-Tetrachlorobenzene	0.68749	0.72186	0.69046	0.70063	0.67456	AVRG		0.69500		2.54114	
75 1,4-Naphthoquinone	167502	405450	665899	799579	969075	QUAD	0.000e+00	1.35276	2.06437	0.93905	no +'s
76 Dimethylphthalate	1.28314	1.38088	1.39573	1.40397	1.30411	AVRG		1.35357		4.12494	
77 m-Dinitrobenzene	0.19723	0.18911	0.20626	0.20628	0.22683	AVRG		0.20514		6.86185	
78 2,6-Dinitrotoluene	0.28566	0.31365	0.30454	0.31242	0.29449	AVRG		0.30215		3.96500	
79 Acenaphthylene	1.81558	1.95706	2.02351	2.05454	1.94813	AVRG		1.95976		4.70281	
80 1,2-Dinitrobenzene	0.13704	0.16012	0.15322	0.15945	0.14822	AVRG		0.15161		6.25932	
81 3-Nitroaniline	60984	203335	362138	680238	1174979	QUAD	0.000e+00	5.33187	-1.22194	0.99444	
82 Acenaphthene	1.21402	1.26260	1.32441	1.35485	1.32133	AVRG		1.29544		4.35765	
83 2,4-Dinitrophenol	33610	156501	207787	427759	798449	QUAD	0.000e+00	8.46269	-3.50986	0.97358	no +'s

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
84 Pentachlorobenzene	0.60290	0.65563	0.69384	0.70912	0.79720	AVRG		0.69174		10.38055	
85 4-Nitrophenol	42547	222376	245942	506360	933470	QUAD	0.000e+00	6.46772	-1.51248	0.94664	no f's
86 Dibenzofuran	1.60070	1.78745	1.72553	1.78630	1.69454	AVRG		1.71891		4.49224	
87 2,4-Dinitrotoluene	0.35807	0.42769	0.39395	0.42849	0.41168	AVRG		0.40397		7.24955	
88 2,3,4,6-Tetrachlorophenol	0.28929	0.32385	0.35615	0.37407	0.42653	AVRG		0.35398		14.65495	
89 1-Naphthylamine	0.83557	0.80134	0.91359	0.96119	1.13954	AVRG		0.93024		14.28348	
90 Zinophos	0.34016	0.36333	0.38579	0.39770	0.43665	AVRG		0.38473		9.47000	
91 2,3,5,6-Tetrachlorophenol	0.31908	0.40831	0.37206	0.40308	0.39799	AVRG		0.38010		9.69477	
92 2-Naphthylamine	262201	526379	1036136	1725432	3619722	QUAD	0.000e+00	1.93878	-0.23458	0.99607	
93 Diethylphthalate	1.35323	1.46734	1.44887	1.45550	1.38607	AVRG		1.42220		3.50153	
94 Fluorene	1.30665	1.46836	1.43337	1.48790	1.45828	AVRG		1.43091		5.04515	
95 4-Chlorophenyl-phenylether	0.78071	0.87940	0.81770	0.86769	0.86679	AVRG		0.84246		4.97227	
96 4-Nitroaniline	60653	191567	252513	535203	970311	QUAD	0.000e+00	6.76729	-2.14245	0.97459	no f's
97 5-Nitro-o-toluidine	0.26263	0.26997	0.29387	0.30983	0.35772	AVRG		0.29881		12.69534	
98 4,6-Dinitro-2-methylphenol	81689	263181	426208	781673	1300276	QUAD	0.000e+00	7.71844	-2.51193	0.99728	
99 N-Nitrosodiphenylamine	0.49728	0.53913	0.58734	0.60924	0.62343	AVRG		0.57128		9.14988	
100 1,2 Diphenylhydrazine	0.89401	0.93270	1.02272	1.03930	1.03241	AVRG		0.98423		6.74470	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
	101 Diphenylamine	0.49728	0.53913	0.58734	0.60924	0.62343	AVRG		0.57128		9.14988
	102 Tetraethyl dithiopyrophosphat	0.12374	0.14122	0.14677	0.14494	0.15841	AVRG		0.14301		8.76992
	103 Diallate 1	244989	714647	1240137	1848408	3342633	QUAD	0.000e+00	3.04339	-0.44212	0.99872
M	189 Diallate, Total	1.30226	1.54213	1.59661	1.76721	2.15907	AVRG		1.67346		19.02734
	104 Phorate	89935	267096	481778	760181	1460649	QUAD	0.000e+00	8.01188	-3.68801	0.99927
	105 1,3,5-Trinitrobenzene	69338	181821	331634	470351	931208	QUAD	0.000e+00	12.04240	-7.90621	0.99617
	106 4-Bromophenyl-phenylether	0.26878	0.27086	0.29035	0.30151	0.30094	AVRG		0.28649		5.53932
	107 Hexachlorobenzene	0.26288	0.25078	0.28301	0.29020	0.28901	AVRG		0.27518		6.36003
	108 Phenacetin	0.29905	0.30517	0.32444	0.32548	0.37646	AVRG		0.32612		9.33756
	109 Diallate 2	0.35467	0.41009	0.41924	0.42902	0.50386	AVRG		0.42337		12.62231
	110 Dimethoate	0.18707	0.20100	0.18133	0.16373	0.14777	AVRG		0.17618		11.78162
	111 Pentachlorophenol	63718	241937	372648	716604	1283025	QUAD	0.000e+00	8.93640	-4.28003	0.99541
	112 Pentachloronitrobenzene	0.14350	0.16243	0.16427	0.16053	0.17261	AVRG		0.16067		6.62615
	113 4-Aminobiphenyl	320808	988807	2018509	3230948	6380500	QUAD	0.000e+00	1.96689	-0.23383	0.99740
	114 Pronamide	0.35057	0.37543	0.38513	0.38227	0.40500	AVRG		0.37968		5.17368
	115 Phenanthrene	1.09514	1.12481	1.18612	1.23569	1.22979	AVRG		1.17431		5.33566
	116 Anthracene	1.03855	1.13415	1.18533	1.24625	1.23103	AVRG		1.16706		7.20636

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
	117 Dinoseb	132380	389948	675364	1064672	2128195	QUAD	0.000e+00	5.70768	-1.91547	0.99921	
	118 Disulfoton	258399	735701	1287101	2030274	3978649	QUAD	0.000e+00	2.98625	-0.51687	0.99948	
	119 Carbazole	448910	1415989	2307829	4363088	7339332	QUAD	0.000e+00	1.43490	-0.09768	0.99677	
	120 Di-n-Butylphthalate	1.24937	1.25477	1.42136	1.44880	1.34434	AVRG		1.34373		6.84943	
	121 4-Nitroquinoline 1-oxide	24094	74631	137497	222719	462911	QUAD	0.000e+00	28.36680	-49.33037	0.99912	
	122 Methapyrilene	314151	643395	842996	919143	922813	QUAD	0.000e+00	1.85687	6.52189	0.58935	R- no f's
	123 Fluoranthene	1.32135	1.37342	1.34012	1.46730	1.39736	AVRG		1.37991		4.13061	
	124 Benzidine	33216	247691	427025	1422999	2319579	QUAD	0.000e+00	6.93137	-3.15433	0.96539	NT
	125 Pyrene	1.51898	1.46505	1.46105	1.33027	1.22895	AVRG		1.40086		8.46378	
	126 Aramite 1	0.09962	0.10739	0.10084	0.10067	0.10009	AVRG		0.10172		3.15205	
M	191 Aramite, Total	0.36818	0.37794	0.37028	0.38762	0.43756	AVRG		0.38832		7.35558	
	127 Aramite 2	0.13597	0.14071	0.13640	0.13784	0.13887	AVRG		0.13796		1.39389	
	128 p-Dimethylamino azobenzene	0.32912	0.34964	0.35223	0.36715	0.39499	AVRG		0.35863		6.81193	
	129 p-Chlorobenzilate	0.58061	0.58801	0.60140	0.61308	0.65275	AVRG		0.60717		4.67137	
	130 Famphur	243112	247830	169032	107550	132347	QUAD	0.000e+00	57.49580	-272	0.58983	NT
	131 Butylbenzylphthalate	0.54000	0.50641	0.55447	0.51469	0.48007	AVRG		0.51913		5.60915	
	132 3,3'-Dimethylbenzidine	145594	409104	701176	1146008	2260532	QUAD	0.000e+00	3.87073	-0.80291	0.99882	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
133 3,3'-Dimethoxybenzidine	30548	235536	421092	1048390	1668695	QUAD	0.000e+00	7.50358	-2.93757	0.98429	NT
134 2-Acetylaminofluorene	0.34772	0.37734	0.39418	0.40384	0.45692	AVRG		0.39600		10.14494	
135 3,3'-Dichlorobenzidine	0.31209	0.40461	0.38997	0.42229	0.39791	AVRG		0.38538		11.07154	
136 Benzo(a)Anthracene	1.36832	1.37271	1.35998	1.35028	1.26399	AVRG		1.34306		3.35207	
137 Chrysene	1.23538	1.19908	1.21314	1.16968	1.05160	AVRG		1.17377		6.16252	
138 4,4'-Methylene bis(o-chloroan	0.18296	0.24008	0.22869	0.24157	0.22464	AVRG		0.22359		10.66089	
139 bis(2-ethylhexyl)Phthalate	0.79193	0.70164	0.78505	0.74671	0.69929	AVRG		0.74492		5.92022	
140 Di-n-octylphthalate	1.81907	1.78095	1.95464	1.91583	1.94258	AVRG		1.88261		4.13668	
141 Benzo(b)fluoranthene	1.62119	1.64333	1.70522	1.84002	1.89740	AVRG		1.74143		7.00004	
142 Benzo(k)fluoranthene	1.59142	1.64045	1.72961	1.72485	1.69043	AVRG		1.67535		3.51665	
143 7,12-dimethylbenz(a)anthracen	0.76375	0.80472	0.83266	0.83964	0.96046	AVRG		0.84025		8.75011	
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
146 Benzo(a)pyrene	1.37338	1.40145	1.46147	1.51932	1.50617	AVRG		1.45236		4.39428	
148 3-Methylcholanthrene	0.57049	0.60693	0.62043	0.61708	0.71392	AVRG		0.62577		8.48802	
149 Indeno(1,2,3-cd)pyrene	1.27243	1.43141	1.22394	1.30870	1.35473	AVRG		1.31824		6.02360	
150 Dibenz(a,h)anthracene	1.24539	1.19631	1.21667	1.30000	1.25054	AVRG		1.24178		3.16473	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
151 Benzo(g,h,i)perylene	1.29798	1.19420	1.18355	1.24098	1.20040	AVRG		1.22342		3.84250
199 3-Picoline	1.31318	1.42318	1.48840	1.55655	1.78548	AVRG		1.51336		11.66915
200 N,N-Dimethylacetamide	0.83144	0.90378	0.94151	0.94764	1.04648	AVRG		0.93417		8.34804
$ 154 Nitrobenzene-d5	0.53652	0.56673	0.57381	0.58451	0.58813	AVRG		0.56994		3.60129
$ 155 2-Fluorobiphenyl	1.36502	1.45897	1.47403	1.49779	1.42879	AVRG		1.44492		3.54314
$ 156 Terphenyl-d14	1.01048	0.97879	1.02862	0.94904	0.89448	AVRG		0.97228		5.45891
$ 157 Phenol-d5	1.50636	1.57259	1.78434	1.94564	2.05487	AVRG		1.77276		13.24862
$ 158 2-Fluorophenol	1.06863	1.03201	1.30140	1.34079	1.30768	AVRG		1.21010		12.16408
$ 159 2,4,6-Tribromophenol	0.15356	0.17735	0.17327	0.18617	0.18286	AVRG		0.17464		7.32286
$ 186 2-Chlorophenol-d4	1.08597	1.12192	1.19287	1.27123	1.29210	AVRG		1.19282		7.55094
$ 187 1,2-Dichlorobenzene-d4	0.90044	0.96769	0.98447	1.05005	1.04007	AVRG		0.98854		6.12245

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 25-AUG-1999 12:32
End Cal Date : 01-SEP-1999 15:49
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90901a.b/8270b.m
Cal Date : 01-Sep-1999 16:12 ulmanm

Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Quad	Amt = b + m1*Rsp + m2*Rsp^2	Response

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0907B DFTPP Injection Date: 09/07/99

Instrument ID: A4HP7 DFTPP Injection Time: 0837

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	40.2
68	Less than 2.0% of mass 69	0.4 (0.9)1
69	Mass 69 relative abundance	49.9
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	43.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.0
275	10.0 - 30.0% of mass 198	27.2
365	Greater than 1.0% of mass 198	2.8
441	Present, but less than mass 443	6.5
442	40.0 - 100.0% of mass 198	47.8
443	17.0 - 23.0% of mass 442	9.7 (20.2)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	7SM0907	09/07/99	0857
02	ASTD050	ASTD050	7AML0907	09/07/99	0943
03	D1QCMCHK	D1QCM102	D1QCM102	09/07/99	1215
04	D1QCMCHKDUP	D1QCM103	D1QCM103	09/07/99	1252
05	CMSMW-15	D1LLR102	D1LLR102	09/07/99	1715
06	CMSMW-2	D1LLK102	D1LLK102	09/07/99	1752
07	FRIMW-23	D1LLH102	D1LLH102	09/07/99	1908
08	RFIMW-1	D1LLW102	D1LLW102	09/07/99	1945
09	RFIMW-22	D1LLN102	D1LLN102	09/07/99	2023
10					
11					
12	RFIMW-23				
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0907.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 08:57
Init. Calibration Date(s): 08/25/99 09/01/99
Init. Calibration Times: 12:32 15:49
Method File: /chem/can/mss/a4hp7.i/90907a.b/827

8270B

RRFs for compds quantitated from curves not correct

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
9	Pyridine	0.716	1.656	0.010	N/A	N/A	
10	N-Nitrosodimethylamine	0.967	1.194	0.010	N/A	N/A	
11	Ethyl methacrylate	1.663	1.903	0.010	-14.4	50.0	
12	3-Chloropropionitrile	0.737	0.805	0.010	-9.3	50.0	
13	Malononitrile	1.396	1.452	0.010	-4.0	50.0	
21	Aniline	0.503	2.064	0.010	N/A	N/A	
22	Phenol	1.996	1.942	0.010	2.7	20.0	
23	bis(2-Chloroethyl)ether	1.443	1.434	0.010	0.6	50.0	
24	2-Chlorophenol	1.223	1.252	0.010	-2.4	50.0	
26	1,3-Dichlorobenzene	1.427	1.450	0.010	-1.6	50.0	
27	1,4-Dichlorobenzene	1.533	1.543	0.010	-0.7	20.0	
28	1,2-Dichlorobenzene	1.433	1.438	0.010	-0.3	50.0	
29	Benzyl Alcohol	1.351	0.905	0.010	N/A	N/A	
30	2-Methylphenol	1.239	1.202	0.010	2.9	50.0	
31	bis(2-Chloroisopropyl)ether	0.885	1.200	0.010	N/A	N/A	
32	N-Nitroso-di-n-propylamine	1.221	1.194	0.050	2.2	50.0	
192	4-Methylphenol	1.254	1.199	0.010	4.4	50.0	
34	Hexachloroethane	0.606	0.592	0.010	2.3	50.0	
35	Nitrobenzene	0.584	0.622	0.010	-6.6	50.0	
41	Isophorone	0.962	1.010	0.010	-5.0	50.0	
42	2-Nitrophenol	0.215	0.207	0.010	3.3	20.0	
43	2,4-Dimethylphenol	0.439	0.478	0.010	-8.9	50.0	
44	bis(2-Chloroethoxy)methane	0.498	0.465	0.010	6.7	50.0	
46	2,4-Toluenediamene	++++	++++	0.010	++++	50.0	<-
47	1,3,5-Trichlorobenzene	0.433	0.457	0.010	-5.5	50.0	
48	2,4-Dichlorophenol	0.324	0.334	0.010	-3.1	20.0	
49	Benzoic Acid	13.464	0.140	0.010	N/A	N/A	
50	1,2,4-Trichlorobenzene	0.406	0.417	0.010	-2.6	50.0	
51	Naphthalene	1.199	1.233	0.010	-2.8	50.0	
52	4-Chloroaniline	3.059	0.338	0.010	N/A	N/A	
56	Hexachlorobutadiene	0.308	0.322	0.010	-4.6	20.0	
57	1,2,3-Trichlorobenzene	0.399	0.421	0.010	-5.4	50.0	
59	4-Chloro-3-Methylphenol	0.391	0.392	0.010	-0.3	20.0	
62	2-Methylnaphthalene	0.799	0.785	0.010	1.8	50.0	
63	1-Methylnaphthalene	0.789	0.782	0.010	0.9	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0907.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 08:57
Init. Calibration Date(s): 08/25/99 09/01/99
Init. Calibration Times: 12:32 15:49
Method File: /chem/can/mss/a4hp7.i/90907a.b/827

COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64 Hexachlorocyclopentadiene	4.488	0.201	0.050	N/A	N/A
66 2,4,6-Trichlorophenol	0.428	0.458	0.010	-7.0	20.0
67 2,4,5-Trichlorophenol	0.415	0.459	0.010	-10.7	50.0
68 1,2,3,5-Tetrachlorobenzene	0.770	0.829	0.010	-7.7	50.0
70 2-Chloronaphthalene	1.103	1.161	0.010	-5.3	50.0
73 2-Nitroaniline	0.415	0.448	0.010	-8.0	50.0
74 1,2,3,4-Tetrachlorobenzene	0.695	0.738	0.010	-6.1	50.0
76 Dimethylphthalate	1.354	1.400	0.010	-3.4	50.0
78 2,6-Dinitrotoluene	0.302	0.302	0.010	-0.1	50.0
79 Acenaphthylene	1.960	2.073	0.010	-5.8	50.0
80 1,2-Dinitrobenzene	0.152	0.155	0.010	-2.2	50.0
81 3-Nitroaniline	5.332	0.174	0.010	N/A	N/A
82 Acenaphthene	1.295	1.358	0.010	-4.8	20.0
83 2,4-Dinitrophenol	8.463	0.114	0.050	N/A	N/A
85 4-Nitrophenol	6.468	0.229	0.050	N/A	N/A
86 Dibenzofuran	1.719	1.697	0.010	1.3	50.0
87 2,4-Dinitrotoluene	0.404	0.391	0.010	3.1	50.0
91 2,3,5,6-Tetrachlorophenol	0.380	0.375	0.010	1.2	50.0
93 Diethylphthalate	1.422	1.502	0.010	-5.6	50.0
94 Fluorene	1.431	1.409	0.010	1.5	50.0
95 4-Chlorophenyl-phenylether	0.842	0.823	0.010	2.3	50.0
96 4-Nitroaniline	6.767	0.135	0.010	N/A	N/A
98 4,6-Dinitro-2-methylphenol	7.718	0.132	0.010	N/A	N/A
99 N-Nitrosodiphenylamine	0.571	0.556	0.010	2.7	20.0
100 1,2-Diphenylhydrazine	0.984	1.084	0.010	-10.1	50.0
106 4-Bromophenyl-phenylether	0.286	0.297	0.010	-3.6	50.0
107 Hexachlorobenzene	0.275	0.291	0.010	-5.6	50.0
111 Pentachlorophenol	8.936	0.137	0.010	N/A	N/A
115 Phenanthrene	1.174	1.241	0.010	-5.7	50.0
116 Anthracene	1.167	1.218	0.010	-4.3	50.0
119 Carbazole	1.435	0.629	0.010	N/A	N/A
120 Di-n-Butylphthalate	1.344	1.553	0.010	-15.6	50.0
123 Fluoranthene	1.380	1.521	0.010	-10.3	20.0
124 Benzidine	6.931	0.091	0.010	N/A	N/A
125 Pyrene	1.401	1.323	0.010	5.5	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0907.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 08:57
Init. Calibration Date(s): 08/25/99 09/01/99
Init. Calibration Times: 12:32 15:49
Method File: /chem/can/mss/a4hp7.i/90907a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.519	0.518	0.010	0.2	50.0
	133 3,3'-Dimethoxybenzidine	7.504	0.152	0.010	N/A	N/A
	135 3,3'-Dichlorobenzidine	0.385	0.415	0.010	-7.6	50.0
	136 Benzo(a)Anthracene	1.343	1.298	0.010	3.4	50.0
	137 Chrysene	1.174	1.139	0.010	2.9	50.0
	138 4,4'-Methylene bis(o-chloro	0.224	0.230	0.010	-3.0	50.0
	139 bis(2-ethylhexyl)Phthalate	0.745	0.783	0.010	-5.1	50.0
	140 Di-n-octylphthalate	1.883	1.666	0.010	11.5	20.0
	141 Benzo(b)fluoranthene	1.741	1.494	0.010	14.2	50.0
	142 Benzo(k)fluoranthene	1.675	1.542	0.010	8.0	50.0
	146 Benzo(a)pyrene	1.452	1.402	0.010	3.5	20.0
	149 Indeno(1,2,3-cd)pyrene	1.318	1.410	0.010	-7.0	50.0
	150 Dibenz(a,h)anthracene	1.242	1.401	0.010	-12.8	50.0
	151 Benzo(g,h,i)perylene	1.223	1.370	0.010	-12.0	50.0
$	154 Nitrobenzene-d5	0.570	0.613	0.010	-7.6	50.0
$	155 2-Fluorobiphenyl	1.445	1.537	0.010	-6.3	50.0
$	156 Terphenyl-d14	0.972	0.904	0.010	7.0	50.0
$	157 Phenol-d5	1.773	1.758	0.010	0.8	50.0
$	158 2-Fluorophenol	1.210	1.261	0.010	-4.2	50.0
$	159 2,4,6-Tribromophenol	0.175	0.170	0.010	2.9	50.0
$	186 2-Chlorophenol-d4	1.193	1.223	0.010	-2.5	50.0
$	187 1,2-Dichlorobenzene-d4	0.989	1.003	0.010	-1.4	50.0
M	195 Cresols, total	1.246	1.200	0.010	3.7	50.0
	101 Diphenylamine	0.571	0.556	0.010	2.7	50.0

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 08:57
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90907a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
1	Phenol	80.0000	77.8370	2.7	20.0
2	bis(2-Chloroethyl)ether	80.0000	79.5363	0.6	50.0
3	2-Chlorophenol	80.0000	81.8873	2.4	50.0
4	1,3-Dichlorobenzene	80.0000	81.2942	1.6	50.0
5	1,4-Dichlorobenzene	80.0000	80.5436	0.7	20.0
6	1,2-Dichlorobenzene	80.0000	80.2691	0.3	50.0
7	2-Methylphenol	80.0000	77.6411	2.9	50.0
8	bis(2-Chloroisopropyl)ether	80.0000	77.1542	3.6	50.0
9	4-Methylphenol	80.0000	76.4579	4.4	50.0
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0
12	Hexachloroethane	80.0000	78.1953	2.3	50.0
13	Nitrobenzene	80.0000	85.2457	6.6	50.0
14	Isophorone	80.0000	83.9636	5.0	50.0
15	2-Nitrophenol	80.0000	77.3286	3.3	20.0
16	2,4-Dimethylphenol	80.0000	87.1404	8.9	50.0
17	bis(2-Chloroethoxy)methane	80.0000	74.6305	6.7	50.0
18	N-Nitroso-di-n-propylamine	80.0000	78.2542	2.2	50.0
18	2,4-Dichlorophenol	80.0000	82.4785	3.1	20.0
19	1,2,4-Trichlorobenzene	80.0000	82.0960	2.6	50.0
20	Naphthalene	80.0000	82.2704	2.8	50.0
21	4-Chloroaniline	80.0000	74.9581	6.3	50.0
22	Hexachlorobutadiene	80.0000	83.7036	4.6	20.0
23	4-Chloro-3-Methylphenol	80.0000	80.2438	0.3	20.0
24	2-Methylnaphthalene	80.0000	78.5590	1.8	50.0
25	Hexachlorocyclopentadiene	80.0000	65.1829	18.5	50.0
26	2,4,6-Trichlorophenol	80.0000	85.5822	7.0	20.0
27	2,4,5-Trichlorophenol	80.0000	88.5259	10.7	50.0
28	2-Chloronaphthalene	80.0000	84.2577	5.3	50.0
29	2-Nitroaniline	80.0000	86.4091	8.0	50.0
30	Dimethylphthalate	80.0000	82.7387	3.4	50.0
31	Acenaphthylene	80.0000	84.6403	5.8	50.0
32	2,6-Dinitrotoluene	80.0000	80.0618	0.1	50.0
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0
33	3-Nitroaniline	80.0000	68.4553	14.4	50.0
34	Acenaphthene	80.0000	83.8679	4.8	20.0
35	2,4-Dinitrophenol	80.0000	70.0338	12.5	50.0
36	4-Nitrophenol	80.0000	105.7672	32.2	50.0
37	Dibenzofuran	80.0000	78.9816	1.3	50.0
38	2,4-Dinitrotoluene	80.0000	77.4812	3.1	50.0

Data File: /chem/can/mss/a4hp7.i/90907a.b/7sm0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 08:57
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90907a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
39	Diethylphthalate	80.0000	84.4676	5.6	50.0	
40	4-Chlorophenyl-phenylether	80.0000	78.1758	2.3	50.0	
41	Fluorene	80.0000	78.7782	1.5	50.0	
42	4-Nitroaniline	80.0000	66.8041	16.5	50.0	
43	4,6-Dinitro-2-methylphenol	80.0000	74.7404	6.6	50.0	
44	N-Nitrosodiphenylamine	80.0000	77.8232	2.7	20.0	
45	4-Bromophenyl-phenylether	80.0000	82.8413	3.6	50.0	
46	Hexachlorobenzene	80.0000	84.5102	5.6	50.0	
47	Pentachlorophenol	80.0000	85.0871	6.4	20.0	
48	Phenanthrene	80.0000	84.5431	5.7	50.0	
49	Anthracene	80.0000	83.4718	4.3	50.0	
50	Carbazole	80.0000	66.0143	17.5	50.0	
51	Di-n-Butylphthalate	80.0000	92.4699	15.6	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
52	Fluoranthene	80.0000	88.2006	10.3	20.0	
53	Pyrene	80.0000	75.5622	5.5	50.0	
54	Butylbenzylphthalate	80.0000	79.8381	0.2	50.0	
55	3,3'-Dichlorobenzidine	80.0000	86.0564	7.6	50.0	
56	Benzo(a)Anthracene	80.0000	77.3022	3.4	50.0	
57	Chrysene	80.0000	77.6631	2.9	50.0	
58	bis(2-ethylhexyl)Phthalate	80.0000	84.0445	5.1	50.0	
59	Di-n-octylphthalate	80.0000	70.8051	11.5	20.0	
60	Benzo(b)fluoranthene	80.0000	68.6118	14.2	50.0	
61	Benzo(k)fluoranthene	80.0000	73.6223	8.0	50.0	
62	Benzo(a)pyrene	80.0000	77.2190	3.5	20.0	
63	Indeno(1,2,3-cd)pyrene	80.0000	85.5817	7.0	50.0	
64	Dibenz(a,h)anthracene	80.0000	90.2650	12.8	50.0	
65	Benzo(g,h,i)perylene	80.0000	89.5955	12.0	50.0	
66	Pyridine	80.0000	87.2238	9.0	50.0	
67	N-Nitrosodimethylamine	80.0000	85.4419	6.8	50.0	
68	Aniline	80.0000	75.7389	5.3	50.0	
69	Benzyl Alcohol	80.0000	85.2973	6.6	50.0	
71	Benzoic Acid	80.0000	115.3990	44.2	50.0	NT ↑
72	1-Methylnaphthalene	80.0000	79.2861	0.9	50.0	
75	1,2-Dinitrobenzene	80.0000	81.7561	2.2	50.0	
77	2,3,5,6-Tetrachlorophenol	80.0000	79.0215	1.2	50.0	
78	1,2-Diphenylhydrazine	80.0000	88.1144	10.1	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
79	Benzidine	80.0000	46.2181	42.2	50.0	NT ↓

Data File: /chem/can/mss/a4hp7.i/90907a.b/7sm0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 08:57
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90907a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
82	Ethyl methacrylate	80.0000	91.5412	14.4	50.0	
83	3-Chloropropionitrile	80.0000	87.4001	9.3	50.0	
84	Malononitrile	80.0000	83.2191	4.0	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
96	2,4-Toluenediamene	80.0000	0.0000	100.0	50.0	<-
97	1,3,5-Trichlorobenzene	80.0000	84.3818	5.5	50.0	
101	1,2,3-Trichlorobenzene	80.0000	84.3321	5.4	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
106	1,2,3,5-Tetrachlorobenzene	80.0000	86.1454	7.7	50.0	
110	1,2,3,4-Tetrachlorobenzene	80.0000	84.9032	6.1	50.0	
117	Diphenylamine	80.0000	77.8232	2.7	50.0	
140	3,3'-Dimethoxybenzidine	80.0000	80.4058	0.5	50.0	
142	4,4'-Methylene bis(o-chloroan	80.0000	82.4320	3.0	50.0	
195	Cresols, total	160.0000	154.0918	3.7	50.0	
181	Nitrobenzene-d5	80.0000	86.0474	7.6	50.0	
182	2-Fluorobiphenyl	80.0000	85.0732	6.3	50.0	
183	Terphenyl-d14	80.0000	74.3647	7.0	50.0	
184	Phenol-d5	80.0000	79.3382	0.8	50.0	
185	2-Fluorophenol	80.0000	83.3818	4.2	50.0	
186	2,4,6-Tribromophenol	80.0000	77.7136	2.9	50.0	
187	2-Chlorophenol-d4	80.0000	82.0109	2.5	50.0	
188	1,2-Dichlorobenzene-d4	80.0000	81.1583	1.4	50.0	

Data File: /chem/can/mss/a4hp7.i/90907a.b/7aml0907.d
Report Date: 07-Sep-1999 13:44

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml0907.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 07-SEP-1999 09:43
Init. Calibration Date(s): 08/25/99 09/01/99
Init. Calibration Times: 12:32 15:49
Method File: /chem/can/mss/a4hp7.i/90907a.b/827

8270B

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D
7	N-Nitrosomorpholine	1.077	0.857	0.010	N/A	N/A
8	Ethyl methanesulfonate	1.064	1.003	0.010	5.8	50.0
14	2-Picoline	1.605	1.638	0.010	-2.0	50.0
15	N-Nitrosomethylethylamine	0.635	0.719	0.010	-13.3	50.0
16	Methyl methanesulfonate	1.104	1.058	0.010	4.2	50.0
18	1,3-Dichloro-2-propanol	1.424	1.473	0.010	-3.5	50.0
19	N-Nitrosodiethylamine	0.697	0.718	0.010	-3.0	50.0
25	Pentachloroethane	0.638	0.598	0.010	6.4	50.0
36	N-Nitrosopyrrolidine	1.922	0.533	0.010	N/A	N/A
37	Acetophenone	1.997	1.761	0.010	11.8	50.0
39	o-Toluidine	0.457	1.888	0.010	N/A	N/A
40	N-Nitrosopiperidine	0.180	0.180	0.010	-0.4	50.0
45	O,O,O-Triethyl phosphorothi	0.282	0.243	0.010	14.1	50.0
53	a,a-Dimethyl-phenethylamine	0.690	0.569	0.010	17.6	50.0
54	2,6-Dichlorophenol	4.111	0.300	0.010	N/A	N/A
55	Hexachloropropene	4.216	0.201	0.010	N/A	N/A
58	N-Nitrosodi-n-butylamine	0.387	0.330	0.010	14.6	50.0
60	p-Phenylene diamine	5.516	0.067	0.010	N/A	N/A
61	Safrole	0.349	0.300	0.010	14.3	50.0
65	1,2,4,5-Tetrachlorobenzene	0.796	0.772	0.010	3.0	50.0
71	Isosafrole 1	0.136	0.140	0.010	-3.4	50.0
M 188	Isosafrole, Total	0.621	0.546	0.010	12.0	50.0
72	Isosafrole 2	1.087	0.952	0.010	N/A	N/A
75	1,4-Naphthoquinone	1.353	0.379	0.010	N/A	N/A
84	Pentachlorobenzene	0.692	0.637	0.010	7.9	50.0
89	1-Naphthylamine	0.930	0.684	0.010	26.5	50.0
92	2-Naphthylamine	1.939	0.367	0.010	N/A	N/A
90	Zinophos	0.385	0.346	0.010	10.1	50.0
102	Tetraethyl dithiopyrophosph	0.143	0.140	0.010	2.2	50.0
103	Diallate 1	3.043	0.374	0.010	N/A	N/A
M 189	Diallate, Total	1.673	1.185	0.010	29.2	50.0
109	Diallate 2	0.423	0.426	0.010	-0.6	50.0
104	Phorate	8.012	0.131	0.010	N/A	N/A
105	1,3,5-Trinitrobenzene	12.042	0.082	0.010	N/A	N/A
108	Phenacetin	0.326	0.301	0.010	7.7	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml0907.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 07-SEP-1999 09:43
Init. Calibration Date(s): 08/25/99 09/01/99
Init. Calibration Times: 12:32 15:49
Method File: /chem/can/mss/a4hp7.i/90907a.b/827

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D	
	110 Dimethoate	0.176	0.218	0.010	-23.7	50.0	
	112 Pentachloronitrobenzene	0.161	0.150	0.010	6.4	50.0	
	113 4-Aminobiphenyl	1.967	0.313	0.010	N/A	N/A	
	114 Pronamide	0.380	0.371	0.010	2.4	50.0	
	117 Dinoseb	5.708	0.186	0.010	N/A	N/A	
	118 Disulfoton	2.986	0.384	0.010	N/A	N/A	
	121 4-Nitroquinoline 1-oxide	28.367	0.032	0.010	N/A	N/A	
	122 Methapyrilene	1.857	0.284	0.010	N/A	N/A	
	126 Aramite 1	0.102	0.098	0.010	3.9	50.0	
M	191 Aramite, Total	0.388	0.273	0.010	29.8	50.0	
	127 Aramite 2	0.138	0.136	0.010	1.7	50.0	
	128 p-Dimethylamino azobenzene	0.359	0.303	0.010	15.4	50.0	
	129 p-Chlorobenzilate	0.607	0.576	0.010	5.1	50.0	
	130 Famphur	57.496	0.157	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	3.871	0.330	0.010	N/A	N/A	
	134 2-Acetylaminofluorene	0.396	0.412	0.010	-4.1	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.840	0.585	0.010	30.4	50.0	
	144 Hexachlorophene	++++	0.001	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.626	0.662	0.010	-5.7	50.0	
	193 3-Methylphenol	0.729	1.224	0.010	N/A	N/A	
	69 1,4-Dinitrobenzene	0.185	0.177	0.010	4.6	50.0	
	77 m-Dinitrobenzene	0.205	0.190	0.010	7.5	50.0	
	198 1,4-Dioxane	0.713	0.996	0.010	-39.7	50.0	
	88 2,3,4,6-Tetrachlorophenol	0.354	0.307	0.010	13.2	50.0	
	97 5-Nitro-o-toluidine	0.299	0.256	0.010	14.2	50.0	
	199 3-Picoline	1.513	1.367	0.010	9.7	50.0	
	200 N,N-Dimethylacetamide	0.934	0.831	0.010	11.0	50.0	

Data File: /chem/can/mss/a4hp7.i/90907a.b/7aml0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 09:43
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90907a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	50.0000	0.0000	100.0	50.0	<-
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
70	3-Methylphenol	50.0000	41.4793	17.0	50.0	
73	1,4-Dinitrobenzene	50.0000	47.7243	4.6	50.0	
74	m-Dinitrobenzene	50.0000	46.2375	7.5	50.0	
76	2,3,4,6-Tetrachlorophenol	50.0000	43.4074	13.2	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	50.0000	42.9047	14.2	50.0	
81	Ethyl methanesulfonate	50.0000	47.1106	5.8	50.0	
85	2-Picoline	50.0000	51.0118	2.0	50.0	
86	N-Nitrosomethylethylamine	50.0000	56.6260	13.3	50.0	
87	Methyl methanesulfonate	50.0000	47.8928	4.2	50.0	
88	1,3-Dichloro-2-propanol	50.0000	51.7319	3.5	50.0	
89	N-Nitrosodiethylamine	50.0000	51.5103	3.0	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	50.0000	46.8233	6.4	50.0	
91	N-Nitrosopyrrolidine	50.0000	47.2439	5.5	50.0	
92	Acetophenone	50.0000	44.0784	11.8	50.0	
93	o-Toluidine	50.0000	40.3038	19.4	50.0	
94	N-Nitrosopiperidine	50.0000	50.2224	0.4	50.0	
95	O,O,O-Triethyl phosphorothioa	50.0000	42.9336	14.1	50.0	
98	a,a-Dimethyl-phenethylamine	50.0000	41.2209	17.6	50.0	
99	2,6-Dichlorophenol	50.0000	56.0389	12.1	50.0	
100	Hexachloropropene	50.0000	39.7028	20.6	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	50.0000	42.7223	14.6	50.0	
103	p-Phenylene diamine	50.0000	17.9648	64.1	50.0	<-
104	Safrole	50.0000	42.8682	14.3	50.0	
105	1,2,4,5-Tetrachlorobenzene	50.0000	48.5184	3.0	50.0	
107	Isosafrole 1	50.0000	51.6780	3.4	50.0	
108	Isosafrole, Total	100.0000	88.0159	12.0	50.0	
109	Isosafrole 2	50.0000	48.0088	4.0	50.0	
111	1,4-Naphthoquinone	50.0000	44.1948	11.6	50.0	
112	Pentachlorobenzene	50.0000	46.0408	7.9	50.0	
113	1-Naphthylamine	50.0000	36.7479	26.5	50.0	
114	2-Naphthylamine	50.0000	33.6189	32.8	50.0	
115	Zinophos	50.0000	44.9547	10.1	50.0	

Data File: /chem/can/mss/a4hp7.i/90907a.b/7aml0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 09:43
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90907a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
116	5-Nitro-o-toluidine	50.0000	42.9172	14.2	50.0	
118	Tetraethyl dithiopyrophosphat	50.0000	48.8773	2.2	50.0	
119	Diallate 1	50.0000	52.9829	6.0	50.0	
120	Diallate, Total	100.0000	70.7997	29.2	50.0	
121	Diallate 2	50.0000	50.3149	0.6	50.0	
122	Phorate	50.0000	48.6023	2.8	50.0	
123	1,3,5-Trinitrobenzene	50.0000	46.1092	7.8	50.0	
124	Phenacetin	50.0000	46.1599	7.7	50.0	
125	Dimethoate	50.0000	61.8354	23.7	50.0	
126	Pentachloronitrobenzene	50.0000	46.8203	6.4	50.0	
127	4-Aminobiphenyl	50.0000	29.3250	41.4	50.0	
128	Pronamide	50.0000	48.8053	2.4	50.0	
129	Dinoseb	50.0000	48.8510	2.3	50.0	
130	Disulfoton	50.0000	52.5897	5.2	50.0	
131	4-Nitroquinoline 1-oxide	50.0000	42.2542	15.5	50.0	
132	Methapyrilene	50.0000	59.3013	18.6	50.0	
133	Aramite 1	50.0000	48.0442	3.9	50.0	
134	Aramite, Total	100.0000	70.1805	29.8	50.0	NT
135	Aramite 2	50.0000	49.1693	1.7	50.0	
136	p-Dimethylamino azobenzene	50.0000	42.2929	15.4	50.0	
137	p-Chlorobenzilate	50.0000	47.4553	5.1	50.0	
138	Famphur	50.0000	33.7289	32.5	50.0	NT
139	3,3'-Dimethylbenzidine	50.0000	58.4221	16.8	50.0	
141	2-Acetylaminofluorene	50.0000	52.0635	4.1	50.0	
143	7,12-dimethylbens[a]anthracen	50.0000	34.7998	30.4	50.0	
144	Hexachlorophene	50.0000	0.0000	100.0	50.0	NT <-
145	3-Methylcholanthrene	50.0000	52.8626	5.7	50.0	
198	1,4-Dioxane	50.0000	69.8544	39.7	50.0	
199	3-Picoline	50.0000	45.1676	9.7	50.0	
200	N,N-Dimethylacetamide	50.0000	44.4922	11.0	50.0	

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID (Standard): 7SM0907 Date Analyzed: 09/07/99

Instrument ID: A4HP7 Time Analyzed: 0857

		IS1 (DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	528987	7.11	1596172	9.48	975000	12.96
	UPPER LIMIT	1057974	7.61	3192344	9.98	1950000	13.46
	LOWER LIMIT	264494	6.61	798086	8.98	487500	12.46
	EPA SAMPLE NO.						
C1	D1QCMCHK	503096	7.12	1395582	9.47	811416	12.95
C2	D1QCMCHKDUP	497559	7.11	1362608	9.47	836640	12.95
C3	CMSMW-15	739570	7.11	2292559	9.47	1508342	12.95
C4	CMSMW-2	655100	7.11	1966282	9.47	1286148	12.95
C5	FRIMW-23	630882	7.12	1788881	9.47	1181161	12.95
C6	RFIMW-1	765998	7.11	2333586	9.47	1476184	12.95
C7	RFIMW-22	699252	7.11	2139982	9.47	1333651	12.95
C8							
C9							
10	RFIMW-23						
11							
12							
13	CCAL 9/7/99 9:43	482154	7.12	1441122	9.48	859923	12.95
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID (Standard): 7SM0907 Date Analyzed: 09/07/99

Instrument ID: A4HP7 Time Analyzed: 0857

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	1559617	15.94	1855817	21.29	1444280	23.95
	UPPER LIMIT	3119234	16.44	3711634	21.79	2888560	24.45
	LOWER LIMIT	779808	15.44	927908	20.79	722140	23.45
	EPA SAMPLE NO.						
C1	D1QCMCHK	1340926	15.94	1079748	21.28	1185851	23.94
C2	D1QCMCHKDUP	1329680	15.93	989729	21.27	931305	23.94
C3	CMSMW-15	2610163	15.94	*2550687	21.29	*2711349	23.96
C4	CMSMW-26	2473441	15.94	*2348498	21.28	2241968	23.95
C5	FRIMW-23	2124937	15.94	2120253	21.28	2016880	23.95
C6	RFIMW-1	2701475	15.94	*2707057	21.29	*2735112	23.95
C7	RFIMW-22	2746522	15.94	*2686117	21.29	*2488016	23.95
C8							
C9							
C10	RFIMW-23						
C11							
C12							
C13	CCM 9/7/99 9:43	1428931		1125893		1160854	
C14							
C15							
C16							
C17							
C18							
C19							
C20							
C21							
C22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

QUANTERRA-NORTH CANTON

Semivolatile REPORT SW-846 Method 8270

Data file : /chem/can/mss/a4hp7.i/90907a.b/7aml0907.d
Lab Smp Id: astd050
Inj Date : 07-SEP-1999 09:43
Operator : 001710 Inst ID: a4hp7.i
Smp Info : astd050,2-ap9.sub,2
Misc Info :
Comment :
Method : /chem/can/mss/a4hp7.i/90907a.b/8270b.m
Meth Date : 07-Sep-1999 13:44 gruberj Quant Type: ISTD
Cal Date : 01-SEP-1999 15:49 Cal File: 7ah0901.d
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 2-ap9.sub
Target Version: 3.40
Processing Host: hpuxcs2

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 1	1,4-Dichlorobenzene-d4	152	7.119	7.119	(1.000)	482154		
* 2	Naphthalene-d8	136	9.475	9.475	(1.000)	1441122		
* 3	Acenaphthene-d10	164	12.953	12.953	(1.000)	859923		
* 4	Phenanthrene-d10	188	15.939	15.939	(1.000)	1428931		
* 5	Chrysene-d12	240	21.281	21.281	(1.000)	1125893		
* 6	Perylene-d12	264	23.947	23.947	(1.000)	1160854		
7	N-Nitrosomorpholine	56	7.910	7.910	(1.111)	516756	50.0000	42.905
8	Ethyl methanesulfonate	79	5.853	5.853	(0.822)	604328	50.0000	47.111
14	2-Picoline	93	4.080	4.080	(0.573)	987114	50.0000	51.012 (M)
15	N-Nitrosomethylethylamine	88	4.288	4.288	(0.602)	433522	50.0000	56.626 (M)
16	Methyl methanesulfonate	80	4.742	4.742	(0.666)	637440	50.0000	47.893
18	1,3-Dichloro-2-propanol	79	5.415	5.415	(0.761)	887927	50.0000	51.732
19	N-Nitrosodiethylamine	102	5.340	5.340	(0.750)	432755	50.0000	51.510
25	Pentachloroethane	167	6.617	6.617	(0.929)	360322	50.0000	46.823 (M)
36	N-Nitrosopyrrolidine	100	7.830	7.830	(1.100)	320965	50.0000	47.244 (H)
37	Acetophenone	105	7.867	7.867	(1.105)	1061274	50.0000	44.078 (H)
39	o-Toluidine	106	7.931	7.931	(1.114)	1138169	50.0000	40.304
40	N-Nitrosopiperidine	114	8.450	8.450	(0.892)	325026	50.0000	50.222
45	O,O,O-Triethyl phosphorothioa	198	9.037	9.037	(0.954)	436927	50.0000	42.934
53	a,a-Dimethyl-phenethylamine	58	9.197	9.197	(0.971)	1024891	50.0000	41.221 (M)
54	2,6-Dichlorophenol	162	9.673	9.673	(1.021)	539899	50.0000	56.039
55	Hexachloropropene	213	9.689	9.689	(1.023)	362517	50.0000	39.703
58	N-Nitrosodi-n-butylamine	84	10.367	10.367	(1.094)	594949	50.0000	42.722 (H)
60	p-Phenylene diamine	108	10.383	10.383	(1.096)	120439	50.0000	17.965 (M)
61	Safrole	162	10.757	10.757	(1.135)	539657	50.0000	42.868
65	1,2,4,5-Tetrachlorobenzene	216	11.222	11.222	(0.866)	829771	50.0000	48.518

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
71	Isosafrole 1	162	11.334	11.334	(0.875)	150809	50.0000	51.678 (H)
M 188	Isosafrole, Total	162				1174574	100.000	88.016
72	Isosafrole 2	162	11.794	11.794	(0.910)	1023765	50.0000	48.009 (H)
75	1,4-Naphthoquinone	158	12.226	12.226	(0.944)	407564	50.0000	44.195
84	Pentachlorobenzene	250	13.290	13.290	(1.026)	684672	50.0000	46.041
89	1-Naphthylamine	143	13.541	13.541	(1.045)	734902	50.0000	36.748
92	2-Naphthylamine	143	13.706	13.706	(1.058)	394701	50.0000	33.619
90	Zinophos	97	14.096	14.096	(1.088)	371816	50.0000	44.955
102	Tetraethyl dithiopyrophosphat	202	14.759	14.759	(0.926)	249712	50.0000	48.877
103	Diallate 1	86	14.972	14.972	(0.939)	667165	50.0000	52.983
M 189	Diallate, Total	100				1428143	100.000	70.800
109	Diallate 2	86	15.143	15.143	(0.950)	760978	50.0000	50.315
104	Phorate	121	14.983	14.983	(0.940)	234408	50.0000	48.602 (H)
105	1,3,5-Trinitrobenzene	213	15.026	15.026	(0.943)	146664	50.0000	46.109
108	Phenacetin	108	15.058	15.058	(0.945)	537769	50.0000	46.160
110	Dimethoate	87	15.314	15.314	(0.961)	389178	50.0000	61.835
112	Pentachloronitrobenzene	237	15.608	15.608	(0.979)	268732	50.0000	46.820
113	4-Aminobiphenyl	169	15.619	15.619	(0.980)	558567	50.0000	29.325 (H)
114	Pronamide	173	15.816	15.816	(0.992)	661970	50.0000	48.805
117	Dinoseb	211	16.025	16.025	(1.005)	331569	50.0000	48.851
118	Disulfoton	88	16.046	16.046	(1.007)	686134	50.0000	52.590
121	4-Nitroquinoline 1-oxide	190	17.590	17.590	(1.104)	57193	50.0000	42.254
122	Methapyrilene	58	17.804	17.804	(1.117)	507584	50.0000	59.301
126	Aramite 1	185	19.273	19.273	(0.906)	137563	50.0000	48.044
M 191	Aramite, Total	100				328494	100.000	70.180
127	Aramite 2	185	19.433	19.433	(0.913)	190931	50.0000	49.169
128	p-Dimethylamino azobenzene	225	19.534	19.534	(0.918)	426921	50.0000	42.293
129	p-Chlorobenzilate ✓	139	19.652	19.652	(0.923)	811020	50.0000	47.455 (H)
130	Famphur	218	20.138	20.138	(0.946)	220323	50.0000	33.729
132	3,3'-Dimethylbenzidine ✓	212	20.213	20.213	(0.950)	464605	50.0000	58.422 (H)
134	2-Acetylaminofluorene ✓	181	20.715	20.715	(0.973)	580317	50.0000	52.063
143	7,12-dimethylbenz[a]anthracen ✓	256	23.290	23.290	(0.973)	848595	50.0000	34.800
144	Hexachlorophene	198.00	Compound Not Detected.					
145	Hexachlorophene product	462.00	Compound Not Detected.					
148	3-Methylcholanthrene ✓	268	24.455	24.455	(1.021)	960025	50.0000	52.862
193	3-Methylphenol	108	7.942	7.942	(1.116)	737737	50.0000	41.479
69	1,4-Dinitrobenzene	168	12.403	12.403	(0.958)	190150	50.0000	47.724
77	m-Dinitrobenzene	168	12.542	12.542	(0.968)	203916	50.0000	46.238
198	1,4-Dioxane	88	2.600	2.600	(0.365)	600507	50.0000	69.854 (M)
88	2,3,4,6-Tetrachlorophenol	232	13.658	13.658	(1.054)	330321	50.0000	43.407
97	5-Nitro-o-toluidine	152	14.128	14.128	(1.091)	275689	50.0000	42.917
199	3-Picoline	93	4.785	4.785	(0.672)	823936	50.0000	45.168 (M)
200	N,N-Dimethylacetamide	44	4.876	4.876	(0.685)	500997	50.0000	44.492

EDIT CODES
K NOT FOUND
R CHROMATOGRAPHY
RONG ISOMER
NFIT
UALLY EDITED BY:
LYST:
E: 9-7-9596

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0909A DFTPP Injection Date: 09/09/99

Instrument ID: A4HP7 DFTPP Injection Time: 1009

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	46.9
68	Less than 2.0% of mass 69	1.0 (1.8)1
69	Mass 69 relative abundance	52.9
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	51.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.1
275	10.0 - 30.0% of mass 198	20.5
365	Greater than 1.0% of mass 198	2.8
441	Present, but less than mass 443	8.6
442	40.0 - 100.0% of mass 198	62.6
443	17.0 - 23.0% of mass 442	13.0 (20.9)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	ASTD020	ASTD020	7AL0909	09/09/99	1621
02	ASTD050	ASTD050	7AML0909	09/09/99	1700
03	ASTD080	ASTD080	7AM0909	09/09/99	1739
04	ASTD120	ASTD120	7AMH0909	09/09/99	1818
05	ASTD160	ASTD160	7AH0909	09/09/99	1858
06					
07					
08					
09					
10					
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15					
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22					

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0910B DFTPP Injection Date: 09/10/99

Instrument ID: A4HP7 DFTPP Injection Time: 1146

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0% of mass 198	40.2	
68	Less than 2.0% of mass 69	0.2	(0.4)1
69	Mass 69 relative abundance	46.1	
70	Less than 2.0% of mass 69	0.2	(0.4)1
127	40.0 - 60.0% of mass 198	48.4	
197	Less than 1.0% of mass 198	0.2	
198	Base Peak, 100% relative abundance	100.0	
199	5.0 - 9.0% of mass 198	6.6	
275	10.0 - 30.0% of mass 198	22.1	
365	Greater than 1.0% of mass 198	2.4	
441	Present, but less than mass 443	12.0	
442	40.0 - 100.0% of mass 198	81.9	
443	17.0 - 23.0% of mass 442	14.9	(18.2)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	7SM0910	09/10/99	1205
02	SSTD160	SSTD160	7SH0910	09/10/99	1321
03	SSTD120	SSTD120	7SMH0910	09/10/99	1437
04	SSTD050	SSTD050	7SML0910	09/10/99	1515
05	SSTD050	SSTD050	7SL0910B	09/10/99	1554
06	20	20			
07					
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22					

QUANTERRA-NORTH CANTON

Semivolatile REPORT SW-846 Method 8270

Data file : /chem/can/mss/a4hp7.i/90910a.b/7sl0910b.d
Lab Smp Id: sstd050
Inj Date : 10-SEP-1999 15:54
Operator : 001710 Inst ID: a4hp7.i
Smp Info : sstd050,1-8270.sub,1,2
Misc Info :
Comment :
Method : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Meth Date : 10-Sep-1999 16:13 gruberj Quant Type: ISTD
Cal Date : 10-SEP-1999 15:54 Cal File: 7sl0910b.d
Als bottle: 3 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 1-8270.sub
Target Version: 3.40
Processing Host: hpuxcs2

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	AMOUNTS ON-COL (NG)
* 1 1,4-Dichlorobenzene-d4	152	8.172	8.172	(1.000)	169381		
* 2 Naphthalene-d8	136	10.586	10.586	(1.000)	577109		
* 3 Acenaphthene-d10	164	14.117	14.117	(1.000)	345156		
* 4 Phenanthrene-d10	188	17.146	17.146	(1.000)	460460		
* 5 Chrysene-d12	240	22.563	22.563	(1.000)	354479		
* 6 Perylene-d12	264	25.266	25.266	(1.000)	297157		
9 Pyridine	79	3.957	3.957	(0.484)	103392	20.0000	18.520(M) 2
10 N-Nitrosodimethylamine	74	3.930	3.930	(0.481)	68350	20.0000	18.602(M) 2
11 Ethyl methacrylate	69	4.576	4.576	(0.560)	122217	20.0000	19.391
12 3-Chloropropionitrile	54	5.030	5.030	(0.616)	63753	20.0000	19.305
13 Malononitrile	66	5.479	5.479	(0.670)	102972	20.0000	18.543
21 Aniline	93	7.579	7.579	(0.927)	134125	20.0000	18.835
22 Phenol	94	7.509	7.509	(0.919)	120133	20.0000	18.426
23 bis(2-Chloroethyl)ether	93	7.696	7.696	(0.942)	105247	20.0000	18.960
24 2-Chlorophenol	128	7.787	7.787	(0.953)	105648	20.0000	19.191
26 1,3-Dichlorobenzene	146	8.070	8.070	(0.988)	122979	20.0000	19.495
27 1,4-Dichlorobenzene	146	8.204	8.204	(1.004)	129676	20.0000	19.578
28 1,2-Dichlorobenzene	146	8.476	8.476	(1.037)	111978	20.0000	19.109
29 Benzyl Alcohol	108	8.412	8.412	(1.029)	66399	20.0000	18.392
30 2-Methylphenol	108	8.610	8.610	(1.054)	94426	20.0000	18.891
31 bis(2-Chloroisopropyl)ether	45	8.679	8.679	(1.062)	96417	20.0000	18.994(M) 2
32 N-Nitroso-di-n-propylamine	70	8.919	8.919	(1.092)	81432	20.0000	18.849
192 4-Methylphenol	108	8.893	8.893	(1.088)	93797	20.0000	17.883
34 Hexachloroethane	117	9.106	9.106	(1.114)	45626	20.0000	18.789
35 Nitrobenzene	77	9.229	9.229	(0.872)	118849	20.0000	19.090
41 Isophorone	82	9.689	9.689	(0.915)	226777	20.0000	19.675

Report Date: 13-Sep-1999 12:46

Calibration History

Method : /chem/can/mss/a4hp7.i/90910c.b/8270c.m
Start Cal Date: 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 20.000		
10-SEP-1999 15:54	1-8270	7sl0910b.d
09-SEP-1999 16:21	2-ap9	/chem/can/mss/a4hp7.i/90909c.b/7al0909.d
Cal Level: 2 , Cal Amount: 50.000		
10-SEP-1999 15:15	1-8270	7sml0910.d
09-SEP-1999 17:00	2-ap9	7aml0909.d
Cal Level: 3 , Cal Amount: 80.000		
10-SEP-1999 12:05	1-8270	/chem/can/mss/a4hp7.i/90910c.b/7sm0910.d
09-SEP-1999 17:39	2-ap9	/chem/can/mss/a4hp7.i/90909c.b/7am0909.d
Cal Level: 4 , Cal Amount: 120.00		
10-SEP-1999 14:37	1-8270	7smh0910.d
09-SEP-1999 18:18	2-ap9	7amh0909.d
Cal Level: 5 , Cal Amount: 160.00		
10-SEP-1999 13:21	1-8270	/chem/can/mss/a4hp7.i/90910c.b/7sh0910.d
09-SEP-1999 18:58	2-ap9	/chem/can/mss/a4hp7.i/90909c.b/7ah0909.d

Continuing Calibration

10-SEP-1999 16:47	1-8270	7sm0910a.d
10-SEP-1999 17:26	2-ap9	7aml910a.d
10-SEP-1999 12:05	1-8270	/chem/can/mss/a4hp7.i/90910c.b/7sm0910.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/mss/a4hp7.i/90910a.b/7sl0910b.d
Level 2: /chem/can/mss/a4hp7.i/90910a.b/7sml0910.d
Level 3: /chem/can/mss/a4hp7.i/90910a.b/7sm0910.d
Level 4: /chem/can/mss/a4hp7.i/90910a.b/7smh0910.d
Level 5: /chem/can/mss/a4hp7.i/90910a.b/7sh0910.d

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
196	1,4-Dioxane	0.70998	0.61974	0.60586	0.63711	0.67967	0.65047	6.660
7	N-Nitrosomorpholine	0.75549	0.86236	0.83769	0.81643	0.83019	0.82043	4.870
8	Ethyl methanesulfonate	0.85254	0.92852	0.90289	0.89234	0.93522	0.90230	3.653
9	Pyridine	1.22082	1.33487	1.24373	1.41100	1.38149	1.31838	6.337
10	N-Nitrosodimethylamine	0.80706	0.87075	0.86270	0.90499	0.89309	0.86772	4.368
11	Ethyl methacrylate	1.44310	1.49497	1.46719	1.57725	1.45968	1.48844	3.565
12	3-Chloropropionitrile	0.75278	0.77233	0.78948	0.79223	0.79257	0.77988	2.218
13	Malononitrile	1.21586	1.27377	1.33959	1.33012	1.39753	1.31138	5.270
14	2-Picoline	1.27302	1.34022	1.31349	1.29820	1.38879	1.32275	3.345
15	N-Nitrosomethylethylamine	0.61584	0.63939	0.62492	0.62081	0.63446	0.62708	1.547
16	Methyl methanesulfonate	0.79982	0.83962	0.80421	0.78063	0.81811	0.80848	2.718
18	1,3-Dichloro-2-propanol	1.21351	1.31903	1.27580	1.27590	1.33214	1.28328	3.623
19	N-Nitrosodiethylamine	0.59303	0.63920	0.61782	0.61749	0.63667	0.62084	2.993
21	Aniline	1.58371	1.65765	1.57694	1.72523	1.86465	1.68164	7.069
22	Phenol	1.41849	1.48373	1.56941	1.56056	1.66600	1.53964	6.084
23	bis(2-Chloroethyl)ether	1.24272	1.28375	1.31298	1.33292	1.38217	1.31091	3.992
24	2-Chlorophenol	1.24746	1.25589	1.31507	1.31458	1.36709	1.30002	3.778
25	Pentachloroethane	0.52550	0.54209	0.51069	0.52140	0.54280	0.52849	2.618
26	1,3-Dichlorobenzene	1.45210	1.48167	1.49030	1.52685	1.49751	1.48968	1.814
27	1,4-Dichlorobenzene	1.53118	1.55805	1.55932	1.59171	1.58078	1.56421	1.494
28	1,2-Dichlorobenzene	1.32220	1.37458	1.39444	1.41608	1.41195	1.38385	2.758
29	Benzyl Alcohol	0.78402	0.81201	0.86771	0.86299	0.93613	0.85257	6.855
30	2-Methylphenol	1.11495	1.13917	1.19462	1.18626	1.26701	1.18040	4.962
31	bis(2-Chloroisopropyl)ether	1.13846	1.16577	1.20875	1.21286	1.26784	1.19874	4.128
32	N-Nitroso-di-n-propylamine	0.96152	0.97858	1.05170	1.03592	1.07354	1.02025	4.716
M 195	Cresols, total	1.11124	1.16884	1.23443	1.22662	1.30643	1.20951	6.078

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
192	4-Methylphenol	1.10753	1.19852	1.27423	1.26698	1.34584	1.23862	7.262	
193	3-Methylphenol	0.92411	1.12224	1.11339	1.09197	1.11610	1.07356	7.854	
34	Hexachloroethane	0.53874	0.56469	0.57885	0.59446	0.59057	0.57346	3.943	
35	Nitrobenzene	0.41188	0.42199	0.43554	0.44739	0.44070	0.43150	3.336	
36	N-Nitrosopyrrolidine	0.46867	0.57193	0.56142	0.54597	0.55822	0.54124	7.688	
37	Acetophenone	1.64469	1.82648	1.77993	1.73557	1.80053	1.75744	4.056	
39	o-Toluidine	1.62982	1.88690	1.87561	1.83664	1.91327	1.82845	6.257	
40	N-Nitrosopiperidine	0.15794	0.16471	0.16702	0.15907	0.16779	0.16331	2.784	
41	Isophorone	0.78591	0.77823	0.80591	0.82380	0.80062	0.79889	2.229	
42	2-Nitrophenol	0.16932	0.17689	0.17419	0.19226	0.20042	0.18262	7.195	
43	2,4-Dimethylphenol	0.37883	0.39016	0.40267	0.41286	0.40767	0.39844	3.469	
44	bis(2-Chloroethoxy)methane	0.39257	0.39383	0.41156	0.42988	0.43669	0.41291	4.894	
45	O,O,O-Triethyl phosphorothioa	0.20047	0.20140	0.19938	0.19067	0.20616	0.19962	2.821	
46	2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
47	1,3,5-Trichlorobenzene	0.37056	0.36832	0.37647	0.38868	0.37994	0.37679	2.148	
48	2,4-Dichlorophenol	0.26834	0.27689	0.29297	0.29543	0.30295	0.28731	4.956	
49	Benzoic Acid	0.08268	0.11665	0.13282	0.14081	0.31877	0.15835	58.360	<- NT
50	1,2,4-Trichlorobenzene	0.35603	0.35432	0.36564	0.37256	0.36673	0.36306	2.116	
51	Naphthalene	1.08487	1.08119	1.13224	1.15360	1.13852	1.11808	2.948	
52	4-Chloroaniline	0.32116	0.32586	0.32834	0.35796	0.39929	0.34652	9.480	
53	a,a-Dimethyl-phenethylamine	0.52479	0.64421	0.75340	0.71884	0.72088	0.67242	13.641	
54	2,6-Dichlorophenol	0.24989	0.27170	0.27855	0.26907	0.28310	0.27046	4.719	
55	Hexachloropropene	0.13270	0.15138	0.16451	0.15957	0.17106	0.15584	9.496	
56	Hexachlorobutadiene	0.22465	0.21758	0.21593	0.22004	0.20695	0.21703	3.005	
57	1,2,3-Trichlorobenzene	0.34613	0.34834	0.36145	0.36535	0.36084	0.35642	2.412	
58	N-Nitrosodi-n-butylamine	0.26130	0.27879	0.28553	0.27285	0.28628	0.27695	3.726	
59	4-Chloro-3-Methylphenol	0.31949	0.31867	0.34863	0.35261	0.35535	0.33895	5.398	
60	p-Phenylene diamine	0.05488	0.07505	0.09823	0.10862	0.12797	0.09295	30.759	NT
61	Safrole	0.28209	0.28628	0.28791	0.26966	0.28929	0.28305	2.810	
62	2-Methylnaphthalene	0.70591	0.72562	0.75190	0.77593	0.76270	0.74441	3.811	
63	1-Methylnaphthalene	0.71445	0.71848	0.76268	0.77113	0.75242	0.74383	3.480	
64	Hexachlorocyclopentadiene	0.12422	0.15443	0.15398	0.16713	0.24673	0.16930	27.209	
65	1,2,4,5-Tetrachlorobenzene	0.55522	0.56252	0.55106	0.53637	0.54953	0.55094	1.738	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
66	2,4,6-Trichlorophenol	0.34975	0.37198	0.38975	0.40285	0.40897	0.38466	6.271
67	2,4,5-Trichlorophenol	0.34074	0.35490	0.38204	0.38298	0.40516	0.37316	6.811
68	1,2,3,5-Tetrachlorobenzene	0.60996	0.59795	0.62073	0.63285	0.62106	0.61651	2.135
69	2,4-Dinitrobenzene	0.09189	0.12691	0.14057	0.13963	0.14561	0.12892	16.924
70	2-Chloronaphthalene	1.06934	1.06089	1.12154	1.14635	1.14609	1.10884	3.723
71	Isosafrole 1	0.13209	0.13982	0.14264	0.13829	0.13919	0.13841	2.808
M 186	Isosafrole, Total	0.50000	0.51763	0.51384	0.49666	0.51248	0.50812	1.813
72	Isosafrole 2	0.86791	0.89544	0.88505	0.85502	0.88577	0.87784	1.840
73	2-Nitroaniline	0.28154	0.30395	0.32339	0.32231	0.36007	0.31825	9.085
74	1,2,3,4-Tetrachlorobenzene	0.55294	0.54520	0.56708	0.58214	0.56257	0.56199	2.510
75	1,4-Naphthoquinone	0.35978	0.40286	0.39630	0.36695	0.37154	0.37949	4.996
76	Dimethylphthalate	1.37538	1.36910	1.41502	1.45539	1.40638	1.40425	2.468
77	m-Dinitrobenzene	0.11272	0.15241	0.15825	0.16173	0.16980	0.15099	14.767
78	2,6-Dinitrotoluene	0.26239	0.27243	0.27474	0.30287	0.29614	0.28171	6.055
79	Acenaphthylene	1.84497	1.86724	1.90044	2.02289	1.97230	1.92157	3.869
80	1,2-Dinitrobenzene	0.11038	0.11876	0.12375	0.13436	0.13749	0.12495	8.929
81	3-Nitroaniline	0.15449	0.15005	0.16881	0.17044	0.23846	0.17645	20.274
82	Acenaphthene	1.17875	1.21180	1.27689	1.31504	1.27328	1.25115	4.382
83	2,4-Dinitrophenol	0.05735	0.07843	0.09081	0.09259	0.13152	0.09014	30.029
84	Pentachlorobenzene	0.45573	0.47419	0.46860	0.45322	0.48002	0.46635	2.488
85	4-Nitrophenol	0.13083	0.15592	0.18025	0.15415	0.19788	0.16381	15.785
86	Dibenzofuran	1.36919	1.40015	1.48543	1.51647	1.51555	1.45736	4.693
87	2,4-Dinitrotoluene	0.30175	0.31494	0.33961	0.34692	0.37201	0.33505	8.231
88	2,3,4,6-Tetrachlorophenol	0.18531	0.23530	0.24859	0.24980	0.26209	0.23622	12.699
89	1-Naphthylamine	0.77419	0.70715	0.72710	0.72293	0.78092	0.74246	4.442
90	Zinophos	0.29440	0.31865	0.31066	0.30264	0.32166	0.30960	3.639
91	2,3,5,6-Tetrachlorophenol	0.24966	0.27405	0.30289	0.30365	0.32164	0.29038	9.793
92	2-Naphthylamine	0.64293	0.35861	0.36071	0.38746	0.46163	0.44227	27.060
93	Diethylphthalate	1.50549	1.48515	1.55370	1.59905	1.49379	1.52744	3.143
94	Fluorene	1.18842	1.23462	1.33014	1.35799	1.33005	1.28824	5.652
95	4-Chlorophenyl-phenylether	0.61528	0.64003	0.66404	0.69136	0.67172	0.65648	4.489
96	4-Nitroaniline	0.17494	0.15581	0.16596	0.15229	0.21529	0.17286	14.652
97	5-Nitro-o-toluidine	0.21020	0.23010	0.24995	0.24467	0.26479	0.23994	8.646

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
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Quant Method : ISTD
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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
	98 4,6-Dinitro-2-methylphenol	0.08788	0.10427	0.10757	0.12177	0.13105	0.11051	15.065
	99 N-Nitrosodiphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	0.53466	6.889
	100 1,2-Diphenylhydrazine	0.90571	0.94076	0.92624	1.00867	0.93719	0.94371	4.111
	101 Diphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	0.53466	6.889
	102 Tetraethyl dithiopyrophosphat	0.11228	0.12055	0.11984	0.11345	0.11375	0.11597	3.360
	103 Diallate 1	0.35040	0.36320	0.35929	0.34603	0.35623	0.35503	1.935
M	189 Diallate, Total	1.25506	1.34205	1.28943	1.30776	1.41329	1.32152	4.553
	104 Phorate	0.14099	0.14408	0.14359	0.13945	0.14073	0.14177	1.398
	105 1,3,5-Trinitrobenzene	0.03428	0.04653	0.05159	0.05093	0.05766	0.04820	18.116
	106 4-Bromophenyl-phenylether	0.23831	0.23529	0.23305	0.25440	0.23161	0.23853	3.868
	107 Hexachlorobenzene	0.25244	0.25801	0.25181	0.27534	0.24317	0.25616	4.671
	108 Phenacetin	0.22622	0.28772	0.30929	0.29212	0.30966	0.28500	12.042
	109 Diallate 2	0.43707	0.44913	0.43627	0.41976	0.43271	0.43499	2.419
	110 Dimethoate	0.22031	0.23169	0.22989	0.21766	0.22360	0.22463	2.687
	111 Pentachlorophenol	0.10390	0.12286	0.14967	0.14520	0.15498	0.13532	15.817
	112 Pentachloronitrobenzene	0.10725	0.11004	0.11069	0.10491	0.10935	0.10845	2.179
	113 4-Aminobiphenyl	0.39588	0.36706	0.45558	0.46055	0.50004	0.43582	12.276
	114 Pronamide	0.35874	0.36630	0.36634	0.34691	0.35862	0.35938	2.212
	115 Phenanthrene	1.15667	1.18121	1.22307	1.26240	1.22436	1.20954	3.408
	116 Anthracene	1.10332	1.14521	1.18726	1.20877	1.22703	1.17432	4.262
	117 Dinoseb	0.06928	0.13805	0.15543	0.15313	0.17326	0.13783	29.242
	118 Disulfoton	0.41311	0.41634	0.40998	0.40466	0.41537	0.41189	1.147
	119 Carbazole	0.69318	0.62758	0.61918	0.62606	0.84105	0.68141	13.817
	120 Di-n-Butylphthalate	1.69282	1.70066	1.67034	1.82653	1.56779	1.69163	5.456
	121 4-Nitroquinoline 1-oxide	0.01856	0.04165	0.05202	0.05413	0.06735	0.04675	38.967
	122 Methapyrilene	0.29746	0.28157	0.26723	0.24801	0.23721	0.26629	9.171
	123 Fluoranthene	1.18842	1.18176	1.24067	1.18505	1.23078	1.20534	2.328
	124 Benzidine	0.13465	0.14120	0.21589	0.25795	0.48463	0.24686	57.776
	125 Pyrene	1.63616	1.56396	1.60300	1.63736	1.76599	1.64129	4.624
	126 Aramite 1	0.11844	0.13163	0.12275	0.11075	0.11557	0.11983	6.599
M	191 Aramite, Total	0.25963	0.26537	0.26278	0.26658	0.32054	0.27498	9.312
	127 Aramite 2	0.17212	0.18347	0.17244	0.15210	0.15879	0.16778	7.381
	128 p-Dimethylamino azobenzene	0.31963	0.35852	0.34188	0.31056	0.31873	0.32986	6.000

QUANTERRA-NORTH CANTON

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Integrator : HP RTE
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Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
129 p-Chlorobenzilate	0.79794	0.84570	0.76974	0.69083	0.71177	0.76320	8.271	
130 Famphur	0.45723	0.09216	0.06181	0.04670	0.02571	0.13672	132.236	<- NT
131 Butylbenzylphthalate	0.83572	0.80470	0.80594	0.83518	0.83272	0.82285	1.950	
132 3,3'-Dimethylbenzidine	0.46457	0.30676	0.32426	0.34652	0.35884	0.36019	17.131	
133 3,3'-Dimethoxybenzidine	0.07511	0.11161	0.06467	0.17463	0.17514	0.12023	43.955	NT
134 2-Acetylaminofluorene	0.33914	0.44310	0.45500	0.45112	0.48980	0.43563	13.044	
135 3,3'-Dichlorobenzidine	0.43481	0.43794	0.44391	0.46943	0.44597	0.44641	3.052	
136 Benzo(a)Anthracene	1.48496	1.43272	1.47464	1.49020	1.45184	1.46687	1.643	
137 Chrysene	1.30414	1.31511	1.33044	1.33509	1.29954	1.31686	1.190	
138 4,4'-Methylene bis(o-chloroan	0.26088	0.24554	0.24551	0.26658	0.24534	0.25277	4.039	
139 bis(2-ethylhexyl)Phthalate	1.23151	1.16165	1.16497	1.21802	1.18395	1.19202	2.638	
140 Di-n-octylphthalate	2.38086	2.43673	2.61886	2.56378	3.10808	2.62166	10.991	
141 Benzo(b)fluoranthene	1.54956	1.61706	1.80897	1.71728	1.81961	1.70250	6.947	
142 Benzo(k)fluoranthene	1.60574	1.60539	1.73720	1.70529	1.80653	1.69203	5.142	
143 7,12-dimethylbenz(a)anthracen	0.65365	0.66115	0.65194	0.60968	0.65533	0.64635	3.216	
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
146 Benzo(a)pyrene	1.42486	1.41654	1.57139	1.51429	1.49834	1.48508	4.364	
148 3-Methylcholanthrene	0.58676	0.62480	0.63896	0.60604	0.64119	0.61955	3.725	
149 Indeno(1,2,3-cd)pyrene	1.24735	1.18072	1.40751	1.56661	1.28423	1.33728	11.398	
150 Dibenz(a,h)anthracene	1.25674	1.16086	1.35748	1.32376	1.10863	1.24149	8.506	
151 Benzo(g,h,i)perylene	1.20785	1.12039	1.33441	1.30705	1.04802	1.20355	10.088	
199 3-Picoline	1.03338	1.18016	1.17156	1.17190	1.23262	1.15792	6.400	
200 N,N-Dimethylacetamide	0.82726	0.97434	0.94717	0.93924	0.96470	0.93054	6.381	
$ 154 Nitrobenzene-d5	0.43791	0.43449	0.44248	0.45742	0.45412	0.44528	2.258	
$ 155 2-Fluorobiphenyl	1.28529	1.27308	1.32779	1.36599	1.34596	1.31962	2.997	
$ 156 Terphenyl-d14	1.04511	1.00133	1.02645	1.05085	1.14515	1.05378	5.183	
$ 157 Phenol-d5	1.43120	1.47308	1.56717	1.55353	1.65420	1.53584	5.657	
$ 158 2-Fluorophenol	1.12309	1.15807	1.16144	1.18859	1.20757	1.16775	2.758	
$ 159 2,4,6-Tribromophenol	0.12718	0.13276	0.14853	0.14679	0.15510	0.14207	8.197	
$ 186 2-Chlorophenol-d4	1.21448	1.24240	1.26851	1.26568	1.30411	1.25904	2.642	
$ 187 1,2-Dichlorobenzene-d4	0.90214	0.93755	0.94887	0.97033	0.96312	0.94440	2.839	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

Calibration File Names:
Level 1: /chem/can/mss/a4hp7.i/90910a.b/7sl0910b.d
Level 2: /chem/can/mss/a4hp7.i/90910a.b/7sml0910.d
Level 3: /chem/can/mss/a4hp7.i/90910a.b/7sm0910.d
Level 4: /chem/can/mss/a4hp7.i/90910a.b/7smh0910.d
Level 5: /chem/can/mss/a4hp7.i/90910a.b/7sh0910.d

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
198	1,4-Dioxane	0.70998	0.61974	0.60586	0.63711	0.67967	AVRG		0.65047		6.65971
7	N-Nitrosomorpholine	0.75549	0.86236	0.83769	0.81643	0.83019	AVRG		0.82043		4.86980
8	Ethyl methanesulfonate	0.85254	0.92852	0.90289	0.89234	0.93522	AVRG		0.90230		3.65345
9	Pyridine	1.22082	1.33487	1.24373	1.41100	1.38149	AVRG		1.31838		6.33723
10	N-Nitrosodimethylamine	0.80706	0.87075	0.86270	0.90499	0.89309	AVRG		0.86772		4.36768
11	Ethyl methacrylate	1.44310	1.49497	1.46719	1.57725	1.45968	AVRG		1.48844		3.56524
12	3-Chloropropionitrile	0.75278	0.77233	0.78948	0.79223	0.79257	AVRG		0.77988		2.21830
13	Malononitrile	1.21586	1.27377	1.33959	1.33012	1.39753	AVRG		1.31138		5.27024
14	2-Picoline	1.27302	1.34022	1.31349	1.29820	1.38879	AVRG		1.32275		3.34453
15	N-Nitrosomethylethylamine	0.61584	0.63939	0.62492	0.62081	0.63446	AVRG		0.62708		1.54710

QUANTERRA-NORTH CANTON

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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2
51 Naphthalene	1.08487	1.08119	1.13224	1.15360	1.13852	AVRG		1.11808		2.94752
52 4-Chloroaniline	0.32116	0.32586	0.32834	0.35796	0.39929	AVRG		0.34652		9.47956
53 a,a-Dimethyl-phenethylamine	0.52479	0.64421	0.75340	0.71884	0.72088	AVRG		0.67242		13.64064
54 2,6-Dichlorophenol	0.24989	0.27170	0.27855	0.26907	0.28310	AVRG		0.27046		4.71949
55 Hexachloropropene	0.13270	0.15138	0.16451	0.15957	0.17106	AVRG		0.15584		9.49610
56 Hexachlorobutadiene	0.22465	0.21758	0.21593	0.22004	0.20695	AVRG		0.21703		3.00473
57 1,2,3-Trichlorobenzene	0.34613	0.34834	0.36145	0.36535	0.36084	AVRG		0.35642		2.41210
58 N-Nitrosodi-n-butylamine	0.26130	0.27879	0.28553	0.27285	0.28628	AVRG		0.27695		3.72597
59 4-Chloro-3-Methylphenol	0.31949	0.31867	0.34863	0.35261	0.35535	AVRG		0.33895		5.39816
60 p-Phenylene diamine	6810	42709	78071	99282	133735	QUAD	0.12132	11.36443	-7.46696	0.99636
61 Safrole	0.28209	0.28628	0.28791	0.26966	0.28929	AVRG		0.28305		2.81038
62 2-Methylnaphthalene	0.70591	0.72562	0.75190	0.77593	0.76270	AVRG		0.74441		3.81118
63 1-Methylnaphthalene	0.71445	0.71848	0.76268	0.77113	0.75242	AVRG		0.74383		3.47988
64 Hexachlorocyclopentadiene	21438	57554	120504	148962	421200	QUAD	-0.01311	7.74338	-3.71417	0.99864
65 1,2,4,5-Tetrachlorobenzene	0.55522	0.56252	0.55106	0.53637	0.54953	AVRG		0.55094		1.73765
66 2,4,6-Trichlorophenol	0.34975	0.37198	0.38975	0.40285	0.40897	AVRG		0.38466		6.27069
67 2,4,5-Trichlorophenol	0.34074	0.35490	0.38204	0.38298	0.40516	AVRG		0.37316		6.81134

QUANTERRA-NORTH CANTON

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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
68	1,2,3,5-Tetrachlorobenzene	0.60996	0.59795	0.62073	0.63285	0.62106	AVRG		0.61651		2.13488
69	1,4-Dinitrobenzene	7207	44405	70017	79596	97878	QUAD	0.07366	7.41894	-1.16647	0.99835
70	2-Chloronaphthalene	1.06934	1.06089	1.12154	1.14635	1.14609	AVRG		1.10884		3.72282
71	Isosafrole 1	0.13209	0.13982	0.14264	0.13829	0.13919	AVRG		0.13841		2.80771
M 188	Isosafrole, Total	0.50000	0.51763	0.51384	0.49666	0.51248	AVRG		0.50812		1.81292
72	Isosafrole 2	0.86791	0.89544	0.88505	0.85502	0.88577	AVRG		0.87784		1.84010
73	2-Nitroaniline	0.28154	0.30395	0.32339	0.32231	0.36007	AVRG		0.31825		9.08543
74	1,2,3,4-Tetrachlorobenzene	0.55294	0.54520	0.56708	0.58214	0.56257	AVRG		0.56199		2.51049
75	1,4-Naphthoquinone	0.35978	0.40286	0.39630	0.36695	0.37154	AVRG		0.37949		4.99594
76	Dimethylphthalate	1.37538	1.36910	1.41502	1.45539	1.40638	AVRG		1.40425		2.46803
77	m-Dinitrobenzene	0.11272	0.15241	0.15825	0.16173	0.16980	AVRG		0.15099		14.76710
78	2,6-Dinitrotoluene	0.26239	0.27243	0.27474	0.30287	0.29614	AVRG		0.28171		6.05476
79	Acenaphthylene	1.84497	1.86724	1.90044	2.02289	1.97230	AVRG		1.92157		3.86864
80	1,2-Dinitrobenzene	0.11038	0.11876	0.12375	0.13436	0.13749	AVRG		0.12495		8.92910
81	3-Nitroaniline	26662	55919	132112	151910	407084	QUAD	-0.03690	7.47950	-3.38749	0.99809
82	Acenaphthene	1.17875	1.21180	1.27689	1.31504	1.27328	AVRG		1.25115		4.38219
83	2,4-Dinitrophenol	9090	29220	71067	82623	224620	QUAD	0.04196	13.44036	-11.22167	0.99745

QUANTERRA-NORTH CANTON

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Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
84 Pentachlorobenzene	0.45573	0.47419	0.46860	0.45322	0.48002	AVRG		0.46635		2.48794
85 4-Nitrophenol	22578	58109	141063	137394	337801	QUAD	-0.00576	7.14080	-2.57056	0.98924
86 Dibenzofuran	1.36919	1.40015	1.48543	1.51647	1.51555	AVRG		1.45736		4.69341
87 2,4-Dinitrotoluene	0.30175	0.31494	0.33961	0.34692	0.37201	AVRG		0.33505		8.23051
88 2,3,4,6-Tetrachlorophenol	0.18531	0.23530	0.24859	0.24980	0.26209	AVRG		0.23622		12.69913
89 1-Naphthylamine	0.77419	0.70715	0.72710	0.72293	0.78092	AVRG		0.74246		4.44172
90 Zinophos	0.29440	0.31865	0.31066	0.30264	0.32166	AVRG		0.30960		3.63939
91 2,3,5,6-Tetrachlorophenol	0.24966	0.27405	0.30289	0.30365	0.32164	AVRG		0.29038		9.79349
92 2-Naphthylamine	50425	125470	179662	220877	310298	QUAD	-0.15919	3.27262	-0.54101	0.98643
93 Diethylphthalate	1.50549	1.48515	1.55370	1.59905	1.49379	AVRG		1.52744		3.14321
94 Fluorene	1.18842	1.23462	1.33014	1.35799	1.33005	AVRG		1.28824		5.65215
95 4-Chlorophenyl-phenylether	0.61528	0.64003	0.66404	0.69136	0.67172	AVRG		0.65648		4.48891
96 4-Nitroaniline	0.17494	0.15581	0.16596	0.15229	0.21529	AVRG		0.17286		14.65227
97 5-Nitro-o-toluidine	0.21020	0.23010	0.24995	0.24467	0.26479	AVRG		0.23994		8.64581
98 4,6-Dinitro-2-methylphenol	20232	52026	121678	146007	330695	QUAD	0.03615	9.94524	-4.61765	0.99937
99 N-Nitrosodiphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	AVRG		0.53466		6.88891
100 1,2 Diphenylhydrazine	0.90571	0.94078	0.92824	1.00887	0.93719	AVRG		0.94371		4.11116

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
	101 Diphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	AVRG		0.53466		6.88891
	102 Tetraethyl dithiopyrophosphat	0.11228	0.12055	0.11984	0.11345	0.11375	AVRG		0.11597		3.36036
	103 Diallate 1	0.35040	0.36320	0.35929	0.34603	0.35623	AVRG		0.35503		1.93532
M	189 Diallate, Total	1.25506	1.34205	1.28943	1.30776	1.41329	AVRG		1.32152		4.55292
	104 Phorate	0.14099	0.14408	0.14359	0.13945	0.14073	AVRG		0.14177		1.39771
	105 1,3,5-Trinitrobenzene	4197	24990	39520	45714	64241	QUAD	0.04880	21.90585	-20.38018	0.99790
	106 4-Bromophenyl-phenylether	0.23831	0.23529	0.23305	0.25440	0.23161	AVRG		0.23853		3.86788
	107 Hexachlorobenzene	0.25244	0.25801	0.25181	0.27534	0.24317	AVRG		0.25616		4.67114
	108 Phenacetin	0.22622	0.28772	0.30929	0.29212	0.30966	AVRG		0.28500		12.04211
	109 Diallate 2	0.43707	0.44913	0.43627	0.41976	0.43271	AVRG		0.43499		2.41913
	110 Dimethoate	0.22031	0.23169	0.22989	0.21766	0.22360	AVRG		0.22463		2.68735
	111 Pentachlorophenol	23920	61306	169296	174102	391060	QUAD	0.06935	7.33063	-1.60109	0.99719
	112 Pentachloronitrobenzene	0.10725	0.11004	0.11069	0.10491	0.10935	AVRG		0.10845		2.17915
	113 4-Aminobiphenyl	0.39588	0.36706	0.45558	0.46055	0.50004	AVRG		0.43582		12.27578
	114 Pronamide	0.35874	0.36630	0.36634	0.34691	0.35862	AVRG		0.35938		2.21212
	115 Phenanthrene	1.15667	1.18121	1.22307	1.26240	1.22436	AVRG		1.20954		3.40755
	116 Anthracene	1.10332	1.14521	1.18726	1.20877	1.22703	AVRG		1.17432		4.26223

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
	117 Dinoseb	8483	74141	119070	137448	193042	QUAD	0.10913	7.01803	-1.98834	0.99549
	118 Disulfoton	0.41311	0.41634	0.40998	0.40466	0.41537	AVRG		0.41189		1.14717
	119 Carbazole	0.69318	0.62758	0.61918	0.62606	0.84105	AVRG		0.68141		13.81665
	120 Di-n-Butylphthalate	1.69282	1.70066	1.67034	1.82653	1.56779	AVRG		1.69163		5.45573
	121 4-Nitroquinoline 1-oxide	2273	22370	39853	48591	75044	QUAD	0.14512	21.70353	-27.37893	0.99464
	122 Methapyrilene	0.29746	0.28157	0.26723	0.24801	0.23721	AVRG		0.26629		9.17082
	123 Fluoranthene	1.18842	1.18176	1.24067	1.18505	1.23078	AVRG		1.20534		2.32803
	124 Benzidine	23865	55173	198353	231234	877974	QUAD	0.17325	4.93274	-1.52911	0.99131
	125 Pyrene	1.63616	1.56396	1.60300	1.63736	1.76599	AVRG		1.64129		4.62385
	126 Aramite 1	0.11844	0.13163	0.12275	0.11075	0.11557	AVRG		0.11983		6.59904
M	191 Aramite, Total	0.25963	0.26537	0.26278	0.26658	0.32054	AVRG		0.27498		9.31214
	127 Aramite 2	0.17212	0.18347	0.17244	0.15210	0.15879	AVRG		0.16778		7.38055
	128 p-Dimethylamino azobenzene	0.31963	0.35852	0.34188	0.31056	0.31873	AVRG		0.32986		6.00010
	129 p-Chlorobenzilate	0.79794	0.84570	0.76974	0.69083	0.71177	AVRG		0.76320		8.27082
	130 Famphur	31386	25231	26006	24894	18684	QUAD	0.06475	42.26393	-177	0.61050
	131 Butylbenzylphthalate	0.83572	0.80470	0.80594	0.83518	0.83272	AVRG		0.82285		1.95029
	132 3,3' Dimethylbenzidine	31890	83980	136434	184714	260750	QUAD	-0.07012	3.34429	-0.35460	0.99556

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QUANTERRA-NORTH CANTON

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Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
133	3,3'-Dimethoxybenzidine	13313	43613	59413	156541	317295	QUAD	0.26195	8.84713	-5.43740	0.93318	NT
134	2-Acetylaminofluorene	0.33914	0.44310	0.45500	0.45112	0.48980	AVRG		0.43563		13.04414	
135	3,3'-Dichlorobenzidine	0.43481	0.43794	0.44391	0.46943	0.44597	AVRG		0.44641		3.05197	
136	Benzo(a)Anthracene	1.48496	1.43272	1.47464	1.49020	1.45184	AVRG		1.46687		1.64324	
137	Chrysene	1.30414	1.31511	1.33044	1.33509	1.29954	AVRG		1.31686		1.18957	
138	4,4'-Methylene bis(o-chloroan	0.26088	0.24554	0.24551	0.26658	0.24534	AVRG		0.25277		4.03851	
139	bis(2-ethylhexyl)Phthalate	1.23151	1.16165	1.16497	1.21802	1.18395	AVRG		1.19202		2.63787	
140	Di-n-octylphthalate	2.38086	2.43673	2.61886	2.56378	3.10808	AVRG		2.62166		10.99149	
141	Benzo(b)fluoranthene	1.54956	1.61706	1.80897	1.71728	1.81961	AVRG		1.70250		6.94741	
142	Benzo(k)fluoranthene	1.60574	1.60539	1.73720	1.70529	1.80653	AVRG		1.69203		5.14209	
143	7,12-dimethylbenz(a)anthracen	0.65365	0.66115	0.65194	0.60968	0.65533	AVRG		0.64635		3.21643	
144	Hexachlorophene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
145	Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
146	Benzo(a)pyrene	1.42486	1.41654	1.57139	1.51429	1.49834	AVRG		1.48508		4.36438	
148	3-Methylcholanthrene	0.58676	0.62480	0.63896	0.60604	0.64119	AVRG		0.61955		3.72493	
149	Indeno(1,2,3-cd)pyrene	1.24735	1.18072	1.40751	1.56661	1.28423	AVRG		1.33728		11.39829	
150	Dibenz(a,h)anthracene	1.25074	1.16086	1.35748	1.32376	1.10863	AVRG		1.24149		8.50612	

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Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
151 Benzo(g,h,i)perylene	1.20785	1.12039	1.33441	1.30705	1.04802	AVRG		1.20355		10.08755
199 3-Picoline	1.03338	1.18016	1.17156	1.17190	1.23262	AVRG		1.15792		6.40000
200 N,N-Dimethylacetamide	0.82726	0.97434	0.94717	0.93924	0.96470	AVRG		0.93054		6.38118
$ 154 Nitrobenzene-d5	0.43791	0.43449	0.44248	0.45742	0.45412	AVRG		0.44528		2.25776
$ 155 2-Fluorobiphenyl	1.28529	1.27308	1.32779	1.36599	1.34596	AVRG		1.31962		2.99672
$ 156 Terphenyl-d14	1.04511	1.00133	1.02645	1.05085	1.14515	AVRG		1.05378		5.18265
$ 157 Phenol-d5	1.43120	1.47308	1.56717	1.55353	1.65420	AVRG		1.53584		5.65686
$ 158 2-Fluorophenol	1.12309	1.15807	1.16144	1.18859	1.20757	AVRG		1.16775		2.75756
$ 159 2,4,6-Tribromophenol	0.12718	0.13276	0.14853	0.14679	0.15510	AVRG		0.14207		8.19677
$ 186 2-Chlorophenol-d4	1.21448	1.24240	1.26851	1.26568	1.30411	AVRG		1.25904		2.64250
$ 187 1,2-Dichlorobenzene-d4	0.90214	0.93765	0.94881	0.97033	0.96312	AVRG		0.94440		2.83894

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Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj

Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Quad	Amt = b + m1*Rsp + m2*Rsp^2	Response

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0910D DFTPP Injection Date: 09/10/99

Instrument ID: A4HP7 DFTPP Injection Time: 1627

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	40.3
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	46.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	47.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.6
275	10.0 - 30.0% of mass 198	22.4
365	Greater than 1.0% of mass 198	2.7
441	Present, but less than mass 443	11.4
442	40.0 - 100.0% of mass 198	79.8
443	17.0 - 23.0% of mass 442	15.6 (19.6)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	7SM0910A	09/10/99	1647
02	ASTD050	ASTD050	7AML910A	09/10/99	1726
03	D1QCMBLK	D1QCM101	D1QCM101	09/10/99	1804
04					
05					
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07					
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20					
21					
22					

9-11-99

Data File: /chem/can/mss/a4hp7.i/90910a.b/7sm0910a.d
Report Date: 11-Sep-1999 08:47

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0910a.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 16:47
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90910a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
9	Pyridine	1.318	1.356	0.010	-2.9	50.0	
10	N-Nitrosodimethylamine	0.868	0.868	0.010	0.0	50.0	
11	Ethyl methacrylate	1.488	1.405	0.010	5.6	50.0	
12	3-Chloropropionitrile	0.780	0.777	0.010	0.3	50.0	
13	Malononitrile	1.311	1.333	0.010	-1.7	50.0	
21	Aniline	1.682	1.856	0.010	-10.4	50.0	
22	Phenol	1.540	1.576	0.010	-2.4	20.0	
23	bis(2-Chloroethyl)ether	1.311	1.258	0.010	4.0	50.0	
24	2-Chlorophenol	1.300	1.332	0.010	-2.5	50.0	
26	1,3-Dichlorobenzene	1.490	1.459	0.010	2.1	50.0	
27	1,4-Dichlorobenzene	1.564	1.513	0.010	3.3	20.0	
28	1,2-Dichlorobenzene	1.384	1.400	0.010	-1.2	50.0	
29	Benzyl Alcohol	0.853	0.886	0.010	-4.0	50.0	
30	2-Methylphenol	1.180	1.203	0.010	-1.9	50.0	
31	bis(2-Chloroisopropyl)ether	1.199	1.114	0.010	7.1	50.0	
32	N-Nitroso-di-n-propylamine	1.020	1.067	0.050	-4.6	50.0	
192	4-Methylphenol	1.239	1.291	0.010	-4.2	50.0	
34	Hexachloroethane	0.573	0.580	0.010	-1.2	50.0	
35	Nitrobenzene	0.432	0.448	0.010	-3.9	50.0	
41	Isophorone	0.799	0.810	0.010	-1.4	50.0	
42	2-Nitrophenol	0.183	0.204	0.010	-11.9	20.0	
43	2,4-Dimethylphenol	0.398	0.424	0.010	-6.4	50.0	
44	bis(2-Chloroethoxy)methane	0.413	0.429	0.010	-3.8	50.0	
46	2,4-Toluenediamene	++++	0.004	0.010	++++	50.0	<-
47	1,3,5-Trichlorobenzene	0.377	0.394	0.010	-4.5	50.0	
48	2,4-Dichlorophenol	0.287	0.304	0.010	-5.8	20.0	
49	Benzoic Acid	8.749	0.162	0.010	N/A	N/A	
50	1,2,4-Trichlorobenzene	0.363	0.371	0.010	-2.1	50.0	
51	Naphthalene	1.118	1.136	0.010	-1.6	50.0	
52	4-Chloroaniline	0.347	0.397	0.010	-14.4	50.0	
56	Hexachlorobutadiene	0.217	0.222	0.010	-2.2	20.0	
57	1,2,3-Trichlorobenzene	0.356	0.361	0.010	-1.3	50.0	
59	4-Chloro-3-Methylphenol	0.339	0.358	0.010	-5.5	20.0	
62	2-Methylnaphthalene	0.744	0.749	0.010	-0.6	50.0	
63	1-Methylnaphthalene	0.744	0.745	0.010	-0.1	50.0	

8270B

associated with method blank

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0910a.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 16:47
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90910a.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64	Hexachlorocyclopentadiene	7.743	0.279	0.050	N/A	N/A
66	2,4,6-Trichlorophenol	0.385	0.403	0.010	-4.7	20.0
67	2,4,5-Trichlorophenol	0.373	0.418	0.010	-12.0	50.0
68	1,2,3,5-Tetrachlorobenzene	0.617	0.611	0.010	0.9	50.0
70	2-Chloronaphthalene	1.109	1.109	0.010	0.0	50.0
73	2-Nitroaniline	0.318	0.372	0.010	-17.0	50.0
74	1,2,3,4-Tetrachlorobenzene	0.562	0.555	0.010	1.3	50.0
76	Dimethylphthalate	1.404	1.399	0.010	0.4	50.0
78	2,6-Dinitrotoluene	0.282	0.293	0.010	-4.0	50.0
79	Acenaphthylene	1.922	1.970	0.010	-2.5	50.0
80	1,2-Dinitrobenzene	0.125	0.144	0.010	-15.0	50.0
81	3-Nitroaniline	7.480	0.237	0.010	N/A	N/A
82	Acenaphthene	1.251	1.240	0.010	0.9	20.0
83	2,4-Dinitrophenol	13.448	0.134	0.050	N/A	N/A
85	4-Nitrophenol	7.141	0.212	0.050	N/A	N/A
86	Dibenzofuran	1.457	1.548	0.010	-6.2	50.0
87	2,4-Dinitrotoluene	0.335	0.376	0.010	-12.3	50.0
91	2,3,5,6-Tetrachlorophenol	0.290	0.325	0.010	-11.9	50.0
93	Diethylphthalate	1.527	1.477	0.010	3.3	50.0
94	Fluorene	1.288	1.321	0.010	-2.5	50.0
95	4-Chlorophenyl-phenylether	0.656	0.664	0.010	-1.1	50.0
96	4-Nitroaniline	0.173	0.217	0.010	-25.3	50.0
98	4,6-Dinitro-2-methylphenol	9.945	0.131	0.010	N/A	N/A
99	N-Nitrosodiphenylamine	0.535	0.517	0.010	3.3	20.0
100	1,2-Diphenylhydrazine	0.944	0.864	0.010	8.5	50.0
106	4-Bromophenyl-phenylether	0.239	0.211	0.010	11.6	50.0
107	Hexachlorobenzene	0.256	0.223	0.010	13.0	50.0
111	Pentachlorophenol	7.331	0.136	0.010	N/A	N/A
115	Phenanthrene	1.210	1.136	0.010	6.1	50.0
116	Anthracene	1.174	1.141	0.010	2.8	50.0
119	Carbazole	0.681	0.779	0.010	-14.3	50.0
120	Di-n-Butylphthalate	1.692	1.470	0.010	13.1	50.0
123	Fluoranthene	1.205	1.156	0.010	4.1	20.0
124	Benzidine	4.933	0.351	0.010	N/A	N/A
125	Pyrene	1.641	1.609	0.010	2.0	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0910a.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 16:47
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90910a.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.823	0.824	0.010	-0.2	50.0
	133 3,3'-Dimethoxybenzidine	8.847	0.205	0.010	N/A	N/A
	135 3,3'-Dichlorobenzidine	0.446	0.461	0.010	-3.3	50.0
	136 Benzo(a)Anthracene	1.467	1.456	0.010	0.7	50.0
	137 Chrysene	1.317	1.294	0.010	1.7	50.0
	138 4,4'-Methylene bis(o-chloro	0.253	0.272	0.010	-7.5	50.0
	139 bis(2-ethylhexyl)Phthalate	1.192	1.166	0.010	2.2	50.0
	140 Di-n-octylphthalate	2.622	2.570	0.010	2.0	20.0
	141 Benzo(b)fluoranthene	1.702	1.552	0.010	8.9	50.0
	142 Benzo(k)fluoranthene	1.692	1.537	0.010	9.2	50.0
	146 Benzo(a)pyrene	1.485	1.312	0.010	11.7	20.0
	149 Indeno(1,2,3-cd)pyrene	1.337	1.035	0.010	22.6	50.0
	150 Dibenz(a,h)anthracene	1.241	1.002	0.010	19.3	50.0
	151 Benzo(g,h,i)perylene	1.204	0.957	0.010	20.5	50.0
$	154 Nitrobenzene-d5	0.445	0.450	0.010	-1.0	50.0
$	155 2-Fluorobiphenyl	1.320	1.319	0.010	0.0	50.0
$	156 Terphenyl-d14	1.054	1.049	0.010	0.4	50.0
$	157 Phenol-d5	1.536	1.512	0.010	1.5	50.0
$	158 2-Fluorophenol	1.168	1.190	0.010	-1.9	50.0
$	159 2,4,6-Tribromophenol	0.142	0.159	0.010	-12.2	50.0
$	186 2-Chlorophenol-d4	1.259	1.322	0.010	-5.0	50.0
$	187 1,2-Dichlorobenzene-d4	0.944	0.926	0.010	2.0	50.0
M	195 Cresols, total	1.210	1.247	0.010	-3.1	50.0
	101 Diphenylamine	0.535	0.517	0.010	3.3	50.0

Data File: /chem/can/mss/a4hp7.i/90910a.b/7sm0910a.d
Report Date: 09/11/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0910a.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 16:47
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90910a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
1	Phenol	80.0000	81.8837	2.4	20.0	
2	bis(2-Chloroethyl)ether	80.0000	76.7666	4.0	50.0	
3	2-Chlorophenol	80.0000	81.9849	2.5	50.0	
4	1,3-Dichlorobenzene	80.0000	78.3571	2.1	50.0	
5	1,4-Dichlorobenzene	80.0000	77.3668	3.3	20.0	
6	1,2-Dichlorobenzene	80.0000	80.9566	1.2	50.0	
7	2-Methylphenol	80.0000	81.5155	1.9	50.0	
8	bis(2-Chloroisopropyl)ether	80.0000	74.3394	7.1	50.0	
9	4-Methylphenol	80.0000	83.3825	4.2	50.0	
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
12	Hexachloroethane	80.0000	80.9815	1.2	50.0	
13	Nitrobenzene	80.0000	83.1345	3.9	50.0	
14	Isophorone	80.0000	81.0959	1.4	50.0	
15	2-Nitrophenol	80.0000	89.5584	11.9	20.0	
16	2,4-Dimethylphenol	80.0000	85.0888	6.4	50.0	
17	bis(2-Chloroethoxy)methane	80.0000	83.0467	3.8	50.0	
18	N-Nitroso-di-n-propylamine	80.0000	83.6523	4.6	50.0	
18	2,4-Dichlorophenol	80.0000	84.6072	5.8	20.0	
19	1,2,4-Trichlorobenzene	80.0000	81.6496	2.1	50.0	
20	Naphthalene	80.0000	81.3078	1.6	50.0	
21	4-Chloroaniline	80.0000	91.5598	14.4	50.0	
22	Hexachlorobutadiene	80.0000	81.7285	2.2	20.0	
23	4-Chloro-3-Methylphenol	80.0000	84.3788	5.5	20.0	
24	2-Methylnaphthalene	80.0000	80.4619	0.6	50.0	
25	Hexachlorocyclopentadiene	80.0000	126.0989	57.6	50.0	<-
26	2,4,6-Trichlorophenol	80.0000	83.7512	4.7	20.0	
27	2,4,5-Trichlorophenol	80.0000	89.6365	12.0	50.0	
28	2-Chloronaphthalene	80.0000	79.9902	0.0	50.0	
29	2-Nitroaniline	80.0000	93.5937	17.0	50.0	
30	Dimethylphthalate	80.0000	79.6957	0.4	50.0	
31	Acenaphthylene	80.0000	82.0081	2.5	50.0	
32	2,6-Dinitrotoluene	80.0000	83.2355	4.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
33	3-Nitroaniline	80.0000	109.9451	37.4	50.0	
34	Acenaphthene	80.0000	79.2561	0.9	20.0	
35	2,4-Dinitrophenol	80.0000	113.7924	42.2	50.0	
36	4-Nitrophenol	80.0000	102.5710	28.2	50.0	
37	Dibenzofuran	80.0000	84.9491	6.2	50.0	
38	2,4-Dinitrotoluene	80.0000	89.8678	12.3	50.0	

Data File: /chem/can/mss/a4hp7.i/90910a.b/7sm0910a.d
Report Date: 09/11/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0910a.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 16:47
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90910a.b/8

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
39 Diethylphthalate	80.0000	77.3674	3.3	50.0
40 4-Chlorophenyl-phenylether	80.0000	80.9145	1.1	50.0
41 Fluorene	80.0000	82.0158	2.5	50.0
42 4-Nitroaniline	80.0000	100.2761	25.3	50.0
43 4,6-Dinitro-2-methylphenol	80.0000	92.8154	16.0	50.0
44 N-Nitrosodiphenylamine	80.0000	77.3430	3.3	20.0
45 4-Bromophenyl-phenylether	80.0000	70.7404	11.6	50.0
46 Hexachlorobenzene	80.0000	69.5878	13.0	50.0
47 Pentachlorophenol	80.0000	77.9094	2.6	20.0
48 Phenanthrene	80.0000	75.1214	6.1	50.0
49 Anthracene	80.0000	77.7502	2.8	50.0
50 Carbazole	80.0000	91.4514	14.3	50.0
51 Di-n-Butylphthalate	80.0000	69.5255	13.1	50.0
52 Acenaphthene-d10	40.0000	40.0000	0.0	50.0
52 Fluoranthene	80.0000	76.7208	4.1	20.0
53 Pyrene	80.0000	78.4019	2.0	50.0
54 Butylbenzylphthalate	80.0000	80.1584	0.2	50.0
55 3,3'-Dichlorobenzidine	80.0000	82.6630	3.3	50.0
56 Benzo(a)Anthracene	80.0000	79.4254	0.7	50.0
57 Chrysene	80.0000	78.6071	1.7	50.0
58 bis(2-ethylhexyl)Phthalate	80.0000	78.2700	2.2	50.0
59 Di-n-octylphthalate	80.0000	78.4382	2.0	20.0
60 Benzo(b)fluoranthene	80.0000	72.9080	8.9	50.0
61 Benzo(k)fluoranthene	80.0000	72.6533	9.2	50.0
62 Benzo(a)pyrene	80.0000	70.6647	11.7	20.0
63 Indeno(1,2,3-cd)pyrene	80.0000	61.9097	22.6	50.0
64 Dibenz(a,h)anthracene	80.0000	64.5411	19.3	50.0
65 Benzo(g,h,i)perylene	80.0000	63.6393	20.5	50.0
66 Pyridine	80.0000	82.3125	2.9	50.0
67 N-Nitrosodimethylamine	80.0000	80.0040	0.0	50.0
68 Aniline	80.0000	88.3011	10.4	50.0
69 Benzyl Alcohol	80.0000	83.1811	4.0	50.0
71 Benzoic Acid	80.0000	96.9551	21.2	50.0
72 1-Methylnaphthalene	80.0000	80.0893	0.1	50.0
75 1,2-Dinitrobenzene	80.0000	91.9693	15.0	50.0
77 2,3,5,6-Tetrachlorophenol	80.0000	89.5516	11.9	50.0
78 1,2-Diphenylhydrazine	80.0000	73.2168	8.5	50.0
78 Phenanthrene-d10	40.0000	40.0000	0.0	50.0
79 Benzidine	80.0000	115.3031	44.1	50.0

Data File: /chem/can/mss/a4hp7.i/90910a.b/7sm0910a.d
Report Date: 09/11/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0910a.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 16:47
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90910a.b/8

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
82 Ethyl methacrylate	80.0000	75.5400	5.6	50.0	
83 3-Chloropropionitrile	80.0000	79.7508	0.3	50.0	
84 Malononitrile	80.0000	81.3352	1.7	50.0	
90 Chrysene-d12	40.0000	40.0000	0.0	50.0	
96 2,4-Toluenediamene	80.0000	0.0000	100.0	50.0	<-
97 1,3,5-Trichlorobenzene	80.0000	83.5882	4.5	50.0	
101 1,2,3-Trichlorobenzene	80.0000	81.0113	1.3	50.0	
101 Perylene-d12	40.0000	40.0000	0.0	50.0	
106 1,2,3,5-Tetrachlorobenzene	80.0000	79.2622	0.9	50.0	
110 1,2,3,4-Tetrachlorobenzene	80.0000	78.9866	1.3	50.0	
117 Diphenylamine	80.0000	77.3430	3.3	50.0	
140 3,3'-Dimethoxybenzidine	80.0000	118.8758	48.6	50.0	
142 4,4'-Methylene bis(o-chloroan	80.0000	85.9666	7.5	50.0	
195 Cresols, total	160.0000	164.9428	3.1	50.0	
181 Nitrobenzene-d5	80.0000	80.8105	1.0	50.0	
182 2-Fluorobiphenyl	80.0000	79.9623	0.0	50.0	
183 Terphenyl-d14	80.0000	79.6425	0.4	50.0	
184 Phenol-d5	80.0000	78.7604	1.5	50.0	
185 2-Fluorophenol	80.0000	81.5320	1.9	50.0	
186 2,4,6-Tribromophenol	80.0000	89.7595	12.2	50.0	
187 2-Chlorophenol-d4	80.0000	84.0162	5.0	50.0	
188 1,2-Dichlorobenzene-d4	80.0000	78.4361	2.0	50.0	

9-11-99

Data File: /chem/can/mss/a4hp7.i/90910a.b/7aml910a.d
Report Date: 11-Sep-1999 08:46

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml910a.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 10-SEP-1999 17:26
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90910a.b/82

8270B

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D
7	N-Nitrosomorpholine	0.820	0.838	0.010	-2.1	50.0
8	Ethyl methanesulfonate	0.902	0.947	0.010	-5.0	50.0
14	2-Picoline	1.323	1.365	0.010	-3.2	50.0
15	N-Nitrosomethylethylamine	0.627	0.640	0.010	-2.1	50.0
16	Methyl methanesulfonate	0.808	0.847	0.010	-4.8	50.0
18	1,3-Dichloro-2-propanol	1.283	1.377	0.010	-7.3	50.0
19	N-Nitrosodiethylamine	0.621	0.642	0.010	-3.5	50.0
25	Pentachloroethane	0.528	0.535	0.010	-1.2	50.0
36	N-Nitrosopyrrolidine	0.541	0.551	0.010	-1.7	50.0
37	Acetophenone	1.757	1.838	0.010	-4.6	50.0
39	o-Toluidine	1.828	1.934	0.010	-5.8	50.0
40	N-Nitrosopiperidine	0.163	0.168	0.010	-3.2	50.0
45	O,O,O-Triethyl phosphorothi	0.200	0.203	0.010	-1.6	50.0
53	a,a-Dimethyl-phenethylamine	0.672	0.597	0.010	11.2	50.0
54	2,6-Dichlorophenol	0.270	0.275	0.010	-1.6	50.0
55	Hexachloropropene	0.156	0.155	0.010	0.3	50.0
58	N-Nitrosodi-n-butylamine	0.277	0.286	0.010	-3.3	50.0
60	p-Phenylene diamine	11.364	0.105	0.010	N/A	N/A
61	Safrole	0.283	0.282	0.010	0.4	50.0
65	1,2,4,5-Tetrachlorobenzene	0.551	0.570	0.010	-3.5	50.0
71	Isosafrole 1	0.138	0.143	0.010	-3.1	50.0
M 188	Isosafrole, Total	0.508	0.522	0.010	-2.7	50.0
72	Isosafrole 2	0.878	0.901	0.010	-2.7	50.0
75	1,4-Naphthoquinone	0.379	0.386	0.010	-1.7	50.0
84	Pentachlorobenzene	0.466	0.480	0.010	-2.9	50.0
89	1-Naphthylamine	0.742	0.656	0.010	11.7	50.0
92	2-Naphthylamine	3.273	0.361	0.010	N/A	N/A
90	Zinophos	0.310	0.313	0.010	-1.3	50.0
102	Tetraethyl dithiopyrophosph	0.116	0.128	0.010	-10.2	50.0
103	Diallate 1	0.355	0.414	0.010	-16.7	50.0
M 189	Diallate, Total	1.322	1.361	0.010	-3.0	50.0
109	Diallate 2	0.435	0.489	0.010	-12.5	50.0
104	Phorate	0.142	0.153	0.010	-8.1	50.0
105	1,3,5-Trinitrobenzene	21.906	0.055	0.010	N/A	N/A
108	Phenacetin	0.285	0.344	0.010	-20.8	50.0

associated with method blank

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml910a.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 10-SEP-1999 17:26
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90910a.b/827

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D	
	110 Dimethoate	0.225	0.225	0.010	-0.1	50.0	
	112 Pentachloronitrobenzene	0.108	0.118	0.010	-8.5	50.0	
	113 4-Aminobiphenyl	0.436	0.474	0.010	-8.8	50.0	
	114 Pronamide	0.359	0.371	0.010	-3.3	50.0	
	117 Dinoseb	7.018	0.147	0.010	N/A	N/A	
	118 Disulfoton	0.412	0.458	0.010	-11.2	50.0	
	121 4-Nitroquinoline 1-oxide	21.704	0.065	0.010	N/A	N/A	
	122 Methapyrilene	0.266	0.257	0.010	3.5	50.0	
	126 Aramite 1	0.120	0.099	0.010	17.1	50.0	
M	191 Aramite, Total	0.275	0.258	0.010	6.0	50.0	
	127 Aramite 2	0.168	0.135	0.010	19.8	50.0	
	128 p-Dimethylamino azobenzene	0.330	0.308	0.010	6.6	50.0	
	129 p-Chlorobenzilate	0.763	0.633	0.010	17.1	50.0	
	130 Famphur	42.264	0.055	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	3.344	0.309	0.010	N/A	N/A	
	134 2-Acetylaminofluorene	0.436	0.511	0.010	-17.3	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.646	0.606	0.010	6.3	50.0	
	144 Hexachlorophene	++++	++++	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.620	0.684	0.010	-10.4	50.0	
	193 3-Methylphenol	1.074	1.182	0.010	-10.1	50.0	
	69 1,4-Dinitrobenzene	7.419	0.135	0.010	N/A	N/A	
	77 m-Dinitrobenzene	0.151	0.151	0.010	-0.3	50.0	
	198 1,4-Dioxane	0.650	0.624	0.010	4.1	50.0	
	88 2,3,4,6-Tetrachlorophenol	0.236	0.250	0.010	-5.8	50.0	
	97 5-Nitro-o-toluidine	0.240	0.246	0.010	-2.6	50.0	
	199 3-Picoline	1.158	1.218	0.010	-5.2	50.0	
	200 N,N-Dimethylacetamide	0.931	0.986	0.010	-6.0	50.0	

Data File: /chem/can/mss/a4hp7.i/90910a.b/7aml910a.d
Report Date: 09/11/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml910a.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 17:26
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90910a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	50.0000	0.0000	100.0	50.0	<-
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
70	3-Methylphenol	50.0000	55.0470	10.1	50.0	
73	1,4-Dinitrobenzene	50.0000	51.6954	3.4	50.0	
74	m-Dinitrobenzene	50.0000	50.1620	0.3	50.0	
76	2,3,4,6-Tetrachlorophenol	50.0000	52.9169	5.8	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	50.0000	51.0621	2.1	50.0	
81	Ethyl methanesulfonate	50.0000	52.4965	5.0	50.0	
85	2-Picoline	50.0000	51.5892	3.2	50.0	
86	N-Nitrosomethylethylamine	50.0000	51.0609	2.1	50.0	
87	Methyl methanesulfonate	50.0000	52.4081	4.8	50.0	
88	1,3-Dichloro-2-propanol	50.0000	53.6495	7.3	50.0	
89	N-Nitrosodiethylamine	50.0000	51.7405	3.5	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	50.0000	50.5943	1.2	50.0	
91	N-Nitrosopyrrolidine	50.0000	50.8667	1.7	50.0	
92	Acetophenone	50.0000	52.2850	4.6	50.0	
93	o-Toluidine	50.0000	52.9001	5.8	50.0	
94	N-Nitrosopiperidine	50.0000	51.5781	3.2	50.0	
95	O,O,O-Triethyl phosphorothioa	50.0000	50.7986	1.6	50.0	
98	a,a-Dimethyl-phenethylamine	50.0000	44.4035	11.2	50.0	
99	2,6-Dichlorophenol	50.0000	50.7997	1.6	50.0	
100	Hexachloropropene	50.0000	49.8605	0.3	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	50.0000	51.6640	3.3	50.0	
103	p-Phenylene diamine	50.0000	59.1773	18.4	50.0	
104	Safrole	50.0000	49.7961	0.4	50.0	
105	1,2,4,5-Tetrachlorobenzene	50.0000	51.7741	3.5	50.0	
107	Isosafrole 1	50.0000	51.5563	3.1	50.0	
108	Isosafrole, Total	100.0000	102.7429	2.7	50.0	
109	Isosafrole 2	50.0000	51.3423	2.7	50.0	
111	1,4-Naphthoquinone	50.0000	50.8643	1.7	50.0	
112	Pentachlorobenzene	50.0000	51.4738	2.9	50.0	
113	1-Naphthylamine	50.0000	44.1507	11.7	50.0	
114	2-Naphthylamine	50.0000	48.2681	3.5	50.0	
115	Zinophos	50.0000	50.6278	1.3	50.0	

Data File: /chem/can/mss/a4hp7.i/90910a.b/7aml910a.d
Report Date: 09/11/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml910a.d
Analysis Type: *NONE*

Injection Date: 10-SEP-1999 17:26
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90910a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
116	5-Nitro-o-toluidine	50.0000	51.2852	2.6	50.0	
118	Tetraethyl dithiopyrophosphat	50.0000	55.1098	10.2	50.0	
119	Diallate 1	50.0000	58.3260	16.7	50.0	
120	Diallate, Total	100.0000	103.0029	3.0	50.0	
121	Diallate 2	50.0000	56.2628	12.5	50.0	
122	Phorate	50.0000	54.0462	8.1	50.0	
123	1,3,5-Trinitrobenzene	50.0000	58.3214	16.6	50.0	
124	Phenacetin	50.0000	60.4240	20.8	50.0	
125	Dimethoate	50.0000	50.0342	0.1	50.0	
126	Pentachloronitrobenzene	50.0000	54.2329	8.5	50.0	
127	4-Aminobiphenyl	50.0000	54.4045	8.8	50.0	
128	Pronamide	50.0000	51.6257	3.3	50.0	
129	Dinoseb	50.0000	53.2637	6.5	50.0	
130	Disulfoton	50.0000	55.6095	11.2	50.0	
131	4-Nitroquinoline 1-oxide	50.0000	69.4942	39.0	50.0	
132	Methapyrilene	50.0000	48.2453	3.5	50.0	
133	Aramite 1	50.0000	41.4529	17.1	50.0	
134	Aramite, Total	100.0000	93.9569	6.0	50.0	
135	Aramite 2	50.0000	40.1020	19.8	50.0	
136	p-Dimethylamino azobenzene	50.0000	46.6819	6.6	50.0	
137	p-Chlorobenzilate	50.0000	41.4428	17.1	50.0	
138	Famphur	50.0000	84.9490	69.9	50.0	<-
139	3,3'-Dimethylbenzidine	50.0000	46.6962	6.6	50.0	
141	2-Acetylaminofluorene	50.0000	58.6413	17.3	50.0	
143	7,12-dimethylbenz[a]anthracen	50.0000	46.8661	6.3	50.0	
144	Hexachlorophene	50.0000	0.0000	100.0	50.0	<-
145	3-Methylcholanthrene	50.0000	55.2093	10.4	50.0	
198	1,4-Dioxane	50.0000	47.9419	4.1	50.0	
199	3-Picoline	50.0000	52.6001	5.2	50.0	
200	N,N-Dimethylacetamide	50.0000	52.9814	6.0	50.0	

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID (Standard): 7SM0910A Date Analyzed: 09/10/99

Instrument ID: A4HP7 Time Analyzed: 1647

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	183714	8.18	629027	10.59	381407	14.12
	UPPER LIMIT	367428	8.68	1258054	11.09	762814	14.62
	LOWER LIMIT	91857	7.68	314514	10.09	190704	13.62
	EPA SAMPLE NO.						
C1	D1QCMBLK	132911	8.17	421441	10.58	261052	14.11
C2							
C3							
C4							
C5							
C6							
C7							
C8							
C9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID (Standard): 7SM0910A Date Analyzed: 09/10/99

Instrument ID: A4HP7 Time Analyzed: 1647

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	613351	17.15	462063	22.57	330738	25.27
	UPPER LIMIT	1226702	17.65	924126	23.07	661476	25.77
	LOWER LIMIT	306676	16.65	231032	22.07	165369	24.77
	EPA SAMPLE NO.						
01	D1QCMBLK	333551	17.14	244570	22.56	220584	25.26
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID: 7DF0913A DFTPP Injection Date: 09/13/99

Instrument ID: A4HP7 DFTPP Injection Time: 0940

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	43.4
68	Less than 2.0% of mass 69	0.3 (0.7)1
69	Mass 69 relative abundance	48.2
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	50.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.6
275	10.0 - 30.0% of mass 198	20.8
365	Greater than 1.0% of mass 198	2.3
441	Present, but less than mass 443	10.8
442	40.0 - 100.0% of mass 198	74.0
443	17.0 - 23.0% of mass 442	14.1 (19.0)2

raw data

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	7SM0913	09/13/99	1000
02	ASTD050	ASTD050	7AML0913	09/13/99	1038
03	CMSMW-1	D1LL1102	D1LL1102	09/13/99	2154
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

OK mc
9-14-9

Data File: /chem/ean/mss/a4hp7.i/90913d.b/7sm0913d.d

Date : 13-SEP-1999 10:00

Client ID:

Instrument: a4hp7.i

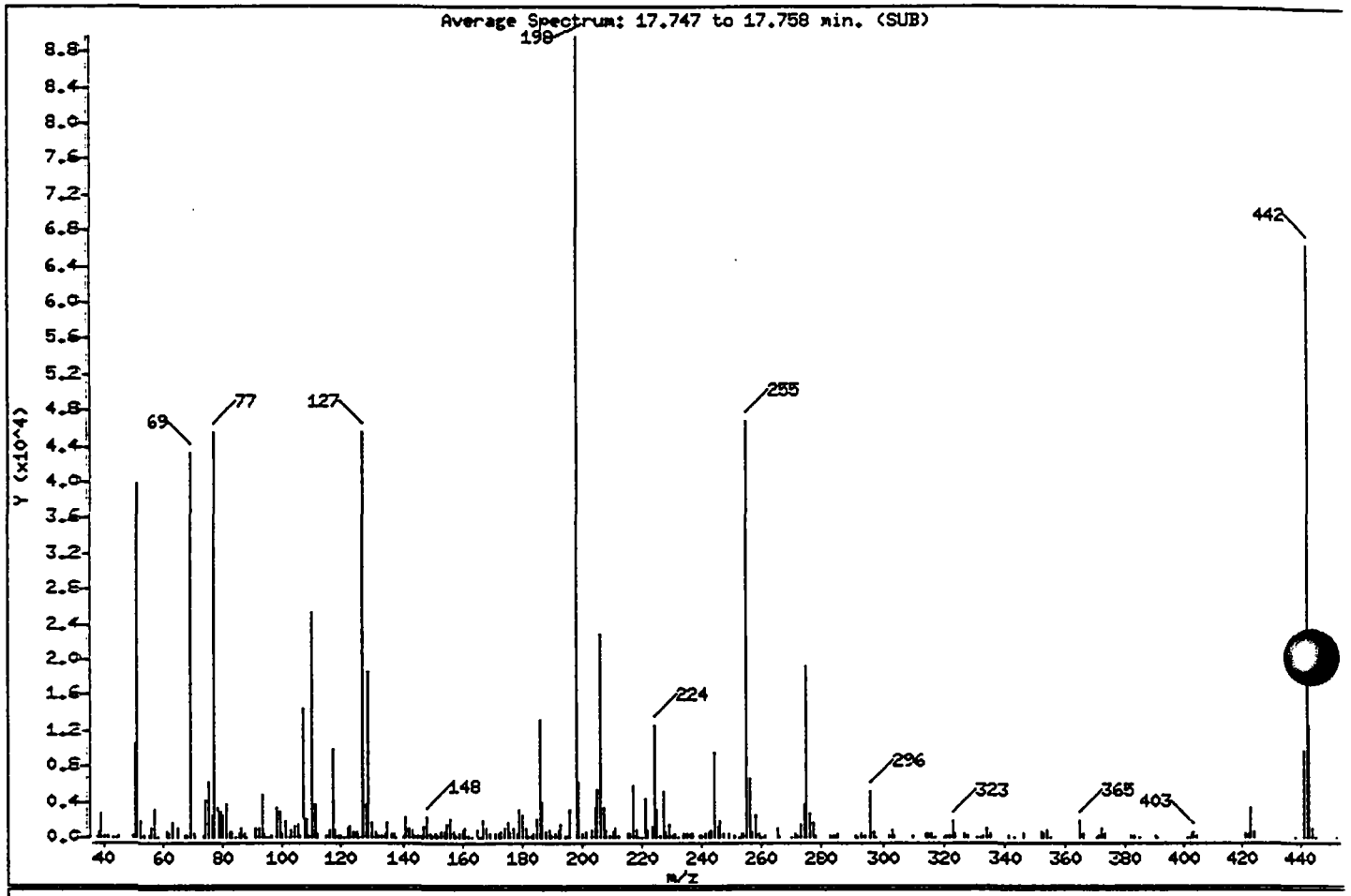
Sample Info: sstd080,1-8270.sub,2

Operator: 001710

Column phase:

Column diameter: 2.00

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	44.47
68	Less than 2.00% of mass 69	0.12 (0.25)
69	Mass 69 relative abundance	48.21
70	Less than 2.00% of mass 69	0.47 (0.98)
127	40.00 - 60.00% of mass 198	50.83
197	Less than 1.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.96
275	10.00 - 30.00% of mass 198	21.42
365	Greater than 1.00% of mass 198	2.15
441	Present, but less than mass 443	10.69
442	40.00 - 100.00% of mass 198	73.98
443	17.00 - 23.00% of mass 442	14.01 (18.94)

9-14-9

Data File: /chem/can/mss/a4hp7.i/90913a.b/7sm0913.d
Report Date: 13-Sep-1999 12:18

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0913.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 13-SEP-1999 10:00
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90913a.b/827

8270B

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
9	Pyridine	1.318	1.427	0.010	-8.2	50.0	
10	N-Nitrosodimethylamine	0.868	0.931	0.010	-7.3	50.0	
11	Ethyl methacrylate	1.488	1.592	0.010	-7.0	50.0	
12	3-Chloropropionitrile	0.780	0.840	0.010	-7.7	50.0	
13	Malononitrile	1.311	1.367	0.010	-4.2	50.0	
21	Aniline	1.682	1.712	0.010	-1.8	50.0	
22	Phenol	1.540	1.641	0.010	-6.6	20.0	
23	bis(2-Chloroethyl)ether	1.311	1.404	0.010	-7.1	50.0	
24	2-Chlorophenol	1.300	1.350	0.010	-3.9	50.0	
26	1,3-Dichlorobenzene	1.490	1.522	0.010	-2.2	50.0	
27	1,4-Dichlorobenzene	1.564	1.600	0.010	-2.3	20.0	
28	1,2-Dichlorobenzene	1.384	1.437	0.010	-3.9	50.0	
29	Benzyl Alcohol	0.853	0.896	0.010	-5.1	50.0	
30	2-Methylphenol	1.180	1.267	0.010	-7.3	50.0	
31	bis(2-Chloroisopropyl)ether	1.199	1.311	0.010	-9.4	50.0	
32	N-Nitroso-di-n-propylamine	1.020	1.045	0.050	-2.4	50.0	
192	4-Methylphenol	1.239	1.317	0.010	-6.3	50.0	
34	Hexachloroethane	0.573	0.612	0.010	-6.8	50.0	
35	Nitrobenzene	0.432	0.444	0.010	-2.9	50.0	
41	Isophorone	0.799	0.839	0.010	-5.1	50.0	
42	2-Nitrophenol	0.183	0.188	0.010	-3.0	20.0	
43	2,4-Dimethylphenol	0.398	0.404	0.010	-1.3	50.0	
44	bis(2-Chloroethoxy)methane	0.413	0.434	0.010	-5.2	50.0	
46	2,4-Toluenediamene	++++	0.004	0.010	++++	50.0	<-
47	1,3,5-Trichlorobenzene	0.377	0.366	0.010	2.7	50.0	
48	2,4-Dichlorophenol	0.287	0.285	0.010	0.7	20.0	
49	Benzoic Acid	8.749	0.132	0.010	N/A	N/A	
50	1,2,4-Trichlorobenzene	0.363	0.356	0.010	2.0	50.0	
51	Naphthalene	1.118	1.150	0.010	-2.9	50.0	
52	4-Chloroaniline	0.347	0.347	0.010	-0.3	50.0	
56	Hexachlorobutadiene	0.217	0.205	0.010	5.6	20.0	
57	1,2,3-Trichlorobenzene	0.356	0.346	0.010	3.0	50.0	
59	4-Chloro-3-Methylphenol	0.339	0.343	0.010	-1.3	20.0	
62	2-Methylnaphthalene	0.744	0.745	0.010	-0.1	50.0	
63	1-Methylnaphthalene	0.744	0.752	0.010	-1.1	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0913.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 13-SEP-1999 10:00
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90913a.b/827

COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64 Hexachlorocyclopentadiene	7.743	0.145	0.050	N/A	N/A
66 2,4,6-Trichlorophenol	0.385	0.378	0.010	1.6	20.0
67 2,4,5-Trichlorophenol	0.373	0.368	0.010	1.3	50.0
68 1,2,3,5-Tetrachlorobenzene	0.617	0.595	0.010	3.4	50.0
70 2-Chloronaphthalene	1.109	1.075	0.010	3.0	50.0
73 2-Nitroaniline	0.318	0.323	0.010	-1.5	50.0
74 1,2,3,4-Tetrachlorobenzene	0.562	0.546	0.010	2.9	50.0
76 Dimethylphthalate	1.404	1.391	0.010	0.9	50.0
78 2,6-Dinitrotoluene	0.282	0.288	0.010	-2.3	50.0
79 Acenaphthylene	1.922	1.895	0.010	1.4	50.0
80 1,2-Dinitrobenzene	0.125	0.132	0.010	-5.9	50.0
81 3-Nitroaniline	7.480	0.188	0.010	N/A	N/A
82 Acenaphthene	1.251	1.257	0.010	-0.5	20.0
83 2,4-Dinitrophenol	13.448	0.137	0.050	N/A	N/A
85 4-Nitrophenol	7.141	0.173	0.050	N/A	N/A
86 Dibenzofuran	1.457	1.428	0.010	2.0	50.0
87 2,4-Dinitrotoluene	0.335	0.349	0.010	-4.0	50.0
91 2,3,5,6-Tetrachlorophenol	0.290	0.292	0.010	-0.5	50.0
93 Diethylphthalate	1.527	1.544	0.010	-1.1	50.0
94 Fluorene	1.288	1.260	0.010	2.2	50.0
95 4-Chlorophenyl-phenylether	0.656	0.622	0.010	5.3	50.0
96 4-Nitroaniline	0.173	0.147	0.010	15.2	50.0
98 4,6-Dinitro-2-methylphenol	9.945	0.142	0.010	N/A	N/A
99 N-Nitrosodiphenylamine	0.535	0.500	0.010	6.5	20.0
100 1,2-Diphenylhydrazine	0.944	0.940	0.010	0.4	50.0
106 4-Bromophenyl-phenylether	0.239	0.228	0.010	4.2	50.0
107 Hexachlorobenzene	0.256	0.254	0.010	1.0	50.0
111 Pentachlorophenol	7.331	0.146	0.010	N/A	N/A
115 Phenanthrene	1.210	1.201	0.010	0.7	50.0
116 Anthracene	1.174	1.173	0.010	0.1	50.0
119 Carbazole	0.681	0.601	0.010	11.8	50.0
120 Di-n-Butylphthalate	1.692	1.713	0.010	-1.2	50.0
123 Fluoranthene	1.205	1.225	0.010	-1.7	20.0
124 Benzidine	4.933	0.198	0.010	N/A	N/A
125 Pyrene	1.641	1.641	0.010	0.0	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0913.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 13-SEP-1999 10:00
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90913a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.823	0.765	0.010	7.1	50.0
	133 3,3'-Dimethoxybenzidine	8.847	NT 0.018	0.010	N/A	N/A
	135 3,3'-Dichlorobenzidine	0.446	0.404	0.010	9.6	50.0
	136 Benzo(a)Anthracene	1.467	1.441	0.010	1.8	50.0
	137 Chrysene	1.317	1.330	0.010	-1.0	50.0
	138 4,4'-Methylene bis(o-chloro	0.253	0.212	0.010	16.3	50.0
	139 bis(2-ethylhexyl)Phthalate	1.192	1.111	0.010	6.8	50.0
	140 Di-n-octylphthalate	2.622	2.711	0.010	-3.4	20.0
	141 Benzo(b)fluoranthene	1.702	1.838	0.010	-8.0	50.0
	142 Benzo(k)fluoranthene	1.692	1.820	0.010	-7.5	50.0
	146 Benzo(a)pyrene	1.485	1.568	0.010	-5.6	20.0
	149 Indeno(1,2,3-cd)pyrene	1.337	1.423	0.010	-6.4	50.0
	150 Dibenz(a,h)anthracene	1.241	1.206	0.010	2.9	50.0
	151 Benzo(g,h,i)perylene	1.204	1.159	0.010	3.7	50.0
$	154 Nitrobenzene-d5	0.445	0.441	0.010	1.0	50.0
$	155 2-Fluorobiphenyl	1.320	1.302	0.010	1.3	50.0
$	156 Terphenyl-d14	1.054	1.027	0.010	2.5	50.0
$	157 Phenol-d5	1.536	1.619	0.010	-5.4	50.0
$	158 2-Fluorophenol	1.168	1.232	0.010	-5.5	50.0
$	159 2,4,6-Tribromophenol	0.142	0.145	0.010	-1.8	50.0
$	186 2-Chlorophenol-d4	1.259	1.320	0.010	-4.8	50.0
$	187 1,2-Dichlorobenzene-d4	0.944	0.954	0.010	-1.0	50.0
M	195 Cresols, total	1.210	1.292	0.010	-6.8	50.0
	101 Diphenylamine	0.535	0.500	0.010	6.5	50.0

Data File: /chem/can/mss/a4hp7.i/90913a.b/7sm0913.d
Report Date: 09/13/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0913.d
Analysis Type: NONE

Injection Date: 13-SEP-1999 10:00
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90913a.b/8270b.m

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
1 Phenol	80.0000	85.2411	6.6	20.0
2 bis(2-Chloroethyl)ether	80.0000	85.6762	7.1	50.0
3 2-Chlorophenol	80.0000	83.0839	3.9	50.0
4 1,3-Dichlorobenzene	80.0000	81.7501	2.2	50.0
5 1,4-Dichlorobenzene	80.0000	81.8360	2.3	20.0
6 1,2-Dichlorobenzene	80.0000	83.0837	3.9	50.0
7 2-Methylphenol	80.0000	85.8623	7.3	50.0
8 bis(2-Chloroisopropyl)ether	80.0000	87.5135	9.4	50.0
9 4-Methylphenol	80.0000	85.0396	6.3	50.0
11 1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0
12 Hexachloroethane	80.0000	85.4367	6.8	50.0
13 Nitrobenzene	80.0000	82.2897	2.9	50.0
14 Isophorone	80.0000	84.0444	5.1	50.0
15 2-Nitrophenol	80.0000	82.3835	3.0	20.0
16 2,4-Dimethylphenol	80.0000	81.0579	1.3	50.0
17 bis(2-Chloroethoxy)methane	80.0000	84.1635	5.2	50.0
18 N-Nitroso-di-n-propylamine	80.0000	81.9477	2.4	50.0
18 2,4-Dichlorophenol	80.0000	79.4455	0.7	20.0
19 1,2,4-Trichlorobenzene	80.0000	78.4340	2.0	50.0
20 Naphthalene	80.0000	82.3076	2.9	50.0
21 4-Chloroaniline	80.0000	80.2242	0.3	50.0
22 Hexachlorobutadiene	80.0000	75.4833	5.6	20.0
23 4-Chloro-3-Methylphenol	80.0000	81.0565	1.3	20.0
24 2-Methylnaphthalene	80.0000	80.1074	0.1	50.0
25 Hexachlorocyclopentadiene	80.0000	76.8696	3.9	50.0
26 2,4,6-Trichlorophenol	80.0000	78.7117	1.6	20.0
27 2,4,5-Trichlorophenol	80.0000	78.9472	1.3	50.0
28 2-Chloronaphthalene	80.0000	77.5860	3.0	50.0
29 2-Nitroaniline	80.0000	81.2093	1.5	50.0
30 Dimethylphthalate	80.0000	79.2669	0.9	50.0
31 Acenaphthylene	80.0000	78.8808	1.4	50.0
32 2,6-Dinitrotoluene	80.0000	81.8588	2.3	50.0
32 Naphthalene-d8	40.0000	40.0000	0.0	50.0
33 3-Nitroaniline	80.0000	92.0478	15.1	50.0
34 Acenaphthene	80.0000	80.4010	0.5	20.0
35 2,4-Dinitrophenol	80.0000	115.4529	44.3	50.0
36 4-Nitrophenol	80.0000	86.1432	7.7	50.0
37 Dibenzofuran	80.0000	78.3612	2.0	50.0
38 2,4-Dinitrotoluene	80.0000	83.2333	4.0	50.0

Data File: /chem/can/mss/a4hp7.i/90913a.b/7sm0913.d
Report Date: 09/13/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0913.d
Analysis Type: NONE

Injection Date: 13-SEP-1999 10:00
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90913a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
39	Diethylphthalate	80.0000	80.8792	1.1	50.0
40	4-Chlorophenyl-phenylether	80.0000	75.7822	5.3	50.0
41	Fluorene	80.0000	78.2393	2.2	50.0
42	4-Nitroaniline	80.0000	67.8349	15.2	50.0
43	4,6-Dinitro-2-methylphenol	80.0000	99.4113	24.3	50.0
44	N-Nitrosodiphenylamine	80.0000	74.7953	6.5	20.0
45	4-Bromophenyl-phenylether	80.0000	76.6226	4.2	50.0
46	Hexachlorobenzene	80.0000	79.1882	1.0	50.0
47	Pentachlorophenol	80.0000	82.7619	3.5	20.0
48	Phenanthrene	80.0000	79.4615	0.7	50.0
49	Anthracene	80.0000	79.9394	0.1	50.0
50	Carbazole	80.0000	70.5433	11.8	50.0
51	Di-n-Butylphthalate	80.0000	80.9927	1.2	50.0
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0
52	Fluoranthene	80.0000	81.3296	1.7	20.0
53	Pyrene	80.0000	79.9844	0.0	50.0
54	Butylbenzylphthalate	80.0000	74.3520	7.1	50.0
55	3,3'-Dichlorobenzidine	80.0000	72.3164	9.6	50.0
56	Benzo(a)Anthracene	80.0000	78.5694	1.8	50.0
57	Chrysene	80.0000	80.7875	1.0	50.0
58	bis(2-ethylhexyl)Phthalate	80.0000	74.5894	6.8	50.0
59	Di-n-octylphthalate	80.0000	82.7121	3.4	20.0
60	Benzo(b)fluoranthene	80.0000	86.3872	8.0	50.0
61	Benzo(k)fluoranthene	80.0000	86.0343	7.5	50.0
62	Benzo(a)pyrene	80.0000	84.4755	5.6	20.0
63	Indeno(1,2,3-cd)pyrene	80.0000	85.1458	6.4	50.0
64	Dibenz(a,h)anthracene	80.0000	77.6963	2.9	50.0
65	Benzo(g,h,i)perylene	80.0000	77.0685	3.7	50.0
66	Pyridine	80.0000	86.5762	8.2	50.0
67	N-Nitrosodimethylamine	80.0000	85.8125	7.3	50.0
68	Aniline	80.0000	81.4526	1.8	50.0
69	Benzyl Alcohol	80.0000	84.1038	5.1	50.0
71	Benzoic Acid	80.0000	82.5905	3.2	50.0
72	1-Methylnaphthalene	80.0000	80.8552	1.1	50.0
75	1,2-Dinitrobenzene	80.0000	84.7547	5.9	50.0
77	2,3,5,6-Tetrachlorophenol	80.0000	80.4325	0.5	50.0
78	1,2-Diphenylhydrazine	80.0000	79.6475	0.4	50.0
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0
79	Benzidine	80.0000	75.5053	5.6	50.0

Data File: /chem/can/mss/a4hp7.i/90913a.b/7sm0913.d
Report Date: 09/13/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0913.d
Analysis Type: NONE

Injection Date: 13-SEP-1999 10:00
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90913a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
82	Ethyl methacrylate	80.0000	85.5654	7.0	50.0	
83	3-Chloropropionitrile	80.0000	86.1610	7.7	50.0	
84	Malononitrile	80.0000	83.3914	4.2	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
96	2,4-Toluenediamene	80.0000	0.0000	100.0	50.0	<-
97	1,3,5-Trichlorobenzene	80.0000	77.8012	2.7	50.0	
101	1,2,3-Trichlorobenzene	80.0000	77.6257	3.0	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
106	1,2,3,5-Tetrachlorobenzene	80.0000	77.2599	3.4	50.0	
110	1,2,3,4-Tetrachlorobenzene	80.0000	77.6635	2.9	50.0	
117	Diphenylamine	80.0000	74.7953	6.5	50.0	
140	3,3'-Dimethoxybenzidine	80.0000	22.8648	71.4	50.0	<-
142	4,4'-Methylene bis(o-chloroan	80.0000	66.9651	16.3	50.0	
195	Cresols, total	160.0000	170.8821	6.8	50.0	
181	Nitrobenzene-d5	80.0000	79.1879	1.0	50.0	
182	2-Fluorobiphenyl	80.0000	78.9256	1.3	50.0	
183	Terphenyl-d14	80.0000	77.9658	2.5	50.0	
194	Phenol-d5	80.0000	84.3137	5.4	50.0	
185	2-Fluorophenol	80.0000	84.4189	5.5	50.0	
186	2,4,6-Tribromophenol	80.0000	81.4388	1.8	50.0	
187	2-Chlorophenol-d4	80.0000	83.8791	4.8	50.0	
188	1,2-Dichlorobenzene-d4	80.0000	80.7907	1.0	50.0	

9-14-99

Data File: /chem/can/mss/a4hp7.i/90913a.b/7aml0913.d
Report Date: 13-Sep-1999 12:09

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml0913.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 13-SEP-1999 10:38
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90913a.b/827

8270B

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D
	N-Nitrosomorpholine	0.820	0.780	0.010	5.0	50.0
	Ethyl methanesulfonate	0.902	0.918	0.010	-1.8	50.0
	2-Picoline	1.323	1.350	0.010	-2.0	50.0
	N-Nitrosomethylethylamine	0.627	0.647	0.010	-3.2	50.0
	Methyl methanesulfonate	0.808	0.798	0.010	1.3	50.0
	1,3-Dichloro-2-propanol	1.283	1.358	0.010	-5.8	50.0
	N-Nitrosodiethylamine	0.621	0.636	0.010	-2.5	50.0
	Pentachloroethane	0.528	0.526	0.010	0.4	50.0
	N-Nitrosopyrrolidine	0.541	0.550	0.010	-1.7	50.0
	Acetophenone	1.757	1.816	0.010	-3.3	50.0
	o-Toluidine	1.828	1.889	0.010	-3.3	50.0
	N-Nitrosopiperidine	0.163	0.167	0.010	-2.2	50.0
	O,O,O-Triethyl phosphorothi	0.200	0.189	0.010	5.4	50.0
	a,a-Dimethyl-phenethylamine	0.672	0.588	0.010	12.6	50.0
	2,6-Dichlorophenol	0.270	0.276	0.010	-2.2	50.0
	Hexachloropropene	0.156	0.164	0.010	-5.4	50.0
	N-Nitrosodi-n-butylamine	0.277	0.271	0.010	2.0	50.0
	p-Phenylene diamine	11.364	0.085	0.010	N/A	N/A
	Safrole	0.283	0.273	0.010	3.5	50.0
	1,2,4,5-Tetrachlorobenzene	0.551	0.552	0.010	-0.1	50.0
	Isosafrole 1	0.138	0.141	0.010	-1.7	50.0
M	Isosafrole, Total	0.508	0.502	0.010	1.3	50.0
	Isosafrole 2	0.878	0.862	0.010	1.8	50.0
	1,4-Naphthoquinone	0.379	0.410	0.010	-8.0	50.0
	Pentachlorobenzene	0.466	0.475	0.010	-1.9	50.0
	1-Naphthylamine	0.742	0.675	0.010	9.1	50.0
	2-Naphthylamine	3.273	0.385	0.010	N/A	N/A
	Zinophos	0.310	0.311	0.010	-0.3	50.0
	Tetraethyl dithiopyrophosph	0.116	0.123	0.010	-6.0	50.0
	Diallate 1	0.355	0.424	0.010	-19.5	50.0
M	Diallate, Total	1.322	1.364	0.010	-3.2	50.0
	Diallate 2	0.435	0.514	0.010	-18.1	50.0
	Phorate	0.142	0.162	0.010	-14.4	50.0
	1,3,5-Trinitrobenzene	21.906	0.069	0.010	N/A	N/A
	Phenacetin	0.285	0.352	0.010	-23.5	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml0913.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 13-SEP-1999 10:38
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90913a.b/827

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D	
	110 Dimethoate	0.225	0.245	0.010	-8.9	50.0	
	112 Pentachloronitrobenzene	0.108	0.105	0.010	2.9	50.0	
	113 4-Aminobiphenyl	0.436	0.386	0.010	11.4	50.0	
	114 Pronamide	0.359	0.357	0.010	0.7	50.0	
	117 Dinoseb	7.018	0.176	0.010	N/A	N/A	
	118 Disulfoton	0.412	0.488	0.010	-18.5	50.0	
	121 4-Nitroquinoline 1-oxide	21.704	0.051	0.010	N/A	N/A	
	122 Methapyrilene	0.266	0.249	0.010	6.4	50.0	
	126 Aramite 1	0.120	0.089	0.010	25.9	50.0	
M	191 Aramite, Total	0.275	0.230	0.010	16.3	50.0	
	127 Aramite 2	0.168	0.121	0.010	28.1	50.0	
	128 p-Dimethylamino azobenzene	0.330	0.306	0.010	7.2	50.0	
	129 p-Chlorobenzilate	0.763	0.533	0.010	30.2	50.0	
	130 Famphur	42.264	0.086	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	3.344	0.272	0.010	N/A	N/A	
	134 2-Acetylaminofluorene	0.436	0.496	0.010	-13.8	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.646	0.587	0.010	9.2	50.0	
	144 Hexachlorophene	++++	++++	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.620	0.652	0.010	-5.3	50.0	
	153 3-Methylphenol	1.074	1.166	0.010	-8.6	50.0	
	69 1,4-Dinitrobenzene	7.419	0.151	0.010	N/A	N/A	
	77 m-Dinitrobenzene	0.151	0.169	0.010	-11.7	50.0	
	198 1,4-Dioxane	0.650	0.645	0.010	0.8	50.0	
	88 2,3,4,6-Tetrachlorophenol	0.236	0.239	0.010	-1.3	50.0	
	97 5-Nitro-o-toluidine	0.240	0.257	0.010	-7.0	50.0	
	199 3-Picoline	1.158	1.203	0.010	-3.9	50.0	
	200 N,N-Dimethylacetamide	0.931	0.961	0.010	-3.2	50.0	

Data File: /chem/can/mss/a4hp7.i/90913a.b/7aml0913.d
Report Date: 09/13/1999

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CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml0913.d
Analysis Type: NONE

Injection Date: 13-SEP-1999 10:38
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90913a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	50.0000	0.0000	100.0	50.0	<-
31	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
72	3-Methylphenol	50.0000	54.3086	8.6	50.0	
73	1,4-Dinitrobenzene	50.0000	57.1269	14.3	50.0	
74	m-Dinitrobenzene	50.0000	55.8428	11.7	50.0	
76	2,3,4,6-Tetrachlorophenol	50.0000	50.6497	1.3	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	50.0000	47.5160	5.0	50.0	
81	Ethyl methanesulfonate	50.0000	50.8836	1.8	50.0	
85	2-Picoline	50.0000	51.0140	2.0	50.0	
86	N-Nitrosomethylethylamine	50.0000	51.6069	3.2	50.0	
87	Methyl methanesulfonate	50.0000	49.3587	1.3	50.0	
88	1,3-Dichloro-2-propanol	50.0000	52.9233	5.8	50.0	
89	N-Nitrosodiethylamine	50.0000	51.2440	2.5	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	50.0000	49.7941	0.4	50.0	
91	N-Nitrosopyrrolidine	50.0000	50.8422	1.7	50.0	
92	Acetophenone	50.0000	51.6603	3.3	50.0	
93	o-Toluidine	50.0000	51.6578	3.3	50.0	
94	N-Nitrosopiperidine	50.0000	51.1135	2.2	50.0	
95	O,O,O-Triethyl phosphorothioa	50.0000	47.2846	5.4	50.0	
98	a,a-Dimethyl-phenethylamine	50.0000	43.7210	12.6	50.0	
99	2,6-Dichlorophenol	50.0000	51.0957	2.2	50.0	
100	Hexachloropropene	50.0000	52.7143	5.4	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	50.0000	48.9823	2.0	50.0	
103	p-Phenylene diamine	50.0000	50.0064	0.0	50.0	
104	Safrole	50.0000	48.2543	3.5	50.0	
105	1,2,4,5-Tetrachlorobenzene	50.0000	50.0556	0.1	50.0	
107	Isosafrole 1	50.0000	50.8556	1.7	50.0	
108	Isosafrole, Total	100.0000	98.7029	1.3	50.0	
109	Isosafrole 2	50.0000	49.1143	1.8	50.0	
111	1,4-Naphthoquinone	50.0000	53.9885	8.0	50.0	
112	Pentachlorobenzene	50.0000	50.9745	1.9	50.0	
113	1-Naphthylamine	50.0000	45.4389	9.1	50.0	
114	2-Naphthylamine	50.0000	51.5668	3.1	50.0	
115	Zinophos	50.0000	50.1559	0.3	50.0	

Data File: /chem/can/mss/a4hp7.i/90913a.b/7aml0913.d
Report Date: 09/13/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml0913.d
Analysis Type: NONE

Injection Date: 13-SEP-1999 10:38
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90913a.b/8

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
116 5-Nitro-o-toluidine	50.0000	53.4812	7.0	50.0	
118 Tetraethyl dithiopyrophosphat	50.0000	53.0060	6.0	50.0	
119 Diallate 1	50.0000	59.7599	19.5	50.0	
120 Diallate, Total	100.0000	103.1900	3.2	50.0	
121 Diallate 2	50.0000	59.0404	18.1	50.0	
122 Phorate	50.0000	57.1951	14.4	50.0	
123 1,3,5-Trinitrobenzene	50.0000	71.8428	43.7	50.0	
124 Phenacetin	50.0000	61.7490	23.5	50.0	
125 Dimethoate	50.0000	54.4689	8.9	50.0	
126 Pentachloronitrobenzene	50.0000	48.5482	2.9	50.0	
127 4-Aminobiphenyl	50.0000	44.2949	11.4	50.0	
128 Pronamide	50.0000	49.6649	0.7	50.0	
129 Dinoseb	50.0000	62.2739	24.5	50.0	
130 Disulfoton	50.0000	59.2413	18.5	50.0	
131 4-Nitroquinoline 1-oxide	50.0000	56.3218	12.6	50.0	
132 Methapyrilene	50.0000	46.8142	6.4	50.0	
133 Aramite 1	50.0000	37.0649	25.9	50.0	
134 Aramite, Total	100.0000	83.7207	16.3	50.0	
135 Aramite 2	50.0000	35.9696	28.1	50.0	
136 p-Dimethylamino azobenzene	50.0000	46.4209	7.2	50.0	
137 p-Chlorobenzilate	50.0000	34.8863	30.2	50.0	
138 Famphur	50.0000	102.4333	104.9	50.0	<-
139 3,3'-Dimethylbenzidine	50.0000	40.9989	18.0	50.0	
141 2-Acetylaminofluorene	50.0000	56.8901	13.8	50.0	
143 7,12-dimethylbenz[a]anthracen	50.0000	45.3913	9.2	50.0	
144 Hexachlorophene	50.0000	0.0000	100.0	50.0	<-
145 3-Methylcholanthrene	50.0000	52.6558	5.3	50.0	
198 1,4-Dioxane	50.0000	49.6147	0.8	50.0	
199 3-Picoline	50.0000	51.9328	3.9	50.0	
200 N,N-Dimethylacetamide	50.0000	51.6250	3.2	50.0	

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID (Standard): 7SM0913 Date Analyzed: 09/13/99

Instrument ID: A4HP7 Time Analyzed: 1000

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	220829	8.13	799603	10.54	478750	14.07
	UPPER LIMIT	441658	8.63	1599206	11.04	957500	14.57
	LOWER LIMIT	110414	7.63	399802	10.04	239375	13.57
	EPA SAMPLE NO.						
C1	CMSMW-1	154154	8.13	546211	10.53	335147	14.07
C2							
C3							
C4							
C5	CCAL 9/13/99 10:38	198268	8.12	669347	10.53	399813	14.06
C6							
C7							
C8							
C9							
C10							
C11							
C12							
C13							
C14							
C15							
C16							
C17							
C18							
C19							
C20							
C21							
C22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H21120

Lab File ID (Standard): 7SM0913 Date Analyzed: 09/13/99

Instrument ID: A4HP7 Time Analyzed: 1000

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	672541	17.10	521106	22.51	348995	25.20
	UPPER LIMIT	1345082	17.60	1042212	23.01	697990	25.70
	LOWER LIMIT	336270	16.60	260553	22.01	174498	24.70
	EPA SAMPLE NO.						
01	CMSMW-1	562469	17.09	406476	22.50	242218	25.20
02							
03							
04	CCA 9/13/99 10:38	576510	17.09	435681	22.49	376937	25.20
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H21120

Matrix: (soil/water) WATER | Lab Sample ID: A9H250000 327
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/20/99
Work Order: D1QCM101 | Date Extracted: 08/26/99
Dilution factor: 1 | Date Analyzed: 09/10/99

QC Batch: 9237327

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
92-67-1	4-Aminobiphenyl	50	U
60-51-5	Dimethoate	200	U
60-11-7	p-Dimethylaminoazobenzene	20	U
57-97-6	7,12-Dimethylbenz(a)anthrace	100	U
1888-71-7	Hexachloropropene	100	U
62-44-2	Phenacetin	50	U
23950-58-5	Pronamide	20	U
122-09-8	a,a-Dimethylphenethylamine	50	U
2303-16-4	Diallate	10	U
510-15-6	Chlorobenzilate	10	U
83-32-9	Acenaphthene	5.0	U
208-96-8	Acenaphthylene	5.0	U
98-86-2	Acetophenone	10	U
53-96-3	2-Acetylaminofluorene	20	U
62-53-3	Aniline	10	U
120-12-7	Anthracene	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
191-24-2	Benzo(ghi)perylene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
100-51-6	Benzyl alcohol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
111-44-4	bis(2-Chloroethyl) ether	5.0	U
117-81-7	bis(2-Ethylhexyl) phthalate	5.0	U
101-55-3	4-Bromophenyl phenyl ether	5.0	U
85-68-7	Butyl benzyl phthalate	5.0	U
106-47-8	4-Chloroaniline	10	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H21120

Matrix: (soil/water) WATER | Lab Sample ID: A9H250000 327
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/20/99
Work Order: D1QCM101 | Date Extracted: 08/26/99
Dilution factor: 1 | Date Analyzed: 09/10/99

QC Batch: 9237327

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-58-7	2-Chloronaphthalene	10	U
95-57-8	2-Chlorophenol	5.0	U
7005-72-3	4-Chlorophenyl phenyl ether	10	U
218-01-9	Chrysene	5.0	U
53-70-3	Dibenz(a,h)anthracene	5.0	U
132-64-9	Dibenzofuran	5.0	U
84-74-2	Di-n-butyl phthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	5.0	U
87-65-0	2,6-Dichlorophenol	10	U
84-66-2	Diethyl phthalate	5.0	U
119-93-7	3,3'-Dimethylbenzidine	50	U
105-67-9	2,4-Dimethylphenol	5.0	U
131-11-3	Dimethyl phthalate	5.0	U
117-84-0	Di-n-octyl phthalate	10	U
99-65-0	1,3-Dinitrobenzene	10	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
51-28-5	2,4-Dinitrophenol	50	U
121-14-2	2,4-Dinitrotoluene	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
122-39-4	Diphenylamine	10	U
62-50-0	Ethyl methanesulfonate	10	U
206-44-0	Fluoranthene	5.0	U
86-73-7	Fluorene	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA
SDG Number: H21120

Matrix: (soil/water) WATER
Lab Sample ID: A9H250000 327
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL
Date Received: 08/20/99
Work Order: D1QCM101
Date Extracted: 08/26/99
Dilution factor: 1
Date Analyzed: 09/10/99

QC Batch: 9237327

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-72-1	Hexachloroethane	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
78-59-1	Isophorone	5.0	U
120-58-1	Isosafrole	10	U
91-80-5	Methapyrilene	100	U
95-53-4	o-Toluidine	10	U
56-49-5	3-Methylcholanthrene	100	U
66-27-3	Methyl methanesulfonate	10	U
91-57-6	2-Methylnaphthalene	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-39-4	3-Methylphenol	10	U
106-44-5	4-Methylphenol	10	U
91-20-3	Naphthalene	5.0	U
130-15-4	1,4-Naphthoquinone	200	U
134-32-7	1-Naphthylamine	10	U
91-59-8	2-Naphthylamine	10	U
88-74-4	2-Nitroaniline	50	U
99-09-2	3-Nitroaniline	50	U
100-01-6	4-Nitroaniline	50	U
98-95-3	Nitrobenzene	5.0	U
88-75-5	2-Nitrophenol	10	U
100-02-7	4-Nitrophenol	50	U
56-57-5	4-Nitroquinoline-1-oxide	100	U
88-85-7	Dinoseb	10	U
924-16-3	N-Nitrosodi-n-butylamine	10	U
55-18-5	N-Nitrosodiethylamine	10	U
62-75-9	N-Nitrosodimethylamine	10	U
621-64-7	N-Nitrosodi-n-propylamine	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H21120

Matrix: (soil/water) WATER | Lab Sample ID: A9H250000 327
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/20/99
Work Order: D1QCM101 | Date Extracted: 08/26/99
Dilution factor: 1 | Date Analyzed: 09/10/99

QC Batch: 9237327

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
86-30-6	N-Nitrosodiphenylamine	5.0	U
10595-95-6	N-Nitrosomethylethylamine	10	U
59-89-2	N-Nitrosomorpholine	10	U
100-75-4	N-Nitrosopiperidine	10	U
930-55-2	N-Nitrosopyrrolidine	10	U
99-55-8	5-Nitro-o-toluidine	10	U
608-93-5	Pentachlorobenzene	5.0	U
76-01-7	Pentachloroethane	50	U
82-68-8	Pentachloronitrobenzene	50	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	5.0	U
108-95-2	Phenol	5.0	U
109-06-8	2-Picoline	20	U
129-00-0	Pyrene	5.0	U
110-86-1	Pyridine	10	U
94-59-7	Safrole	10	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
95-95-4	2,4,5-Trichlorophenol	10	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
99-35-4	1,3,5-Trinitrobenzene	50	U
108-60-1	bis(2-Chloroisopropyl) ether	10	U
123-91-1	1,4-Dioxane	50	U

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H250000 327
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/20/99
Work Order: D1QCM102 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 09/07/99

QC Batch: 9237327

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	36	
59-50-7	4-Chloro-3-methylphenol	54	
95-57-8	2-Chlorophenol	50	
121-14-2	2,4-Dinitrotoluene	39	
100-02-7	4-Nitrophenol	72	
621-64-7	N-Nitrosodi-n-propylamine	30	
87-86-5	Pentachlorophenol	56	
108-95-2	Phenol	43	
129-00-0	Pyrene	49	
120-82-1	1,2,4-Trichlorobenzene	30	
106-46-7	1,4-Dichlorobenzene	26	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H21120

Matrix: (soil/water) WATER Lab Sample ID:A9H250000 327
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/20/99
Work Order: D1QCM103 Date Extracted:08/26/99
Dilution factor: 1 Date Analyzed: 09/07/99
Moisture %:NA

QC Batch: 9237327

Client Sample Id: DUPLICATE CHECK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	35	
59-50-7	4-Chloro-3-methylphenol	55	
95-57-8	2-Chlorophenol	50	
121-14-2	2,4-Dinitrotoluene	37	
100-02-7	4-Nitrophenol	67	
621-64-7	N-Nitrosodi-n-propylamine	29	
87-86-5	Pentachlorophenol	56	
108-95-2	Phenol	42	
129-00-0	Pyrene	50	
120-82-1	1,2,4-Trichlorobenzene	30	
106-46-7	1,4-Dichlorobenzene	25	

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/30/99
Time: 13:51:16

708

LEV 1	LEV 2		LEV 1	LEV 2	
Y	Y	Blank	Y	Y	Weights/Volumes
Y	Y	Check	Y	Y	Spike & Surrogate Worksheet
Y	Y	MS/MSD	Y	Y	Vial contains correct volume
			Y	Y	Labels, greenbars, worksheets
					computer batch: correct & all match
			_	_	Anomalies to Extraction Method

Y Expanded Deliverable
Y COC Completed
Y Bench Sheet Copied
_ Package Submitted to AnalyticalGroup
_ Bench Sheet Copied per COC

Extractionist: 100001 Cooper Walsh
001935 Eric S. Miller

Concentrationist: 001560 Thomas R. Fausnight
002398 Sharon Geis

QC BATCH: 9237327

PREP DATE: 8/26/99
COMP DATE: 8/28/99

Reviewer/Date: RATHBURK / 8/30/99

Base/Neutrals and Acids (8270B)
LIQ/LIQ, CONT (A/B/N) - Acid->Base

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
8/26/99	9/03/99	A9H210120-002 D1LLH-1-02	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/26/99	9/03/99	A9H210120-003 D1LLK-1-02	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/26/99	9/03/99	A9H210120-004 D1LLN-1-02	D	49	L4	WATER	1000mL 3.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/26/99	9/03/99	A9H210120-005 D1LLR-1-02	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/26/99	9/03/99	A9H210120-006 D1LLW-1-02	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/26/99	9/03/99	A9H210120-001 D1LL1-1-02	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/26/99	0/00/00	A9H250000-327 D1QCM-1-01B		49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/30/99
Time: 13:51:16

709

QC BATCH: 9237327

PREP DATE: 8/26/99
COMP DATE: 8/28/99

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
8/26/99	0/00/00	A9H250000-327 D1QCM-1-02C		49	L4	WATER	1000mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 830
COMMENTS:							1.00mL								0.5ML WAT 820
8/26/99	0/00/00	A9H250000-327 D1QCM-1-03L	R	49	L4	WATER	1000mL	7.0	12.0	2.0	DCM	250.0		.0	
COMMENTS:							1.00mL								0.5ML WAT 820

EM S&S
DCM #N23307 NA2S04 #8024N02613
ASSOC BLK & CHK QC W/9237328 B ON @10AM OFF @6AM 8/26 A ON @10AM OFF @6AM8/27

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 9

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 2
DATE: 8-25-99

COLUMN TYPE: DB-5625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: .32 mm
hold for 3 min.

FILM THICKNESS: .5 MICRONS F.D.=2.85 E.T.= 28:53 I.S.= 212 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DFCE25A	SV2159			OK	(12:13)	
7SMLOE25	SV2171			OK	Cal Std OK mw Checked by: 8-26-99	
7SLOE25	SV2170			OK		
7SHCE25	SV2174			OK		
7SMHOE25	SV2173			OK		
7SMOE25	SV2172			OK		
7DFOE25G	SV2159			OK	(15:39)	
7SMOE25A	SV2167	* 2nd source continuing STD.				
D1EKR101	B D1EKC101	8-17 1L-1-1	ST	OK/ OK reprep 270 C / *		
D1EKR102	C D1EKC102	" "	"	OK/OK reanr		
D17VC101		" 1		OK reanr		
D17VC10V	MS	" 5ml-1-1		OK reanr		
D17VC10W	MSD	1 1		OK reanr		
D1743I0A		8-12 30g-1-1		OK		
D1745I0A		" "		OK		
D173L10A		" "		OK		
D172F10C		1 1		OK		
D168D109		8-17 1L-1-1		rerun reanr	50:100	
D17QM101		8-13 "		OK		
D1AM810C2		8-15 "		OK		
DCV2L10R		8-6 "		OK		
DCV2T10R		1 1		OK		
D1C1V10D	MS	8-15 5ml-1-1		OK		
D1C1V10E	MSD	" 1		OK		
D1EQN101		" 1L-1-1		OK		
D1AM510C2		1 1	1	OK	1	1

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 7
DATE: 9-1-99

COLUMN
TYPE: DB5.625

ANALYSIS
40 deg. C for 1.5 min.
to 320 deg. C @ 11.5 deg. C/min
hold for 3 min.

CASE NO.
SDG NO.

LENGTH: 30m
ID: @.32 mm
FILM THICKNESS: 0.5 MICRONS

F.D.= 2:24 E.T.= 28:30 I.S.# 2162 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF09C1C	SV 2159	50NG DFTPP STD	—		(10:35)	MU
7SML09C1	SV 2171	50NG TCL STD	—		Cal Std Checked by:	
7AML09C1	SV 2048	50NG APP STD	—			
7AM09C1	SV 2049	80NG APP STD	—			
7AL09C1	SV 2047	20NG APP STD	—		New APP	
7AMH09C1	SV 2050	120NG APP STD	—		8270b + c	
7AH09C1	SV 2051	160NG APP STD	—		5-pt	

MU 9-1-99

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 13
DATE: 9-7-99

COLUMN TYPE: DB5-625
LENGTH: 30~
ID: .32 mm
FILM THICKNESS: .5 MICRONS

ANALYSIS: 40 deg. C for 1.5 min. to 320 deg. C @ 11.5 deg. C/min hold for 3 min.

CASE NO.
SDG NO.

F.D.= 2.45 E.T.= 28:30 I.S.= 2162 TUNE: DFTPP ∪

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF0907B	SV2159			OK	(8:37)	JS
7SM0907	SV2167			OK	Cal Std of mo Checked by: 9-8-99	
7AML0907	SV2048			OK		
D1QCF101	B	8-26 1L-1-1	St	OK	8270C	
D1QCF102	C			OK	〃	
D1QCM101	B			rerun	IS out 8270B	
D1QCM102	C			OK	〃	
D1QCM103	L			OK	〃	
D1LQE102				OK	8270C	
D1M1A10X				OK		
D1M1704				OK		
D1KXM105		〃		OK		
D1KXM112	MS	500-1-1		OK		
D1KXM113	MSD	〃		OK	〃	
D1LLR102		1L-1-1		OK	8270B	
D1LLK102				OK		
D1LL1102				rerun	IS out	
D1LLH102			1	OK		
D1LLW102			20:100	OK		
D1LLN102			5:100	OK		
D1QCM101	B	〃	St	rerun	out of run	〃

9-7-99

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 14
DATE: 9-9-99

COLUMN TYPE: DB5-625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: .32 mm
hold for 4 min.

FILM THICKNESS: .5 MICRONS F.D.= 2.80 E.T.= 29:03 I.S.= 2162 TUNE: DFTPP ✓

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF0909A	SV2159			OK	10:09	
7AL0909	SV2047			OK	Cal Std OK mw Checked by: 9-11-99	
7AML0909	SV2048			OK		
7AMQ909	SV2049	APP 5pt.		OK		
7AMH0909	SV2050			OK		
7AHC909	SV2051			OK		

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North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 15
DATE: 9-10-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 326 deg. C @ 11.5 deg. C/min

ID: 32 mm
hold for 4 min.

FILM THICKNESS: .5 MICRONS F.D.= 2.20 E.T.= 29:03 I.S.# 2162 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF0910B	SV2159			OK	(11:46)	
7SM0910	SV2172			OK	Cal Std OK mw Checked by: 9-11-99	
7SH0910	SV2174			OK		
7SMH0910	SV2173	8270 SA.		OK		
7SML0910	SV2171			OK		
7SL0910B	SV2170			OK		
7DF0910D	SV2159			OK	(16:27)	
7SM0910A	SV2161	* 2nd source Continuing Std OK				
7AML0910A	SV2048			OK		
D1QCM101	B	8-26 1L-1-1	St	OK	8270B	
D2504101	B	9-4		OK	8270C	
D2504102	C	"		rerun	ISmt	
D2504103	L	"		rerun		
D236W101	B	9-3 30g-1-1		OK		
D236W102	C	"		OK		
D19EC202		9-4 1L-1-1		OK		
D1ATJ202		9-3 30g-1-1		OK		
D236N101		"		OK		
D1LL102		8-26 1L-1-1		rerun	8270B ISmt	
D2362101		9-3 30g-1-1		OK	8270C	
D2362102	MS	"		OK		
D2362103	MSD	"		OK		
D236M101		"		OK		
D236H101		"		OK		
D236K101		"		OK		
D236L101		"		OK		
D2366101		"		rerun	out of line	705

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

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COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: .32 mm
hold for 4 min.

FILM THICKNESS: .5 MICRONS F.D.= 2.80 E.T.= 29:03 I.S.# 2162 TUNE: DFTPP

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DE0913A	SV2159			OK	9:40	
7SM0913D 7SM0913	SV2172	DFTPP PASSED INSTD		OK	Cal Std 10:00 Checked by: OK mw 9-14-99	
7AML0913	SV2046			OK		
D20X8101	B	9.2 30g-1-1	St	OK	8270C	
D20X8102	C	"	"	OK		
D203N103		"	"	OK		
D1XTF101		"	"	OK		
D24QV10T		9.7 "	"	OK		
D2504103	L	9-4 1L-1-1	"	OK		
D24QW10T		9-7 30g-1-1	"	OK		
D1XEH102		" "	"	OK		
D1XEK102		" "	"	OK		
D1XAT102		9.2 30g-1-1	"	OK		
D1XCR102		" "	"	OK		
D1X7X102		" "	"	OK		
D1X7X106	MS	" "	"	OK		
D1X7X107	MSD	" "	"	OK		
D1XCN102		" "	"	OK		
D1XAN102		" "	"	OK		
D1LL102		8-26 1L-1-1	"	OK	8270B	
D1XAR102		9.2 30g-1-1	"	Rerun	out of tune 8270C	

9-13-99

E. SDG H25128

Organic Analyses Support Documentation

Environmental Standards Project Name: Basf/Wyandott
Sample Collection Dates: 8/23-8/25/99
Job Number: 9010925
Project Manager: Vendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: K. Grega
Completion Date: 11/99

Applicable Sample No's.: ☐ Refer to Table 1 in the Quality Assurance Review

Deliverables: CLP ☑ like
Tier I ☐
Tier II ☐
Limited ☐
Other ☐

Sample No.	Lab. Control No.
SDG H25128	

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail (Check (✓) If Yes or Footnote Letter for Comments Below)						Problems Identified (Check (✓) If Yes or Footnote Number for Comments Below)				Support Documentation Attachments (Check (✓) If Yes -- or Identify Attachment No.)			
	VOA Method 8260A	BNA Method 8270B	PEST / PCB Method	Other Method(s)	VOA Method 8260A	BNA Method 8270B	PEST / PCB Method	Other Method(s)	VOA Method 8260A	BNA Method 8270B	PEST / PCB Method	Other Method(s)
Holding Times	✓	✓				✓			✓	✓		
Blank Analysis Results: Target Compounds	✓	✓			✓	✓			✓	✓		
Blank Analysis Results: TICs												
System Mntr. Cmpds. &/or Surrogate Spike Rslts.	✓	✓				✓			✓	✓		
Matrix Spike / Matrix Spike Duplicate Results	✓	✓							✓	✓		
Blank Spike Results	✓	✓							✓	✓		
Duplicate Analysis Results ☑ Field ☐ Lab	✓	✓							✓	✓		
Qualitative Identification: Target Compounds	✓	✓										
Qualitative Identification: TICs												
DFTPP & BFB Mass Tuning	✓	✓							✓	✓		
GC Instrument Performance												
Initial Calibrations	✓	✓			✓	✓			✓	✓		
Continuing Calibrations	✓	✓			✓	✓			✓	✓		
Quantitation of Results	✓	✓							✓	✓		
DDT / Endrin Breakdown												
Surrogate Retention Time Shifts												
Internal Standards Performance	✓	✓							✓	✓		
Resolution Check Standards												
Analytical Sequence												
Florisil Cartridge Check & GPC Calibration												
GC Column Agreement												
Others:												

Comments: Data is acceptable for use unless otherwise qualified

BLANK ANALYSIS RESULTS FOR TARGET ORGANIC COMPOUNDS

H25128

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (units) ug/L	Qualification Limit 5x	Qualification Limit 10x
V	Aq	MB	D1XAJ101	$MeCl_2$	0.64		6.4
			D20GV101	↓	0.26		2.6
			D220G101	↓	2.0		20
			ERB-1	benzene	0.25	1.25	
			(2x dilution)	bromodichloromethane	1.2	6	
				chlorobenzene	0.34	1.7	
				chloroform	38	190	
				$MeCl_2$	13		130
				styrene	0.28	1.4	
				toluene	0.60	3	
			Trip blank	$MeCl_2$	0.98		9.8
SV	Aq	MB	D1R9F101	none			
			D1XAQ101	bis(2-ethylhexyl)phthalate	7.4		74
			D2D0X101	none			
			ERB-1	none			

1 - V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

Aq. = Aqueous; S = Solid

2 - MB = Method Blank; TB = Trip Blank; EB = Equipment Rinse Blank; FB = Field Blank
IB = Instrument Blank; SB = Storage Blank

* = Inferred from instrument printouts and/or supporting data; mass spectra not provided.

+ = Contaminant observed on one column only.

Notes: _____

SW846 8260A SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN QESSDG: H25128

Lot #: A9H250128

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	RFIMW-29	115 ✓	93 ✓	100 ✓	00
02	PM4NA	120	93	99	00
03	CMSMW-13S	110	96	96	00
04	CMSMW-13F	117	93	99	00
05	METHOD BLK. D1XAJ101	118	92	98	00
06	LCS D1XAJ102	113	94	99	00
07	RFIMW-29 D	115	96	97	00
08	RFIMW-29 S	119	94	98	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(69-127)
SRG02	= Toluene-d8	(90-112)
SRG03	= Bromofluorobenzene	(87-114)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8260A SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN QESSDG: H25128

Lot #: A9H270119

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	CMSMW-14S	122	94	97	00
02	CMSMW-39S	113	97	101	00
03	ERB-1	115	91	101	00
04	TRIP BLANK	120	93	97	00
05	CMSMW-12	122	94	97	00
06	METHOD BLK. D20GV101	118	93	99	00
07	METHOD BLK. D220G101	118	93	98	00
08	LCS D20GV102	117	94	98	00
09	LCS D220G102	116	94	98	00
10	LCSD D20GV103	109	97	99	00
11	LCSD D220G103	112	96	98	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(69-127)
SRG02	= Toluene-d8	(90-112)
SRG03	= Bromofluorobenzene	(87-114)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8260A CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9H310000 WO #: D1XAJ102
BATCH: 9243214

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	4.0	3.8	94	87- 113	
Trichloroethene	4.0	4.0	101	89- 115	
Chlorobenzene	4.0	3.8	94	89- 119	
Toluene	4.0	4.0	101	81- 117	
Benzene	4.0	4.4	110	77- 126	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9I010000 WO #: D20GV102
BATCH: 9244136

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	4.0	3.8	95	87- 113	
Trichloroethene	4.0	4.1	102	89- 115	
Chlorobenzene	4.0	3.9	98	89- 119	
Toluene	4.0	4.1	103	81- 117	
Benzene	4.0	4.4	111	77- 126	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9I010000 WO #: D20GV103

BATCH: 9244136

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	4.0	3.9	98	87- 113	
Trichloroethene	4.0	4.1	102	89- 115	
Chlorobenzene	4.0	3.8	96	89- 119	
Toluene	4.0	4.1	102	81- 117	
Benzene	4.0	4.4	109	77- 126	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9I020000 WO #: D220G102
BATCH: 9245137

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	4.0	3.7	92	87- 113	
Trichloroethene	4.0	4.0	101	89- 115	
Chlorobenzene	4.0	3.7	93	89- 119	
Toluene	4.0	4.0	100	81- 117	
Benzene	4.0	4.3	108	77- 126	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9I020000 WO #: D220G103
BATCH: 9245137

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,1-Dichloroethene	4.0	3.8	94	87- 113	
Trichloroethene	4.0	4.1	102	89- 115	
Chlorobenzene	4.0	3.8	94	89- 119	
Toluene	4.0	4.0	101	81- 117	
Benzene	4.0	4.3	108	77- 126	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Matrix Spike ID: RFIMW-29

Lot #: A9H250128 WO #: D1PVN103
BATCH: 9243214

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,1-Dichloroethene	10	ND	9.1	91	75- 113	
Trichloroethene	10	ND	9.7	97	71- 110	
Chlorobenzene	10	ND	9.2	92	81- 115	
Toluene	10	ND	9.6	96	78- 126	
Benzene	10	ND	11	107	78- 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Matrix Spike ID: RFIMW-29

Lot #: A9H250128 WO #: D1PVN104
BATCH: 9243214

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	QUAL
1,1-Dichloroethene	10	9.6	96	5.1	20	75- 113	
Trichloroethene	10	10	100	2.8	22	71- 110	
Chlorobenzene	10	9.8	98	5.9	18	81- 115	
Toluene	10	10	102	5.8	24	78- 126	
Benzene	10	11	109	1.4	17	78- 117	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

SW846 8260A METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D1XAJ101

Lab Name: QUANTERRA

Lab Code: QESCAN — SDG Number: H25128

Lab File ID: ux35588.d — Lot Number: A9H250128

Date Analyzed: 08/30/99 — Time Analyzed: 09:52

Matrix: WATER — Date Extracted: 08/30/99

GC Column: DB-624 ID: .53 — Extraction Method: 5030/8260A

Instrument ID: UX3 — Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	RFIMW-29	D1PVN102	ux35595.d	08/30/99	13:34
02	RFIMW-29	D1PVN103 S	ux35606.d	08/30/99	19:25
03	RFIMW-29	D1PVN104 D	ux35607.d	08/30/99	19:57
04	PM4NA pH >2 fixed collected 8/25/99	D1PW4102	ux35596.d	08/30/99	14:06 → within 7 days
05	CMSMW-13S	D1PXF102	ux35598.d	08/30/99	15:09
06	CMSMW-13F	D1PX6102	ux35597.d	08/30/99	14:37
07	CHECK SAMPLE	D1XAJ102 C	ux35587.d	08/30/99	09:20
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

SW846 8260A METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D20GV101

Lab Name: QUANTERRA

Lab Code: QESCAN

SDG Number: H25128

Lab File ID: ux35611.d

Lot Number: A9H270119

Date Analyzed: 08/31/99

Time Analyzed: 10:17

Matrix: WATER

Date Extracted: 08/31/99

GC Column: DB-624 ID: .53

Extraction Method: 5030/8260A

Instrument ID: UX3

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
01	CMSMW-14S	D1RMA102	ux35622.d	08/31/99	16:08	
02	CMSMW-39S	D1RMC102	ux35623.d	08/31/99	16:40	
03	TRIP BLANK	D1RME101	ux35620.d	08/31/99	15:04	
04	CMSMW-12 pH>2 collected 8/25/99	D1RM8102	ux35621.d	08/31/99	15:36	within 7 days
05	CHECK SAMPLE	D20GV102 C	ux35610.d	08/31/99	09:46	
06	DUPLICATE CHECK	D20GV103 L	ux35612.d	08/31/99	10:49	
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

COMMENTS:

SW846 8260A METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D220G101

Lab Name: QUANTERRA

Lab Code: QESCAN SDG Number:H25128

Lab File ID: ux35634.d Lot Number: A9H270119

Date Analyzed: 09/01/99 Time Analyzed: 10:01

Matrix: WATER Date Extracted:09/01/99

GC Column: DB-624 ID: .53 Extraction Method: 5030/8260A

Instrument ID: UX3 Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	ERB-1	D1RMD101	ux35636.d	09/01/99	11:05
02	CHECK SAMPLE	D220G102 C	ux35633.d	09/01/99	09:29
03	DUPLICATE CHECK	D220G103 L	ux35635.d	09/01/99	10:33
04					
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COMMENTS:

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: BFB161 BFB Injection Date: 06/07/99

Instrument ID: A3UX3 BFB Injection Time: 0950

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.2
75	30.0 - 60.0% of mass 95	43.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	71.1
175	5.0 - 9.0% of mass 174	5.1 (7.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	69.3 (97.6)1
177	5.0 - 9.0% of mass 176	4.6 (6.6)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE 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	500NG-IC60	UX34001	06/07/99	1041
02	VSTD010	250NG-IC60	UX34002	06/07/99	1113
03	VSTD004	100NG-IC60	UX34003	06/07/99	1144
04	VSTD040	1000NG-A9IC25	UX34005	06/07/99	1248
05	VSTD020	500NG-A9IC25	UX34006	06/07/99	1319
06	VSTD010	250NG-A9IC25	UX34007	06/07/99	1351
07	VSTD004	100NG-A9IC25	UX34008	06/07/99	1423
08	VSTD002	50NG-A9IC25	UX34009	06/07/99	1455
09	VSTD001	25NG-IC25	UX34010	06/07/99	1527
10	VSTD040	1000NG-IC25	UX34011	06/07/99	1559
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 07-Jun-1999 16:49

Calibration History

Method : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Start Cal Date: 07-JUN-1999 10:10 10:41
End Cal Date : 07-JUN-1999 15:59

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 2.000		
07-JUN-1999 14:55	3-IX	ux34009.d
07-JUN-1999 15:27	1-8260	ux34010.d
Cal Level: 2 , Cal Amount: 4.000		
07-JUN-1999 14:23	3-IX	ux34008.d
07-JUN-1999 11:44	1-8260	ux34003.d
Cal Level: 3 , Cal Amount: 10.000		
07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d
Cal Level: 4 , Cal Amount: 20.000		
07-JUN-1999 13:19	3-IX	ux34006.d
07-JUN-1999 10:41	1-8260	ux34001.d
Cal Level: 5 , Cal Amount: 40.000		
07-JUN-1999 12:48	3-IX	ux34005.d
07-JUN-1999 15:59	1-8260	ux34011.d

Continuing Calibration

07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34011.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 15:59
Lab Sample ID: 1000NG-IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/N826025

COMPOUND	%RSD
1,2-Dichloroethene (total)	5.7
Xylenes (total)	11.9
Dichlorodifluoromethane	5.0
Chloromethane	14.6
Vinyl Chloride	5.7
Bromomethane	13.7
Chloroethane	15.9
Trichlorofluoromethane	5.8
Acrolein	14.8
1,1-Dichloroethene	8.1
Freon-113	8.2
Acetone	17.8
Iodomethane	2.5
Carbon Disulfide	5.8
Acetonitrile	11.0
Methylene Chloride	14.9
tert-Butyl Alcohol	11.4
Acrylonitrile	6.7
trans-1,2-Dichloroethene	5.7
Methyl tert-butyl ether	5.3
Hexane	6.8
1,1-Dichloroethane	7.7
Vinyl Acetate	34.8
cis-1,2-dichloroethene	5.9
2,2-Dichloropropane	2.9
2-Butanone	7.2
Bromochloromethane	8.5
Tetrahydrofuran	45.7
Chloroform	7.2
Dibromoflouromethane	7.6
1,1,1-Trichloroethane	4.7
1,1-Dichloropropene	2.5
Carbon Tetrachloride	4.3
1,2-Dichloroethane-d4	8.0
Benzene	3.3
1,2-Dichloroethane	6.6
Trichloroethene	4.4
1,2-Dichloropropane	3.5
Dibromomethane	4.8

Data File: /chem/can/msv/a3ux3.i/V90607A.b/ux34011.d
Report Date: 06/07/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34011.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 15:59
Lab Sample ID: 1000NG-IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/

COMPOUND	%RSD
1,4-Dioxane	7.6
Bromodichloromethane	5.1
2-Chloroethyl vinyl ether	27.8
cis-1,3-Dichloropropene	3.4
4-Methyl-2-Pentanone	15.5
Toluene-d8	5.3
Toluene	5.1
trans-1,3-Dichloropropene	5.9
Ethyl methacrylate	13.7
1,1,2-Trichloroethane	8.2
Tetrachloroethene	5.5
1,3-Dichloropropane	5.0
2-Hexanone	13.7
Dibromochloromethane	3.8
1,2-Dibromoethane	4.5
Chlorobenzene	6.2
1,1,1,2-Tetrachloroethane	4.6
Ethylbenzene	5.4
m + p-Xylene	4.8
Xylene-o	5.6
Styrene	5.7
Bromoform	8.6
Isopropylbenzene	7.0
Bromoflourobenzene	7.5
Bromobenzene	8.1
1,1,2,2-Tetrachloroethane	8.2
1,2,3-Trichloropropane	14.1
1,4-Dichloro-2-butene	5.2
n-Propylbenzene	5.7
2-Chlorotoluene	6.4
4-Chlorotoluene	6.2
1,3,5-Trimethylbenzene	5.3
tert-Butylbenzene	5.9
1,2,4-Trimethylbenzene	6.0
sec-Butylbenzene	5.7
1,3-Dichlorobenzene	7.1
4-Isopropyltoluene	5.8
1,4-Dichlorobenzene	8.2
1,2-Dichlorobenzene	8.4

Data File: /chem/can/msv/a3ux3.i/V90607A.b/ux34011.d
Report Date: 06/07/1999

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34011.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 15:59
Lab Sample ID: 1000NG-IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/

COMPOUND	%RSD
n-Butylbenzene	6.3
1,2-Dibromo-3-chloropropane	15.1
1,2,4-Trichlorobenzene	9.0
Hexachlorobutadiene	10.7
Naphthalene	18.7
1,2,3-Trichlorobenzene	12.8

The average of all %RSD's in the initial calibration is 8.7

INITIAL CALIBRATION REPORT

Instrument ID: a3ux3.i
Lab File ID: ux34005.d
Analysis Type: WATER

Injection Date: 07-JUN-1999 12:48
Lab Sample ID: 1000NG-A9IC25
Method File: /chem/can/msv/a3ux3.i/V90607A.b/N826025

COMPOUND	%RSD
Dichlorofluoromethane	13.4
Ethyl Ether	10.4
3-Chloro-1-propene	11.1
2-Chloro-1,3-butadiene	8.2
Ethyl Acetate	6.6
Isopropyl Ether	2.9
Propionitrile	11.3
Methacrylonitrile	13.9
Isobutanol	38.2
n-Butanol	7.5
Methyl methacrylate	6.7
2-Nitropropane	34.9
Cyclohexanone	20.5

The average of all %RSD's in the initial calibration is 14.3

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10 10:41
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/msv/a3ux3.i/V90607A.b/ux34009.d
Level 2: /chem/can/msv/a3ux3.i/V90607A.b/ux34008.d
Level 3: /chem/can/msv/a3ux3.i/V90607A.b/ux34007.d
Level 4: /chem/can/msv/a3ux3.i/V90607A.b/ux34006.d
Level 5: /chem/can/msv/a3ux3.i/V90607A.b/ux34005.d

	Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD
	7 Dichlorodifluoromethane	0.46124	0.41711	0.43125	0.41963	0.40548	0.42694	4.976
	8 Chloromethane	0.32665	0.42690	0.32362	0.36384	0.29562	0.34732	14.587
	9 Vinyl Chloride	0.39876	0.38566	0.36097	0.35092	0.35340	0.36994	5.724
	10 Bromomethane	0.25798	0.30992	0.24842	0.22793	0.22285	0.25342	13.701
	11 Chloroethane	0.24758	0.22912	0.21919	0.18684	0.16506	0.20956	15.859
	12 Trichlorofluoromethane	0.61040	0.55967	0.56250	0.54522	0.52139	0.55984	5.826
	13 1,1-Dichloroethene	0.36822	0.33667	0.31966	0.31282	0.29925	0.32732	8.108
	14 Methylene Chloride	0.32174	0.27725	0.23948	0.23892	0.22673	0.26083	14.946
	15 trans-1,2-Dichloroethene	0.38959	0.37319	0.35510	0.35112	0.33648	0.36110	5.709
	16 1,1-Dichloroethane	0.70944	0.63005	0.59435	0.59322	0.60655	0.62672	7.748
	17 2,2-Dichloropropane	0.51095	0.48996	0.49387	0.48451	0.47147	0.49015	2.934
	18 cis-1,2-dichloroethene	0.30383	0.29923	0.27480	0.27851	0.26455	0.28419	5.883
M	19 1,2-Dichloroethene (total)	0.34671	0.33621	0.31495	0.31482	0.30052	0.32264	5.743
	20 Bromochloromethane	0.12535	0.11987	0.10842	0.11023	0.10130	0.11303	8.456
	21 Chloroform	0.61838	0.57181	0.53803	0.54105	0.51439	0.55673	7.194
	22 1,1,1-Trichloroethane	0.55745	0.52102	0.51295	0.51130	0.49096	0.51874	4.687
	23 Carbon Tetrachloride	0.48435	0.44733	0.45335	0.45011	0.43139	0.45330	4.257
	24 1,1-Dichloropropene	0.53857	0.54866	0.54719	0.53405	0.51586	0.53687	2.461
	25 Benzene	1.00949	1.04126	0.99815	1.01334	0.95136	1.00272	3.271
	26 1,2-Dichloroethane	0.20369	0.19326	0.18039	0.18730	0.17142	0.18721	6.564
	27 Trichloroethene	0.40432	0.42154	0.40389	0.40834	0.37294	0.40221	4.440
	28 1,2-Dichloropropane	0.32944	0.33296	0.32329	0.33233	0.30589	0.32478	3.459
	29 Dibromomethane	0.13365	0.13012	0.12386	0.12898	0.11810	0.12694	4.776
	30 Bromodichloromethane	0.44623	0.43249	0.40889	0.42053	0.39050	0.41973	5.106
	31 cis-1,3-Dichloropropene	0.35682	0.37883	0.36535	0.38134	0.35378	0.36723	3.408
	32 Toluene	5.13548	5.51197	5.26604	5.16488	4.78669	5.17301	5.062

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

	Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD
	33 trans-1,3-Dichloropropene	1.03501	1.19624	1.15424	1.20197	1.12953	1.14340	5.912
	34 1,1,2-Trichloroethane	0.61382	0.72410	0.64564	0.68903	0.59353	0.65322	8.201
	35 Tetrachloroethene	1.87838	2.00207	1.97453	1.87437	1.73708	1.89328	5.503
	36 1,3-Dichloropropane	1.10967	1.23419	1.20979	1.26204	1.16843	1.19682	4.982
	37 Dibromochloromethane	1.16068	1.18798	1.15781	1.19766	1.08460	1.15775	3.831
	38 1,2-Dibromoethane	0.73109	0.78625	0.75258	0.80099	0.72137	0.75845	4.539
	39 Chlorobenzene	3.26700	3.50766	3.30891	3.25361	2.94788	3.25701	6.163
	40 1,1,1,2-Tetrachloroethane	1.21832	1.32133	1.31059	1.32851	1.20925	1.27760	4.594
	41 Ethylbenzene	1.95033	2.00859	1.92151	1.84920	1.74068	1.89406	5.447
	42 m + p-Xylene	2.41630	2.49267	2.41554	2.31808	2.19967	2.36845	4.766
	43 Xylene-o	2.17206	2.26424	2.13483	2.08515	1.94476	2.12021	5.564
M	44 Xylenes (total)	1.75116	2.41653	2.32197	2.24044	2.11470	2.16896	11.919
	45 Styrene	3.30191	3.52858	3.30108	3.24082	3.00297	3.27507	5.730
	46 Bromoform	0.57453	0.68455	0.66902	0.67976	0.58187	0.63795	8.604
	47 Bromobenzene	0.77092	0.92830	0.86270	0.86442	0.77090	0.83945	8.091
	48 Isopropylbenzene	7.12268	6.84500	6.61874	6.20021	5.99364	6.55605	7.037
	49 1,2,3-Trichloropropane	0.13069	0.10902	0.10623	0.10370	0.08829	0.10759	14.136
	50 1,1,2,2-Tetrachloroethane	0.46372	0.52420	0.52154	0.48874	0.42980	0.48560	8.227
	51 2-Chlorotoluene	0.81756	0.91151	0.85193	0.81931	0.76755	0.83357	6.356
	52 n-Propylbenzene	1.00201	1.10007	1.05255	0.97812	0.95645	1.01784	5.721
	53 4-Chlorotoluene	0.79541	0.89416	0.85370	0.81930	0.76110	0.82473	6.241
	54 1,3,5-Trimethylbenzene	2.69277	2.99407	2.84555	2.66422	2.65532	2.77039	5.299
	55 tert-Butylbenzene	3.01938	3.34518	3.20757	2.94363	2.92597	3.08835	5.888
	56 1,2,4-Trimethylbenzene	2.45361	2.83050	2.65751	2.51957	2.48365	2.58897	6.023
	57 1,3-Dichlorobenzene	1.64804	1.80981	1.72557	1.62337	1.49589	1.66053	7.072
	58 sec-Butylbenzene	4.48136	4.68097	4.60689	4.08752	4.23894	4.41914	5.659
	59 1,4-Dichlorobenzene	1.68634	1.91039	1.79399	1.66431	1.53779	1.71856	8.185
	60 4-Isopropyltoluene	3.46737	3.74019	3.67145	3.28052	3.33189	3.49828	5.798
	61 1,2-Dichlorobenzene	1.22674	1.43021	1.34373	1.26913	1.15120	1.28420	8.358
	62 n-Butylbenzene	3.53390	3.78787	3.84343	3.31951	3.44220	3.58538	6.259
	63 1,2-Dibromo-3-chloropropane	0.10596	0.10704	0.08802	0.09077	0.07304	0.09296	15.149
	64 1,2,4-Trichlorobenzene	0.92929	1.12483	1.02242	0.99712	0.89316	0.99336	9.044
	65 Naphthalene	0.46544	0.75921	0.71475	0.76067	0.62335	0.66468	18.740

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD	
66 Hexachlorobutadiene	1.13026	0.92912	1.07261	0.88055	0.94089	0.99069	10.658	
67 1,2,3-Trichlorobenzene	0.67296	0.89338	0.74690	0.74522	0.65001	0.74169	12.822	
68 Acetone	0.01923	0.01817	0.01617	0.01847	0.01183	0.01677	17.797	J/R
69 Carbon Disulfide	1.16729	1.05847	1.04514	1.02455	1.01234	1.06156	5.816	
70 2-Butanone	0.03486	0.03495	0.03265	0.03855	0.03225	0.03465	7.235	
71 Vinyl Acetate	0.07674	0.21617	0.23745	0.23048	0.23967	0.20010	34.766	no +'s
72 4-Methyl-2-Pentanone	0.63419	0.58126	0.47602	0.50293	0.43307	0.52549	15.468	
73 2-Hexanone	0.28452	0.37293	0.31130	0.33379	0.26271	0.31305	13.710	
74 Acrolein	0.01176	0.00964	0.00877	0.00894	0.00815	0.00945	14.791	<-
75 Acrylonitrile	0.01851	0.01900	0.01715	0.01769	0.01596	0.01766	6.736	
76 2-Chloroethyl vinyl ether	0.01944	0.03181	0.03635	0.04525	0.03496	0.03356 NT	27.821	
77 Iodomethane	0.59226	0.59727	0.56944	0.56309	0.57692	0.57980	2.522	
78 1,4-Dichloro-2-butene	0.07732	0.08634	0.08345	0.08870	0.08236	0.08363	5.163	
79 Acetonitrile	0.00743	0.00693	0.00582	0.00616	0.00589	0.00645	10.983	<-
80 2-Chloro-1,3-butadiene	0.64938	0.63032	0.55518	0.55518	0.54730	0.58747	8.237	
81 3-Chloro-1-propene	0.18488	0.20329	0.16523	0.16076	0.15776	0.17438	11.072	
82 1,4-Dioxane	0.00069	0.00075	0.00071	0.00076	0.00063	0.00071 NT	7.567	<-
83 Isobutanol	0.00410	0.00348	0.00261	0.00163	0.00187	0.00274	38.220	<- no +'s
84 Ethyl methacrylate	0.77314	1.03952	0.90253	0.93073	0.74511	0.87820	13.726	
85 Methyl methacrylate	0.09697	0.10803	0.09582	0.09783	0.08981	0.09769	6.731	
86 Methacrylonitrile	0.06981	0.05967	0.06480	0.05451	0.04880	0.05952	13.904	
87 Propionitrile	0.00734	0.00760	0.00679	0.00582	0.00612	0.00673	11.333	<-
88 Freon-113	0.50211	0.43262	0.44371	0.42699	0.40557	0.44220	8.198	
89 n-Butanol	0.00163	0.00138	0.00138	0.00144	0.00138	0.00144 NT	7.476	<-
90 Ethyl Acetate	1.14883	0.97752	0.98641	1.04630	1.02458	1.03673	6.621	
91 Cyclohexanone	0.05166	0.05045	0.03877	0.03464	0.03395	0.04189 NT	20.465	
92 Ethyl Ether	0.12809	0.13238	0.11060	0.10770	0.10647	0.11705	10.446	
93 Tetrahydrofuran	0.05912	0.02941	0.02559	0.02817	0.02182	0.03282 NT	45.657	not a target
94 Methyl tert-butyl ether	0.30768	0.31563	0.29626	0.31095	0.27542	0.30119	5.338	
95 Dichlorofluoromethane	0.87950	0.99006	0.76934	0.74367	0.73094	0.82270	13.419	
96 1-Chlorohexane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
97 Ethanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
98 tert-Butyl Alcohol	0.00456	0.00565	0.00480	0.00479	0.00416	0.00479 NT	11.415	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/msv/a3ux3.i/V90607A.b/N826025UX3-3.m
Cal Date : 07-Jun-1999 16:24 a
Curve Type : Average

	Compound	2.000 Level 1	4.000 Level 2	10.000 Level 3	20.000 Level 4	40.000 Level 5	RRF	% RSD	
	99 Hexane	0.65213	0.56198	0.57076	0.56193	0.56136	0.58163	6.809	
	100 Isopropyl Ether	0.17943	0.17166	0.16661	0.16870	0.16999	0.17128	2.871	
	101 2-Nitropropane	0.03254	0.01848	0.01592	0.01855	0.01550	0.02020	34.872	not a target
	146 2-Methylfuran	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	147 Tetrahydrothiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	148 1,4-Dichlorobutane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	154 Paraldehyde	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	155 Thiophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	156 Crotononitrile(1st Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
	157 Crotononitrile(2nd Isomer)	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M	158 Total Crotononitrile	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
$	150 1,2-Dichloroethane-d4	0.18502	0.17382	0.15788	0.16169	0.15206	0.16609	7.974	
$	151 Toluene-d8	4.79481	4.78517	4.66836	4.52477	4.20176	4.59497	5.342	
$	152 Bromoflourobenzene	1.54857	1.60417	1.50037	1.44327	1.31282	1.48184	7.531	
$	153 Dibromoflouromethane	0.42813	0.39432	0.37892	0.37385	0.34881	0.38481	7.596	

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: BFB234 BFB Injection Date: 08/30/99

Instrument ID: A3UX3 BFB Injection Time: 0804

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.1
75	30.0 - 60.0% of mass 95	51.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	59.4
175	5.0 - 9.0% of mass 174	4.2 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	56.7 (95.4)1
177	5.0 - 9.0% of mass 176	3.8 (6.7)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	250NG-CC60	UX35585	08/30/99	0816
02	VSTD010	250NG-A9CC25	UX35586	08/30/99	0848
03	D1XAJ-CHK	D1XAJ102	UX35587	08/30/99	0920
04	D1XAJ-BLK	D1XAJ101	UX35588	08/30/99	0952
05	RFIMW-29	D1PVN102	UX35595	08/30/99	1334
06	PM4NA	D1PW4102	UX35596	08/30/99	1406
07	CMSMW-13F	D1PX6102	UX35597	08/30/99	1437
08	CMSMW-13S	D1PXF102	UX35598	08/30/99	1509
09	RFIMW-29 x	D1PVN103	UX35606	08/30/99	1925
10	RFIMW-29 x	D1PVN104	UX35607	08/30/99	1957
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 31-Aug-1999 09:53

Calibration History

Method : /chem/can/msv/a3ux3.i/V90830A.b/N826025UX3-3.m
Start Cal Date: 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 2.000		
07-JUN-1999 14:55	3-IX	ux34009.d
07-JUN-1999 15:27	1-8260	ux34010.d
Cal Level: 2 , Cal Amount: 4.000		
07-JUN-1999 14:23	3-IX	ux34008.d
07-JUN-1999 11:44	1-8260	ux34003.d
Cal Level: 3 , Cal Amount: 10.000		
07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d
Cal Level: 4 , Cal Amount: 20.000		
07-JUN-1999 13:19	3-IX	ux34006.d
07-JUN-1999 10:41	1-8260	ux34001.d
Cal Level: 5 , Cal Amount: 40.000		
07-JUN-1999 12:48	3-IX	ux34005.d
07-JUN-1999 15:59	1-8260	ux34011.d

Continuing Calibration

30-AUG-1999 08:16	1-8260	ux35585.d
30-AUG-1999 08:48	3-IX	ux35586.d

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35585.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:16
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
0	m + p-Xylene	500.0000	438.7995	12.2	50.0
0	Xylene-o	250.0000	217.9494	12.8	50.0
1	Dichlorodifluoromethane	250.0000	289.6903	15.9	50.0
2	Chloromethane	250.0000	266.4300	6.6	50.0
3	Vinyl Chloride	250.0000	263.4380	5.4	20.0
4	Bromomethane	250.0000	219.9992	12.0	50.0
5	Chloroethane	250.0000	286.6570	14.7	50.0
6	Trichlorofluoromethane	250.0000	279.2262	11.7	50.0
9	1,1-Dichloroethene	250.0000	214.1577	14.3	20.0
10	Methylene Chloride	250.0000	228.2097	8.7	50.0
13	trans-1,2-Dichloroethene	250.0000	211.0642	15.6	50.0
15	1,1-Dichloroethane	250.0000	267.6493	7.1	50.0
17	cis-1,2-dichloroethene	250.0000	228.3612	8.7	50.0
18	Chloroform	250.0000	269.1185	7.6	20.0
19	Bromochloromethane	250.0000	231.1185	7.6	50.0
20	1,1,1-Trichloroethane	250.0000	281.7600	12.7	50.0
21	Carbon Tetrachloride	250.0000	294.2449	17.7	50.0
23	1,2-Dichloroethane	250.0000	325.9922	30.4	50.0
24	Benzene	250.0000	264.9454	6.0	50.0
26	Trichloroethene	250.0000	245.4240	1.8	50.0
27	1,2-Dichloropropane	250.0000	285.3431	14.1	20.0
28	Bromodichloromethane	250.0000	264.8897	6.0	50.0
31	cis-1,3-Dichloropropene	250.0000	273.7769	9.5	50.0
33	Toluene	250.0000	243.2145	2.7	20.0
34	trans-1,3-Dichloropropene	250.0000	276.3284	10.5	50.0
36	1,1,2-Trichloroethane	250.0000	236.3291	5.5	50.0
37	Tetrachloroethene	250.0000	218.4230	12.6	50.0
38	Dibromochloromethane	250.0000	243.6355	2.5	50.0
40	Chlorobenzene	250.0000	228.2512	8.7	50.0
41	Ethylbenzene	250.0000	222.2587	11.1	20.0
42	Xylenes (total)	750.0000	656.7488	12.4	50.0
44	Styrene	250.0000	216.0094	13.6	50.0
45	Bromoform	250.0000	196.6196	21.4	50.0
46	1,1,2,2-Tetrachloroethane	250.0000	249.3342	0.3	50.0
48	1,3-Dichlorobenzene	250.0000	230.2425	7.9	50.0
49	1,4-Dichlorobenzene	250.0000	227.5964	9.0	50.0
50	1,2-Dichlorobenzene	250.0000	226.3795	9.4	50.0
60	Dibromomethane	250.0000	237.9593	4.8	50.0
63	1,2-Dibromoethane	250.0000	240.0693	4.0	50.0

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35585.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:16
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90830A.b

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
64 1,1,1,2-Tetrachloroethane	250.0000	268.5335	7.4	50.0	
65 1,2,3-Trichloropropane	250.0000	232.3954	7.0	50.0	
69 1,2-Dibromo-3-chloropropane	250.0000	185.7493	25.7	50.0	↓
74 2,2-Dichloropropane	250.0000	273.8426	9.5	50.0	
75 1,1-Dichloropropene	250.0000	258.0867	3.2	50.0	
77 1,3-Dichloropropane	250.0000	272.8028	9.1	50.0	
83 n-Propylbenzene	250.0000	257.9057	3.2	50.0	
84 Bromobenzene	250.0000	236.1818	5.5	50.0	
85 1,3,5-Trimethylbenzene	250.0000	255.2580	2.1	50.0	
86 2-Chlorotoluene	250.0000	255.8304	2.3	50.0	
87 4-Chlorotoluene	250.0000	254.1683	1.7	50.0	
88 tert-Butylbenzene	250.0000	265.6300	6.3	50.0	
89 1,2,4-Trimethylbenzene	250.0000	257.0952	2.8	50.0	
90 sec-Butylbenzene	250.0000	261.4193	4.6	50.0	
91 4-Isopropyltoluene	250.0000	256.6694	2.7	50.0	
94 n-Butylbenzene	250.0000	281.8405	12.7	50.0	
95 1,2,4-Trichlorobenzene	250.0000	204.6417	18.1	50.0	
96 Hexachlorobutadiene	250.0000	249.4456	0.2	50.0	
97 Naphthalene	250.0000	280.3560	12.1	50.0	
98 1,2,3-Trichlorobenzene	250.0000	201.9599	19.2	50.0	
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0	
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0	
106 Acetone	2500.0000	3224.4733	29.0	50.0	↑
107 Carbon Disulfide	250.0000	237.6898	4.9	50.0	
108 2-Butanone	2500.0000	3014.6291	20.6	50.0	
109 Vinyl Acetate	500.0000	410.1411	18.0	50.0	
110 4-Methyl-2-Pentanone	2500.0000	2508.2694	0.3	50.0	
111 2-Hexanone	2500.0000	2831.5029	13.3	50.0	
112 Acrolein	5000.0000	3296.3508	34.1	50.0	↓
113 Acrylonitrile	5000.0000	5171.6910	3.4	50.0	
114 2-Chloroethyl vinyl ether	1000.0000	5.8364	99.4	50.0	<-
115 Iodomethane	250.0000	150.3077	39.9	50.0	↓
116 1,4-Dichloro-2-butene	250.0000	275.5711	10.2	50.0	
117 Acetonitrile	2500.0000	2731.1668	9.2	50.0	
120 1,4-Dioxane	12500.0000	10872.4187	13.0	50.0	
122 Ethyl methacrylate	250.0000	237.6604	4.9	50.0	
126 Freon-113	250.0000	212.1027	15.2	50.0	
127 1,2-Dichloroethene (total)	500.0000	439.4253	12.1	50.0	
133 Tetrahydrofuran	250.0000	266.6993	6.7	50.0	

J (some flagged R)

flagged R due to RRF

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35585.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:16
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
134 Methyl tert-butyl ether	250.0000	198.6413	20.5	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
140 tert-Butyl Alcohol	5000.0000	4313.8665	13.7	50.0
141 Hexane	250.0000	255.1890	2.1	50.0
144 Isopropylbenzene	250.0000	243.4519	2.6	50.0
150 1,2-Dichloroethane-d4	250.0000	320.2540	28.1	50.0
151 Toluene-d8	250.0000	228.3269	8.7	50.0
152 Bromoflourobenzene	250.0000	243.5846	2.6	50.0
153 Dibromoflouromethane	250.0000	243.7731	2.5	50.0

surrogate

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 30-AUG-1999 08:16
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
S	150 1,2-Dichloroethane-d4	0.166	0.213	0.010	-28.1	50.0
S	151 Toluene-d8	4.595	4.197	0.010	8.7	50.0
S	152 Bromoflourobenzene	1.482	1.444	0.010	2.6	50.0
S	153 Dibromoflouromethane	0.385	0.375	0.010	2.5	50.0
	7 Dichlorodifluoromethane	0.427	0.495	0.010	-15.9	50.0
	8 Chloromethane	0.347	0.370	0.100	-6.6	50.0
	9 Vinyl Chloride	0.370	0.390	0.010	-5.4	20.0
	10 Bromomethane	0.253	0.223	0.010	12.0	50.0
	11 Chloroethane	0.210	0.240	0.010	-14.7	50.0
	12 Trichlorofluoromethane	0.560	0.625	0.010	-11.7	50.0
	13 1,1-Dichloroethene	0.327	0.280	0.010	14.3	20.0
	14 Methylene Chloride	0.261	0.238	0.010	8.7	50.0
	15 trans-1,2-Dichloroethene	0.361	0.305	0.010	15.6	50.0
	16 1,1-Dichloroethane	0.627	0.671	0.100	-7.1	50.0
	18 cis-1,2-dichloroethene	0.284	0.260	0.010	8.7	50.0
M	19 1,2-Dichloroethene (total)	0.323	0.282	0.010	12.5	50.0
	21 Chloroform	0.557	0.599	0.010	-7.6	20.0
	22 1,1,1-Trichloroethane	0.519	0.585	0.010	-12.7	50.0
	23 Carbon Tetrachloride	0.453	0.534	0.010	-17.7	50.0
	25 Benzene	1.003	1.063	0.010	-6.0	50.0
	26 1,2-Dichloroethane	0.187	0.244	0.010	-30.4	50.0
	27 Trichloroethene	0.402	0.395	0.010	1.8	50.0
	28 1,2-Dichloropropane	0.325	0.371	0.010	-14.1	20.0
	29 Dibromomethane	0.127	0.121	0.010	4.8	50.0
	30 Bromodichloromethane	0.420	0.445	0.010	-6.0	50.0
	31 cis-1,3-Dichloropropene	0.367	0.402	0.010	-9.5	50.0
	32 Toluene	5.173	5.033	0.010	2.7	20.0
	33 trans-1,3-Dichloropropene	1.143	1.264	0.010	-10.5	50.0
	34 1,1,2-Trichloroethane	0.653	0.618	0.010	5.5	50.0
	35 Tetrachloroethene	1.893	1.654	0.010	12.6	50.0
	37 Dibromochloromethane	1.158	1.128	0.010	2.5	50.0
	38 1,2-Dibromoethane	0.758	0.728	0.010	4.0	50.0
	39 Chlorobenzene	3.257	2.974	0.300	8.7	50.0
	41 Ethylbenzene	1.894	1.684	0.010	11.1	20.0
	42 m + p-Xylene	2.368	2.079	0.010	12.2	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35585.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 30-AUG-1999 08:16
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
	43 Xylene-o	2.120	1.848	0.010	12.8	50.0	
M	44 Xylenes (total)	2.169	2.002	0.010	7.7	50.0	
	45 Styrene	3.275	2.830	0.010	13.6	50.0	
	46 Bromoform	0.638	0.502	0.100	21.4	50.0	
	49 1,2,3-Trichloropropane	0.108	0.100	0.010	7.0	50.0	
	50 1,1,2,2-Tetrachloroethane	0.486	0.484	0.300	0.3	50.0	
	57 1,3-Dichlorobenzene	1.661	1.529	0.010	7.9	50.0	
	59 1,4-Dichlorobenzene	1.719	1.565	0.010	9.0	50.0	
	61 1,2-Dichlorobenzene	1.284	1.163	0.010	9.4	50.0	
	68 Acetone	0.017	0.022	0.010	-29.0	50.0	
	69 Carbon Disulfide	1.062	1.009	0.010	4.9	50.0	
	70 2-Butanone	0.035	0.042	0.010	-20.6	50.0	
	71 Vinyl Acetate	0.200	0.164	0.010	18.0	50.0	
	72 4-Methyl-2-Pentanone	0.525	0.527	0.010	-0.3	50.0	
	73 2-Hexanone	0.313	0.355	0.010	-13.3	50.0	
	74 Acrolein	0.009	0.006	0.010	34.1	50.0	<-
	75 Acrylonitrile	0.018	0.018	0.010	-3.4	50.0	
	76 2-Chloroethyl vinyl ether	0.034	NT 0.000	0.010	99.4	50.0	<-
	77 Iodomethane	0.580	0.349	0.010	39.9	50.0	
	78 1,4-Dichloro-2-butene	0.084	0.092	0.010	-10.2	50.0	
	82 1,4-Dioxane	0.001	NT 0.001	0.010	13.0	50.0	<-
	84 Ethyl methacrylate	0.878	0.835	0.010	4.9	50.0	
	88 Freon-113	0.442	0.375	0.010	15.2	50.0	
	93 Tetrahydrofuran	0.033	NT 0.035	0.010	-6.7	50.0	
	94 Methyl tert-butyl ether	0.301	0.239	0.010	20.5	50.0	
	98 tert-Butyl Alcohol	0.005	NT 0.004	0.010	13.7	50.0	<-
	99 Hexane	0.582	0.594	0.010	-2.1	50.0	
	17 2,2-Dichloropropane	0.490	0.537	0.010	-9.5	50.0	
	20 Bromochloromethane	0.113	0.104	0.010	7.6	50.0	
	24 1,1-Dichloropropene	0.537	0.554	0.010	-3.2	50.0	
	36 1,3-Dichloropropane	1.197	1.306	0.010	-9.1	50.0	
	40 1,1,1,2-Tetrachloroethane	1.278	1.372	0.010	-7.4	50.0	
	47 Bromobenzene	0.839	0.793	0.010	5.5	50.0	
	48 Isopropylbenzene	6.556	6.384	0.010	2.6	50.0	
	51 2-Chlorotoluene	0.834	0.853	0.010	-2.3	50.0	
	52 n-Propylbenzene	1.018	1.050	0.010	-3.2	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i Injection Date: 30-AUG-1999 08:16
Lab File ID: ux35585.d Init. Calibration Date(s): 06/07/99 06/07/99
Analysis Type: WATER Init. Calibration Times: 10:10 15:59
Lab Sample ID: 250NG-CC60 Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82
Quant Type: ISTD

COMPOUND	$\overline{RRF}$	RF10	MIN RRF	%D	MAX %D	
53 4-Chlorotoluene	0.825	0.838	0.010	-1.7	50.0	
54 1,3,5-Trimethylbenzene	2.770	2.829	0.010	-2.1	50.0	
55 tert-Butylbenzene	3.088	3.281	0.010	-6.3	50.0	
56 1,2,4-Trimethylbenzene	2.589	2.662	0.010	-2.8	50.0	
58 sec-Butylbenzene	4.419	4.621	0.010	-4.6	50.0	
60 4-Isopropyltoluene	3.498	3.592	0.010	-2.7	50.0	
62 n-Butylbenzene	3.585	4.042	0.010	-12.7	50.0	
63 1,2-Dibromo-3-chloropropane	0.093	0.069	0.010	25.7	50.0	
64 1,2,4-Trichlorobenzene	0.993	0.813	0.010	18.1	50.0	
65 Naphthalene	0.665	0.745	0.010	-12.1	50.0	
66 Hexachlorobutadiene	0.991	0.988	0.010	0.2	50.0	
67 1,2,3-Trichlorobenzene	0.742	0.599	0.010	19.2	50.0	
79 Acetonitrile	0.006	0.007	0.010	-9.2	50.0	<-

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35586.d
Report Date: 08/31/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35586.d
Analysis Type: WATER

Injection Date: 30-AUG-1999 08:48
Lab Sample ID: 250NG-A9CC25
Method File: /chem/can/msv/a3ux3.i/V90830A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0
118 2-Chloro-1,3-butadiene	250.0000	263.0226	5.2	50.0
119 3-Chloro-1-propene	250.0000	220.5927	11.8	50.0
121 Isobutanol	5000.0000	3041.9426	39.2	50.0
123 Methyl methacrylate	250.0000	276.0708	10.4	50.0
124 Methacrylonitrile	250.0000	248.0900	0.8	50.0
125 Propionitrile	500.0000	524.8462	5.0	50.0
129 n-Butanol	5000.0000	4717.4038	5.7	50.0
130 Ethyl Acetate	500.0000	518.0070	3.6	50.0
131 Cyclohexanone	2500.0000	1509.2412	39.6 NT	50.0
132 Ethyl Ether	250.0000	236.1567	5.5	50.0
135 Dichlorofluoromethane	250.0000	266.3416	6.5	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
143 Isopropyl Ether	1250.0000	999.2277	20.1	50.0
145 2-Nitropropane	500.0000	369.5535	26.1 NT	50.0

flagged R due to CCF

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i Injection Date: 30-AUG-1999 08:48
Lab File ID: ux35586.d Init. Calibration Date(s): 06/07/99 06/07/99
Analysis Type: WATER Init. Calibration Times: 10:10 15:59
Lab Sample ID: 250NG-A9CC25 Method File: /chem/can/msv/a3ux3.i/V90830A.b/N82
Quant Type: ISTD

COMPOUND	$\overline{RRF}$	RF10	MIN RRF	%D	MAX %D	
80 2-Chloro-1,3-butadiene	0.587	0.618	0.010	-5.2	50.0	
81 3-Chloro-1-propene	0.174	0.154	0.010	11.8	50.0	
83 Isobutanol	0.003	0.002	0.010	39.2	50.0	<-
85 Methyl methacrylate	0.098	0.108	0.010	-10.4	50.0	
86 Methacrylonitrile	0.060	0.059	0.010	0.8	50.0	
87 Propionitrile	0.007	0.007	0.010	-5.0	50.0	<-
89 n-Butanol	0.001	0.001	0.010	5.7	50.0	<-
90 Ethyl Acetate	1.037	1.074	0.010	-3.6	50.0	
91 Cyclohexanone	0.042	0.025	0.010	39.6	50.0	
92 Ethyl Ether	0.117	0.111	0.010	5.5	50.0	
95 Dichlorofluoromethane	0.823	0.876	0.010	-6.5	50.0	
100 Isopropyl Ether	0.171	0.137	0.010	20.1	50.0	
101 2-Nitropropane	0.020	0.015	0.010	26.1	50.0	

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): UX35585 Date Analyzed: 08/30/99

Instrument ID: A3UX3 Time Analyzed: 0816

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

	EPA SAMPLE NO.	IS1(CBZ) AREA #	RT	IS2(DCB) AREA #	RT	IS3 AREA #	RT
	12 HOUR STD	138166	17.25	217279	22.55	684038	10.10
	UPPER LIMIT	276332	17.75	434558	23.05	1368076	10.60
	LOWER LIMIT	69083	16.75	108640	22.05	342019	9.60
01	D1XAJ-CHK	132477	17.24	202948	22.55	671835	10.08
02	D1XAJ-BLK	127341	17.24	201135	22.55	628983	10.09
03	RFIMW-29	139693	17.25	208081	22.55	680098	10.09
04	PM4NA	129381	17.25	198420	22.55	644939	10.09
05	CMSMW-13F	129759	17.26	202849	22.55	646299	10.08
06	CMSMW-13S	132084	17.25	209817	22.55	683826	10.10
07	RFIMW-29	123745	17.27	197139	22.56	618763	10.11
08	RFIMW-29	120835	17.26	192997	22.55	626258	10.12
09							
10							
11	CCAL 8/30/99 8:48	137008	17.25	212632	22.55	701599	10.08
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: BFB235 BFB Injection Date: 08/31/99

Instrument ID: A3UX3 BFB Injection Time: 0830

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.9
75	30.0 - 60.0% of mass 95	53.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.1 (0.2)1
174	50.0 - 120.0% of mass 95	57.2
175	5.0 - 9.0% of mass 174	3.8 (6.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	55.0 (96.2)1
177	5.0 - 9.0% of mass 176	3.6 (6.6)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	250NG-CC60	UX35608	08/31/99	0842
02	VSTD010	250NG-A9CC25	UX35609	08/31/99	0914
03	D20GV-CHK	D20GV102	UX35610	08/31/99	0946
04	D20GV-BLK	D20GV101	UX35611	08/31/99	1017
05	D20GV-CKDUP	D20GV103	UX35612	08/31/99	1049
06	TRIP BLANK	D1RME101	UX35620	08/31/99	1504
07	CMSMW-12	D1RM8102	UX35621	08/31/99	1536
08	CMSMW-14S	D1RMA102	UX35622	08/31/99	1608
09	CMSMW-39S	D1RMC102	UX35623	08/31/99	1640
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 01-Sep-1999 09:57

Calibration History

Method : /chem/can/msv/a3ux3.i/V90831A.b/N826025UX3-3.m
Start Cal Date: 07-JUN-1999 10:10 10:41
End Cal Date : 07-JUN-1999 15:59

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 2.000		
07-JUN-1999 14:55	3-IX	ux34009.d
07-JUN-1999 15:27	1-8260	ux34010.d
Cal Level: 2 , Cal Amount: 4.000		
07-JUN-1999 14:23	3-IX	ux34008.d
07-JUN-1999 11:44	1-8260	ux34003.d
Cal Level: 3 , Cal Amount: 10.000		
07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d
Cal Level: 4 , Cal Amount: 20.000		
07-JUN-1999 13:19	3-IX	ux34006.d
07-JUN-1999 10:41	1-8260	ux34001.d
Cal Level: 5 , Cal Amount: 40.000		
07-JUN-1999 12:48	3-IX	ux34005.d
07-JUN-1999 15:59	1-8260	ux34011.d

Continuing Calibration

31-AUG-1999 08:42	1-8260	ux35608.d
31-AUG-1999 09:14	3-IX	ux35609.d

Data File: /chem/can/msv/a3ux3.i/V90831A.b/ux35608.d
Report Date: 09/01/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35608.d
Analysis Type: WATER

Injection Date: 31-AUG-1999 08:42
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90831A.b/

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
0	m + p-Xylene	500.0000	417.0383	16.6	50.0
0	Xylene-o	250.0000	205.9504	17.6	50.0
1	Dichlorodifluoromethane	250.0000	266.0377	6.4	50.0
2	Chloromethane	250.0000	263.7636	5.5	50.0
3	Vinyl Chloride	250.0000	251.6570	0.7	20.0
4	Bromomethane	250.0000	154.2366	38.3	50.0
5	Chloroethane	250.0000	312.7230	25.1	50.0
6	Trichlorofluoromethane	250.0000	263.8012	5.5	50.0
9	1,1-Dichloroethene	250.0000	214.2308	14.3	20.0
10	Methylene Chloride	250.0000	212.8394	14.9	50.0
13	trans-1,2-Dichloroethene	250.0000	208.7496	16.5	50.0
15	1,1-Dichloroethane	250.0000	263.7769	5.5	50.0
17	cis-1,2-dichloroethene	250.0000	231.1593	7.5	50.0
18	Chloroform	250.0000	261.6784	4.7	20.0
19	Bromochloromethane	250.0000	215.8155	13.7	50.0
20	1,1,1-Trichloroethane	250.0000	278.4772	11.4	50.0
21	Carbon Tetrachloride	250.0000	285.7484	14.3	50.0
23	1,2-Dichloroethane	250.0000	312.3935	25.0	50.0
24	Benzene	250.0000	257.9452	3.2	50.0
26	Trichloroethene	250.0000	240.0060	4.0	50.0
27	1,2-Dichloropropane	250.0000	274.2537	9.7	20.0
28	Bromodichloromethane	250.0000	255.3653	2.1	50.0
31	cis-1,3-Dichloropropene	250.0000	258.0584	3.2	50.0
33	Toluene	250.0000	236.7395	5.3	20.0
34	trans-1,3-Dichloropropene	250.0000	254.8272	1.9	50.0
36	1,1,2-Trichloroethane	250.0000	219.1112	12.4	50.0
37	Tetrachloroethene	250.0000	203.4900	18.6	50.0
38	Dibromochloromethane	250.0000	228.1712	8.7	50.0
40	Chlorobenzene	250.0000	219.0453	12.4	50.0
41	Ethylbenzene	250.0000	213.1319	14.7	20.0
42	Xylenes (total)	750.0000	622.9887	16.9	50.0
44	Styrene	250.0000	204.7854	18.1	50.0
45	Bromoform	250.0000	176.3004	29.5	50.0
46	1,1,2,2-Tetrachloroethane	250.0000	224.8421	10.1	50.0
48	1,3-Dichlorobenzene	250.0000	217.2505	13.1	50.0
49	1,4-Dichlorobenzene	250.0000	213.6340	14.5	50.0
50	1,2-Dichlorobenzene	250.0000	209.3246	16.3	50.0
60	Dibromomethane	250.0000	228.4556	8.6	50.0
63	1,2-Dibromoethane	250.0000	224.4120	10.2	50.0

Data File: /chem/can/msv/a3ux3.i/V90831A.b/ux35608.d
Report Date: 09/01/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35608.d
Analysis Type: WATER

Injection Date: 31-AUG-1999 08:42
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90831A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
64 1,1,1,2-Tetrachloroethane	250.0000	258.2849	3.3	50.0	
65 1,2,3-Trichloropropane	250.0000	218.9285	12.4	50.0	
69 1,2-Dibromo-3-chloropropane	250.0000	173.0588	30.8	50.0	↓
74 2,2-Dichloropropane	250.0000	244.9267	2.0	50.0	
75 1,1-Dichloropropene	250.0000	237.0922	5.2	50.0	
77 1,3-Dichloropropane	250.0000	258.8282	3.5	50.0	
83 n-Propylbenzene	250.0000	254.7550	1.9	50.0	
84 Bromobenzene	250.0000	225.3186	9.9	50.0	
85 1,3,5-Trimethylbenzene	250.0000	250.0934	0.0	50.0	
86 2-Chlorotoluene	250.0000	249.7890	0.1	50.0	
87 4-Chlorotoluene	250.0000	246.7950	1.3	50.0	
88 tert-Butylbenzene	250.0000	263.2827	5.3	50.0	
89 1,2,4-Trimethylbenzene	250.0000	252.6459	1.1	50.0	
90 sec-Butylbenzene	250.0000	258.4575	3.4	50.0	
91 4-Isopropyltoluene	250.0000	254.1368	1.7	50.0	
94 n-Butylbenzene	250.0000	281.0511	12.4	50.0	
95 1,2,4-Trichlorobenzene	250.0000	195.1053	22.0	50.0	
96 Hexachlorobutadiene	250.0000	248.9363	0.4	50.0	
97 Naphthalene	250.0000	251.6879	0.7	50.0	
98 1,2,3-Trichlorobenzene	250.0000	193.9514	22.4	50.0	
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0	
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0	
106 Acetone	2500.0000	2407.2469	3.7	50.0	
107 Carbon Disulfide	250.0000	228.1143	8.8	50.0	
108 2-Butanone	2500.0000	2523.6027	0.9	50.0	
109 Vinyl Acetate	500.0000	341.3191	31.7	50.0	↓
110 4-Methyl-2-Pentanone	2500.0000	2308.8016	7.6	50.0	
111 2-Hexanone	2500.0000	2450.7482	2.0	50.0	
112 Acrolein	5000.0000	2672.1352	46.6	50.0	↓
113 Acrylonitrile	5000.0000	4865.4522	2.7	50.0	
114 2-Chloroethyl vinyl ether	1000.0000	7.8284	99.2	50.0	<-
115 Iodomethane	250.0000	154.7746	38.1	50.0	↓
116 1,4-Dichloro-2-butene	250.0000	255.7109	2.3	50.0	
117 Acetonitrile	2500.0000	2435.0376	2.6	50.0	
120 1,4-Dioxane	12500.0000	9737.7731	22.1	50.0	
122 Ethyl methacrylate	250.0000	216.9642	13.2	50.0	
126 Freon-113	250.0000	205.9258	17.6	50.0	
127 1,2-Dichloroethene (total)	500.0000	439.9089	12.0	50.0	
133 Tetrahydrofuran	250.0000	281.5384	12.6	50.0	

flagged R

Data File: /chem/can/msv/a3ux3.i/V90831A.b/ux35608.d
Report Date: 09/01/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35608.d
Analysis Type: WATER

Injection Date: 31-AUG-1999 08:42
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90831A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
134 Methyl tert-butyl ether	250.0000	200.9467	19.6	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
140 tert-Butyl Alcohol	5000.0000	4054.5466	18.9	50.0
141 Hexane	250.0000	242.0851	3.2	50.0
144 Isopropylbenzene	250.0000	237.0753	5.2	50.0
150 1,2-Dichloroethane-d4	250.0000	337.3666	34.9	50.0
151 Toluene-d8	250.0000	227.8315	8.9	50.0
152 Bromoflourobenzene	250.0000	243.6118	2.6	50.0
153 Dibromoflouromethane	250.0000	252.3121	0.9	50.0

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QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35608.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 31-AUG-1999 08:42
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90831A.b/N82

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
$	150 1,2-Dichloroethane-d4	0.166	0.224	0.010	-34.9	50.0
$	151 Toluene-d8	4.595	4.188	0.010	8.9	50.0
$	152 Bromoflourobenzene	1.482	1.444	0.010	2.6	50.0
$	153 Dibromoflouromethane	0.385	0.388	0.010	-0.9	50.0
	7 Dichlorodifluoromethane	0.427	0.454	0.010	-6.4	50.0
	8 Chloromethane	0.347	0.366	0.100	-5.5	50.0
	9 Vinyl Chloride	0.370	0.372	0.010	-0.7	20.0
	10 Bromomethane	0.253	0.156	0.010	38.3	50.0
	11 Chloroethane	0.210	0.262	0.010	-25.1	50.0
	12 Trichlorofluoromethane	0.560	0.591	0.010	-5.5	50.0
	13 1,1-Dichloroethene	0.327	0.280	0.010	14.3	20.0
	14 Methylene Chloride	0.261	0.222	0.010	14.9	50.0
	15 trans-1,2-Dichloroethene	0.361	0.302	0.010	16.5	50.0
	16 1,1-Dichloroethane	0.627	0.661	0.100	-5.5	50.0
	18 cis-1,2-dichloroethene	0.284	0.263	0.010	7.5	50.0
M	19 1,2-Dichloroethene (total)	0.323	0.282	0.010	12.6	50.0
	21 Chloroform	0.557	0.583	0.010	-4.7	20.0
	22 1,1,1-Trichloroethane	0.519	0.578	0.010	-11.4	50.0
	23 Carbon Tetrachloride	0.453	0.518	0.010	-14.3	50.0
	25 Benzene	1.003	1.035	0.010	-3.2	50.0
	26 1,2-Dichloroethane	0.187	0.234	0.010	-25.0	50.0
	27 Trichloroethene	0.402	0.386	0.010	4.0	50.0
	28 1,2-Dichloropropane	0.325	0.356	0.010	-9.7	20.0
	29 Dibromomethane	0.127	0.116	0.010	8.6	50.0
	30 Bromodichloromethane	0.420	0.429	0.010	-2.1	50.0
	31 cis-1,3-Dichloropropene	0.367	0.379	0.010	-3.2	50.0
	32 Toluene	5.173	4.899	0.010	5.3	20.0
	33 trans-1,3-Dichloropropene	1.143	1.165	0.010	-1.9	50.0
	34 1,1,2-Trichloroethane	0.653	0.573	0.010	12.4	50.0
	35 Tetrachloroethene	1.893	1.541	0.010	18.6	50.0
	37 Dibromochloromethane	1.158	1.057	0.010	8.7	50.0
	38 1,2-Dibromoethane	0.758	0.681	0.010	10.2	50.0
	39 Chlorobenzene	3.257	2.854	0.300	12.4	50.0
	41 Ethylbenzene	1.894	1.615	0.010	14.7	20.0
	42 m + p-Xylene	2.368	1.975	0.010	16.6	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35608.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 31-AUG-1999 08:42
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90831A.b/N82

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
	43 Xylene-o	2.120	1.747	0.010	17.6	50.0	
M	44 Xylenes (total)	2.169	1.899	0.010	12.4	50.0	
	45 Styrene	3.275	2.683	0.010	18.1	50.0	
	46 Bromoform	0.638	0.450	0.100	29.5	50.0	
	49 1,2,3-Trichloropropane	0.108	0.094	0.010	12.4	50.0	
	50 1,1,2,2-Tetrachloroethane	0.486	0.437	0.300	10.1	50.0	
	57 1,3-Dichlorobenzene	1.661	1.443	0.010	13.1	50.0	
	59 1,4-Dichlorobenzene	1.719	1.469	0.010	14.5	50.0	
	61 1,2-Dichlorobenzene	1.284	1.075	0.010	16.3	50.0	
	68 Acetone	0.017	0.010	0.010	3.7	50.0	
	69 Carbon Disulfide	1.062	0.969	0.010	8.8	50.0	
	70 2-Butanone	0.035	0.035	0.010	-0.9	50.0	
	71 Vinyl Acetate	0.200	0.137	0.010	31.7	50.0	
	72 4-Methyl-2-Pentanone	0.525	0.485	0.010	7.6	50.0	
	73 2-Hexanone	0.313	0.307	0.010	2.0	50.0	
	74 Acrolein	0.009	0.005	0.010	46.6	50.0	<-
	75 Acrylonitrile	0.018	0.017	0.010	2.7	50.0	
	76 2-Chloroethyl vinyl ether	0.034	0.000	0.010	99.2	50.0	<-
	77 Iodomethane	0.580	0.359	0.010	38.1	50.0	
	78 1,4-Dichloro-2-butene	0.084	0.086	0.010	-2.3	50.0	
	82 1,4-Dioxane	0.001	0.001	0.010	22.1	50.0	<-
	84 Ethyl methacrylate	0.878	0.762	0.010	13.2	50.0	
	88 Freon-113	0.442	0.364	0.010	17.6	50.0	
	93 Tetrahydrofuran	0.033	0.037	0.010	-12.6	50.0	
	94 Methyl tert-butyl ether	0.301	0.242	0.010	19.6	50.0	
	98 tert-Butyl Alcohol	0.005	0.004	0.010	18.9	50.0	<-
	99 Hexane	0.582	0.563	0.010	3.2	50.0	
	17 2,2-Dichloropropane	0.490	0.480	0.010	2.0	50.0	
	20 Bromochloromethane	0.113	0.098	0.010	13.7	50.0	
	24 1,1-Dichloropropene	0.537	0.509	0.010	5.2	50.0	
	36 1,3-Dichloropropane	1.197	1.239	0.010	-3.5	50.0	
	40 1,1,1,2-Tetrachloroethane	1.278	1.320	0.010	-3.3	50.0	
	47 Bromobenzene	0.839	0.757	0.010	9.9	50.0	
	48 Isopropylbenzene	6.556	6.217	0.010	5.2	50.0	
	51 2-Chlorotoluene	0.834	0.833	0.010	0.1	50.0	
	52 n-Propylbenzene	1.018	1.037	0.010	-1.9	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35608.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 31-AUG-1999 08:42
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90831A.b/N82

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
53 4-Chlorotoluene	0.825	0.814	0.010	1.3	50.0	
54 1,3,5-Trimethylbenzene	2.770	2.771	0.010	0.0	50.0	
55 tert-Butylbenzene	3.088	3.252	0.010	-5.3	50.0	
56 1,2,4-Trimethylbenzene	2.589	2.616	0.010	-1.1	50.0	
58 sec-Butylbenzene	4.419	4.569	0.010	-3.4	50.0	
60 4-Isopropyltoluene	3.498	3.556	0.010	-1.7	50.0	
62 n-Butylbenzene	3.585	4.031	0.010	-12.4	50.0	
63 1,2-Dibromo-3-chloropropane	0.093	0.064	0.010	30.8	50.0	
64 1,2,4-Trichlorobenzene	0.993	0.775	0.010	22.0	50.0	
65 Naphthalene	0.665	0.669	0.010	-0.7	50.0	
66 Hexachlorobutadiene	0.991	0.986	0.010	0.4	50.0	
67 1,2,3-Trichlorobenzene	0.742	0.575	0.010	22.4	50.0	
79 Acetonitrile	0.006	0.006	0.010	2.6	50.0	<-

Data File: /chem/can/msv/a3ux3.i/V90831A.b/ux35609.d
Report Date: 09/01/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35609.d
Analysis Type: WATER

Injection Date: 31-AUG-1999 09:14
Lab Sample ID: 250NG-A9CC25
Method File: /chem/can/msv/a3ux3.i/V90831A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0
118 2-Chloro-1,3-butadiene	250.0000	302.4053	21.0	50.0
119 3-Chloro-1-propene	250.0000	228.9665	8.4	50.0
121 Isobutanol	5000.0000	3647.2584	27.1	50.0
123 Methyl methacrylate	250.0000	277.9022	11.2	50.0
124 Methacrylonitrile	250.0000	263.7545	5.5	50.0
125 Propionitrile	500.0000	501.3090	0.3	50.0
129 n-Butanol	5000.0000	4215.4141	15.7	50.0
130 Ethyl Acetate	500.0000	584.6557	16.9	50.0
131 Cyclohexanone	2500.0000	1382.4161	44.7	50.0
132 Ethyl Ether	250.0000	244.9441	2.0	50.0
135 Dichlorofluoromethane	250.0000	282.3484	12.9	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
143 Isopropyl Ether	1250.0000	1146.5473	8.3	50.0
145 2-Nitropropane	500.0000	406.5340	18.7	50.0

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QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i Injection Date: 31-AUG-1999 09:14
Lab File ID: ux35609.d Init. Calibration Date(s): 06/07/99 06/07/99
Analysis Type: WATER Init. Calibration Times: 10:10 15:59
Lab Sample ID: 250NG-A9CC25 Method File: /chem/can/msv/a3ux3.i/V90831A.b/N82
Quant Type: ISTD

COMPOUND	$\overline{RRF}$	RF10	MIN RRF	%D	MAX %D	
80 2-Chloro-1,3-butadiene	0.587	0.711	0.010	-21.0	50.0	
81 3-Chloro-1-propene	0.174	0.160	0.010	8.4	50.0	
83 Isobutanol	0.003	0.002	0.010	27.1	50.0	<-
85 Methyl methacrylate	0.098	0.109	0.010	-11.2	50.0	
86 Methacrylonitrile	0.060	0.063	0.010	-5.5	50.0	
87 Propionitrile	0.007	0.007	0.010	-0.3	50.0	<-
89 n-Butanol	0.001	NT 0.001	0.010	15.7	50.0	<-
90 Ethyl Acetate	1.037	1.212	0.010	-16.9	50.0	
91 Cyclohexanone	0.042	NT 0.023	0.010	44.7	50.0	
92 Ethyl Ether	0.117	0.115	0.010	2.0	50.0	
95 Dichlorofluoromethane	0.823	0.929	0.010	-12.9	50.0	
100 Isopropyl Ether	0.171	0.157	0.010	8.3	50.0	
101 2-Nitropropane	0.020	NT 0.016	0.010	18.7	50.0	

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): UX35608 Date Analyzed: 08/31/99

Instrument ID: A3UX3 Time Analyzed: 0842

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

		IS1(CBZ) AREA #	RT	IS2(DCB) AREA #	RT	IS3 AREA #	RT
	12 HOUR STD	140033	17.26	218279	22.55	696468	10.09
	UPPER LIMIT	280066	17.76	436558	23.05	1392936	10.59
	LOWER LIMIT	70016	16.76	109140	22.05	348234	9.59
	EPA SAMPLE NO.						
01	D20GV-CHK	132615	17.26	205813	22.55	671448	10.09
02	D20GV-BLK	121229	17.25	191253	22.55	607926	10.10
03	D20GV-CKDUP	123154	17.24	184458	22.55	634279	10.08
04	TRIP BLANK	133888	17.29	214772	22.57	665307	10.12
05	CMSMW-12	132533	17.28	205254	22.56	658130	10.10
06	CMSMW-14S	125141	17.28	195828	22.56	626222	10.12
07	CMSMW-39S	120009	17.26	188145	22.56	620215	10.11
08							
09							
10	CCAL 8/31/99 9:14	127384	17.25	201444	22.56	635342	10.10
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: BFB236 BFB Injection Date: 09/01/99

Instrument ID: A3UX3 BFB Injection Time: 0814

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.0
75	30.0 - 60.0% of mass 95	52.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.1 (0.2)1
174	50.0 - 120.0% of mass 95	56.5
175	5.0 - 9.0% of mass 174	4.0 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	55.0 (97.4)1
177	5.0 - 9.0% of mass 176	3.5 (6.4)2

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	250NG-CC60	UX35631	09/01/99	0826
02	VSTD010	250NG-A9CC25	UX35632	09/01/99	0857
03	D220G-CHK	D220G102	UX35633	09/01/99	0929
04	D220G-BLK	D220G101	UX35634	09/01/99	1001
05	D220G-CKDUP	D220G103	UX35635	09/01/99	1033
06	ERB-1	D1RMD101	UX35636	09/01/99	1105
07					
08					
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20					
21					
22					

Report Date: 02-Sep-1999 08:09

Calibration History

Method : /chem/can/msv/a3ux3.i/V90901A.b/N826025UX3-3.m
Start Cal Date: 07-JUN-1999 10:10
End Cal Date : 07-JUN-1999 15:59

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 2.000		
07-JUN-1999 14:55	3-IX	ux34009.d
07-JUN-1999 15:27	1-8260	ux34010.d
Cal Level: 2 , Cal Amount: 4.000		
07-JUN-1999 14:23	3-IX	ux34008.d
07-JUN-1999 11:44	1-8260	ux34003.d
Cal Level: 3 , Cal Amount: 10.000		
07-JUN-1999 13:51	3-IX	ux34007.d
07-JUN-1999 11:13	1-8260	ux34002.d
Cal Level: 4 , Cal Amount: 20.000		
07-JUN-1999 13:19	3-IX	ux34006.d
07-JUN-1999 10:41	1-8260	ux34001.d
Cal Level: 5 , Cal Amount: 40.000		
07-JUN-1999 12:48	3-IX	ux34005.d
07-JUN-1999 15:59	1-8260	ux34011.d

Continuing Calibration

01-SEP-1999 08:26	1-8260	ux35631.d
01-SEP-1999 08:57	3-IX	ux35632.d

Data File: /chem/can/msv/a3ux3.i/V90901A.b/ux35631.d
Report Date: 09/02/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35631.d
Analysis Type: WATER

Injection Date: 01-SEP-1999 08:26
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90901A.b/

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
0	m + p-Xylene	500.0000	418.7284	16.3	50.0
0	Xylene-o	250.0000	208.9719	16.4	50.0
1	Dichlorodifluoromethane	250.0000	284.3628	13.7	50.0
2	Chloromethane	250.0000	266.2682	6.5	50.0
3	Vinyl Chloride	250.0000	256.9615	2.8	20.0
4	Bromomethane	250.0000	156.8164	37.3	50.0
5	Chloroethane	250.0000	287.5571	15.0	50.0
6	Trichlorofluoromethane	250.0000	266.8105	6.7	50.0
9	1,1-Dichloroethene	250.0000	210.3778	15.8	20.0
10	Methylene Chloride	250.0000	256.4112	2.6	50.0
13	trans-1,2-Dichloroethene	250.0000	203.2730	18.7	50.0
15	1,1-Dichloroethane	250.0000	263.8424	5.5	50.0
17	cis-1,2-dichloroethene	250.0000	224.7690	10.1	50.0
18	Chloroform	250.0000	261.5379	4.6	20.0
19	Bromochloromethane	250.0000	235.6004	5.8	50.0
20	1,1,1-Trichloroethane	250.0000	276.5643	10.6	50.0
21	Carbon Tetrachloride	250.0000	288.3892	15.4	50.0
23	1,2-Dichloroethane	250.0000	320.6374	28.3	50.0
24	Benzene	250.0000	259.0653	3.6	50.0
26	Trichloroethene	250.0000	247.6059	1.0	50.0
27	1,2-Dichloropropane	250.0000	282.9857	13.2	20.0
28	Bromodichloromethane	250.0000	257.2018	2.9	50.0
31	cis-1,3-Dichloropropene	250.0000	268.5620	7.4	50.0
33	Toluene	250.0000	233.0167	6.8	20.0
34	trans-1,3-Dichloropropene	250.0000	267.6444	7.1	50.0
36	1,1,2-Trichloroethane	250.0000	221.4113	11.4	50.0
37	Tetrachloroethene	250.0000	202.9827	18.8	50.0
38	Dibromochloromethane	250.0000	233.9899	6.4	50.0
40	Chlorobenzene	250.0000	217.8640	12.9	50.0
41	Ethylbenzene	250.0000	214.6587	14.1	20.0
42	Xylenes (total)	750.0000	627.7003	16.3	50.0
44	Styrene	250.0000	209.2460	16.3	50.0
45	Bromoform	250.0000	182.9906	26.8	50.0
46	1,1,2,2-Tetrachloroethane	250.0000	235.2893	5.9	50.0
48	1,3-Dichlorobenzene	250.0000	219.0047	12.4	50.0
49	1,4-Dichlorobenzene	250.0000	217.0817	13.2	50.0
50	1,2-Dichlorobenzene	250.0000	213.9557	14.4	50.0
60	Dibromomethane	250.0000	238.5339	4.6	50.0
63	1,2-Dibromoethane	250.0000	232.5388	7.0	50.0

Data File: /chem/can/msv/a3ux3.i/V90901A.b/ux35631.d
Report Date: 09/02/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35631.d
Analysis Type: WATER

Injection Date: 01-SEP-1999 08:26
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90901A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
64 1,1,1,2-Tetrachloroethane	250.0000	254.0998	1.6	50.0	
65 1,2,3-Trichloropropane	250.0000	224.4494	10.2	50.0	
69 1,2-Dibromo-3-chloropropane	250.0000	169.1977	32.3	50.0	↓
74 2,2-Dichloropropane	250.0000	303.3707	21.3	50.0	
75 1,1-Dichloropropene	250.0000	286.4735	14.6	50.0	
77 1,3-Dichloropropane	250.0000	263.8189	5.5	50.0	
83 n-Propylbenzene	250.0000	239.4600	4.2	50.0	
84 Bromobenzene	250.0000	217.6563	12.9	50.0	
85 1,3,5-Trimethylbenzene	250.0000	239.3235	4.3	50.0	
86 2-Chlorotoluene	250.0000	237.5935	5.0	50.0	
87 4-Chlorotoluene	250.0000	231.7295	7.3	50.0	
88 tert-Butylbenzene	250.0000	247.8949	0.8	50.0	
89 1,2,4-Trimethylbenzene	250.0000	241.0995	3.6	50.0	
90 sec-Butylbenzene	250.0000	240.5971	3.8	50.0	
91 4-Isopropyltoluene	250.0000	239.4855	4.2	50.0	
94 n-Butylbenzene	250.0000	261.5448	4.6	50.0	
95 1,2,4-Trichlorobenzene	250.0000	184.3282	26.3 NT	50.0	
96 Hexachlorobutadiene	250.0000	226.1845	9.5	50.0	
97 Naphthalene	250.0000	251.0940	0.4	50.0	
98 1,2,3-Trichlorobenzene	250.0000	186.2864	25.5 NT	50.0	
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0	
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0	
106 Acetone	2500.0000	2873.8514	15.0	50.0	
107 Carbon Disulfide	250.0000	232.4180	7.0	50.0	
108 2-Butanone	2500.0000	2941.1978	17.6	50.0	
109 Vinyl Acetate	500.0000	685.1566	37.0	50.0	↑
110 4-Methyl-2-Pentanone	2500.0000	2418.6194	3.3	50.0	
111 2-Hexanone	2500.0000	2629.4086	5.2	50.0	
112 Acrolein	5000.0000	5756.8527	15.1	50.0	
113 Acrylonitrile	5000.0000	5085.5837	1.7	50.0	
114 2-Chloroethyl vinyl ether	1000.0000	1.0126	99.9 NT	50.0	<-
115 Iodomethane	250.0000	174.2085	30.3	50.0	↓
116 1,4-Dichloro-2-butene	250.0000	272.0114	8.8	50.0	
117 Acetonitrile	2500.0000	2675.5542	7.0	50.0	
120 1,4-Dioxane	12500.0000	10646.9231	14.8	50.0	
122 Ethyl methacrylate	250.0000	233.9630	6.4	50.0	
126 Freon-113	250.0000	205.6025	17.8	50.0	
127 1,2-Dichloroethene (total)	500.0000	428.0420	14.4	50.0	
133 Tetrahydrofuran	250.0000	300.0245	20.0	50.0	

Data File: /chem/can/msv/a3ux3.i/V90901A.b/ux35631.d
Report Date: 09/02/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35631.d
Analysis Type: WATER

Injection Date: 01-SEP-1999 08:26
Lab Sample ID: 250NG-CC60
Method File: /chem/can/msv/a3ux3.i/V90901A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
134 Methyl tert-butyl ether	250.0000	221.3925	11.4	50.0
137 Fluorobenzene	250.0000	250.0000	0.0	50.0
140 tert-Butyl Alcohol	5000.0000	4467.4946	10.7	50.0
141 Hexane	250.0000	249.4701	0.2	50.0
144 Isopropylbenzene	250.0000	225.9823	9.6	50.0
150 1,2-Dichloroethane-d4	250.0000	323.8679	29.5	50.0
151 Toluene-d8	250.0000	225.6226	9.8	50.0
152 Bromoflourobenzene	250.0000	243.6274	2.5	50.0
153 Dibromoflouromethane	250.0000	247.3261	1.1	50.0

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QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35631.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 01-SEP-1999 08:26
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90901A.b/N82

	COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D
$	150 1,2-Dichloroethane-d4	0.166	0.215	0.010	-29.5	50.0
$	151 Toluene-d8	4.595	4.147	0.010	9.8	50.0
$	152 Bromoflourobenzene	1.482	1.444	0.010	2.5	50.0
$	153 Dibromoflouromethane	0.385	0.381	0.010	1.1	50.0
	7 Dichlorodifluoromethane	0.427	0.486	0.010	-13.7	50.0
	8 Chloromethane	0.347	0.370	0.100	-6.5	50.0
	9 Vinyl Chloride	0.370	0.380	0.010	-2.8	20.0
	10 Bromomethane	0.253	0.159	0.010	37.3	50.0
	11 Chloroethane	0.210	0.241	0.010	-15.0	50.0
	12 Trichlorofluoromethane	0.560	0.597	0.010	-6.7	50.0
	13 1,1-Dichloroethene	0.327	0.275	0.010	15.8	20.0
	14 Methylene Chloride	0.261	0.268	0.010	-2.6	50.0
	15 trans-1,2-Dichloroethene	0.361	0.294	0.010	18.7	50.0
	16 1,1-Dichloroethane	0.627	0.661	0.100	-5.5	50.0
	18 cis-1,2-dichloroethene	0.284	0.256	0.010	10.1	50.0
M	19 1,2-Dichloroethene (total)	0.323	0.275	0.010	14.9	50.0
	21 Chloroform	0.557	0.582	0.010	-4.6	20.0
	22 1,1,1-Trichloroethane	0.519	0.574	0.010	-10.6	50.0
	23 Carbon Tetrachloride	0.453	0.523	0.010	-15.4	50.0
	25 Benzene	1.003	1.039	0.010	-3.6	50.0
	26 1,2-Dichloroethane	0.187	0.240	0.010	-28.3	50.0
	27 Trichloroethene	0.402	0.398	0.010	1.0	50.0
	28 1,2-Dichloropropane	0.325	0.368	0.010	-13.2	20.0
	29 Dibromomethane	0.127	0.121	0.010	4.6	50.0
	30 Bromodichloromethane	0.420	0.432	0.010	-2.9	50.0
	31 cis-1,3-Dichloropropene	0.367	0.394	0.010	-7.4	50.0
	32 Toluene	5.173	4.822	0.010	6.8	20.0
	33 trans-1,3-Dichloropropene	1.143	1.224	0.010	-7.1	50.0
	34 1,1,2-Trichloroethane	0.653	0.579	0.010	11.4	50.0
	35 Tetrachloroethene	1.893	1.537	0.010	18.8	50.0
	37 Dibromochloromethane	1.158	1.084	0.010	6.4	50.0
	38 1,2-Dibromoethane	0.758	0.705	0.010	7.0	50.0
	39 Chlorobenzene	3.257	2.838	0.300	12.9	50.0
	41 Ethylbenzene	1.894	1.626	0.010	14.1	20.0
	42 m + p-Xylene	2.368	1.983	0.010	16.3	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35631.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 01-SEP-1999 08:26
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90901A.b/N82

	COMPOUND	$\overline{RRF}$	RF10	MIN RRF	%D	MAX %D	
	43 Xylene-o	2.120	1.772	0.010	16.4	50.0	
M	44 Xylenes (total)	2.169	1.913	0.010	11.8	50.0	
	45 Styrene	3.275	2.741	0.010	16.3	50.0	
	46 Bromoform	0.638	0.467	0.100	26.8	50.0	
	49 1,2,3-Trichloropropane	0.108	0.097	0.010	10.2	50.0	
	50 1,1,2,2-Tetrachloroethane	0.486	0.457	0.300	5.9	50.0	
	57 1,3-Dichlorobenzene	1.661	1.455	0.010	12.4	50.0	
	59 1,4-Dichlorobenzene	1.719	1.492	0.010	13.2	50.0	
	61 1,2-Dichlorobenzene	1.284	1.099	0.010	14.4	50.0	
	68 Acetone	0.017	0.019	0.010	-15.0	50.0	
	69 Carbon Disulfide	1.062	0.987	0.010	7.0	50.0	
	70 2-Butanone	0.035	0.041	0.010	-17.6	50.0	
	71 Vinyl Acetate	0.200	0.274	0.010	-37.0	50.0	
	72 4-Methyl-2-Pentanone	0.525	0.508	0.010	3.3	50.0	
	73 2-Hexanone	0.313	0.329	0.010	-5.2	50.0	
	74 Acrolein	0.009	0.011	0.010	-15.1	50.0	<-
	75 Acrylonitrile	0.018	0.018	0.010	-1.7	50.0	
	76 2-Chloroethyl vinyl ether	0.034	NT 0.000	0.010	99.9	50.0	<-
	77 Iodomethane	0.580	0.404	0.010	30.3	50.0	
	78 1,4-Dichloro-2-butene	0.084	0.091	0.010	-8.8	50.0	
	82 1,4-Dioxane	0.001	NT 0.001	0.010	14.8	50.0	<-
	84 Ethyl methacrylate	0.878	0.822	0.010	6.4	50.0	
	88 Freon-113	0.442	0.364	0.010	17.8	50.0	
	93 Tetrahydrofuran	0.033	NT 0.039	0.010	-20.0	50.0	
	94 Methyl tert-butyl ether	0.301	0.267	0.010	11.4	50.0	
	98 tert-Butyl Alcohol	0.005	NT 0.004	0.010	10.7	50.0	<-
	99 Hexane	0.582	0.580	0.010	0.2	50.0	
	17 2,2-Dichloropropane	0.490	0.595	0.010	-21.3	50.0	
	20 Bromochloromethane	0.113	0.107	0.010	5.8	50.0	
	24 1,1-Dichloropropene	0.537	0.615	0.010	-14.6	50.0	
	36 1,3-Dichloropropane	1.197	1.263	0.010	-5.5	50.0	
	40 1,1,1,2-Tetrachloroethane	1.278	1.299	0.010	-1.6	50.0	
	47 Bromobenzene	0.839	0.731	0.010	12.9	50.0	
	48 Isopropylbenzene	6.556	5.926	0.010	9.6	50.0	
	51 2-Chlorotoluene	0.834	0.792	0.010	5.0	50.0	
	52 n-Propylbenzene	1.018	0.975	0.010	4.2	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i
Lab File ID: ux35631.d
Analysis Type: WATER
Lab Sample ID: 250NG-CC60
Quant Type: ISTD

Injection Date: 01-SEP-1999 08:26
Init. Calibration Date(s): 06/07/99 06/07/99
Init. Calibration Times: 10:10 15:59
Method File: /chem/can/msv/a3ux3.i/V90901A.b/N82

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
53 4-Chlorotoluene	0.825	0.764	0.010	7.3	50.0	
54 1,3,5-Trimethylbenzene	2.770	2.652	0.010	4.3	50.0	
55 tert-Butylbenzene	3.088	3.062	0.010	0.8	50.0	
56 1,2,4-Trimethylbenzene	2.589	2.497	0.010	3.6	50.0	
58 sec-Butylbenzene	4.419	4.253	0.010	3.8	50.0	
60 4-Isopropyltoluene	3.498	3.351	0.010	4.2	50.0	
62 n-Butylbenzene	3.585	3.751	0.010	-4.6	50.0	
63 1,2-Dibromo-3-chloropropane	0.093	0.063	0.010	32.3	50.0	
64 1,2,4-Trichlorobenzene	0.993	0.732	0.010	26.3	50.0	
65 Naphthalene	0.665	0.668	0.010	-0.4	50.0	
66 Hexachlorobutadiene	0.991	0.896	0.010	9.5	50.0	
67 1,2,3-Trichlorobenzene	0.742	0.553	0.010	25.5	50.0	
79 Acetonitrile	0.006	0.007	0.010	-7.0	50.0	<-

Data File: /chem/can/msv/a3ux3.i/V90901A.b/ux35632.d
Report Date: 09/02/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a3ux3.i
Lab File ID: ux35632.d
Analysis Type: WATER

Injection Date: 01-SEP-1999 08:57
Lab Sample ID: 250NG-A9CC25
Method File: /chem/can/msv/a3ux3.i/V90901A.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
101 Chlorobenzene-d5	250.0000	250.0000	0.0	50.0	
102 1,4-Dichlorobenzene-d4	250.0000	250.0000	0.0	50.0	
118 2-Chloro-1,3-butadiene	250.0000	259.7155	3.9	50.0	
119 3-Chloro-1-propene	250.0000	213.9356	14.4	50.0	
121 Isobutanol	5000.0000	3713.5195	25.7	50.0	
123 Methyl methacrylate	250.0000	275.6636	10.3	50.0	
124 Methacrylonitrile	250.0000	263.2841	5.3	50.0	
125 Propionitrile	500.0000	504.3536	0.9	50.0	
129 n-Butanol	5000.0000	4184.8537	16.3	50.0	
130 Ethyl Acetate	500.0000	507.8274	1.6	50.0	
131 Cyclohexanone	2500.0000	739.9439	70.4 NT	50.0	<-
132 Ethyl Ether	250.0000	232.3742	7.1	50.0	
135 Dichlorofluoromethane	250.0000	264.9256	6.0	50.0	
137 Fluorobenzene	250.0000	250.0000	0.0	50.0	
143 Isopropyl Ether	1250.0000	976.7715	21.9	50.0	
145 2-Nitropropane	500.0000	354.0206	29.2 NT	50.0	

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QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a3ux3.i Injection Date: 01-SEP-1999 08:57
Lab File ID: ux35632.d Init. Calibration Date(s): 06/07/99 06/07/99
Analysis Type: WATER Init. Calibration Times: 10:10 15:59
Lab Sample ID: 250NG-A9CC25 Method File: /chem/can/msv/a3ux3.i/V90901A.b/N82
Quant Type: ISTD

COMPOUND	RRF	RF10	MIN RRF	%D	MAX %D	
80 2-Chloro-1,3-butadiene	0.587	0.610	0.010	-3.9	50.0	
81 3-Chloro-1-propene	0.174	0.149	0.010	14.4	50.0	
83 Isobutanol	0.003	0.002	0.010	25.7	50.0	<-
85 Methyl methacrylate	0.098	0.108	0.010	-10.3	50.0	
86 Methacrylonitrile	0.060	0.063	0.010	-5.3	50.0	
87 Propionitrile	0.007	0.007	0.010	-0.9	50.0	<-
89 n-Butanol	0.001	0.001	0.010	16.3	50.0	<-
90 Ethyl Acetate	1.037	1.053	0.010	-1.6	50.0	
91 Cyclohexanone	0.042	0.012	0.010	70.4	50.0	<-
92 Ethyl Ether	0.117	0.109	0.010	7.1	50.0	
95 Dichlorofluoromethane	0.823	0.872	0.010	-6.0	50.0	
100 Isopropyl Ether	0.171	0.134	0.010	21.9	50.0	
101 2-Nitropropane	0.020	0.014	0.010	29.2	50.0	

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): UX35631 Date Analyzed: 09/01/99

Instrument ID: A3UX3 Time Analyzed: 0826

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

		IS1(CBZ) AREA #	RT	IS2(DCB) AREA #	RT	IS3 AREA #	RT
	12 HOUR STD	132684	17.27	208924	22.55	647284	10.10
	UPPER LIMIT	265368	17.77	417848	23.05	1294568	10.60
	LOWER LIMIT	66342	16.77	104462	22.05	323642	9.60
	EPA SAMPLE NO.						
01	D220G-CHK	133096	17.24	206611	22.54	670497	10.08
02	D220G-BLK	128699	17.26	205905	22.55	645453	10.09
03	D220G-CKDUP	123737	17.25	191687	22.55	633556	10.10
04	ERB-1	110772	17.25	165899	22.55	537523	10.09
05							
06							
07							
08	CCAL 9/1/99 8:57	134834	17.26	210246	22.55	666263	10.10
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA
SDG Number: H25128

Matrix: (soil/water) WATER
Lab Sample ID: A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL
Work Order: D1XAJ101
Dilution factor: 1
Moisture %: NA
Date Received: 08/25/99
Date Extracted: 08/30/99
Date Analyzed: 08/30/99
QC Batch: 9243214

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
75-05-8	Acetonitrile	100	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	3-Chloropropene	10	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/25/99
Work Order: D1XAJ101 Date Extracted:08/30/99
Dilution factor: 1 Date Analyzed: 08/30/99
Moisture %:NA

QC Batch: 9243214

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	10	U
78-83-1	Isobutyl alcohol	500	U
126-98-7	Methacrylonitrile	20	U
75-09-2	Methylene chloride	0.64	J
78-93-3	Methyl ethyl ketone	10	U
80-62-6	Methyl methacrylate	1.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
107-12-0	Propionitrile	100	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	1.0	U
136777-61-2	m-Xylene & p-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID:A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL | Date Received: 08/25/99
Work Order: D1XAJ101 | Date Extracted:08/30/99
Dilution factor: 1 | Date Analyzed: 08/30/99
Moisture %:NA

QC Batch: 9243214

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
95-47-6	o-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I010000 136
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D20GV101 Date Extracted:08/31/99
Dilution factor: 1 Date Analyzed: 08/31/99
Moisture %:NA

QC Batch: 9244136

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
75-05-8	Acetonitrile	100	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	3-Chloropropene	10	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID:A9I010000 136
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL | Date Received: 08/26/99
Work Order: D20GV10[illegible] | Date Extracted:08/31/99
Dilution factor: 1 | Date Analyzed: 08/31/99
Moisture %:NA

QC Batch: 9244136

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	10	U
78-83-1	Isobutyl alcohol	500	U
126-98-7	Methacrylonitrile	20	U
75-09-2	Methylene chloride	0.26	J
78-93-3	Methyl ethyl ketone	10	U
80-62-6	Methyl methacrylate	1.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
107-12-0	Propionitrile	100	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	1.0	U
136777-61-2	m-Xylene & p-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I010000 136
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D20GV101 Date Extracted:08/31/99
Dilution factor: 1 Date Analyzed: 08/31/99
Moisture %:NA

QC Batch: 9244136

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
95-47-6	o-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I020000 137
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D220G101 Date Extracted:09/01/99
Dilution factor: 1 Date Analyzed: 09/01/99
Moisture %:NA

QC Batch: 9245137

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
75-05-8	Acetonitrile	100	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	3-Chloropropene	10	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID: A9I020000 137
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL | Date Received: 08/26/99
Work Order: D220G101 | Date Extracted: 09/01/99
Dilution factor: 1 | Date Analyzed: 09/01/99
Moisture %: NA

QC Batch: 9245137

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	10	U
78-83-1	Isobutyl alcohol	500	U
126-98-7	Methacrylonitrile	20	U
75-09-2	Methylene chloride	2.0	
78-93-3	Methyl ethyl ketone	10	U
80-62-6	Methyl methacrylate	1.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
107-12-0	Propionitrile	100	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	1.0	U
136777-61-2	m-Xylene & p-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I020000 137
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D220G101 Date Extracted:09/01/99
Dilution factor: 1 Date Analyzed: 09/01/99
Moisture %:NA

QC Batch: 9245137

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
95-47-6	o-Xylene	1.0	U

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9H310000 214
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/25/99
Work Order: D1XAJ102 Date Extracted:08/30/99
Dilution factor: 1 Date Analyzed: 08/30/99
Moisture %:NA

QC Batch: 9243214

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.4	
108-90-7	Chlorobenzene	3.8	
75-35-4	1,1-Dichloroethene	3.8	
108-88-3	Toluene	4.0	
79-01-6	Trichloroethene	4.0	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I010000 136
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D20GV102 Date Extracted:08/31/99
Dilution factor: 1 Date Analyzed: 08/31/99
Moisture %:NA

QC Batch: 9244136

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.4	
108-90-7	Chlorobenzene	3.9	
75-35-4	1,1-Dichloroethene	3.8	
108-88-3	Toluene	4.1	
79-01-6	Trichloroethene	4.1	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I010000 136
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D20GV103 Date Extracted:08/31/99
Dilution factor: 1 Date Analyzed: 08/31/99
Moisture %:NA

QC Batch: 9244136

Client Sample Id: DUPLICATE CHECK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.4	
108-90-7	Chlorobenzene	3.8	
75-35-4	1,1-Dichloroethene	3.9	
108-88-3	Toluene	4.1	
79-01-6	Trichloroethene	4.1	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I020000 137
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D220G102 Date Extracted:09/01/99
Dilution factor: 1 Date Analyzed: 09/01/99
Moisture %:NA

QC Batch: 9245137

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.3	
108-90-7	Chlorobenzene	3.7	
75-35-4	1,1-Dichloroethene	3.7	
108-88-3	Toluene	4.0	
79-01-6	Trichloroethene	4.0	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I020000 137
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/26/99
Work Order: D220G103 Date Extracted:09/01/99
Dilution factor: 1 Date Analyzed: 09/01/99
Moisture %:NA

QC Batch: 9245137

Client Sample Id: DUPLICATE CHECK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.3	
108-90-7	Chlorobenzene	3.8	
75-35-4	1,1-Dichloroethene	3.8	
108-88-3	Toluene	4.0	
79-01-6	Trichloroethene	4.1	

PARSONS ENGINEERING SCIENCE, INC.
MATRIX SPIKE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9H250128 001
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL Date Received: 08/24/99
Work Order: D1PVN103 Date Extracted:08/30/99
Dilution factor: 1 Date Analyzed: 08/30/99
Moisture %:NA

QC Batch: 9243214

Client Sample Id: RFIMW-29

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	11	
108-90-7	Chlorobenzene	9.2	
75-35-4	1,1-Dichloroethene	9.1	
108-88-3	Toluene	9.6	
79-01-6	Trichloroethene	9.7	

UX3

Batch # _____

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

25ml Sp

Date : 6/7/99

(A)

Column	BFB	Analysis	Purge & Trap
Type: DB624	100 °C for 0.1 min	40 °C for 2 min	Trap: Y3000
Length: 75 m	to 220 °C @ 20 °C/min	to 150 °C @ 6 °C/min	Purge: 11 min
I.D. 0.53 mm	hold 1 min	to 220 °C @ 25 °C/min	Desorb: 2 min @ 250 °C
Flow rate: 15 ml/min		hold 220 °C min	Bake: 6 (min) min @ 260 °C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		BFB161	50 mg		Initial (9:50)	[illegible]	[illegible]
9	Vol Std		UX34000	1000 mg	V6085 V6091 V6094 V6087 V6088 V6093 V6102 V6095 V6096	(A)		
10			01	500 mg		V90607-3	[illegible]	
11			02	250 mg			[illegible]	
12			03	100 mg			[illegible]	
13			04	25 mg		(A)		
14	App IV Std		05	1000 mg	V6085 V6092	V90607-3	[illegible]	
15			06	500 mg			[illegible]	
16			07	250 mg			[illegible]	
1			08	100 mg			[illegible]	
2			09	50 mg			[illegible]	
3	Vol Std		10	250 mg	V6085 V6091 V6094 V6087 V6088 V6093 V6102 V6095 V6096		[illegible]	
4			11	1000 mg			[illegible]	

300

000008

UX3 ms# 9243067

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

MZ

Date : 8/30/99

Batch # 9243214

Column
Type: DB624
Length: 75 m
I.D. 0.53 mm
Flow rate: 15 mL/min

BFB
10°C for 2 min
to 220°C @ 8°C/min
hold 1 min

Analysis
40°C for 2 min
to 150°C @ 6°C/min
hold 220°C @ 25°C/min

Purge & Trap
Trap: VOCARB 3000
Purge: 11 min
Desorb: 2 min @ 250°C
Bake: 6 (min) min @ 260°C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	GFB		GFB234	5ml		Init Cal. (8:04)	MZ	
9	VBSTD		UX35585	25ml		VBX1607-3	OK	
10	Quan IV Std		586	25ml		VBX1623	OK	
11	Blank	DIXAJ102	587	10ml			OK	
12	VBLK	DIXAJ101	588	25ml/25ml			OK	
13	DIRXL-101		589	1	A9H27K03		OK	
14	DILLW-101	E	55K	0.25ml/25ml	A9H27K03	Diffusivity Tune	OK	
15	DILLW-101	E	591	1.25ml/25ml		Trans	OK	
16	DILMN-101	E	592	25ml/25ml		Dec-Hexachloro	OK	
1	DIMDN-104		593	1ml/25ml	A9H27K05	Trans	OK	
2	DIMDR-102		594	25ml/25ml			OK	
3	DIPYN-102	E	595	1	A9H25121X		OK	
4	DIFZ4-102	E	59K	1ml/25ml		Trans	OK	
5	DIFXG-102	E	59?	1ml/25ml		Trans	OK	
6	DIFZF-102	E	59?	5ml/25ml		Trans	MZ	
7	DIRLZ-101		5??	25ml/25ml	A9H27K11		OK	
8	DIRL3-101		600	0.75ml/25ml			OK	
9	DIRKO-101		601	12ml/25ml	A9H27K05	Trans	OK	
10	DIRL2-101		602	25ml/25ml	A9H27K05	35 T	-	
11	DIRL3-101		603				IN	
12	DIRK4-101		604				OK	
13	DIVXV-101		605		A9H27K10		OK	
14	DIPYN-MS		606	25ml/25ml			OK	
15	DIPYN-BSD		607	1			OK	

301

24/10

UX3 QK 9244134

Batch # MZ 9244136

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

MZ/QK

Date : 8/31/99

Column	BFB	Analysis	Purge & Trap
Type: DR624	100 °C for 0.1 min	40 °C for 2 min	Trap: V3000
Length: 75 m	to 220 °C @ 30 °C/min	to 150 °C @ 6 °C/min	Purge: 11 min
I.D. 0.53 mm	hold 1 min	to 220 °C @ 25 °C/min hold ___ min	Desorb: 2 min @ 250 °C
Flow rate: 15 mL/min			Bake: 6 (min) min @ 260 °C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		BFB235	50 m		Suicide (8:30) OK	[illegible]	[illegible]
9	Vol Std		UX35608	250 m		V906073 OK		
10	Aug IV Std		609	250 m		V906073 OK		
11	Check	~~D20AR102~~ D20BV102	610	100 m		OK		
12	VBLK	~~D20AR101~~ D20BV101	611	25 mL/25 mL		OK		
13	Check Dup	~~D20AR103~~ D20BV103	612	100 m		OK		
D 14	DIMGL-101	QK E	613	25 mL/25 mL	A9H230114	OK		
15	DIT65-101	E	614		A9H270174	OK		
16	DIT66-101	E	615	5 mL/25 mL		OK		
1	DIT6B-101	E	616	25 mL/25 mL		OK		
2	DIT6M-101	E	617	5 mL/25 mL		OK		
3	DIRK2-101	MZ	618	25 mL/25 mL	A9H270105	OK		
4	DIRMD-101	E	619		A9H270119	Q 12.5 mL Chloroform		
D 5	DIRME-101	E	620			OK		
D 6	DIRM8-102	E	621	2 mL/25 mL		Diluted to Joanne OK		
D 7	DIRMA-102	E	622	5 mL/25 mL		Joanne OK		
D 8	DIRMC-102	E	623	5 mL/25 mL		Joanne OK		
9	DIV8F-101	QK E	624	0.5 mL/25 mL	A9H270313	OK		
10	DIV8J-101	E	625	25 mL/25 mL		OK		
11	DIV8E-101	E	626			OK		
12	DIV60-101	E	627			OK		
13	DIV8K-101	E	628	10 mL/25 mL		Joanne OK		
D 14	DIVX1-101	E	629	25 mL/25 mL	A9H270212	OK		
15	DIVX2-101	E	630	0.015 mL/25 mL		OK		

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UX3 MZ 9245137

Batch # QK 9245139

Quanterra - North Canton
GC/MS VOA Run Log
Temperature Program

MZ/QK

Date : 9/1/99

Column	BFB	Analysis	Purge & Trap
Type: DB624	100 °C for 0.1 min	40 °C for 2 min	Trap: V3000
Length: 75 m	to 220 °C @ 20 °C/min	to 150 °C @ 6 °C/min	Purge: 11 min
I.D. 0.53 mm	hold 1 min	to 220 °C @ 25 °C/min	Desorb: 2 min @ 250 °C
Flow rate: 15 mL/min		hold ___ min	Bake: 6 (min) min @ 260 °C

Auto num	Sample ID Workorder#	Method	File name	Amt purged	Sample Prep	Comments	Analyst	Level 2 Review
	BFB		BFB236	50 ml		Dist Ctg (8:14) ok	[illegible]	[illegible]
9	Vol Std		UX35631	250 ml		V90607-3 ok		
10	Vol IV Std		32	250 ml		V90607-3 ok		
11	Check	D220#102 ~~D220K102~~	33	100 ml		ok		
12	VBLK	D220#101 ~~D220K101~~	34	25 ml/25 ml		ok		
13	Check Dup	D220#103 ~~D220K103~~	35	100 ml		ok		
14	DIRMD-101	~~MZ~~ E	36	12.5 ml/25 ml	A9H270119	ok		
15	DIRML-102	QK	37	25 ml/25 ml	A9H270122	ok		
16	DIRN6-102		38			ok		
1	DIRN7-102		39			ok		
2	DIRN8-102		40			ok		
3	DIRNA-102		41			ok		
4	DIRNC-102		42			ok		
5	DIRND-102		43			ok		
6	DIVO5-102		44		A9H270287	ok		
7	DIVOF-102		45			ok		
8	DIVO#-102		46			ok		
9	DIVOK-102		47			ok		
10	DIVOM-102		48			ok		
11	DIVOG-102		49			ok		
12	DIVOV-102		50			ok		
13	DIVOX-102		51			ok		
14	DIVSM-102		52			ok		
15	DIVSQ-102		53			ok		

24/18

000032

SW846 8270B SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN QESSDG: H25128

Lot #: A9H250128

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	SRG05	SRG06	TOT OUT
01	RFIMW-29	63	59	44	9.7*	3.3*	3.5*	03
02	RFIMW-29 RE-1	70	72	42	51	51	61	00
03	PM4NA	57 D	77 D	54 D	66 D	73 D	89 D	00
04	CMSMW-13S	59	78	58	64	65	96	00
05	CMSMW-13F	70	71	38	62	63	82	00
06	METHOD BLK. D1R9F101	74	67	85	65	66	74	00
07	METHOD BLK. D2D0X101	64	62	84	60	62	74	00
08	LCS D1R9F102	68	64	84	63	60	81	00
09	LCS D2D0X102	71	76	87	68	68	91	00
10	RFIMW-29 D	61	56	58	40	38	50	00
11	LCSD D2D0X103	76	83	92	74	72	95	00
12	RFIMW-29 S	62	62	50	41	38	42	00

SURROGATES		QC LIMITS
SRG01	= Nitrobenzene-d5	(40-114)
SRG02	= 2-Fluorobiphenyl	(45-118)
SRG03	= Terphenyl-d14	(33-141)
SRG04	= Phenol-d5	(17-101)
SRG05	= 2-Fluorophenol	(21-100)
SRG06	= 2,4,6-Tribromophenol	(16-129)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

SW846 8270B SURROGATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN QESSDG:

Lot #: A9H270119

	CLIENT ID.	SRG01	SRG02	SRG03	SRG04	SRG05	SRG06	TOT OUT
01	CMSMW-14S	81	76	46	67	68	86	00
02	CMSMW-39S	77	74	57	67	67	79	00
03	ERB-1	94	84	97	76	77	80	00
04	CMSMW-12	81 D	85 D	69 D	79 D	78 D	92 D	00
05	METHOD BLK. D1XAQ101	82	73	88	68	70	70	00
06	LCS D1XAQ104	69	65	90	60	59	65	00
07	LCSD D1XAQ105	71	67	87	61	60	74	00

SURROGATES		QC LIMITS
SRG01	= Nitrobenzene-d5	(40-114)
SRG02	= 2-Fluorobiphenyl	(45-118)
SRG03	= Terphenyl-d14	(33-141)
SRG04	= Phenol-d5	(17-101)
SRG05	= 2-Fluorophenol	(21-100)
SRG06	= 2,4,6-Tribromophenol	(16-129)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

SW846 8270B CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9H260000 WO #: D1R9F102
BATCH: 9238236

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	31	61	44- 142	
Acenaphthene	50	32	64	47- 145	
2,4-Dinitrotoluene	50	37	73	60- 134	
Pyrene	50	37	75	68- 131	
N-Nitrosodi-n-propylamine	50	30	61	10- 230	
1,4-Dichlorobenzene	50	27	54	20- 124	
Pentachlorophenol	75	52	70	14- 176	
Phenol	75	45	61	10- 112	
2-Chlorophenol	75	46	61	23- 134	
4-Chloro-3-methylphenol	75	51	68	22- 147	
4-Nitrophenol	75	57	76	30- 162	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No:

Lot #: A9H310000 WO #: D1XAQ104
BATCH: 9243203

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	29	59	44- 142	
Acenaphthene	50	32	64	47- 145	
2,4-Dinitrotoluene	50	35	70	60- 134	
Pyrene	50	41	82	68- 131	
N-Nitrosodi-n-propylamine	50	29	57	10- 230	
1,4-Dichlorobenzene	50	26	52	20- 124	
Pentachlorophenol	75	45	60	14- 176	
Phenol	75	46	61	10- 112	
2-Chlorophenol	75	46	61	23- 134	
4-Chloro-3-methylphenol	75	48	65	22- 147	
4-Nitrophenol	75	43	58	30- 162	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No:

Lot #: A9H310000 WO #: D1XAQ105
BATCH: 9243203

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	30	61	44- 142	
Acenaphthene	50	35	69	47- 145	
2,4-Dinitrotoluene	50	39	79	60- 134	
Pyrene	50	40	80	68- 131	
1,4-Dichlorobenzene	50	27	53	20- 124	
N-Nitrosodi-n-propylamine	50	31	62	10- 230	
Pentachlorophenol	75	51	68	14- 176	
Phenol	75	47	62	10- 112	
2-Chlorophenol	75	47	63	23- 134	
4-Chloro-3-methylphenol	75	52	70	22- 147	
4-Nitrophenol	75	52	69	30- 162	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9I130000 WO #: D2D0X102
BATCH: 9256113

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	32	64	44- 142	
Acenaphthene	50	38	75	47- 145	
2,4-Dinitrotoluene	50	51	103	60- 134	
Pyrene	50	39	77	68- 131	
N-Nitrosodi-n-propylamine	50	36	71	10- 230	
1,4-Dichlorobenzene	50	29	58	20- 124	
Pentachlorophenol	50	38	76	14- 176	
Phenol	50	36	71	10- 112	
2-Chlorophenol	50	34	69	23- 134	
4-Chloro-3-methylphenol	50	38	76	22- 147	
4-Nitrophenol	50	50	101	30- 162	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B CHECK SAMPLE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Lot #: A9I130000 WO #: D2D0X103
BATCH: 9256113

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	% REC	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	50	34	68	44- 142	
Acenaphthene	50	40	79	47- 145	
2,4-Dinitrotoluene	50	54	107	60- 134	
Pyrene	50	41	81	68- 131	
N-Nitrosodi-n-propylamine	50	37	75	10- 230	
1,4-Dichlorobenzene	50	31	61	20- 124	
Pentachlorophenol	50	39	78	14- 176	
Phenol	50	41	82	10- 112	
2-Chlorophenol	50	36	72	23- 134	
4-Chloro-3-methylphenol	50	41	82	22- 147	
4-Nitrophenol	50	53	105	30- 162	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Matrix Spike ID: RFIMW-29

Lot #: A9H250128 WO #: D1PVN106
BATCH: 9238236

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENT. (ug/L)	MS CONCENT. (ug/L)	MS % REC	LIMITS REC	QUAL
1,2,4-Trichlorobenzene	110	ND	63	57	44- 142	
Acenaphthene	110	ND	71	64	47- 145	
2,4-Dinitrotoluene	110	ND	77	70	39- 139	
Pyrene	110	ND	70	63	52- 115	
N-Nitrosodi-n-propylamine	110	ND	59	54	10- 230	
1,4-Dichlorobenzene	110	ND	55	50	20- 124	
Pentachlorophenol	160	ND	51	31	14- 176	
Phenol	160	ND	64	39	10- 112	
2-Chlorophenol	160	ND	71	43	23- 134	
4-Chloro-3-methylphenol	160	ND	91	55	22- 147	
4-Nitrophenol	160	ND	100	62	10- 132	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA Client: PARSONS ENGINEERING SCIENCE, INC.

Lab Code: QESCAN SDG No: H25128

Matrix Spike ID: RFIMW-29

Lot #: A9H250128 WO #: D1PVN107
BATCH: 9238236

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENT. (ug/L)	MSD % REC	% RPD		QC LIMITS RPD	QC LIMITS REC	QUAL
1,2,4-Trichlorobenzene	110	62	56	2.2		28	44 - 142	
Acenaphthene	110	66	60	6.8		28	47 - 145	
2,4-Dinitrotoluene	110	78	71	1.6		22	39 - 139	
Pyrene	110	77	70	9.6		25	52 - 115	
N-Nitrosodi-n-propylamine	110	58	52	3.2		55	10 - 230	
1,4-Dichlorobenzene	110	56	51	0.52		32	20 - 124	
Pentachlorophenol	160	66	40	26		49	14 - 176	
Phenol	160	64	39	0.040		23	10 - 112	
2-Chlorophenol	160	71	43	0.68		29	23 - 134	
4-Chloro-3-methylphenol	160	93	57	3.0		37	22 - 147	
4-Nitrophenol	160	100	63	1.0		47	10 - 132	

NOTES(S):

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 11 outside limits

COMMENTS:

SW846 8270B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D1R9F101

Lab Name: QUANTERRA

Lab Code: QESCAN

SDG Number:H25128

Lab File ID: d1r9f101.

Lot Number: A9H250128

Date Analyzed: 09/09/99

Time Analyzed: 18:52

Matrix: WATER

Date Extracted:08/27/99

GC Column: DB 5.625 ID: .00

Extraction Method: 3520B

Instrument ID: HP8

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	RFIMW-29	D1PVN105	d1pvn105.	09/09/99	21:28
02	RFIMW-29	D1PVN106 S	d1pvn106.	09/09/99	22:07
03	RFIMW-29	D1PVN107 D	d1pvn107.	09/09/99	22:45
04	PM4NA	D1PW4103	d1pw4103.	09/10/99	18:46
05	CMSMW-13S	D1PXF103	d1pxf103.	09/10/99	18:07
06	CMSMW-13F	D1PX6103	d1px6103.	09/10/99	17:28
07	CHECK SAMPLE	D1R9F102 C	d1r9f102.	09/09/99	19:31
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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25					
26					
27					
28					
29					
30					

COMMENTS:

SW846 8270B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D1XAQ101

Lab Name: QUANTERRA

Lab Code: QESCAN

SDG Number:

Lab File ID: d1xaq101.

Lot Number: A9H270119

Date Analyzed: 09/07/99

Time Analyzed: 16:25

Matrix: WATER

Date Extracted: 09/01/99

GC Column: DB 5.625 ID: .00

Extraction Method: 3520B

Instrument ID: HP8

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CMSMW-14S	D1RMA103	d1rma103.	09/07/99	22:51
02	CMSMW-39S	D1RMC103	d1rmc103.	09/07/99	23:30
03	ERB-1	D1RMD102	d1rmd102.	09/07/99	18:21
04	CMSMW-12	D1RM8103	d1rm8103.	09/08/99	00:08
05	CHECK SAMPLE	D1XAQ104 C	d1xaq104.	09/07/99	17:04
06	DUPLICATE CHECK	D1XAQ105 L	d1xaq105.	09/07/99	17:42
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
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19					
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22					
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26					
27					
28					
29					
30					

COMMENTS:

SW846 8270B METHOD BLANK SUMMARY

BLANK WORKORDER NO.: D2D0X101

Lab Name: QUANTERRA

Lab Code: QESCAN

SDG Number:H25128

Lab File ID: d2d0x101.

Lot Number: A9H250128

Date Analyzed: 09/16/99

Time Analyzed: 11:24

Matrix: WATER

Date Extracted:09/13/99

GC Column: DB-5.625 ID: .32

Extraction Method: 3520B

Instrument ID: HP7

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	RFIMW-29	D1PVN205	d1pvn205.	09/16/99	13:55
02	CHECK SAMPLE	D2D0X102 C	d2d0x102.	09/16/99	12:02
03	DUPLICATE CHECK	D2D0X103 L	d2d0x103.	09/16/99	12:39
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
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29					
30					

14 days outside holding time (3/R)

COMMENTS:

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 8DF0629B DFTPP Injection Date: 06/29/99

Instrument ID: A4HP8 DFTPP Injection Time: 0942

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	46.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	51.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	50.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.0
275	10.0 - 30.0% of mass 198	25.2
365	Greater than 1.0% of mass 198	3.0
441	Present, but less than mass 443	10.3
442	Greater than 40.0% of mass 198	71.0
443	17.0 - 23.0% of mass 442	13.6 (19.2)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	ASTD050	ASTD050	8AML0629	06/29/99	1041
02	ASTD080	ASTD080	8AM0629	06/29/99	1119
03	ASTD020	ASTD020	8AL0629	06/29/99	1156
04	ASTD120	ASTD120	8AMH0629	06/29/99	1234
05	ASTD160	ASTD160	8AH0629	06/29/99	1312
06					
07					
08					
09					
10					
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20					
21					
22					

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 8DF0827B DFTPP Injection Date: 08/27/99

Instrument ID: A4HP8 DFTPP Injection Time: 1110

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	48.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	47.1
70	Less than 2.0% of mass 69	0.0 (0.1)1
127	25.0 - 75.0% of mass 198	56.1
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	22.2
365	Greater than 0.75% of mass 198	1.9
441	Present, but less than mass 443	9.0
442	40.0 - 110.0% of mass 198	59.2
443	15.0 - 24.0% of mass 442	11.4 (19.3)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	8SM0827	08/27/99	1243
02	SSTD050	SSTD050	8SML0827	08/27/99	1323
03	SSTD020	SSTD020	8SL0827	08/27/99	1404
04	SSTD120	SSTD120	8SMH0827	08/27/99	1445
05	SSTD160	SSTD160	8SH0827	08/27/99	1525
06					
07					
08					
09					
10					
11					
12					
13					
14					
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16					
17					
18					
19					
20					
21					
22					

Report Date: 07-Sep-1999 14:38

Calibration History

Method : /chem/can/mss/a4hp8.i/90907a.b/8270b.m
Start Cal Date: 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 20.000		
27-AUG-1999 14:04	1-8270	/chem/can/mss/a4hp8.i/90827e.b/8sl0827.d
29-JUN-1999 11:56	2-ap9	/chem/can/mss/a4hp8.i/90827e.b/8al0629.d
Cal Level: 2 , Cal Amount: 50.000		
27-AUG-1999 13:23	1-8270	8sml0827.d
29-JUN-1999 10:41	2-ap9	8aml0629.d
Cal Level: 3 , Cal Amount: 80.000		
27-AUG-1999 12:43	1-8270	/chem/can/mss/a4hp8.i/90827e.b/8sm0827.d
29-JUN-1999 11:19	2-ap9	/chem/can/mss/a4hp8.i/90827e.b/8am0629.d
Cal Level: 4 , Cal Amount: 120.00		
27-AUG-1999 14:45	1-8270	8smh0827.d
29-JUN-1999 12:34	2-ap9	8amh0629.d
Cal Level: 5 , Cal Amount: 160.00		
27-AUG-1999 15:25	1-8270	/chem/can/mss/a4hp8.i/90827e.b/8sh0827.d
29-JUN-1999 13:12	2-ap9	/chem/can/mss/a4hp8.i/90827e.b/8ah0629.d

Continuing Calibration

07-SEP-1999 13:12	1-8270	8sml0907.d
07-SEP-1999 11:09	1-8270	/chem/can/mss/a4hp8.i/90907a.b/8sm0907.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:27 ulmanm
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/mss/a4hp8.i/90827e.b/8sl0827.d
Level 2: /chem/can/mss/a4hp8.i/90827e.b/8sml0827.d
Level 3: /chem/can/mss/a4hp8.i/90827e.b/8sm0827.d
Level 4: /chem/can/mss/a4hp8.i/90827e.b/8smh0827.d
Level 5: /chem/can/mss/a4hp8.i/90827e.b/8sh0827.d

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
198	1,4-Dioxane	0.65451	0.63370	0.61811	0.57725	0.62244	0.62120	4.559
7	N-Nitrosomorpholine	0.95215	0.98044	1.03851	1.04550	1.13068	1.02946	6.689
8	Ethyl methanesulfonate	1.10577	1.09835	1.13152	1.11751	1.19542	1.12971	3.436
9	Pyridine	1.48763	1.48682	1.51246	1.52997	1.49761	1.50290	1.220
10	N-Nitrosodimethylamine	0.89869	0.89823	0.91404	0.92183	0.89127	0.90481	1.397
11	Ethyl methacrylate	1.29020	1.26650	1.28543	1.29763	1.24967	1.27789	1.527
12	3-Chloropropionitrile	0.87821	0.87130	0.88238	0.88937	0.85651	0.87555	1.428
13	Malononitrile	1.63962	1.64455	1.66838	1.67436	1.61924	1.64923	1.360
14	2-Picoline	1.42325	1.46650	1.48797	1.47251	1.56001	1.48205	3.357
15	N-Nitrosomethylethylamine	0.71681	0.71990	0.72144	0.70662	0.75057	0.72307	2.271
16	Methyl methanesulfonate	0.94495	0.91270	0.90954	0.87810	0.90691	0.91044	2.608
18	1,3-Dichloro-2-propanol	1.55765	1.59563	1.62545	1.61214	1.74734	1.62764	4.398
19	N-Nitrosodiethylamine	0.72201	0.73869	0.76593	0.75522	0.81656	0.75968	4.725
21	Aniline	2.24166	2.20056	2.21871	2.22326	2.15613	2.20806	1.472
22	Phenol	1.81224	1.76697	1.78152	1.76324	1.70757	1.76631	2.156
23	bis(2-Chloroethyl)ether	1.38873	1.36363	1.35860	1.35558	1.30702	1.35471	2.192
24	2-Chlorophenol	1.44829	1.42915	1.43537	1.43123	1.37361	1.42353	2.029
25	Pentachloroethane	0.49397	0.49703	0.50697	0.49371	0.53291	0.50492	3.278
26	1,3-Dichlorobenzene	1.52707	1.50399	1.51201	1.50429	1.44320	1.49811	2.142
27	1,4-Dichlorobenzene	1.60593	1.56722	1.57970	1.56679	1.49987	1.56390	2.504
28	1,2-Dichlorobenzene	1.40985	1.37780	1.38314	1.36524	1.30132	1.36747	2.954
29	Benzyl Alcohol	0.97437	0.96626	0.97427	0.96566	0.92909	0.96193	1.957
30	2-Methylphenol	1.34079	1.31638	1.32766	1.31906	1.27422	1.31562	1.902
31	bis(2-Chloroisopropyl)ether	1.54859	1.53049	1.53047	1.52064	1.47481	1.52100	1.823
32	N-Nitroso-di-n-propylamine	1.01489	0.98755	0.99897	0.99602	0.95886	0.99125	2.082
M 195	Cresols, total	1.38793	1.36666	1.37602	1.36364	1.32041	1.36293	1.877

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:27 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
192	4-Methylphenol	1.43506	1.41695	1.42438	1.40822	1.36661	1.41024	1.866
193	3-Methylphenol	1.51209	1.67765	1.84831	1.93510	2.16008	1.82665	13.536
34	Hexachloroethane	0.54852	0.54193	0.55116	0.54727	0.53024	0.54382	1.527
35	Nitrobenzene	0.39058	0.38525	0.38904	0.38709	0.37093	0.38458	2.051
36	N-Nitrosopyrrolidine	0.71742	0.75079	0.81035	0.82534	0.90634	0.80205	9.093
37	Acetophenone	1.97073	1.98184	2.10678	2.12082	2.29811	2.09566	6.326
39	o-Toluidine	2.14672	2.32770	2.51419	2.62006	2.83056	2.48785	10.590
40	N-Nitrosopiperidine	0.18253	0.19177	0.19099	0.18644	0.19895	0.19013	3.249
41	Isophorone	0.71906	0.70282	0.71291	0.70682	0.68408	0.70514	1.884
42	2-Nitrophenol	0.19421	0.19944	0.20320	0.20490	0.19758	0.19987	2.151
43	2,4-Dimethylphenol	0.37439	0.36565	0.36940	0.36589	0.35242	0.36555	2.229
44	bis(2-Chloroethoxy)methane	0.42945	0.41606	0.42161	0.41763	0.40271	0.41749	2.336
45	O,O,O-Triethyl phosphorothioa	0.18636	0.19603	0.20150	0.20260	0.21703	0.20070	5.562
46	2,4-Toluenediamene	0.02937	0.07825	0.16944	0.19280	0.17692	0.12936	55.346 <-
47	1,3,5-Trichlorobenzene	0.29354	0.28731	0.28611	0.28310	0.26898	0.28381	3.214
48	2,4-Dichlorophenol	0.29238	0.28637	0.29249	0.29065	0.27837	0.28805	2.066
49	Benzoic Acid	0.18511	0.20106	0.22698	0.21849	0.23831	0.21399	9.864
50	1,2,4-Trichlorobenzene	0.28950	0.27965	0.28247	0.27944	0.26734	0.27968	2.863
51	Naphthalene	1.16182	1.12315	1.11712	1.08679	1.01229	1.10023	5.085
52	4-Chloroaniline	0.46178	0.45396	0.45862	0.45294	0.43693	0.45285	2.118
53	a,a-Dimethyl-phenethylamine	0.74900	0.80109	0.85960	0.82126	0.85199	0.81659	5.454
54	2,6-Dichlorophenol	0.26911	0.28732	0.29940	0.30158	0.32122	0.29573	6.497
55	Hexachloropropene	0.17331	0.18493	0.19772	0.21350	0.20957	0.19581	8.586
56	Hexachlorobutadiene	0.13755	0.13421	0.13492	0.13400	0.12770	0.13368	2.713
57	1,2,3-Trichlorobenzene	0.27656	0.27161	0.27277	0.26965	0.25717	0.26955	2.732
58	N-Nitrosodi-n-butylamine	0.29461	0.31794	0.32467	0.31923	0.33215	0.31772	4.431
59	4-Chloro-3-Methylphenol	0.34592	0.34049	0.34213	0.33986	0.32047	0.33778	2.947
60	p-Phenylene diamine	0.32394	0.35525	0.34515	0.31376	0.27593	0.32281	9.589
61	Safrole	0.27833	0.29675	0.30620	0.30767	0.33302	0.30440	6.511
62	2-Methylnaphthalene	0.75175	0.73283	0.72884	0.71399	0.67502	0.72049	3.992
63	1-Methylnaphthalene	0.73142	0.70851	0.70765	0.69473	0.65426	0.69931	4.067
64	Hexachlorocyclopentadiene	0.21295	0.21643	0.23238	0.22483	0.23103	0.22352	3.864
65	1,2,4,5-Tetrachlorobenzene	0.52636	0.55134	0.56888	0.57292	0.60394	0.56469	5.066

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:27 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	___ RRF	% RSD
66	2,4,6-Trichlorophenol	0.33586	0.33824	0.34362	0.34101	0.33284	0.33832	1.249
67	2,4,5-Trichlorophenol	0.36557	0.36252	0.36651	0.36496	0.35329	0.36257	1.488
68	1,2,3,5-Tetrachlorobenzene	0.49495	0.47887	0.48177	0.47707	0.45772	0.47808	2.795
69	1,4-Dinitrobenzene	0.19294	0.20991	0.21499	0.21220	0.22702	0.21141	5.797
70	2-Chloronaphthalene	1.15906	1.13087	1.13405	1.10821	1.05530	1.11750	3.504
71	Isosafrole 1	0.13284	0.13316	0.13552	0.13326	0.14014	0.13498	2.276
M 188	Isosafrole, Total	0.50758	0.55505	0.58535	0.59190	0.63612	0.57520	8.279
72	Isosafrole 2	0.88231	0.97695	1.03517	1.05055	1.13210	1.01542	9.138
73	*2-Nitroaniline*	*0.36952*	*0.37459*	*0.38244*	*0.38401*	*0.37628*	*0.37737*	*1.569*
74	1,2,3,4-Tetrachlorobenzene	0.46089	0.44894	0.45111	0.44807	0.43276	0.44835	2.253
75	1,4-Naphthoquinone	0.37877	0.36225	0.28879	0.24827	0.23035	0.30168	22.062
76	Dimethylphthalate	1.35255	1.31080	1.32206	1.31082	1.26352	1.31195	2.440
77	m-Dinitrobenzene	0.20890	0.22586	0.22882	0.22431	0.24097	0.22577	5.085
78	2,6-Dinitrotoluene	0.29346	0.29982	0.30594	0.31385	0.30538	0.30369	2.500
79	Acenaphthylene	2.09543	2.01128	1.98546	1.94037	1.83150	1.97281	4.921
80	1,2-Dinitrobenzene	0.14239	0.14313	0.14478	0.14830	0.14548	0.14482	1.595
81	3-Nitroaniline	0.31426	0.33100	0.34100	0.34690	0.33864	0.33436	3.769
82	Acenaphthene	1.30318	1.26179	1.25818	1.23959	1.17903	1.24835	3.619
83	2,4-Dinitrophenol	0.08709	0.11423	0.13195	0.14764	0.15981	0.12814	22.334
84	Pentachlorobenzene	0.49122	0.49824	0.51363	0.51141	0.55112	0.51313	4.517
85	4-Nitrophenol	0.14930	0.15720	0.16485	0.16523	0.16351	0.16002	4.257
86	Dibenzofuran	1.64581	1.58125	1.56221	1.53381	1.45835	1.55629	4.401
87	2,4-Dinitrotoluene	0.37982	0.38262	0.38520	0.39100	0.38030	0.38379	1.189
88	2,3,4,6-Tetrachlorophenol	0.23643	0.27208	0.28994	0.28883	0.30945	0.27935	9.808
89	1-Naphthylamine	1.01472	1.10938	1.15195	1.13553	1.20656	1.12363	6.275
90	Zinophos	0.32021	0.33625	0.34386	0.33469	0.34816	0.33663	3.182
91	2,3,5,6-Tetrachlorophenol	0.26162	0.26756	0.27474	0.27613	0.26931	0.26987	2.167
92	2-Naphthylamine	0.94824	1.04706	1.08679	1.07999	1.17462	1.06734	7.646
93	Diethylphthalate	1.40996	1.37755	1.36907	1.34198	1.26995	1.35370	3.895
94	Fluorene	1.43957	1.38372	1.37303	1.34578	1.26395	1.36121	4.716
95	4-Chlorophenyl-phenylether	0.59213	0.56764	0.56938	0.55653	0.52044	0.56123	4.670
96	4-Nitroaniline	0.32200	0.31716	0.33214	0.33371	0.32756	0.32651	2.125
97	5-Nitro-o-toluidine	0.34111	0.36072	0.36910	0.36230	0.38630	0.36391	4.475

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:27 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
98	4,6-Dinitro-2-methylphenol	0.09964	0.11883	0.12936	0.14136	0.14577	0.12699	14.621
99	N-Nitrosodiphenylamine	0.66216	0.65026	0.64913	0.64060	0.61069	0.64257	3.020
100	1,2-Diphenylhydrazine	0.93776	0.91549	0.90579	0.88823	0.84700	0.89885	3.789
101	Diphenylamine	0.66216	0.65026	0.64913	0.64060	0.61069	0.64257	3.020
102	Tetraethyl dithiopyrophosphat	0.09218	0.09963	0.10082	0.09898	0.10612	0.09955	5.008
103	Diallate 1	0.33246	0.35505	0.36789	0.36042	0.38846	0.36086	5.632
M 189	Diallate, Total	1.53044	1.57645	1.67745	1.66165	1.89277	1.66775	8.371
104	Phorate	0.12783	0.13714	0.14460	0.14480	0.16032	0.14294	8.352
105	1,3,5-Trinitrobenzene	0.07373	0.08366	0.08834	0.08688	0.09274	0.08507	8.384
106	4-Bromophenyl-phenylether	0.19474	0.19372	0.19325	0.19224	0.18468	0.19173	2.107
107	Hexachlorobenzene	0.19223	0.19025	0.18974	0.18975	0.18145	0.18868	2.211
108	Phenacetin	0.33603	0.36080	0.36102	0.35822	0.40279	0.36377	6.647
109	Diallate 2	0.39496	0.40922	0.42039	0.41159	0.46658	0.42055	6.493
110	Dimethoate	0.26010	0.24273	0.20836	0.17546	0.17520	0.21237	18.175
111	Pentachlorophenol	0.10559	0.11932	0.12652	0.12819	0.12650	0.12122	7.743
112	Pentachloronitrobenzene	0.09496	0.09645	0.09793	0.09538	0.10256	0.09746	3.155
113	4-Aminobiphenyl	0.61902	0.71106	0.73192	0.72555	0.77135	0.71178	7.932
114	Pronamide	0.31016	0.31838	0.31996	0.31512	0.32984	0.31869	2.282
115	Phenanthrene	1.26321	1.21743	1.20166	1.18564	1.11691	1.19697	4.453
116	Anthracene	1.28928	1.25052	1.23641	1.21040	1.14334	1.22599	4.428
117	Dinoseb	0.12532	0.14836	0.15629	0.17628	0.17359	0.15597	13.296
118	Disulfoton	0.38894	0.40894	0.42669	0.43008	0.47019	0.42497	7.088
119	Carbazole	1.11965	1.09349	1.09254	1.07216	1.02412	1.08039	3.303
120	Di-n-Butylphthalate	1.61671	1.53823	1.49315	1.45306	1.34219	1.48867	6.850
121	4-Nitroquinoline 1-oxide	0.05870	0.06857	0.06933	0.06970	0.06936	0.06713	7.051
122	Methapyrilene	0.40854	0.29864	0.19997	0.15322	0.13854	0.23978	47.217
123	Fluoranthene	1.23559	1.18735	1.17879	1.16055	1.09575	1.17161	4.325
124	Benzidine	0.81191	0.93178	0.97094	1.01240	1.00864	0.94713	8.695
125	Pyrene	1.95345	1.92202	1.92703	1.89823	1.84453	1.90905	2.151
126	Aramite 1	0.08353	0.09368	0.08697	0.07593	0.09133	0.08629	8.104
M 191	Aramite, Total	0.29367	0.29091	0.28927	0.27100	0.29868	0.28871	3.645
127	Aramite 2	0.11887	0.13017	0.12259	0.10637	0.12918	0.12144	7.932
128	p-Dimethylamino azobenzene	0.32994	0.37606	0.37553	0.36393	0.41412	0.37192	8.108

no #'s

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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End Cal Date : 27-AUG-1999 15:25
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Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:27 ulmanm
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	___ RRF	% RSD	
129 p-Chlorobenzilate	0.51145	0.57471	0.56235	0.53359	0.61044	0.55851	6.824	
130 Famphur	0.28451	0.07563	0.01360	0.01447	0.01369	0.08038	145.807	<- NT
131 Butylbenzylphthalate	0.97303	0.96000	0.95695	0.95938	0.91872	0.95362	2.149	
132 3,3'-Dimethylbenzidine	0.51847	0.51713	0.43975	0.39403	0.43110	0.46009	12.042	
133 3,3'-Dimethoxybenzidine	0.29863	0.30206	0.30367	0.30995	0.28172	0.29921	3.544	
134 2-Acetylaminofluorene	0.48652	0.48733	0.48293	0.44935	0.49575	0.48038	3.741	
135 3,3'-Dichlorobenzidine	0.43833	0.44556	0.45053	0.44599	0.41934	0.43995	2.801	
136 Benzo(a)Anthracene	1.46990	1.42116	1.42921	1.40660	1.34742	1.41486	3.139	
137 Chrysene	1.35431	1.32131	1.32651	1.32056	1.27493	1.31952	2.161	
138 4,4'-Methylene bis(o-chloroan	0.26191	0.25183	0.25110	0.24266	0.22776	0.24705	5.166	
139 bis(2-ethylhexyl)Phthalate	1.32077	1.28774	1.28099	1.27767	1.22764	1.27896	2.612	
140 Di-n-octylphthalate	3.12772	3.06588	3.18309	3.04627	2.98186	3.08096	2.507	
141 Benzo(b)fluoranthene	1.68348	1.66666	1.73174	1.69152	1.63950	1.68258	2.017	
142 Benzo(k)fluoranthene	1.70955	1.64886	1.66988	1.62640	1.58330	1.64760	2.866	
143 7,12-dimethylbenz[a]anthracen	0.56516	0.69788	0.71765	0.74591	0.80420	0.70616	12.521	
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
146 Benzo(a)pyrene	1.42611	1.39468	1.41898	1.40124	1.36683	1.40157	1.658	
148 3-Methylcholanthrene	0.66479	0.70208	0.71082	0.69810	0.75320	0.70580	4.495	
149 Indeno(1,2,3-cd)pyrene	1.03327	1.06598	1.05083	1.18232	1.12736	1.09195	5.651	
150 Dibenz(a,h)anthracene	1.03491	1.02615	1.01600	1.09302	1.08847	1.05171	3.451	
151 Benzo(g,h,i)perylene	0.98413	0.98131	0.95993	1.04961	1.05064	1.00512	4.192	
199 3-Picoline	1.41009	1.47987	1.50670	1.51446	1.62661	1.50755	5.190	
200 N,N-Dimethylacetamide	1.14585	1.17452	1.22303	1.21647	1.30069	1.21211	4.844	
$ 154 Nitrobenzene-d5	0.38930	0.38820	0.39402	0.39604	0.38194	0.38990	1.412	
$ 155 2-Fluorobiphenyl	1.34604	1.29602	1.29979	1.27502	1.21909	1.28719	3.578	
$ 156 Terphenyl-d14	1.24522	1.21942	1.22175	1.21961	1.18159	1.21752	1.875	
$ 157 Phenol-d5	1.81628	1.78802	1.80268	1.80082	1.74601	1.79076	1.505	
$ 158 2-Fluorophenol	1.35371	1.34234	1.36833	1.37647	1.33514	1.35520	1.275	
$ 159 2,4,6-Tribromophenol	0.11347	0.11500	0.11800	0.11910	0.11492	0.11610	2.024	
$ 186 2-Chlorophenol-d4	1.38405	1.36096	1.37066	1.37106	1.32659	1.36266	1.598	
$ 187 1,2-Dichlorobenzene-d4	0.93208	0.91699	0.91693	0.90568	0.85617	0.90557	3.221	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

9.8.99

541

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

Calibration File Names:
Level 1: /chem/can/mss/a4hp8.i/90827e.b/8sl0827.d
Level 2: /chem/can/mss/a4hp8.i/90827e.b/8sml0827.d
Level 3: /chem/can/mss/a4hp8.i/90827e.b/8sm0827.d
Level 4: /chem/can/mss/a4hp8.i/90827e.b/8smh0827.d
Level 5: /chem/can/mss/a4hp8.i/90827e.b/8sh0827.d

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
198 1,4-Dioxane	0.65451	0.63370	0.61811	0.57725	0.62244	AVRG		0.62120		4.55916
7 N-Nitrosomorpholine	0.95215	0.98044	1.03851	1.04550	1.13068	AVRG		1.02946		6.68857
8 Ethyl methanesulfonate	1.10577	1.09835	1.13152	1.11751	1.19542	AVRG		1.12971		3.43594
9 Pyridine	1.48763	1.48682	1.51246	1.52997	1.49761	AVRG		1.50290		1.21954
10 N-Nitrosodimethylamine	0.89869	0.89823	0.91404	0.92183	0.89127	AVRG		0.90481		1.39656
11 Ethyl methacrylate	1.29020	1.26650	1.28543	1.29763	1.24967	AVRG		1.27789		1.52746
12 3-Chloropropionitrile	0.87821	0.87130	0.88238	0.88937	0.85651	AVRG		0.87555		1.42794
13 Malononitrile	1.63962	1.64455	1.66838	1.67436	1.61924	AVRG		1.64923		1.35981
14 2-Picoline	1.42325	1.46650	1.48797	1.47251	1.56001	AVRG		1.48205		3.35738
15 N-Nitrosomethylethylamine	0.71681	0.71990	0.72144	0.70662	0.75057	AVRG		0.72307		2.27102

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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Start Cal Date : 29-JUN-1999 10:41
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Quant Method : ISTD
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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
	16 Methyl methanesulfonate	0.94495	0.91270	0.90954	0.87810	0.90691	AVRG		0.91044		2.60821
	18 1,3-Dichloro-2-propanol	1.55765	1.59563	1.62545	1.61214	1.74734	AVRG		1.62764		4.39810
	19 N-Nitrosodiethylamine	0.72201	0.73869	0.76593	0.75522	0.81656	AVRG		0.75968		4.72514
	21 Aniline	2.24166	2.20056	2.21871	2.22326	2.15613	AVRG		2.20806		1.47210
	22 Phenol	1.81224	1.76697	1.78152	1.76324	1.70757	AVRG		1.76631		2.15600
	23 bis(2-Chloroethyl)ether	1.38873	1.36363	1.35860	1.35558	1.30702	AVRG		1.35471		2.19199
	24 2-Chlorophenol	1.44829	1.42915	1.43537	1.43123	1.37361	AVRG		1.42353		2.02888
	25 Pentachloroethane	0.49397	0.49703	0.50697	0.49371	0.53291	AVRG		0.50492		3.27815
	26 1,3-Dichlorobenzene	1.52707	1.50399	1.51201	1.50429	1.44320	AVRG		1.49811		2.14208
	27 1,4-Dichlorobenzene	1.60593	1.56722	1.57970	1.56679	1.49987	AVRG		1.56390		2.50432
	28 1,2-Dichlorobenzene	1.40985	1.37780	1.38314	1.36524	1.30132	AVRG		1.36747		2.95445
	29 Benzyl Alcohol	0.97437	0.96626	0.97427	0.96566	0.92909	AVRG		0.96193		1.95730
	30 2-Methylphenol	1.34079	1.31638	1.32766	1.31906	1.27422	AVRG		1.31562		1.90208
	31 bis(2-Chloroisopropyl)ether	1.54859	1.53049	1.53047	1.52064	1.47481	AVRG		1.52100		1.82284
	32 N-Nitroso-di-n-propylamine	1.01489	0.98755	0.99897	0.99602	0.95886	AVRG		0.99125		2.08222
M	195 Cresols, total	1.38793	1.36666	1.37602	1.36364	1.32041	AVRG		1.36293		1.87721
	192 4-Methylphenol	1.43506	1.41695	1.42438	1.40822	1.36661	AVRG		1.41024		1.86577

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
193	3-Methylphenol	1.51209	1.67765	1.84831	1.93510	2.16008	AVRG		1.82665		13.53637
34	Hexachloroethane	0.54852	0.54193	0.55116	0.54727	0.53024	AVRG		0.54382		1.52726
35	Nitrobenzene	0.39058	0.38525	0.38904	0.38709	0.37093	AVRG		0.38458		2.05113
36	N-Nitrosopyrrolidine	0.71742	0.75079	0.81035	0.82534	0.90634	AVRG		0.80205		9.09322
37	Acetophenone	1.97073	1.98184	2.10678	2.12082	2.29811	AVRG		2.09566		6.32629
39	o-Toluidine	2.14672	2.32770	2.51419	2.62006	2.83056	AVRG		2.48785		10.58979
40	N-Nitrosopiperidine	0.18253	0.19177	0.19099	0.18644	0.19895	AVRG		0.19013		3.24949
41	Isophorone	0.71906	0.70282	0.71291	0.70682	0.68408	AVRG		0.70514		1.88420
42	2-Nitrophenol	0.19421	0.19944	0.20320	0.20490	0.19758	AVRG		0.19987		2.15097
43	2,4-Dimethylphenol	0.37439	0.36565	0.36940	0.36589	0.35242	AVRG		0.36555		2.22895
44	bis(2-Chloroethoxy)methane	0.42945	0.41606	0.42161	0.41763	0.40271	AVRG		0.41749		2.33594
45	O,O,O-Triethyl phosphorothioa	0.18636	0.19603	0.20150	0.20260	0.21703	AVRG		0.20070		5.56165
46	2,4-Toluenediamene	31726	213717	735107	1164248	1475126	QUAD	0.000e+00	7.16419	-2.55904	0.96228
47	1,3,5-Trichlorobenzene	0.29354	0.28731	0.28611	0.28310	0.26898	AVRG		0.28381		3.21351
48	2,4-Dichlorophenol	0.29238	0.28637	0.29249	0.29065	0.27837	AVRG		0.28805		2.06588
49	Benzoic Acid	0.18511	0.20106	0.22698	0.21849	0.23831	AVRG		0.21399		9.86352
50	1,2,4-Trichlorobenzene	0.28950	0.27965	0.28247	0.27944	0.26734	AVRG		0.27968		2.86268

QUANTERRA-NORTH CANTON

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Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
51 Naphthalene	1.16182	1.12315	1.11712	1.08679	1.01229	AVRG		1.10023		5.08453
52 4-Chloroaniline	0.46178	0.45396	0.45862	0.45294	0.43693	AVRG		0.45285		2.11796
53 a,a-Dimethyl-phenethylamine	0.74900	0.80109	0.85960	0.82126	0.85199	AVRG		0.81659		5.45380
54 2,6-Dichlorophenol	0.26911	0.28732	0.29940	0.30158	0.32122	AVRG		0.29573		6.49700
55 Hexachloropropene	0.17331	0.18493	0.19772	0.21350	0.20957	AVRG		0.19581		8.58568
56 Hexachlorobutadiene	0.13755	0.13421	0.13492	0.13400	0.12770	AVRG		0.13368		2.71298
57 1,2,3-Trichlorobenzene	0.27656	0.27161	0.27277	0.26965	0.25717	AVRG		0.26955		2.73227
58 N-Nitrosodi-n-butylamine	0.29461	0.31794	0.32467	0.31923	0.33215	AVRG		0.31772		4.43115
59 4-Chloro-3-Methylphenol	0.34592	0.34049	0.34213	0.33986	0.32047	AVRG		0.33778		2.94719
60 p-Phenylene diamine	0.32394	0.35525	0.34515	0.31376	0.27593	AVRG		0.32281		9.58851
61 Safrole	0.27833	0.29675	0.30620	0.30767	0.33302	AVRG		0.30440		6.51136
62 2-Methylnaphthalene	0.75175	0.73283	0.72884	0.71399	0.67502	AVRG		0.72049		3.99217
63 1-Methylnaphthalene	0.73142	0.70851	0.70765	0.69473	0.65426	AVRG		0.69931		4.06692
64 Hexachlorocyclopentadiene	0.21295	0.21643	0.23238	0.22483	0.23103	AVRG		0.22352		3.86441
65 1,2,4,5-Tetrachlorobenzene	0.52636	0.55134	0.56888	0.57292	0.60394	AVRG		0.56469		5.06606
66 2,4,6-Trichlorophenol	0.33586	0.33824	0.34362	0.34101	0.33284	AVRG		0.33832		1.24858
67 2,4,5-Trichlorophenol	0.36557	0.36252	0.36651	0.36496	0.35329	AVRG		0.36257		1.48825

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
68	1,2,3,5-Tetrachlorobenzene	0.49495	0.47887	0.48177	0.47707	0.45772	AVRG		0.47808		2.79546
69	1,4-Dinitrobenzene	0.19294	0.20991	0.21499	0.21220	0.22702	AVRG		0.21141		5.79652
70	2-Chloronaphthalene	1.15906	1.13087	1.13405	1.10821	1.05530	AVRG		1.11750		3.50425
71	Isosafrole 1	0.13284	0.13316	0.13552	0.13326	0.14014	AVRG		0.13498		2.27604
M 188	Isosafrole, Total	0.50758	0.55505	0.58535	0.59190	0.63612	AVRG		0.57520		8.27942
72	Isosafrole 2	0.88231	0.97695	1.03517	1.05055	1.13210	AVRG		1.01542		9.13770
73	2-Nitroaniline	0.36952	0.37459	0.38244	0.38401	0.37628	AVRG		0.37737		1.56937
74	1,2,3,4-Tetrachlorobenzene	0.46089	0.44894	0.45111	0.44807	0.43276	AVRG		0.44835		2.25348
75	1,4-Naphthoquinone	260660	769968	1082651	1332915	1794404	QUAD	0.000e+00	1.75996	2.85971	0.99538
76	Dimethylphthalate	1.35255	1.31080	1.32206	1.31082	1.26352	AVRG		1.31195		2.44009
77	m-Dinitrobenzene	0.20890	0.22586	0.22882	0.22431	0.24097	AVRG		0.22577		5.08457
78	2,6-Dinitrotoluene	0.29346	0.29982	0.30594	0.31385	0.30538	AVRG		0.30369		2.50047
79	Acenaphthylene	2.09543	2.01128	1.98546	1.94037	1.83150	AVRG		1.97281		4.92086
80	1,2-Dinitrobenzene	0.14239	0.14313	0.14478	0.14830	0.14548	AVRG		0.14482		1.59474
81	3-Nitroaniline	0.31426	0.33100	0.34100	0.34690	0.33864	AVRG		0.33436		3.76902
82	Acenaphthene	1.30318	1.26179	1.25818	1.23959	1.17903	AVRG		1.24835		3.61919
83	2,4-Dinitrophenol	52982	175207	321391	498467	734513	QUAD	0.000e+00	8.69668	-3.91209	0.99779

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
84	Pentachlorobenzene	0.49122	0.49824	0.51363	0.51141	0.55112	AVRG		0.51313		4.51660
85	4-Nitrophenol	0.14930	0.15720	0.16485	0.16523	0.16351	AVRG		0.16002		4.25724
86	Dibenzofuran	1.64581	1.58125	1.56221	1.53381	1.45835	AVRG		1.55629		4.40146
87	2,4-Dinitrotoluene	0.37982	0.38262	0.38520	0.39100	0.38030	AVRG		0.38379		1.18885
88	2,3,4,6-Tetrachlorophenol	0.23643	0.27208	0.28994	0.28883	0.30945	AVRG		0.27935		9.80791
89	1-Naphthylamine	1.01472	1.10938	1.15195	1.13553	1.20656	AVRG		1.12363		6.27519
90	Zinophos	0.32021	0.33625	0.34386	0.33469	0.34816	AVRG		0.33663		3.18154
91	2,3,5,6-Tetrachlorophenol	0.26162	0.26756	0.27474	0.27613	0.26931	AVRG		0.26987		2.16661
92	2-Naphthylamine	0.94824	1.04706	1.08679	1.07999	1.17462	AVRG		1.06734		7.64648
93	Diethylphthalate	1.40996	1.37755	1.36907	1.34198	1.26995	AVRG		1.35370		3.89517
94	Fluorene	1.43957	1.38372	1.37303	1.34578	1.26395	AVRG		1.36121		4.71622
95	4-Chlorophenyl-phenylether	0.59213	0.56764	0.56938	0.55653	0.52044	AVRG		0.56123		4.67034
96	4-Nitroaniline	0.32200	0.31716	0.33214	0.33371	0.32756	AVRG		0.32651		2.12450
97	5-Nitro-o-toluidine	0.34111	0.36072	0.36910	0.36230	0.38630	AVRG		0.36391		4.47478
98	4,6-Dinitro-2-methylphenol	0.09964	0.11883	0.12936	0.14136	0.14577	AVRG		0.12699		14.62149
99	N-Nitrosodiphenylamine	0.66216	0.65026	0.64913	0.64060	0.61069	AVRG		0.64257		3.01980
100	1,2-Diphenylhydrazine	0.93776	0.91549	0.90579	0.88823	0.84700	AVRG		0.89885		3.78942

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

547

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
	101 Diphenylamine	0.66216	0.65026	0.64913	0.64060	0.61069	AVRG		0.64257		3.01980
	102 Tetraethyl dithiopyrophosphat	0.09218	0.09963	0.10082	0.09898	0.10612	AVRG		0.09955		5.00837
	103 Diallate 1	0.33246	0.35505	0.36789	0.36042	0.38846	AVRG		0.36086		5.63190
M	189 Diallate, Total	1.53044	1.57645	1.67745	1.66165	1.89277	AVRG		1.66775		8.37060
	104 Phorate	0.12783	0.13714	0.14460	0.14480	0.16032	AVRG		0.14294		8.35216
	105 1,3,5-Trinitrobenzene	0.07373	0.08366	0.08834	0.08688	0.09274	AVRG		0.08507		8.38352
	106 4-Bromophenyl-phenylether	0.19474	0.19372	0.19325	0.19224	0.18468	AVRG		0.19173		2.10742
	107 Hexachlorobenzene	0.19223	0.19025	0.18974	0.18975	0.18145	AVRG		0.18868		2.21054
	108 Phenacetin	0.33603	0.36080	0.36102	0.35822	0.40279	AVRG		0.36377		6.64749
	109 Diallate 2	0.39496	0.40922	0.42039	0.41159	0.46658	AVRG		0.42055		6.49264
	110 Dimethoate	321393	929501	1398158	1688367	2449742	QUAD	0.000e+00	3.52936	3.29298	0.99000
	111 Pentachlorophenol	0.10559	0.11932	0.12652	0.12819	0.12650	AVRG		0.12122		7.74320
	112 Pentachloronitrobenzene	0.09496	0.09645	0.09793	0.09538	0.10256	AVRG		0.09746		3.15496
	113 4-Aminobiphenyl	0.61902	0.71106	0.73192	0.72555	0.77135	AVRG		0.71178		7.93153
	114 Pronamide	0.31016	0.31838	0.31996	0.31512	0.32984	AVRG		0.31869		2.28153
	115 Phenanthrene	1.26321	1.21743	1.20166	1.18564	1.11691	AVRG		1.19697		4.45349
	116 Anthracene	1.28928	1.25052	1.23641	1.21040	1.14334	AVRG		1.22599		4.42836

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
	117 Dinoseb	0.12532	0.14836	0.15629	0.17628	0.17359	AVRG		0.15597		13.29647
	118 Disulfoton	0.38894	0.40894	0.42669	0.43008	0.47019	AVRG		0.42497		7.08800
	119 Carbazole	1.11965	1.09349	1.09254	1.07216	1.02412	AVRG		1.08039		3.30336
	120 Di-n-Butylphthalate	1.61671	1.53823	1.49315	1.45306	1.34219	AVRG		1.48867		6.85016
	121 4-Nitroquinoline 1-oxide	0.05870	0.06857	0.06933	0.06970	0.06936	AVRG		0.06713		7.05081
	122 Methapyrilene	504817	1143584	1341858	1474303	1937055	QUAD	0.000e+00	-1.58026	16.13641	0.96127
	123 Fluoranthene	1.23559	1.18735	1.17879	1.16055	1.09575	AVRG		1.17161		4.32510
	124 Benzidine	0.81191	0.93178	0.97094	1.01240	1.00864	AVRG		0.94713		8.69534
	125 Pyrene	1.95345	1.92202	1.92703	1.89823	1.84453	AVRG		1.90905		2.15063
	126 Aramite 1	0.08353	0.09368	0.08697	0.07593	0.09133	AVRG		0.08629		8.10445
M	191 Aramite, Total	0.29367	0.29091	0.28927	0.27100	0.29868	AVRG		0.28871		3.64454
	127 Aramite 2	0.11887	0.13017	0.12259	0.10637	0.12918	AVRG		0.12144		7.93183
	128 p-Dimethylamino azobenzene	0.32994	0.37606	0.37553	0.36393	0.41412	AVRG		0.37192		8.10780
	129 p-Chlorobenzilate	0.51145	0.57471	0.56235	0.53359	0.61044	AVRG		0.55851		6.82374
	130 Famphur	242439	182459	59189	96150	117141	QUAD	0.000e+00	87.27738	-613	0.52931
	131 Butylbenzylphthalate	0.97303	0.96000	0.95695	0.95938	0.91872	AVRG		0.95362		2.14876
	132 3,3'-Dimethylbenzidine	0.51847	0.51713	0.43975	0.39403	0.43110	AVRG		0.46009		12.04223

ND x 5

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
133	3,3'-Dimethoxybenzidine	0.29863	0.30206	0.30367	0.30995	0.28172	AVRG		0.29921		3.54409	
134	2-Acetylaminofluorene	0.48652	0.48733	0.48293	0.44935	0.49575	AVRG		0.48038		3.74072	
135	3,3'-Dichlorobenzidine	0.43833	0.44556	0.45053	0.44599	0.41934	AVRG		0.43995		2.80066	
136	Benzo(a)Anthracene	1.46990	1.42116	1.42921	1.40660	1.34742	AVRG		1.41486		3.13936	
137	Chrysene	1.35431	1.32131	1.32651	1.32056	1.27493	AVRG		1.31952		2.16067	
138	4,4'-Methylene bis(o-chloroan	0.26191	0.25183	0.25110	0.24266	0.22776	AVRG		0.24705		5.16559	
139	bis(2-ethylhexyl)Phthalate	1.32077	1.28774	1.28099	1.27767	1.22764	AVRG		1.27896		2.61226	
140	Di-n-octylphthalate	3.12772	3.06588	3.18309	3.04627	2.98186	AVRG		3.08096		2.50730	
141	Benzo(b)fluoranthene	1.68348	1.66666	1.73174	1.69152	1.63950	AVRG		1.68258		2.01690	
142	Benzo(k)fluoranthene	1.70955	1.64886	1.66988	1.62640	1.58330	AVRG		1.64760		2.86598	
143	7,12-dimethylbenz[a]anthracen	0.56516	0.69788	0.71765	0.74591	0.80420	AVRG		0.70616		12.52123	
144	Hexachlorophene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
145	Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
146	Benzo(a)pyrene	1.42611	1.39468	1.41898	1.40124	1.36683	AVRG		1.40157		1.65796	
148	3-Methylcholanthrene	0.66479	0.70208	0.71082	0.69810	0.75320	AVRG		0.70580		4.49545	
149	Indeno(1,2,3-cd)pyrene	1.03327	1.06598	1.05083	1.18232	1.12736	AVRG		1.09195		5.65083	
150	Dibenz(a,h)anthracene	1.03491	1.02615	1.01600	1.09302	1.08847	AVRG		1.05171		3.45078	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 29-JUN-1999 10:41
End Cal Date : 27-AUG-1999 15:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90827e.b/8270b.m
Cal Date : 07-Sep-1999 13:31 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2
151 Benzo(g,h,i)perylene	0.98413	0.98131	0.95993	1.04961	1.05064	AVRG		1.00512		4.19200
199 3-Picoline	1.41009	1.47987	1.50670	1.51446	1.62661	AVRG		1.50755		5.19032
200 N,N-Dimethylacetamide	1.14585	1.17452	1.22303	1.21647	1.30069	AVRG		1.21211		4.84380
$ 154 Nitrobenzene-d5	0.38930	0.38820	0.39402	0.39604	0.38194	AVRG		0.38990		1.41243
$ 155 2-Fluorobiphenyl	1.34604	1.29602	1.29979	1.27502	1.21909	AVRG		1.28719		3.57846
$ 156 Terphenyl-d14	1.24522	1.21942	1.22175	1.21961	1.18159	AVRG		1.21752		1.87457
$ 157 Phenol-d5	1.81628	1.78802	1.80268	1.80082	1.74601	AVRG		1.79076		1.50482
$ 158 2-Fluorophenol	1.35371	1.34234	1.36833	1.37647	1.33514	AVRG		1.35520		1.27538
$ 159 2,4,6-Tribromophenol	0.11347	0.11500	0.11800	0.11910	0.11492	AVRG		0.11610		2.02428
$ 186 2-Chlorophenol-d4	1.38405	1.36096	1.37066	1.37106	1.32659	AVRG		1.36266		1.59771
$ 187 1,2-Dichlorobenzene-d4	0.93208	0.91699	0.91693	0.90568	0.85617	AVRG		0.90557		3.22054

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 8DF0907D DFTPP Injection Date: 09/07/99

Instrument ID: A4HP8 DFTPP Injection Time: 1501

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	55.0
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	52.0
70	Less than 2.0% of mass 69	0.4 (0.7)1
127	40.0 - 60.0% of mass 198	58.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	22.8
365	Greater than 1.0% of mass 198	2.1
441	Present, but less than mass 443	8.8
442	Greater than 40.0% of mass 198	59.1
443	17.0 - 23.0% of mass 442	11.9 (20.1)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	8SM0907	09/07/99	1501
02	ASTD080	ASTD080	8AM0907	09/07/99	1542
03	D1XAQBLK	D1XAQ101	D1XAQ101	09/07/99	1625
04	D1XAQCHK	D1XAQ104	D1XAQ104	09/07/99	1704
05	D1XAQCHKDUP	D1XAQ105	D1XAQ105	09/07/99	1742
06	ERB-1	D1RMD102	D1RMD102	09/07/99	1821
07	CMSMW-14S	D1RMA103	D1RMA103	09/07/99	2251
08	CMSMW-39S	D1RMC103	D1RMC103	09/07/99	2330
09	CMSMW-12	D1RM8103	D1RM8103	09/08/99	0008
10					
11					
12					
13					
14					
15					
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18					
19					
20					
21					
22					

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0907.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 15:01
Init. Calibration Date(s): 06/29/99 08/27/99
Init. Calibration Times: 10:41 15:25
Method File: /chem/can/mss/a4hp8.i/90907a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
9	Pyridine	1.503	1.552	0.010	-3.3	50.0
10	N-Nitrosodimethylamine	0.905	0.969	0.010	-7.1	50.0
11	Ethyl methacrylate	1.278	1.401	0.010	-9.6	50.0
12	3-Chloropropionitrile	0.876	0.933	0.010	-6.6	50.0
13	Malononitrile	1.649	1.570	0.010	4.8	50.0
21	Aniline	2.208	2.198	0.010	0.5	50.0
22	Phenol	1.766	1.947	0.010	-10.2	20.0
23	bis(2-Chloroethyl)ether	1.355	1.372	0.010	-1.2	50.0
24	2-Chlorophenol	1.424	1.446	0.010	-1.6	50.0
26	1,3-Dichlorobenzene	1.498	1.573	0.010	-5.0	50.0
27	1,4-Dichlorobenzene	1.564	1.648	0.010	-5.4	20.0
28	1,2-Dichlorobenzene	1.367	1.459	0.010	-6.7	50.0
29	Benzyl Alcohol	0.962	1.004	0.010	-4.3	50.0
30	2-Methylphenol	1.316	1.311	0.010	0.3	50.0
31	bis(2-Chloroisopropyl)ether	1.521	1.627	0.010	-7.0	50.0
32	N-Nitroso-di-n-propylamine	0.991	1.043	0.050	-5.2	50.0
192	4-Methylphenol	1.410	1.445	0.010	-2.5	50.0
34	Hexachloroethane	0.544	0.547	0.010	-0.5	50.0
35	Nitrobenzene	0.385	0.413	0.010	-7.3	50.0
41	Isophorone	0.705	0.727	0.010	-3.1	50.0
42	2-Nitrophenol	0.200	0.211	0.010	-5.5	20.0
43	2,4-Dimethylphenol	0.366	0.380	0.010	-3.8	50.0
44	bis(2-Chloroethoxy)methane	0.417	0.427	0.010	-2.2	50.0
46	2,4-Toluenediamene	7.164	0.029	0.010	N/A	N/A
47	1,3,5-Trichlorobenzene	0.284	0.311	0.010	-9.8	50.0
48	2,4-Dichlorophenol	0.288	0.293	0.010	-1.6	20.0
49	Benzoic Acid	0.214	0.166	0.010	22.3	50.0
50	1,2,4-Trichlorobenzene	0.280	0.298	0.010	-6.6	50.0
51	Naphthalene	1.100	1.184	0.010	-7.6	50.0
52	4-Chloroaniline	0.453	0.456	0.010	-0.7	50.0
56	Hexachlorobutadiene	0.134	0.149	0.010	-11.7	20.0
57	1,2,3-Trichlorobenzene	0.270	0.289	0.010	-7.4	50.0
59	4-Chloro-3-Methylphenol	0.338	0.352	0.010	-4.1	20.0
62	2-Methylnaphthalene	0.720	0.770	0.010	-6.9	50.0
63	1-Methylnaphthalene	0.699	0.750	0.010	-7.2	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0907.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 15:01
Init. Calibration Date(s): 06/29/99 08/27/99
Init. Calibration Times: 10:41 15:25
Method File: /chem/can/mss/a4hp8.i/90907a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64	Hexachlorocyclopentadiene	0.224	0.161	0.050	27.9	50.0
66	2,4,6-Trichlorophenol	0.338	0.345	0.010	-1.9	20.0
67	2,4,5-Trichlorophenol	0.363	0.355	0.010	2.1	50.0
68	1,2,3,5-Tetrachlorobenzene	0.478	0.519	0.010	-8.5	50.0
70	2-Chloronaphthalene	1.117	1.187	0.010	-6.2	50.0
73	2-Nitroaniline	0.377	0.397	0.010	-5.1	50.0
74	1,2,3,4-Tetrachlorobenzene	0.448	0.480	0.010	-7.1	50.0
76	Dimethylphthalate	1.312	1.340	0.010	-2.1	50.0
78	2,6-Dinitrotoluene	0.304	0.316	0.010	-4.1	50.0
79	Acenaphthylene	1.973	2.112	0.010	-7.1	50.0
80	1,2-Dinitrobenzene	0.145	0.150	0.010	-3.7	50.0
81	3-Nitroaniline	0.334	0.302	0.010	9.8	50.0
82	Acenaphthene	1.248	1.331	0.010	-6.7	20.0
83	2,4-Dinitrophenol	8.697	0.116	0.050	N/A	N/A
85	4-Nitrophenol	0.160	0.132	0.050	17.3	50.0
86	Dibenzofuran	1.556	1.656	0.010	-6.4	50.0
87	2,4-Dinitrotoluene	0.384	0.407	0.010	-6.2	50.0
91	2,3,5,6-Tetrachlorophenol	0.270	0.242	0.010	10.3	50.0
93	Diethylphthalate	1.354	1.405	0.010	-3.8	50.0
94	Fluorene	1.361	1.422	0.010	-4.5	50.0
95	4-Chlorophenyl-phenylether	0.561	0.602	0.010	-7.3	50.0
96	4-Nitroaniline	0.327	0.260	0.010	20.3	50.0
98	4,6-Dinitro-2-methylphenol	0.127	0.131	0.010	-2.9	50.0
99	N-Nitrosodiphenylamine	0.643	0.713	0.010	-10.9	20.0
100	1,2-Diphenylhydrazine	0.899	1.068	0.010	-18.8	50.0
106	4-Bromophenyl-phenylether	0.192	0.222	0.010	-15.7	50.0
107	Hexachlorobenzene	0.189	0.217	0.010	-14.9	50.0
111	Pentachlorophenol	0.121	0.099	0.010	18.2	20.0
115	Phenanthrene	1.197	1.272	0.010	-6.3	50.0
116	Anthracene	1.226	1.288	0.010	-5.1	50.0
119	Carbazole	1.080	0.997	0.010	7.7	50.0
120	Di-n-Butylphthalate	1.489	1.632	0.010	-9.6	50.0
123	Fluoranthene	1.172	1.092	0.010	6.8	20.0
124	Benzidine	0.947	0.781	0.010	17.6	50.0
125	Pyrene	1.909	1.903	0.010	0.3	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0907.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 15:01
Init. Calibration Date(s): 06/29/99 08/27/99
Init. Calibration Times: 10:41 15:25
Method File: /chem/can/mss/a4hp8.i/90907a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.954	0.996	0.010	-4.5	50.0
	133 3,3'-Dimethoxybenzidine	0.299	0.293	0.010	2.1	50.0
	135 3,3'-Dichlorobenzidine	0.440	0.434	0.010	1.3	50.0
	136 Benzo(a)Anthracene	1.415	1.455	0.010	-2.9	50.0
	137 Chrysene	1.320	1.290	0.010	2.3	50.0
	138 4,4'-Methylene bis(o-chloro	0.247	0.246	0.010	0.5	50.0
	139 bis(2-ethylhexyl)Phthalate	1.279	1.426	0.010	-11.5	50.0
	140 Di-n-octylphthalate	3.081	3.032	0.010	1.6	20.0
	141 Benzo(b)fluoranthene	1.683	1.623	0.010	3.5	50.0
	142 Benzo(k)fluoranthene	1.648	1.570	0.010	4.7	50.0
	146 Benzo(a)pyrene	1.402	1.391	0.010	0.8	20.0
	149 Indeno(1,2,3-cd)pyrene	1.092	1.233	0.010	-12.9	50.0
	150 Dibenz(a,h)anthracene	1.052	1.181	0.010	-12.3	50.0
	151 Benzo(g,h,i)perylene	1.005	1.236	0.010	-22.9	50.0
$	154 Nitrobenzene-d5	0.390	0.420	0.010	-7.7	50.0
$	155 2-Fluorobiphenyl	1.287	1.351	0.010	-4.9	50.0
$	156 Terphenyl-d14	1.218	1.247	0.010	-2.4	50.0
$	157 Phenol-d5	1.791	1.774	0.010	0.9	50.0
$	158 2-Fluorophenol	1.355	1.332	0.010	1.7	50.0
$	159 2,4,6-Tribromophenol	0.116	0.112	0.010	3.8	50.0
$	186 2-Chlorophenol-d4	1.363	1.375	0.010	-0.9	50.0
$	187 1,2-Dichlorobenzene-d4	0.906	0.986	0.010	-8.9	50.0
M	195 Cresols, total	1.363	1.378	0.010	-1.1	50.0
	101 Diphenylamine	0.643	0.713	0.010	-10.9	50.0

Data File: /chem/can/mss/a4hp8.i/90907a.b/8sm0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 15:01
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90907a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
1	Phenol	80.0000	88.1630	10.2	20.0
2	bis(2-Chloroethyl)ether	80.0000	80.9954	1.2	50.0
3	2-Chlorophenol	80.0000	81.2484	1.6	50.0
4	1,3-Dichlorobenzene	80.0000	83.9982	5.0	50.0
5	1,4-Dichlorobenzene	80.0000	84.3080	5.4	20.0
6	1,2-Dichlorobenzene	80.0000	85.3640	6.7	50.0
7	2-Methylphenol	80.0000	79.7324	0.3	50.0
8	bis(2-Chloroisopropyl)ether	80.0000	85.6013	7.0	50.0
9	4-Methylphenol	80.0000	81.9913	2.5	50.0
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0
12	Hexachloroethane	80.0000	80.4126	0.5	50.0
13	Nitrobenzene	80.0000	85.8571	7.3	50.0
14	Isophorone	80.0000	82.4759	3.1	50.0
15	2-Nitrophenol	80.0000	84.4033	5.5	20.0
16	2,4-Dimethylphenol	80.0000	83.0762	3.8	50.0
17	bis(2-Chloroethoxy)methane	80.0000	81.7396	2.2	50.0
18	N-Nitroso-di-n-propylamine	80.0000	84.1915	5.2	50.0
18	2,4-Dichlorophenol	80.0000	81.2419	1.6	20.0
19	1,2,4-Trichlorobenzene	80.0000	85.2767	6.6	50.0
20	Naphthalene	80.0000	86.0656	7.6	50.0
21	4-Chloroaniline	80.0000	80.5265	0.7	50.0
22	Hexachlorobutadiene	80.0000	89.3715	11.7	20.0
23	4-Chloro-3-Methylphenol	80.0000	83.2885	4.1	20.0
24	2-Methylnaphthalene	80.0000	85.5274	6.9	50.0
25	Hexachlorocyclopentadiene	80.0000	57.6686	27.9	50.0
26	2,4,6-Trichlorophenol	80.0000	81.4914	1.9	20.0
27	2,4,5-Trichlorophenol	80.0000	78.3119	2.1	50.0
28	2-Chloronaphthalene	80.0000	84.9765	6.2	50.0
29	2-Nitroaniline	80.0000	84.1076	5.1	50.0
30	Dimethylphthalate	80.0000	81.6928	2.1	50.0
31	Acenaphthylene	80.0000	85.6526	7.1	50.0
32	2,6-Dinitrotoluene	80.0000	83.3013	4.1	50.0
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0
33	3-Nitroaniline	80.0000	72.1792	9.8	50.0
34	Acenaphthene	80.0000	85.3273	6.7	20.0
35	2,4-Dinitrophenol	80.0000	72.5296	9.3	50.0
36	4-Nitrophenol	80.0000	66.1495	17.3	50.0
37	Dibenzofuran	80.0000	85.1435	6.4	50.0
38	2,4-Dinitrotoluene	80.0000	84.9208	6.2	50.0

Data File: /chem/can/mss/a4hp8.i/90907a.b/8sm0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 15:01
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90907a.b/8

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
39 Diethylphthalate	80.0000	83.0355	3.8	50.0
40 4-Chlorophenyl-phenylether	80.0000	85.8243	7.3	50.0
41 Fluorene	80.0000	83.5751	4.5	50.0
42 4-Nitroaniline	80.0000	63.7207	20.3	50.0
43 4,6-Dinitro-2-methylphenol	80.0000	82.3380	2.9	50.0
44 N-Nitrosodiphenylamine	80.0000	88.7178	10.9	20.0
45 4-Bromophenyl-phenylether	80.0000	92.5548	15.7	50.0
46 Hexachlorobenzene	80.0000	91.9147	14.9	50.0
47 Pentachlorophenol	80.0000	65.4406	18.2	20.0
48 Phenanthrene	80.0000	85.0121	6.3	50.0
49 Anthracene	80.0000	84.0655	5.1	50.0
50 Carbazole	80.0000	73.8532	7.7	50.0
51 Di-n-Butylphthalate	80.0000	87.7128	9.6	50.0
52 Acenaphthene-d10	40.0000	40.0000	0.0	50.0
52 Fluoranthene	80.0000	74.5448	6.8	20.0
53 Pyrene	80.0000	79.7325	0.3	50.0
54 Butylbenzylphthalate	80.0000	83.5692	4.5	50.0
55 3,3'-Dichlorobenzidine	80.0000	78.9787	1.3	50.0
56 Benzo(a)Anthracene	80.0000	82.2966	2.9	50.0
57 Chrysene	80.0000	78.1898	2.3	50.0
58 bis(2-ethylhexyl)Phthalate	80.0000	89.2124	11.5	50.0
59 Di-n-octylphthalate	80.0000	78.7353	1.6	20.0
60 Benzo(b)fluoranthene	80.0000	77.1762	3.5	50.0
61 Benzo(k)fluoranthene	80.0000	76.2282	4.7	50.0
62 Benzo(a)pyrene	80.0000	79.3831	0.8	20.0
63 Indeno(1,2,3-cd)pyrene	80.0000	90.3141	12.9	50.0
64 Dibenz(a,h)anthracene	80.0000	89.8460	12.3	50.0
65 Benzo(g,h,i)perylene	80.0000	98.3454	22.9	50.0
66 Pyridine	80.0000	82.6286	3.3	50.0
67 N-Nitrosodimethylamine	80.0000	85.6764	7.1	50.0
68 Aniline	80.0000	79.6311	0.5	50.0
69 Benzyl Alcohol	80.0000	83.4579	4.3	50.0
71 Benzoic Acid	80.0000	62.1382	22.3	50.0
72 1-Methylnaphthalene	80.0000	85.7913	7.2	50.0
75 1,2-Dinitrobenzene	80.0000	82.9291	3.7	50.0
77 2,3,5,6-Tetrachlorophenol	80.0000	71.7786	10.3	50.0
78 1,2-Diphenylhydrazine	80.0000	95.0368	18.8	50.0
78 Phenanthrene-d10	40.0000	40.0000	0.0	50.0
79 Benzidine	80.0000	65.9370	17.6	50.0

Data File: /chem/can/mss/a4hp8.i/90907a.b/8sm0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 15:01
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90907a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
82	Ethyl methacrylate	80.0000	87.6872	9.6	50.0	
83	3-Chloropropionitrile	80.0000	85.2420	6.6	50.0	
84	Malononitrile	80.0000	76.1795	4.8	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
96	2,4-Toluenediamene	80.0000	16.1213	79.8	50.0	<-
97	1,3,5-Trichlorobenzene	80.0000	87.8021	9.8	50.0	
101	1,2,3-Trichlorobenzene	80.0000	85.9063	7.4	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
106	1,2,3,5-Tetrachlorobenzene	80.0000	86.8396	8.5	50.0	
110	1,2,3,4-Tetrachlorobenzene	80.0000	85.6952	7.1	50.0	
117	Diphenylamine	80.0000	88.7178	10.9	50.0	
140	3,3'-Dimethoxybenzidine	80.0000	78.3562	2.1	50.0	
142	4,4'-Methylene bis(o-chloroan	80.0000	79.5866	0.5	50.0	
195	Cresols, total	160.0000	161.8020	1.1	50.0	
181	Nitrobenzene-d5	80.0000	86.1878	7.7	50.0	
182	2-Fluorobiphenyl	80.0000	83.9428	4.9	50.0	
183	Terphenyl-d14	80.0000	81.9165	2.4	50.0	
184	Phenol-d5	80.0000	79.2435	0.9	50.0	
185	2-Fluorophenol	80.0000	78.6481	1.7	50.0	
186	2,4,6-Tribromophenol	80.0000	76.9370	3.8	50.0	
187	2-Chlorophenol-d4	80.0000	80.7246	0.9	50.0	
188	1,2-Dichlorobenzene-d4	80.0000	87.1102	8.9	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8am0907.d
Analysis Type:
Lab Sample ID: astd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 15:42
Init. Calibration Date(s): 06/29/99 08/27/99
Init. Calibration Times: 10:41 15:25
Method File: /chem/can/mss/a4hp8.i/90907a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	7 N-Nitrosomorpholine	1.029	0.866	0.010	15.9	50.0
	8 Ethyl methanesulfonate	1.130	0.950	0.010	15.9	50.0
	14 2-Picoline	1.482	1.481	0.010	0.1	50.0
	15 N-Nitrosomethylethylamine	0.723	0.680	0.010	6.0	50.0
	16 Methyl methanesulfonate	0.910	0.726	0.010	20.2	50.0
	18 1,3-Dichloro-2-propanol	1.628	1.424	0.010	12.5	50.0
	19 N-Nitrosodiethylamine	0.760	0.707	0.010	6.9	50.0
	25 Pentachloroethane	0.505	0.453	0.010	10.3	50.0
	36 N-Nitrosopyrrolidine	0.802	0.684	0.010	14.8	50.0
	37 Acetophenone	2.096	1.868	0.010	10.9	50.0
	39 o-Toluidine	2.488	2.178	0.010	12.5	50.0
	40 N-Nitrosopiperidine	0.190	0.179	0.010	6.0	50.0
	45 O,O,O-Triethyl phosphorothi	0.201	0.152	0.010	24.3	50.0
	53 a,a-Dimethyl-phenethylamine	0.817	0.771	0.010	5.6	50.0
	54 2,6-Dichlorophenol	0.296	0.259	0.010	12.6	50.0
	55 Hexachloropropene	0.196	0.116	0.010	41.0	50.0
	58 N-Nitrosodi-n-butylamine	0.318	0.254	0.010	20.0	50.0
	60 p-Phenylene diamine	0.323	0.279	0.010	13.5	50.0
	61 Safrole	0.304	0.279	0.010	8.3	50.0
	65 1,2,4,5-Tetrachlorobenzene	0.565	0.479	0.010	15.2	50.0
	71 Isosafrole 1	0.135	0.146	0.010	-7.8	50.0
M	188 Isosafrole, Total	0.575	0.556	0.010	3.3	50.0
	72 Isosafrole 2	1.015	0.967	0.010	4.7	50.0
	75 1,4-Naphthoquinone	1.760	0.384	0.010	N/A	N/A
	84 Pentachlorobenzene	0.513	0.372	0.010	27.6	50.0
	89 1-Naphthylamine	1.124	1.087	0.010	3.2	50.0
	92 2-Naphthylamine	1.067	0.909	0.010	14.9	50.0
	90 Zinophos	0.337	0.288	0.010	14.5	50.0
	102 Tetraethyl dithiopyrophosph	0.100	0.104	0.010	-4.7	50.0
	103 Diallate 1	0.361	0.398	0.010	-10.3	50.0
M	189 Diallate, Total	1.668	1.274	0.010	23.6	50.0
	109 Diallate 2	0.421	0.468	0.010	-11.2	50.0
	104 Phorate	0.143	0.177	0.010	-23.7	50.0
	105 1,3,5-Trinitrobenzene	0.085	0.073	0.010	14.1	50.0
	108 Phenacetin	0.364	0.376	0.010	-3.2	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8am0907.d
Analysis Type:
Lab Sample ID: astd080
Quant Type: ISTD

Injection Date: 07-SEP-1999 15:42
Init. Calibration Date(s): 06/29/99 08/27/99
Init. Calibration Times: 10:41 15:25
Method File: /chem/can/mss/a4hp8.i/90907a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
	110 Dimethoate	3.529	0.279	0.010	N/A	N/A	
	112 Pentachloronitrobenzene	0.097	0.078	0.010	19.5	50.0	
	113 4-Aminobiphenyl	0.712	0.740	0.010	-4.0	50.0	
	114 Pronamide	0.319	0.347	0.010	-9.0	50.0	
	117 Dinoseb	0.156	0.162	0.010	-3.8	50.0	
	118 Disulfoton	0.425	0.464	0.010	-9.2	50.0	
	121 4-Nitroquinoline 1-oxide	0.067	0.052	0.010	22.9	50.0	
	122 Methapyrilene	++++	0.373	0.010	N/A	N/A	
	126 Aramite 1	0.086	0.104	0.010	-20.3	50.0	
M	191 Aramite, Total	0.289	0.190	0.010	34.2	50.0	
	127 Aramite 2	0.121	0.147	0.010	-20.7	50.0	
	128 p-Dimethylamino azobenzene	0.372	0.335	0.010	9.8	50.0	
	129 p-Chlorobenzilate	0.559	0.698	0.010	-25.0	50.0	
	130 Famphur	87.277	0.112	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	0.460	0.619	0.010	-34.6	50.0	
	134 2-Acetylaminofluorene	0.480	0.536	0.010	-11.6	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.706	0.684	0.010	3.2	50.0	
	144 Hexachlorophene	++++	++++	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.706	0.668	0.010	5.4	50.0	
	193 3-Methylphenol	1.827	1.353	0.010	25.9	50.0	
	69 1,4-Dinitrobenzene	0.211	0.193	0.010	8.8	50.0	
	77 m-Dinitrobenzene	0.226	0.207	0.010	8.5	50.0	
	198 1,4-Dioxane	0.621	0.637	0.010	-2.5	50.0	
	88 2,3,4,6-Tetrachlorophenol	0.279	0.199	0.010	28.6	50.0	
	97 5-Nitro-o-toluidine	0.364	0.326	0.010	10.4	50.0	
	199 3-Picoline	1.508	1.431	0.010	5.1	50.0	
	200 N,N-Dimethylacetamide	1.212	1.255	0.010	-3.6	50.0	

Data File: /chem/can/mss/a4hp8.i/90907a.b/8am0907.d
Report Date: 09/07/1999

Pa

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8am0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 15:42
Lab Sample ID: astd080
Method File: /chem/can/mss/a4hp8.i/90907a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	80.0000	0.0000	100.0	50.0	<-
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
70	3-Methylphenol	80.0000	59.2689	25.9	50.0	
73	1,4-Dinitrobenzene	80.0000	72.9802	8.8	50.0	
74	m-Dinitrobenzene	80.0000	73.2359	8.5	50.0	
76	2,3,4,6-Tetrachlorophenol	80.0000	57.0824	28.6	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	80.0000	67.2909	15.9	50.0	
81	Ethyl methanesulfonate	80.0000	67.2647	15.9	50.0	
85	2-Picoline	80.0000	79.9423	0.1	50.0	
86	N-Nitrosomethylethylamine	80.0000	75.1825	6.0	50.0	
87	Methyl methanesulfonate	80.0000	63.8066	20.2	50.0	
88	1,3-Dichloro-2-propanol	80.0000	69.9875	12.5	50.0	
89	N-Nitrosodiethylamine	80.0000	74.4478	6.9	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	80.0000	71.7959	10.3	50.0	
91	N-Nitrosopyrrolidine	80.0000	68.1916	14.8	50.0	
92	Acetophenone	80.0000	71.3060	10.9	50.0	
93	o-Toluidine	80.0000	70.0341	12.5	50.0	
94	N-Nitrosopiperidine	80.0000	75.2166	6.0	50.0	
95	O,O,O-Triethyl phosphorothioa	80.0000	60.5326	24.3	50.0	
98	a,a-Dimethyl-phenethylamine	80.0000	75.5454	5.6	50.0	
99	2,6-Dichlorophenol	80.0000	69.9580	12.6	50.0	
100	Hexachloropropene	80.0000	47.1930	41.0	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	80.0000	64.0346	20.0	50.0	
103	p-Phenylene diamine	80.0000	69.2205	13.5	50.0	
104	Safrole	80.0000	73.3480	8.3	50.0	
105	1,2,4,5-Tetrachlorobenzene	80.0000	67.8056	15.2	50.0	
107	Isosafrole 1	80.0000	86.2533	7.8	50.0	
108	Isosafrole, Total	160.0000	154.7627	3.3	50.0	
109	Isosafrole 2	80.0000	76.2020	4.7	50.0	
111	1,4-Naphthoquinone	80.0000	121.7597	52.2	50.0	<-
112	Pentachlorobenzene	80.0000	57.9549	27.6	50.0	
113	1-Naphthylamine	80.0000	77.4131	3.2	50.0	
114	2-Naphthylamine	80.0000	68.1121	14.9	50.0	
115	Zinophos	80.0000	68.3684	14.5	50.0	

Data File: /chem/can/mss/a4hp8.i/90907a.b/8am0907.d
Report Date: 09/07/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8am0907.d
Analysis Type: NONE

Injection Date: 07-SEP-1999 15:42
Lab Sample ID: astd080
Method File: /chem/can/mss/a4hp8.i/90907a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
116	5-Nitro-o-toluidine	80.0000	71.6791	10.4	50.0	
118	Tetraethyl dithiopyrophosphat	80.0000	83.7471	4.7	50.0	
119	Diallate 1	80.0000	88.2056	10.3	50.0	
120	Diallate, Total	160.0000	122.2707	23.6	50.0	
121	Diallate 2	80.0000	88.9620	11.2	50.0	
122	Phorate	80.0000	98.9459	23.7	50.0	
123	1,3,5-Trinitrobenzene	80.0000	68.7243	14.1	50.0	
124	Phenacetin	80.0000	82.5836	3.2	50.0	
125	Dimethoate	80.0000	119.6991	49.6	50.0	
126	Pentachloronitrobenzene	80.0000	64.3853	19.5	50.0	
127	4-Aminobiphenyl	80.0000	83.2195	4.0	50.0	
128	Pronamide	80.0000	87.1731	9.0	50.0	
129	Dinoseb	80.0000	83.0017	3.8	50.0	
130	Disulfoton	80.0000	87.3945	9.2	50.0	
131	4-Nitroquinoline 1-oxide	80.0000	61.7036	NT 22.9	50.0	
132	Methapyrilene	80.0000	311.7359	289.7	50.0	<- flag if (1.0>90!.)
133	Aramite 1	80.0000	96.2369	20.3	50.0	
134	Aramite, Total	160.0000	105.3262	NT 34.2	50.0	
135	Aramite 2	80.0000	96.5680	20.7	50.0	
136	p-Dimethylamino azobenzene	80.0000	72.1215	9.8	50.0	
137	p-Chlorobenzilate	80.0000	99.9733	25.0	50.0	
138	Famphur	80.0000	-452.6505	665.8 NT	50.0	<-
139	3,3'-Dimethylbenzidine	80.0000	107.6685	34.6	50.0	
141	2-Acetylaminofluorene	80.0000	89.2976	11.6	50.0	
143	7,12-dimethylbenz[a]anthracen	80.0000	77.4352	3.2	50.0	
144	Hexachlorophene	80.0000	0.0000	100.0 NT	50.0	<-
145	3-Methylcholanthrene	80.0000	75.7046	5.4	50.0	
198	1,4-Dioxane	80.0000	81.9752	2.5	50.0	
199	3-Picoline	80.0000	75.9441	5.1	50.0	
200	N,N-Dimethylacetamide	80.0000	82.8557	3.6	50.0	

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 8SM0907 Date Analyzed: 09/07/99

Instrument ID: A4HP8 Time Analyzed: 1501

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	433442	7.64	1634841	10.12	931529	13.76
	UPPER LIMIT	866884	8.14	3269682	10.62	1863058	14.26
	LOWER LIMIT	216721	7.14	817420	9.62	465764	13.26
	EPA SAMPLE NO.						
01	D1XAQBLK	430738	7.64	1560623	10.11	923711	13.76
02	D1XAQCHK	487085	7.64	1797540	10.11	1050915	13.76
03	D1XAQCHKDUP	482077	7.64	1780643	10.11	1048375	13.76
04	ERB-1	394532	7.65	1419264	10.11	842457	13.76
05	CMSMW-14S	464595	7.64	1696021	10.11	994627	13.76
06	CMSMW-39S	448416	7.64	1622433	10.11	939846	13.76
07	CMSMW-12	459602	7.64	1716971	10.11	1012683	13.76
08							
09							
10							
11	CCA1 9/7/99 15:42	479589	7.64	1772333	10.12	1022808	13.76
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 8DF0908B DFTPP Injection Date: 09/08/99

Instrument ID: A4HP8 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	47.0
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	55.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	23.2
365	Greater than 1.0% of mass 198	2.2
441	Present, but less than mass 443	9.6
442	Greater than 40.0% of mass 198	61.6
443	17.0 - 23.0% of mass 442	11.5 (18.7)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	8SM0908	09/08/99	1556
02	SSTD020	SSTD020	8SL0908	09/08/99	1645
03	SSTD050	SSTD050	8SML0908	09/08/99	1724
04	SSTD120	SSTD120	8SMH0908	09/08/99	1803
05	SSTD160	SSTD160	8SH0908	09/08/99	1842
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Report Date: 10-Sep-1999 12:43

Calibration History

Method : /chem/can/mss/a4hp8.i/90910a.b/8270c.m
Start Cal Date: 29-JUN-1999 10:41
End Cal Date : 09-SEP-1999 12:18 14:42

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 20.000		
08-SEP-1999 16:45	1-8270	/chem/can/mss/a4hp8.i/90908c.b/8sl0908.d
29-JUN-1999 11:56	2-ap9	/chem/can/mss/a4hp8.i/90909a.b/8al0629.d
Cal Level: 2 , Cal Amount: 50.000		
08-SEP-1999 17:24	1-8270	8sml0908.d
29-JUN-1999 10:41	2-ap9	8aml0629.d
Cal Level: 3 , Cal Amount: 80.000		
29-JUN-1999 11:19	2-ap9	/chem/can/mss/a4hp8.i/90909a.b/8am0629.d
08-SEP-1999 15:56	1-8270	/chem/can/mss/a4hp8.i/90908c.b/8sm0908.d
Cal Level: 4 , Cal Amount: 120.00		
08-SEP-1999 18:03	1-8270	8smh0908.d
29-JUN-1999 12:34	2-ap9	8amh0629.d
Cal Level: 5 , Cal Amount: 160.00		
08-SEP-1999 18:42	1-8270	/chem/can/mss/a4hp8.i/90908c.b/8sh0908.d
29-JUN-1999 13:12	2-ap9	/chem/can/mss/a4hp8.i/90909a.b/8ah0629.d

Continuing Calibration

10-SEP-1999 12:20	1-8270	/chem/can/mss/a4hp8.i/90910a.b/8sm0910.d
10-SEP-1999 11:22	1-8270	/chem/can/mss/a4hp8.i/90910a.b/8sm0910.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 18:54 ulmanm
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/mss/a4hp8.i/90908a.b/8sl0908.d
Level 2: /chem/can/mss/a4hp8.i/90908a.b/8sml0908.d
Level 3: /chem/can/mss/a4hp8.i/90908a.b/8sm0908.d
Level 4: /chem/can/mss/a4hp8.i/90908a.b/8smh0908.d
Level 5: /chem/can/mss/a4hp8.i/90908a.b/8sh0908.d

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
198	1,4-Dioxane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
7	N-Nitrosomorpholine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
8	Ethyl methanesulfonate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
9	Pyridine	1.49891	1.54121	1.62918	1.55567	1.57703	1.56040	3.070	
10	N-Nitrosodimethylamine	0.97049	0.93138	0.98418	0.96949	0.97740	0.96659	2.126	
11	Ethyl methacrylate	1.35962	1.31617	1.39537	1.30954	1.30945	1.33803	2.861	
12	3-Chloropropionitrile	0.98813	0.92977	0.97787	0.97867	0.95981	0.96685	2.391	
13	Malononitrile	1.60291	1.55512	1.64126	1.60878	1.63943	1.60950	2.176	
14	2-Picoline	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
15	N-Nitrosomethylethylamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
16	Methyl methanesulfonate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
18	1,3-Dichloro-2-propanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
19	N-Nitrosodiethylamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
21	Aniline	2.03634	2.13238	2.18968	2.21147	2.25583	2.16514	3.908	
22	Phenol	1.81516	1.75670	1.85217	1.90055	1.94074	1.85306	3.879	
23	bis(2-Chloroethyl)ether	1.41215	1.32894	1.40911	1.44076	1.43776	1.40574	3.221	
24	2-Chlorophenol	1.46737	1.42211	1.49740	1.52662	1.54199	1.49110	3.219	
25	Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
26	1,3-Dichlorobenzene	1.53446	1.48091	1.56306	1.55744	1.56291	1.53976	2.269	
27	1,4-Dichlorobenzene	1.60759	1.54822	1.64758	1.64583	1.65005	1.61985	2.697	
28	1,2-Dichlorobenzene	1.43316	1.39069	1.46567	1.47589	1.49782	1.45265	2.873	
29	Benzyl Alcohol	0.97235	0.95619	1.01321	1.05346	1.09517	1.01808	5.630	
30	2-Methylphenol	1.34641	1.31863	1.37500	1.42834	1.42295	1.37827	3.458	
31	bis(2-Chloroisopropyl)ether	1.75147	1.65311	1.71491	1.75145	1.67631	1.70945	2.588	
32	N-Nitroso-di-n-propylamine	1.05895	1.04151	1.07903	1.10552	1.09313	1.07563	2.395	
M 195	Cresols, total	1.40160	1.37999	1.44234	1.49145	1.48121	1.43932	3.372	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 18:54 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
192	4-Methylphenol	1.45679	1.44134	1.50968	1.55456	1.53946	1.50037	3.322	
193	3-Methylphenol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
34	Hexachloroethane	0.56076	0.54952	0.58023	0.58498	0.58246	0.57159	2.734	
35	Nitrobenzene	0.41864	0.40343	0.41956	0.41433	0.40967	0.41313	1.620	
36	N-Nitrosopyrrolidine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
37	Acetophenone	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
39	o-Toluidine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
40	N-Nitrosopiperidine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
41	Isophorone	0.74062	0.72368	0.75024	0.74685	0.73860	0.74000	1.386	
42	2-Nitrophenol	0.20898	0.20799	0.21987	0.22007	0.22969	0.21732	4.139	
43	2,4-Dimethylphenol	0.36646	0.37716	0.38993	0.39116	0.38771	0.38248	2.752	
44	bis(2-Chloroethoxy)methane	0.42849	0.42169	0.43927	0.43767	0.43689	0.43280	1.731	
45	0,0,0-Triethyl phosphorothioa	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
46	2,4-Toluenediamene	+++++	0.02922	0.01914	0.00701	0.02971	0.02127	NT 50.221	<-
47	1,3,5-Trichlorobenzene	0.30379	0.29955	0.31291	0.31432	0.31860	0.30983	2.545	
48	2,4-Dichlorophenol	0.29052	0.28681	0.30384	0.30424	0.31182	0.29944	3.482	
49	Benzoic Acid	0.20439	0.21860	0.22469	0.22835	0.24575	0.22436	6.706	
50	1,2,4-Trichlorobenzene	0.28722	0.28272	0.29997	0.30214	0.30250	0.29491	3.141	
51	Naphthalene	1.16507	1.13250	1.17330	1.17024	1.09456	1.14713	2.930	
52	4-Chloroaniline	0.41456	0.44014	0.45256	0.45829	0.46589	0.44629	4.498	
53	a,a-Dimethyl-phenethylamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
54	2,6-Dichlorophenol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
55	Hexachloropropene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
56	Hexachlorobutadiene	0.14582	0.14169	0.15068	0.15187	0.15341	0.14870	3.253	
57	1,2,3-Trichlorobenzene	0.27874	0.27253	0.28642	0.28945	0.29399	0.28422	3.018	
58	N-Nitrosodi-n-butylamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
59	4-Chloro-3-Methylphenol	0.34147	0.33826	0.35152	0.34772	0.35341	0.34648	1.868	
60	p-Phenylene diamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
61	Safrole	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
62	2-Methylnaphthalene	0.74598	0.72407	0.75524	0.76117	0.75220	0.74773	1.915	
63	1-Methylnaphthalene	0.72547	0.70717	0.73605	0.74014	0.73117	0.72800	1.768	
64	Hexachlorocyclopentadiene	0.05869	0.20182	0.19388	0.18407	0.20856	0.16940	36.932	NO +5
65	1,2,4,5-Tetrachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 18:54 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
66	2,4,6-Trichlorophenol	0.34053	0.33935	0.36204	0.36433	0.37856	0.35696	4.701	
67	2,4,5-Trichlorophenol	0.35292	0.36255	0.38415	0.38635	0.39869	0.37693	4.959	
68	1,2,3,5-Tetrachlorobenzene	0.49836	0.50299	0.53450	0.55031	0.55864	0.52896	5.159	
69	1,4-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
70	2-Chloronaphthalene	1.13860	1.12941	1.18358	1.19490	1.19700	1.16870	2.759	
71	Isosafrole 1	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M 188	Isosafrole, Total	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
72	Isosafrole 2	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
73	2-Nitroaniline	0.40277	0.40045	0.41564	0.41804	0.42355	0.41209	2.432	
74	1,2,3,4-Tetrachlorobenzene	0.45802	0.45225	0.47989	0.48833	0.49373	0.47445	3.882	
75	1,4-Naphthoquinone	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
76	Dimethylphthalate	1.31518	1.31028	1.36629	1.37563	1.36909	1.34729	2.359	
77	m-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
78	2,6-Dinitrotoluene	0.30630	0.30811	0.32277	0.32287	0.32778	0.31757	3.052	
79	Acenaphthylene	1.98074	2.02921	2.11570	2.11312	2.03658	2.05507	2.835	
80	1,2-Dinitrobenzene	0.14947	0.15509	0.16352	0.16209	0.16334	0.15870	3.917	
81	3-Nitroaniline	0.27216	0.30449	0.31667	0.33045	0.33819	0.31239	8.304	
82	Acenaphthene	1.28611	1.26285	1.33512	1.33412	1.33132	1.30990	2.549	
83	2,4-Dinitrophenol	0.13570	0.14884	0.15349	0.18284	0.19279	0.16273	14.790	
84	Pentachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
85	4-Nitrophenol	0.16295	0.16496	0.16834	0.18376	0.18668	0.17334	6.383	
86	Dibenzofuran	1.62091	1.59595	1.68564	1.67828	1.66131	1.64842	2.340	
87	2,4-Dinitrotoluene	0.40710	0.41124	0.43152	0.43587	0.43980	0.42510	3.508	
88	2,3,4,6-Tetrachlorophenol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
89	1-Naphthylamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
90	Zinophos	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
91	2,3,5,6-Tetrachlorophenol	0.26313	0.27261	0.29001	0.29160	0.30585	0.28464	5.917	
92	2-Naphthylamine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
93	Diethylphthalate	1.40140	1.37240	1.43313	1.43093	1.39775	1.40712	1.801	
94	Fluorene	1.41216	1.38764	1.46560	1.46737	1.47739	1.44203	2.752	
95	4-Chlorophenyl-phenylether	0.57963	0.58327	0.61852	0.62485	0.64913	0.61108	4.810	
96	4-Nitroaniline	0.25043	0.27471	0.27549	0.29970	0.30711	0.28149	8.013	
97	5-Nitro-o-toluidine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 18:54 ulmanm
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
98	4,6-Dinitro-2-methylphenol	0.13526	0.14086	0.14738	0.16262	0.16793	0.15081	9.289	
99	N-Nitrosodiphenylamine	0.62264	0.64227	0.68436	0.68152	0.68698	0.66355	4.414	
100	1,2-Diphenylhydrazine	0.98542	0.96207	1.01303	1.00148	0.97184	0.98677	2.114	
101	Diphenylamine	0.62264	0.64227	0.68436	0.68152	0.68698	0.66355	4.414	
102	Tetraethyl dithiopyrophosphat	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
103	Diallate 1	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M 189	Diallate, Total	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
104	Phorate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
105	1,3,5-Trinitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
106	4-Bromophenyl-phenylether	0.20062	0.19687	0.21374	0.21226	0.22055	0.20881	4.690	
107	Hexachlorobenzene	0.20047	0.19643	0.21167	0.21012	0.21519	0.20677	3.844	
108	Phenacetin	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
109	Diallate 2	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
110	Dimethoate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
111	Pentachlorophenol	0.12362	0.12897	0.14324	0.14607	0.15251	0.13888	8.725	
112	Pentachloronitrobenzene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
113	4-Aminobiphenyl	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
114	ronamide	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
115	nanthrene	1.26229	1.21455	1.28535	1.27688	1.26413	1.26064	2.177	
116	An racene	1.17567	1.23376	1.30783	1.30288	1.27700	1.25943	4.388	
117	Dinc b	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
118	Disul ton	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
119	Carba e	0.88809	1.01937	1.05938	1.10043	1.09471	1.03240	8.421	
120	Di-n-But phthalate	1.66165	1.55201	1.62586	1.61257	1.47445	1.58531	4.637	
121	4-Nitroqu oline 1-oxide	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
122	Methapyrile e	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
123	Fluoranth ne	1.26285	1.16185	1.21801	1.26282	1.21833	1.22477	3.402	
124	Benzidine	0.06218	0.50494	0.48293	0.56068	0.66206	0.45456	50.602	<- NT
125	Pyrene	1.75334	1.84561	1.95934	1.74692	1.75327	1.81169	5.086	
126	Aramite 1	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
M 191	Aramite, Total	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
127	Aramite 2	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
128	p-Dimethylamino azob zene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 18:54 ulmanm
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
129 p-Chlorobenzilate	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
130 Famphur	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
131 Butylbenzylphthalate	0.90699	0.90930	0.97832	0.87320	0.85917	0.90540	5.094	
132 3,3'-Dimethylbenzidine	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
133 3,3'-Dimethoxybenzidine	0.01519	0.18615	0.16562	0.16419	0.21262	0.14875	51.899	<- NT
134 2-Acetylaminofluorene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
135 3,3'-Dichlorobenzidine	0.33944	0.37920	0.38418	0.43380	0.46276	0.39988	12.143	
136 Benzo(a)Anthracene	1.45677	1.44782	1.50468	1.50967	1.51594	1.48698	2.156	
137 Chrysene	1.31362	1.26130	1.31231	1.29985	1.27355	1.29212	1.825	
138 4,4'-Methylene bis(o-chloroan	0.20284	0.22988	0.22675	0.25017	0.25784	0.23350	9.257	
139 bis(2-ethylhexyl)Phthalate	1.29074	1.28415	1.37803	1.26471	1.19204	1.28193	5.188	
140 Di-n-octylphthalate	2.94574	2.84737	3.11970	3.16755	2.83462	2.98300	5.154	
141 Benzo(b)fluoranthene	1.75082	1.59663	1.70969	1.88801	1.88665	1.76636	7.021	
142 Benzo(k)fluoranthene	1.69915	1.58660	1.67375	1.86596	1.83053	1.73120	6.665	
143 7,12-dimethylbenz[a]anthracen	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
146 Benzo(a)pyrene	1.48396	1.36610	1.44498	1.58251	1.60665	1.49684	6.626	
148 3-Methylcholanthrene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
149 Indeno(1,2,3-cd)pyrene	1.23675	1.15022	1.14039	1.18938	1.42745	1.22884	9.548	
150 Dibenz(a,h)anthracene	1.21071	1.12825	1.10407	1.15092	1.35307	1.18941	8.380	
151 Benzo(g,h,i)perylene	1.21365	1.11832	1.10332	1.10228	1.27694	1.16290	6.770	
199 3-Picoline	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
200 N,N-Dimethylacetamide	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
$ 154 Nitrobenzene-d5	0.42536	0.40830	0.42260	0.42141	0.41609	0.41875	1.610	
$ 155 2-Fluorobiphenyl	1.31761	1.30213	1.37876	1.39246	1.36308	1.35081	2.900	
$ 156 Terphenyl-d14	1.14260	1.17538	1.28365	1.14057	1.17902	1.18425	4.929	
$ 157 Phenol-d5	1.77621	1.74020	1.84024	1.87201	1.90462	1.82666	3.707	
$ 158 2-Fluorophenol	1.38031	1.33592	1.40695	1.40272	1.41930	1.38904	2.366	
$ 159 2,4,6-Tribromophenol	0.11447	0.11542	0.12317	0.12532	0.13176	0.12203	5.904	
$ 186 2-Chlorophenol-d4	1.40753	1.35449	1.42047	1.45241	1.46102	1.41919	2.985	
$ 187 1,2-Dichlorobenzene-d4	0.96066	0.92865	0.98405	1.00230	1.01663	0.97846	3.560	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

Calibration File Names:
Level 1: /chem/can/mss/a4hp8.i/90908a.b/8sl0908.d
Level 2: /chem/can/mss/a4hp8.i/90908a.b/8sml0908.d
Level 3: /chem/can/mss/a4hp8.i/90908a.b/8sm0908.d
Level 4: /chem/can/mss/a4hp8.i/90908a.b/8smh0908.d
Level 5: /chem/can/mss/a4hp8.i/90908a.b/8sh0908.d

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
198	1,4-Dioxane	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
7	N-Nitrosomorpholine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
8	Ethyl methanesulfonate	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
9	Pyridine	1.49891	1.54121	1.62918	1.55567	1.57703	AVRG		1.56040		3.07001	
10	N-Nitrosodimethylamine	0.97049	0.93138	0.98418	0.96949	0.97740	AVRG		0.96659		2.12614	
11	Ethyl methacrylate	1.35962	1.31617	1.39537	1.30954	1.30945	AVRG		1.33803		2.86070	
12	3-Chloropropionitrile	0.98813	0.92977	0.97787	0.97867	0.95981	AVRG		0.96685		2.39132	
13	Malononitrile	1.60291	1.55512	1.64126	1.60878	1.63943	AVRG		1.60950		2.17582	
14	2-Picoline	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
15	N-Nitrosomethylethylamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
	16 Methyl methanesulfonate	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	18 1,3-Dichloro-2-propanol	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	19 N-Nitrosodiethylamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	21 Aniline	2.03634	2.13238	2.18968	2.21147	2.25583	AVRG		2.16514		3.90784	
	22 Phenol	1.81516	1.75670	1.85217	1.90055	1.94074	AVRG		1.85306		3.87891	
	23 bis(2-Chloroethyl)ether	1.41215	1.32894	1.40911	1.44076	1.43776	AVRG		1.40574		3.22126	
	24 2-Chlorophenol	1.46737	1.42211	1.49740	1.52662	1.54199	AVRG		1.49110		3.21865	
	25 Pentachloroethane	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	26 1,3-Dichlorobenzene	1.53446	1.48091	1.56306	1.55744	1.56291	AVRG		1.53976		2.26912	
	27 1,4-Dichlorobenzene	1.60759	1.54822	1.64758	1.64583	1.65005	AVRG		1.61985		2.69746	
	28 1,2-Dichlorobenzene	1.43316	1.39069	1.46567	1.47589	1.49782	AVRG		1.45265		2.87333	
	29 Benzyl Alcohol	0.97235	0.95619	1.01321	1.05346	1.09517	AVRG		1.01808		5.62960	
	30 2-Methylphenol	1.34641	1.31863	1.37500	1.42834	1.42295	AVRG		1.37827		3.45791	
	31 bis(2-Chloroisopropyl)ether	1.75147	1.65311	1.71491	1.75145	1.67631	AVRG		1.70945		2.58833	
	32 N-Nitroso-di-n-propylamine	1.05895	1.04151	1.07903	1.10552	1.09313	AVRG		1.07563		2.39460	
M	195 Cresols, total	1.40160	1.37999	1.44234	1.49145	1.48121	AVRG		1.43932		3.37248	
	192 4-Methylphenol	1.45679	1.44134	1.50968	1.55456	1.53946	AVRG		1.50037		3.32186	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
193	3-Methylphenol	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
34	Hexachloroethane	0.56076	0.54952	0.58023	0.58498	0.58246	AVRG		0.57159		2.73378	
35	Nitrobenzene	0.41864	0.40343	0.41956	0.41433	0.40967	AVRG		0.41313		1.61982	
36	N-Nitrosopyrrolidine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
37	Acetophenone	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
39	o-Toluidine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
40	N-Nitrosopiperidine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
41	Isophorone	0.74062	0.72368	0.75024	0.74685	0.73860	AVRG		0.74000		1.38564	
42	2-Nitrophenol	0.20898	0.20799	0.21987	0.22007	0.22969	AVRG		0.21732		4.13933	
43	2,4-Dimethylphenol	0.36646	0.37716	0.38993	0.39116	0.38771	AVRG		0.38248		2.75175	
44	bis(2-Chloroethoxy)methane	0.42849	0.42169	0.43927	0.43767	0.43689	AVRG		0.43280		1.73068	
45	O,O,O-Triethyl phosphorothioa	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
46	2,4-Toluenediamene	+++++	0.02922	0.01914	0.00701	0.02971	AVRG		0.02127		50.22150	<- NT
47	1,3,5-Trichlorobenzene	0.30379	0.29955	0.31291	0.31432	0.31860	AVRG		0.30983		2.54478	
48	2,4-Dichlorophenol	0.29052	0.28681	0.30384	0.30424	0.31182	AVRG		0.29944		3.48239	
49	Benzoic Acid	0.20439	0.21860	0.22469	0.22835	0.24575	AVRG		0.22436		6.70629	
50	1,2,4-Trichlorobenzene	0.28722	0.28272	0.29997	0.30214	0.30250	AVRG		0.29491		3.14078	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
51 Naphthalene	1.16507	1.13250	1.17330	1.17024	1.09456	AVRG		1.14713		2.92971	
52 4-Chloroaniline	0.41456	0.44014	0.45256	0.45829	0.46589	AVRG		0.44629		4.49786	
53 a,a-Dimethyl-phenethylamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
54 2,6-Dichlorophenol	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
55 Hexachloropropene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
56 Hexachlorobutadiene	0.14582	0.14169	0.15068	0.15187	0.15341	AVRG		0.14870		3.25339	
57 1,2,3-Trichlorobenzene	0.27874	0.27253	0.28642	0.28945	0.29399	AVRG		0.28422		3.01761	
58 N-Nitrosodi-n-butylamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
59 4-Chloro-3-Methylphenol	0.34147	0.33826	0.35152	0.34772	0.35341	AVRG		0.34648		1.86849	
60 p-Phenylene diamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
61 Safrole	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
62 2-Methylnaphthalene	0.74598	0.72407	0.75524	0.76117	0.75220	AVRG		0.74773		1.91463	
63 1-Methylnaphthalene	0.72547	0.70717	0.73605	0.74014	0.73117	AVRG		0.72800		1.76756	
64 Hexachlorocyclopentadiene	47440	348215	457980	563516	1244739	QUAD	0.000e+00	5.76581	-1.10599	0.98488	
65 1,2,4,5-Tetrachlorobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
66 2,4,6-Trichlorophenol	0.34053	0.33935	0.36204	0.36433	0.37856	AVRG		0.35696		4.70146	
67 2,4,5-Trichlorophenol	0.35292	0.36255	0.38415	0.38635	0.39869	AVRG		0.37693		4.95924	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
68	1,2,3,5-Tetrachlorobenzene	0.49836	0.50299	0.53450	0.55031	0.55864	AVRG		0.52896		5.15869	
69	1,4-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
70	2-Chloronaphthalene	1.13860	1.12941	1.18358	1.19490	1.19700	AVRG		1.16870		2.75861	
71	Isosafrole 1	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
M 188	Isosafrole, Total	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
72	Isosafrole 2	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
73	2-Nitroaniline	0.40277	0.40045	0.41564	0.41804	0.42355	AVRG		0.41209		2.43175	
74	1,2,3,4-Tetrachlorobenzene	0.45802	0.45225	0.47989	0.48833	0.49373	AVRG		0.47445		3.88193	
75	1,4-Naphthoquinone	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
76	Dimethylphthalate	1.31518	1.31028	1.36629	1.37563	1.36909	AVRG		1.34729		2.35894	
77	m-Dinitrobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
78	2,6-Dinitrotoluene	0.30630	0.30811	0.32277	0.32287	0.32778	AVRG		0.31757		3.05171	
79	Acenaphthylene	1.98074	2.02921	2.11570	2.11312	2.03658	AVRG		2.05507		2.83537	
80	1,2-Dinitrobenzene	0.14947	0.15509	0.16352	0.16209	0.16334	AVRG		0.15870		3.91703	
81	3-Nitroaniline	0.27216	0.30449	0.31667	0.33045	0.33819	AVRG		0.31239		8.30365	
82	Acenaphthene	1.28611	1.26285	1.33512	1.33412	1.33132	AVRG		1.30990		2.54939	
83	2,4-Dinitrophenol	0.13570	0.14884	0.15349	0.16284	0.19279	AVRG		0.16273		14.78995	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
84	Pentachlorobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
85	4-Nitrophenol	0.16295	0.16496	0.16834	0.18376	0.18668	AVRG		0.17334		6.38342	
86	Dibenzofuran	1.62091	1.59595	1.68564	1.67828	1.66131	AVRG		1.64842		2.34024	
87	2,4-Dinitrotoluene	0.40710	0.41124	0.43152	0.43587	0.43980	AVRG		0.42510		3.50758	
88	2,3,4,6-Tetrachlorophenol	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
89	1-Naphthylamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
90	Zinophos	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
91	2,3,5,6-Tetrachlorophenol	0.26313	0.27261	0.29001	0.29160	0.30585	AVRG		0.28464		5.91709	
92	2-Naphthylamine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
93	Diethylphthalate	1.40140	1.37240	1.43313	1.43093	1.39775	AVRG		1.40712		1.80127	
94	Fluorene	1.41216	1.38764	1.46560	1.46737	1.47739	AVRG		1.44203		2.75192	
95	4-Chlorophenyl-phenylether	0.57963	0.58327	0.61852	0.62485	0.64913	AVRG		0.61108		4.80953	
96	4-Nitroaniline	0.25043	0.27471	0.27549	0.29970	0.30711	AVRG		0.28149		8.01278	
97	5-Nitro-o-toluidine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
98	4,6-Dinitro-2-methylphenol	0.13526	0.14086	0.14738	0.16262	0.16793	AVRG		0.15081		9.28918	
99	N-Nitrosodiphenylamine	0.62264	0.64227	0.68436	0.68152	0.68698	AVRG		0.66355		4.41400	
100	1,2-Diphenylhydrazine	0.98542	0.96207	1.01303	1.00148	0.97184	AVRG		0.98677		2.11428	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

tart Cal Date : 08-SEP-1999 15:56
nd Cal Date : 08-SEP-1999 18:42
uant Method : ISTD
rigin : Included
arget Version : 3.40
ntegrator : HP RTE
ethod file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
al Date : 08-Sep-1999 19:08 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
101	Diphenylamine	0.62264	0.64227	0.68436	0.68152	0.68698	AVRG		0.66355		4.41400	
102	Tetraethyl dithiopyrophosphat	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
103	Diallate 1	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
M 189	Diallate, Total	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
104	Phorate	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
105	1,3,5-Trinitrobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
106	4-Bromophenyl-phenylether	0.20062	0.19687	0.21374	0.21226	0.22055	AVRG		0.20881		4.69029	
107	Hexachlorobenzene	0.20047	0.19643	0.21167	0.21012	0.21519	AVRG		0.20677		3.84392	
108	Phenacetin	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
109	Diallate 2	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
110	Dimethoate	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
111	Pentachlorophenol	0.12362	0.12897	0.14324	0.14607	0.15251	AVRG		0.13888		8.72527	
112	Pentachloronitrobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
113	4-Aminobiphenyl	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
114	Pronamide	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
115	Phenanthrene	1.26229	1.21455	1.28535	1.27688	1.26413	AVRG		1.26064		2.17730	
116	Anthracene	1.17567	1.23376	1.30783	1.30288	1.27700	AVRG		1.25943		4.38775	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
	117 Dinoseb	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	118 Disulfoton	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	119 Carbazole	0.88809	1.01937	1.05938	1.10043	1.09471	AVRG		1.03240		8.42097	
	120 Di-n-Butylphthalate	1.66165	1.55201	1.62586	1.61257	1.47445	AVRG		1.58531		4.63693	
	121 4-Nitroquinoline 1-oxide	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	122 Methapyrilene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	123 Fluoranthene	1.26285	1.16185	1.21801	1.26282	1.21833	AVRG		1.22477		3.40160	
	124 Benzidine	54035	811573	1039162	1842963	4082031	QUAD	0.000e+00	2.29410	-0.29654	0.98824	
	125 Pyrene	1.75334	1.84561	1.95934	1.74692	1.75327	AVRG		1.81169		5.08615	
	126 Aramite 1	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
M	191 Aramite, Total	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	127 Aramite 2	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	128 p-Dimethylamino azobenzene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	129 p-Chlorobenzilate	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	130 Famphur	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
	131 Butylbenzylphthalate	0.90699	0.90930	0.97832	0.87320	0.85917	AVRG		0.90540		5.09434	
	132 3,3'-Dimethylbenzidine	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

tart Cal Date : 08-SEP-1999 15:56
nd Cal Date : 08-SEP-1999 18:42
uant Method : ISTD
rigin : Included
arget Version : 3.40
ntegrator : HP RTE
ethod file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
al Date : 08-Sep-1999 19:08 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
133 3,3'-Dimethoxybenzidine	13199	299193	356387	539689	1310942	QUAD	0.000e+00	6.97689	-2.61118	0.97216	NT
134 2-Acetylaminofluorene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
135 3,3'-Dichlorobenzidine	0.33944	0.37920	0.38418	0.43380	0.46276	AVRG		0.39988		12.14299	
136 Benzo(a)Anthracene	1.45677	1.44782	1.50468	1.50967	1.51594	AVRG		1.48698		2.15645	
137 Chrysene	1.31362	1.26130	1.31231	1.29985	1.27355	AVRG		1.29212		1.82504	
138 4,4'-Methylene bis(o-chloroan	0.20284	0.22988	0.22675	0.25017	0.25784	AVRG		0.23350		9.25720	
139 bis(2-ethylhexyl)Phthalate	1.29074	1.28415	1.37803	1.26471	1.19204	AVRG		1.28193		5.18831	
140 Di-n-octylphthalate	2.94574	2.84737	3.11970	3.16755	2.83462	AVRG		2.98300		5.15392	
141 Benzo(b)fluoranthene	1.75082	1.59663	1.70969	1.88801	1.88665	AVRG		1.76636		7.02147	
142 Benzo(k)fluoranthene	1.69915	1.58660	1.67375	1.86596	1.83053	AVRG		1.73120		6.66549	
143 7,12-dimethylbenz[a]anthracen	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
146 Benzo(a)pyrene	1.48396	1.36610	1.44498	1.58251	1.60665	AVRG		1.49684		6.62601	
148 3-Methylcholanthrene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
149 Indeno(1,2,3-cd)pyrene	1.23675	1.15022	1.14039	1.18938	1.42745	AVRG		1.22884		9.54841	
150 Dibenz(a,h)anthracene	1.21071	1.12825	1.10407	1.15092	1.35307	AVRG		1.18941		8.38039	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 08-SEP-1999 15:56
End Cal Date : 08-SEP-1999 18:42
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Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp8.i/90908a.b/8270b.m
Cal Date : 08-Sep-1999 19:08 ulmanm

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
151 Benzo(g,h,i)perylene	1.21365	1.11832	1.10332	1.10228	1.27694	AVRG		1.16290		6.77018	
199 3-Picoline	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
200 N,N-Dimethylacetamide	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
$ 154 Nitrobenzene-d5	0.42536	0.40830	0.42260	0.42141	0.41609	AVRG		0.41875		1.61050	
$ 155 2-Fluorobiphenyl	1.31761	1.30213	1.37876	1.39246	1.36308	AVRG		1.35081		2.90005	
$ 156 Terphenyl-d14	1.14260	1.17538	1.28365	1.14057	1.17902	AVRG		1.18425		4.92914	
$ 157 Phenol-d5	1.77621	1.74020	1.84024	1.87201	1.90462	AVRG		1.82666		3.70690	
$ 158 2-Fluorophenol	1.38031	1.33592	1.40695	1.40272	1.41930	AVRG		1.38904		2.36645	
$ 159 2,4,6-Tribromophenol	0.11447	0.11542	0.12317	0.12532	0.13176	AVRG		0.12203		5.90419	
$ 186 2-Chlorophenol-d4	1.40753	1.35449	1.42047	1.45241	1.46102	AVRG		1.41919		2.98490	
$ 187 1,2-Dichlorobenzene-d4	0.96066	0.92865	0.98405	1.00230	1.01663	AVRG		0.97846		3.56022	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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Cal Date : 08-Sep-1999 19:08 ulmanm

Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Quad	Amt = b + m1*Rsp + m2*Rsp^2	Response

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 8DF0909D DFTPP Injection Date: 09/09/99

Instrument ID: A4HP8 DFTPP Injection Time: 1100

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	56.9
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	52.2
70	Less than 2.0% of mass 69	0.3 (0.6)1
127	40.0 - 60.0% of mass 198	57.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	22.8
365	Greater than 1.0% of mass 198	2.4
441	Present, but less than mass 443	8.0
442	Greater than 40.0% of mass 198	58.4
443	17.0 - 23.0% of mass 442	11.2 (19.2)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	8SM0909	09/09/99	1100
02	ASTD080	ASTD080	8AM0909	09/09/99	1218
03	D1R9FBLK	D1R9F101	D1R9F101	09/09/99	1852
04	D1R9FCHK	D1R9F102	D1R9F102	09/09/99	1931
05	RFIMW-29	D1PVN105	D1PVN105	09/09/99	2128
06	RFIMW-29	D1PVN106	D1PVN106	09/09/99	2207
07	RFIMW-29	D1PVN107	D1PVN107	09/09/99	2245
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0909.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 09-SEP-1999 11:00
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90909b.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
9	Pyridine	1.560	1.547	0.010	0.9	50.0
10	N-Nitrosodimethylamine	0.967	0.952	0.010	1.5	50.0
11	Ethyl methacrylate	1.338	1.364	0.010	-2.0	50.0
12	3-Chloropropionitrile	0.967	0.940	0.010	2.8	50.0
13	Malononitrile	1.609	1.540	0.010	4.3	50.0
21	Aniline	2.165	2.129	0.010	1.7	50.0
22	Phenol	1.853	1.776	0.010	4.2	20.0
23	bis(2-Chloroethyl)ether	1.406	1.364	0.010	2.9	50.0
24	2-Chlorophenol	1.491	1.449	0.010	2.8	50.0
26	1,3-Dichlorobenzene	1.540	1.570	0.010	-1.9	50.0
27	1,4-Dichlorobenzene	1.620	1.643	0.010	-1.4	20.0
28	1,2-Dichlorobenzene	1.453	1.457	0.010	-0.3	50.0
29	Benzyl Alcohol	1.018	1.004	0.010	1.4	50.0
30	2-Methylphenol	1.378	1.321	0.010	4.1	50.0
31	bis(2-Chloroisopropyl)ether	1.709	1.639	0.010	4.1	50.0
32	N-Nitroso-di-n-propylamine	1.076	1.041	0.050	3.2	50.0
192	4-Methylphenol	1.500	1.449	0.010	3.4	50.0
34	Hexachloroethane	0.572	0.570	0.010	0.3	50.0
35	Nitrobenzene	0.413	0.418	0.010	-1.2	50.0
41	Isophorone	0.740	0.745	0.010	-0.7	50.0
42	2-Nitrophenol	0.217	0.219	0.010	-0.7	20.0
43	2,4-Dimethylphenol	0.382	0.390	0.010	-1.9	50.0
44	bis(2-Chloroethoxy)methane	0.433	0.434	0.010	-0.3	50.0
46	2,4-Toluenediamene	0.021	0.027	0.010	-25.7	50.0
47	1,3,5-Trichlorobenzene	0.310	0.318	0.010	-2.6	50.0
48	2,4-Dichlorophenol	0.299	0.301	0.010	-0.5	20.0
49	Benzoic Acid	0.224	0.196	0.010	12.4	50.0
50	1,2,4-Trichlorobenzene	0.295	0.304	0.010	-3.1	50.0
51	Naphthalene	1.147	1.190	0.010	-3.7	50.0
52	4-Chloroaniline	0.446	0.459	0.010	-2.9	50.0
56	Hexachlorobutadiene	0.149	0.154	0.010	-3.6	20.0
57	1,2,3-Trichlorobenzene	0.284	0.292	0.010	-2.8	50.0
59	4-Chloro-3-Methylphenol	0.346	0.362	0.010	-4.4	20.0
62	2-Methylnaphthalene	0.748	0.788	0.010	-5.4	50.0
63	1-Methylnaphthalene	0.728	0.764	0.010	-5.0	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0909.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 09-SEP-1999 11:00
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90909b.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64	Hexachlorocyclopentadiene	5.766	0.207	0.050	N/A	N/A
66	2,4,6-Trichlorophenol	0.357	0.360	0.010	-0.8	20.0
67	2,4,5-Trichlorophenol	0.377	0.370	0.010	1.7	50.0
68	1,2,3,5-Tetrachlorobenzene	0.529	0.532	0.010	-0.5	50.0
70	2-Chloronaphthalene	1.169	1.178	0.010	-0.8	50.0
73	2-Nitroaniline	0.412	0.409	0.010	0.7	50.0
74	1,2,3,4-Tetrachlorobenzene	0.474	0.481	0.010	-1.4	50.0
76	Dimethylphthalate	1.347	1.367	0.010	-1.5	50.0
78	2,6-Dinitrotoluene	0.318	0.325	0.010	-2.2	50.0
79	Acenaphthylene	2.055	2.137	0.010	-4.0	50.0
80	1,2-Dinitrobenzene	0.159	0.165	0.010	-3.9	50.0
81	3-Nitroaniline	0.312	0.319	0.010	-2.0	50.0
82	Acenaphthene	1.310	1.349	0.010	-3.0	20.0
83	2,4-Dinitrophenol	0.163	0.152	0.050	6.7	50.0
85	4-Nitrophenol	0.173	0.175	0.050	-1.0	50.0
86	Dibenzofuran	1.648	1.701	0.010	-3.2	50.0
87	2,4-Dinitrotoluene	0.425	0.442	0.010	-3.9	50.0
91	2,3,5,6-Tetrachlorophenol	0.285	0.278	0.010	2.4	50.0
93	Diethylphthalate	1.407	1.465	0.010	-4.1	50.0
94	Fluorene	1.442	1.493	0.010	-3.5	50.0
95	4-Chlorophenyl-phenylether	0.611	0.633	0.010	-3.5	50.0
96	4-Nitroaniline	0.281	0.293	0.010	-4.2	50.0
98	4,6-Dinitro-2-methylphenol	0.151	0.154	0.010	-1.8	50.0
99	N-Nitrosodiphenylamine	0.664	0.675	0.010	-1.8	20.0
100	1,2-Diphenylhydrazine	0.987	0.989	0.010	-0.2	50.0
106	4-Bromophenyl-phenylether	0.209	0.214	0.010	-2.6	50.0
107	Hexachlorobenzene	0.207	0.213	0.010	-3.0	50.0
111	Pentachlorophenol	0.139	0.128	0.010	7.8	20.0
115	Phenanthrene	1.261	1.295	0.010	-2.7	50.0
116	Anthracene	1.259	1.314	0.010	-4.3	50.0
119	Carbazole	1.032	1.088	0.010	-5.4	50.0
120	Di-n-Butylphthalate	1.585	1.687	0.010	-6.4	50.0
123	Fluoranthene	1.225	1.294	0.010	-5.6	20.0
124	Benzidine	2.294	0.625	0.010	N/A	N/A
125	Pyrene	1.812	1.833	0.010	-1.2	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0909.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 09-SEP-1999 11:00
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90909b.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.905	0.924	0.010	-2.0	50.0
	133 3,3'-Dimethoxybenzidine	6.977	0.234	0.010	N/A	N/A
	135 3,3'-Dichlorobenzidine	0.400	0.447	0.010	-11.8	50.0
	136 Benzo(a)Anthracene	1.487	1.539	0.010	-3.5	50.0
	137 Chrysene	1.292	1.307	0.010	-1.1	50.0
	138 4,4'-Methylene bis(o-chloro	0.233	0.259	0.010	-10.8	50.0
	139 bis(2-ethylhexyl)Phthalate	1.282	1.266	0.010	1.3	50.0
	140 Di-n-octylphthalate	2.983	2.786	0.010	6.6	20.0
	141 Benzo(b)fluoranthene	1.766	1.678	0.010	5.0	50.0
	142 Benzo(k)fluoranthene	1.731	1.691	0.010	2.3	50.0
	146 Benzo(a)pyrene	1.497	1.465	0.010	2.1	20.0
	149 Indeno(1,2,3-cd)pyrene	1.229	1.215	0.010	1.1	50.0
	150 Dibenz(a,h)anthracene	1.189	1.175	0.010	1.2	50.0
	151 Benzo(g,h,i)perylene	1.163	1.140	0.010	2.0	50.0
$	154 Nitrobenzene-d5	0.419	0.423	0.010	-0.9	50.0
$	155 2-Fluorobiphenyl	1.351	1.362	0.010	-0.9	50.0
$	156 Terphenyl-d14	1.184	1.193	0.010	-0.7	50.0
$	157 Phenol-d5	1.827	1.772	0.010	3.0	50.0
$	158 2-Fluorophenol	1.389	1.347	0.010	3.0	50.0
$	159 2,4,6-Tribromophenol	0.122	0.125	0.010	-2.5	50.0
$	186 2-Chlorophenol-d4	1.419	1.379	0.010	2.8	50.0
$	187 1,2-Dichlorobenzene-d4	0.978	0.975	0.010	0.3	50.0
M	195 Cresols, total	1.439	1.385	0.010	3.8	50.0
	101 Diphenylamine	0.664	0.675	0.010	-1.8	50.0

Data File: /chem/can/mss/a4hp8.i/90909b.b/8sm0909.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0909.d
Analysis Type: NONE

Injection Date: 09-SEP-1999 11:00
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90909b.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
1	Phenol	80.0000	76.6664	4.2	20.0
2	bis(2-Chloroethyl)ether	80.0000	77.6498	2.9	50.0
3	2-Chlorophenol	80.0000	77.7677	2.8	50.0
4	1,3-Dichlorobenzene	80.0000	81.5526	1.9	50.0
5	1,4-Dichlorobenzene	80.0000	81.1554	1.4	20.0
6	1,2-Dichlorobenzene	80.0000	80.2537	0.3	50.0
7	2-Methylphenol	80.0000	76.6888	4.1	50.0
8	bis(2-Chloroisopropyl)ether	80.0000	76.7215	4.1	50.0
9	4-Methylphenol	80.0000	77.2619	3.4	50.0
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0
12	Hexachloroethane	80.0000	79.7831	0.3	50.0
13	Nitrobenzene	80.0000	80.9746	1.2	50.0
14	Isophorone	80.0000	80.5350	0.7	50.0
15	2-Nitrophenol	80.0000	80.5910	0.7	20.0
16	2,4-Dimethylphenol	80.0000	81.5308	1.9	50.0
17	bis(2-Chloroethoxy)methane	80.0000	80.2763	0.3	50.0
18	N-Nitroso-di-n-propylamine	80.0000	77.4101	3.2	50.0
18	2,4-Dichlorophenol	80.0000	80.4290	0.5	20.0
19	1,2,4-Trichlorobenzene	80.0000	82.4687	3.1	50.0
20	Naphthalene	80.0000	82.9932	3.7	50.0
21	4-Chloroaniline	80.0000	82.3255	2.9	50.0
22	Hexachlorobutadiene	80.0000	82.8501	3.6	20.0
23	4-Chloro-3-Methylphenol	80.0000	83.5577	4.4	20.0
24	2-Methylnaphthalene	80.0000	84.2802	5.4	50.0
25	Hexachlorocyclopentadiene	80.0000	87.8599	9.8	50.0
26	2,4,6-Trichlorophenol	80.0000	80.6431	0.8	20.0
27	2,4,5-Trichlorophenol	80.0000	78.6120	1.7	50.0
28	2-Chloronaphthalene	80.0000	80.6442	0.8	50.0
29	2-Nitroaniline	80.0000	79.4619	0.7	50.0
30	Dimethylphthalate	80.0000	81.1770	1.5	50.0
31	Acenaphthylene	80.0000	83.1739	4.0	50.0
32	2,6-Dinitrotoluene	80.0000	81.7842	2.2	50.0
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0
33	3-Nitroaniline	80.0000	81.6367	2.0	50.0
34	Acenaphthene	80.0000	82.3793	3.0	20.0
35	2,4-Dinitrophenol	80.0000	74.6451	6.7	50.0
36	4-Nitrophenol	80.0000	80.8023	1.0	50.0
37	Dibenzofuran	80.0000	82.5503	3.2	50.0
38	2,4-Dinitrotoluene	80.0000	83.1401	3.9	50.0

Data File: /chem/can/mss/a4hp8.i/90909b.b/8sm0909.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0909.d
Analysis Type: NONE

Injection Date: 09-SEP-1999 11:00
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90909b.b/8

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
39 Diethylphthalate	80.0000	83.2961	4.1	50.0
40 4-Chlorophenyl-phenylether	80.0000	82.8159	3.5	50.0
41 Fluorene	80.0000	82.8143	3.5	50.0
42 4-Nitroaniline	80.0000	83.3410	4.2	50.0
43 4,6-Dinitro-2-methylphenol	80.0000	81.4486	1.8	50.0
44 N-Nitrosodiphenylamine	80.0000	81.4267	1.8	20.0
45 4-Bromophenyl-phenylether	80.0000	82.1104	2.6	50.0
46 Hexachlorobenzene	80.0000	82.4324	3.0	50.0
47 Pentachlorophenol	80.0000	73.7636	7.8	20.0
48 Phenanthrene	80.0000	82.1898	2.7	50.0
49 Anthracene	80.0000	83.4587	4.3	50.0
50 Carbazole	80.0000	84.3336	5.4	50.0
51 Di-n-Butylphthalate	80.0000	85.1290	6.4	50.0
52 Acenaphthene-d10	40.0000	40.0000	0.0	50.0
52 Fluoranthene	80.0000	84.4896	5.6	20.0
53 Pyrene	80.0000	80.9488	1.2	50.0
54 Butylbenzylphthalate	80.0000	81.6198	2.0	50.0
55 3,3'-Dichlorobenzidine	80.0000	89.4399	11.8	50.0
56 Benzo(a)Anthracene	80.0000	82.8030	3.5	50.0
57 Chrysene	80.0000	80.8946	1.1	50.0
58 bis(2-ethylhexyl)Phthalate	80.0000	78.9874	1.3	50.0
59 Di-n-octylphthalate	80.0000	74.7148	6.6	20.0
60 Benzo(b)fluoranthene	80.0000	75.9910	5.0	50.0
61 Benzo(k)fluoranthene	80.0000	78.1315	2.3	50.0
62 Benzo(a)pyrene	80.0000	78.2850	2.1	20.0
63 Indeno(1,2,3-cd)pyrene	80.0000	79.1167	1.1	50.0
64 Dibenz(a,h)anthracene	80.0000	79.0506	1.2	50.0
65 Benzo(g,h,i)perylene	80.0000	78.4072	2.0	50.0
66 Pyridine	80.0000	79.3172	0.9	50.0
67 N-Nitrosodimethylamine	80.0000	78.7871	1.5	50.0
68 Aniline	80.0000	78.6540	1.7	50.0
69 Benzyl Alcohol	80.0000	78.9154	1.4	50.0
71 Benzoic Acid	80.0000	70.0613	12.4	50.0
72 1-Methylnaphthalene	80.0000	83.9788	5.0	50.0
75 1,2-Dinitrobenzene	80.0000	83.1286	3.9	50.0
77 2,3,5,6-Tetrachlorophenol	80.0000	78.0828	2.4	50.0
78 1,2-Diphenylhydrazine	80.0000	80.1506	0.2	50.0
78 Phenanthrene-d10	40.0000	40.0000	0.0	50.0
79 Benzidine	80.0000	96.1200	20.1	50.0

Data File: /chem/can/mss/a4hp8.i/90909b.b/8sm0909.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0909.d
Analysis Type: NONE

Injection Date: 09-SEP-1999 11:00
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90909b.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
82	Ethyl methacrylate	80.0000	81.5737	2.0	50.0
83	3-Chloropropionitrile	80.0000	77.7548	2.8	50.0
84	Malononitrile	80.0000	76.5485	4.3	50.0
90	Chrysene-d12	40.0000	40.0000	0.0	50.0
96	2,4-Toluenediamene	80.0000	100.5656	25.7	50.0
97	1,3,5-Trichlorobenzene	80.0000	82.0426	2.6	50.0
101	1,2,3-Trichlorobenzene	80.0000	82.2616	2.8	50.0
101	Perylene-d12	40.0000	40.0000	0.0	50.0
106	1,2,3,5-Tetrachlorobenzene	80.0000	80.3891	0.5	50.0
110	1,2,3,4-Tetrachlorobenzene	80.0000	81.1486	1.4	50.0
117	Diphenylamine	80.0000	81.4267	1.8	50.0
140	3,3'-Dimethoxybenzidine	80.0000	107.8625	34.8	50.0
142	4,4'-Methylene bis(o-chloroan	80.0000	88.6689	10.8	50.0
195	Cresols, total	160.0000	153.9750	3.8	50.0
181	Nitrobenzene-d5	80.0000	80.7200	0.9	50.0
182	2-Fluorobiphenyl	80.0000	80.6867	0.9	50.0
183	Terphenyl-d14	80.0000	80.5956	0.7	50.0
184	Phenol-d5	80.0000	77.5893	3.0	50.0
185	2-Fluorophenol	80.0000	77.5688	3.0	50.0
186	2,4,6-Tribromophenol	80.0000	82.0008	2.5	50.0
187	2-Chlorophenol-d4	80.0000	77.7346	2.8	50.0
188	1,2-Dichlorobenzene-d4	80.0000	79.7257	0.3	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8am0909.d
Analysis Type:
Lab Sample ID: astd080
Quant Type: ISTD

Injection Date: 09-SEP-1999 12:18
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90909b.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	7 N-Nitrosomorpholine	1.029	0.902	0.010	12.4	50.0
	8 Ethyl methanesulfonate	1.130	0.959	0.010	15.1	50.0
	14 2-Picoline	1.482	1.519	0.010	-2.5	50.0
	15 N-Nitrosomethylethylamine	0.723	0.668	0.010	7.7	50.0
	16 Methyl methanesulfonate	0.910	0.747	0.010	17.9	50.0
	18 1,3-Dichloro-2-propanol	1.628	1.420	0.010	12.8	50.0
	19 N-Nitrosodiethylamine	0.760	0.701	0.010	7.8	50.0
	25 Pentachloroethane	0.505	0.481	0.010	4.8	50.0
	36 N-Nitrosopyrrolidine	0.802	0.687	0.010	14.3	50.0
	37 Acetophenone	2.096	1.890	0.010	9.8	50.0
	39 o-Toluidine	2.488	2.166	0.010	13.0	50.0
	40 N-Nitrosopiperidine	0.190	0.179	0.010	5.9	50.0
	45 O,O,O-Triethyl phosphorothi	0.201	0.154	0.010	23.0	50.0
	53 a,a-Dimethyl-phenethylamine	0.817	0.760	0.010	7.0	50.0
	54 2,6-Dichlorophenol	0.296	0.266	0.010	10.0	50.0
	55 Hexachloropropene	0.196	0.149	0.010	24.1	50.0
	58 N-Nitrosodi-n-butylamine	0.318	0.263	0.010	17.3	50.0
	60 p-Phenylene diamine	0.323	0.304	0.010	5.8	50.0
	61 Safrole	0.304	0.279	0.010	8.5	50.0
	65 1,2,4,5-Tetrachlorobenzene	0.565	0.472	0.010	16.5	50.0
	71 Isosafrole 1	0.135	0.142	0.010	-5.4	50.0
M	188 Isosafrole, Total	0.575	0.555	0.010	3.5	50.0
	72 Isosafrole 2	1.015	0.968	0.010	4.7	50.0
	75 1,4-Naphthoquinone	1.760	0.381	0.010	N/A	N/A
	84 Pentachlorobenzene	0.513	0.372	0.010	27.5	50.0
	89 1-Naphthylamine	1.124	1.100	0.010	2.1	50.0
	92 2-Naphthylamine	1.067	0.921	0.010	13.7	50.0
	90 Zinophos	0.337	0.299	0.010	11.2	50.0
	102 Tetraethyl dithiopyrophosph	0.100	0.101	0.010	-1.2	50.0
	103 Diallate 1	0.361	0.375	0.010	-3.8	50.0
M	189 Diallate, Total	1.668	1.333	0.010	20.1	50.0
	109 Diallate 2	0.421	0.445	0.010	-5.8	50.0
	104 Phorate	0.143	0.166	0.010	-15.8	50.0
	105 1,3,5-Trinitrobenzene	0.085	0.079	0.010	6.7	50.0
	108 Phenacetin	0.364	0.395	0.010	-8.5	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8am0909.d
Analysis Type:
Lab Sample ID: astd080
Quant Type: ISTD

Injection Date: 09-SEP-1999 12:18
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90909b.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
	110 Dimethoate	3.529	0.249	0.010	N/A	N/A	
	112 Pentachloronitrobenzene	0.097	0.083	0.010	15.2	50.0	
	113 4-Aminobiphenyl	0.712	0.752	0.010	-5.7	50.0	
	114 Pronamide	0.319	0.351	0.010	-10.1	50.0	
	117 Dinoseb	0.156	0.193	0.010	-24.1	50.0	
	118 Disulfoton	0.425	0.448	0.010	-5.5	50.0	
	121 4-Nitroquinoline 1-oxide	0.067	0.082	0.010	-21.9	50.0	
	122 Methapyrilene	++++	0.349	0.010	N/A	N/A	
	126 Aramite 1	0.086	0.087	0.010	-0.7	50.0	
M	191 Aramite, Total	0.289	0.245	0.010	15.2	50.0	
	127 Aramite 2	0.121	0.122	0.010	-0.6	50.0	
	128 p-Dimethylamino azobenzene	0.372	0.307	0.010	17.5	50.0	
	129 p-Chlorobenzilate	0.559	0.621	0.010	-11.1	50.0	
	130 Famphur	87.277	0.043	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	0.460	0.442	0.010	3.9	50.0	
	134 2-Acetylaminofluorene	0.480	0.513	0.010	-6.8	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.706	0.724	0.010	-2.5	50.0	
	144 Hexachlorophene	++++	++++	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.706	0.687	0.010	2.7	50.0	
	193 3-Methylphenol	1.827	1.351	0.010	26.0	50.0	
	69 1,4-Dinitrobenzene	0.211	0.202	0.010	4.4	50.0	
	77 m-Dinitrobenzene	0.226	0.215	0.010	4.8	50.0	
	198 1,4-Dioxane	0.621	0.629	0.010	-1.3	50.0	
	88 2,3,4,6-Tetrachlorophenol	0.279	0.231	0.010	17.4	50.0	
	97 5-Nitro-o-toluidine	0.364	0.349	0.010	4.0	50.0	
	199 3-Picoline	1.508	1.454	0.010	3.6	50.0	
	200 N,N-Dimethylacetamide	1.212	1.319	0.010	-8.8	50.0	

Data File: /chem/can/mss/a4hp8.i/90909b.b/8am0909.d
Report Date: 09/10/1999

9-10-99

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8am0909.d
Analysis Type: NONE

Injection Date: 09-SEP-1999 12:18
Lab Sample ID: astd080
Method File: /chem/can/mss/a4hp8.i/90909b.b/827

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	80.0000	0.0000	NA 100.0	50.0	<-
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
70	3-Methylphenol	80.0000	59.1802	26.0	50.0	
73	1,4-Dinitrobenzene	80.0000	76.4876	4.4	50.0	
74	m-Dinitrobenzene	80.0000	76.1875	4.8	50.0	
76	2,3,4,6-Tetrachlorophenol	80.0000	66.0414	17.4	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	80.0000	70.0694	12.4	50.0	
81	Ethyl methanesulfonate	80.0000	67.9264	15.1	50.0	
85	2-Picoline	80.0000	81.9686	2.5	50.0	
86	N-Nitrosomethylethylamine	80.0000	73.8649	7.7	50.0	
87	Methyl methanesulfonate	80.0000	65.6408	17.9	50.0	
88	1,3-Dichloro-2-propanol	80.0000	69.7829	12.8	50.0	
89	N-Nitrosodiethylamine	80.0000	73.7941	7.8	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	80.0000	76.1849	4.8	50.0	
91	N-Nitrosopyrrolidine	80.0000	68.5276	14.3	50.0	
92	Acetophenone	80.0000	72.1606	9.8	50.0	
93	o-Toluidine	80.0000	69.6362	13.0	50.0	
94	N-Nitrosopiperidine	80.0000	75.2833	5.9	50.0	
95	O,O,O-Triethyl phosphorothioa	80.0000	61.5750	23.0	50.0	
98	a,a-Dimethyl-phenethylamine	80.0000	74.4096	7.0	50.0	
99	2,6-Dichlorophenol	80.0000	71.9646	10.0	50.0	
100	Hexachloropropene	80.0000	60.6855	24.1	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	80.0000	66.1513	17.3	50.0	
103	p-Phenylene diamine	80.0000	75.3604	5.8	50.0	
104	Safrole	80.0000	73.1951	8.5	50.0	
105	1,2,4,5-Tetrachlorobenzene	80.0000	66.8377	16.5	50.0	
107	Isosafrole 1	80.0000	84.3059	5.4	50.0	
108	Isosafrole, Total	160.0000	154.3727	3.5	50.0	
109	Isosafrole 2	80.0000	76.2399	4.7	50.0	
111	1,4-Naphthoquinone	80.0000	120.0069	50.0	50.0	<-
112	Pentachlorobenzene	80.0000	57.9984	27.5	50.0	
113	1-Naphthylamine	80.0000	78.3142	2.1	50.0	
114	2-Naphthylamine	80.0000	69.0441	13.7	50.0	
115	Zinophos	80.0000	71.0264	11.2	50.0	

previously flagged R

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 8SM0909 Date Analyzed: 09/09/99

Instrument ID: A4HP8 Time Analyzed: 1100

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	519178	8.07	1923405	10.57	1107971	14.24
	UPPER LIMIT	1038356	8.57	3846810	11.07	2215942	14.74
	LOWER LIMIT	259589	7.57	961702	10.07	553986	13.74
	EPA SAMPLE NO.						
01	D1R9FBLK	441941	8.07	1578418	10.56	940078	14.23
02	D1R9FCHK	633770	8.07	2325456	10.56	1373141	14.24
03	RFIMW-29	560206	8.06	1991655	10.56	1178431	14.24
04	RFIMW-29	492682	8.06	1706068	10.56	1008032	14.23
05	RFIMW-29	581056	8.07	2101714	10.56	1272611	14.24
06							
07							
08	CCAL						
09	9/12/99 12:18	432538	8.06	1579000	10.56	929360	14.24
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 8SM0909 Date Analyzed: 09/09/99

Instrument ID: A4HP8 Time Analyzed: 1100

		IS4 (PHN) AREA #	RT	IS5 (CRY) AREA #	RT	IS6 (PRY) AREA #	RT
	12 HOUR STD	1624293	17.40	1180768	23.04	787005	25.84
	UPPER LIMIT	3248586	17.90	2361536	23.54	1574010	26.34
	LOWER LIMIT	812146	16.90	590384	22.54	393502	25.34
	EPA SAMPLE NO.						
01	D1R9FBLK	1322454	17.39	976537	23.02	805967	25.83
02	D1R9FCHK	2019839	17.39	1440639	23.02	1062049	25.83
03	RFIMW-29	1824985	17.40	1328726	23.03	962442	25.84
04	RFIMW-29	1486250	17.39	1073680	23.02	771275	25.83
05	RFIMW-29	1867439	17.40	1255112	23.03	851327	25.84
06							
07							
08							
09	CCA2 9/9/99	1407243	17.40	1013334	23.03	825311	25.84
10							
11	12:18						
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract: Limited

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 8DF0910D DFTPP Injection Date: 09/10/99

Instrument ID: A4HP8 DFTPP Injection Time: 1220

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	57.0
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	52.8
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	40.0 - 60.0% of mass 198	58.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	23.0
365	Greater than 1.0% of mass 198	2.3
441	Present, but less than mass 443	8.6
442	Greater than 40.0% of mass 198	55.1
443	17.0 - 23.0% of mass 442	10.2 (18.5)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	8SM0910	09/10/99	1220
02	ASTD080	ASTD080	8AM0910	09/10/99	1415
03	CMSMW-13F	D1PX6103	D1PX6103	09/10/99	1728
04	CMSMW-13S	D1PXF103	D1PXF103	09/10/99	1807
05	PM4NA	D1PW4103	D1PW4103	09/10/99	1846
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
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19					
20					
21					
22					

QUANTERRA-NORTH CANTON

Limited

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0910.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 12:20
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90910b.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
9	Pyridine	1.560	1.500	0.010	3.9	50.0	
10	N-Nitrosodimethylamine	0.967	0.940	0.010	2.7	50.0	
11	Ethyl methacrylate	1.338	1.333	0.010	0.4	50.0	
12	3-Chloropropionitrile	0.967	0.944	0.010	2.3	50.0	
13	Malononitrile	1.609	1.490	0.010	7.4	50.0	
21	Aniline	2.165	2.089	0.010	3.5	50.0	
22	Phenol	1.853	1.803	0.010	2.7	20.0	
23	bis(2-Chloroethyl)ether	1.406	1.347	0.010	4.2	50.0	
24	2-Chlorophenol	1.491	1.438	0.010	3.6	50.0	
26	1,3-Dichlorobenzene	1.540	1.549	0.010	-0.6	50.0	
27	1,4-Dichlorobenzene	1.620	1.641	0.010	-1.3	20.0	
28	1,2-Dichlorobenzene	1.453	1.450	0.010	0.2	50.0	
29	Benzyl Alcohol	1.018	1.017	0.010	0.1	50.0	
30	2-Methylphenol	1.378	1.309	0.010	5.0	50.0	
31	bis(2-Chloroisopropyl)ether	1.709	1.595	0.010	6.7	50.0	
32	N-Nitroso-di-n-propylamine	1.076	1.037	0.050	3.6	50.0	
192	4-Methylphenol	1.500	1.477	0.010	1.6	50.0	
34	Hexachloroethane	0.572	0.567	0.010	0.8	50.0	
35	Nitrobenzene	0.413	0.417	0.010	-0.9	50.0	
41	Isophorone	0.740	0.726	0.010	1.8	50.0	
42	2-Nitrophenol	0.217	0.225	0.010	-3.6	20.0	
43	2,4-Dimethylphenol	0.382	0.385	0.010	-0.7	50.0	
44	bis(2-Chloroethoxy)methane	0.433	0.423	0.010	2.2	50.0	
46	2,4-Toluenediamene	0.021	++++	0.010	++++	50.0	<-
47	1,3,5-Trichlorobenzene	0.310	0.320	0.010	-3.4	50.0	
48	2,4-Dichlorophenol	0.299	0.301	0.010	-0.6	20.0	
49	Benzoic Acid	0.224	0.181	0.010	19.1	50.0	
50	1,2,4-Trichlorobenzene	0.295	0.303	0.010	-2.7	50.0	
51	Naphthalene	1.147	1.189	0.010	-3.6	50.0	
52	4-Chloroaniline	0.446	0.452	0.010	-1.2	50.0	
56	Hexachlorobutadiene	0.149	0.155	0.010	-4.5	20.0	
57	1,2,3-Trichlorobenzene	0.284	0.292	0.010	-2.8	50.0	
59	4-Chloro-3-Methylphenol	0.346	0.362	0.010	-4.5	20.0	
62	2-Methylnaphthalene	0.748	0.782	0.010	-4.6	50.0	
63	1-Methylnaphthalene	0.728	0.757	0.010	-4.0	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0910.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 12:20
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90910b.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64	Hexachlorocyclopentadiene	5.766	0.144	0.050	N/A	N/A
66	2,4,6-Trichlorophenol	0.357	0.360	0.010	-0.9	20.0
67	2,4,5-Trichlorophenol	0.377	0.378	0.010	-0.4	50.0
68	1,2,3,5-Tetrachlorobenzene	0.529	0.536	0.010	-1.3	50.0
70	2-Chloronaphthalene	1.169	1.184	0.010	-1.3	50.0
73	2-Nitroaniline	0.412	0.411	0.010	0.3	50.0
74	1,2,3,4-Tetrachlorobenzene	0.474	0.484	0.010	-2.0	50.0
76	Dimethylphthalate	1.347	1.369	0.010	-1.6	50.0
78	2,6-Dinitrotoluene	0.318	0.323	0.010	-1.8	50.0
79	Acenaphthylene	2.055	2.122	0.010	-3.3	50.0
80	1,2-Dinitrobenzene	0.159	0.164	0.010	-3.3	50.0
81	3-Nitroaniline	0.312	0.311	0.010	0.5	50.0
82	Acenaphthene	1.310	1.351	0.010	-3.2	20.0
83	2,4-Dinitrophenol	0.163	0.153	0.050	5.7	50.0
85	4-Nitrophenol	0.173	0.183	0.050	-5.4	50.0
86	Dibenzofuran	1.648	1.723	0.010	-4.5	50.0
87	2,4-Dinitrotoluene	0.425	0.441	0.010	-3.7	50.0
91	2,3,5,6-Tetrachlorophenol	0.285	0.279	0.010	1.8	50.0
93	Diethylphthalate	1.407	1.465	0.010	-4.1	50.0
94	Fluorene	1.442	1.501	0.010	-4.1	50.0
95	4-Chlorophenyl-phenylether	0.611	0.641	0.010	-4.9	50.0
96	4-Nitroaniline	0.281	0.269	0.010	4.5	50.0
98	4,6-Dinitro-2-methylphenol	0.151	0.155	0.010	-2.6	50.0
99	N-Nitrosodiphenylamine	0.664	0.676	0.010	-1.8	20.0
100	1,2-Diphenylhydrazine	0.987	0.980	0.010	0.7	50.0
106	4-Bromophenyl-phenylether	0.209	0.216	0.010	-3.4	50.0
107	Hexachlorobenzene	0.207	0.212	0.010	-2.7	50.0
111	Pentachlorophenol	0.139	0.116	0.010	16.7	20.0
115	Phenanthrene	1.261	1.301	0.010	-3.2	50.0
116	Anthracene	1.259	1.309	0.010	-4.0	50.0
119	Carbazole	1.032	1.065	0.010	-3.1	50.0
120	Di-n-Butylphthalate	1.585	1.667	0.010	-5.1	50.0
123	Fluoranthene	1.225	1.262	0.010	-3.1	20.0
124	Benzidine	2.294	0.456	0.010	N/A	N/A
125	Pyrene	1.812	1.909	0.010	-5.3	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8sm0910.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 12:20
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90910b.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.905	0.941	0.010	-4.0	50.0
	133 3,3'-Dimethoxybenzidine	6.977	0.141	0.010	N/A	N/A
	135 3,3'-Dichlorobenzidine	0.400	0.424	0.010	-5.9	50.0
	136 Benzo(a)Anthracene	1.487	1.545	0.010	-3.9	50.0
	137 Chrysene	1.292	1.284	0.010	0.6	50.0
	138 4,4'-Methylene bis(o-chloro	0.233	0.250	0.010	-6.9	50.0
	139 bis(2-ethylhexyl)Phthalate	1.282	1.289	0.010	-0.5	50.0
	140 Di-n-octylphthalate	2.983	3.209	0.010	-7.6	20.0
	141 Benzo(b)fluoranthene	1.766	1.852	0.010	-4.9	50.0
	142 Benzo(k)fluoranthene	1.731	1.865	0.010	-7.7	50.0
	146 Benzo(a)pyrene	1.497	1.612	0.010	-7.7	20.0
	149 Indeno(1,2,3-cd)pyrene	1.229	1.387	0.010	-12.9	50.0
	150 Dibenz(a,h)anthracene	1.189	1.339	0.010	-12.6	50.0
	151 Benzo(g,h,i)perylene	1.163	1.287	0.010	-10.6	50.0
$	154 Nitrobenzene-d5	0.419	0.423	0.010	-1.0	50.0
$	155 2-Fluorobiphenyl	1.351	1.361	0.010	-0.8	50.0
$	156 Terphenyl-d14	1.184	1.258	0.010	-6.2	50.0
$	157 Phenol-d5	1.827	1.778	0.010	2.7	50.0
$	158 2-Fluorophenol	1.389	1.330	0.010	4.3	50.0
$	159 2,4,6-Tribromophenol	0.122	0.126	0.010	-3.1	50.0
$	186 2-Chlorophenol-d4	1.419	1.380	0.010	2.8	50.0
$	187 1,2-Dichlorobenzene-d4	0.978	0.993	0.010	-1.5	50.0
M	195 Cresols, total	1.439	1.393	0.010	3.2	50.0
	101 Diphenylamine	0.664	0.676	0.010	-1.8	50.0

Data File: /chem/can/mss/a4hp8.i/90910b.b/8sm0910.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0910.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 12:20
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90910b.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
1	Phenol	80.0000	77.8504	2.7	20.0
2	bis(2-Chloroethyl)ether	80.0000	76.6730	4.2	50.0
3	2-Chlorophenol	80.0000	77.1306	3.6	50.0
4	1,3-Dichlorobenzene	80.0000	80.4926	0.6	50.0
5	1,4-Dichlorobenzene	80.0000	81.0306	1.3	20.0
6	1,2-Dichlorobenzene	80.0000	79.8405	0.2	50.0
7	2-Methylphenol	80.0000	76.0081	5.0	50.0
8	bis(2-Chloroisopropyl)ether	80.0000	74.6498	6.7	50.0
9	4-Methylphenol	80.0000	78.7374	1.6	50.0
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0
12	Hexachloroethane	80.0000	79.3285	0.8	50.0
13	Nitrobenzene	80.0000	80.7018	0.9	50.0
14	Isophorone	80.0000	78.5365	1.8	50.0
15	2-Nitrophenol	80.0000	82.8983	3.6	20.0
16	2,4-Dimethylphenol	80.0000	80.5647	0.7	50.0
17	bis(2-Chloroethoxy)methane	80.0000	78.2288	2.2	50.0
18	N-Nitroso-di-n-propylamine	80.0000	77.1073	3.6	50.0
18	2,4-Dichlorophenol	80.0000	80.4465	0.6	20.0
19	1,2,4-Trichlorobenzene	80.0000	82.1435	2.7	50.0
20	Naphthalene	80.0000	82.9097	3.6	50.0
21	4-Chloroaniline	80.0000	80.9677	1.2	50.0
22	Hexachlorobutadiene	80.0000	83.6330	4.5	20.0
23	4-Chloro-3-Methylphenol	80.0000	83.5778	4.5	20.0
24	2-Methylnaphthalene	80.0000	83.6510	4.6	50.0
25	Hexachlorocyclopentadiene	80.0000	62.6066	21.7	50.0
26	2,4,6-Trichlorophenol	80.0000	80.7520	0.9	20.0
27	2,4,5-Trichlorophenol	80.0000	80.2904	0.4	50.0
28	2-Chloronaphthalene	80.0000	81.0299	1.3	50.0
29	2-Nitroaniline	80.0000	79.7906	0.3	50.0
30	Dimethylphthalate	80.0000	81.2986	1.6	50.0
31	Acenaphthylene	80.0000	82.6125	3.3	50.0
32	2,6-Dinitrotoluene	80.0000	81.4149	1.8	50.0
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0
33	3-Nitroaniline	80.0000	79.6044	0.5	50.0
34	Acenaphthene	80.0000	82.5394	3.2	20.0
35	2,4-Dinitrophenol	80.0000	75.4216	5.7	50.0
36	4-Nitrophenol	80.0000	84.3302	5.4	50.0
37	Dibenzofuran	80.0000	83.6387	4.5	50.0
38	2,4-Dinitrotoluene	80.0000	82.9274	3.7	50.0

Data File: /chem/can/mss/a4hp8.i/90910b.b/8sm0910.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0910.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 12:20
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90910b.b/

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
39 Diethylphthalate	80.0000	83.2926	4.1	50.0
40 4-Chlorophenyl-phenylether	80.0000	83.9010	4.9	50.0
41 Fluorene	80.0000	83.2709	4.1	50.0
42 4-Nitroaniline	80.0000	76.4154	4.5	50.0
43 4,6-Dinitro-2-methylphenol	80.0000	82.0716	2.6	50.0
44 N-Nitrosodiphenylamine	80.0000	81.4704	1.8	20.0
45 4-Bromophenyl-phenylether	80.0000	82.6822	3.4	50.0
46 Hexachlorobenzene	80.0000	82.1857	2.7	50.0
47 Pentachlorophenol	80.0000	66.6476	16.7	20.0
48 Phenanthrene	80.0000	82.5607	3.2	50.0
49 Anthracene	80.0000	83.1649	4.0	50.0
50 Carbazole	80.0000	82.4988	3.1	50.0
51 Di-n-Butylphthalate	80.0000	84.1197	5.1	50.0
52 Acenaphthene-d10	40.0000	40.0000	0.0	50.0
52 Fluoranthene	80.0000	82.4468	3.1	20.0
53 Pyrene	80.0000	84.2747	5.3	50.0
54 Butylbenzylphthalate	80.0000	83.1896	4.0	50.0
55 3,3'-Dichlorobenzidine	80.0000	84.7491	5.9	50.0
56 Benzo(a)Anthracene	80.0000	83.1128	3.9	50.0
57 Chrysene	80.0000	79.5015	0.6	50.0
58 bis(2-ethylhexyl)Phthalate	80.0000	80.4304	0.5	50.0
59 Di-n-octylphthalate	80.0000	86.0677	7.6	20.0
60 Benzo(b)fluoranthene	80.0000	83.8997	4.9	50.0
61 Benzo(k)fluoranthene	80.0000	86.1818	7.7	50.0
62 Benzo(a)pyrene	80.0000	86.1351	7.7	20.0
63 Indeno(1,2,3-cd)pyrene	80.0000	90.3270	12.9	50.0
64 Dibenz(a,h)anthracene	80.0000	90.0667	12.6	50.0
65 Benzo(g,h,i)perylene	80.0000	88.5047	10.6	50.0
66 Pyridine	80.0000	76.9170	3.9	50.0
67 N-Nitrosodimethylamine	80.0000	77.8332	2.7	50.0
68 Aniline	80.0000	77.1870	3.5	50.0
69 Benzyl Alcohol	80.0000	79.9206	0.1	50.0
71 Benzoic Acid	80.0000	64.7012	19.1	50.0
72 1-Methylnaphthalene	80.0000	83.2058	4.0	50.0
75 1,2-Dinitrobenzene	80.0000	82.6554	3.3	50.0
77 2,3,5,6-Tetrachlorophenol	80.0000	78.5428	1.8	50.0
78 1,2-Diphenylhydrazine	80.0000	79.4717	0.7	50.0
78 Phenanthrene-d10	40.0000	40.0000	0.0	50.0
79 Benzidine	80.0000	73.8904	7.6	50.0

Data File: /chem/can/mss/a4hp8.i/90910b.b/8sm0910.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8sm0910.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 12:20
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp8.i/90910b.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
82	Ethyl methacrylate	80.0000	79.7174	0.4	50.0	
83	3-Chloropropionitrile	80.0000	78.1242	2.3	50.0	
84	Malononitrile	80.0000	74.0719	7.4	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
96	2,4-Toluenediamene	80.0000	0.0000	100.0	50.0	<-
97	1,3,5-Trichlorobenzene	80.0000	82.6983	3.4	50.0	
101	1,2,3-Trichlorobenzene	80.0000	82.2021	2.8	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
106	1,2,3,5-Tetrachlorobenzene	80.0000	81.0094	1.3	50.0	
110	1,2,3,4-Tetrachlorobenzene	80.0000	81.6338	2.0	50.0	
117	Diphenylamine	80.0000	81.4704	1.8	50.0	
140	3,3'-Dimethoxybenzidine	80.0000	70.3759	12.0	50.0	
142	4,4'-Methylene bis(o-chloroan	80.0000	85.5069	6.9	50.0	
195	Cresols, total	160.0000	154.8613	3.2	50.0	
181	Nitrobenzene-d5	80.0000	80.8139	1.0	50.0	
182	2-Fluorobiphenyl	80.0000	80.6237	0.8	50.0	
183	Terphenyl-d14	80.0000	84.9487	6.2	50.0	
184	Phenol-d5	80.0000	77.8536	2.7	50.0	
185	2-Fluorophenol	80.0000	76.5907	4.3	50.0	
186	2,4,6-Tribromophenol	80.0000	82.4937	3.1	50.0	
187	2-Chlorophenol-d4	80.0000	77.7769	2.8	50.0	
188	1,2-Dichlorobenzene-d4	80.0000	81.2266	1.5	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Limited

Instrument ID: a4hp8.i
Lab File ID: 8am0910.d
Analysis Type:
Lab Sample ID: astd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 14:15
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90910b.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
7	N-Nitrosomorpholine	1.029	0.923	0.010	10.4	50.0
8	Ethyl methanesulfonate	1.130	0.937	0.010	17.0	50.0
14	2-Picoline	1.482	1.484	0.010	-0.1	50.0
15	N-Nitrosomethylethylamine	0.723	0.644	0.010	10.9	50.0
16	Methyl methanesulfonate	0.910	0.737	0.010	19.0	50.0
18	1,3-Dichloro-2-propanol	1.628	1.380	0.010	15.2	50.0
19	N-Nitrosodiethylamine	0.760	0.678	0.010	10.7	50.0
25	Pentachloroethane	0.505	0.479	0.010	5.1	50.0
36	N-Nitrosopyrrolidine	0.802	0.681	0.010	15.1	50.0
37	Acetophenone	2.096	1.886	0.010	10.0	50.0
39	o-Toluidine	2.488	2.149	0.010	13.6	50.0
40	N-Nitrosopiperidine	0.190	0.180	0.010	5.5	50.0
45	O,O,O-Triethyl phosphorothi	0.201	0.159	0.010	20.7	50.0
53	a,a-Dimethyl-phenethylamine	0.817	0.803	0.010	1.6	50.0
54	2,6-Dichlorophenol	0.296	0.228	0.010	23.0	50.0
55	Hexachloropropene	0.196	0.159	0.010	18.8	50.0
58	N-Nitrosodi-n-butylamine	0.318	0.267	0.010	16.0	50.0
60	p-Phenylene diamine	0.323	0.271	0.010	16.0	50.0
61	Safrole	0.304	0.286	0.010	5.9	50.0
65	1,2,4,5-Tetrachlorobenzene	0.565	0.470	0.010	16.8	50.0
71	Isosafrole 1	0.135	0.138	0.010	-2.6	50.0
M 188	Isosafrole, Total	0.575	0.558	0.010	2.9	50.0
72	Isosafrole 2	1.015	0.978	0.010	3.7	50.0
75	1,4-Naphthoquinone	1.760	0.281	0.010	N/A	N/A
84	Pentachlorobenzene	0.513	0.377	0.010	26.5	50.0
89	1-Naphthylamine	1.124	1.122	0.010	0.1	50.0
92	2-Naphthylamine	1.067	0.973	0.010	8.9	50.0
90	Zinophos	0.337	0.301	0.010	10.6	50.0
102	Tetraethyl dithiopyrophosph	0.100	0.100	0.010	-0.8	50.0
103	Diallate 1	0.361	0.372	0.010	-3.0	50.0
M 189	Diallate, Total	1.668	1.362	0.010	18.3	50.0
109	Diallate 2	0.421	0.438	0.010	-4.2	50.0
104	Phorate	0.143	0.167	0.010	-16.5	50.0
105	1,3,5-Trinitrobenzene	0.085	0.077	0.010	10.0	50.0
108	Phenacetin	0.364	0.402	0.010	-10.6	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp8.i
Lab File ID: 8am0910.d
Analysis Type:
Lab Sample ID: astd080
Quant Type: ISTD

Injection Date: 10-SEP-1999 14:15
Init. Calibration Date(s): 06/29/99 09/08/99
Init. Calibration Times: 10:41 18:42
Method File: /chem/can/mss/a4hp8.i/90910b.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
	110 Dimethoate	3.529	0.209	0.010	N/A	N/A	
	112 Pentachloronitrobenzene	0.097	0.086	0.010	11.8	50.0	
	113 4-Aminobiphenyl	0.712	0.790	0.010	-11.0	50.0	
	114 Pronamide	0.319	0.351	0.010	-10.3	50.0	
	117 Dinoseb	0.156	0.195	0.010	-24.9	50.0	
	118 Disulfoton	0.425	0.442	0.010	-3.9	50.0	
	121 4-Nitroquinoline 1-oxide	0.067	0.070	0.010	-4.7	50.0	
	122 Methapyrilene	++++	0.296	0.010	N/A	N/A	
	126 Aramite 1	0.086	0.088	0.010	-2.4	50.0	
M	191 Aramite, Total	0.289	0.237	0.010	18.0	50.0	
	127 Aramite 2	0.121	0.124	0.010	-1.9	50.0	
	128 p-Dimethylamino azobenzene	0.372	0.328	0.010	11.9	50.0	
	129 p-Chlorobenzilate	0.559	0.676	0.010	-21.0	50.0	
	130 Famphur	87.277	0.076	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	0.460	0.441	0.010	4.1	50.0	
	134 2-Acetylaminofluorene	0.480	0.485	0.010	-0.9	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.706	0.756	0.010	-7.0	50.0	
	144 Hexachlorophene	++++	++++	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.706	0.716	0.010	-1.4	50.0	
	193 3-Methylphenol	1.827	1.338	0.010	26.8	50.0	
	69 1,4-Dinitrobenzene	0.211	0.200	0.010	5.5	50.0	
	77 m-Dinitrobenzene	0.226	0.212	0.010	6.0	50.0	
	198 1,4-Dioxane	0.621	0.591	0.010	4.8	50.0	
	88 2,3,4,6-Tetrachlorophenol	0.279	0.221	0.010	20.9	50.0	
	97 5-Nitro-o-toluidine	0.364	0.348	0.010	4.3	50.0	
	199 3-Picoline	1.508	1.426	0.010	5.4	50.0	
	200 N,N-Dimethylacetamide	1.212	1.314	0.010	-8.4	50.0	

Data File: /chem/can/mss/a4hp8.i/90910b.b/8am0910.d
Report Date: 09/10/1999

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CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8am0910.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 14:15
Lab Sample ID: astd080
Method File: /chem/can/mss/a4hp8.i/90910b.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	80.0000	0.0000	100.0	50.0	<-
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
70	3-Methylphenol	80.0000	58.5902	26.8	50.0	
73	1,4-Dinitrobenzene	80.0000	75.5665	5.5	50.0	
74	m-Dinitrobenzene	80.0000	75.1746	6.0	50.0	
76	2,3,4,6-Tetrachlorophenol	80.0000	63.3103	20.9	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	80.0000	71.6968	10.4	50.0	
81	Ethyl methanesulfonate	80.0000	66.3652	17.0	50.0	
85	2-Picoline	80.0000	80.1057	0.1	50.0	
86	N-Nitrosomethylethylamine	80.0000	71.2834	10.9	50.0	
87	Methyl methanesulfonate	80.0000	64.7953	19.0	50.0	
88	1,3-Dichloro-2-propanol	80.0000	67.8053	15.2	50.0	
89	N-Nitrosodiethylamine	80.0000	71.4315	10.7	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	80.0000	75.9251	5.1	50.0	
91	N-Nitrosopyrrolidine	80.0000	67.9565	15.1	50.0	
92	Acetophenone	80.0000	71.9950	10.0	50.0	
93	o-Toluidine	80.0000	69.1027	13.6	50.0	
94	N-Nitrosopiperidine	80.0000	75.5871	5.5	50.0	
95	O,O,O-Triethyl phosphorothioa	80.0000	63.4108	20.7	50.0	
98	a,a-Dimethyl-phenethylamine	80.0000	78.7027	1.6	50.0	
99	2,6-Dichlorophenol	80.0000	61.6272	23.0	50.0	
100	Hexachloropropene	80.0000	64.9673	18.8	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	80.0000	67.1939	16.0	50.0	
103	p-Phenylene diamine	80.0000	67.1815	16.0	50.0	
104	Safrole	80.0000	75.2551	5.9	50.0	
105	1,2,4,5-Tetrachlorobenzene	80.0000	66.5263	16.8	50.0	
107	Isosafrole 1	80.0000	82.0592	2.6	50.0	
108	Isosafrole, Total	160.0000	155.2918	2.9	50.0	
109	Isosafrole 2	80.0000	77.0592	3.7	50.0	
111	1,4-Naphthoquinone	80.0000	75.6356	5.5	50.0	
112	Pentachlorobenzene	80.0000	58.8233	26.5	50.0	
113	1-Naphthylamine	80.0000	79.9179	0.1	50.0	
114	2-Naphthylamine	80.0000	72.9176	8.9	50.0	
115	Zinophos	80.0000	71.4973	10.6	50.0	

Data File: /chem/can/mss/a4hp8.i/90910b.b/8am0910.d
Report Date: 09/10/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp8.i
Lab File ID: 8am0910.d
Analysis Type: NONE

Injection Date: 10-SEP-1999 14:15
Lab Sample ID: astd080
Method File: /chem/can/mss/a4hp8.i/90910b.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
116	5-Nitro-o-toluidine	80.0000	76.5985	4.3	50.0	
118	Tetraethyl dithiopyrophosphat	80.0000	80.6204	0.8	50.0	
119	Diallate 1	80.0000	82.3609	3.0	50.0	
120	Diallate, Total	160.0000	130.6414	18.3	50.0	
121	Diallate 2	80.0000	83.3567	4.2	50.0	
122	Phorate	80.0000	93.2356	16.5	50.0	
123	1,3,5-Trinitrobenzene	80.0000	72.0225	10.0	50.0	
124	Phenacetin	80.0000	88.4745	10.6	50.0	
125	Dimethoate	80.0000	81.9039	2.4	50.0	
126	Pentachloronitrobenzene	80.0000	70.5421	11.8	50.0	
127	4-Aminobiphenyl	80.0000	88.8163	11.0	50.0	
128	Pronamide	80.0000	88.2238	10.3	50.0	
129	Dinoseb	80.0000	99.9108	24.9	50.0	
130	Disulfoton	80.0000	83.1582	3.9	50.0	
131	4-Nitroquinoline 1-oxide	80.0000	83.7963	4.7	50.0	
132	Methapyrilene	80.0000	188.1656	135.2	50.0	<-
133	Aramite 1	80.0000	81.9515	2.4	50.0	
134	Aramite, Total	160.0000	131.1484	18.0	50.0	
135	Aramite 2	80.0000	81.5065	1.9	50.0	
136	p-Dimethylamino azobenzene	80.0000	70.4525	11.9	50.0	
137	p-Chlorobenzilate	80.0000	96.8086	21.0	50.0	
138	Famphur	80.0000	-32.3509	140.4	50.0	<-
139	3,3'-Dimethylbenzidine	80.0000	76.7079	4.1	50.0	
141	2-Acetylaminofluorene	80.0000	80.7399	0.9	50.0	
143	7,12-dimethylbenz[a]anthracen	80.0000	85.6088	7.0	50.0	
144	Hexachlorophene	80.0000	0.0000	100.0	50.0	<-
145	3-Methylcholanthrene	80.0000	81.1167	1.4	50.0	
198	1,4-Dioxane	80.0000	76.1573	4.8	50.0	
199	3-Picoline	80.0000	75.6822	5.4	50.0	
200	N,N-Dimethylacetamide	80.0000	86.7540	8.4	50.0	

> 90% → R

NT

NT

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 8SM0910 Date Analyzed: 09/10/99

Instrument ID: A4HP8 Time Analyzed: 1220

		IS1 (DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	449329	8.04	1655051	10.54	949995	14.21
	UPPER LIMIT	898658	8.54	3310102	11.04	1899990	14.71
	LOWER LIMIT	224664	7.54	827526	10.04	474998	13.71
	EPA SAMPLE NO.						
01	CMSMW-13F	274662	8.03	958279	10.53	575831	14.20
02	CMSMW-13S	349702	8.03	1224010	10.53	737794	14.20
03	PM4NA	284679	8.03	995527	10.53	596080	14.20
04							
05							
06							
07							
08	CCAL 9/10/99 14:15	409171	8.03	1487865	10.53	912262	14.21
09							
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16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 8SM0910 Date Analyzed: 09/10/99

Instrument ID: A4HP8 Time Analyzed: 1220

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	1392536	17.37	931825	23.01	546884	25.80
	UPPER LIMIT	2785072	17.87	1863650	23.51	1093768	26.30
	LOWER LIMIT	696268	16.87	465912	22.51	273442	25.30
	EPA SAMPLE NO.						
01	CMSMW-13F	836650	17.36	640177	22.99	433309	25.80
02	CMSMW-13S	1095296	17.36	919021	23.00	577498	25.81
03	PM4NA	865055	17.36	671466	22.99	473275	25.80
04							
05							
06							
07	CCAL 9/10/99 14:15	1376272	17.37	912973	22.99	661196	25.80
08							
09							
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18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 7DF0909A DFTPP Injection Date: 09/09/99

Instrument ID: A4HP7 DFTPP Injection Time: 1009

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	46.9
68	Less than 2.0% of mass 69	1.0 (1.8)1
69	Mass 69 relative abundance	52.9
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	51.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.1
275	10.0 - 30.0% of mass 198	20.5
365	Greater than 1.0% of mass 198	2.8
441	Present, but less than mass 443	8.6
442	40.0 - 100.0% of mass 198	62.6
443	17.0 - 23.0% of mass 442	13.0 (20.9)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	ASTD020	ASTD020	7AL0909	09/09/99	1621
02	ASTD050	ASTD050	7AML0909	09/09/99	1700
03	ASTD080	ASTD080	7AM0909	09/09/99	1739
04	ASTD120	ASTD120	7AMH0909	09/09/99	1818
05	ASTD160	ASTD160	7AH0909	09/09/99	1858
06					
07					
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5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 7DF0910B DFTPP Injection Date: 09/10/99

Instrument ID: A4HP7 DFTPP Injection Time: 1146

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	40.2
68	Less than 2.0% of mass 69	0.2 (0.4)1
69	Mass 69 relative abundance	46.1
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	48.4
197	Less than 1.0% of mass 198	0.2
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.6
275	10.0 - 30.0% of mass 198	22.1
365	Greater than 1.0% of mass 198	2.4
441	Present, but less than mass 443	12.0
442	40.0 - 100.0% of mass 198	81.9
443	17.0 - 23.0% of mass 442	14.9 (18.2)2

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	7SM0910	09/10/99	1205
02	SSTD160	SSTD160	7SH0910	09/10/99	1321
03	SSTD120	SSTD120	7SMH0910	09/10/99	1437
04	SSTD050	SSTD050	7SML0910	09/10/99	1515
05	SSTD050 20	SSTD050 20	7SL0910B	09/10/99	1554
06					
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Report Date: 13-Sep-1999 12:46

Calibration History

Method : /chem/can/mss/a4hp7.i/90910c.b/8270c.m
Start Cal Date: 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54

Initial Calibration

Injection Date	Sublist	Calibration File
Cal Level: 1 , Cal Amount: 20.000		
10-SEP-1999 15:54	1-8270	7sl0910b.d
09-SEP-1999 16:21	2-ap9	/chem/can/mss/a4hp7.i/90909c.b/7al0909.d
Cal Level: 2 , Cal Amount: 50.000		
10-SEP-1999 15:15	1-8270	7sml0910.d
09-SEP-1999 17:00	2-ap9	7aml0909.d
Cal Level: 3 , Cal Amount: 80.000		
10-SEP-1999 12:05	1-8270	/chem/can/mss/a4hp7.i/90910c.b/7sm0910.d
09-SEP-1999 17:39	2-ap9	/chem/can/mss/a4hp7.i/90909c.b/7am0909.d
Cal Level: 4 , Cal Amount: 120.00		
10-SEP-1999 14:37	1-8270	7smh0910.d
09-SEP-1999 18:18	2-ap9	7amh0909.d
Cal Level: 5 , Cal Amount: 160.00		
10-SEP-1999 13:21	1-8270	/chem/can/mss/a4hp7.i/90910c.b/7sh0910.d
09-SEP-1999 18:58	2-ap9	/chem/can/mss/a4hp7.i/90909c.b/7ah0909.d

Continuing Calibration

10-SEP-1999 16:47	1-8270	7sm0910a.d
10-SEP-1999 17:26	2-ap9	7aml910a.d
10-SEP-1999 12:05	1-8270	/chem/can/mss/a4hp7.i/90910c.b/7sm0910.d

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

Calibration File Names:
Level 1: /chem/can/mss/a4hp7.i/90910a.b/7sl0910b.d
Level 2: /chem/can/mss/a4hp7.i/90910a.b/7sml0910.d
Level 3: /chem/can/mss/a4hp7.i/90910a.b/7sm0910.d
Level 4: /chem/can/mss/a4hp7.i/90910a.b/7smh0910.d
Level 5: /chem/can/mss/a4hp7.i/90910a.b/7sh0910.d

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
198	1,4-Dioxane	0.70998	0.61974	0.60586	0.63711	0.67967	0.65047	6.660
7	N-Nitrosomorpholine	0.75549	0.86236	0.83769	0.81643	0.83019	0.82043	4.870
8	Ethyl methanesulfonate	0.85254	0.92852	0.90289	0.89234	0.93522	0.90230	3.653
9	Pyridine	1.22082	1.33487	1.24373	1.41100	1.38149	1.31838	6.337
10	N-Nitrosodimethylamine	0.80706	0.87075	0.86270	0.90499	0.89309	0.86772	4.368
11	Ethyl methacrylate	1.44310	1.49497	1.46719	1.57725	1.45968	1.48844	3.565
12	3-Chloropropionitrile	0.75278	0.77233	0.78948	0.79223	0.79257	0.77988	2.218
13	Malononitrile	1.21586	1.27377	1.33959	1.33012	1.39753	1.31138	5.270
14	2-Picoline	1.27302	1.34022	1.31349	1.29820	1.38879	1.32275	3.345
15	N-Nitrosomethylethylamine	0.61584	0.63939	0.62492	0.62081	0.63446	0.62708	1.547
16	Methyl methanesulfonate	0.79982	0.83962	0.80421	0.78063	0.81811	0.80848	2.718
18	1,3-Dichloro-2-propanol	1.21351	1.31903	1.27580	1.27590	1.33214	1.28328	3.623
19	*N-Nitrosodiethylamine*	*0.59303*	*0.63920*	*0.61782*	*0.61749*	*0.63667*	*0.62084*	2.993
21	Aniline	1.58371	1.65765	1.57694	1.72523	1.86465	1.68164	7.069
22	Phenol	1.41849	1.48373	1.56941	1.56056	1.66600	1.53964	6.084
23	bis(2-Chloroethyl)ether	1.24272	1.28375	1.31298	1.33292	1.38217	1.31091	3.992
24	2-Chlorophenol	1.24746	1.25589	1.31507	1.31458	1.36709	1.30002	3.778
25	Pentachloroethane	0.52550	0.54209	0.51069	0.52140	0.54280	0.52849	2.618
26	1,3-Dichlorobenzene	1.45210	1.48167	1.49030	1.52685	1.49751	1.48968	1.814
27	1,4-Dichlorobenzene	1.53118	1.55805	1.55932	1.59171	1.58078	1.56421	1.494
28	1,2-Dichlorobenzene	1.32220	1.37458	1.39444	1.41608	1.41195	1.38385	2.758
29	Benzyl Alcohol	0.78402	0.81201	0.86771	0.86299	0.93613	0.85257	6.855
30	2-Methylphenol	1.11495	1.13917	1.19462	1.18626	1.26701	1.18040	4.962
31	bis(2-Chloroisopropyl)ether	1.13846	1.16577	1.20875	1.21286	1.26784	1.19874	4.128
32	N-Nitroso-di-n-propylamine	0.96152	0.97858	1.05170	1.03592	1.07354	1.02025	4.716
M 195	Cresols, total	1.11124	1.16884	1.23443	1.22662	1.30643	1.20951	6.078

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
192 4-Methylphenol	1.10753	1.19852	1.27423	1.26698	1.34584	1.23862	7.262	
193 3-Methylphenol	0.92411	1.12224	1.11339	1.09197	1.11610	1.07356	7.854	
34 Hexachloroethane	0.53874	0.56469	0.57885	0.59446	0.59057	0.57346	3.943	
35 Nitrobenzene	0.41188	0.42199	0.43554	0.44739	0.44070	0.43150	3.336	
36 N-Nitrosopyrrolidine	0.46867	0.57193	0.56142	0.54597	0.55822	0.54124	7.688	
37 Acetophenone	1.64469	1.82648	1.77993	1.73557	1.80053	1.75744	4.056	
39 o-Toluidine	1.62982	1.88690	1.87561	1.83664	1.91327	1.82845	6.257	
40 N-Nitrosopiperidine	0.15794	0.16471	0.16702	0.15907	0.16779	0.16331	2.784	
41 Isophorone	0.78591	0.77823	0.80591	0.82380	0.80062	0.79889	2.229	
42 2-Nitrophenol	0.16932	0.17689	0.17419	0.19226	0.20042	0.18262	7.195	
43 2,4-Dimethylphenol	0.37883	0.39016	0.40267	0.41286	0.40767	0.39844	3.469	
44 bis(2-Chloroethoxy)methane	0.39257	0.39383	0.41156	0.42988	0.43669	0.41291	4.894	
45 O,O,O-Triethyl phosphorothioa	0.20047	0.20140	0.19938	0.19067	0.20616	0.19962	2.821	
46 2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
47 1,3,5-Trichlorobenzene	0.37056	0.36832	0.37647	0.38868	0.37994	0.37679	2.148	
48 2,4-Dichlorophenol	0.26834	0.27689	0.29297	0.29543	0.30295	0.28731	4.956	
49 Benzoic Acid	0.08268	0.11665	0.13282	0.14081	0.31877	0.15835	58.360	<- NT
50 1,2,4-Trichlorobenzene	0.35603	0.35432	0.36564	0.37256	0.36673	0.36306	2.116	
51 Naphthalene	1.08487	1.08119	1.13224	1.15360	1.13852	1.11808	2.948	
52 4-Chloroaniline	0.32116	0.32586	0.32834	0.35796	0.39929	0.34652	9.480	
53 a,a-Dimethyl-phenethylamine	0.52479	0.64421	0.75340	0.71884	0.72088	0.67242	13.641	
54 2,6-Dichlorophenol	0.24989	0.27170	0.27855	0.26907	0.28310	0.27046	4.719	
55 Hexachloropropene	0.13270	0.15138	0.16451	0.15957	0.17106	0.15584	9.496	
56 Hexachlorobutadiene	0.22465	0.21758	0.21593	0.22004	0.20695	0.21703	3.005	
57 1,2,3-Trichlorobenzene	0.34613	0.34834	0.36145	0.36535	0.36084	0.35642	2.412	
58 N-Nitrosodi-n-butylamine	0.26130	0.27879	0.28553	0.27285	0.28628	0.27695	3.726	
59 4-Chloro-3-Methylphenol	0.31949	0.31867	0.34863	0.35261	0.35535	0.33895	5.398	
60 p-Phenylene diamine	0.05488	0.07505	0.09823	0.10862	0.12797	0.09295	30.759	NT
61 Safrole	0.28209	0.28628	0.28791	0.26966	0.28929	0.28305	2.810	
62 2-Methylnaphthalene	0.70591	0.72562	0.75190	0.77593	0.76270	0.74441	3.811	
63 1-Methylnaphthalene	0.71445	0.71848	0.76268	0.77113	0.75242	0.74383	3.480	
64 Hexachlorocyclopentadiene	0.12422	0.15443	0.15398	0.16713	0.24673	0.16930	27.209	
65 1,2,4,5-Tetrachlorobenzene	0.55522	0.56252	0.55106	0.53637	0.54953	0.55094	1.738	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
66	2,4,6-Trichlorophenol	0.34975	0.37198	0.38975	0.40285	0.40897	0.38466	6.271
67	2,4,5-Trichlorophenol	0.34074	0.35490	0.38204	0.38298	0.40516	0.37316	6.811
68	1,2,3,5-Tetrachlorobenzene	0.60996	0.59795	0.62073	0.63285	0.62106	0.61651	2.135
69	1,4-Dinitrobenzene	0.09189	0.12691	0.14057	0.13963	0.14561	0.12892	16.924
70	2-Chloronaphthalene	1.06934	1.06089	1.12154	1.14635	1.14609	1.10884	3.723
71	Isosafrole 1	0.13209	0.13982	0.14264	0.13829	0.13919	0.13841	2.808
M 188	Isosafrole, Total	0.50000	0.51763	0.51384	0.49666	0.51248	0.50812	1.813
72	Isosafrole 2	0.86791	0.89544	0.88505	0.85502	0.88577	0.87784	1.840
73	2-Nitroaniline	0.28154	0.30395	0.32339	0.32231	0.36007	0.31825	9.085
74	1,2,3,4-Tetrachlorobenzene	0.55294	0.54520	0.56708	0.58214	0.56257	0.56199	2.510
75	1,4-Naphthoquinone	0.35978	0.40286	0.39630	0.36695	0.37154	0.37949	4.996
76	Dimethylphthalate	1.37538	1.36910	1.41502	1.45539	1.40638	1.40425	2.468
77	m-Dinitrobenzene	0.11272	0.15241	0.15825	0.16173	0.16980	0.15099	14.767
78	2,6-Dinitrotoluene	0.26239	0.27243	0.27474	0.30287	0.29614	0.28171	6.055
79	Acenaphthylene	1.84497	1.86724	1.90044	2.02289	1.97230	1.92157	3.869
80	1,2-Dinitrobenzene	0.11038	0.11876	0.12375	0.13436	0.13749	0.12495	8.929
81	3-Nitroaniline	0.15449	0.15005	0.16881	0.17044	0.23846	0.17645	20.274
82	Acenaphthene	1.17875	1.21180	1.27689	1.31504	1.27328	1.25115	4.382
83	2,4-Dinitrophenol	0.05735	0.07843	0.09081	0.09259	0.13152	0.09014	30.029
84	Pentachlorobenzene	0.45573	0.47419	0.46860	0.45322	0.48002	0.46635	2.488
85	4-Nitrophenol	0.13083	0.15592	0.18025	0.15415	0.19788	0.16381	15.785
86	Dibenzofuran	1.36919	1.40015	1.48543	1.51647	1.51555	1.45736	4.693
87	2,4-Dinitrotoluene	0.30175	0.31494	0.33961	0.34692	0.37201	0.33505	8.231
88	2,3,4,6-Tetrachlorophenol	0.18531	0.23530	0.24859	0.24980	0.26209	0.23622	12.699
89	1-Naphthylamine	0.77419	0.70715	0.72710	0.72293	0.78092	0.74246	4.442
90	Zinophos	0.29440	0.31865	0.31066	0.30264	0.32166	0.30960	3.639
91	2,3,5,6-Tetrachlorophenol	0.24966	0.27405	0.30289	0.30365	0.32164	0.29038	9.793
92	2-Naphthylamine	0.64293	0.35861	0.36071	0.38746	0.46163	0.44227	27.060
93	Diethylphthalate	1.50549	1.48515	1.55370	1.59905	1.49379	1.52744	3.143
94	Fluorene	1.18842	1.23462	1.33014	1.35799	1.33005	1.28824	5.652
95	4-Chlorophenyl-phenylether	0.61528	0.64003	0.66404	0.69136	0.67172	0.65648	4.489
96	4-Nitroaniline	0.17494	0.15581	0.16596	0.15229	0.21529	0.17286	14.652
97	5-Nitro-o-toluidine	0.21020	0.23010	0.24995	0.24467	0.26479	0.23994	8.646

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

	Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD
	98 4,6-Dinitro-2-methylphenol	0.08788	0.10427	0.10757	0.12177	0.13105	0.11051	15.065
	99 N-Nitrosodiphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	0.53466	6.889
	100 1,2-Diphenylhydrazine	0.90571	0.94076	0.92624	1.00867	0.93719	0.94371	4.111
	101 Diphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	0.53466	6.889
	102 Tetraethyl dithiopyrophosphat	0.11228	0.12055	0.11984	0.11345	0.11375	0.11597	3.360
	103 Diallate 1	0.35040	0.36320	0.35929	0.34603	0.35623	0.35503	1.935
M	189 Diallate, Total	1.25506	1.34205	1.28943	1.30776	1.41329	1.32152	4.553
	104 Phorate	0.14099	0.14408	0.14359	0.13945	0.14073	0.14177	1.398
	105 1,3,5-Trinitrobenzene	0.03428	0.04653	0.05159	0.05093	0.05766	0.04820	18.116
	106 4-Bromophenyl-phenylether	0.23831	0.23529	0.23305	0.25440	0.23161	0.23853	3.868
	107 Hexachlorobenzene	0.25244	0.25801	0.25181	0.27534	0.24317	0.25616	4.671
	108 Phenacetin	0.22622	0.28772	0.30929	0.29212	0.30966	0.28500	12.042
	109 Diallate 2	0.43707	0.44913	0.43627	0.41976	0.43271	0.43499	2.419
	110 Dimethoate	0.22031	0.23169	0.22989	0.21766	0.22360	0.22463	2.687
	111 Pentachlorophenol	0.10390	0.12286	0.14967	0.14520	0.15498	0.13532	15.817
	112 Pentachloronitrobenzene	0.10725	0.11004	0.11069	0.10491	0.10935	0.10845	2.179
	113 4-Aminobiphenyl	0.39588	0.36706	0.45558	0.46055	0.50004	0.43582	12.276
	114 Pronamide	0.35874	0.36630	0.36634	0.34691	0.35862	0.35938	2.212
	115 Phenanthrene	1.15667	1.18121	1.22307	1.26240	1.22436	1.20954	3.408
	116 Anthracene	1.10332	1.14521	1.18726	1.20877	1.22703	1.17432	4.262
	117 Dinoseb	0.06928	0.13805	0.15543	0.15313	0.17326	0.13783	29.242
	118 Disulfoton	0.41311	0.41634	0.40998	0.40466	0.41537	0.41189	1.147
	119 Carbazole	0.69318	0.62758	0.61918	0.62606	0.84105	0.68141	13.817
	120 Di-n-Butylphthalate	1.69282	1.70066	1.67034	1.82653	1.56779	1.69163	5.456
	121 4-Nitroquinoline 1-oxide	0.01856	0.04165	0.05202	0.05413	0.06735	0.04675	38.967
	122 Methapyrilene	0.29746	0.28157	0.26723	0.24801	0.23721	0.26629	9.171
	123 Fluoranthene	1.18842	1.18176	1.24067	1.18505	1.23078	1.20534	2.328
	124 Benzidine	0.13465	0.14120	0.21589	0.25795	0.48463	0.24686	57.776
	125 Pyrene	1.63616	1.56396	1.60300	1.63736	1.76599	1.64129	4.624
	126 Aramite 1	0.11844	0.13163	0.12275	0.11075	0.11557	0.11983	6.599
M	191 Aramite, Total	0.25963	0.26537	0.26278	0.26658	0.32054	0.27498	9.312
	127 Aramite 2	0.17212	0.18347	0.17244	0.15210	0.15879	0.16778	7.381
	128 p-Dimethylamino azobenzene	0.31963	0.35852	0.34188	0.31056	0.31873	0.32986	6.000

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

Start Cal Date : 09-SEP-1999 16:21
End Cal Date : 10-SEP-1999 15:54
Quant Method : ISTD
Origin : Disabled
Target Version : 3.40
Integrator : HP RTE
Method file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Cal Date : 10-Sep-1999 16:13 gruberj
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	80.000 Level 3	120.000 Level 4	160.000 Level 5	RRF	% RSD	
129 p-Chlorobenzilate	0.79794	0.84570	0.76974	0.69083	0.71177	0.76320	8.271	
130 Famphur	0.45723	0.09216	0.06181	0.04670	0.02571	0.13672	132.236	<- NT
131 Butylbenzylphthalate	0.83572	0.80470	0.80594	0.83518	0.83272	0.82285	1.950	
132 3,3'-Dimethylbenzidine	0.46457	0.30676	0.32426	0.34652	0.35884	0.36019	17.131	
133 3,3'-Dimethoxybenzidine	0.07511	0.11161	0.06467	0.17463	0.17514	0.12023	43.955	NT
134 2-Acetylaminofluorene	0.33914	0.44310	0.45500	0.45112	0.48980	0.43563	13.044	
135 3,3'-Dichlorobenzidine	0.43481	0.43794	0.44391	0.46943	0.44597	0.44641	3.052	
136 Benzo(a)Anthracene	1.48496	1.43272	1.47464	1.49020	1.45184	1.46687	1.643	
137 Chrysene	1.30414	1.31511	1.33044	1.33509	1.29954	1.31686	1.190	
138 4,4'-Methylene bis(o-chloroan	0.26088	0.24554	0.24551	0.26658	0.24534	0.25277	4.039	
139 bis(2-ethylhexyl)Phthalate	1.23151	1.16165	1.16497	1.21802	1.18395	1.19202	2.638	
140 Di-n-octylphthalate	2.38086	2.43673	2.61886	2.56378	3.10808	2.62166	10.991	
141 Benzo(b)fluoranthene	1.54956	1.61706	1.80897	1.71728	1.81961	1.70250	6.947	
142 Benzo(k)fluoranthene	1.60574	1.60539	1.73720	1.70529	1.80653	1.69203	5.142	
143 7,12-dimethylbenz[a]anthracen	0.65365	0.66115	0.65194	0.60968	0.65533	0.64635	3.216	
144 Hexachlorophene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
145 Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	+++++	+++++	<-
146 Benzo(a)pyrene	1.42486	1.41654	1.57139	1.51429	1.49834	1.48508	4.364	
148 3-Methylcholanthrene	0.58676	0.62480	0.63896	0.60604	0.64119	0.61955	3.725	
149 Indeno(1,2,3-cd)pyrene	1.24735	1.18072	1.40751	1.56661	1.28423	1.33728	11.398	
150 Dibenz(a,h)anthracene	1.25674	1.16086	1.35748	1.32376	1.10863	1.24149	8.506	
151 Benzo(g,h,i)perylene	1.20785	1.12039	1.33441	1.30705	1.04802	1.20355	10.088	
199 3-Picoline	1.03338	1.18016	1.17156	1.17190	1.23262	1.15792	6.400	
200 N,N-Dimethylacetamide	0.82726	0.97434	0.94717	0.93924	0.96470	0.93054	6.381	
$ 154 Nitrobenzene-d5	0.43791	0.43449	0.44248	0.45742	0.45412	0.44528	2.258	
$ 155 2-Fluorobiphenyl	1.28529	1.27308	1.32779	1.36599	1.34596	1.31962	2.997	
$ 156 Terphenyl-d14	1.04511	1.00133	1.02645	1.05085	1.14515	1.05378	5.183	
$ 157 Phenol-d5	1.43120	1.47308	1.56717	1.55353	1.65420	1.53584	5.657	
$ 158 2-Fluorophenol	1.12309	1.15807	1.16144	1.18859	1.20757	1.16775	2.758	
$ 159 2,4,6-Tribromophenol	0.12718	0.13276	0.14853	0.14679	0.15510	0.14207	8.197	
$ 186 2-Chlorophenol-d4	1.21448	1.24240	1.26851	1.26568	1.30411	1.25904	2.642	
$ 187 1,2-Dichlorobenzene-d4	0.90214	0.93755	0.94887	0.97033	0.96312	0.94440	2.839	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

art Cal Date : 09-SEP-1999 16:21
d Cal Date : 10-SEP-1999 15:54
ant Method : ISTD
igin : Included
rget Version : 3.40
tegrator : HP RTE
thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

libration File Names:
vel 1: /chem/can/mss/a4hp7.i/90910a.b/7sl0910b.d
vel 2: /chem/can/mss/a4hp7.i/90910a.b/7sml0910.d
vel 3: /chem/can/mss/a4hp7.i/90910a.b/7sm0910.d
vel 4: /chem/can/mss/a4hp7.i/90910a.b/7smh0910.d
vel 5: /chem/can/mss/a4hp7.i/90910a.b/7sh0910.d

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
198	1,4-Dioxane	0.70998	0.61974	0.60586	0.63711	0.67967	AVRG		0.65047		6.65971
7	N-Nitrosomorpholine	0.75549	0.86236	0.83769	0.81643	0.83019	AVRG		0.82043		4.86980
8	Ethyl methanesulfonate	0.85254	0.92852	0.90289	0.89234	0.93522	AVRG		0.90230		3.65345
9	Pyridine	1.22082	1.33487	1.24373	1.41100	1.38149	AVRG		1.31838		6.33723
10	N-Nitrosodimethylamine	0.80706	0.87075	0.86270	0.90499	0.89309	AVRG		0.86772		4.36768
11	Ethyl methacrylate	1.44310	1.49497	1.46719	1.57725	1.45968	AVRG		1.48844		3.56524
12	3-Chloropropionitrile	0.75278	0.77233	0.78948	0.79223	0.79257	AVRG		0.77988		2.21830
13	Malononitrile	1.21586	1.27377	1.33959	1.33012	1.39753	AVRG		1.31138		5.27024
14	2-Picoline	1.27302	1.34022	1.31349	1.29820	1.38879	AVRG		1.32275		3.34453
15	N-Nitrosomethylethylamine	0.61584	0.63939	0.62492	0.62081	0.63446	AVRG		0.62708		1.54710

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thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
16 Methyl methanesulfonate	0.79982	0.83962	0.80421	0.78063	0.81811	AVRG		0.80848		2.71792
18 1,3-Dichloro-2-propanol	1.21351	1.31903	1.27580	1.27590	1.33214	AVRG		1.28328		3.62251
19 N-Nitrosodiethylamine	0.59303	0.63920	0.61782	0.61749	0.63667	AVRG		0.62084		2.99298
21 Aniline	1.58371	1.65765	1.57694	1.72523	1.86465	AVRG		1.68164		7.06876
22 Phenol	1.41849	1.48373	1.56941	1.56056	1.66600	AVRG		1.53964		6.08351
23 bis(2-Chloroethyl)ether	1.24272	1.28375	1.31298	1.33292	1.38217	AVRG		1.31091		3.99187
24 2-Chlorophenol	1.24746	1.25589	1.31507	1.31458	1.36709	AVRG		1.30002		3.77761
25 Pentachloroethane	0.52550	0.54209	0.51069	0.52140	0.54280	AVRG		0.52849		2.61815
26 1,3-Dichlorobenzene	1.45210	1.48167	1.49030	1.52685	1.49751	AVRG		1.48968		1.81357
27 1,4-Dichlorobenzene	1.53118	1.55805	1.55932	1.59171	1.58078	AVRG		1.56421		1.49381
28 1,2-Dichlorobenzene	1.32220	1.37458	1.39444	1.41608	1.41195	AVRG		1.38385		2.75795
29 Benzyl Alcohol	0.78402	0.81201	0.86771	0.86299	0.93613	AVRG		0.85257		6.85548
30 2-Methylphenol	1.11495	1.13917	1.19462	1.18626	1.26701	AVRG		1.18040		4.96184
31 bis(2-Chloroisopropyl)ether	1.13846	1.16577	1.20875	1.21286	1.26784	AVRG		1.19874		4.12775
32 N-Nitroso-di-n-propylamine	0.96152	0.97858	1.05170	1.03592	1.07354	AVRG		1.02025		4.71579
195 Cresols, total	1.11124	1.16884	1.23443	1.22662	1.30643	AVRG		1.20951		6.07794
192 4-Methylphenol	1.10753	1.19852	1.27423	1.26698	1.34584	AVRG		1.23862		7.26185

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

art Cal Date : 09-SEP-1999 16:21
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ant Method : ISTD
igin : Included
rget Version : 3.40
tegrator : HP RTE
thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
193 3-Methylphenol	0.92411	1.12224	1.11339	1.09197	1.11610	AVRG		1.07356		7.85432	
34 Hexachloroethane	0.53874	0.56469	0.57885	0.59446	0.59057	AVRG		0.57346		3.94303	
35 Nitrobenzene	0.41188	0.42199	0.43554	0.44739	0.44070	AVRG		0.43150		3.33607	
36 N-Nitrosopyrrolidine	0.46867	0.57193	0.56142	0.54597	0.55822	AVRG		0.54124		7.68841	
37 Acetophenone	1.64469	1.82648	1.77993	1.73557	1.80053	AVRG		1.75744		4.05562	
39 o-Toluidine	1.62982	1.88690	1.87561	1.83664	1.91327	AVRG		1.82845		6.25701	
40 N-Nitrosopiperidine	0.15794	0.16471	0.16702	0.15907	0.16779	AVRG		0.16331		2.78351	
41 Isophorone	0.78591	0.77823	0.80591	0.82380	0.80062	AVRG		0.79889		2.22883	
42 2-Nitrophenol	0.16932	0.17689	0.17419	0.19226	0.20042	AVRG		0.18262		7.19542	
43 2,4-Dimethylphenol	0.37883	0.39016	0.40267	0.41286	0.40767	AVRG		0.39844		3.46886	
44 bis(2-Chloroethoxy)methane	0.39257	0.39383	0.41156	0.42988	0.43669	AVRG		0.41291		4.89360	
45 O,O,O-Triethyl phosphorothioa	0.20047	0.20140	0.19938	0.19067	0.20616	AVRG		0.19962		2.82060	
46 2,4-Toluenediamene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
47 1,3,5-Trichlorobenzene	0.37056	0.36832	0.37647	0.38868	0.37994	AVRG		0.37679		2.14765	
48 2,4-Dichlorophenol	0.26834	0.27689	0.29297	0.29543	0.30295	AVRG		0.28731		4.95603	
49 Benzoic Acid	23859	73139	173470	208096	919659	QUAD	0.05967	8.74919	-4.43738	0.99850	
50 1,2,4-Trichlorobenzene	0.35603	0.35432	0.36564	0.37256	0.36673	AVRG		0.36306		2.11590	

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

art Cal Date : 09-SEP-1999 16:21
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ant Method : ISTD
igin : Included
rget Version : 3.40
tegrator : HP RTE
thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
51 Naphthalene	1.08487	1.08119	1.13224	1.15360	1.13852	AVRG		1.11808		2.94752
52 4-Chloroaniline	0.32116	0.32586	0.32834	0.35796	0.39929	AVRG		0.34652		9.47956
53 a,a-Dimethyl-phenethylamine	0.52479	0.64421	0.75340	0.71884	0.72088	AVRG		0.67242		13.64064
54 2,6-Dichlorophenol	0.24989	0.27170	0.27855	0.26907	0.28310	AVRG		0.27046		4.71949
55 Hexachloropropene	0.13270	0.15138	0.16451	0.15957	0.17106	AVRG		0.15584		9.49610
56 Hexachlorobutadiene	0.22465	0.21758	0.21593	0.22004	0.20695	AVRG		0.21703		3.00473
57 1,2,3-Trichlorobenzene	0.34613	0.34834	0.36145	0.36535	0.36084	AVRG		0.35642		2.41210
58 N-Nitrosodi-n-butylamine	0.26130	0.27879	0.28553	0.27285	0.28628	AVRG		0.27695		3.72597
59 4-Chloro-3-Methylphenol	0.31949	0.31867	0.34863	0.35261	0.35535	AVRG		0.33895		5.39816
60 p-Phenylene diamine	6810	42709	78071	99282	133735	QUAD	0.12132	11.36443	-7.46696	0.99636
61 Safrole	0.28209	0.28628	0.28791	0.26966	0.28929	AVRG		0.28305		2.81038
62 2-Methylnaphthalene	0.70591	0.72562	0.75190	0.77593	0.76270	AVRG		0.74441		3.81118
63 1-Methylnaphthalene	0.71445	0.71848	0.76268	0.77113	0.75242	AVRG		0.74383		3.47988
64 Hexachlorocyclopentadiene	21438	57554	120504	148962	421200	QUAD	-0.01311	7.74338	-3.71417	0.99864
65 1,2,4,5-Tetrachlorobenzene	0.55522	0.56252	0.55106	0.53637	0.54953	AVRG		0.55094		1.73765
66 2,4,6-Trichlorophenol	0.34975	0.37198	0.38975	0.40285	0.40897	AVRG		0.38466		6.27069
67 2,4,5-Trichlorophenol	0.34074	0.35490	0.38204	0.38298	0.40516	AVRG		0.37316		6.81134

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

irt Cal Date : 09-SEP-1999 16:21
l Cal Date : 10-SEP-1999 15:54
int Method : ISTD
.gin : Included
rget Version : 3.40
egrator : HP RTE
hod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
68 1,2,3,5-Tetrachlorobenzene	0.60996	0.59795	0.62073	0.63285	0.62106	AVRG		0.61651		2.13488
69 1,4-Dinitrobenzene	7207	44405	70017	79596	97878	QUAD	0.07366	7.41894	-1.16647	0.99835
70 2-Chloronaphthalene	1.06934	1.06089	1.12154	1.14635	1.14609	AVRG		1.10884		3.72282
71 Isosafrole 1	0.13209	0.13982	0.14264	0.13829	0.13919	AVRG		0.13841		2.80771
88 Isosafrole, Total	0.50000	0.51763	0.51384	0.49666	0.51248	AVRG		0.50812		1.81292
72 Isosafrole 2	0.86791	0.89544	0.88505	0.85502	0.88577	AVRG		0.87784		1.84010
73 2-Nitroaniline	0.28154	0.30395	0.32339	0.32231	0.36007	AVRG		0.31825		9.08543
74 1,2,3,4-Tetrachlorobenzene	0.55294	0.54520	0.56708	0.58214	0.56257	AVRG		0.56199		2.51049
75 1,4-Naphthoquinone	0.35978	0.40286	0.39630	0.36695	0.37154	AVRG		0.37949		4.99594
76 Dimethylphthalate	1.37538	1.36910	1.41502	1.45539	1.40638	AVRG		1.40425		2.46803
77 m-Dinitrobenzene	0.11272	0.15241	0.15825	0.16173	0.16980	AVRG		0.15099		14.76710
78 2,6-Dinitrotoluene	0.26239	0.27243	0.27474	0.30287	0.29614	AVRG		0.28171		6.05476
79 Acenaphthylene	1.84497	1.86724	1.90044	2.02289	1.97230	AVRG		1.92157		3.86864
80 1,2-Dinitrobenzene	0.11038	0.11876	0.12375	0.13436	0.13749	AVRG		0.12495		8.92910
81 3-Nitroaniline	26662	55919	132112	151910	407084	QUAD	-0.03690	7.47950	-3.38749	0.99809
82 Acenaphthene	1.17875	1.21180	1.27689	1.31504	1.27328	AVRG		1.25115		4.38219
83 2,4-Dinitrophenol	9898	29228	71067	82523	224520	QUAD	0.04196	13.44835	-11.22167	0.99745

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QUANTERRA-NORTH CANTON

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thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
84 Pentachlorobenzene	0.45573	0.47419	0.46860	0.45322	0.48002	AVRG		0.46635		2.48794
85 4-Nitrophenol	22578	58109	141063	137394	337801	QUAD	-0.00576	7.14080	-2.57056	0.98924
86 Dibenzofuran	1.36919	1.40015	1.48543	1.51647	1.51555	AVRG		1.45736		4.69341
87 2,4-Dinitrotoluene	0.30175	0.31494	0.33961	0.34692	0.37201	AVRG		0.33505		8.23051
88 2,3,4,6-Tetrachlorophenol	0.18531	0.23530	0.24859	0.24980	0.26209	AVRG		0.23622		12.69913
89 1-Naphthylamine	0.77419	0.70715	0.72710	0.72293	0.78092	AVRG		0.74246		4.44172
90 Zinophos	0.29440	0.31865	0.31066	0.30264	0.32166	AVRG		0.30960		3.63939
91 2,3,5,6-Tetrachlorophenol	0.24966	0.27405	0.30289	0.30365	0.32164	AVRG		0.29038		9.79349
92 2-Naphthylamine	50425	125470	179662	220877	310298	QUAD	-0.15919	3.27262	-0.54101	0.98641
93 Diethylphthalate	1.50549	1.48515	1.55370	1.59905	1.49379	AVRG		1.52744		3.14321
94 Fluorene	1.18842	1.23462	1.33014	1.35799	1.33005	AVRG		1.28824		5.65215
95 4-Chlorophenyl-phenylether	0.61528	0.64003	0.66404	0.69136	0.67172	AVRG		0.65648		4.48891
96 4-Nitroaniline	0.17494	0.15581	0.16596	0.15229	0.21529	AVRG		0.17286		14.65227
97 5-Nitro-o-toluidine	0.21020	0.23010	0.24995	0.24467	0.26479	AVRG		0.23994		8.64581
98 4,6-Dinitro-2-methylphenol	20232	52026	121678	146007	330695	QUAD	0.03615	9.94524	-4.61765	0.99937
99 N-Nitrosodiphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	AVRG		0.53466		6.88891
100 1,2-Diphenylhydrazine	0.90571	0.94076	0.92624	1.00867	0.93719	AVRG		0.94371		4.11116

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QUANTERRA-NORTH CANTON

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Date : 10-Sep-1999 16:13 gruberj

ompound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
1 Diphenylamine	0.54817	0.54120	0.47026	0.56276	0.55090	AVRG		0.53466		6.88891
2 Tetraethyl dithiopyrophosphat	0.11228	0.12055	0.11984	0.11345	0.11375	AVRG		0.11597		3.36036
3 Diallate 1	0.35040	0.36320	0.35929	0.34603	0.35623	AVRG		0.35503		1.93532
9 Diallate, Total	1.25506	1.34205	1.28943	1.30776	1.41329	AVRG		1.32152		4.55292
4 Phorate	0.14099	0.14408	0.14359	0.13945	0.14073	AVRG		0.14177		1.39771
5 1,3,5-Trinitrobenzene	4197	24990	39520	45714	64241	QUAD	0.04880	21.90585	-20.38018	0.99790
6 4-Bromophenyl-phenylether	0.23831	0.23529	0.23305	0.25440	0.23161	AVRG		0.23853		3.86788
7 Hexachlorobenzene	0.25244	0.25801	0.25181	0.27534	0.24317	AVRG		0.25616		4.67114
8 Phenacetin	0.22622	0.28772	0.30929	0.29212	0.30966	AVRG		0.28500		12.04211
9 Diallate 2	0.43707	0.44913	0.43627	0.41976	0.43271	AVRG		0.43499		2.41913
0 Dimethoate	0.22031	0.23169	0.22989	0.21766	0.22360	AVRG		0.22463		2.68735
1 Pentachlorophenol	23920	61306	169296	174102	391060	QUAD	0.06935	7.33063	-1.60109	0.99719
2 Pentachloronitrobenzene	0.10725	0.11004	0.11069	0.10491	0.10935	AVRG		0.10845		2.17915
3 4-Aminobiphenyl	0.39588	0.36706	0.45558	0.46055	0.50004	AVRG		0.43582		12.27578
4 Pronamide	0.35874	0.36630	0.36634	0.34691	0.35862	AVRG		0.35938		2.21212
5 Phenanthrene	1.15667	1.18121	1.22307	1.26240	1.22436	AVRG		1.20954		3.40755
6 Anthracene	1.10332	1.14521	1.18726	1.20877	1.22703	AVRG		1.17432		4.26223

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

rt Cal Date : 09-SEP-1999 16:21
Cal Date : 10-SEP-1999 15:54
nt Method : ISTD
gin : Included
get Version : 3.40
egrator : HP RTE
hod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
7 Dinoseb	8483	74141	119070	137448	193042	QUAD	0.10913	7.01803	-1.98834	0.99549
8 Disulfoton	0.41311	0.41634	0.40998	0.40466	0.41537	AVRG		0.41189		1.14717
9 Carbazole	0.69318	0.62758	0.61918	0.62606	0.84105	AVRG		0.68141		13.81665
0 Di-n-Butylphthalate	1.69282	1.70066	1.67034	1.82653	1.56779	AVRG		1.69163		5.45573
1 4-Nitroquinoline 1-oxide	2273	22370	39853	48591	75044	QUAD	0.14512	21.70353	-27.37893	0.99464
2 Methapyrilene	0.29746	0.28157	0.26723	0.24801	0.23721	AVRG		0.26629		9.17082
3 Fluoranthene	1.18842	1.18176	1.24067	1.18505	1.23078	AVRG		1.20534		2.32803
4 Benzidine	23865	55173	198353	231234	877974	QUAD	0.17325	4.93274	-1.52911	0.99131
5 Pyrene	1.63616	1.56396	1.60300	1.63736	1.76599	AVRG		1.64129		4.62385
6 Aramite 1	0.11844	0.13163	0.12275	0.11075	0.11557	AVRG		0.11983		6.59904
1 Aramite, Total	0.25963	0.26537	0.26278	0.26658	0.32054	AVRG		0.27498		9.31214
7 Aramite 2	0.17212	0.18347	0.17244	0.15210	0.15879	AVRG		0.16778		7.38055
8 p-Dimethylamino azobenzene	0.31963	0.35852	0.34188	0.31056	0.31873	AVRG		0.32986		6.00010
9 p-Chlorobenzilate	0.79794	0.84570	0.76974	0.69083	0.71177	AVRG		0.76320		8.27082
0 Famphur	31386	25231	26006	24894	18684	QUAD	0.06475	42.26393	-177	0.61050
1 Butylbenzylphthalate	0.83572	0.80470	0.80594	0.83518	0.83272	AVRG		0.82285		1.95029
2 3,3'-Dimethylbenzidine	31890	83980	136434	184714	260750	QUAD	-0.07012	3.34429	-0.35460	0.99556

NT

QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

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art Cal Date : 09-SEP-1999 16:21
d Cal Date : 10-SEP-1999 15:54
ant Method : ISTD
igin : Included
rget Version : 3.40
tegrator : HP RTE
thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

	Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2	
133	3,3'-Dimethoxybenzidine	13313	43613	59413	156541	317295	QUAD	0.26195	8.84713	-5.43740	0.93318	NT
134	2-Acetylaminofluorene	0.33914	0.44310	0.45500	0.45112	0.48980	AVRG		0.43563		13.04414	
135	3,3'-Dichlorobenzidine	0.43481	0.43794	0.44391	0.46943	0.44597	AVRG		0.44641		3.05197	
136	Benzo(a)Anthracene	1.48496	1.43272	1.47464	1.49020	1.45184	AVRG		1.46687		1.64324	
137	Chrysene	1.30414	1.31511	1.33044	1.33509	1.29954	AVRG		1.31686		1.18957	
138	4,4'-Methylene bis(o-chloroan	0.26088	0.24554	0.24551	0.26658	0.24534	AVRG		0.25277		4.03851	
139	bis(2-ethylhexyl)Phthalate	1.23151	1.16165	1.16497	1.21802	1.18395	AVRG		1.19202		2.63787	
140	Di-n-octylphthalate	2.38086	2.43673	2.61886	2.56378	3.10808	AVRG		2.62166		10.99149	
141	Benzo(b)fluoranthene	1.54956	1.61706	1.80897	1.71728	1.81961	AVRG		1.70250		6.94741	
142	Benzo(k)fluoranthene	1.60574	1.60539	1.73720	1.70529	1.80653	AVRG		1.69203		5.14209	
143	7,12-dimethylbenz(a)anthracen	0.65365	0.66115	0.65194	0.60968	0.65533	AVRG		0.64635		3.21643	
144	Hexachlorophene	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
145	Hexachlorophene product	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
146	Benzo(a)pyrene	1.42486	1.41654	1.57139	1.51429	1.49834	AVRG		1.48508		4.36438	
148	3-Methylcholanthrene	0.58676	0.62480	0.63896	0.60604	0.64119	AVRG		0.61955		3.72493	
149	Indeno(1,2,3-cd)pyrene	1.24735	1.18072	1.40751	1.56661	1.28423	AVRG		1.33728		11.39829	
150	Dibenz(a,h)anthracene	1.25674	1.16086	1.35748	1.32376	1.10863	AVRG		1.24149		8.50612	

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

rt Cal Date : 09-SEP-1999 16:21
l Cal Date : 10-SEP-1999 15:54
nt Method : ISTD
gin : Included
rget Version : 3.40
tegrator : HP RTE
thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
Date : 10-Sep-1999 16:13 gruberj

Compound	20 Level 1	50 Level 2	80 Level 3	120 Level 4	160 Level 5	Curve	Coefficients b	m1	m2	%RSD or R^2
51 Benzo(g,h,i)perylene	1.20785	1.12039	1.33441	1.30705	1.04802	AVRG		1.20355		10.08755
99 3-Picoline	1.03338	1.18016	1.17156	1.17190	1.23262	AVRG		1.15792		6.40000
00 N,N-Dimethylacetamide	0.82726	0.97434	0.94717	0.93924	0.96470	AVRG		0.93054		6.38118
54 Nitrobenzene-d5	0.43791	0.43449	0.44248	0.45742	0.45412	AVRG		0.44528		2.25776
55 2-Fluorobiphenyl	1.28529	1.27308	1.32779	1.36599	1.34596	AVRG		1.31962		2.99672
56 Terphenyl-d14	1.04511	1.00133	1.02645	1.05085	1.14515	AVRG		1.05378		5.18265
57 Phenol-d5	1.43120	1.47308	1.56717	1.55353	1.65420	AVRG		1.53584		5.65686
58 2-Fluorophenol	1.12309	1.15807	1.16144	1.18859	1.20757	AVRG		1.16775		2.75756
59 2,4,6-Tribromophenol	0.12718	0.13276	0.14853	0.14679	0.15510	AVRG		0.14207		8.19677
86 2-Chlorophenol-d4	1.21448	1.24240	1.26851	1.26568	1.30411	AVRG		1.25904		2.64250
87 1,2-Dichlorobenzene-d4	0.90214	0.93755	0.94887	0.97033	0.96312	AVRG		0.94440		2.83894

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QUANTERRA-NORTH CANTON

INITIAL CALIBRATION DATA

art Cal Date : 09-SEP-1999 16:21
i Cal Date : 10-SEP-1999 15:54
ant Method : ISTD
igin : Included
rget Version : 3.40
tegrator : HP RTE
thod file : /chem/can/mss/a4hp7.i/90910a.b/8270b.m
l Date : 10-Sep-1999 16:13 gruberj

rve	Formula	Units
veraged	Amt = Rsp/m1	Response
uad	Amt = b + m1*Rsp + m2*Rsp^2	Response

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID: 7DF0916A DFTPP Injection Date: 09/16/99

Instrument ID: A4HP7 DFTPP Injection Time: 0945

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	40.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	44.6
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	49.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	21.9
365	Greater than 1.0% of mass 198	2.6
441	Present, but less than mass 443	11.9
442	40.0 - 100.0% of mass 198	80.0
443	17.0 - 23.0% of mass 442	15.8 (19.7)2

does not match raw data

1-Value is % of mass 69 2-Value is % of mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD080	SSTD080	7SM0916	09/16/99	1009
02	ASTD050	ASTD050	7AML0916	09/16/99	1046
03	D2D0XBLK	D2D0X101	D2D0X101	09/16/99	1124
04	D2D0XCHK	D2D0X102	D2D0X102	09/16/99	1202
05	D2D0XCHKDUP	D2D0X103	D2D0X103	09/16/99	1239
06	RFIMW-29 x Rt	D1PVN205	D1PVN205	09/16/99	1355
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Data File: /chem/can/mss/a4hp7.i/90916d.b/7sm0916d.d

Date : 16-SEP-1999 10:09

Client ID:

Instrument: a4hp7.i

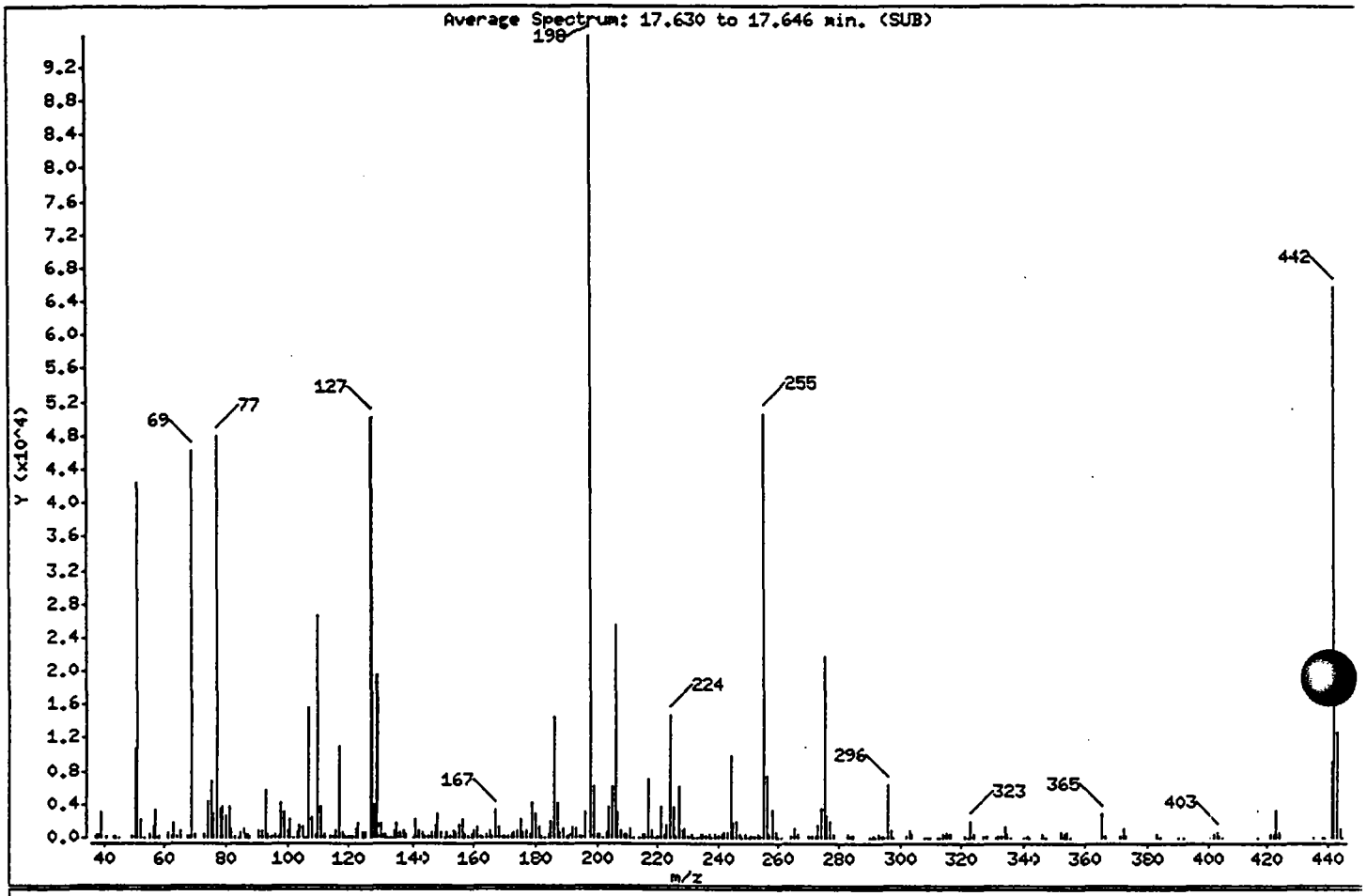
Sample Info: sstd080,1-8270.sub,2

Operator: 001710

Column phase:

Column diameter: 2.00

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	44.32
68	Less than 2.00% of mass 69	0.25 (0.51)
69	Mass 69 relative abundance	48.24
70	Less than 2.00% of mass 69	0.45 (0.92)
127	40.00 - 60.00% of mass 198	52.49
197	Less than 1.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.53
275	10.00 - 30.00% of mass 198	22.75
365	Greater than 1.00% of mass 198	2.95
441	Present, but less than mass 443	9.77
442	40.00 - 100.00% of mass 198	68.78
443	17.00 - 23.00% of mass 442	13.35 (19.40)

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0916.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 16-SEP-1999 10:09
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90916a.b/82

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D	
9	Pyridine	1.318	1.576	0.010	-19.6	50.0	
10	N-Nitrosodimethylamine	0.868	1.048	0.010	-20.7	50.0	
11	Ethyl methacrylate	1.488	1.612	0.010	-8.3	50.0	
12	3-Chloropropionitrile	0.780	0.990	0.010	-26.9	50.0	
13	Malononitrile	1.311	1.795	0.010	-36.9	50.0	
21	Aniline	1.682	1.835	0.010	-9.1	50.0	
22	Phenol	1.540	1.658	0.010	-7.7	20.0	
23	bis(2-Chloroethyl)ether	1.311	1.378	0.010	-5.1	50.0	
24	2-Chlorophenol	1.300	1.380	0.010	-6.2	50.0	
26	1,3-Dichlorobenzene	1.490	1.555	0.010	-4.4	50.0	
27	1,4-Dichlorobenzene	1.564	1.661	0.010	-6.2	20.0	
28	1,2-Dichlorobenzene	1.384	1.484	0.010	-7.2	50.0	
29	Benzyl Alcohol	0.853	0.593	0.010	30.5	50.0	
30	2-Methylphenol	1.180	1.235	0.010	-4.6	50.0	
31	bis(2-Chloroisopropyl)ether	1.199	1.123	0.010	6.4	50.0	
32	N-Nitroso-di-n-propylamine	1.020	1.074	0.050	-5.3	50.0	
192	4-Methylphenol	1.239	1.370	0.010	-10.6	50.0	
34	Hexachloroethane	0.573	0.640	0.010	-11.6	50.0	
35	Nitrobenzene	0.432	0.457	0.010	-5.8	50.0	
41	Isophorone	0.799	0.808	0.010	-1.1	50.0	
42	2-Nitrophenol	0.183	0.212	0.010	-16.4	20.0	
43	2,4-Dimethylphenol	0.398	0.424	0.010	-6.5	50.0	
44	bis(2-Chloroethoxy)methane	0.413	0.422	0.010	-2.3	50.0	
46	2,4-Toluenediamene	++++	0.004	0.010	++++	50.0	<-
47	1,3,5-Trichlorobenzene	0.377	0.377	0.010	0.0	50.0	
48	2,4-Dichlorophenol	0.287	0.301	0.010	-4.8	20.0	
49	Benzoic Acid	8.749	0.171	0.010	N/A	N/A	
50	1,2,4-Trichlorobenzene	0.363	0.365	0.010	-0.5	50.0	
51	Naphthalene	1.118	1.176	0.010	-5.2	50.0	
52	4-Chloroaniline	0.347	0.392	0.010	-13.2	50.0	
56	Hexachlorobutadiene	0.217	0.224	0.010	-3.1	20.0	
57	1,2,3-Trichlorobenzene	0.356	0.355	0.010	0.3	50.0	
59	4-Chloro-3-Methylphenol	0.339	0.373	0.010	-10.0	20.0	
62	2-Methylnaphthalene	0.744	0.789	0.010	-5.9	50.0	
63	1-Methylnaphthalene	0.744	0.777	0.010	-4.4	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0916.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 16-SEP-1999 10:09
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90916a.b/82

COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
64 Hexachlorocyclopentadiene	7.743	0.183	0.050	N/A	N/A
66 2,4,6-Trichlorophenol	0.385	0.390	0.010	-1.5	20.0
67 2,4,5-Trichlorophenol	0.373	0.401	0.010	-7.6	50.0
68 1,2,3,5-Tetrachlorobenzene	0.617	0.621	0.010	-0.7	50.0
70 2-Chloronaphthalene	1.109	1.167	0.010	-5.3	50.0
73 2-Nitroaniline	0.318	0.400	0.010	-25.7	50.0
74 1,2,3,4-Tetrachlorobenzene	0.562	0.561	0.010	0.1	50.0
76 Dimethylphthalate	1.404	1.443	0.010	-2.8	50.0
78 2,6-Dinitrotoluene	0.282	0.323	0.010	-14.7	50.0
79 Acenaphthylene	1.922	2.057	0.010	-7.1	50.0
80 1,2-Dinitrobenzene	0.125	0.163	0.010	-30.3	50.0
81 3-Nitroaniline	7.480	0.240	0.010	N/A	N/A
82 Acenaphthene	1.251	1.320	0.010	-5.5	20.0
83 2,4-Dinitrophenol	13.448	0.195	0.050	N/A	N/A
85 4-Nitrophenol	7.141	0.260	0.050	N/A	N/A
86 Dibenzofuran	1.457	1.666	0.010	-14.3	50.0
87 2,4-Dinitrotoluene	0.335	0.446	0.010	-33.3	50.0
91 2,3,5,6-Tetrachlorophenol	0.290	0.327	0.010	-12.7	50.0
93 Diethylphthalate	1.527	1.627	0.010	-6.5	50.0
94 Fluorene	1.288	1.472	0.010	-14.3	50.0
95 4-Chlorophenyl-phenylether	0.656	0.729	0.010	-11.0	50.0
96 4-Nitroaniline	0.173	0.229	0.010	-32.4	50.0
98 4,6-Dinitro-2-methylphenol	9.945	0.151	0.010	N/A	N/A
99 N-Nitrosodiphenylamine	0.535	0.464	0.010	13.3	20.0
100 1,2-Diphenylhydrazine	0.944	0.878	0.010	7.0	50.0
106 4-Bromophenyl-phenylether	0.239	0.223	0.010	6.5	50.0
107 Hexachlorobenzene	0.256	0.229	0.010	10.7	50.0
111 Pentachlorophenol	7.331	0.147	0.010	N/A	N/A
115 Phenanthrene	1.210	1.261	0.010	-4.3	50.0
116 Anthracene	1.174	1.246	0.010	-6.1	50.0
119 Carbazole	0.681	0.715	0.010	-4.9	50.0
120 Di-n-Butylphthalate	1.692	1.620	0.010	4.2	50.0
123 Fluoranthene	1.205	1.398	0.010	-16.0	20.0
124 Benzidine	4.933	0.293	0.010	N/A	N/A
125 Pyrene	1.641	1.599	0.010	2.6	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7sm0916.d
Analysis Type:
Lab Sample ID: sstd080
Quant Type: ISTD

Injection Date: 16-SEP-1999 10:09
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90916a.b/827

	COMPOUND	RRF	RF80	MIN RRF	%D	MAX %D
	131 Butylbenzylphthalate	0.823	0.777	0.010	5.6	50.0
	133 3,3'-Dimethoxybenzidine	8.847	0.057	0.010	N/A	N/A
	135 3,3'-Dichlorobenzidine	0.446	0.428	0.010	4.0	50.0
	136 Benzo(a)Anthracene	1.467	1.478	0.010	-0.8	50.0
	137 Chrysene	1.317	1.317	0.010	0.0	50.0
	138 4,4'-Methylene bis(o-chloro	0.253	0.237	0.010	6.4	50.0
	139 bis(2-ethylhexyl)Phthalate	1.192	1.155	0.010	3.1	50.0
	140 Di-n-octylphthalate	2.622	2.985	0.010	-13.8	20.0
	141 Benzo(b)fluoranthene	1.702	1.948	0.010	-14.4	50.0
	142 Benzo(k)fluoranthene	1.692	1.876	0.010	-10.9	50.0
	146 Benzo(a)pyrene	1.485	1.627	0.010	-9.6	20.0
	149 Indeno(1,2,3-cd)pyrene	1.337	1.348	0.010	-0.8	50.0
	150 Dibenz(a,h)anthracene	1.241	1.319	0.010	-6.3	50.0
	151 Benzo(g,h,i)perylene	1.204	1.264	0.010	-5.0	50.0
$	154 Nitrobenzene-d5	0.445	0.467	0.010	-4.9	50.0
$	155 2-Fluorobiphenyl	1.320	1.359	0.010	-3.0	50.0
$	156 Terphenyl-d14	1.054	1.030	0.010	2.3	50.0
$	157 Phenol-d5	1.536	1.698	0.010	-10.6	50.0
$	158 2-Fluorophenol	1.168	1.388	0.010	-18.8	50.0
$	159 2,4,6-Tribromophenol	0.142	0.169	0.010	-19.2	50.0
$	186 2-Chlorophenol-d4	1.259	1.357	0.010	-7.8	50.0
$	187 1,2-Dichlorobenzene-d4	0.944	1.007	0.010	-6.7	50.0
M	195 Cresols, total	1.210	1.303	0.010	-7.7	50.0
	101 Diphenylamine	0.535	0.464	0.010	13.3	50.0

Data File: /chem/can/mss/a4hp7.i/90916a.b/7sm0916.d
Report Date: 09/16/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0916.d
Analysis Type: NONE

Injection Date: 16-SEP-1999 10:09
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90916a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
1	Phenol	80.0000	86.1435	7.7	20.0	
2	bis(2-Chloroethyl)ether	80.0000	84.0813	5.1	50.0	
3	2-Chlorophenol	80.0000	84.9376	6.2	50.0	
4	1,3-Dichlorobenzene	80.0000	83.5251	4.4	50.0	
5	1,4-Dichlorobenzene	80.0000	84.9602	6.2	20.0	
6	1,2-Dichlorobenzene	80.0000	85.7667	7.2	50.0	
7	2-Methylphenol	80.0000	83.7074	4.6	50.0	
8	bis(2-Chloroisopropyl)ether	80.0000	74.9178	6.4	50.0	
9	4-Methylphenol	80.0000	88.4973	10.6	50.0	
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
12	Hexachloroethane	80.0000	89.3002	11.6	50.0	
13	Nitrobenzene	80.0000	84.6711	5.8	50.0	
14	Isophorone	80.0000	80.8810	1.1	50.0	
15	2-Nitrophenol	80.0000	93.0889	16.4	20.0	
16	2,4-Dimethylphenol	80.0000	85.1607	6.5	50.0	
17	bis(2-Chloroethoxy)methane	80.0000	81.8199	2.3	50.0	
18	N-Nitroso-di-n-propylamine	80.0000	84.2238	5.3	50.0	
18	2,4-Dichlorophenol	80.0000	83.8468	4.8	20.0	
19	1,2,4-Trichlorobenzene	80.0000	80.4144	0.5	50.0	
20	Naphthalene	80.0000	84.1528	5.2	50.0	
21	4-Chloroaniline	80.0000	90.5794	13.2	50.0	
22	Hexachlorobutadiene	80.0000	82.4933	3.1	20.0	
23	4-Chloro-3-Methylphenol	80.0000	88.0382	10.0	20.0	
24	2-Methylnaphthalene	80.0000	84.7478	5.9	50.0	
25	Hexachlorocyclopentadiene	80.0000	92.9476	16.2	50.0	
26	2,4,6-Trichlorophenol	80.0000	81.2015	1.5	20.0	
27	2,4,5-Trichlorophenol	80.0000	86.0575	7.6	50.0	
28	2-Chloronaphthalene	80.0000	84.2050	5.3	50.0	
29	2-Nitroaniline	80.0000	100.5879	25.7	50.0	
30	Dimethylphthalate	80.0000	82.2003	2.8	50.0	
31	Acenaphthylene	80.0000	85.6437	7.1	50.0	
32	2,6-Dinitrotoluene	80.0000	91.7729	14.7	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
33	3-Nitroaniline	80.0000	110.9143	38.6	50.0	
34	Acenaphthene	80.0000	84.4268	5.5	20.0	
35	2,4-Dinitrophenol	80.0000	143.2915	79.1	50.0	<-
36	4-Nitrophenol	80.0000	120.6065	50.8	50.0	<-
37	Dibenzofuran	80.0000	91.4320	14.3	50.0	
38	2,4-Dinitrotoluene	80.0000	106.6086	33.3	50.0	

all compounds UR due to holding time

Data File: /chem/can/mss/a4hp7.i/90916a.b/7sm0916.d
Report Date: 09/16/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0916.d
Analysis Type: NONE

Injection Date: 16-SEP-1999 10:09
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90916a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D
39	Diethylphthalate	80.0000	85.2250	6.5	50.0
40	4-Chlorophenyl-phenylether	80.0000	88.7867	11.0	50.0
41	Fluorene	80.0000	91.4236	14.3	50.0
42	4-Nitroaniline	80.0000	105.9148	32.4	50.0
43	4,6-Dinitro-2-methylphenol	80.0000	105.0186	31.3	50.0
44	N-Nitrosodiphenylamine	80.0000	69.3566	13.3	20.0
45	4-Bromophenyl-phenylether	80.0000	74.7740	6.5	50.0
46	Hexachlorobenzene	80.0000	71.4062	10.7	50.0
47	Pentachlorophenol	80.0000	83.6387	4.5	20.0
48	Phenanthrene	80.0000	83.4343	4.3	50.0
49	Anthracene	80.0000	84.8518	6.1	50.0
50	Carbazole	80.0000	83.8916	4.9	50.0
51	Di-n-Butylphthalate	80.0000	76.6264	4.2	50.0
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0
52	Fluoranthene	80.0000	92.8099	16.0	20.0
53	Pyrene	80.0000	77.9508	2.6	50.0
54	Butylbenzylphthalate	80.0000	75.5088	5.6	50.0
55	3,3'-Dichlorobenzidine	80.0000	76.7629	4.0	50.0
56	Benzo(a)Anthracene	80.0000	80.6234	0.8	50.0
57	Chrysene	80.0000	80.0098	0.0	50.0
58	bis(2-ethylhexyl)Phthalate	80.0000	77.5153	3.1	50.0
59	Di-n-octylphthalate	80.0000	91.0772	13.8	20.0
60	Benzo(b)fluoranthene	80.0000	91.5566	14.4	50.0
61	Benzo(k)fluoranthene	80.0000	88.7147	10.9	50.0
62	Benzo(a)pyrene	80.0000	87.6678	9.6	20.0
63	Indeno(1,2,3-cd)pyrene	80.0000	80.6672	0.8	50.0
64	Dibenz(a,h)anthracene	80.0000	85.0088	6.3	50.0
65	Benzo(g,h,i)perylene	80.0000	83.9942	5.0	50.0
66	Pyridine	80.0000	95.6594	19.6	50.0
67	N-Nitrosodimethylamine	80.0000	96.5824	20.7	50.0
68	Aniline	80.0000	87.2989	9.1	50.0
69	Benzyl Alcohol	80.0000	55.6270	30.5	50.0
71	Benzoic Acid	80.0000	101.2058	26.5	50.0
72	1-Methylnaphthalene	80.0000	83.5142	4.4	50.0
75	1,2-Dinitrobenzene	80.0000	104.2165	30.3	50.0
77	2,3,5,6-Tetrachlorophenol	80.0000	90.1676	12.7	50.0
78	1,2-Diphenylhydrazine	80.0000	74.4147	7.0	50.0
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0
79	Benzidine	80.0000	101.6055	27.0	50.0

UR due to holding time

Data File: /chem/can/mss/a4hp7.i/90916a.b/7sm0916.d
Report Date: 09/16/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7sm0916.d
Analysis Type: NONE

Injection Date: 16-SEP-1999 10:09
Lab Sample ID: sstd080
Method File: /chem/can/mss/a4hp7.i/90916a.b/8

COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
82 Ethyl methacrylate	80.0000	86.6655	8.3	50.0	
83 3-Chloropropionitrile	80.0000	101.5196	26.9	50.0	
84 Malononitrile	80.0000	109.5252	36.9	50.0	
90 Chrysene-d12	40.0000	40.0000	0.0	50.0	
96 2,4-Toluenediamene	80.0000	0.0000	100.0	50.0	<-
97 1,3,5-Trichlorobenzene	80.0000	80.0379	0.0	50.0	
101 1,2,3-Trichlorobenzene	80.0000	79.7259	0.3	50.0	
101 Perylene-d12	40.0000	40.0000	0.0	50.0	
106 1,2,3,5-Tetrachlorobenzene	80.0000	80.5211	0.7	50.0	
110 1,2,3,4-Tetrachlorobenzene	80.0000	79.8939	0.1	50.0	
117 Diphenylamine	80.0000	69.3566	13.3	50.0	
140 3,3'-Dimethoxybenzidine	80.0000	47.8604	40.2	50.0	
142 4,4'-Methylene bis(o-chloroan	80.0000	74.9056	6.4	50.0	
195 Cresols, total	160.0000	172.3199	7.7	50.0	
181 Nitrobenzene-d5	80.0000	83.9400	4.9	50.0	
182 2-Fluorobiphenyl	80.0000	82.3709	3.0	50.0	
183 Terphenyl-d14	80.0000	78.1628	2.3	50.0	
184 Phenol-d5	80.0000	88.4654	10.6	50.0	
185 2-Fluorophenol	80.0000	95.0648	18.8	50.0	
186 2,4,6-Tribromophenol	80.0000	95.3613	19.2	50.0	
187 2-Chlorophenol-d4	80.0000	86.2201	7.8	50.0	
188 1,2-Dichlorobenzene-d4	80.0000	85.3344	6.7	50.0	

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml0916.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 16-SEP-1999 10:46
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90916a.b/827

8270B

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D
7	N-Nitrosomorpholine	0.820	0.894	0.010	-8.9	50.0
8	Ethyl methanesulfonate	0.902	1.039	0.010	-15.2	50.0
14	2-Picoline	1.323	1.609	0.010	-21.7	50.0
15	N-Nitrosomethylethylamine	0.627	0.766	0.010	-22.2	50.0
16	Methyl methanesulfonate	0.808	0.868	0.010	-7.4	50.0
18	1,3-Dichloro-2-propanol	1.283	1.289	0.010	-0.4	50.0
19	N-Nitrosodiethylamine	0.621	0.741	0.010	-19.4	50.0
25	Pentachloroethane	0.528	0.551	0.010	-4.3	50.0
36	N-Nitrosopyrrolidine	0.541	0.582	0.010	-7.5	50.0
37	Acetophenone	1.757	1.989	0.010	-13.2	50.0
39	o-Toluidine	1.828	2.047	0.010	-12.0	50.0
40	N-Nitrosopiperidine	0.163	0.161	0.010	1.2	50.0
45	O,O,O-Triethyl phosphorothi	0.200	0.190	0.010	4.9	50.0
53	a,a-Dimethyl-phenethylamine	0.672	0.574	0.010	14.6	50.0
54	2,6-Dichlorophenol	0.270	0.278	0.010	-2.7	50.0
55	Hexachloropropene	0.156	0.215	0.010	-37.9	50.0
58	N-Nitrosodi-n-butylamine	0.277	0.276	0.010	0.3	50.0
60	p-Phenylene diamine	11.364	0.117	0.010	N/A	N/A
61	Safrole	0.283	0.279	0.010	1.4	50.0
65	1,2,4,5-Tetrachlorobenzene	0.551	0.549	0.010	0.4	50.0
71	Isosafrole 1	0.138	0.135	0.010	2.3	50.0
M 188	Isosafrole, Total	0.508	0.533	0.010	-4.9	50.0
72	Isosafrole 2	0.878	0.931	0.010	-6.0	50.0
75	1,4-Naphthoquinone	0.379	0.422	0.010	-11.2	50.0
84	Pentachlorobenzene	0.466	0.485	0.010	-3.9	50.0
89	1-Naphthylamine	0.742	0.709	0.010	4.5	50.0
92	2-Naphthylamine	3.273	0.388	0.010	N/A	N/A
90	Zinophos	0.310	0.318	0.010	-2.7	50.0
102	Tetraethyl dithiopyrophosph	0.116	0.093	0.010	19.8	50.0
103	Diallate 1	0.355	0.320	0.010	9.9	50.0
M 189	Diallate, Total	1.322	1.487	0.010	-12.5	50.0
109	Diallate 2	0.435	0.389	0.010	10.7	50.0
104	Phorate	0.142	0.123	0.010	13.4	50.0
105	1,3,5-Trinitrobenzene	21.906	0.074	0.010	N/A	N/A
108	Phenacetin	0.285	0.389	0.010	-36.4	50.0

QUANTERRA-NORTH CANTON

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: a4hp7.i
Lab File ID: 7aml0916.d
Analysis Type:
Lab Sample ID: astd050
Quant Type: ISTD

Injection Date: 16-SEP-1999 10:46
Init. Calibration Date(s): 09/09/99 09/10/99
Init. Calibration Times: 16:21 15:54
Method File: /chem/can/mss/a4hp7.i/90916a.b/827

	COMPOUND	RRF	RF50	MIN RRF	%D	MAX %D	
	110 Dimethoate	0.225	0.162	0.010	27.9	50.0	
	112 Pentachloronitrobenzene	0.108	0.108	0.010	0.2	50.0	
	113 4-Aminobiphenyl	0.436	0.478	0.010	-9.6	50.0	
	114 Pronamide	0.359	0.332	0.010	7.6	50.0	
	117 Dinoseb	7.018	0.186	0.010	N/A	N/A	
	118 Disulfoton	0.412	0.362	0.010	12.0	50.0	
	121 4-Nitroquinoline 1-oxide	21.704	0.046	0.010	N/A	N/A	
	122 Methapyrilene	0.266	0.157	0.010	41.1	50.0	
	125 Aramite 1	0.120	0.078	0.010	35.2	50.0	
M	191 Aramite, Total	0.275	0.321	0.010	-16.9	50.0	
	127 Aramite 2	0.168	0.109	0.010	34.9	50.0	
	128 p-Dimethylamino azobenzene	0.330	0.286	0.010	13.2	50.0	
	129 p-Chlorobenzilate	0.763	0.563	0.010	26.3	50.0	
	130 Famphur	42.264	0.026	0.010	N/A	N/A	
	132 3,3'-Dimethylbenzidine	3.344	0.196	0.010	N/A	N/A	
	134 2-Acetylaminofluorene	0.436	0.450	0.010	-3.3	50.0	
	143 7,12-dimethylbenz[a]anthrac	0.646	0.697	0.010	-7.8	50.0	
	144 Hexachlorophene	++++	++++	0.010	++++	50.0	<-
	145 Hexachlorophene product	++++	++++	0.010	++++	50.0	<-
	148 3-Methylcholanthrene	0.620	0.672	0.010	-8.5	50.0	
	193 3-Methylphenol	1.074	1.215	0.010	-13.2	50.0	
	69 1,4-Dinitrobenzene	7.419	0.188	0.010	N/A	N/A	
	77 m-Dinitrobenzene	0.151	0.209	0.010	-38.4	50.0	
	198 1,4-Dioxane	0.650	0.628	0.010	3.5	50.0	
	85 2,3,4,6-Tetrachlorophenol	0.236	0.280	0.010	-18.4	50.0	
	97 5-Nitro-o-toluidine	0.240	0.333	0.010	-38.8	50.0	
	199 3-Picoline	1.158	1.572	0.010	-35.8	50.0	
	200 N,N-Dimethylacetamide	0.931	1.327	0.010	-42.6	50.0	

Data File: /chem/can/mss/a4hp7.i/90916a.b/7aml0916.d
Report Date: 09/16/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml0916.d
Analysis Type: NONE

Injection Date: 16-SEP-1999 10:46
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90916a.b/8270b.m

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
0	Hexachlorophene product	50.0000	0.0000	100.0	50.0	<-
11	1,4-Dichlorobenzene-d4	40.0000	40.0000	0.0	50.0	
32	Naphthalene-d8	40.0000	40.0000	0.0	50.0	
52	Acenaphthene-d10	40.0000	40.0000	0.0	50.0	
70	3-Methylphenol	50.0000	56.5867	13.2	50.0	
73	1,4-Dinitrobenzene	50.0000	70.2777	40.6	50.0	
74	m-Dinitrobenzene	50.0000	69.2036	38.4	50.0	
76	2,3,4,6-Tetrachlorophenol	50.0000	59.2029	18.4	50.0	
78	Phenanthrene-d10	40.0000	40.0000	0.0	50.0	
80	N-Nitrosomorpholine	50.0000	54.4683	8.9	50.0	
81	Ethyl methanesulfonate	50.0000	57.5972	15.2	50.0	
85	2-Picoline	50.0000	60.8347	21.7	50.0	
86	N-Nitrosomethylethylamine	50.0000	61.0994	22.2	50.0	
87	Methyl methanesulfonate	50.0000	53.7113	7.4	50.0	
88	1,3-Dichloro-2-propanol	50.0000	50.2165	0.4	50.0	
89	N-Nitrosodiethylamine	50.0000	59.7086	19.4	50.0	
90	Chrysene-d12	40.0000	40.0000	0.0	50.0	
90	Pentachloroethane	50.0000	52.1430	4.3	50.0	
91	N-Nitrosopyrrolidine	50.0000	53.7560	7.5	50.0	
92	Acetophenone	50.0000	56.5912	13.2	50.0	
93	o-Toluidine	50.0000	55.9866	12.0	50.0	
94	N-Nitrosopiperidine	50.0000	49.4097	1.2	50.0	
95	O,O,O-Triethyl phosphorothioa	50.0000	47.5482	4.9	50.0	
98	a,a-Dimethyl-phenethylamine	50.0000	42.7162	14.6	50.0	
99	2,6-Dichlorophenol	50.0000	51.3416	2.7	50.0	
100	Hexachloropropene	50.0000	68.9301	37.9	50.0	
101	Perylene-d12	40.0000	40.0000	0.0	50.0	
102	N-Nitrosodi-n-butylamine	50.0000	49.8339	0.3	50.0	
103	p-Phenylene diamine	50.0000	64.9107	29.8	50.0	
104	Safrole	50.0000	49.2779	1.4	50.0	
105	1,2,4,5-Tetrachlorobenzene	50.0000	49.8023	0.4	50.0	
107	Isosafrole 1	50.0000	48.8460	2.3	50.0	
108	Isosafrole, Total	100.0000	104.9061	4.9	50.0	
109	Isosafrole 2	50.0000	53.0217	6.0	50.0	
111	1,4-Naphthoquinone	50.0000	55.5937	11.2	50.0	
112	Pentachlorobenzene	50.0000	51.9615	3.9	50.0	
113	1-Naphthylamine	50.0000	47.7367	4.5	50.0	
114	2-Naphthylamine	50.0000	52.0938	4.2	50.0	
115	Zinophos	50.0000	51.3620	2.7	50.0	

R due to holding time

Data File: /chem/can/mss/a4hp7.i/90916a.b/7aml0916.d
Report Date: 09/16/1999

CONTINUING CALIBRATION COMPOUNDS
PERCENT DRIFT REPORT

Instrument ID: a4hp7.i
Lab File ID: 7aml0916.d
Analysis Type: NONE

Injection Date: 16-SEP-1999 10:46
Lab Sample ID: astd050
Method File: /chem/can/mss/a4hp7.i/90916a.b/8

	COMPOUND	EXPECTED CONC.	MEASURED CONC.	%D	MAX %D	
116	5-Nitro-o-toluidine	50.0000	69.4193	38.8	50.0	
118	Tetraethyl dithiopyrophosphat	50.0000	40.1181	19.8	50.0	
119	Diallate 1	50.0000	45.0548	9.9	50.0	
120	Diallate, Total	100.0000	112.4936	12.5	50.0	
121	Diallate 2	50.0000	44.6666	10.7	50.0	
122	Phorate	50.0000	43.2870	13.4	50.0	
123	1,3,5-Trinitrobenzene	50.0000	76.0081	52.0	50.0	<-
124	Phenacetin	50.0000	68.2206	36.4	50.0	
125	Dimethoate	50.0000	36.0438	27.9	50.0	
126	Pentachloronitrobenzene	50.0000	49.9008	0.2	50.0	
127	4-Aminobiphenyl	50.0000	54.8157	9.6	50.0	
128	Pronamide	50.0000	46.2193	7.6	50.0	
129	Dinoseb	50.0000	65.4238	30.8	50.0	
130	Disulfoton	50.0000	43.9848	12.0	50.0	
131	4-Nitroquinoline 1-oxide	50.0000	51.7390	3.5	50.0	
132	Methapyrilene	50.0000	29.4748	41.1	50.0	
133	Aramite 1	50.0000	32.3892	35.2	50.0	
134	Aramite, Total	100.0000	116.8626	16.9	50.0	
135	Aramite 2	50.0000	32.5367	34.9	50.0	
136	p-Dimethylamino azobenzene	50.0000	43.4247	13.2	50.0	
137	p-Chlorobenzilate	50.0000	36.8737	26.3	50.0	
138	Famphur	50.0000	50.0842	0.2	50.0	
139	3,3'-Dimethylbenzidine	50.0000	29.1193	41.8	50.0	
141	2-Acetylaminofluorene	50.0000	51.6603	3.3	50.0	
143	7,12-dimethylbenz[a]anthracen	50.0000	53.8852	7.8	50.0	
144	Hexachlorophene	50.0000	0.0000	100.0	50.0	<-
145	3-Methylcholanthrene	50.0000	54.2705	8.5	50.0	
198	1,4-Dioxane	50.0000	48.2479	3.5	50.0	
199	3-Picoline	50.0000	67.8976	35.8	50.0	
200	N,N-Dimethylacetamide	50.0000	71.3025	42.6	50.0	

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 7SM0916 Date Analyzed: 09/16/99

Instrument ID: A4HP7 Time Analyzed: 1009

		IS1 (DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	218508	8.01	840408	10.42	516420	13.95
	UPPER LIMIT	437016	8.51	1680816	10.92	1032840	14.45
	LOWER LIMIT	109254	7.51	420204	9.92	258210	13.45
	EPA SAMPLE NO.						
01	D2D0XBLK	273154	8.01	973356	10.41	580938	13.94
02	D2D0XCHK	223650	8.01	799270	10.42	484304	13.94
03	D2D0XCHKDUP	238505	8.01	841973	10.42	501964	13.94
04	RFIMW-29	191904	8.01	653950	10.41	396038	13.94
05							
06							
07							
08	CCAL 9/16/99	211253	8.01	767408	10.42	476257	13.94
09							
10	10:46						
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: QUANTERRA, INC. Contract:

Lab Code: QESOH Case No.: SAS No.: SDG No.: H25128

Lab File ID (Standard): 7SM0916 Date Analyzed: 09/16/99

Instrument ID: A4HP7 Time Analyzed: 1009

		IS4 (PHN) AREA #	RT	IS5 (CRY) AREA #	RT	IS6 (PRY) AREA #	RT
	12 HOUR STD	913878	16.98	845018	22.40	524713	25.08
	UPPER LIMIT	1827756	17.48	1690036	22.90	1049426	25.58
	LOWER LIMIT	456939	16.48	422509	21.90	262356	24.58
	EPA SAMPLE NO.						
01	D2D0XBLK	979944	16.97	781911	22.37	506642	25.07
02	D2D0XCHK	828683	16.97	699349	22.38	462756	25.07
03	D2D0XCHKDUP	867674	16.97	702036	22.38	376083	25.07
04	RFIMW-29	661221	16.96	525110	22.37	331946	25.06
05							
06							
07							
08	CCAL 9/16/99 10:46	886528	16.97	726807	22.37	488115	25.06
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID: A9H260000 236
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/21/99
Work Order: D1R9F102 | Date Extracted: 08/27/99
Dilution factor: 1 | Date Analyzed: 09/09/99

QC Batch: 9238236

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	32	
59-50-7	4-Chloro-3-methylphenol	51	
95-57-8	2-Chlorophenol	46	
121-14-2	2,4-Dinitrotoluene	37	
100-02-7	4-Nitrophenol	57	
621-64-7	N-Nitrosodi-n-propylamine	30	
87-86-5	Pentachlorophenol	52	
108-95-2	Phenol	45	
129-00-0	Pyrene	37	
120-82-1	1,2,4-Trichlorobenzene	31	
106-46-7	1,4-Dichlorobenzene	27	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Lab Sample ID:A9H310000 203

Sample WT/Vol: 1000 / mL
Work Order: D1XAQ104
Dilution factor: 1

Date Received: 08/26/99
Date Extracted:09/01/99
Date Analyzed: 09/07/99

QC Batch: 9243203

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	32	
59-50-7	4-Chloro-3-methylphenol	48	
95-57-8	2-Chlorophenol	46	
121-14-2	2,4-Dinitrotoluene	35	
100-02-7	4-Nitrophenol	43	
621-64-7	N-Nitrosodi-n-propylamine	29	
87-86-5	Pentachlorophenol	45	
108-95-2	Phenol	46	
129-00-0	Pyrene	41	
120-82-1	1,2,4-Trichlorobenzene	29	
106-46-7	1,4-Dichlorobenzene	26	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Lab Sample ID:A9H310000 203

Sample WT/Vol: 1000 / mL
Work Order: D1XAQ105
Dilution factor: 1
Moisture %:NA

Date Received: 08/26/99
Date Extracted:09/01/99
Date Analyzed: 09/07/99

QC Batch: 9243203

Client Sample Id: DUPLICATE CHECK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	35	
59-50-7	4-Chloro-3-methylphenol	52	
95-57-8	2-Chlorophenol	47	
121-14-2	2,4-Dinitrotoluene	39	
100-02-7	4-Nitrophenol	52	
621-64-7	N-Nitrosodi-n-propylamine	31	
87-86-5	Pentachlorophenol	51	
108-95-2	Phenol	47	
129-00-0	Pyrene	40	
120-82-1	1,2,4-Trichlorobenzene	30	
106-46-7	1,4-Dichlorobenzene	27	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I130000 113
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/24/99
Work Order: D2D0X102 Date Extracted:09/13/99
Dilution factor: 1 Date Analyzed: 09/16/99

QC Batch: 9256113

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	38	
59-50-7	4-Chloro-3-methylphenol	38	
95-57-8	2-Chlorophenol	34	
121-14-2	2,4-Dinitrotoluene	51	
100-02-7	4-Nitrophenol	50	
621-64-7	N-Nitrosodi-n-propylamine	36	
87-86-5	Pentachlorophenol	38	
108-95-2	Phenol	36	
129-00-0	Pyrene	39	
120-82-1	1,2,4-Trichlorobenzene	32	
106-46-7	1,4-Dichlorobenzene	29	

PARSONS ENGINEERING SCIENCE, INC.
CHECK SAMPLE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA

SDG Number: H25128

Matrix: (soil/water) WATER
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Lab Sample ID:A9I130000 113

Sample WT/Vol: 1000 / mL
Work Order: D2D0X103
Dilution factor: 1
Moisture %:NA

Date Received: 08/24/99
Date Extracted:09/13/99
Date Analyzed: 09/16/99

QC Batch: 9256113

Client Sample Id: DUPLICATE CHECK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	40	
59-50-7	4-Chloro-3-methylphenol	41	
95-57-8	2-Chlorophenol	36	
121-14-2	2,4-Dinitrotoluene	54	
100-02-7	4-Nitrophenol	53	
621-64-7	N-Nitrosodi-n-propylamine	37	
87-86-5	Pentachlorophenol	39	
108-95-2	Phenol	41	
129-00-0	Pyrene	41	
120-82-1	1,2,4-Trichlorobenzene	34	
106-46-7	1,4-Dichlorobenzene	31	

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID:A9H260000 236
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/21/99
Work Order: D1R9F101 | Date Extracted:08/27/99
Dilution factor: 1 | Date Analyzed: 09/09/99

QC Batch: 9238236

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
92-67-1	4-Aminobiphenyl	50	U
60-51-5	Dimethoate	200	U
60-11-7	p-Dimethylaminoazobenzene	20	U
57-97-6	7,12-Dimethylbenz(a)anthrace	100	U
1888-71-7	Hexachloropropene	100	U
62-44-2	Phenacetin	50	U
23950-58-5	Pronamide	20	U
122-09-8	a,a-Dimethylphenethylamine	50	U
2303-16-4	Diallate	10	U
510-15-6	Chlorobenzilate	10	U
83-32-9	Acenaphthene	5.0	U
208-96-8	Acenaphthylene	5.0	U
98-86-2	Acetophenone	10	U
53-96-3	2-Acetylaminofluorene	20	U
62-53-3	Aniline	10	U
120-12-7	Anthracene	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
191-24-2	Benzo(ghi)perylene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
100-51-6	Benzyl alcohol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
111-44-4	bis(2-Chloroethyl) ether	5.0	U
117-81-7	bis(2-Ethylhexyl) phthalate	5.0	U
101-55-3	4-Bromophenyl phenyl ether	5.0	U
85-68-7	Butyl benzyl phthalate	5.0	U
106-47-8	4-Chloroaniline	10	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID: A9H260000 236
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/21/99
Work Order: D1R9F101 | Date Extracted: 08/27/99
Dilution factor: 1 | Date Analyzed: 09/09/99

QC Batch: 9238236

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-58-7	2-Chloronaphthalene	10	U
95-57-8	2-Chlorophenol	5.0	U
7005-72-3	4-Chlorophenyl phenyl ether	10	U
218-01-9	Chrysene	5.0	U
53-70-3	Dibenz(a,h)anthracene	5.0	U
132-64-9	Dibenzofuran	5.0	U
84-74-2	Di-n-butyl phthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	5.0	U
87-65-0	2,6-Dichlorophenol	10	U
84-66-2	Diethyl phthalate	5.0	U
119-93-7	3,3'-Dimethylbenzidine	50	U
105-67-9	2,4-Dimethylphenol	5.0	U
131-11-3	Dimethyl phthalate	5.0	U
117-84-0	Di-n-octyl phthalate	10	U
99-65-0	1,3-Dinitrobenzene	10	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
51-28-5	2,4-Dinitrophenol	50	U
121-14-2	2,4-Dinitrotoluene	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
122-39-4	Diphenylamine	10	U
62-50-0	Ethyl methanesulfonate	10	U
206-44-0	Fluoranthene	5.0	U
86-73-7	Fluorene	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID:A9H260000 236
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/21/99
Work Order: D1R9F101 | Date Extracted:08/27/99
Dilution factor: 1 | Date Analyzed: 09/09/99

QC Batch: 9238236

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-72-1	Hexachloroethane	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
78-59-1	Isophorone	5.0	U
120-58-1	Isosafrole	10	U
91-80-5	Methapyrilene	100	U
95-53-4	o-Toluidine	10	U
56-49-5	3-Methylcholanthrene	100	U
66-27-3	Methyl methanesulfonate	10	U
91-57-6	2-Methylnaphthalene	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-39-4	3-Methylphenol	10	U
106-44-5	4-Methylphenol	10	U
91-20-3	Naphthalene	5.0	U
130-15-4	1,4-Naphthoquinone	200	U
134-32-7	1-Naphthylamine	10	U
91-59-8	2-Naphthylamine	10	U
88-74-4	2-Nitroaniline	50	U
99-09-2	3-Nitroaniline	50	U
100-01-6	4-Nitroaniline	50	U
98-95-3	Nitrobenzene	5.0	U
88-75-5	2-Nitrophenol	10	U
100-02-7	4-Nitrophenol	50	U
56-57-5	4-Nitroquinoline-1-oxide	100	U
88-85-7	Dinoseb	10	U
924-16-3	N-Nitrosodi-n-butylamine	10	U
55-18-5	N-Nitrosodiethylamine	10	U
62-75-9	N-Nitrosodimethylamine	10	U
621-64-7	N-Nitrosodi-n-propylamine	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9H260000 236
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/21/99
Work Order: D1R9F101 Date Extracted:08/27/99
Dilution factor: 1 Date Analyzed: 09/09/99

QC Batch: 9238236

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
86-30-6	N-Nitrosodiphenylamine	5.0	U
10595-95-6	N-Nitrosomethylethylamine	10	U
59-89-2	N-Nitrosomorpholine	10	U
100-75-4	N-Nitrosopiperidine	10	U
930-55-2	N-Nitrosopyrrolidine	10	U
99-55-8	5-Nitro-o-toluidine	10	U
608-93-5	Pentachlorobenzene	5.0	U
76-01-7	Pentachloroethane	50	U
82-68-8	Pentachloronitrobenzene	50	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	5.0	U
108-95-2	Phenol	5.0	U
109-06-8	2-Picoline	20	U
129-00-0	Pyrene	5.0	U
110-86-1	Pyridine	10	U
94-59-7	Safrole	10	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
95-95-4	2,4,5-Trichlorophenol	10	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
99-35-4	1,3,5-Trinitrobenzene	50	U
108-60-1	bis(2-Chloroisopropyl) ether	10	U
123-91-1	1,4-Dioxane	50	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number:

Matrix: (soil/water) WATER | Lab Sample ID:A9H310000 203
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/26/99
Work Order: D1XAQ101 | Date Extracted:09/01/99
Dilution factor: 1 | Date Analyzed: 09/07/99

QC Batch: 9243203

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
92-67-1	4-Aminobiphenyl	50	U
60-51-5	Dimethoate	200	U
60-11-7	p-Dimethylaminoazobenzene	20	U
57-97-6	7,12-Dimethylbenz(a)anthrace	100	U
1888-71-7	Hexachloropropene	100	U
62-44-2	Phenacetin	50	U
23950-58-5	Pronamide	20	U
122-09-8	a,a-Dimethylphenethylamine	50	U
2303-16-4	Diallate	10	U
510-15-6	Chlorobenzilate	10	U
83-32-9	Acenaphthene	5.0	U
208-96-8	Acenaphthylene	5.0	U
98-86-2	Acetophenone	10	U
53-96-3	2-Acetylaminofluorene	20	U
62-53-3	Aniline	10	U
120-12-7	Anthracene	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
191-24-2	Benzo(ghi)perylene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
100-51-6	Benzyl alcohol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
111-44-4	bis(2-Chloroethyl) ether	5.0	U
117-81-7	bis(2-Ethylhexyl) phthalate	7.4	
101-55-3	4-Bromophenyl phenyl ether	5.0	U
85-68-7	Butyl benzyl phthalate	5.0	U
106-47-8	4-Chloroaniline	10	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) WATER Lab Sample ID:A9H310000 203
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/26/99
Work Order: D1XAQ101 Date Extracted:09/01/99
Dilution factor: 1 Date Analyzed: 09/07/99

QC Batch: 9243203

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-58-7	2-Chloronaphthalene	10	U
95-57-8	2-Chlorophenol	5.0	U
7005-72-3	4-Chlorophenyl phenyl ether	10	U
218-01-9	Chrysene	5.0	U
53-70-3	Dibenz(a,h)anthracene	5.0	U
132-64-9	Dibenzofuran	5.0	U
84-74-2	Di-n-butyl phthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	5.0	U
87-65-0	2,6-Dichlorophenol	10	U
84-66-2	Diethyl phthalate	5.0	U
119-93-7	3,3'-Dimethylbenzidine	50	U
105-67-9	2,4-Dimethylphenol	5.0	U
131-11-3	Dimethyl phthalate	5.0	U
117-84-0	Di-n-octyl phthalate	10	U
99-65-0	1,3-Dinitrobenzene	10	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
51-28-5	2,4-Dinitrophenol	50	U
121-14-2	2,4-Dinitrotoluene	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
122-39-4	Diphenylamine	10	U
62-50-0	Ethyl methanesulfonate	10	U
206-44-0	Fluoranthene	5.0	U
86-73-7	Fluorene	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number:

Matrix: (soil/water) WATER | Lab Sample ID:A9H310000 203
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/26/99
Work Order: D1XAQ101 | Date Extracted:09/01/99
Dilution factor: 1 | Date Analyzed: 09/07/99

QC Batch: 9243203

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-72-1	Hexachloroethane	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
78-59-1	Isophorone	5.0	U
120-58-1	Isosafrole	10	U
91-80-5	Methapyrilene	100	U
95-53-4	o-Toluidine	10	U
56-49-5	3-Methylcholanthrene	100	U
66-27-3	Methyl methanesulfonate	10	U
91-57-6	2-Methylnaphthalene	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-39-4	3-Methylphenol	10	U
106-44-5	4-Methylphenol	10	U
91-20-3	Naphthalene	5.0	U
130-15-4	1,4-Naphthoquinone	200	U
134-32-7	1-Naphthylamine	10	U
91-59-8	2-Naphthylamine	10	U
88-74-4	2-Nitroaniline	50	U
99-09-2	3-Nitroaniline	50	U
100-01-6	4-Nitroaniline	50	U
98-95-3	Nitrobenzene	5.0	U
88-75-5	2-Nitrophenol	10	U
100-02-7	4-Nitrophenol	50	U
56-57-5	4-Nitroquinoline-1-oxide	100	U
88-85-7	Dinoseb	10	U
924-16-3	N-Nitrosodi-n-butylamine	10	U
55-18-5	N-Nitrosodiethylamine	10	U
62-75-9	N-Nitrosodimethylamine	10	U
621-64-7	N-Nitrosodi-n-propylamine	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) WATER Lab Sample ID:A9H310000 203
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/26/99
Work Order: D1XAQ101 Date Extracted:09/01/99
Dilution factor: 1 Date Analyzed: 09/07/99

QC Batch: 9243203

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
86-30-6	N-Nitrosodiphenylamine	5.0	U
10595-95-6	N-Nitrosomethylethylamine	10	U
59-89-2	N-Nitrosomorpholine	10	U
100-75-4	N-Nitrosopiperidine	10	U
930-55-2	N-Nitrosopyrrolidine	10	U
99-55-8	5-Nitro-o-toluidine	10	U
608-93-5	Pentachlorobenzene	5.0	U
76-01-7	Pentachloroethane	50	U
82-68-8	Pentachloronitrobenzene	50	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	5.0	U
108-95-2	Phenol	5.0	U
109-06-8	2-Picoline	20	U
129-00-0	Pyrene	5.0	U
110-86-1	Pyridine	10	U
94-59-7	Safrole	10	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
95-95-4	2,4,5-Trichlorophenol	10	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
99-35-4	1,3,5-Trinitrobenzene	50	U
108-60-1	bis(2-Chloroisopropyl) ether	10	U
123-91-1	1,4-Dioxane	50	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I130000 113
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/24/99
Work Order: D2D0X101 Date Extracted:09/13/99
Dilution factor: 1 Date Analyzed: 09/16/99

QC Batch: 9256113

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
92-67-1	4-Aminobiphenyl	50	U
60-51-5	Dimethoate	200	U
60-11-7	p-Dimethylaminoazobenzene	20	U
57-97-6	7,12-Dimethylbenz(a)anthrace	100	U
1888-71-7	Hexachloropropene	100	U
62-44-2	Phenacetin	50	U
23950-58-5	Pronamide	20	U
122-09-8	a,a-Dimethylphenethylamine	50	U
2303-16-4	Diallate	10	U
510-15-6	Chlorobenzilate	10	U
83-32-9	Acenaphthene	5.0	U
208-96-8	Acenaphthylene	5.0	U
98-86-2	Acetophenone	10	U
53-96-3	2-Acetylaminofluorene	20	U
62-53-3	Aniline	10	U
120-12-7	Anthracene	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
191-24-2	Benzo(ghi)perylene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
100-51-6	Benzyl alcohol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
111-44-4	bis(2-Chloroethyl) ether	5.0	U
117-81-7	bis(2-Ethylhexyl) phthalate	5.0	U
101-55-3	4-Bromophenyl phenyl ether	5.0	U
85-68-7	Butyl benzyl phthalate	5.0	U
106-47-8	4-Chloroaniline	10	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9I130000 113
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL Date Received: 08/24/99
Work Order: D2D0X101 Date Extracted:09/13/99
Dilution factor: 1 Date Analyzed: 09/16/99

QC Batch: 9256113

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-58-7	2-Chloronaphthalene	10	U
95-57-8	2-Chlorophenol	5.0	U
7005-72-3	4-Chlorophenyl phenyl ether	10	U
218-01-9	Chrysene	5.0	U
53-70-3	Dibenz(a,h)anthracene	5.0	U
132-64-9	Dibenzofuran	5.0	U
84-74-2	Di-n-butyl phthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	5.0	U
87-65-0	2,6-Dichlorophenol	10	U
84-66-2	Diethyl phthalate	5.0	U
119-93-7	3,3'-Dimethylbenzidine	50	U
105-67-9	2,4-Dimethylphenol	5.0	U
131-11-3	Dimethyl phthalate	5.0	U
117-84-0	Di-n-octyl phthalate	10	U
99-65-0	1,3-Dinitrobenzene	10	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
51-28-5	2,4-Dinitrophenol	50	U
121-14-2	2,4-Dinitrotoluene	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
122-39-4	Diphenylamine	10	U
62-50-0	Ethyl methanesulfonate	10	U
206-44-0	Fluoranthene	5.0	U
86-73-7	Fluorene	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA | SDG Number: H25128

Matrix: (soil/water WATER | Lab Sample ID:A9I130000 113
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/24/99
Work Order: D2D0X101 | Date Extracted:09/13/99
Dilution factor: 1 | Date Analyzed: 09/16/99

QC Batch: 9256113

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-72-1	Hexachloroethane	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
78-59-1	Isophorone	5.0	U
120-58-1	Isosafrole	10	U
91-80-5	Methapyrilene	100	U
95-53-4	o-Toluidine	10	U
56-49-5	3-Methylcholanthrene	100	U
66-27-3	Methyl methanesulfonate	10	U
91-57-6	2-Methylnaphthalene	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-39-4	3-Methylphenol	10	U
106-44-5	4-Methylphenol	10	U
91-20-3	Naphthalene	5.0	U
130-15-4	1,4-Naphthoquinone	200	U
134-32-7	1-Naphthylamine	10	U
91-59-8	2-Naphthylamine	10	U
88-74-4	2-Nitroaniline	50	U
99-09-2	3-Nitroaniline	50	U
100-01-6	4-Nitroaniline	50	U
98-95-3	Nitrobenzene	5.0	U
88-75-5	2-Nitrophenol	10	U
100-02-7	4-Nitrophenol	50	U
56-57-5	4-Nitroquinoline-1-oxide	100	U
88-85-7	Dinoseb	10	U
924-16-3	N-Nitrosodi-n-butylamine	10	U
55-18-5	N-Nitrosodiethylamine	10	U
62-75-9	N-Nitrosodimethylamine	10	U
621-64-7	N-Nitrosodi-n-propylamine	5.0	U

PARSONS ENGINEERING SCIENCE, INC.
METHOD BLANK COMPOUNDS

Lab Name: QUANTERRA | SDG Number: H25128

Matrix: (soil/water) WATER | Lab Sample ID: A9I130000 113
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 1000 / mL | Date Received: 08/24/99
Work Order: D2D0X101 | Date Extracted: 09/13/99
Dilution factor: 1 | Date Analyzed: 09/16/99

QC Batch: 9256113

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
86-30-6	N-Nitrosodiphenylamine	5.0	U
10595-95-6	N-Nitrosomethylethylamine	10	U
59-89-2	N-Nitrosomorpholine	10	U
100-75-4	N-Nitrosopiperidine	10	U
930-55-2	N-Nitrosopyrrolidine	10	U
99-55-8	5-Nitro-o-toluidine	10	U
608-93-5	Pentachlorobenzene	5.0	U
76-01-7	Pentachloroethane	50	U
82-68-8	Pentachloronitrobenzene	50	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	5.0	U
108-95-2	Phenol	5.0	U
109-06-8	2-Picoline	20	U
129-00-0	Pyrene	5.0	U
110-86-1	Pyridine	10	U
94-59-7	Safrole	10	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
95-95-4	2,4,5-Trichlorophenol	10	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
99-35-4	1,3,5-Trinitrobenzene	50	U
108-60-1	bis(2-Chloroisopropyl) ether	10	U
123-91-1	1,4-Dioxane	50	U

PARSONS ENGINEERING SCIENCE, INC.
MATRIX SPIKE COMPOUNDS

Lab Name:QUANTERRA

SDG Number: H25128

Matrix: (soil/water) WATER
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Lab Sample ID:A9H250128 001

Sample WT/Vol: 455 / mL
Work Order: D1PVN106
Dilution factor: 1
Moisture %:NA

Date Received: 08/24/99
Date Extracted:08/27/99
Date Analyzed: 09/09/99

QC Batch: 9238236

Client Sample Id: RFIMW-29

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
106-46-7	1,4-Dichlorobenzene	55	
83-32-9	Acenaphthene	71	
59-50-7	4-Chloro-3-methylphenol	91	
95-57-8	2-Chlorophenol	71	
121-14-2	2,4-Dinitrotoluene	77	
100-02-7	4-Nitrophenol	100	
621-64-7	N-Nitrosodi-n-propylamine	59	
87-86-5	Pentachlorophenol	51	
108-95-2	Phenol	64	
129-00-0	Pyrene	70	
120-82-1	1,2,4-Trichlorobenzene	63	

PARSONS ENGINEERING SCIENCE, INC.
MATRIX SPIKE DUPLICATE COMPOUNDS

Lab Name:QUANTERRA SDG Number: H25128

Matrix: (soil/water) WATER Lab Sample ID:A9H250128 001
Method: SW846 8270B
Base/Neutrals and Acids (8270B)

Sample WT/Vol: 455 / mL Date Received: 08/24/99
Work Order: D1PVN107 Date Extracted:08/27/99
Dilution factor: 1 Date Analyzed: 09/09/99
Moisture %:NA

QC Batch: 9238236

Client Sample Id: RFIMW-29

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
106-46-7	1,4-Dichlorobenzene	56	
83-32-9	Acenaphthene	66	
59-50-7	4-Chloro-3-methylphenol	93	
95-57-8	2-Chlorophenol	71	
121-14-2	2,4-Dinitrotoluene	78	
100-02-7	4-Nitrophenol	100	
621-64-7	N-Nitrosodi-n-propylamine	58	
87-86-5	Pentachlorophenol	66	
108-95-2	Phenol	64	
129-00-0	Pyrene	77	
120-82-1	1,2,4-Trichlorobenzene	62	

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 14
DATE: 9-9-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: .32 mm
hold for 4 min.

FILM THICKNESS: .5 MICRONS F.D.= 2.80 E.T.= 29:03 I.S.= 2162 TUNE: DFTPP ✓

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF0909A	5V2159			OK	10:09	
7AL0909	5V2047	APP 5pt.		OK	Cal Std ok mw Checked by: 9-11-99	
7AML0909	5V2048			OK		
7AM0909	5V2049			OK		
7AMH0909	5V2050			OK		
7AH0909	5V2051			OK		

9-9-99

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 15
DATE: 9-10-99

COLUMN TYPE: DB5.625
ANALYSIS 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: 32 mm
hold for 4 min.

FILM THICKNESS: .5 MICRONS F.D.= 2.80 E.T.= 29:03 I.S.# 2162 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF0910B	SV2159			OK	(11:46)	
7SM0910	SV2172			OK	Cal Std OK mw Checked by: 9-11-99	
7SH0910	SV2174			OK		
7SMH0910	SV2173	8270 5 pt.		OK		
7SML0910	SV2171			OK		
7SL0910B	SV2170			OK		
7DF0910D	SV2159			OK	(16:27)	
7SM0910A	SV2161	* 2nd Source Continuing Std		OK		
7AML0910A	SV2048			OK		
D1QCM101	B	8-26 1L-1-1	St	OK	8270B	
D2504101	B	9-4		OK	8270C	
D2504102	C			rerun	IS out	
D2504103	L			rerun		
D236W101	B	9-3 30g-1-1		OK		
D236W102	C			OK		
D19GC202		9-4 1L-1-1		OK		
D1ATJ202		9-3 30g-1-1		OK		
D236N101				OK		
D1LL102		8-26 1L-1-1		rerun	8270B IS out	
D2362101		9-3 30g-1-1		OK	8270C	
D2362100	MS			OK		
D2362100	MSD			OK		
D236M101				OK		
D236H101				OK		
D236K101				OK		
D236L101				OK		
D2366101				rerun	out of line	910

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North Canton

INSTRUMENT: A4HP7
GC/MS SEMIVOLATILE RUN LOG

Page: 20
DATE: 9-16-99

COLUMN TYPE: DB5-625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: .32 mm
hold for 3.4 min.

FILM THICKNESS: .5 MICRONS F.D.= 2.80 E.T.= 28:63 I.S.= 2162 TUNE: DFTPP ✓

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
7DF0916A	SV2159			OK	(9:45)	
7SM0916D 7SM0916	SV2172	DFTPP PASSED STD		OK	Cal Std (10:09) Checked by: ok mw 9-17-99	
7AMLC916	SV2048			OK		
D2D0V101	B D2D0X101	9-13 1L-1-1	ST	OK/OK	8270C / 8270B	
D2D0V102	C D2D0X02	" "	"	OK/OK	" "	
D2D0X103	L	" "	"	OK	8270B	
D1E3W205		" "	"	OK	8270C	
D1P4N205		" "	"	OK	8270B	
D277W107		" "	"	OK	8270C	
D277W117	MS	" 500-1-1	"	OK	"	
D277W11E	MSD	" "	"	OK	"	
D22LA102		9-7 30g-1-1	"	OK	"	
D22KV102		" "	"	OK	"	
D22KR102		" "	"	OK	"	
D22LC102		" "	"	OK	"	
D22KP102		" "	"	OK	"	
D22KP109	MS	" "	"	OK	"	
D22KP10A	MSD	" "	"	OK	"	
D22LE102		" "	"	OK	"	
D22L4102		" "	"	OK	"	
D22KX102		" "	"	OK	"	

9-17-99
SLF

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP8
GC/MS SEMIVOLATILE RUN LOG

Page: 43
DATE: 6-29-99

COLUMN TYPE: DB5.625
LENGTH: 30 m
ID: 0.32 mm
FILM THICKNESS: 0.5 MICRONS

ANALYSIS
40 deg. C for 1.5 min.
to 320 deg. C @ 11.5 deg. C/min
hold for 2.7 min.

CASE NO.
SDG NO.

F.D.= 2:30 E.T.= 28:30 I.S.# 2148 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
8DF0629b.d	SV2120	50NG DFTPP STD	—		(9:42)	mu
8SM0629	SV2158	80NG TCL STD	—		Cal Std Checked by:	
8AML0629	SV2048	50NG AP9 STD	—			
8AM0629	SV2049	80NG AP9 STD	—		8270 b+c	
8AL0629	SV2047	20NG AP9 STD	—		AP9 5-pt	
8AMHC0629	SV2050	120NG AP9 STD	—			
8AH0629	SV2051	160NG AP9 STD	—			

mu
6-29-99

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP8
GC/MS SEMIVOLATILE RUN LOG

Page: 2
DATE: 8-27-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: 0.32 mm
hold for 6.2 min.

FILM THICKNESS: 0.5 MICRONS
F.D.= 1:45 E.T.= 30:00 I.S.# 2162 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
8DF0827b	SV2159	50NG DFTPP STD	—	ok	(11:10)	MW
8SM DF0827	SV2172	80NG BNA STD	—	ok	Cal Std Checked by:	
8SMLC827	SV2171	50NG BNA STD	—	ok		
8SLC827	SV2170	20NG BNA STD	—	ok	8270C	
8SMHC827	SV2173	120NG BNA STD	—	ok	+ CLP 1.9	
8SHC827	SV2174	160NG BNA STD	—	ok	5-pts	

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP8
GC/MS SEMIVOLATILE RUN LOG

Page: 17
DATE: 9-7-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: 0.32 mm
hold for 3.2 min.

FILM THICKNESS: 0.5 MICRONS F.D.= 2:45 E.T.= 29:00 I.S.# 2162 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
8DF0907c	SV 2159	50NG DFTPP STD	—		(14:39)	MU
8DF0907d 8SM0907	SV 2172	80NG TCL STD	—		Cal Std (15:01) Checked by: 9-8-99	
8AMC907	SV 2049	80NG AP9 STD	—	OK		
D1XAG101	B	9-1 1L → 1mL	5t	OK	8270b APBs	
D1XAG104	C	9-1 1L → 1mL	"	OK		
D1XAG105	L	9-1 1L → 1mL	"	OK		
D1RMD102	A9H270119	9-1 1L → 1mL	"	OK		
D2CXH101	B	9-2 3Cg → 1mL	"	OK	8270bs	
D2CXH102	C	9-2 3Cg → 1mL	"	OK		
D1X38100	A9H310108	9-2 3Cg → 1mL	"	OK		
D1X3H100		9-2 3Cg → 1mL	"	OK		
D1X3H110	MS	9-2 3Cg → 1mL	"	OK		
D1X3H111	MSD	9-2 3Cg → 1mL	"	OK		
D1RMA103	A9H270119	9-1 1L → 1mL	"	OK	8270b APBs	
D1RMC103		9-1 1L → 1mL	"	OK		
D1RMB103		9-1 1L → 1mL	5/100	OK		
D1X3K100	A9H310108	9-2 3Cg → 1mL	5t	OK	8270bs	
D1X3Q100		9-2 3Cg → 1mL	"	Rerun	IS out	
D1X3R100		9-2 3Cg → 1mL	"	Rerun	IS out	
D1X3V100		9-2 3Cg → 1mL	"	OK		
D1X41100		9-2 3Cg → 1mL	"	Rerun	out of tune	

11K 9-7-99

QC 7/7 Samples 8/10

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP8
GC/MS SEMIVOLATILE RUN LOG

DATE: 9-8-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min. to 320 deg. C @ 11.5 deg. C/min hold for 3.7 min.
CASE NO.
SDG NO.

LENGTH: 30m
ID: 0.32 mm
FILM THICKNESS: 0.5 MICRONS
F.D.= 2.45 E.T.= 29:30 I.S.# 2162 TUNE: DFTPP

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
8DF0908B	SV2159	50NG DFTPP STD	—	ok	(15:34)	MU
8SMC908	SV 2167	80NG TCL STD	—	ok	Cal Std Checked by: 9/6/99	
8SLC908	SV 2165	20NG TCL STD	—	ok		
8SMLC908	SV 2166	50NG TCL STD	—	ok	8270C low	
8SMHC908	SV 2168	120NG TCL STD	—	ok	8270C 5-pt	
8SHC908	SV 2169	160NG TCL STD	—	ok		
8SMCQC.B.A	SV 2172	80NG TCL STD	—	ok	2nd Source	1

MU 9-8-99

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP8
GC/MS SEMIVOLATILE RUN LOG

Page: 20
DATE: 9-9-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m to 320 deg. C @ 11.5 deg. C/min

ID: 0.32 mm hold for 3.7 min.

FILM THICKNESS: 0.5 MICRONS F.D.= 2:45 E.T.= 29:30 I.S.# 2162 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
8AFC9C9A	SV 2159	50NG DFTPP STD	—		(10:30)	MU
8DFC9CAd 8SMC9C9	SV 2172	80NG TCL STD	—		Cal Std (11:00) Checked by:	
8SLC9C9	QCMRLC26	20NG TCS STD	—			
8AMC9C9	SV 2049	80NG APP STD	—			
DIMCJ101	B	8-22 1L→1mL	5t	CK	E.D 8270C APP	
DIMCJ102	C	8-22 1L→1mL	"	CK		
DIG3W105	A9H1FC1H1	8-22 1L→1mL	"	CKREXT	SS<10%	
DIG3W114	MS	8-22 5cc mL→1mL	"	CK		
DIG3W115	MSD	8-22 5cc mL→1mL	"	CK		
DIKC3102	A9H20C131	8-22 1L→1mL	"	OK		
DIKC6102		8-22 1L→1mL	"	CK		
DIKC9102		8 22 1L→1mL	"	CK		
DIKCA102		8-22 1L→1mL	"	CK	〃	
DIR9F101	B	8-27 1L→1mL	"	CK	E.D 8270C APP	
DIR9F102	C	8-27 1L→1mL	"	CK		
DIMDN103	A9H220102	8-27 930mL→1mL	15/100	OK		
DIMDM103	〃	8-27 930mL→1mL	25/100	CK		
DIPVN105	A9H250128	8-27 1L→1mL	5t	OKREXT	3 SS <10%	
DIPVN106	MS	8-27 455mL→1mL	"	OK		
DIPVN107	MSD	8-27 455mL→1mL	"	OK		
DIPXG103		8-27 1L→1mL	"	Rerun	out of tune	
DIPXF103	〃	8-29 1L→1mL	"	〃	〃 〃	〃
		INV 9.9.99				

QC 8/E. Samples 6/E.

Quanterra Incorporated
North Canton

INSTRUMENT: A4HP8
GC/MS SEMIVOLATILE RUN LOG

Page: 21
DATE: 9-10-99

COLUMN TYPE: DB5.625
ANALYSIS: 40 deg. C for 1.5 min.
CASE NO.
SDG NO.

LENGTH: 30m
to 320 deg. C @ 11.5 deg. C/min

ID: 0.32 mm
hold for 3.7 min.

FILM THICKNESS: 0.5 MICRONS F.D.= 2:45 E.T.= 29:30 I.S.# 2178 TUNE: DFTPP.U

FILE NAME	LOT # / FILE NAME	SAMPLE PREP	D.F.	QUAL	COMMENTS	ANALYST
8DFC910b	SV 2159	50NG DFTPP STD	—	ok	(10:59)	MC
8DFC910d 8SMC910	SV 2172	80NG TCL STD	—	ok	Cal Std (12:30) Checked by [illegible] 9/13/99	
8SLC910 (QCMRL020)	SV 2170	20NG TCL STD	—	ok	MDL check	
8ALC910	SV 2049	30NG APP STD	—	ok		
DIXF1 IC1	B	9-1 3cg → 1ml	5t	OK	E.D 8270c APP +20	
DIXF2 IC2	C	9-1 3cg → 1ml	"	OK	⊥	
DIMCD IC V	MS (ARH 210155)	8-27 46c ml → 1ml	"	OK	E.D 8270c	
DIMCD IC W	MSD ⊥	8 27 46c ml → 1ml	"	OK	⊥	
DIPX6 IC3	A9H250128	8 27 1L → 1ml	5t	CK	E.D 8270B (APP)	
DIPXF IC3	⊥	8-27 1L → 1ml	"	CK	⊥	
DIPW4 IC3	⊥	8-27 1L → 1ml	5/100	CK	⊥	
DITV9 IC3	A9H270272	9-1 3cg → 1ml	5t	OK	E.D 8270c (APP)	
DITVC IC3	⊥	9-1 3cg → 1ml	"	OK	⊥	
DITVE IC3	⊥	9-1 3cg → 1ml	"	OK	⊥	
DITV7 IC3	⊥	9-1 3cg → 1ml	"	OK	⊥	
DIFQJ 2C2	119H 120150	8-25 1L → 1ml	50/100	OK	E.D 8270c	
DIFTT 2C2	⊥	8-25 1L → 1ml	50/100	OK	⊥	
DCTQP IC2	A9H030143	8-27 1g → 4ml	4/100	OK	8270c	
DCTQP 118	MS	8-27 1g → 4ml	"	Reanal	out of tune	
DCTQP 119	MSD ⊥	8-27 1g → 4ml	"	⊥	⊥	
DITTI IC1	A9H270267	9-1 3cg → 1ml	5t	⊥	E.D 8270c +20	

MJ
9-10-99

QC 4/4 Samples 10/10

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/31/99
Time: 44:33

LEV 1	LEV 2		LEV 1	LEV 2	
Y	Y	Blank	Y	Y	Weights/Volumes
Y	Y	Check	Y	Y	Spike & Surrogate Worksheet
Y	Y	MS/MSD	Y	Y	Vial contains correct volume
			Y	Y	Labels, greenbars, worksheets computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
Y Bench Sheet Copied
_ Package Submitted to Analytical Group
_ Bench Sheet Copied per COC

Extractionist: 001935 Eric S. Miller
100001 Cooper Walsh

Concentrationist: 009521 Kami L. Rathburn
001163 Donny E. Williamson

****
* *
* QC BATCH: 9238236 *
* *
****

PREP DATE: 8/27/99
COMP DATE: 8/28/99

Reviewer/Date: RATHBURK / 8/30/99

Base/Neutrals and Acids (8270B)
LIQ/LIQ, CONT (A/B/N) - Acid->Base

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
8/27/99	9/06/99	A9H220102-007 D1MDM-1-03		49	L4	WATER	930mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/27/99	9/06/99	A9H220102-008 D1MDN-1-03		49	L4	WATER	930mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/30/99	9/07/99	A9H250128-001 D1PVN-1-05	✓ D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/30/99	9/07/99	A9H250128-001 D1PVN-1-06S	✓ D	49	L4	WATER	455mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 830 0.5ML WAT 820
COMMENTS:															
8/30/99	9/07/99	A9H250128-001 D1PVN-1-07D	✓ D	49	L4	WATER	455mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 830 0.5ML WAT 820
COMMENTS:															
8/30/99	9/07/99	A9H250128-002 D1PW4-1-03	✓ D	49	L4	WATER	1000mL 1.00mL	10.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/30/99	9/07/99	A9H250128-008 D1PXF-1-03	✓ D	49	L4	WATER	1000mL 1.00mL	10.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															

19

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 8/31/99
Time: 44:33

QC BATCH: 9238236

PREP DATE: 8/27/99
COMP DATE: 8/28/99

920

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
8/30/99	9/07/99	A9H250128-007 D1PX6-1-03	✓ D	49	L4	WATER	1000mL 1.00mL	10.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/27/99	0/00/00	A9H260000-236 D1R9F-1-01B	✓	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
8/27/99	0/00/00	A9H260000-236 D1R9F-1-02C	✓	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 830 0.5ML WAT 820
COMMENTS:															

EM S&S
DCM #N23307 NA20S4 #8024N02613
BASE ON @10AM 8/27 OFF @6AM 8/28 ACID ON @10AM 8/27 OFF @6AM 8/29

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 10

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 9/03/99
Time: 1:19:05

LEV 1	LEV 2		LEV 1	LEV 2	
Y	Y	Blank	Y	Y	Weights/Volumes
Y	Y	Check	Y	Y	Spike & Surrogate Worksheet
–	–	MS/MSD	Y	Y	Vial contains correct volume
			Y	Y	Labels, greenbars, worksheets computer batch: correct & all match
			–	–	Anomalies to Extraction Method

Y Expanded Deliverable
Y COC Completed
– Bench Sheet Copied
– Package Submitted to Analytical Group
– Bench Sheet Copied per COC

Extractionist: 100001 Cooper Walsh
001935 Eric S. Miller

Concentrationist: 002398 Sharon Geis
001560 Thomas R. Fausnight

****
* *
* QC BATCH: 9243203 *
* *
****

PREP DATE: 9/01/99
COMP DATE: ~~9/03/99~~

Reviewer/Date: FAUSNIGT / 9/03/99

Base/Neutrals and Acids (8270B)
LIQ/LIQ, CONT (A/B/N) - Acid->Base

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
9/01/99	9/09/99	A9H270119-002 D1RMA-1-03	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
9/01/99	9/09/99	A9H270119-003 D1RMC-1-03	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
9/01/99	9/09/99	A9H270119-004 D1RMD-1-02	D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
9/01/99	9/09/99	A9H270119-001 D1RM8-1-03	D	49	L4	WATER	1000mL 1.00mL	10.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
9/01/99	0/00/00	A9H310000-203 D1XAQ-1-01B		49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
9/01/99	0/00/00	A9H310000-203 D1XAQ-1-04C		49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															
9/01/99	0/00/00	A9H310000-203 D1XAQ-1-05L	R	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 820
COMMENTS:															

DCM #N23307
S/S BY C.W. WITNESSED BY E.M.
BASE ON AT 10A.M. ACID ON 6A.M.

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)

NUMBER OF WORK ORDERS IN BATCH: 7

1-2

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 9/15/99
Time: 20:45:59

LEV 1	LEV 2		LEV 1	LEV 2	
Y	Y	Blank	Y	Y	Weights/Volumes
Y	Y	Check	Y	Y	Spike & Surrogate Worksheet
_	_	MS/MSD	Y	Y	Vial contains correct volume
			Y	Y	Labels, greenbars, worksheets
					computer batch: correct & all match
			_	_	Anomalies to Extraction Method

Y Expanded Deliverable
Y COC Completed
Y Bench Sheet Copied
_ Package Submitted to AnalyticalGroup
_ Bench Sheet Copied per COC

922

Extractionist: 100001 Cooper Walsh
001935 Eric S. Miller

Concentrationist: 009521 Kami L. Rathburn

QC BATCH: 9256113

PREP DATE: 9/13/99
COMP DATE: ~~9/15/99~~

Reviewer/Date: RATHBURK / 9/15/99

Base/Neutrals and Acids (8270B)
LIQ/LIQ, CONT (A/B/N) - Acid->Base

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
8/30/99	9/07/99	A9H250128-001 D1PVN-2-05	/ D	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML CLP #3642
COMMENTS:															
8/30/99	0/00/00	A9I130000-113 D2D0X-1-01B	/	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML CLP #3642
COMMENTS:															
8/30/99	0/00/00	A9I130000-113 D2D0X-1-02C	/	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 810 0.5ML CLP #3642
COMMENTS:															
8/30/99	0/00/00	A9I130000-113 D2D0X-1-03L	/R	49	L4	WATER	1000mL 1.00mL	7.0	12.0	2.0	DCM	250.0		.0	0.5ML WAT 810 0.5ML CLP #3642
COMMENTS:															

S/S BY CW WITNESSED BY ESM ASSOC BLANK AND CHECK WITH 9256112.
DCM #N14270 NA2SO4 #8024N20613
BASE ON @10AM 9/13 OFF @6AM 9/14 ACID ON @10AM 9/14 OFF @6AM 9/15/99.

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 4

SECTION 4

INORGANIC AND WET CHEMISTRY DATA

SUPPORT DOCUMENTATION

A. SDG H21120

Inorganic Analyses Support Documentation

Environmental Standards Project Name: Basf / Wyandott
Sample Collection Dates: 6/19 - 8/20/99
Job Number: 9010925
Project Manager: Kendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: K. Grega
Completion Date: 11/98

Applicable Sample No's.: ☑ Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab. Control No.
SDG H21120	

Deliverables:
- CLP ☑ like
- Tier I ☐
- Tier II ☐
- Limited ☐
- Other ____

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail										Problems Identified						Support Documentation Attachments					
	ICP or A.A Metals	Furnace Metals	Cold Vapor Mercury	Cyanide	Other Method(s) Wet Chem		ICP or A.A Metals	Furnace Metals	Cold Vapor Mercury	Cyanide	Other Method(s) Wet Chem		ICP or A.A Metals	Furnace Metals	Cold Vapor Mercury	Cyanide	Other Method(s) Wet Chem	
Holding Times	✓				✓						✓		✓				✓					
Blank Analysis Results	✓				✓								✓				✓					
Matrix Spike (Predigestion) Results	✓				✓						✓		✓				✓					
Duplicate Analysis Results ☑ Field ☑ Lab	✓				✓						✓		✓				✓					
Quantitation of Results	✓				✓																	
Detection Limits / Sensitivity	✓				✓								✓				✓					
Initial Calibrations	✓				✓								✓				✓					
Continuing Calibrations	✓				✓								✓				✓					
Laboratory Control Standards (LCS)	✓				✓								✓				✓					
ICP Linear Range Analysis	✓												✓									
ICP Interference Checks	✓												✓									
ICP Serial Dilutions	✓												✓									
ICP Post-Digestion Spike																						
GFAA Post-Digestion Spikes																						
GFAA Duplicate Injections																						
ICP Multiple Exposures	✓																					
GFAA Standard Additions																						
CROL Standards	✓												✓									
Others:																						

Comments: Data is acceptable for use unless otherwise qualified.

BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

	MATRIX (Aq., S)	BLANK TYPE (✓) METHOD ICB	METHOD CCB	METHOD PREP.	TRIP	EQUIPMENT	FIELD	BLANK SAMPLE NUMBER	CONTAMINANT	CONCENTRATION (units)	QUALIFICATION LIMIT FOR AQUEOUS SAMPLES (ug/L)	QUALIFICATION LIMIT FOR SOLID SAMPLES (mg/Kg)
										mg/L	5x	5x
ICP	Aq		✓					CCB6	calcium	0.100g		
								method blank	none			
wet chem	L			✓				method blanks	none			

Aq. = Aqueous; S = Solid

Notes: _____

EVALUATION OF INORGANIC DUPLICATE ANALYSIS PRECISION

PRECISION OBJECTIVES		Compound > or = 5 X CRDL/MDL	Compound < 5 X CRDL/MDL
All Parameters	Aqueous	RPD < or = 20%	Difference < or = CRDL/MDL
	Solid	RPD < or = 40%	Difference < or = 2 X CRDL/MDL

Sample Identification #1: RFIMW-14 Units (enter one): ug/L, mg/l, ug/kg, or mg/kg

Sample Identification #2: RFIMW-39 UNITS: mg/L

H21120

ANALYTE	SAMPLE ANALYTE CONCENTRATION	Q	DUPLICATE SAMPLE ANALYTE CONCENTRATION	Q	RELATIVE PERCENT DIFFERENCE (RPD)	CRDL/MDL	NOTES
calcium	2040.00		1850.00		10	50.00	1,IN
COD	117.00		100.00		16	5.00	1,IN
hardness	7000.00		6800.00		3	50.00	1,IN
alkalinity	700.00		730.00		4	5.00	1,IN
TDS	77000.00		76000.00		1	500.00	1,IN
TOC	7.00		7.00		0	1.00	1,IN
total solids	77000.00		78000.00		1	500.00	1,IN

NOTES:

1 - When both results are > or = 5 X CRDL/MDL, the acceptance limit is the relative percent difference must be < or = 20% for aqueous and air samples and must be < or = 40% for solid samples.

2 - When at least one of the results is < 5 X CRQL/MDL, the acceptance limit is the difference between the results must be < or = CRDL/MDL for aqueous and air samples and < or = 2 X CRDL/MDL for solid samples.

Q - The column in which the qualifier code is entered to indicate if the analyte was not-detected or qualitatively questionable in the sample.

U - The analyte was not-detected in the sample at or above the associated numerical value. The numerical value will be used for comparison purposes.

N.C. - The RPD was not calculated because one of the results was not-detected; the acceptance limit used is the difference between the results must be < or = CRDL/MDL for aqueous and air samples and < or = 2 X CRDL/MDL for solid samples.

J - The positive results should be considered estimated.

U*/B - The result should be considered "not-detected" (U*) or qualitatively questionable (B) due to blank contamination. The numerical value will be used for comparison purposes.

IN - The results are acceptable.

Comments:

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium	25000.0	25788.73	103.2	50000.0	52154.77	104.3	52475.63	105.0	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	52044.20	104.1	52846.47	105.7	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	54239.53	108.5	53644.13	107.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	53639.90	107.3	53442.27	106.9	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	53241.33	106.5			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

Identity 1: CRI Identity 2: 8:19 AM September 16, 1999
Task name : 140423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Sr (ppm)	Zn (ppm)	Ba (ppm)	2Fe (ppm)	Mg (ppm)	Sn (ppm)	Tl (ppm)	As (ppm)
Mean	0.103	0.040	0.020	0.141	10.156	0.257	3.747	0.617
S.D.	0.000	0.001	0.000	0.010	0.032	0.003	0.112	0.009
% R.S.D.	0.193	1.811	0.333	6.997	0.312	1.132	2.990	1.396

	V (ppm)	Na (ppm)	Mo (ppm)	Se (ppm)	Al (ppm)	Sb (ppm)	Be (ppm)	Ca (ppm)
Mean	0.102	9.867	0.081	0.497	0.434	0.116	0.010	10.292
S.D.	0.000	0.077	0.003	0.015	0.004	0.009	0.000	0.026
% R.S.D.	0.153	0.780	4.278	2.961	0.845	7.539	0.385	0.253

	Cd (ppm)	Cu (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Co (ppm)	Ni (ppm)	K (ppm)
Mean	0.012	0.022	0.023	0.224	0.101	0.109	0.082	9.566
S.D.	0.000	0.001	0.000	0.007	0.000	0.004	0.002	0.064
% R.S.D.	1.840	2.552	1.446	3.183	0.495	3.266	2.198	0.673

	Mn (ppm)	Fe (ppm)	Cr (ppm)	B (ppm)
Mean	0.018	0.099	0.013	0.451
S.D.	0.001	0.002	0.001	0.003
% R.S.D.	3.457	2.125	11.127	0.736

103%.

Identity 1: VERSCAL Identity 2: 8:22 AM September 16, 1999
Task name : 140423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

Analyte	Channel	Corrected	Counts	
Sr	1	905.997	905.114	902.700
Zn	2	192.435	192.420	192.378
Ba	3	170.693	170.688	170.256
2Fe	5	51.893	51.933	51.947
Mg	6	104.928	104.927	104.752
Sn	7	13.690	13.653	13.636
Ti	8	3.361	3.329	3.383
As	9	10.452	10.411	10.444
V	10	78.263	78.275	78.175
Na	11	1.607	1.611	1.601
Mo	12	57.948	58.025	58.075
Se	13	4.100	4.060	4.052
Al	14	41.727	41.745	41.631
Sb	15	12.765	12.746	12.786
Be	16	243.519	243.894	243.802
Ca	17	79.616	79.666	79.764
Cd	18	78.183	77.861	78.204
Cu	19	58.136	58.186	58.080
Ag	20	12.129	12.129	12.123

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium	23.2	U	23.2	U	31.5	B	38.7	B			P

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium			42.5	B	85.3	B	100.9	B			P

no impact

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium			-25.6	B	-53.8	B	23.2	U			P

no impact

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9H240148 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A9H310000-247 Prep Batch #...: 9243247						
Calcium	ND	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1XL9106
	Dilution Factor: 1					

NOTE(S):

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

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

ICP ID Number: ARL\I4_____ ICS Source: _____

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Calcium	500000	500000	492194	493841.6	98.8			

no endings ICS

Be	16	0.413	0.412	0.413
Ca	17	403.158	403.559	403.572
Cd	18	0.234	0.224	0.220
Co	19	1.046	1.045	1.048
Ag	20	0.008	0.010	0.017
Pb	21	0.123	0.136	0.128
Ti	22	-0.081	-0.083	-0.080
Cu	24	0.038	0.025	0.035
Ni	25	0.001	0.002	-0.010
K	27	1.152	1.154	1.156
Mn	28	0.242	0.261	0.243
Fe	29	513.008	514.763	511.622
Cr	30	0.062	0.056	0.035
B	31	1.184	1.137	1.169

Identity 1: ICSA Identity 2: 9256329 2:50 PM September 16, 1999
Task name : I40423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Sr (ppm)	Zn (ppm)	Ba (ppm)	2Fe (ppm)	Mg (ppm)	Sn (ppm)	Tl (ppm)	As (ppm)
Mean	0.034	0.015	0.002	188.946	505.560	0.031	-0.060	-0.087
S.D.	0.000	0.001	0.000	0.572	2.100	0.004	0.100	0.021
% R.S.D.	0.366	5.250	7.806	0.303	0.415	13.121	165.117	24.419

	V (ppm)	Na (ppm)	Mo (ppm)	Se (ppm)	Al (ppm)	Sb (ppm)	Be (ppm)	Ca (ppm)
Mean	-0.002	0.000	-0.000	0.078	492.728	0.023	0.001	508.250
S.D.	0.001	0.038	0.003	0.036	1.500	0.006	0.000	0.297
% R.S.D.	35.230	176334259520.000	5408.327	46.811	0.304	27.887	3.064	0.058

	Cd (ppm)	Cu (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Co (ppm)	Ni (ppm)	K (ppm)
Mean	-0.000	0.011	0.002	0.053	0.005	0.008	-0.001	0.034
S.D.	0.001	0.000	0.001	0.008	0.000	0.001	0.003	0.010
% R.S.D.	630.251	2.441	47.258	14.325	4.758	16.738	221.096	30.000

	Mn (ppm)	Fe (ppm)	Cr (ppm)	B (ppm)
Mean	0.007	188.846	0.010	0.011
S.D.	0.001	0.579	0.003	0.003
% R.S.D.	7.856	0.307	34.863	29.397

Identity 1: ICSAB Identity 2: 9256329 2:53 PM September 16, 1999
Task name : I40423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

Analyte	Channel	Corrected Counts		
Sr	1	96.752	97.050	97.605
Zn	2	19.755	19.834	19.898

Ba	3	9.733	9.756	9.798
2Fe	5	103.130	103.364	103.997
Mg	6	511.263	513.100	515.383
Sn	7	1.580	1.575	1.594
Tl	8	1.718	1.757	1.760
As	9	0.995	1.039	1.033
V	10	3.970	3.981	4.000
Na	11	0.266	0.267	0.268
Mo	12	5.878	5.927	5.865
Se	13	0.404	0.406	0.407
Al	14	202.123	203.513	204.323
Sb	15	1.338	1.346	1.354
Be	16	12.537	12.554	12.634
Ca	17	401.577	402.620	406.463
Cd	18	8.384	8.410	8.457
Cu	19	3.931	3.943	3.959
Ag	20	5.469	5.483	5.489
Pb	21	0.988	0.956	1.018
Ti	22	5.800	5.818	5.838
Co	24	2.459	2.481	2.487
Ni	25	2.349	2.352	2.380
K	27	3.141	3.148	3.156
Mn	28	9.854	9.904	9.851
Fe	29	510.190	512.188	515.043
Cr	30	2.080	2.059	2.099
B	31	8.725	8.666	8.770

Identity 1: ICSAB Identity 2: 9256329 2:53 PM September 16, 1999
Task name : I40423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Sr (ppm)	Zn (ppm)	Ba (ppm)	2Fe (ppm)	Mg (ppm)	Sn (ppm)	Tl (ppm)	As (ppm)
Mean	1.072	0.992	0.507	188.967	490.469	1.146	9.183	0.990
S.D.	0.005	0.004	0.002	0.819	1.977	0.007	0.125	0.023
% R.S.D.	0.446	0.359	0.382	0.433	0.403	0.620	1.357	2.274

	V (ppm)	Na (ppm)	Mo (ppm)	Se (ppm)	Al (ppm)	Sb (ppm)	Be (ppm)	Ca (ppm)
Mean	0.505	10.356	1.007	1.060	487.021	1.077	0.478	508.406
S.D.	0.002	0.067	0.006	0.004	2.673	0.006	0.002	3.246
% R.S.D.	0.368	0.644	0.555	0.353	0.549	0.592	0.425	0.638

	Cd (ppm)	Cu (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Co (ppm)	Ni (ppm)	K (ppm)
Mean	1.049	0.514	0.899	1.058	1.021	0.505	0.989	10.301
S.D.	0.005	0.002	0.002	0.036	0.003	0.003	0.007	0.039
% R.S.D.	0.438	0.475	0.187	3.407	0.332	0.594	0.724	0.375

	Mn (ppm)	Fe (ppm)	Cr (ppm)	B (ppm)
Mean	0.504	188.604	0.500	0.988
S.D.	0.002	0.898	0.005	0.006
% R.S.D.	0.306	0.476	0.967	0.649

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H240148 **Matrix.....:** WATER
Date Sampled...: 08/25/99 11:29 **Date Received..:** 08/26/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H270192-001 **Prep Batch #...:** 9243247									
Calcium									
	109	50.0	157	mg/L	96		SW846 6010A	09/01-09/14/99	D1TC911
	109	50.0	166	mg/L	115	5.8	SW846 6010A	09/01-09/14/99	D1TC911

Dilution Factor: 1

NOTE(S):

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

batch QC

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H210120 **Matrix.....:** WATER
Date Sampled...: 08/25/99 11:29 **Date Received..:** 08/26/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H270192-001 **Prep Batch #...:** 9243247									
Calcium									
	109	50.0	157	mg/L	96		SW846 6010A	09/01-09/14/99	D1TC9115
	109	50.0	166	mg/L	115	5.8	SW846 6010A	09/01-09/14/99	D1TC9116

Dilution Factor: 1

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H240148 **Matrix.....:** WATER
Date Sampled...: 08/25/99 11:29 **Date Received..:** 08/26/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H270192-001 **Prep Batch #...:** 9243247							
Calcium	96	(80 - 120)			SW846 6010A	09/01-09/14/99	D1TC9115
	115	(80 - 120)	5.8	(0-20)	SW846 6010A	09/01-09/14/99	D1TC9116
		Dilution Factor: 1					

NOTE(S):

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

batch QC

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H210120 **Matrix.....:** WATER
Date Sampled...: 08/25/99 11:29 **Date Received..:** 08/26/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H270192-001 **Prep Batch #...:** 9243247							
Calcium	96	(80 - 120)			SW846 6010A	09/01-09/14/99	D1TC9115
	115	(80 - 120)	5.8	(0-20)	SW846 6010A	09/01-09/14/99	D1TC9116
		Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H240148 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9H310000-247 **Prep Batch #...:** 9243247							
Calcium	50.0	51.7	mg/L	103	SW846 6010A	09/01-09/16/99	D1XL910H
Dilution Factor: 1							

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H240148 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9H310000-247 **Prep Batch #...:** 9243247					
Calcium	103	(86 - 109)	SW846 6010A	09/01-09/16/99	D1XL910H
	Dilution Factor: 1				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H210120 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9H310000-247 **Prep Batch #...:** 9243247							
Calcium	50.0	51.7	mg/L	103	SW846 6010A	09/01-09/16/99	D1XL910H
		Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H210120 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9H310000-247 **Prep Batch #...:** 9243247					
Calcium	103	(86 - 109)	SW846 6010A	09/01-09/16/99	D1XL910H
	Dilution Factor: 1				

NOTE(S):

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

10
Instrument Detection Limits (Quarterly)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Code: QESOH_ _____ _____ SDG No.: H21120

ICP ID Number: ARL\I4_____ Date: 05/17/99

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Calcium	317.93		5000	23.2	P

Comments:

11A
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

ICP ID Number: ARL\I4_____ Date: 04/21/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	CO_
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

U.S. EPA - CLP

11B
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

ICP ID Number: ARL\I4_____ Date: 04/21/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : CR_	CU_	MO_	NI_	Q__
Calcium__	_317.93__	_0.0000000	_0.0000000_	_0.0000000	_0.0000000	_0.0000000

Comments:

FORM XI (Part 2) - IN

U.S. EPA - CLP

11B
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

ICP ID Number: ARL\I4_____ Date: 04/21/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : SB_	SN_	TI_	TL_	V__
Calcium__	_317.93__	_0.0000000	_0.0000000_	_0.0000000	_0.0000000	_0.0000000

Comments:

FORM XI (Part 2) - IN

12
ICP Linear Ranges (Quarterly)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H21120

ICP ID Number: ARL\I4_____ Date: 05/13/99

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Calcium	5.00	1000000.0	P

Comments:

Analysis Run Log ICP I4

Instrument Upload — Run Log - Page 1
Started Fri Sep 17 11:03:48 1999 by OMEARAP
Data File: UPL$CAN_DATA_ROOT:<ARL>I40916A.DAT;1

So Stnd Scal2

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1	ICV	1.0	16-SEP-1999	08:15:00			I4
2	ICB	1.0	16-SEP-1999	08:17:00			I4
3	CRI	1.0	16-SEP-1999	08:20:00			I4
4	VERSCAL	1.0	16-SEP-1999	08:24:00			I4
5	VERSCAL2	1.0	16-SEP-1999	08:26:00			I4
6	ICSA	1.0	16-SEP-1999	08:30:00			I4
7	ICSAB	1.0	16-SEP-1999	08:34:00			I4
8	CCV	1.0	16-SEP-1999	08:38:00			I4
9	CCB	1.0	16-SEP-1999	08:43:00			I4
10	D2F3CB	1.0	16-SEP-1999	10:00:00	9257352	A9I140000	I4
11	D2F3CC	1.0	16-SEP-1999	10:11:00	9257352	A9I140000	I4
12	D2EE1	1.0	16-SEP-1999	10:13:00	9257352	A9I140137	I4
13	D2EE1S	1.0	16-SEP-1999	10:15:00	9257352	A9I140137	I4
14	D2EE1D	1.0	16-SEP-1999	10:18:00	9257352	A9I140137	I4
15	D2EE6	1.0	16-SEP-1999	10:20:00	9257352	A9I140137	I4
16	D2EE6L	1.0	16-SEP-1999	10:22:00			I4
17	D2EEA	1.0	16-SEP-1999	10:56:00	9257352	A9I140137	I4
18	CCV	1.0	16-SEP-1999	10:59:00			I4
19	CCB	1.0	16-SEP-1999	11:00:00			I4
20	D2D1QB	1.0	16-SEP-1999	12:11:00	9256127	A9I130000	I4
21	D2D1QC	1.0	16-SEP-1999	12:14:00	9256127	A9I130000	I4
22	D240N	1.0	16-SEP-1999	13:00:00	9256127	A9I030146	I4
23	D240P	1.0	16-SEP-1999	13:00:00	9256127	A9I030146	I4
24	D240Q	1.0	16-SEP-1999	13:00:00	9256127	A9I030146	I4
25	D240R	1.0	16-SEP-1999	13:11:00	9256127	A9I030146	I4
26	D25AN	1.0	16-SEP-1999	13:14:00	9256127	A9I040146	I4
27	D25ANS	1.0	16-SEP-1999	13:16:00	9256127	A9I040146	I4
28	D25AND	1.0	16-SEP-1999	13:19:00	9256127	A9I040146	I4
29	D25AXF	1.0	16-SEP-1999	13:21:00	9256127	A9I040146	I4
30	CCV	1.0	16-SEP-1999	13:28:00			I4
31	CCB	1.0	16-SEP-1999	13:30:00			I4
32	D25C1F	1.0	16-SEP-1999	13:32:00	9256127	A9I040146	I4
33	D25C1FL	1.0	16-SEP-1999	13:35:00			I4
34	D2DQKB	1.0	16-SEP-1999	13:40:00	9256329	A9I130000	I4
35	D2DQKC	1.0	16-SEP-1999	13:43:00	9256329	A9I130000	I4
36	D15PX	1.0	16-SEP-1999	13:45:00	9256329	A9H100182	I4
37	D15PXL	1.0	16-SEP-1999	13:48:00			I4
38	D15QN	1.0	16-SEP-1999	13:52:00	9256329	A9H100182	I4
39	D1F57	1.0	16-SEP-1999	13:54:00	9256329	A9H170178	I4
40	D1F5D	1.0	16-SEP-1999	13:57:00	9256329	A9H170178	I4
41	D1F5F	1.0	16-SEP-1999	14:00:00	9256329	A9H170178	I4
42	CCV	1.0	16-SEP-1999	14:10:00			I4
43	CCB	1.0	16-SEP-1999	14:12:00			I4
44	D17RF	1.0	16-SEP-1999	14:16:00	9256329	A9H110252	I4

not summarized

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
445	D17RN	1.0	16-SEP-1999	14:19:00	9256329	A9H110252	I4
446	D17RR	1.0	16-SEP-1999	14:21:00	9256329	A9H110252	I4
447	D17V2	1.0	16-SEP-1999	14:24:00	9256329	A9H110255	I4
448	D17V2S	1.0	16-SEP-1999	14:26:00	9256329	A9H110255	I4
449	D17V2D	1.0	16-SEP-1999	14:29:00	9256329	A9H110255	I4
550	D17V6	1.0	16-SEP-1999	14:31:00	9256329	A9H110255	I4
551	D17V5	1.0	16-SEP-1999	14:33:00	9256329	A9H110255	I4
552	D17V5	1.0	16-SEP-1999	14:34:00	9256329	A9H110255	I4
553	D17V7	1.0	16-SEP-1999	14:36:00	9256329	A9H110255	I4
554	D17V8	1.0	16-SEP-1999	14:39:00	9256329	A9H110255	I4
555	CCV	1.0	16-SEP-1999	14:43:00			I4
556	CCB	1.0	16-SEP-1999	14:45:00			I4
557	D17V9	1.0	16-SEP-1999	14:48:00	9256329	A9H110255	I4
558	ICSA	1.0	16-SEP-1999	14:51:00			I4
559	ICSAB	1.0	16-SEP-1999	14:54:00			I4
560	CCV	1.0	16-SEP-1999	14:57:00			I4
561	CCB	1.0	16-SEP-1999	14:59:00			I4
562	D1XL9B	1.0	16-SEP-1999	15:31:00	9243247	A9H310000	I4
563	D1XL9C	1.0	16-SEP-1999	15:37:00	9243247	A9H310000	I4
564	D1LL1	1.0	16-SEP-1999	15:52:00	9243247	H21120	I4
565	D1LLH	1.0	16-SEP-1999	15:57:00	9243247	H21120	I4
566	D1LLK	1.0	16-SEP-1999	15:59:00	9243247	H21120	I4
567	D1LLN	1.0	16-SEP-1999	16:00:00	9243247	H21120	I4
568	D1LLN	10	16-SEP-1999	16:00:00	9243247	H21120	I4
569	D1LLR	1.0	16-SEP-1999	16:14:00	9243247	H21120	I4
570	D1LLR	10	16-SEP-1999	16:19:00	9243247	H21120	I4
571	CCV	1.0	16-SEP-1999	16:23:00			I4
572	CCB	1.0	16-SEP-1999	16:26:00			I4
573	D1LLW	1.0	16-SEP-1999	16:50:00	9243247	H21120	I4
574	D1LM0	1.0	16-SEP-1999	17:10:00	9243247	H21120	I4
575	D1LM5	1.0	16-SEP-1999	17:13:00	9243247	H21120	I4
576	D1NRT	1.0	16-SEP-1999	17:16:00	9243247	H21120	I4
577	D1NRX	1.0	16-SEP-1999	17:19:00	9243247	H21120	I4
578	D1NRX	10	16-SEP-1999	17:27:00	9243247	H21120	I4
579	D1NT0	1.0	16-SEP-1999	17:31:00	9243247	H21120	I4
580	D1NT0	10	16-SEP-1999	17:34:00	9243247	H21120	I4
581	D1NT1	10	16-SEP-1999	17:39:00	9243247	H21120	I4
582	D1NT2	10	16-SEP-1999	17:43:00	9243247	H21120	I4
583	CCV	1.0	16-SEP-1999	17:54:00			I4
584	CCB	1.0	16-SEP-1999	18:12:00			I4
585	D1NT8	10	16-SEP-1999	19:19:00	9243247	H21120	I4
586	D1TC9	10	16-SEP-1999	19:23:00	9243247	A9H270192	I4
587	D1TC9	1.0	16-SEP-1999	19:25:00	9243247	A9H270192	I4
588	D1TC9	1.0	16-SEP-1999	19:26:00	9243247	A9H270192	I4

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
89	D1TC9S	1.0	16-SEP-1999	19:29:00	9243247	A9H270192	I4
90	D1TC9D	1.0	16-SEP-1999	19:33:00	9243247	A9H270192	I4
91	D1TD1	1.0	16-SEP-1999	19:37:00	9243247	A9H270192	I4
92	D1TD2	1.0	16-SEP-1999	19:40:00	9243247	A9H270192	I4
93	D1TD4	1.0	16-SEP-1999	19:46:00	9243247	A9H270192	I4
94	D1TCW	1.0	16-SEP-1999	19:50:00	9243247	A9H270192	I4
95	CCV	1.0	16-SEP-1999	19:53:00			I4
96	CCB	1.0	16-SEP-1999	19:56:00			I4
97	D1TCT	1.0	16-SEP-1999	20:00:00	9243247	A9H270192	I4
98	D1TCTL	1.0	16-SEP-1999	20:00:00			I4
99	D275PB	1.0	16-SEP-1999	20:10:00	9251259	A9I080000	I4
100	D275PC	1.0	16-SEP-1999	20:12:00	9251259	A9I080000	I4
101	D1W6L	1.0	16-SEP-1999	20:16:00	9251259	A9H300111	I4
102	D1W6LL	1.0	16-SEP-1999	20:20:00			I4
103	D1W6P	1.0	16-SEP-1999	20:25:00	9251259	A9H300111	I4
104	D1W6Q	1.0	16-SEP-1999	20:28:00	9251259	A9H300111	I4
105	D1W6R	1.0	16-SEP-1999	20:32:00	9251259	A9H300111	I4
106	D1W6RS	1.0	16-SEP-1999	20:36:00	9251259	A9H300111	I4
107	CCV	1.0	16-SEP-1999	20:41:00			I4
108	CCB	1.0	16-SEP-1999	20:46:00			I4
109	D1W6RD	1.0	16-SEP-1999	20:51:00	9251259	A9H300111	I4
110	D1W6T	1.0	16-SEP-1999	20:55:00	9251259	A9H300111	I4
111	D1W6W	1.0	16-SEP-1999	20:59:00	9251259	A9H300111	I4
112	D1W70	1.0	16-SEP-1999	21:00:00	9251259	A9H300111	I4
113	D22X7F	1.0	16-SEP-1999	21:00:00	9251259	A9I020217	I4
114	D22X7F	10	16-SEP-1999	21:13:00	9251259	A9I020217	I4
115	D22X2F	1.0	16-SEP-1999	21:16:00	9251259	A9I020217	I4
116	D22X2F	10	16-SEP-1999	21:21:00	9251259	A9I020217	I4
117	ICSA	1.0	16-SEP-1999	21:25:00			I4
118	ICSAB	1.0	16-SEP-1999	21:28:00			I4
119	CCV	1.0	16-SEP-1999	21:32:00			I4
120	CCB	1.0	16-SEP-1999	21:36:00			I4
121	D1LKR	1.0	16-SEP-1999	21:39:00	9251115	A9H210118	I4
122	D1LKT	1.0	16-SEP-1999	21:42:00	9251115	A9H210118	I4
123	D1R1D	1.0	16-SEP-1999	21:45:00	9251115	A9H260138	I4
124	D1R1F	1.0	16-SEP-1999	21:48:00	9251115	A9H260138	I4
125	D1R1H	1.0	16-SEP-1999	21:53:00	9251115	A9H260138	I4
126	D1R1J	1.0	16-SEP-1999	21:58:00	9251115	A9H260138	I4
127	D1R1M	1.0	16-SEP-1999	22:00:00	9251115	A9H260138	I4
128	D1R1Q	1.0	16-SEP-1999	22:00:00	9251115	A9H260138	I4
129	D1R1V	1.0	16-SEP-1999	22:00:00	9251115	A9H260138	I4
130	D1R1W	1.0	16-SEP-1999	22:14:00	9251115	A9H260138	I4
131	CCV	1.0	16-SEP-1999	22:17:00			I4
132	CCB	1.0	16-SEP-1999	22:20:00			I4

(continued)

RQC057 Quanterra Incorporated Run Date: 8/31/99
METALS PREP LOG/BATCH SUMMARY Time: 12:03:56

BATCH NUMBER: 9243247 PREP DATE: 9/01/99
DUE DATE 9/03/99 INITIALS: LPM/LM

LOT NUMBER	WORK ORDER	QC	ICP/WEIGHT	HG/WEIGH	GFA/WEIGHT	FLA/WEIGH
A9H210120	D1LL1	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LLH	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LLK	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LLN	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LLR	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LLW	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LM0	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H210120	D1LM5	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H240148	D1NRT	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H240148	D1NRX	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H240148	D1NT0	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H240148	D1NT1	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H240148	D1NT2	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H240148	D1NT8	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/03/99			
A9H270192	D1TC9	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE:		9/09/99			
	D1TC9S		_____g	_____g	_____g	_____g

RQC057 Quanterra Incorporated Run Date: 8/31/99
METALS PREP LOG/BATCH SUMMARY Time: 12:03:56

BATCH NUMBER: 9243247 PREP DATE: 9/01/99
DUE DATE 9/03/99 INITIALS: LPM/LM

LOT NUMBER	WORK ORDER	QC	ICP/WEIGHT	HG/WEIGHT	GFA/WEIGHT	FLA/WEIGH
	D1TC9D		_____g	_____g	_____g	_____g
A9E270192 WATER	D1TCT TO DUE DATE: 9/09/99	01	X _____g	_____g	_____g	_____g
A9E270192 WATER	D1TCW TO DUE DATE: 9/09/99	01	X _____g	_____g	_____g	_____g
A9E270192 WATER	D1TD1 TO DUE DATE: 9/09/99	01	X _____g	_____g	_____g	_____g
A9E270192 WATER	D1TD2 TO DUE DATE: 9/09/99	01	X _____g	_____g	_____g	_____g
A9E270192 WATER	D1TD4 TO DUE DATE: 9/09/99	01	X _____g	_____g	_____g	_____g
A9E310000 WATER	D1XL9B DUE DATE: 0/00/00	01	X _____g	_____g	_____g	_____g
	D1XL9C		_____g	_____g	_____g	_____g

LEVEL 2
BLANK AND CHECK STANDARD ON BATCH ✓
MS/MSD AND PDS ON BATCH ✓
CURVE PREPPED FOR HG
CORRECT SPIKES ADDED ✓
SPIKING SOLUTIONS DOCUMENTED ON BATCH LOG ✓

COMMENTS: ICP is a Total Recoverable Prep
B-BLANK/C-LCS/D-MSD/I-REANALYSIS/L-LCSD/P-SERIAL DLTN/S-MS/X-SAMP DUP/Y-SAMP CONF/Z-PDS
SPIKING WITNESSED BY LM

RQC057 Quanterra Incorporated Run Date: 8/31/99
METALS PREP LOG/BATCH SUMMARY Time: 12:03:56

BATCH NUMBER: **9243247** PREP DATE: 9/01/99
DUE DATE 9/03/99 INITIALS: LPM/LM

ICP ELEMENTS WITHIN THE BATCH:

AL CA CD CR FE MN NA NI PB ZN

MS/MSD 1:	(ICP - 1)	(ICP - 2A)	GFAA	HG	ODD
D1TC9					
MS/MSD 2:	ICP - 1	ICP - 2	GFAA	HG	ODD
MS/MSD 3:	ICP - 1	ICP - 2	GFAA	HG	ODD
CHECK :	(ICP - 1)	(ICP - 2A)	GFAA	HG	ODD
D1XL9					
CHECK DUP:	ICP - 1	ICP - 2	GFAA	HG	ODD
STANDARD NUMBERS	9H309	9H385	___	___	___

DATE: 9.1.99

METALS PREPARATION REAGENTS

Reagents listed on this form are used for the entire day's prep batches unless otherwise noted on the individual prep log.

REAGENT NAME	REAGENT NUMBER
1:1 HNO_3 (nitric acid)	9MR462
1:1 HCl (hydrochloric acid)	9MR460
HNO_3 (nitric acid)	9MR461
HCl (hydrochloric acid)	9MR443
$KMnO_4$ (potassium permanganate)	9MR441
$K_2S_2O_8$ (potassium persulfate)	9MR423
H_2O_2 (hydrogen peroxide)	9MR334
H_2SO_4 (sulfuric acid)	9MR300
HCl/HNO_3 (aqua regia)	9MR463

Waters

Hg time in the water bath 10:45 am

Hg time out of the water bath 12:45 pm

Solids

Hg time in the water bath 1:45 pm

Hg time out of the water bath 2:15 pm

Times listed are for the waters and solids for that day unless otherwise noted.

METALS PREPARATION SUMMARY

Preparation Type	Matrix	Amount of Standard added to LCS & MS/MSD		Initial Sample Vol/Wt	Final Sample Volume
		Amount	Standard name		
ICP	water	1 mL 1 mL 2.5 mL 1.0 mL	Ag ICP-1 ICP-2 ICP-2A	50 mL	50 mL
Flame	water	2.5 mL	Pb, Sn, Ti	50 mL	50 mL
Cd, Cr, Pb, Tl, Ag, Sb, As, Se - GFAA	water	1 mL	Graphite	50 mL	50 mL
Hg - CVAA	water	5 mL (LCS) 1 mL (MS/MSD)	HG-1 HG-1	100 mL	100 mL
ICP	solid	2 mL 2 mL 5 mL 2 mL	Ag ICP-1 ICP-2 ICP-2A	1.00 +/- .02g	100 mL
Flame	solid	5 mL	Pb, Sn, Ti	1.00 +/- .02g	100 mL
As, Se, Cd, Cr, Pb, Tl, Ag, Sb - GFAA	solid	2 mL	Graphite	1.00 +/- .02g	100 mL
Hg - CVAA	solid	5 mL (LCS) 1 mL (MS/MSD)	HG-1 HG-1	0.60 +/- .01g	100 mL
ICP	TCLP	1 mL (LCS) 1 mL(LCS)	Ag ICP-1	50 mL	50 mL
ICP	TCLP	0.5 mL(MS/MSD)	TCLP Spike I RCRA	50 mL	50 mL
ICP	TCLP	1 mL(MS/MSD)	TCLP Spike II Non-RCRA	50 mL	50 mL
Hg - CVAA	TCLP	5 mL (LCS) 5 mL (MS/MSD)	HG-1 HG-1	100 mL	100 mL

Mercury Standards Preparation				
Final Concentration		Spiking Standard		
		Amount	Standard	Concentration
Calibration Standards:				
0.0002 ppm		0.2 mL	HG-2	0.1 ppm
0.0005 ppm		0.5 mL	HG-2	0.1 ppm
0.001 ppm		1 mL	HG-2	0.1 ppm
0.005 ppm		5 mL	HG-2	0.1 ppm
0.010 ppm		10 mL	HG-2	0.1 ppm
ICV Prepartion				
0.0025 ppm		2.5 mL	HG-1	0.1 ppm
CCV Preparation:				
0.005 ppm		5 mL	HG-2	0.1 ppm

SPIKING STANDARD DEFINITIONS

Elements	Ag	ICP-1	ICP-2	ICP-2A	GFAA	HG-1	HG-2	TCLP Spike I	TCLP Spike II
Ag	2.5 ppm				0.25 ppm			100 ppm	
Al		100 ppm							100 ppm
As		100 ppm			2.0 ppm			500 ppm	
Ba		100 ppm						5000 ppm	
Be		2.5 ppm							2.5 ppm
Cd		2.5 ppm			0.2 ppm			100 ppm	
Ca			1000 ppm	2500 ppm					
Co		25 ppm							25 ppm
Cr		10 ppm			0.5 ppm			500 ppm	
Cu		12.5 ppm							12.5 ppm
Fe		50 ppm							50 ppm
Hg						0.1 ppm	0.1 ppm		
K			1000 ppm	2500 ppm					
Mg			1000 ppm	2500 ppm					
Mn		25 ppm							25 ppm
Na			1000 ppm	2500 ppm					
Ni		25 ppm							25 ppm
Pb		25 ppm			2.0 ppm			500 ppm	
Sb		25 ppm			2.0 ppm				25 ppm
Se		100 ppm			2.0 ppm			100 ppm	
Tl		100 ppm			2.0 ppm				100 ppm
V		25 ppm							25 ppm
Zn		25 ppm							25 ppm
B		50 ppm							50 ppm
Sr		50 ppm							
Mo		50 ppm							50 ppm
W		50 ppm							
Sn		100 ppm							100 ppm
Zr		50 ppm							
Ti		50 ppm							

	Flame
Pb	100 ppm
Sn	100 ppm
Ti	100 ppm

I40916A

SCAL	STD 9I448	ICSA	STD 9H251
SCAL2	STD 9I449	ICSAB	STD 9G136
CRI	STD 9H278	ICV	STD 9H228
CLP CRI	STD _____	CCV	STD 9I426

A9H260138
A9I140137
A9H100182 ✓
A9H170178
A9H110252
A9H110255
A9H300111
A9H210120
A9I020217
A9H24014
A9H210118
A9H27O1

Quanterra ICP Data Review Checklist

Run/Project Information:

Run Date: 9-16-99 Analyst: Karen Counts / AL DiPofi Instrument: I4

Prep Batches Run: 9257352 9256127 9256329 9243247 9251259 9251115

Cu/MnRatio: 0.3021145

Circle Methods used: 6010B / 200.7: CORP-MT-0001 Rev 2
CLP ILM03.0: CORP-MT-0002 Rev 1
6010A/200.7: CORP-MT-0001NC, Rev 2

Review Items

A. Calibration/Instrument Run QC	Yes	No	N/A	2nd Level
1. Instrument calibrated per manufacturer's instructions and at SOP specified levels ?	✓			✓
2. ICV/CCV analyzed at appropriate frequency and within control limits ? (*ICV: 6010B, CLP = 90 - 110%, 200.7 = 95 -105%) (CCV: 90 - 110%)*	✓			✓
3. ICB/CCB analyzed at appropriate frequency and within +/- RL or +/- CRDL (CLP) ?	✓			✓
4. High Std. (HCAL) reanalyzed before samples and recovered within QC limits ? (6010A/200.7 95-105%, CLP- N/A)	✓			✓
5. CRI run and recovered within QC limits ? (+/- 50% for non-CLP - 6010A only)	✓			✓
6. ICSA/ICSAB run at required frequency and within SOP limits ?	✓			✓
B. Sample Results				
1. Were samples with concentrations > the linear range for any parameter diluted and reanalyzed ?	✓			✓
2. All reported results bracketed by in control QC ?	✓			✓
3. Sample analyses done within holding time ?	✓			✓
C. Preparation/Matrix QC				
1. LCS done per prep batch and within QC limits ?	✓			✓
2. Method blank done per prep batch and < RL or CRDL (CLP) ?	✓			✓
3. MS/MSD run at required frequency and within limits ?	✓			✓
4. MSD or DU run at required frequency and RPD within SOP limits ?	✓			✓
5. Serial dilution done per prep batch (or per SDG for CLP) ?	✓			✓
6. Post digest spike analyzed if required (CLP only) ?			✓	
D. Other				
1. Are all nonconformances documented appropriately ?	✓			✓
2. Current IDL/LR/IEC data on file ?	✓			✓
3. Calculations checked for error ?	✓			✓
4. Transcriptions checked for error ?	✓			✓
5. All client/project specific requirements met ?	✓			✓
6. Date/time of analysis verified as correct ?	✓			✓

Level I Analyst: Karen L Counts Date: 9-17-99 Time: 8:04 am - 10:45 pm.
Comments: _____

Level II Reviewer: Heather M Bosworth Date: 9.17.99 Time: 8:04 AM - 10:45 PM
Comments: _____

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-1

TOTAL Metals

Lot-Sample #...: A9H210120-001 Matrix.....: WATER
Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	539	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LL110A

Dilution Factor: 1

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-23

TOTAL Metals

Lot-Sample #...: A9H210120-002 Matrix.....: WATER
Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	271	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LLH10A
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-2

TOTAL Metals

Lot-Sample #...: A9H210120-003 Matrix.....: WATER
Date Sampled...: 08/19/99 10:45 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	420	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LLK10A
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-22

TOTAL Metals

Lot-Sample #...: A9H210120-004 Matrix.....: WATER
Date Sampled...: 08/19/99 11:00 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	103	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LLN10A
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-15

TOTAL Metals

Lot-Sample #...: A9H210120-005 Matrix.....: WATER
Date Sampled...: 08/19/99 11:50 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	1630	50.0	mg/L	SW846 6010A	09/01-09/16/99	D1LLR10A
		Dilution Factor: 10				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-1

TOTAL Metals

Lot-Sample #...: A9H210120-006 Matrix.....: WATER
Date Sampled...: 08/19/99 12:00 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	573	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LLW10A
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-3

TOTAL Metals

Lot-Sample #...: A9H210120-007 Matrix.....: WATER
Date Sampled...: 08/19/99 14:10 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	404	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LM0108
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-13

TOTAL Metals

Lot-Sample #...: A9H210120-008 Matrix.....: WATER
Date Sampled...: 08/19/99 14:45 Date Received..: 08/20/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	482	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1LM5108

Dilution Factor: 1

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-4

TOTAL Metals

Lot-Sample #...: A9H240148-001 Matrix.....: WATER
Date Sampled...: 08/20/99 10:45 Date Received..: 08/21/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	857	5.0	mg/L	SW846 6010A	09/01-09/16/99	D1NRT107
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-14

TOTAL Metals

Lot-Sample #...: A9H240148-002 Matrix.....: WATER
Date Sampled...: 08/20/99 11:00 Date Received..: 08/21/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	2040	50.0	mg/L	SW846 6010A	09/01-09/16/99	D1NRX107
	Dilution Factor: 10					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-39

TOTAL Metals

Lot-Sample #...: A9H240148-003 Matrix.....: WATER
Date Sampled...: 08/20/99 12:00 Date Received..: 08/21/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	1850	50.0	mg/L	SW846 6010A	09/01-09/16/99	D1NT0107
	Dilution Factor: 10					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-4

TOTAL Metals

Lot-Sample #...: A9H240148-004 Matrix.....: WATER
Date Sampled...: 08/20/99 12:10 Date Received..: 08/21/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	463	50.0	mg/L	SW846 6010A	09/01-09/16/99	D1NT1107
		Dilution Factor: 10				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-5

TOTAL Metals

Lot-Sample #...: A9H240148-005 Matrix.....: WATER
Date Sampled...: 08/20/99 12:30 Date Received..: 08/21/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	3330	50.0	mg/L	SW846 6010A	09/01-09/16/99	D1NT2107
		Dilution Factor: 10				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-30

TOTAL Metals

Lot-Sample #...: A9H240148-006 Matrix.....: WATER
Date Sampled...: 08/20/99 13:30 Date Received..: 08/21/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9243247						
Calcium	3290	50.0	mg/L	SW846 6010A	09/01-09/16/99	D1NT8107
		Dilution Factor: 10				

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H210120 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D1RRT101		MB Lot-Sample #:	A9H270000-145	
	ND	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: D2672101		MB Lot-Sample #:	A9I070000-310	
	ND	2	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1				
Total Alkalinity		Work Order #: D1RNT101		MB Lot-Sample #:	A9H270000-135	
	ND	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 1				
Total Dissolved Solids		Work Order #: D1QQD101		MB Lot-Sample #:	A9H260000-151	
	ND	10	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D1NKP101		MB Lot-Sample #:	A9H240000-219	
	ND	1	mg/L	MCAWW 415.1	08/21/99	9236
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D1NXN101		MB Lot-Sample #:	A9H240000-334	
	ND	1	mg/L	MCAWW 415.1	08/24/99	9236334
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D1QQM101		MB Lot-Sample #:	A9H260000-155	
	ND	10	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D1TVH101		MB Lot-Sample #:	A9H270000-286	
	ND	10	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D2WME101		MB Lot-Sample #:	A9I250000-123	
	ND	10	mg/L	MCAWW 160.3	09/23-09/24/99	9268123
		Dilution Factor: 1				

NOTE(S):

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

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H240148 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D1RRT101		MB Lot-Sample #:	A9H270000-145	
	ND	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1				
Chemical Oxygen Demand (COD)		Work Order #: D22XN101		MB Lot-Sample #:	A9I020000-323	
	ND	5.0	mg/L	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: D2672101		MB Lot-Sample #:	A9I070000-310	
	ND	2	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1				
Total Alkalinity		Work Order #: D1RP0101		MB Lot-Sample #:	A9H270000-136	
	ND	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1				
Total Dissolved Solids		Work Order #: D1QR6101		MB Lot-Sample #:	A9H260000-163	
	ND	10	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D1WL3101		MB Lot-Sample #:	A9H300000-323	
	ND	1	mg/L	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D1QQM101		MB Lot-Sample #:	A9H260000-155	
	ND	10	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D1TVH101		MB Lot-Sample #:	A9H270000-286	
	ND	10	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D2WME101		MB Lot-Sample #:	A9I250000-123	
	ND	10	mg/L	MCAWW 160.3	09/23-09/24/99	9268123
		Dilution Factor: 1				

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		WO#: D1NT1108-MS/D1NT1109-MSD				MS Lot-Sample #: A9H240148-004	
	105	(90 - 110)			MCAWW 410.4	08/26-08/27/99	9239145
	99	(90 - 110)	5.3	(0-20)	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1					
Hardness, as CaCO3		WO#: D1PVN109-MS/D1PVN10A-MSD				MS Lot-Sample #: A9H250128-001	
	99	(80 - 120)			MCAWW 130.2	09/07/99	9250310
	97	(80 - 120)	1.7	(0-20)	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1					
Total Alkalinity		WO#: D1M2C10C-MS/D1M2C10D-MSD				MS Lot-Sample #: A9H210159-013	
	96	(80 - 120)			MCAWW 310.1	08/26/99	9239135
	90	(80 - 120)	3.7	(0-20)	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 1					

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H240148 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		WO#: D1NT1108-MS/D1NT1109-MSD				MS Lot-Sample #: A9H240148-004	
	105	(90 - 110)			MCAWW 410.4	08/26-08/27/99	9239145
	99	(90 - 110)	5.3	(0-20)	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1					
Chemical Oxygen Demand (COD)		WO#: D1PVN10K-MS/D1PVN10L-MSD				MS Lot-Sample #: A9H250128-001	
	104	(90 - 110)			MCAWW 410.4	09/02/99	9245323
	100	(90 - 110)	3.7	(0-20)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1					
Hardness, as CaCO3		WO#: D1PVN109-MS/D1PVN10A-MSD				MS Lot-Sample #: A9H250128-001	
	99	(80 - 120)			MCAWW 130.2	09/07/99	9250310
	97	(80 - 120)	1.7	(0-20)	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1					
Total Alkalinity		WO#: D1PVN10G-MS/D1PVN10H-MSD				MS Lot-Sample #: A9H250128-001	
	88	(80 - 120)			MCAWW 310.1	08/26/99	9239136
	91	(80 - 120)	1.7	(0-20)	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1PVN10N-MS/D1PVN10P-MSD				MS Lot-Sample #: A9H250128-001	
	87 N	(90 - 110)			MCAWW 415.1	08/30/99	9242323
	86 N	(90 - 110)	0.88	(0-20)	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1					

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

Client sample "J"

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 **Work Order #...:** D1LLH-SMP D1LLH-DUP **Matrix.....:** WATER

Date Sampled...: 08/19/99 09:45 **Date Received..:** 08/20/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H210120-002		
	3200	3200	mg/L	0.38	(0-20)	MCAWW 160.3	09/23-09/24/99	9268123

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 Work Order #...: D1LL1-SMP D1LL1-DUP Matrix.....: WATER

Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H210120-001		
		7700	mg/L	8.1	(0-20)	MCAWW 160.3	08/25/99	923815

Dilution Factor: 2

Dup was not reanalyzed

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 **Work Order #...:** D1M01-SMP D1M01-DUP **Matrix.....:** WATER

Date Sampled...: 08/19/99 12:30 **Date Received..:** 08/20/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: A9H210151-002		
	540	510	mg/L	5.3	(0-20)	MCAWW 160.1	08/25-08/26/99	9238151

Dilution Factor: 2

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 Work Order #...: D1LXN-SMP Matrix.....: WATER
D1LXN-DUP
Date Sampled...: 08/19/99 11:20 Date Received..: 08/20/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: A9H210151-001		
	720	740	mg/L	2.5	(0-20)	MCAWW 160.1	08/25-08/26/99	923815
		Dilution Factor: 2						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 **Work Order #...:** D1NRX-SMP D1NRX-DUP **Matrix.....:** WATER

Date Sampled...: 08/20/99 11:00 **Date Received...:** 08/21/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H240148-002		
	77000	77000	mg/L	0.065	(0-20)	MCAWW 160.3	08/26-08/27/99	923928

Dilution Factor: 50

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H240148 Work Order #...: D1LLH-SMP D1LLH-DUP Matrix.....: WATER

Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H210120-002		
	3200	3200	mg/L	0.38	(0-20)	MCAWW 160.3	09/23-09/24/99	9268123

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H240148 Work Order #...: D1LL1-SMP Matrix.....: WATER
D1LL1-DUP

Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH
Total Solids (Residue)						SD Lot-Sample #: A9H210120-001		
		7700	mg/L	8.1	(0-20)	MCAWW 160.3	08/25/99	92381
		Dilution Factor: 2						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H240148 Work Order #...: D1NRX-SMP Matrix.....: WATER
D1NRX-DUP

Date Sampled...: 08/20/99 11:00 Date Received...: 08/21/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H240148-002		
	77000	77000	mg/L	0.065	(0-20)	MCAWW 160.3	08/26-08/27/99	9239286

Dilution Factor: 50

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: A9H210120 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	WO#:D1NKP102-LCS/D1NKP103-LCSD LCS Lot-Sample#: A9H240000-219						
	97	(90 - 110)			MCAWW 415.1	08/21/99	9236219
	102	(90 - 110)	5.3	(0-20)	MCAWW 415.1	08/22/99	9236219
	Dilution Factor: 1						
Total Organic Carbon	WO#:D1NXN102-LCS/D1NXN103-LCSD LCS Lot-Sample#: A9H240000-334						
	102	(90 - 110)			MCAWW 415.1	08/24/99	9236334
	103	(90 - 110)	0.95	(0-20)	MCAWW 415.1	08/24/99	9236334
	Dilution Factor: 1						

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210120 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D1RRT102	LCS Lot-Sample#: A9H270000-145		
	108	(90 - 110)	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1			
Hardness, as CaCO3		Work Order #: D2672102	LCS Lot-Sample#: A9I070000-310		
	100	(90 - 110)	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1			
Total Alkalinity		Work Order #: D1RNT102	LCS Lot-Sample#: A9H270000-135		
	95	(80 - 120)	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 1			
Total Dissolved Solids		Work Order #: D1QQD102	LCS Lot-Sample#: A9H260000-151		
	98	(80 - 120)	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D1QQM102	LCS Lot-Sample#: A9H260000-155		
	99	(80 - 120)	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D1TVH102	LCS Lot-Sample#: A9H270000-286		
	97	(80 - 120)	MCAWW 160.3	08/26-08/27/99	9239286
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D2WME102	LCS Lot-Sample#: A9I250000-123		
	96	(80 - 120)	MCAWW 160.3	09/23-09/24/99	9268123
		Dilution Factor: 1			

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H240148 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D1RRT102	LCS Lot-Sample#: A9H270000-145		
	108	(90 - 110)	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1			
Chemical Oxygen Demand (COD)		Work Order #: D22XN102	LCS Lot-Sample#: A9I020000-323		
	98	(90 - 110)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1			
Hardness, as CaCO3		Work Order #: D2672102	LCS Lot-Sample#: A9I070000-310		
	100	(90 - 110)	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1			
Total Alkalinity		Work Order #: D1RP0102	LCS Lot-Sample#: A9H270000-136		
	95	(80 - 120)	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1			
Total Dissolved Solids		Work Order #: D1QR6102	LCS Lot-Sample#: A9H260000-163		
	90	(80 - 120)	MCAWW 160.1	08/25-08/26/99	9238163
		Dilution Factor: 1			
Total Organic Carbon		Work Order #: D1WL3102	LCS Lot-Sample#: A9H300000-323		
	101	(90 - 110)	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D1QQM102	LCS Lot-Sample#: A9H260000-155		
	99	(80 - 120)	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D1TVH102	LCS Lot-Sample#: A9H270000-286		
	97	(80 - 120)	MCAWW 160.3	08/26-08/27/99	9239286
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D2WME102	LCS Lot-Sample#: A9I250000-123		
	96	(80 - 120)	MCAWW 160.3	09/23-09/24/99	9268123
		Dilution Factor: 1			

NOTE(S):

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

INITIAL AND CONTINUING CALIBRATION VERIFICATION
CONCENTRATION UNITS: mg/L

LOT NUMBER(S): A9H210120 A9H240148
SDG NUMBER: H21120
CLIENT CODE: 2508
YEAR: 1999

ANALYTE	BATCH #	DATES		INITIAL CALIBRATION			CONTINUING CALIBRATION		
		PREP	ANAL.	TRUE	FOUND	%R	TRUE	FOUND	%R
COD	9239145	8/26	8/27	50	54.11900	108	50	54.119	108
							50	54.119	108
	9245323	9/2	9/2	50	49.04500	98	50	49.045	98
TOC	Cal	7/13	7/13	25	23.94500	96			
	9236219	8/21	8/21				25	24.7818	99
							25	23.8136	95
							25	25.4948	102
	9236334	8/24	8/24				25	25.4778	102
							25	25.7211	103
	9242323	8/30	8/30				25	25.2576	101
							25	25.1956	101
									WD 9.27.99

0096

9739145

Analyze / Colorimetry Analysis Mode: Manual

Operator: AKH Test: LLCOD Run Date: 8/27/99

Calibration Information:

5 CD9412
25 CD9413
50 CD9414
100 CD9415
150 CD9416
LCS CD9417

Intercept: 0.4568 R^2: 0.9994

1st Order: -0.0030 SD: 0.0051

2nd Order: 0.0000 Corr. Coef.: 0.9997

3rd Order: 0.0000

Sample ID	Dilution	Weight	Time	Absorbance	Concentration	Flag	
S1	1	1	0:00:00	0.454	0.918	sH	
S2	1	1	11:00:09 AM	0.445	3.892	sPH	
S3	1	1	10:59:46 AM	0.375	27.023	sPH	
S4	1	1	10:59:19 AM	0.311	48.171	sH	
S5	1	1	10:58:50 AM	0.157	99.058	sH	
S6	1	1	10:58:23 AM	0.000	150.937	sH	
ICV/LCS	1	1	0:00:00	0.293	54.119/50	H	108%
ICB/BLK	1	1	0:00:00	0.454	0.918	H	
D1LL1	1	1	0:00:00	0.308	49.162	H	
D1LLH	1	1	0:00:00	0.262	64.362	H	
D1LLK	2	1	0:00:00	0.235	146.568	H	
D1LLN	5	1	0:00:00	0.275	300.334	H	
D1LLR	10	1	0:00:00	0.344	372.665	H	
D1LLW	5	1	0:00:00	0.299	260.681	H	
D1LM0	10	1	0:00:00	0.382	247.098	H	
D1LM5	1	1	0:00:00	0.271	61.388	H	
D1NRT	1	1	0:00:00	0.073	126.815	H	
D1NRX	1	1	0:00:00	0.104	116.572	H	
CCV	1	1	0:00:00	0.293	54.119/50	H	108%
CCB	1	1	0:00:00	0.453	1.249	H	
D1NT0	1	1	0:00:00	0.154	100.050	H	
D1NT1	1	1	0:00:00	0.200	84.850	H	
D1NT1/S	5	1	0:00:00	0.088	609.293	H	-84.850/500 = 105%
D1NT1/D	5	1	0:00:00	0.107	577.902	H	99%
CCV	1	1	0:00:00	0.293	54.119/50	H	108%
CCB	1	1	0:00:00	0.452	1.579	H	

Quanterra General Chemistry Data Review Checklist

Parameter(s): LL COD

Batch(es): 9239145

Method #/SOP#: 4.0.4

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓			✓		
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓			✓		
4. ICB analyzed immediately after ICV and within criteria (± RL)?	✓			✓		
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓			✓		
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?	✓			✓		
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			✓
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: [signature] Date: 990827

Level II Reviewer: [signature] Date: 08-30-99

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Corporate Policy, C

Analyze / Colorimetry Analysis Mode: Manual

Operator: AKH Test: LLCOD Run Date: 9/2/99

Calibration Information:

5 CD9418
25 CD9419
50 CD9420
100 CD9421
150 CD9422
LCS CD9423

Intercept: 0.4636 R^2: 0.9993

1st Order: -0.0031 SD: 0.0054

2nd Order: 0.0000 Corr. Coef.: 0.9996

3rd Order: 0.0000

Sample ID	Dilution	Weight	Time	Absorbance	Concentration	Flag	
S1	1	1	0:00:00	0.461	0.862	sH	
S2	1	1	0:00:00	0.447	5.451	sPH	
S3	1	1	0:00:00	0.386	25.445	sH	
S4	1	1	0:00:00	0.315	48.718	sH	
S5	1	1	0:00:00	0.166	97.556	sH	
S6	1	1	0:00:00	0.000	151.967	sH	
ICV/LCS	1	1	0:00:00	0.314	49.045/50	H	98%
ICB/BLK	1	1	0:00:00	0.463	0.207	EH	
D1NT2	5	1	0:00:00	0.421	69.866	H	
D1NT8	5	1	0:00:00	0.420	71.505	H	
D1PVN	1	1	0:00:00	0.301	53.306	H	
D1PVN/S	20	1	0:00:00	0.137	2141.237	H	53.306/2000 104%
D1PVN/D	20	1	0:00:00	0.149	2062.571	H	100%
D1PW4	20	1	0:00:00	0.239	1472.573	H	
D1PWT	2	1	0:00:00	0.273	124.968	H	
D1PX3	2	1	0:00:00	0.153	203.635	H	
D1PX5	1	1	0:00:00	0.104	117.879	H	
D1PX6	5	1	0:00:00	0.338	205.894	H	
CCV	1	1	0:00:00	0.314	49.045/50	H	98%
CCB	1	1	0:00:00	0.462	0.534	EH	
D1QP5	5	1	0:00:00	0.311	250.144	H	
D1QP8	2	1	0:00:00	0.206	168.891	H	
D1QP9	2	1	0:00:00	0.043	275.746	H	
D1RMA	2	1	0:00:00	0.315	97.435	H	
D1RMC	2	1	0:00:00	0.309	101.369	H	
CCV	1	1	0:00:00	0.313	49.373/50	H	99%
CCB	1	1	0:00:00	0.461	0.862	H	

Quanterra General Chemistry Data Review Checklist

Parameter(s): LLCON

Batch(es): 9245323

Method #/SOP#: 410.4

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓					
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (= RL)?	✓					
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (=RL)?	✓					
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: _____ Date: 990902

Level II Reviewer: _____ Date: 990993

		Quanterra, North Canton				
		Hardness Titrimetric Logsheet				
Prep Date	9/7/99				Batch	9250310
Anal Date	9/7/99				Lcs No.	HD9025
					Lcs Prep Date	9/7/99
Analyst	AKH				RL	2 mg/L
Titrant					Standardization	
Name:	EDTA				Date	8/16/99
Normality	0.0202				Intials	AKH

Sample No.	Sample Vol	dil	Titrant Vol (ml)	Final Conc mg/L	QC/Calc
BLANK	25	1	0	0	
LCS	25	1	4.95	199.98	200 100%
D1HTQ	25	1	4.85	195.94	
D1LL1	25	5	8.3	1676.6	
D1LLH	25	10	1.95	787.8	
D1LLK	25	10	2.55	1030.2	
D1LLN	25	10	0.85	343.4	
D1LLR	25	25	4.25	4292.5	
D1LLW	25	10	5.4	2181.6	
D1LM0	25	10	3.2	1292.8	
D1LM5	25	10	5.05	2040.2	
D1LQW	25	10	2	808	
D1NRT	25	10	6.6	2666.4	
D1NRX	25	25	6.9	6969	
D1NT0	25	25	6.75	6817.5	
D1NT1	25	25	1.4	1414	
D1NT2	25	25	8.35	8433.5	
D1NT8	25	25	8.45	8534.5	
D1PVN	25	25	1.1	1111	
D1PVN/S	25	25	6	6060	1111/5000 99%
D1PVN/D	25	25	5.9	5959	97%

Quanterra General Chemistry Data Review Checklist

Parameter(s): HARDNESS

Batch(es): 9250310

Method #/SOP#: 130.2

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			
2. Calibration curve consist of the minimum number of calibration standards?			✓			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?			✓			
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?		✓		✓		
2. Titrant. standardization expires 9/16/99						
F. Other						✓
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s):

Level I reviewer: [signature] Date: 990907

Level II Reviewer: [signature] Date: 990909

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Corporate Policy

			Quanterra, North Canton					
			Alkalinity Logsheet					
					9239130/35/36/38/39			
Prep Date	8/26/99		Lcs No. AL9067/68/69/70		Batch		RL	5,10 mg/L
Anal Date	8/26/99		Lcs Prep		Instrument			
			Date	8/26/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.4
Name	H2SO4		Date	7/29/99	Date	8/26/99		
Normality	0.01913		Intials	AKH	Intials	AKH		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc
PH7	6.99			#VALUE!	#VALUE!	#VALUE!	0.00	
BLK	5.48	50	0.05	0.96	0.96	0.00	0.00	
LCS	10.57	50	24.33	465.43/500	99.47	347.39	18.58	93%.
D1CHG	7.29	50	3.47	66.38	66.25	0.12	0.01	
D1CHP	7.3	50	3.2	61.22	61.09	0.11	0.01	
D1CHQ	7.27	50	3.28	62.75	62.63	0.11	0.01	
D1CHT	7.28	50	3.28	62.75	62.62	0.11	0.01	
D1K2M	7.15	50	13.64	260.93	260.58	0.35	0.01	
D1K2R	7.17	50	15.77	301.68	301.25	0.42	0.01	
D1GKM	7.03	50	18.1	346.25	345.90	0.35	0.01	
D1H14	5.26	50	0.28	5.36	5.36	0.00	0.00	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
D1H1K	4.6	50	0.02	0.38	0.38	0.00	0.00	
D1H1N	5.39	50	1.93	36.9209	36.92	0.00	0.00	
D1H1T	4.97	50	0.5	9.565	9.56	0.00	0.00	
D1H1V	7.14	50	4.83	92.3979	92.27	0.12	0.01	
D1H1X	4.82	50	0.1	1.913	1.91	0.00	0.00	
D1K3F	7.31	50	22.4	428.512	427.68	0.82	0.01	
D1K3H	7.12	50	17.92	342.8096	342.38	0.42	0.01	
D1K3K	7.13	50	15	286.95	286.58	0.36	0.01	
D1K3P	7.17	50	15.68	299.9584	299.53	0.42	0.01	
D1J7X	6.73	50	29.3	560.509	560.22	0.28	0.00	
PH7	7.04			#VALUE!	#VALUE!	#VALUE!	0.01	
D1J8A	6.75	50	28.2	539.466	539.18	0.29	0.00	
D1K3X	7.24	50	15.3	292.689	292.20	0.48	0.01	
D1K3X/S	9.65	50	39.3	751.809	527.91	221.66	2.23	−292.689/500 92%.
D1K3X/D	9.58	50	40.77	779.9301	573.19	204.84	1.90	97%.
BLK	5.58	50	0.05	0.9565	0.96	0.00	0.00	
LCS	10.75	50	24.86	475.5718/500	71.18	376.27	28.12	95%.
D1K3T	7.13	50	14.5	277.385	277.03	0.35	0.01	
D1K42	7.15	50	14.82	283.5066	283.12	0.38	0.01	
D1LKG	7.33	50	15.2	290.776	290.18	0.58	0.01	
PH7	7.03			#VALUE!	#VALUE!	#VALUE!	0.01	

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			Quanterra, North Canton					
			Alkalinity Logsheet					
Prep Date	8/26/99		Lcs No.		Batch		RL	5,10 mg/L
Anal Date	8/26/99		Lcs Prep		Instrument			
			Date	8/26/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.4
Name	H2SO4		Date	7/29/99	Date	8/26/99		
Normality	0.01913		Intials	AKH	Intials	AKH		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc
PH7	7.03			#VALUE!	#VALUE!	#VALUE!	0.01	
D1LKL	7.01	50	14.5	277.39	277.11	0.27	0.01	
D1LKN	7.2	50	14.9	285.04	284.61	0.42	0.01	
D1LKR	7.2	50	15.9	304.17	303.71	0.45	0.01	
D1LL1	9.47	50	2.78	53.18	40.48	11.23	1.48	
D1LLH	6.93	50	7.8	149.21	149.09	0.12	0.00	
D1LLK	12.03	10	9.15	875.20	3.34	336.10	535.76	
D1LLN	10.16	1	6.5	6217.25	2632.80	3577.22	7.23	
D1LLR	11.36	50	10.69	204.50	3.99	85.96	114.54	
D1LLW	6.91	50	32.8	627.46	626.98	0.48	0.00	
D1LM0	7.63	50	19.4	371.12	369.62	1.48	0.02	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
D1LM5	7.05	50	32.2	615.99	615.33	0.65	0.01	
D1M28	7.43	50	15.35	293.6455	292.89	0.74	0.01	
D1M2M	7.31	50	15.57	297.8541	297.27	0.57	0.01	
D1M2Q	7.24	50	14.1	269.733	269.28	0.44	0.01	
D1M2T	7.25	50	15.8	302.254	301.74	0.50	0.01	
D1M2W	7.2	50	15.1	288.863	288.43	0.43	0.01	
D1M2C	7.06	50	18.39	351.8007	351.42	0.38	0.01	
D1M2C/S	9.33	50	43.5	832.155	692.01	139.07	1.07	$-351.8007/500$ 96%
D1M2C/D	9.42	50	41.9	801.547	641.60	158.63	1.32	90%
BLK	5.4	50	0.05	0.9565	0.96	0.00	0.00	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
LCS	10.78	50	24.9	476.337/500	66.96	379.25	30.13	95%
D1M32	6.96	50	14.35	274.5155	274.28	0.24	0.00	
D1MDJ	6.75	50	45.4	868.502	868.04	0.46	0.00	
D1MDK	6.85	50	43.7	835.981	835.42	0.56	0.00	
D1M1Q	7.22	50	14.81	283.3153	282.87	0.44	0.01	
D1M1W	7.21	50	15.32	293.0716	292.62	0.45	0.01	
D1M20	7.25	50	15.6	298.428	297.92	0.50	0.01	
D1M22	7.33	50	16.2	309.906	309.27	0.62	0.01	
D1M25	7.36	50	15.6	298.428	297.78	0.64	0.01	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	

			Quanterra, North Canton					
			Alkalinity Logsheet					
Prep Date	8/26/99		Lcs No.		Batch		RL	5,10 mg/L
Anal Date	8/26/99		Lcs Prep		Instrument			
			Date	8/26/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.4
Name	H2SO4		Date	7/29/99	Date	8/26/99		
Normality	0.01913		Intials	AKH	Intials	AKH		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1M2G	7.06	50	17	325.21	324.85	0.35	0.01		
D1M2H	7.13	50	16	306.08	305.69	0.39	0.01		
D1MDL	6.63	25	27.6	1055.98	1055.55	0.42	0.00		
D1MDM	7.37	5	17	3252.10	3244.94	7.15	0.01		
D1MDN	7.6	5	50	9565.00	9529.32	35.66	0.02		
D1NRT	7.45	50	15.6	298.43	297.63	0.79	0.01		
D1NRX	6.55	50	36.5	698.25	698.01	0.23	0.00		
D1NT0	6.56	50	38.3	732.68	732.43	0.25	0.00		
D1NT1	7.1	50	36.74	702.84	702.00	0.83	0.01		
D1NT2	11.94	10	9.25	884.76	5.42	443.86	435.48		
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1NT8	10.76	50	4.13	79.01	7.84	42.40	28.77		
D1PVN	7.46	50	22.7	434.251	433.06	1.17	0.01		
D1PVN/S	9.19	50	45.7	874.241	762.46	111.01	0.77	-434.251	88%
D1PVN/D	9.23	50	46.47	888.9711	765.86	122.26	0.85	500	91%
BLK	5.26	50	0.04	0.7652	0.77	0.00	0.00		
LCS	10.43	50	24.62	470.9806	129.61	327.91	13.46	94%	
D1PW4	8.88	5	44.8	8570.24	7999.45	570.41	0.38		
D1PWC	11.82	10	5.6	535.64	3.25	202.04	330.35		
D1PWC/S	11.31	10	29.3	2802.545	133.74	2566.72	102.09	-535.64	91%
D1PWC/D	11.36	10	29.7	2840.805	120.98	2605.28	114.54	2500	92%
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1PWT	12.16	25	35.2	1346.752	4.56	619.47	722.72		
D1PX3	11.91	25	18.53	708.9578	3.91	298.63	406.42		
D1PX5	11.64	10	11.5	1099.975	20.98	860.74	218.26		
D1PX6	9.38	10	8.6	822.59	670.25	151.14	1.20		
D1PXF	9.32	10	23.1	2209.515	1845.94	362.53	1.04		
D1HTQ	6.62	50	4.21	80.5373	80.50	0.03	0.00		
D1HTQ/X	6.65	50	4.15	79.3895	79.35	0.03	0.00		
D1LQW	6.26	50	13	248.69	248.65	0.04	0.00		
PH7	7.05			#DIV/0!	#DIV/0!	#DIV/0!	0.01		

922

Quanterra General Chemistry Data Review Checklist

Parameter(s): ALK - T + HCO_3

Batch(es): 9239130/35/36/38/39

Method #/SOP#: 2320

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			✓
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			✓
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			✓
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			✓
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?		✓			✓	[illegible]
2. If no, standardization expires 8/29/99						[illegible]
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s):

Level I reviewer: A J K Herals Date: 990827

Level II Reviewer: Heather M Bosworth Date: 8-30-99

923

\\QCANOH01\PUBLIC\QAQC\LAB_FORM\GChem_Le

Corporate Policy.

		Quanterra, North Canton								
		TS/TDS/TSS Logsheet								
Analysis	TDS					Batch	9238151/9238163			
Prep Date	5/25/99	Time	3:30PM	Temp	105	Lcs No.	TD9003			TDS
						Lcs prep date	5/3/99			
Anal Date	5/26/99	Time	1:30PM	Temp	180	RL	10mg/L			
Analyst	CKV									

Sample No.	Tare wt (g)	Sample ml	wt 1 g	wt 2 g	wt 3 g	Final wt (g)	diff g	Result mg/L	Conductivity Screen	Take Third Weight
BLANK	69.6344	100	69.6344	69.6344		69.6344	0	0	NA x100	
LCS	70.2702	100	70.2751	70.2755		70.2751	0.0049	49	NA /50	= 98%
BLK-1	69.6245	100	69.6243	69.6244		69.6243	-0.0002	-2		
LCS-1	65.3732	100	65.3777	65.3781		65.3777	0.0045	45	x100 /50	= 90%
D1LXN	69.1553	50	69.1914	69.1916		69.1914	0.0361	722	818	
D1LXN-D	71.4052	50	71.4422	71.4425		71.4422	0.037	740		
D1MO1	67.1985	50	67.2256	67.2260		67.2256	0.0271	542	603	
D1MO1-D	67.4343	50	67.4600	67.4604		67.4600	0.0257	514		
D1MO2	65.6064	50	65.6750	65.6746		65.6746	0.0682	1364	1773	
D1MO2-D	68.8061	50	68.8753	68.8750		68.8750	0.0689	1378		
D1MO3	70.7115	100	70.7955	70.7957		70.7955	0.084	840	859	
D1MO3-D	72.1647	100	72.2492	72.2494		72.2492	0.0845	845		
D1J7X	69.1651	50	69.3005	69.3008		69.3005	0.1354	2708	2581	
D1J8A	68.4189	50	68.5455	68.5459		68.5455	0.1266	2532	2575	
D1NOC	68.2266	100	68.2519	68.2522		68.2519	0.0253	253	363	
D1LL1	68.0224	25	68.1019	68.1019		68.1019	0.0795	3180	4344	
D1LLH	70.5687	25	70.6484	70.6480		70.6480	0.0793	3172	3955	
D1LLK	70.7301	25	70.7802	70.7805		70.7802	0.0501	2004	4026	
D1LLN	70.6126	10	70.7584	70.7587		70.7584	0.1458	14580	16000	
D1LLR	67.3711	5	67.3748	67.3752		67.3748	0.0037	740	1348	
D1LLW	68.0789	5	68.2284	68.2288		68.2284	0.1495	29900	47000	
D1LMO	68.9364	25	69.0130	69.0128		69.0128	0.0764	3056	3749	
D1LM5	68.0568	5	68.2128	68.2125		68.2125	0.1557	31140	50000	
D1MDJ	69.0669	20	69.2098	69.2095		69.2095	0.1426	7130	10000	
D1MDK	65.6704	20	65.7526	65.7522		65.7522	0.0818	4090	5663	
D1MDL	66.8714	50	67.0134	67.0296	67.0302	67.0134	0.142	2840	3956	Yes
D1MDM	66.3814	25	66.5008	66.5005		66.5005	0.1191	4764	8424	
D1MDN	67.6533	10	67.7357	67.7353		67.7353	0.082	8200	14000	
D1NRT	70.8811	25	70.9549	70.9545		70.9545	0.0734	2936	3814	
D1NRX	80.6059	2	80.7608	80.7605		80.7605	0.1546	77300	130000	
D1NTO	68.0074	2	68.1602	68.1626	68.1655	68.1602	0.1528	76400	130000	Yes
D1NT1	68.1376	20	68.2205	68.2188	68.2199	68.2188	0.0812	4060	5190	Yes
D1NT2	70.2805	10	70.4337	70.5230	70.5243	70.4337	0.1532	15320	21000	Yes
D1NT8	108.4418	10	108.5911	108.6775	108.6790	108.5911	0.1493	14930	20000	Yes
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		

Quanterra General Chemistry Data Review Checklist

Parameter(s): TDS'

Batch(es): 9238151 / 9238163

Method #/SOP#: NC-WC-0055

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	NA	YES	NO	NA
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			✓
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			✓
4. ICB analyzed immediately after ICV and within criteria (= RL)?			✓			✓
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			✓
2. CCB analyzed every 10 samples, at end of sequence & within criteria (=RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?			✓			✓
2. If no, standardization expires ____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): ____

Level I reviewer: [signature] Date: 08-30-99

Level II Reviewer: Heather M Bosworth Date: 8.30.99

Page 1 of 1

Quanterra, North Canton

TS/TDS/TSS Logsheet

Analysis	TS(WATER)					Batch	9238152 / 9238155			
Prep Date	8/25/99	Time	11.30AM	Temp	104	Lcs No.	TT9004			
						Lcs prep date	8/12/99			
Anal Date	8/25/99	Time		Temp	180	RL	10MG/L			
Analyst	CKK									

TS

Sample No.	Tare wt (g)	Sample ml	wt 1 g	wt 2 g	wt 3 g	Final wt (g)	diff g	Result mg/L	Conductivity Screen	Take Third Weight
BLANK	68.2291	100	68.2295	68.2293		68.2293	0.0002	2	NA	
LCS	67.1891	25	67.2513	67.2511		67.2511	0.062	2480	NA	2500 x100 = 99%
D1K9G	80.7654	100	80.7670	80.7669		80.7669	0.0015	15		
D1K9G-D	71.9233	100	71.9244	71.9246		71.9244	0.0011	11		
D1LL1	69.2962	50	69.6493	69.6507	69.6511	69.6493	0.3531	7062		Yes
D1LL1-D	72.8073	50	73.1904	73.1908		73.1904	0.3831	7662		
D1LLH	70.6741	50	70.8059	70.8056		70.8056	0.1315	2630		
D1LLK	70.3763	50	70.4807	70.4803		70.4803	0.104	2080		
D1LLN	70.0289	25	70.1544	70.1548		70.1544	0.1255	5020		
D1LLR	69.3701	100	69.5116	69.5117		69.5116	0.1415	1415		
D1LLW	67.731	50	68.7610	68.7608		68.7608	1.0298	20596		
D1LMO	69.5391	50	69.7280	69.7283		69.7280	0.1889	3778		
D1LM5	79.4061	50	80.6175	80.6190	80.6172	80.6172	1.2111	24222		Yes
D1NRT	66.7691	50	66.9598	66.9596		66.9596	0.1905	3810		
D1NRX	70.1174	50	72.6958	72.6993	72.6956	72.6956	2.5782	51564		Yes
D1NTO	71.4343	50	74.0532	74.0532		74.0532	2.6189	52378		
D1NT1	69.8472	25	69.8919	69.8915		69.8915	0.0443	1772		
D1NT2	71.9026	25	72.0902	72.0900		72.0900	0.1874	7496		
D1NT8	66.6565	25	66.9040	66.9038		66.9038	0.2473	9892		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
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reprep.

* Sent for reprep - 990826 KB

08-26-99 CLW

953

Quanterra General Chemistry Data Review Checklist

Parameter(s): TS (water)

Batch(es): 9238152/9238155

Method #/SOP#: NC-WC-0004

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			—			
2. Calibration curve consist of the minimum number of calibration standards?			—			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			—			
4. ICB analyzed immediately after ICV and within criteria (= RL)?			—			
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			—			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (=RL)?			—			
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	—					
2. All reported results bracketed by in control QC ?	—					
3. Sample analyses done within holding time ?	—					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	—					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	—					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			—			
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	—					
E. Titrant						
1. Titrant standardized?			—			
2. If no, standardization expires _____			—			
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			—			
2. Calculations checked for error ?	—					
3. Transcriptions checked for error ?	—					
4. All client/project specific requirements met ?	—					
5. Date/time of preparation and analysis verified as correct ?	—					
6. Units verified as correct?	—					
7. Dilutions have been properly applied and RL's adjusted appropriately?	—					
8. SOP followed?	—					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	—					
10. All reagent and standard numbers recorded in logbook?	—					
11. Edits dated and initialed	—					

Comment on any "NO" response(s): _____

Level I reviewer: [signature] Date: 08-26-99

Level II Reviewer: Heather M Bosworth Date: 8.26.99 954

TS

			Quanterra, North Canton							
			TS/TDS/TSS Logsheet							
Analysis	TS(WATER)					Batch	9239286			
Prep Date	8/26/99	Time	8/26/99	Temp	105	Lcs No.	TT9004			
						Lcs prep date		990812		
Anal Date	8/27/99	Time	8/27/99	Temp	180	RL	10			
Analyst	CKK									
Sample No.	Tare wt (g)	Sample ml	wt 1 g	wt 2 g	wt 3 g	Final wt (g)	diff g	Result mg/L	Conductivity Screen	Take Third Weight
BLANK	68.3424	100	68.3424	68.3424		68.3424	0	0	NA	
LCS	65.7892	25	65.8501	65.8501		65.8501	0.0609	2436	NA	
D1NRX ✓	68.9604	2	69.1171	69.1137	69.1152	69.1137	0.1533	76650		Yes
D1NRX-D ✓	69.6591	2	69.8129	69.8125		69.8125	0.1534	76700		
D1LLW	68.016	5	68.1696	68.1695		68.1695	0.1535	30700		
D1NT8	67.6843	10	67.8481	67.8481		67.8481	0.1638	16380		
D1LL1 ✓	65.7131	25	65.9076	65.9072		65.9072	0.1941	7764		
D1LM5	69.4499	5	69.6012	69.6010		69.6010	0.1511	30220		
D1NTO ✓	69.5098	2	69.6662	69.6662		69.6662	0.1564	78200		
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
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						0.0000	0	#DIV/0!		

08-31-99 CKK

Quanterra General Chemistry Data Review Checklist

Parameter(s): TS (water)

Batch(es): 9239286

Method #/SOP#: NC-WC-0004

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?			✓			✓
2. If no, standardization expires _____			✓			
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: [signature] Date: 08-31-99.

Level II Reviewer: [signature] Date: 9/2/99

			Quanterra, North Canton							
			TS/TDS/TSS Logsheet							
Analysis	TS H2O					Batch	9268123			
Prep Date	9/23/99	Time	14 PM	Temp	106	Lcs No.	TT9004			
						Lcs prep date	8/12/99			
Anal Date	9/24/99	Time		Temp	180	RL	10MG/L			
Analyst	OC									
Sample	Tare	Sample	wt 1	wt 2	wt 3	Final	diff	Result	Conductivity	Take Third
No.	wt (g)	ml	g	g	g	wt (g)	g	mg/L	Screen	Weight
BLANK	70.2476	100	70.2477	70.2475		70.2475	-0.0001	-1	NA	
LCS	69.4452	25	69.5050	69.5050		69.5050	0.0598	2392	NA x100 / 2500	= 96%
D1LLH	65.676	50	65.8339	65.8336		65.8336	0.1576	3152		
D1LLH-D	68.1303	50	68.2887	68.2885		68.2885	0.1582	3164		
D1LLN	68.0109	10	68.1662	68.1624	68.1628	68.1624	0.1515	15150		Yes
D1NT1	68.7903	25	68.8883	68.8880		68.8880	0.0977	3908		
D1NT2	68.9571	10	69.0992	69.1000	69.1004	69.0992	0.1421	14210		Yes
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		#VALUE!
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
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						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		

OC 9/25/99

Quanterra General Chemistry Data Review Checklist

Parameter(s): TS

Batch(es): 9268123

Method #/SOP#: NC-WC-0004

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			
B. Continuing Calibration			✓			
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			
C. Sample Results	✓					
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓				✓	
D. Quality Control	✓					
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant			✓			✓
1. Titrant standardized?			✓			
2. If no, standardization expires						
F. Other			✓			✓
1. Are all nonconformances documented appropriately (NCM or narrative)?	✓			✓		
2. Calculations checked for error ?	✓					
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓					

Comment on any "NO" response(s): HTV's - DILLH, DILLN, DINTI, DINT2
ALL RE-RUN'S TO CONFIRM TPS
SEE NCM AC0486

Level I reviewer: D.C. **Date:** 9/27/99

Level II Reviewer: [signature] **Date:** 9-27-99

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15 03 1999

Std. #	Used	Conc. (ppm)	olume (mL)
1	Yes	0.000	2.000
2	Yes	1.000	2.000
3	Yes	10.000	2.000
4	Yes	25.000	.000
5	Yes	50.000	2 000

RF (ugC/k-cnt): 1.0427
R-Squared: 0.9983

Calibration Mode: TOC
Allow Editing: No

Rep	Std. 1	Std. 2	Std. 3	Sta 4	Std. 5
1	444	3199	18818	4634(	97856
2	296	2178	17713	44909	97420
3	328	2284	17304	44841	96585
4	275	2260	18027	45531	97909
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

RUN SETUP

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990821 Firmware Version: 3.0

CALIBRATION

990713A Tue Jul 13 18:15:03 1999

METHODS

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

SEQUENCE

990821 Sat Aug 21 18:06:59 1999

Start Pos/Vial #: 1, Stop Pos/Vial #: 26

Pos/ Vial	Sample Name	Method Type	Run Rep	# (mL)	Vol Blk	# Rng	Ovr	Remarks
1	ZZZZZ	tic/toc	Sample	4	2.000	0	No	
2	CCV icv TC 9116	tic/toc	Chk. 3	4	2.000	0	No	
3	CCB	tic/toc	Chk. 1	4	2.000	0	No	
4	D1HQW	tic/toc	Sample	4	2.000	0	No	BATCH 9236218
5	D1HQX	tic/toc	Sample	4	2.000	0	No	
6	D1HRO	tic/toc	Sample	4	2.000	0	No	
7	CCV	tic/toc	Chk. 3	4	2.000	0	No	
8	CCB	tic/toc	Chk. 1	4	2.000	0	No	
9	D1LK4	tic/toc	Sample	1	2.000	0	No	
10	D1LKH	tic/toc	Sample	1	2.000	0	No	BATCH 9236219
11	D1LKK	tic/toc	Sample	1	2.000	0	No	
12	D1LJX	tic/toc	Sample	1	2.000	0	No	
13	D1LK0	tic/toc	Sample	1	2.000	0	No	
14	D1LK1	tic/toc	Sample	1	2.000	0	No	
15	D1LL1	tic/toc	Sample	1	2.000	0	No	
16	D1LLH	tic/toc	Sample	1	2.000	0	No	

117	D1LLK	tic/toc	Sample	1	2.000	0	No
118	CCV	tic/toc	Chk. 3	1	2.000	0	No
119	CCB	tic/toc	Chk. 1	1	2.000	0	No
220	D1LLN	tic/toc	Sample	1	2.000	0	No
221	D1LLR	tic/toc	Sample	1	2.000	0	No
222	D1LLW	tic/toc	Sample	1	2.000	0	No
223	D1LMO	tic/toc	Sample	1	2.000	0	No
224	D1LM5	tic/toc	Sample	1	2.000	0	No
225	CCV	tic/toc	Chk. 3	1	2.000	0	No
226	CCB	tic/toc	Chk. 1	1	2.000	0	No

rerun

RESULTS - 990821 **

Pos/Vial: 1 Name: ZZZZZ Analyzed: 08-21-99 18:07
Run ID: 50 Meth: tic/toc Vol (mL): 2.018

SAMPLES Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08211	188	0.048	0.0238	2561	2.170	1.0752
2	08212	575	0.451	0.2237	10822	10.783	5.3436
3	08213	489	0.362	0.1793	5070	4.786	2.3716
4	08214	333	0.199	0.0987	2496	2.102	1.0416
Avg		396	0.265	0.1314	5237	4.960	2.4580
Std.Dev.		171.20			3911.27		
RSD (%)		43.20			74.68		

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 2 Name: CCV icv TC 9116 Analyzed: 08-21-99 18:44
Run ID: 1 Meth: tic/toc Vol (mL): 2.018

CHK. 3 Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08215	48449	51.103	25.3238
2	08216	47448	50.060	24.8066
3	08217	46915	49.504	24.5312
4	08218	46788	49.372	24.4656
Avg		47400	50.010	24.7818
Std.Dev.		755.53		
RSD (%)		1.59		

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 3 Name: CCB Analyzed: 08-21-99 19:20
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

CHK. 1 Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08219	5173	5.981	~~2.9837~~ SAM 8/24/99
2	082110	801	1.422	0.7047
3	082111	719	1.337	0.6623
4	082112	499	1.107	0.5487
Avg		1798	2.462	~~1.2198~~ 0.6386
Std.Dev.		2253.61		SAM 8/24/99
RSD (%)		125.34		

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 4 Name: D1HQW Analyzed: 08-21-99 19:56
Run ID: 3 Meth: tic/toc Vol (mL): 2.018

SAMPLES Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	082113	52956	55.068	27.2883	28579	29.298	14.5184
2	082114	54729	56.916	28.2044	28690	29.414	14.5757
3	082115	53915	56.068	27.7838	28350	29.059	14.4001
4	082116	50372	52.374	25.9532	28794	29.522	14.6295
Avg		52993	55.106	27.3074	28603	29.323	14.5309
Std.Dev.		1891.63		190.29			
RSD (%)		3.57		0.67			

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 5 Name: D1HQX Analyzed: 08-21-99 20:32
Run ID: 4 Meth: tic/toc Vol (mL): 2.018

SAMPLES Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	082117	43758	45.477	22.5358	25616	26.209	12.9874
2	082118	44823	46.588	23.0861	26395	27.021	13.3899
3	082119	44345	46.089	22.8391	26078	26.690	13.2261
4	082120	39294	40.823	20.2293	25906	26.511	13.1373
Avg		43055	44.744	22.1726	25998	26.608	13.1852

Std.Dev. 2544.88 325.78
RSD (%) 5.91 1.25

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 6 Name: D1HRO Analyzed: 08-21-99 21:08
Run ID: 5 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082121	42784	44.462	22.0326	25433	26.018	12.8929
2	082122	44087	45.820	22.7058	25540	26.129	12.9482
3	082123	43594	45.306	22.4511	26071	26.683	13.2225
4	082124	38446	39.939	19.7912	25455	26.041	12.9042
Avg		42227	43.882	21.7451	25624	26.218	12.9920
Std.Dev.		2577.76			301.06		
RSD (%)		6.10			1.17		

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 7 Name: CCV Analyzed: 08-21-99 21:44
Run ID: 6 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	082125	46234	48.794	24.1793
2	082126	45306	47.826	23.6998
3	082127	44968	47.474	23.5252
4	082128	45597	48.130	23.8502
Avg		45526	48.056	23.8136
Std.Dev.		537.30		
RSD (%)		1.18		

9.236.219

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 8 Name: CCB Analyzed: 08-21-99 22:20
Run ID: 7 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)

1	082129	857	1.480	0.7336
2	082130	522	1.131	0.5605
3	082131	472	1.079	0.5347
4	082132	343	0.945	0.4681

Avg 548 1.159 0.5742
Std.Dev. 219.06
RSD (%) 39.94

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 9 Name: D1LK4 Analyzed: 08-21-99 22:55
Run ID: 8 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082133	110899	115.483	57.2267	25663	26.253	13.0117

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 10 Name: D1LKH Analyzed: 08-21-99 23:07
Run ID: 9 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082134	98994	103.070	51.0755	47959	49.505	24.5318

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 11 Name: D1LKK Analyzed: 08-21-99 23:18
Run ID: 10 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082135	34749	36.084	17.8810	8037	7.879	3.9046

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 16 Name: D1LLH Analyzed: 08-22-99 00:13
Run ID: 15 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082140	96054	100.005	49.5565	19363	19.689	9.7566

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 17 Name: D1LLK Analyzed: 08-22-99 00:24
Run ID: 16 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082141	58086	60.417	29.9389	75057	77.759	38.5329

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 18 Name: CCV Analyzed: 08-22-99 00:35
Run ID: 17 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	082142	48780	51.449	25.4948

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 19 Name: CCB Analyzed: 08-22-99 00:46
Run ID: 18 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	082143	979	1.608	0.7967

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 9236218, 19

Method #/SOP#: NC-WC-0017

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?	✓					
2. Calibration curve consist of the minimum number of calibration standards?	✓					
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (± RL)?	✓					
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?	✓					
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			
2. Calculations checked for error ?						
3. Transcriptions checked for error ?						
4. All client/project specific requirements met ?						
5. Date/time of preparation and analysis verified as correct ?						
6. Units verified as correct?						
7. Dilutions have been properly applied and RL's adjusted appropriately?						
8. SOP followed?						
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?						
10. All reagent and standard numbers recorded in logbook?						
11. Edits dated and initialed						

Comment on any "NO" response(s): _____

Level I reviewer: SAM Date: 8/24/99

Level II Reviewer: Heather M Boswell Date: 8.25.99

****
** RUN SETUP **
****

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990824 Firmware Version: 3.0

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15:03 1999

****
** METHODS **
****

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

****
** SEQUENCE **
****

990824 Tue Aug 24 11:13:27 1999

Start Pos/Vial #: 2, Stop Pos/Vial #: 14

Pos/ Vial	Sample Name	Method Type	Run Rep	# Vol (mL)	# Blk	Ovr Rng	Remarks
1	ZZZZZ	tic/toc	Sample	4 2.000	0	No	
2	CCV TC 9117	tic/toc	Chk. 3	1 2.000	0	No	
3	CCB	tic/toc	Chk. 1	1 2.000	0	No	
4	D1LLN 40X	tic/toc	Sample	1 2.000	0	No	
5	D1LLR	tic/toc	Sample	1 2.000	0	No	
6	D1LLW	tic/toc	Sample	1 2.000	0	No	
7	D1LM0	tic/toc	Sample	1 2.000	0	No	
8	D1LM5 4X	tic/toc	Sample	1 2.000	0	No	
9	D1M9P	tic/toc	Sample	1 2.000	0	No	
10	D1M9Q	tic/toc	Sample	1 2.000	0	No	
11	D1M9R	tic/toc	Sample	1 2.000	0	No	
12	D1MKD	tic/toc	Sample	1 2.000	0	No	
13	CCV	tic/toc	Chk. 3	1 2.000	0	No	
14	CCB	tic/toc	Chk. 1	1 2.000	0	No	

****

BATCH
G236334

Pos/Vial: 2 Name: CCV TC 9117 Analyzed: 08-24-99 12:38
Run ID: 1 Meth: tic/toc Vol (mL): 2.018

CHK. 3	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 08241	48747	51.414	25.4778

125

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 3 Name: CCB Analyzed: 08-24-99 12:50
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

CHK. 1	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 08242	1322	1.965	0.9739

ND

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 4 Name: D1LLN 40X Analyzed: 08-24-99 13:01
Run ID: 3 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 08243	13883	14.327	7.0998	36059	37.097	18.3832

x40
735.328

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 5 Name: D1LLR Analyzed: 08-24-99 13:12
Run ID: 4 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 08244	520142	542.190	268.6771	31101	31.928	15.8215

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08248	47101	48.963	24.2631	4680	4.379	2.1701

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 10 Name: D1M9Q Analyzed: 08-24-99 14:08
Run ID: 9 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	08249	70910	73.788	36.5649	17590	17.840	8.8405

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 11 Name: D1M9R Analyzed: 08-24-99 14:19
Run ID: 10 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082410	80814	84.115	41.6821	24669	25.221	12.4981

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 12 Name: D1MKD Analyzed: 08-24-99 14:30
Run ID: 11 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	082411	157728	164.311	81.4226	5671	5.413	2.6821

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 13 Name: CCV Analyzed: 08-24-99 14:42
Run ID: 12 Meth: tic/toc Vol (mL): 2.018

CHK. 3	TOC Area	TOC Mass	TOC Conc

Rep	Data File	(cts)	(ugC)	(ppm)
1	082412	49218	51.905	25.7211

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 14 Name: CCB Analyzed: 08-24-99 14:53
Run ID: 13 Meth: tic/toc Vol (mL): 2.018

CHK. 1

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	082413	1076	1.709	0.8468

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 92363347

Method #/SOP#: NC-WC-0017

Items	Level I Review			Level II Review		
	YES	NO	N/A	YES	NO	N/A
A. Initial Calibration						
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓			✓		
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓			✓		
4. ICB analyzed immediately after ICV and within criteria (= RL)?	✓			✓		
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓			✓		
2. CCB analyzed every 10 samples, at end of sequence & within criteria (=RL)?	✓			✓		
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			✓
2. If so, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: _____ Date: 8/24/99

Level II Reviewer: Heather M Bosworth Date: 8.25.99

****
** RUN SETUP **
****

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990830 Firmware Version: 3.0

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15:03 1999

****
** METHODS **
****

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

****
** SEQUENCE **
****

990830 Mon Aug 30 10:39:19 1999

Start Pos/Vial #: 2, Stop Pos/Vial #: 27

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Vol (mL)	# Blk	Ovr Rng	Remarks
2	ICV TC 9119	tic/toc	Chk. 3	1	2.000	0	No	
3	CCB	tic/toc	Chk. 1	1	2.000	0	No	
4	D1R6M	tic/toc	Sample	1	2.000	0	No	
5	D1R5C4X	tic/toc	Sample	1	2.000	0	No	
6	DIR59 10X	tic/toc	Sample	1	2.000	0	No	
7	DIR6L 20X	tic/toc	Sample	1	2.000	0	No	
8	D1NRT	tic/toc	Sample	1	2.000	0	No	
9	DINRX	tic/toc	Sample	1	2.000	0	No	
10	DINTO	tic/toc	Sample	1	2.000	0	No	
11	DINT1	tic/toc	Sample	1	2.000	0	No	
12	DINT2	tic/toc	Sample	1	2.000	0	No	
13	DINT8	tic/toc	Sample	1	2.000	0	No	
14	CCV	tic/toc	Chk. 3	1	2.000	0	No	
15	CCB	tic/toc	Chk. 1	1	2.000	0	No	
16	DINK7	tic/toc	Sample	1	2.000	0	No	
17	D1NK8	tic/toc	Sample	1	2.000	0	No	

B01
9242323

18	DINKC	tic/toc	Sample	1	2.000	0	No
19	DINKF	tic/toc	Sample	1	2.000	0	No — rerun
20	DIPVN	tic/toc	Sample	1	2.000	0	No
21	DIPVN MS	tic/toc	Sample	1	2.000	0	No
22	DIPVN MSD	tic/toc	Sample	1	2.000	0	No
23	D1PW4 20X	tic/toc	Sample	1	2.000	0	No
24	DIPWT	tic/toc	Sample	1	2.000	0	No
25	DIPX3	tic/toc	Sample	1	2.000	0	No
26	CCV	tic/toc	Chk. 3	1	2.000	0	No
27	CCB	tic/toc	Chk. 1	1	2.000	0	No

****

** RESULTS - 990830 **

****

Pos/Vial: 2 Name: ICV TC 9119 LCS Analyzed: 08-30-99 10:40
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

CHK. 3

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08301	48321	50.970	25.2576

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 3 Name: CCB Blk Analyzed: 08-30-99 10:51
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

CHK. 1

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08302	1222	1.861	0.9222

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 4 Name: D1R6M Analyzed: 08-30-99 11:03
Run ID: 3 Meth: tic/toc Vol (mL): 2.018

SAMPLES

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	08303	30817	31.984	15.8494	1543	1.108	0.5492

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 13 Name: DINT8 Analyzed: 08-30-99 12:43
Run ID: 12 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 083012	313631	326.867	161.9756	15582	15.746	7.8030

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 14 Name: CCV Analyzed: 08-30-99 12:54
Run ID: 13 Meth: tic/toc Vol (mL): 2.018

CHK. 3	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 083013	48201	50.845	25.1956

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 15 Name: CCB Analyzed: 08-30-99 13:05
Run ID: 14 Meth: tic/toc Vol (mL): 2.018

CHK. 1	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 083014	1338	1.982	0.9822

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 16 Name: DINK7 Analyzed: 08-30-99 13:16
Run ID: 15 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 083015	301004	313.701	155.4514	34126	35.082	17.3844

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 9242323

Method #/SOP#: NC-WC-0067

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓					
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (± RL)?	✓					
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?	✓					
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?						
3. Transcriptions checked for error ?				✓		
4. All client/project specific requirements met ?						
5. Date/time of preparation and analysis verified as correct ?						
6. Units verified as correct?						
7. Dilutions have been properly applied and RL's adjusted appropriately?						
8. SOP followed?						
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?						
10. All reagent and standard numbers recorded in logbook?						
11. Edits dated and initialed				✓		

Comment on any "NO" response(s): _____

Level I reviewer: SAM Date: 8/1/99

Level II Reviewer: [signature] Date: 8/5/99

RSR280

Quanterra Incorporated
Sample Control Record

Client: 2508

Lot #: A9H210120

Case Number/SDG: 733893

Storage Location: MS/W142/W142 MS

962

Laboratory Sample I.D.	Transferred By	Date	Entered	Removed	Reason	Date Returned
D1LL1	EZZOL	8/20/99	Yes		Storage	
D1LLH	EZZOL	8/20/99	Yes		Storage	
D1LLK	EZZOL	8/20/99	Yes		Storage	
D1LLN	EZZOL	8/20/99	Yes		Storage	
D1LLR	EZZOL	8/20/99	Yes		Storage	
D1LLW	EZZOL	8/20/99	Yes		Storage	
D1LM0	EZZOL	8/20/99	Yes		Storage	
D1LM5	EZZOL	8/20/99	Yes		Storage	
D1LMD	EZZOL	8/20/99	Yes		Storage	

RSR280

Quanterra Incorporated
Sample Control Record

Client: 2508

Lot #: A9H240148

Case Number/SDG: 733893

Storage Location: W146

Laboratory Sample I.D.	Transferred By	Date	Entered	Removed	Reason	Date Returned
D1NRT	GIRARDJ	8/21/99	Yes		Storage	
D1NRX	GIRARDJ	8/21/99	Yes		Storage	
D1NT0	GIRARDJ	8/21/99	Yes		Storage	
D1NT1	GIRARDJ	8/21/99	Yes		Storage	
D1NT2	GIRARDJ	8/21/99	Yes		Storage	
D1NT8	GIRARDJ	8/21/99	Yes		Storage	

09/10/99 11:45:41 Sample Control Chain of Custody - Quanterra North Canton PAGE 1

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	ANALYSIS DATE	ANALYST NAME
A9H210120	1	D1LL1101	MS8260LL	8/25/99	Laura Evans
A9H210120	2	D1LLH101	MS8260LL	8/25/99	Laura Evans
A9H210120	3	D1LLK101	MS8260LL	8/25/99	Laura Evans
A9H210120	4	D1LLN101	MS8260LL	8/30/99	Jennifer McCrory
A9H210120	5	D1LLR101	MS8260LL	8/25/99	Laura Evans
A9H210120	6	D1LLW101	MS8260LL	8/30/99	Jennifer McCrory
A9H210120	9	D1LMD101	MS8260LL	8/30/99	Jennifer McCrory

* * * E N D O F R E P O R T * * *

LOT NUMBER	SAMPLE	SAMPLE SUFFIX	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	DATE OF TRANSFER	TRANSFERRED BY	ANALYSIS DATE	ANALYST
A9H210120	1		D1LL1102	MS8270_L	8/26/99	Eric Miller	8/30/99	Kami Rathburn	9/13/99	John Gruber
A9H210120	2		D1LLH102	MS8270_L	8/26/99	Eric Miller	8/30/99	Kami Rathburn	9/07/99	John Gruber
A9H210120	3		D1LLK102	MS8270_L	8/26/99	Eric Miller	8/30/99	Kami Rathburn	9/07/99	John Gruber
A9H210120	4		D1LLN102	MS8270_L	8/26/99	Eric Miller	8/30/99	Kami Rathburn	9/07/99	John Gruber
A9H210120	5		D1LLR102	MS8270_L	8/26/99	Eric Miller	8/30/99	Kami Rathburn	9/07/99	John Gruber
A9H210120	6		D1LLW102	MS8270_L	8/26/99	Eric Miller	8/30/99	Kami Rathburn	9/07/99	John Gruber

* * * E N D O F R E P O R T * * *

09/22/99 05:34:26 Sample Control Chain of Custody for Metals Prep - Quanterra North Canton PAGE 1

LOT NUMBER	SAMPLE NUMBER	LAB ID	SAMPLE TYPE	PREP DATE	PREP ANALYST
A9H240148	1	D1NRT	TOTAL	9/01/99	Lina Mustafa
A9H240148	2	D1NRX	TOTAL	9/01/99	Lina Mustafa
A9H240148	3	D1NT0	TOTAL	9/01/99	Lina Mustafa
A9H240148	4	D1NT1	TOTAL	9/01/99	Lina Mustafa
A9H240148	5	D1NT2	TOTAL	9/01/99	Lina Mustafa
A9H240148	6	D1NT8	TOTAL	9/01/99	Lina Mustafa

* * * E N D O F R E P O R T * * *

LOT NUMBER	SAMPLE	SAMPLE SUFFIX	LAB ID	TEST		PREP DATE	ANALYSIS DATE	ANALYST	INSTRUMENT CODE
A9H240148	1		D1NRT U	SW846	6010A	9/01/99	9/16/99	Albert DiPofi	I4
A9H240148	2		D1NRX U	SW846	6010A	9/01/99	9/16/99	Albert DiPofi	I4
A9H240148	3		D1NT0 U	SW846	6010A	9/01/99	9/16/99	Albert DiPofi	I4
A9H240148	4		D1NT1 U	SW846	6010A	9/01/99	9/16/99	Albert DiPofi	I4
A9H240148	5		D1NT2 U	SW846	6010A	9/01/99	9/16/99	Albert DiPofi	I4
A9H240148	6		D1NT8 U	SW846	6010A	9/01/99	9/16/99	Albert DiPofi	I4

* * * E N D O F R E P O R T * * *

U = Unfiltered F = Filtered T = TCLP L = SPLP East W = SPLP West

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H210120	1	D1LL1107	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	1	D1LL1103	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	1	D1LL1104	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	1	D1LL1109	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	1	D1LL1209	TS	8/26/99	Kumudu Kulasekere	8/27/99	Kumudu Kulasekere
A9H210120	1	D1LL1108	TOC	8/22/99	Susan Macenczak	8/22/99	Susan Macenczak
A9H210120	1	D1LL1106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	2	D1LLH107	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	2	D1LLH103	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	2	D1LLH104	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	2	D1LLH109	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	2	D1LLH209	TS	9/23/99	Olguita Colon	9/24/99	Olguita Colon
A9H210120	2	D1LLH108	TOC	8/22/99	Susan Macenczak	8/22/99	Susan Macenczak
A9H210120	2	D1LLH106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	3	D1LLK107	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	3	D1LLK103	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	3	D1LLK104	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	3	D1LLK109	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	3	D1LLK108	TOC	8/22/99	Susan Macenczak	8/22/99	Susan Macenczak
A9H210120	3	D1LLK106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	4	D1LLN107	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	4	D1LLN103	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	4	D1LLN104	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	4	D1LLN109	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	4	D1LLN209	TS	9/23/99	Olguita Colon	9/24/99	Olguita Colon

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H210120	4	D1LLN108	TOC	8/24/99	Susan Macenczak	8/24/99	Susan Macenczak
A9H210120	4	D1LLN106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	5	D1LLR107	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	5	D1LLR103	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	5	D1LLR104	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	5	D1LLR109	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	5	D1LLR108	TOC	8/24/99	Susan Macenczak	8/24/99	Susan Macenczak
A9H210120	5	D1LLR106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	6	D1LLW107	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	6	D1LLW103	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	6	D1LLW104	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	6	D1LLW109	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	6	D1LLW209	TS	8/26/99	Kumudu Kulasekere	8/27/99	Kumudu Kulasekere
A9H210120	6	D1LLW108	TOC	8/24/99	Susan Macenczak	8/24/99	Susan Macenczak
A9H210120	6	D1LLW106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	7	D1LM0105	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	7	D1LM0101	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	7	D1LM0102	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	7	D1LM0107	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H210120	7	D1LM0106	TOC	8/24/99	Susan Macenczak	8/24/99	Susan Macenczak
A9H210120	7	D1LM0104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H210120	8	D1LM5105	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H210120	8	D1LM5101	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H210120	8	D1LM5102	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H210120	8	D1LM5107	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H210120	8	D1LM5207	TS	8/26/99	Kumudu Kulasekere	8/27/99	Kumudu Kulasekere
A9H210120	8	D1LM5106	TOC	8/24/99	Susan Macenczak	8/24/99	Susan Macenczak
A9H210120	8	D1LM5104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules

* * * E N D O F R E P O R T * * *

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H240148	1	D1NRT105	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H240148	1	D1NRT102	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H240148	1	D1NRT103	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H240148	1	D1NRT101	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H240148	1	D1NRT106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H240148	1	D1NRT104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H240148	2	D1NRX105	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H240148	2	D1NRX102	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H240148	2	D1NRX103	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H240148	2	D1NRX101	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H240148	2	D1NRX201	TS	8/26/99	Kumudu Kulasekere	8/27/99	Kumudu Kulasekere
A9H240148	2	D1NRX106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H240148	2	D1NRX104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H240148	3	D1NT0105	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H240148	3	D1NT0102	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H240148	3	D1NT0103	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H240148	3	D1NT0101	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H240148	3	D1NT0201	TS	8/26/99	Kumudu Kulasekere	8/27/99	Kumudu Kulasekere
A9H240148	3	D1NT0106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H240148	3	D1NT0104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H240148	4	D1NT1105	LL-COD	8/26/99	Amanda Hercules	8/27/99	Amanda Hercules
A9H240148	4	D1NT1102	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H240148	4	D1NT1103	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H240148	4	D1NT1101	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H240148	4	D1NT1201	TS	9/23/99	Olguita Colon	9/24/99	Olguita Colon

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H240148	4	D1NT1106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H240148	4	D1NT1104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H240148	5	D1NT2105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H240148	5	D1NT2102	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H240148	5	D1NT2103	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H240148	5	D1NT2101	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H240148	5	D1NT2201	TS	9/23/99	Olguita Colon	9/24/99	Olguita Colon
A9H240148	5	D1NT2106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H240148	5	D1NT2104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H240148	6	D1NT8105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H240148	6	D1NT8102	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H240148	6	D1NT8103	TDS	8/25/99	Kumudu Kulasekere	8/26/99	Kumudu Kulasekere
A9H240148	6	D1NT8101	TS	8/25/99	Kumudu Kulasekere	8/25/99	Kumudu Kulasekere
A9H240148	6	D1NT8201	TS	8/26/99	Kumudu Kulasekere	8/27/99	Kumudu Kulasekere
A9H240148	6	D1NT8106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H240148	6	D1NT8104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules

*** END OF REPORT ***

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-1

General Chemistry

Lot-Sample #...: A9H210120-001 Work Order #...: D1LL1 Matrix.....: WATER
Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	49.2	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
	Dilution Factor: 1					
Hardness, as CaCO3	1700	10	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 5					
Total Alkalinity	53	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
	Dilution Factor: 1					
Total Dissolved Solids	3200	40	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
	Dilution Factor: 4					
Total Organic Carbon	12	1	mg/L	MCAWW 415.1	08/22/99	9236219
	Dilution Factor: 1					
Total Solids (Residue)	7800	40	mg/L	MCAWW 160.3	08/26-08/27/99	92392
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-23

General Chemistry

Lot-Sample #...: A9H210120-002 Work Order #...: D1LLH Matrix.....: WATER
Date Sampled...: 08/19/99 09:45 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	64.4	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
	Dilution Factor: 1					
Hardness, as CaCO3	790	20	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 10					
Total Alkalinity	150	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
	Dilution Factor: 1					
Total Dissolved Solids	3200	40	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
	Dilution Factor: 4					
Total Organic Carbon	10	1	mg/L	MCAWW 415.1	08/22/99	9236219
	Dilution Factor: 1					
Total Solids (Residue)	2600	20	mg/L	MCAWW 160.3	08/25/99	9238155
	Dilution Factor: 2					
Total Solids (Residue)	3200	~~10~~ 20	mg/L	MCAWW 160.3	09/23-09/24/99	9268123
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-2

General Chemistry

Lot-Sample #...: A9H210120-003 Work Order #...: D1LLK Matrix.....: WATER
Date Sampled...: 08/19/99 10:45 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	147	10.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 2				
Hardness, as CaCO3	1000	20	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 10				
Total Alkalinity	880	25	mg/L	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 5				
Total Dissolved Solids	2000	40	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 4				
Total Organic Carbon	39	1	mg/L	MCAWW 415.1	08/22/99	9236219
		Dilution Factor: 1				
Total Solids (Residue)	2100	20	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 2				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-22

General Chemistry

Lot-Sample #...: A9H210120-004 Work Order #...: D1LLN Matrix.....: WATER
Date Sampled...: 08/19/99 11:00 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	300	25.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 5				
Hardness, as CaCO3	340	20	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 10				
Total Alkalinity	6200	250	mg/L	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 50				
Total Dissolved Solids	15000	100	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 10				
Total Organic Carbon	740	40	mg/L	MCAWW 415.1	08/24/99	9236334
		Dilution Factor: 40				
Total Solids (Residue)	5000	40	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 4				
Total Solids (Residue)	15000	~~10~~ 100	mg/L	MCAWW 160.3	09/23-09/24/99	9268123
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-15

General Chemistry

Lot-Sample #...: A9H210120-005 Work Order #...: D1LLR Matrix.....: WATER
Date Sampled...: 08/19/99 11:50 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	373	50.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 10				
Hardness, as CaCO3	4300	50	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 25				
Total Alkalinity	200	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 1				
Total Dissolved Solids	740	200	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 20				
Total Organic Carbon	16	1	mg/L	MCAWW 415.1	08/24/99	9236334
		Dilution Factor: 1				
Total Solids (Residue)	1400	10	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-1

General Chemistry

Lot-Sample #...: A9H210120-006 Work Order #...: D1LLW Matrix.....: WATER
Date Sampled...: 08/19/99 12:00 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	261	25.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 5				
Hardness, as CaCO3	2200	20	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 10				
Total Alkalinity	630	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 1				
Total Dissolved Solids	30000	200	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 20				
Total Organic Carbon	23	1	mg/L	MCAWW 415.1	08/24/99	9236334
		Dilution Factor: 1				
Total Solids (Residue)	31000	200	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
		Dilution Factor: 20				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-3

General Chemistry

Lot-Sample #...: A9H210120-007 Work Order #...: D1LM0 Matrix.....: WATER
Date Sampled...: 08/19/99 14:10 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	247	50.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 10				
Hardness, as CaCO3	1300	20	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 10				
Total Alkalinity	370	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
		Dilution Factor: 1				
Total Dissolved Solids	3100	40	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
		Dilution Factor: 4				
Total Organic Carbon	33	1	mg/L	MCAWW 415.1	08/24/99	9236334
		Dilution Factor: 1				
Total Solids (Residue)	3800	20	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 2				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-13

General Chemistry

Lot-Sample #...: A9H210120-008 Work Order #...: D1LM5 Matrix.....: WATER
Date Sampled...: 08/19/99 14:45 Date Received..: 08/20/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	61.4	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
	Dilution Factor: 1					
Hardness, as CaCO3	2000	20	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 10					
Total Alkalinity	620	5.0	mg/L	MCAWW 310.1	08/26/99	9239135
	Dilution Factor: 1					
Total Dissolved Solids	31000	200	mg/L	MCAWW 160.1	08/25-08/26/99	9238151
	Dilution Factor: 20					
Total Organic Carbon	160	4	mg/L	MCAWW 415.1	08/24/99	9236334
	Dilution Factor: 4					
Total Solids (Residue)	30000	200	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
	Dilution Factor: 20					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-4

General Chemistry

Lot-Sample #...: A9H240148-001 Work Order #...: D1NRT Matrix.....: WATER
Date Sampled...: 08/20/99 10:45 Date Received..: 08/21/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	127	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
		Dilution Factor: 1				
Hardness, as CaCO3	2700	20	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 10				
Total Alkalinity	300	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1				
Total Dissolved Solids	2900	40	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
		Dilution Factor: 4				
Total Organic Carbon	49	1	mg/L	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1				
Total Solids (Residue)	3800	20	mg/L	MCAWW 160.3	08/25/99	9238155
		Dilution Factor: 2				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-14

General Chemistry

Lot-Sample #...: A9H240148-002 Work Order #...: D1NRX Matrix.....: WATER
Date Sampled...: 08/20/99 11:00 Date Received..: 08/21/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	117	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
	Dilution Factor: 1					
Hardness, as CaCO3	7000	50	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 25					
Total Alkalinity	700	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
	Dilution Factor: 1					
Total Dissolved Solids	77000	500	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
	Dilution Factor: 50					
Total Organic Carbon	7	1	mg/L	MCAWW 415.1	08/30/99	9242323
	Dilution Factor: 1					
Total Solids (Residue)	77000	500	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
	Dilution Factor: 50					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-39

General Chemistry

Lot-Sample #...: A9H240148-003 Work Order #...: D1NT0 Matrix.....: WATER
Date Sampled...: 08/20/99 12:00 Date Received..: 08/21/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	100	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
	Dilution Factor: 1					
Hardness, as CaCO3	6800	50	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 25					
Total Alkalinity	730	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
	Dilution Factor: 1					
Total Dissolved Solids	76000	500	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
	Dilution Factor: 50					
Total Organic Carbon	7	1	mg/L	MCAWW 415.1	08/30/99	92423
	Dilution Factor: 1					
Total Solids (Residue)	78000	500	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
	Dilution Factor: 50					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-4

General Chemistry

Lot-Sample #...: A9H240148-004 Work Order #...: D1NT1 Matrix.....: WATER
Date Sampled...: 08/20/99 12:10 Date Received..: 08/21/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	84.8	5.0	mg/L	MCAWW 410.4	08/26-08/27/99	9239145
	Dilution Factor: 1					
Hardness, as CaCO3	1400	50	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 25					
Total Alkalinity	700	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
	Dilution Factor: 1					
Total Dissolved Solids	4100	50	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
	Dilution Factor: 5					
Total Organic Carbon	10	1	mg/L	MCAWW 415.1	08/30/99	9242323
	Dilution Factor: 1					
Total Solids (Residue)	1800	40	mg/L	MCAWW 160.3	08/25/99	9238155
	Dilution Factor: 4					
Total Solids (Residue)	3900	~~10~~ 40	mg/L	MCAWW 160.3	09/23-09/24/99	9268123
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-5

General Chemistry

Lot-Sample #...: A9H240148-005 Work Order #...: D1NT2 Matrix.....: WATER
Date Sampled...: 08/20/99 12:30 Date Received..: 08/21/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	69.9	25.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 5					
Hardness, as CaCO3	8400	50	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 25					
Total Alkalinity	880	25	mg/L	MCAWW 310.1	08/26/99	9239136
	Dilution Factor: 5					
Total Dissolved Solids	15000	100	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
	Dilution Factor: 10					
Total Organic Carbon	6	1	mg/L	MCAWW 415.1	08/30/99	9242323
	Dilution Factor: 1					
Total Solids (Residue)	7500	40	mg/L	MCAWW 160.3	08/25/99	9238155
	Dilution Factor: 4					
Total Solids (Residue)	14000	~~10~~ 100	mg/L	MCAWW 160.3	09/23-09/24/99	9268123
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-30

General Chemistry

Lot-Sample #...: A9H240148-006 Work Order #...: D1NT8 Matrix.....: WATER
Date Sampled...: 08/20/99 13:30 Date Received..: 08/21/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	71.5	25.0	mg/L	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 5				
Hardness, as CaCO3	8500	50	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 25				
Total Alkalinity	79	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1				
Total Dissolved Solids	15000	100	mg/L	MCAWW 160.1	08/25-08/26/99	9238163
		Dilution Factor: 10				
Total Organic Carbon	8	1	mg/L	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1				
Total Solids (Residue)	16000	100	mg/L	MCAWW 160.3	08/26-08/27/99	9239286
		Dilution Factor: 10				

B. SDG H25128

Inorganic Analyses Support Documentation

Environmental Standards Project Name: Basf/Wyandott
Sample Collection Dates: 8/23-8/25/99
Job Number: 99010925
Project Manager: Kendra G
Laboratory: Quanterra

Reviewed By: Dina V
Approved By: K. Grega
Completion Date: 11/99

Applicable Sample No's.: ☐ Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab. Control No.
SDG H25128	

Deliverables: CLP ☑ like
Tier I ☐
Tier II ☐
Limited ☐
Other ____

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail						Problems Identified						Support Documentation Attachments					
	ICP or A.A Metals	Furnace Metals	Cold Vapor Mercury	Cyanide	Other Method(s) wet chem		ICP or A.A Metals	Furnace Metals	Cold Vapor Mercury	Cyanide	Other Method(s) wet chem		ICP or A.A Metals	Furnace Metals	Cold Vapor Mercury	Cyanide	Other Method(s) wet chem	
Holding Times	✓				✓						✓		✓				✓	
Blank Analysis Results	✓				✓								✓				✓	
Matrix Spike (Predigestion) Results	✓				✓						✓		✓				✓	
Duplicate Analysis Results ☑ Field ☑ Lab	✓				✓						✓		✓				✓	
Quantitation of Results	✓				✓													
Detection Limits / Sensitivity	✓				✓								✓				✓	
Initial Calibrations	✓				✓								✓				✓	
Continuing Calibrations	✓				✓								✓				✓	
Laboratory Control Standards (LCS)	✓				✓								✓					
ICP Linear Range Analysis	✓												✓					
ICP Interference Checks	✓												✓					
ICP Serial Dilutions	✓												✓					
ICP Post-Digestion Spike																		
GFAA Post-Digestion Spikes																		
GFAA Duplicate Injections																		
ICP Multiple Exposures	✓																	
GFAA Standard Additions																		
CRDL Standards	✓												✓					
Others:																		

Comments: Data is acceptable for use unless otherwise qualified

BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

	MATRIX (Aq., S)	BLANK TYPE (✓) METHOD ICB	METHOD CCB	METHOD PREP.	TRIP	EQUIPMENT	FIELD	BLANK SAMPLE NUMBER	CONTAMINANT	CONCENTRATION (units) mg/L	QUALIFICATION LIMIT FOR AQUEOUS SAMPLES (ug/L) 5x	QUALIFICATION LIMIT FOR SOLID SAMPLES (mg/Kg) 5x
ICP	Aq		/					CCB 5	calcium	0.125		
ICP	↓					/		ERB-1	none			
Wet Chem	↓		/	/				Method Blanks	none			

Aq. = Aqueous; S = Solid

Notes: _____

EVALUATION OF INORGANIC DUPLICATE ANALYSIS PRECISION

PRECISION OBJECTIVES		Compound > or = 5 X CRDL/MDL	Compound < 5 X CRDL/MDL
All Parameters	Aqueous	RPD < or = 20%	Difference < or = CRDL/MDL
	Solid	RPD < or = 40%	Difference < or = 2 X CRDL/MDL

Sample Identification #1: CMSMW-14S Units (enter one): ug/L, mg/l, ug/kg, or mg/kg

Sample Identification #2: CMSMW-39S UNITS: mg/L

H25128

ANALYTE	SAMPLE ANALYTE CONCENTRATION	Q	DUPLICATE SAMPLE ANALYTE CONCENTRATION	Q	RELATIVE PERCENT DIFFERENCE (RPD)	CRDL/MDL	NOTES
calcium	550.00		551.00		0	5.00	1,IN
COD	97.40		101.00		4	10.00	1,IN
hardness	1700.00		1800.00		6	20.00	1,IN
alkalinity	560.00		530.00		6	25.00	1,IN
TDS	2900.00		3000.00		3	20.00	1,IN
TOC	24.00		23.00		4	1.00	1,IN
total solids	4400.00		3100.00		35	20.00	1,J

NOTES:

1 - When both results are > or = 5 X CRDL/MDL, the acceptance limit is the relative percent difference must be < or = 20% for aqueous and air samples and must be < or = 40% for solid samples.

2 - When at least one of the results is < 5 X CRQL/MDL, the acceptance limit is the difference between the results must be < or = CRDL/MDL for aqueous and air samples and < or = 2 X CRDL/MDL for solid samples.

Q - The column in which the qualifier code is entered to indicate if the analyte was not-detected or qualitatively questionable in the sample.

U - The analyte was not-detected in the sample at or above the associated numerical value. The numerical value will be used for comparison purposes.

N.C. - The RPD was not calculated because one of the results was not-detected; the acceptance limit used is the difference between the results must be < or = CRDL/MDL for aqueous and air samples and < or = 2 X CRDL/MDL for solid samples.

J - The positive results should be considered estimated.

U*/B - The result should be considered "not-detected" (U*) or qualitatively questionable (B) due to blank contamination. The numerical value will be used for comparison purposes.

IN - The results are acceptable.

Comments:

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab.Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _ ___ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

only L-3 reported for this run

9/16/99

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium	25000.0	25031.05	100.1	50000.0	50581.82	101.2	508[illegible]8.51	101.6	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	51241.51	102.5	50399.47	100.8	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium__				_50000.0	49969.78	_99.9	50093.89	100.2	P_

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	49548.31	99.1	49498.73	99.0	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

9/13/99

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium	25000.0	25261.77	101.0	50000.0	51168.17	102.3	51167.27	102.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	53002.03	106.0	52501.30	105.0	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	51578.27	103.2	52861.73	105.7	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	53091.80	106.2	53007.90	106.0	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	52554.07	105.1	52771.50	105.5	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Initial Calibration Source: HPS/ULTRA___

Continuing Calibration Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Calcium				50000.0	52767.00	105.5	51897.23	103.8	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110

Elem	Co	Cr	Cu	Fe	Mg	Mn	Mo
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.5959	.4427	.7963	-22.41	31.15	.5249	3.527
SDev	.1749	.3452	.2241	1.15	9.04	.1628	.605
%RSD	29.35	77.97	28.14	5.112	29.01	31.02	17.14
#1	.7195	.6868	.9548	-21.60	37.54	.6401	3.955
#2	.4722	.1986	.6379	-23.22	24.76	.4098	3.100
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Range	20.00	5.000	10.00	50.00	5000.	10.00	10.00

Elem	Ni	Se	Pb	Sb	Tl	V	Zn
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.407	.20893	-.22456	1.0704	3.4987	.5305	.7654
SDev	.001	.02728	.39036	.7186	.0267	.1865	.0843
%RSD	.0849	13.059	173.84	67.134	.76260	35.17	11.01
#1	1.407	.18964	-.50058	1.5786	3.5176	.3986	.7058
#2	1.408	.22822	.05147	.56229	3.4799	.6624	.8250
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	.0000	.00000	.00000	.00000	.00000	.0000	.0000
Range	40.00	5.0000	3.0000	5.0000	10.000	20.00	20.00

Elem	2068/2	2068/1	1960\1	1960\2	2203\1	2203\2	Y_3710
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.3398	.93594	1.0938	-.23283	.50209	-.58733	5.0000
SDev	.1562	.99940	1.8433	.87936	.46841	.81910	.0000
%RSD	11.661	106.78	168.53	377.68	93.293	139.46	.00001
#1	1.4503	1.6426	-.20963	.38897	.83330	-1.1665	5.0000
#2	1.2293	.22926	2.3972	-.85463	.17087	-.00814	5.0000
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

IntStd	1	2	3	4	5	6	7
Mode	Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	371.030	--	--	--	--	--	--
Avge	19179	--	--	--	--	--	--
SDev	15.83947	--	--	--	--	--	--
%RSD	.0825876	--	--	--	--	--	--
#1	19190	--	--	--	--	--	--
#2	19168	--	--	--	--	--	--

Method: INTSTD Sample Name: CRI Operator: MJC
Run Time: 09/08/99 11:59:39
Comment:
Mode: CONC Corr. Factor: 1

99%

Elem	Ag	Al	As	Ba	Be	Ca	Cd
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	9.529	113.7	9.5739	20.32	9.854	9869.	2.175
SDev	.188	3.1	1.3332	.16	.103	41.	.008
%RSD	1.976	2.762	13.925	.8086	1.048	.4182	.3503
#1	9.662	115.9	8.6312	20.43	9.927	9898.	2.169
#2	9.396	111.4	10.517	20.20	9.781	9839.	2.180
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	10.00	100.0	10.000	20.00	10.00	10000.	2.000
Range	50.00	50.00	50.000	50.00	50.00	50.00	50.00

Elem	Co	Cr	Cu	Fe	Mg	Mn	Mo
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	40.50	9.932	20.17	82.44	9443.	21.11	20.45
SDev	.10	.168	.12	2.80	47.	.10	.70
%RSD	.2446	1.693	.6017	3.400	.4998	.4894	3.427
#1	40.57	10.05	20.25	80.45	9477.	21.18	20.95
#2	40.43	9.813	20.08	84.42	9410.	21.03	19.96
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	40.00	10.00	20.00	100.0	10000.	20.00	20.00
Range	50.00	50.00	50.00	50.00	50.00	50.00	50.00

Elem	Ni	Se	Pb	Sb	Tl	V	Zn
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	81.51	9.8592	6.1992	9.5243	19.294	39.32	40.92
SDev	.54	1.1918	.4202	.1091	.740	.06	.17
%RSD	.6666	12.088	6.7786	1.1451	3.8378	.1652	.4065
#1	81.90	10.702	6.4964	9.4471	18.770	39.37	41.04
#2	81.13	9.0165	5.9021	9.6014	19.817	39.27	40.80
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	80.00	10.000	6.0000	10.000	20.000	40.00	40.00
Range	50.00	50.000	50.000	50.000	50.000	50.00	50.00

Elem	2068/2	2068/1	1960\1	1960\2	2203\1	2203\2	Y_3710
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	9.9805	9.2965	9.7706	9.9034	5.2588	6.6688	5.0000
SDev	.1251	.2260	1.3110	2.4413	1.6578	.1976	.0000
%RSD	1.2539	2.4309	13.418	24.651	31.524	2.9636	.00000
#1	10.069	9.1367	8.8435	11.630	6.4311	6.5290	5.0000
#2	9.8921	9.4563	10.698	8.1772	4.0866	6.8085	5.0000
Errors	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Value							
Range							

AutStd	1	2	3	4	5	6	7
Mode	Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	371.030	--	--	--	--	--	--

Identity 1: CRI Identity 2: 10:54 AM September 13, 1999
Task name : 140423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Sr (ppm)	Zn (ppm)	Ba (ppm)	2Fe (ppm)	Mg (ppm)	Sn (ppm)	Ti (ppm)	As (ppm)
Mean	0.100	0.032	0.019	0.041	9.774	0.248	3.790	0.593
S.D.	0.000	0.001	0.000	0.022	0.030	0.002	0.087	0.014
% R.S.D.	0.430	3.473	0.365	53.131	0.302	0.788	2.295	2.406

	V (ppm)	Na (ppm)	Mo (ppm)	Se (ppm)	Al (ppm)	Sb (ppm)	Be (ppm)	Ca (ppm)
Mean	0.101	9.589	0.084	0.459	0.408	0.110	0.010	10.107
S.D.	0.001	0.114	0.004	0.033	0.001	0.008	0.000	0.047
% R.S.D.	0.833	1.192	4.997	7.259	0.354	7.332	0.437	0.461

101/.

	Cd (ppm)	Cu (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Co (ppm)	Ni (ppm)	K (ppm)
Mean	0.011	0.020	0.019	0.232	0.098	0.106	0.078	9.353
S.D.	0.000	0.000	0.000	0.003	0.000	0.006	0.004	0.041
% R.S.D.	3.292	0.515	1.887	1.116	0.282	5.321	5.798	0.441

	Mn (ppm)	Fe (ppm)	Cr (ppm)	B (ppm)
Mean	0.020	0.078	0.023	0.427
S.D.	0.000	0.001	0.003	0.004
% R.S.D.	2.236	1.259	14.444	0.920

Identity 1: SCAL Identity 2: 10:57 AM September 13, 1999
Task name : 140423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

Analyte	Channel		Corrected	Counts
Sr	1	873.756	875.025	881.034
Zn	2	176.780	177.520	178.126
Ba	3	161.103	161.428	162.550
2Fe	5	47.453	47.529	47.907
Mg	6	102.504	102.717	103.368
Sn	7	12.719	12.787	12.945
Ti	8	3.102	3.087	3.124
As	9	9.670	9.788	9.859
V	10	72.359	72.502	73.020
Na	11	1.603	1.604	1.620
Mo	12	53.204	53.499	53.645
Se	13	3.734	3.785	3.848
Al	14	39.925	40.022	40.239
Sb	15	12.078	12.083	12.120
Be	16	220.653	220.966	223.164
Ca	17	73.542	73.634	74.187
Cd	18	70.734	70.815	71.357

U.S. EPA - CLP

3
BLANKS

Lab Name: QUANTERRA_INC. Client: 2508

Lab Code: QESOH_ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

9/8/99

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Calcium	31.3	B	59.9	B	57.4	B	23.2	U			P

FORM III - IN

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium			23.2	U	23.2	U	23.2	U			P

U.S. EPA - CLP

3
BLANKS

Lab Name: QUANTERRA_INC. Client: 2508

Lab Code: QESOH_ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Calcium			23.2	U	35.4	B					P

FORM III - IN

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____ 9/13/99

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium	23.2	U	23.2	U	23.2	U	55.0	B			P

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium			72.6	B	125.0	B	23.2	U			P

J no mark

3
BLANKS

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Calcium			64.1	B	30.7	B	-119.5	B			P

no impact

U.S. EPA - CLP

3
BLANKS

Lab Name: QUANTERRA_INC. Client: 2508

Lab Code: QESOH_ SDG No.: H25128

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Calcium			-75.3	B	-72.2	B	-111.0	B			P

FORM III - IN

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A9I030000-193 **Prep Batch #...:** 9246193						
Calcium	ND	5.0	mg/L	SW846 6010A	09/07-09/13/99	D23V910
	Dilution Factor: 1					

NOTE(S):

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

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A9I030000-193 **Prep Batch #...:** 9246193						
Calcium	ND	5.0	mg/L	SW846 6010A	09/07-09/13/99	D23V910
	Dilution Factor: 1					

NOTE(S):

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

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A9I030000-193 **Prep Batch #...:** 9246193						
Calcium	ND	5.0	mg/L	SW846 6010A	09/07-09/13/99	D23V9101
	Dilution Factor: 1					

NOTE(S):

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

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: TRACE\I5____ ICS Source: HPS/ULTRA___

Concentration Units: ug/L 9/8/99

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Calcium__	500000	_500000	_553078	_556338.1	111.3	_554421	_559079.1	111.8

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: TRACE\I5____ ICS Source: HPS/ULTRA___

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Calcium__	500000	_500000				_542861	_538763.6	107.8

4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: ARL\I4_____ ICS Source: HPS/ULTRA___

Concentration Units: ug/L 9/13/99

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Calcium	500000	500000	486116	486189.6	97.2	498460	496862.9	99.4

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-001 **Prep Batch #...:** 9246193									
Calcium									
	556	50.0	433	mg/L			SW846 6010A	09/07-09/13/99	D1PVN1
				Qualifiers: NC,MSB					
	556	50.0	436	mg/L			SW846 6010A	09/07-09/13/99	D1PVN1C
				Qualifiers: NC,MSB					
				Dilution Factor: 1					

↑ >4x spike level

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-003 **Prep Batch #...:** 9246193									
Calcium									
	640	50.0	690	mg/L			SW846 6010A	09/07-09/13/99	D1PWC10
				Qualifiers: NC,MSB					
	640	50.0	688	mg/L			SW846 6010A	09/07-09/13/99	D1PWC10
				Qualifiers: NC,MSB					
				Dilution Factor: 1					

↑ >4x spike level

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-001 **Prep Batch #...:** 9246193							
Calcium	NC,MSB	(80 - 120)			SW846 6010A	09/07-09/13/99	D1PVN10R
	NC,MSB	(80 - 120)		(0-20)	SW846 6010A	09/07-09/13/99	D1PVN10T
		Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-003 **Prep Batch #...:** 9246193							
Calcium	NC,MSB	(80 - 120)			SW846 6010A	09/07-09/13/99	D1PWC10K
	NC,MSB	(80 - 120)		(0-20)	SW846 6010A	09/07-09/13/99	D1PWC10L
		Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-001 **Prep Batch #...:** 9246193									
Calcium									
	556	50.0	433	mg/L			SW846 6010A	09/07-09/13/99	D1PVN1(
				Qualifiers: NC,MSB					
	556	50.0	436	mg/L			SW846 6010A	09/07-09/13/99	D1PVN1(
				Qualifiers: NC,MSB					
				Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-003 **Prep Batch #...:** 9246193									
Calcium									
	640	50.0	690	mg/L			SW846 6010A	09/07-09/13/99	D1PWC1(
				Qualifiers: NC,MSB					
	640	50.0	688	mg/L			SW846 6010A	09/07-09/13/99	D1PWC1(
				Qualifiers: NC,MSB					
				Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER

Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-001 **Prep Batch #...:** 9246193							
Calcium	NC,MSB	(80 - 120)			SW846 6010A	09/07-09/13/99	D1PVN10R
	NC,MSB	(80 - 120)		(0-20)	SW846 6010A	09/07-09/13/99	D1PVN10T

Dilution Factor: 1

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-003 **Prep Batch #...:** 9246193							
Calcium	NC,MSB	(80 - 120)			SW846 6010A	09/07-09/13/99	D1PWC10K
	NC,MSB	(80 - 120)		(0-20)	SW846 6010A	09/07-09/13/99	D1PWC10L
		Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-001 **Prep Batch #...:** 9246193									
Calcium									
	556	50.0	433	mg/L			SW846 6010A	09/07-09/13/99	D1PVN10
				Qualifiers: NC,MSB					
	556	50.0	436	mg/L			SW846 6010A	09/07-09/13/99	D1PVN10
				Qualifiers: NC,MSB					
			Dilution Factor: 1						

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-003 **Prep Batch #...:** 9246193									
Calcium									
	640	50.0	690	mg/L			SW846 6010A	09/07-09/13/99	D1PWC10
				Qualifiers: NC,MSB					
	640	50.0	688	mg/L			SW846 6010A	09/07-09/13/99	D1PWC10
				Qualifiers: NC,MSB					
			Dilution Factor: 1						

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER
Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-001 **Prep Batch #...:** 9246193							
Calcium	NC,MSB	(80 - 120)			SW846 6010A	09/07-09/13/99	D1PVN10R
	NC,MSB	(80 - 120)		(0-20)	SW846 6010A	09/07-09/13/99	D1PVN10T
		Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A9H250128-003 **Prep Batch #...:** 9246193							
Calcium	NC,MSB	(80 - 120)			SW846 6010A	09/07-09/13/99	D1PWC10K
	NC,MSB	(80 - 120)		(0-20)	SW846 6010A	09/07-09/13/99	D1PWC10L
		Dilution Factor: 1					

NOTE(S):

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

NC The recovery and/or RPD were not calculated.

MSB The recovery and RPD were not calculated because the sample amount was greater than four times the spike amount.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9I030000-193 **Prep Batch #...:** 9246193							
Calcium	50.0	52.2	mg/L	104	SW846 6010A	09/07-09/08/99	D23V9102
		Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9I030000-193 **Prep Batch #...:** 9246193					
Calcium	104	(86 - 109)	SW846 6010A	09/07-09/08/99	D23V9102
	Dilution Factor: 1				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9I030000-193 **Prep Batch #...:** 9246193							
Calcium	50.0	52.2	mg/L	104	SW846 6010A	09/07-09/08/99	D23V9102
Dilution Factor: 1							

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H260105 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9I030000-193 **Prep Batch #...:** 9246193					
Calcium	104	(86 - 109)	SW846 6010A	09/07-09/08/99	D23V9102
	Dilution Factor: 1				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9I030000-193 **Prep Batch #...:** 9246193							
Calcium	50.0	52.2	mg/L	104	SW846 6010A	09/07-09/08/99	D23V9102
Dilution Factor: 1							

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A9H270119 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A9I030000-193 **Prep Batch #...:** 9246193					
Calcium	104	(86 - 109)	SW846 6010A	09/07-09/08/99	D23V9102
	Dilution Factor: 1				

NOTE(S):

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

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

CMSMW-39SL

Lab Name: QUANTERRA_INC. Client: 2508

Lab Code: QESOH SDG No.: H25128

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Calcium	550810.43		547842.00		0.5		P

10
Instrument Detection Limits (Quarterly)

Lab Name: QUANTERRA_INC._____ Client: 2508_____
Lab Code: QESOH_ _____ SDG No.: H25128
ICP ID Number: TRACE\I5____ Date: 05/21/99
Flame AA ID Number : _____
Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Calcium	317.90		5000	12.6	P

Comments:

10

Instrument Detection Limits (Quarterly)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: ARL\I4_____ Date: 05/17/99

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Calcium	317.93		5000	23.2	P

Comments:

FORM X - IN

U.S. EPA - CLP

11A
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: TRACE\I5____ Date: 05/14/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	CR_
Calcium__	_317.90__	_0.0000000	_0.0000000_	_0.0000000	_0.0000000	_0.0000000

Comments:

FORM XI (Part 1) - IN

U.S. EPA - CLP

11B
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: TRACE\I5____ Date: 05/14/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : CU_	MN_	MO_	NI_	V__
Calcium__	_317.90__	_0.0000000	_0.0000000_	_0.0000000	_0.0000000	_0.0000000

Comments:

FORM XI (Part 2) - IN

U.S. EPA - CLP

11A
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: ARL\I4_____ Date: 04/21/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	CO_
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

FORM XI (Part 1) - IN

11B
ICP Interelement Correction Factors (Annually)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: ARL\I4_____ Date: 04/21/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : CR_	CU_	MO_	NI_	Q__
Calcium__	_317.93__	_0.0000000	_0.0000000_	_0.0000000	_0.0000000	_0.0000000

Comments:

U.S. EPA - CLP

11B
ICP Interelement Correction Factors (Annually)

Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: ARL\I4_____ Date: 04/21/99

Analyte	Wave-length (nm)	Interelement Correction Factors for : SB_	SN_	TI_	TL_	V__
Calcium__	_317.93__	_0.0000000	_0.0000000_	_0.0000000	_0.0000000	_0.0000000

Comments:

FORM XI (Part 2) - IN

U.S. EPA - CLP

12
ICP Linear Ranges (Quarterly)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: TRACE\I5____ Date: 05/18/99

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Calcium		550000.0	P

Comments:

U.S. EPA - CLP

12
ICP Linear Ranges (Quarterly)

Lab Name: QUANTERRA_INC._____ Client: 2508_____

Lab Code: QESOH_ _____ _____ SDG No.: H25128

ICP ID Number: ARL\I4_____ Date: 05/13/99

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Calcium	5.00	1000000.0	P

Comments:

Analyzed Run Log 1 of Page 15

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	STD1-Blank	I50908A	INTSTD	09/08/99	11:36		X	IR
2	CALSTD	I50908A	INTSTD	09/08/99	11:41		X	IR
3	CAL 2	I50908A	INTSTD	09/08/99	11:46		X	IR
4	ICV	I50908A	INTSTD	09/08/99	11:49	MJC	Q	CONC
5	ICB	I50908A	INTSTD	09/08/99	11:54	MJC	Q	CONC
6	CRI	I50908A	INTSTD	09/08/99	11:59	MJC	Q	CONC
7	CALSTD	I50908A	INTSTD	09/08/99	12:04	MJC	Q	CONC
8	CAL 2	I50908A	INTSTD	09/08/99	12:09	MJC	Q	CONC
9	ICSA	I50908A	INTSTD	09/08/99	12:14	MJC	Q	CONC
10	ICSAB	I50908A	INTSTD	09/08/99	12:19	MJC	Q	CONC
11	CCV	I50908A	INTSTD	09/08/99	12:25	MJC	Q	CONC
12	CCB	I50908A	INTSTD	09/08/99	12:32	MJC	Q	CONC
13	D25T5B 9250184	I50908A	INTSTD	09/08/99	12:37	MJC	S	CONC
14	D25T5C	I50908A	INTSTD	09/08/99	12:42	MJC	S	CONC
15	D1XXN	I50908A	INTSTD	09/08/99	12:48	MJC	S	CONC
16	D1XXNS	I50908A	INTSTD	09/08/99	12:53	MJC	S	CONC
17	D1XXND	I50908A	INTSTD	09/08/99	12:58	MJC	S	CONC
18	D2006	I50908A	INTSTD	09/08/99	13:04	MJC	S	CONC
19	D2008	I50908A	INTSTD	09/08/99	13:09	MJC	S	CONC
20	D2008L	I50908A	INTSTD	09/08/99	13:14	MJC	S	CONC
21	ICSA	I50908A	INTSTD	09/08/99	13:21	MJC	Q	CONC
22	ICSAB	I50908A	INTSTD	09/08/99	13:26	MJC	Q	CONC
23	CCV	I50908A	INTSTD	09/08/99	13:31	MJC	Q	CONC
24	CCB QC	I50908A	INTSTD	09/08/99	13:38	MJC	Q	CONC
25	D23V9B 9246193	I50908A	INTSTD	09/08/99	14:04	MJC	S	CONC
26	D23V9C	I50908A	INTSTD	09/08/99	14:09	MJC	S	CONC
27	D1XGK	I50908A	INTSTD	09/08/99	14:15	MJC	S	CONC
28	D1XGKL	I50908A	INTSTD	09/08/99	14:20	MJC	S	CONC
29	D1PVN-	I50908A	INTSTD	09/08/99	14:25	MJC	S	CONC
30	D1PVNS-	I50908A	INTSTD	09/08/99	14:30	MJC	S	CONC
31	D1PVND-	I50908A	INTSTD	09/08/99	14:35	MJC	S	CONC
32	D1N3KB 9235318	I50908A	INTSTD	09/08/99	14:54	MJC	S	CONC
33	D1N3KC	I50908A	INTSTD	09/08/99	14:59	MJC	S	CONC
34	D172F	I50908A	INTSTD	09/08/99	15:05	MJC	S	CONC
35	CCV	I50908A	INTSTD	09/08/99	15:10	MJC	Q	CONC
36	CCB	I50908A	INTSTD	09/08/99	15:17	MJC	Q	CONC
37	D172FL	I50908A	INTSTD	09/08/99	15:22	MJC	S	CONC
38	D172FS	I50908A	INTSTD	09/08/99	15:27	MJC	S	CONC
39	D172FD	I50908A	INTSTD	09/08/99	15:32	MJC	S	CONC
40	D173L	I50908A	INTSTD	09/08/99	15:38	MJC	S	CONC
41	D173R	I50908A	INTSTD	09/08/99	15:43	MJC	S	CONC
42	D1740	I50908A	INTSTD	09/08/99	15:48	MJC	S	CONC
43	D1743	I50908A	INTSTD	09/08/99	15:53	MJC	S	CONC
44	D1745	I50908A	INTSTD	09/08/99	15:58	MJC	S	CONC
45	D26GJB 9251105	I50908A	INTSTD	09/08/99	16:04	MJC	S	CONC
46	D26GJC	I50908A	INTSTD	09/08/99	16:09	MJC	S	CONC
47	CCV	I50908A	INTSTD	09/08/99	16:15	MJC	Q	CONC
48	CCB	I50908A	INTSTD	09/08/99	16:21	MJC	Q	CONC
49	D1XG2	I50908A	INTSTD	09/08/99	16:26	MJC	S	CONC
50	D1XG2S	I50908A	INTSTD	09/08/99	16:31	MJC	S	CONC
51	D1XG2D	I50908A	INTSTD	09/08/99	16:36	MJC	S	CONC
52	D1XG8	I50908A	INTSTD	09/08/99	16:42	MJC	S	CONC
53	D1XG8L	I50908A	INTSTD	09/08/99	16:47	MJC	S	CONC

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#	Sample Name	File	Method	Date	Time	Oprtr	Type	Mode
54	D1XG9	I50908A	INTSTD	09/08/99	16:52	MJC	S	CONC
55	D1XGA	I50908A	INTSTD	09/08/99	16:57	MJC	S	CONC
56	D1XGC	I50908A	INTSTD	09/08/99	17:17	MJC	S	CONC
57	D1XGD	I50908A	INTSTD	09/08/99	17:22	MJC	S	CONC
58	D1XGE	I50908A	INTSTD	09/08/99	17:27	MJC	S	CONC
59	CCV	I50908A	INTSTD	09/08/99	17:32	MJC	Q	CONC
60	CCB	I50908A	INTSTD	09/08/99	17:38	MJC	Q	CONC
61	D1XGF	I50908A	INTSTD	09/08/99	17:43	MJC	S	CONC
62	D1XGG	I50908A	INTSTD	09/08/99	17:48	MJC	S	CONC
63	D1XGH	I50908A	INTSTD	09/08/99	17:53	MJC	S	CONC
64	D1XGJ	I50908A	INTSTD	09/08/99	17:58	MJC	S	CONC
65	CCV	I50908A	INTSTD	09/08/99	18:04	MJC	Q	CONC
66	CCB	I50908A	INTSTD	09/08/99	18:10	MJC	Q	CONC
67	D1MH9BE 9235111	I50908A	INTSTD	09/08/99	18:15	MJC	S	CONC
68	D1MH9CE	I50908A	INTSTD	09/08/99	18:20	MJC	S	CONC
69	D1K3MBE	I50908A	INTSTD	09/08/99	18:26	MJC	S	CONC
70	D16G2E	I50908A	INTSTD	09/08/99	18:31	MJC	S	CONC
71	D16G2EL	I50908A	INTSTD	09/08/99	18:36	MJC	S	CONC
72	D16G9E	I50908A	INTSTD	09/08/99	18:41	MJC	S	CONC
73	D16GVE	I50908A	INTSTD	09/08/99	18:46	MJC	S	CONC
74	D16GXE	I50908A	INTSTD	09/08/99	18:51	MJC	S	CONC
75	D16H1E	I50908A	INTSTD	09/08/99	18:56	MJC	S	CONC
76	D16H5E	I50908A	INTSTD	09/08/99	19:01	MJC	S	CONC
77	CCV	I50908A	INTSTD	09/08/99	19:06	MJC	Q	CONC
78	CCB	I50908A	INTSTD	09/08/99	19:13	MJC	Q	CONC
79	D16H9E	I50908A	INTSTD	09/08/99	19:18	MJC	S	CONC
80	D16HCE	I50908A	INTSTD	09/08/99	19:23	MJC	S	CONC
81	D16HGE	I50908A	INTSTD	09/08/99	19:28	MJC	S	CONC
82	D16HME	I50908A	INTSTD	09/08/99	19:33	MJC	S	CONC
83	D16HPE	I50908A	INTSTD	09/08/99	19:38	MJC	S	CONC
84	D16HPSE/5	I50908A	INTSTD	09/08/99	19:43	MJC	S	CONC
85	D16HPDE/5	I50908A	INTSTD	09/08/99	19:48	MJC	S	CONC
86	D16HWE	I50908A	INTSTD	09/08/99	19:54	MJC	S	CONC
87	D16J1E	I50908A	INTSTD	09/08/99	19:59	MJC	S	CONC
88	ICSA	I50908A	INTSTD	09/08/99	20:06	MJC	Q	CONC
89	ICSAB	I50908A	INTSTD	09/08/99	20:11	MJC	Q	CONC
90	CCV	I50908A	INTSTD	09/08/99	20:16	MJC	Q	CONC
91	CCB	I50908A	INTSTD	09/08/99	20:22	MJC	Q	CONC
92	D23W2B 9246217	I50908A	INTSTD	09/08/99	20:30	MJC	S	CONC
93	D23W2C	I50908A	INTSTD	09/08/99	20:35	MJC	S	CONC
94	D1DFF	I50908A	INTSTD	09/08/99	20:41	MJC	S	CONC
95	D1DFG	I50908A	INTSTD	09/08/99	20:46	MJC	S	CONC
96	D1VWG	I50908A	INTSTD	09/08/99	20:51	MJC	S	CONC
97	D1VWH	I50908A	INTSTD	09/08/99	20:56	MJC	S	CONC
98	D1VWJ	I50908A	INTSTD	09/08/99	21:01	MJC	S	CONC
99	D1VWL	I50908A	INTSTD	09/08/99	21:06	MJC	S	CONC
100	D1VWQ	I50908A	INTSTD	09/08/99	21:11	MJC	S	CONC
101	D1VWR	I50908A	INTSTD	09/08/99	21:16	MJC	S	CONC
102	CCV	I50908A	INTSTD	09/08/99	21:21	MJC	Q	CONC
103	CCB	I50908A	INTSTD	09/08/99	21:28	MJC	Q	CONC
104	D1X38	I50908A	INTSTD	09/08/99	21:33	MJC	S	CONC
105	D1X38S	I50908A	INTSTD	09/08/99	21:38	MJC	S	CONC
106	D1X38D	I50908A	INTSTD	09/08/99	21:43	MJC	S	CONC
107	D1X3H	I50908A	INTSTD	09/08/99	21:49	MJC	S	CONC

take batch from previous run

Rerun

NOT NEEDED SL 9-21-99

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Analysis Run Log ARL ICP I4

: Instrument Upload Run Log - Page 1 :
: Started Mon Sep 13 18:00:34 1999 by OMEARAP :
: Data File: UPL$CAN_DATA_ROOT:<ARL>I40913A.DAT;1 :

So
Scal
Scal2

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
1	ICV	1.0	13-SEP-1999	10:50:00			I4
2	ICB	1.0	13-SEP-1999	10:52:00			I4
3	ICB	1.0	13-SEP-1999	10:53:00			I4
4	CRI	1.0	13-SEP-1999	10:55:00			I4
5	SCAL	1.0	13-SEP-1999	10:58:00			I4
6	SCAL2	1.0	13-SEP-1999	11:00:00			I4
7	ICSA	1.0	13-SEP-1999	11:00:00			I4
8	ICSAB	1.0	13-SEP-1999	11:00:00			I4
9	CCV 990914 kk	1.0	13-SEP-1999	11:00:00			I4
10	~~ICB~~CCB	1.0	13-SEP-1999	11:18:00			I4
11	D29LGB	1.0	13-SEP-1999	11:22:00	9253117	A9I100000	I4
12	D29LGC	1.0	13-SEP-1999	11:28:00	9253117	A9I100000	I4
13	D24F3	1.0	13-SEP-1999	11:31:00	9253117	A9I030214	I4
14	D24F3S	1.0	13-SEP-1999	11:34:00	9253117	A9I030214	I4
15	D24F3D	1.0	13-SEP-1999	11:37:00	9253117	A9I030214	I4
16	D24FK	1.0	13-SEP-1999	11:40:00	9253117	A9I030214	I4
17	D24FKL	1.0	13-SEP-1999	11:44:00			I4
18	D24FP	1.0	13-SEP-1999	11:47:00	9253117	A9I030214	I4
19	D1PNX	1.0	13-SEP-1999	11:52:00	9252119	A9H250101	I4
20	CCV	1.0	13-SEP-1999	11:54:00			I4
21	CCB	1.0	13-SEP-1999	11:57:00			I4
22	D1PNT	1.0	13-SEP-1999	12:00:00	9252119	A9H250101	I4
23	D1R9C	1.0	13-SEP-1999	12:00:00	9252122	A9H260181	I4
24	D1R9A	1.0	13-SEP-1999	12:00:00	9252122	A9H260181	I4
25	D22X9B	1.0	13-SEP-1999	12:12:00	9245320	A9I020000	I4
26	D22X9C	1.0	13-SEP-1999	12:15:00	9245320	A9I020000	I4
27	D1VVQ	1.0	13-SEP-1999	12:18:00	9245320	A9H290102	I4
28	D1VVQS	1.0	13-SEP-1999	12:21:00	9245320	A9H290102	I4
29	D1VVQD	1.0	13-SEP-1999	12:25:00	9245320	A9H290102	I4
30	D1VVQF	1.0	13-SEP-1999	12:29:00	9245320	A9H290102	I4
31	CCV	1.0	13-SEP-1999	12:33:00			I4
32	CCB	1.0	13-SEP-1999	12:36:00			I4
33	D1VVR	1.0	13-SEP-1999	12:39:00	9245320	A9H290102	I4
34	D1VVRL	1.0	13-SEP-1999	12:42:00			I4
35	D1VVRF	1.0	13-SEP-1999	12:45:00	9245320	A9H290102	I4
36	D1VVT	1.0	13-SEP-1999	12:47:00	9245320	A9H290102	I4
37	D1VVTF	1.0	13-SEP-1999	12:50:00	9245320	A9H290102	I4
38	D1VVV	1.0	13-SEP-1999	12:52:00	9245320	A9H290102	I4
39	D1VVVF	1.0	13-SEP-1999	12:55:00	9245320	A9H290102	I4
40	D1VVW	1.0	13-SEP-1999	12:57:00	9245320	A9H290102	I4
41	D1VVWF	1.0	13-SEP-1999	12:59:00	9245320	A9H290102	I4
42	CCV	1.0	13-SEP-1999	13:00:00			I4
43	CCB	1.0	13-SEP-1999	13:00:00			I4
44	D1VVX	1.0	13-SEP-1999	13:00:00	9245320	A9H290102	I4

(continued)

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
45	D1VVXF	1.0	13-SEP-1999	13:10:00	9245320	A9H290102	I4
46	D1VW0	1.0	13-SEP-1999	13:12:00	9245320	A9H290102	I4
47	D1VW0F	1.0	13-SEP-1999	13:15:00	9245320	A9H290102	I4
48	D1VW1	1.0	13-SEP-1999	13:18:00	9245320	A9H290102	I4
49	D1VW1F	1.0	13-SEP-1999	13:21:00	9245320	A9H290102	I4
50	D1VW2	1.0	13-SEP-1999	13:27:00	9245320	A9H290102	I4
51	D1VW2F	1.0	13-SEP-1999	13:30:00	9245320	A9H290102	I4
52	D1VW3	1.0	13-SEP-1999	13:33:00	9245320	A9H290102	I4
53	D1VW3F	1.0	13-SEP-1999	13:35:00	9245320	A9H290102	I4
54	CCV	1.0	13-SEP-1999	13:41:00			I4
55	CCB	1.0	13-SEP-1999	13:44:00			I4
56	D2370	1.0	13-SEP-1999	13:48:00	9251111	A9I020232	I4
57	D2370F	1.0	13-SEP-1999	13:52:00	9251111	A9I020232	I4
58	D1N3KB	1.0	13-SEP-1999	13:55:00	9235318	A9H230000	I4
59	D1N3KC	1.0	13-SEP-1999	14:00:00	9235318	A9H230000	I4
60	D172F	1.0	13-SEP-1999	14:00:00	9235318	BR124	I4
61	D172FL	1.0	13-SEP-1999	14:00:00			I4
62	D172FS	1.0	13-SEP-1999	14:11:00	9235318	BR124	I4
63	D172FD	1.0	13-SEP-1999	14:14:00	9235318	BR124	I4
64	D173L	1.0	13-SEP-1999	14:16:00	9235318	BR124	I4
65	D173R	1.0	13-SEP-1999	14:19:00	9235318	BR124	I4
66	CCV	1.0	13-SEP-1999	14:23:00			I4
67	CCB	1.0	13-SEP-1999	14:26:00			I4
68	D1740	1.0	13-SEP-1999	14:29:00	9235318	BR124	I4
69	D1743	1.0	13-SEP-1999	14:32:00	9235318	BR124	I4
70	D1745	1.0	13-SEP-1999	14:35:00	9235318	BR124	I4
71	D1XP9B	1.0	13-SEP-1999	14:44:00	9243281	A9H310000	I4
72	D1XP9C	1.0	13-SEP-1999	14:47:00	9243281	A9H310000	I4
73	D1ARX	1.0	13-SEP-1999	14:55:00	9243281	A9H130202	I4
74	D1ARXS	1.0	13-SEP-1999	14:58:00	9243281	A9H130202	I4
75	D1ARXD	1.0	13-SEP-1999	15:00:00	9243281	A9H130202	I4
76	D1AT7	1.0	13-SEP-1999	15:00:00	9243281	A9H130202	I4
77	D1AT7L	1.0	13-SEP-1999	15:00:00			I4
78	CCV	1.0	13-SEP-1999	15:10:00			I4
79	CCB	1.0	13-SEP-1999	15:13:00			I4
80	D1ATA	1.0	13-SEP-1999	15:16:00	9243281	A9H130202	I4
81	D1ATC	1.0	13-SEP-1999	15:19:00	9243281	A9H130202	I4
82	D1ATD	1.0	13-SEP-1999	15:34:00	9243281	A9H130202	I4
83	D1ATE	1.0	13-SEP-1999	15:36:00	9243281	A9H130202	I4
84	D1ATF	1.0	13-SEP-1999	15:39:00	9243281	A9H130202	I4
85	D1ATH	1.0	13-SEP-1999	15:42:00	9243281	A9H130202	I4
86	D1ATJ	1.0	13-SEP-1999	15:44:00	9243281	A9H130202	I4
87	D1ATK	1.0	13-SEP-1999	15:47:00	9243281	A9H130202	I4
88	D1ATL	1.0	13-SEP-1999	15:50:00	9243281	A9H130202	I4

(continued)

: Instrument Upload Run Log - Page 3 :
: Started Mon Sep 13 18:00:35 1999 by OMEARAP :
: Data File: UPL$CAN_DATA_ROOT:<ARL>I40913A.DAT;1 :

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
89	D1ATM	1.0	13-SEP-1999	15:53:00	9243281	A9H130202	I4
90	CCV	1.0	13-SEP-1999	15:56:00			I4
91	CCB	1.0	13-SEP-1999	15:59:00			I4
92	D1CNK	1.0	13-SEP-1999	16:00:00	9243281	A9H140124	I4
93	D1CNL	1.0	13-SEP-1999	16:00:00	9243281	A9H140124	I4
94	D1CNM	1.0	13-SEP-1999	16:11:00	9243281	A9H140124	I4
95	D1CNN	1.0	13-SEP-1999	16:13:00	9243281	A9H140124	I4
96	D1CNP	1.0	13-SEP-1999	16:16:00	9243281	A9H140124	I4
97	D1CNT	1.0	13-SEP-1999	16:18:00	9243281	A9H140124	I4
98	D23V9B	1.0	13-SEP-1999	16:22:00	9246193	A9I030000	I4
99	D23V9C	1.0	13-SEP-1999	16:24:00	9246193	A9I030000	I4
100	D1PVN	1.0	13-SEP-1999	16:27:00	9246193	H25128	I4
101	CCV	1.0	13-SEP-1999	16:30:00			I4
102	CCB	1.0	13-SEP-1999	16:37:00			I4
103	D23V9C	1.0	13-SEP-1999	16:40:00	9246193	A9I030000	I4
104	D1PVNS	1.0	13-SEP-1999	16:42:00	9246193	H25128	I4
105	D1PVND	1.0	13-SEP-1999	16:45:00	9246193	H25128	I4
106	D1PW4	1.0	13-SEP-1999	16:47:00	9246193	H25128	I4
107	D1PWC	1.0	13-SEP-1999	16:50:00	9246193	H25128	I4
108	D1PWCS	1.0	13-SEP-1999	16:53:00	9246193	H25128	I4
109	D1PWCD	1.0	13-SEP-1999	16:55:00	9246193	H25128	I4
110	D1PWT	1.0	13-SEP-1999	16:58:00	9246193	H25128	I4
111	D1PWT	5	13-SEP-1999	17:00:00	9246193	H25128	I4
112	D1PX3	1.0	13-SEP-1999	17:00:00	9246193	H25128	I4
113	CCV	1.0	13-SEP-1999	17:10:00			I4
114	CCB	1.0	13-SEP-1999	17:12:00			I4
115	D1PX3	5	13-SEP-1999	17:15:00	9246193	H25128	I4
116	D1PX5	1.0	13-SEP-1999	17:17:00	9246193	H25128	I4
117	D1PX6	1.0	13-SEP-1999	17:19:00	9246193	H25128	I4
118	D1PXF	1.0	13-SEP-1999	17:23:00	9246193	H25128	I4
119	D1QP4	1.0	13-SEP-1999	17:26:00	9246193	H25128	I4
120	D1QP5	1.0	13-SEP-1999	17:28:00	9246193	H25128	I4
121	D1QP6	1.0	13-SEP-1999	17:31:00	9246193	H25128	I4
122	D1QP7	1.0	13-SEP-1999	17:34:00	9246193	H25128	I4
123	D1QP7	5	13-SEP-1999	17:36:00	9246193	H25128	I4
124	D1QP8	1.0	13-SEP-1999	17:39:00	9246193	H25128	I4
125	CCV	1.0	13-SEP-1999	17:42:00			I4
126	CCB	1.0	13-SEP-1999	17:45:00			I4
127	D1QP9	1.0	13-SEP-1999	17:47:00	9246193	H25128	I4
128	D1QPA	1.0	13-SEP-1999	17:49:00	9246193	H25128	I4
129	D1RM8	1.0	13-SEP-1999	17:51:00	9246193	H25128	I4
130	D1RMA	1.0	13-SEP-1999	17:54:00	9246193	H25128	I4
131	D1RMC	1.0	13-SEP-1999	17:57:00	9246193	H25128	I4
132	D1RMD	1.0	13-SEP-1999	18:00:00	9246193	H25128	I4

(continued)

: Instrument Upload Run Log - Page 4 :
: Started Mon Sep 13 18:00:35 1999 by OMEARAP :
: Data File: UPL$CAN_DATA_ROOT:<ARL>I40913A.DAT;1 :

#	WorkOrder	Dilution	Date	Time	Batch	Lot	Instrument
133	D1RMCL	~~1.0~~ 5.0 (serial dilution)	13-SEP-1999	18:00:00			I4
134	ICSA	1.0	13-SEP-1999	18:00:00			I4
135	ICSAB	1.0	13-SEP-1999	18:11:00			I4
136	CCV	1.0	13-SEP-1999	18:14:00			I4
137	CCB	1.0	13-SEP-1999	18:19:00			I4

End of Report

RQC057 Quanterra Incorporated Run Date: 9/03/99
METALS PREP LOG/BATCH SUMMARY Time: 10:09:37

BATCH NUMBER: 9246193 PREP DATE: 9/07/99
DUE DATE 9/03/99 INITIALS: DC/LM

LOT NUMBER	WORK ORDER	QC	ICP/WEIGHT	HG/WEIGHT	GFA/WEIGHT	FLA/WEIGH
A9H310140	D1XGK	01	X _____g	X _____g	_____g	_____g
WATER	TO DUE DATE: 9/03/99					
A9H250128	D1PVN	01	X _____g	X _____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
	D1PVNS		_____g	_____g	_____g	_____g
	D1PVND		_____g	_____g	_____g	_____g
A9H250128	D1PW4	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
A9H250128	D1PWC	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
	D1PWCS		_____g	_____g	_____g	_____g
	D1PWCD		_____g	_____g	_____g	_____g
A9H250128	D1PWT	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
A9H250128	D1PX3	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
A9H250128	D1PX5	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
A9H250128	D1PX6	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
A9H250128	D1PXF	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/07/99					
A9H260105	D1QP4	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/08/99					
A9H260105	D1QP5	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/08/99					
A9H260105	D1QP6	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/08/99					
A9H260105	D1QP7	01	X _____g	_____g	_____g	_____g
WATER	TO DUE DATE: 9/08/99					

RQC057 Quanterra Incorporated Run Date: 9/03/99
METALS PREP LOG/BATCH SUMMARY Time: 10:09:37

BATCH NUMBER: **9246193** PREP DATE: 9/07/99
DUE DATE 9/03/99 INITIALS: DC/LM

LOT NUMBER	WORK ORDER	QC	ICP/WEIGHT	HG/WEIGHT	GFA/WEIGHT	FLA/WEIGH
A9H260105	D1QP8	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/08/99			
A9H260105	D1QP9	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/08/99			
A9H260105	D1QPA	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/08/99			
A9H270119	D1RM8	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/09/99			
A9H270119	D1RMA	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/09/99			
A9H270119	D1RMC	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/09/99			
A9H270119	D1RMD	01	X _____g	_____g	_____g	_____g
WATER	**TO** DUE DATE:		9/09/99			
A9I030000	D23V9B	01	X _____g	X _____g	_____g	_____g
WATER	DUE DATE:		0/00/00			
	D23V9C		_____g	_____g	_____g	_____g

LEVEL 2
BLANK AND CHECK STANDARD ON BATCH ✓
MS/MSD AND PDS ON BATCH ✓
CURVE PREPPED FOR HG _____
CORRECT SPIKES ADDED ✓
SPIKING SOLUTIONS DOCUMENTED ON BATCH LOG ✓

COMMENTS: ICP is a Total Recoverable Prep
B-BLANK/C-LCS/D-MSD/I-REANALYSIS/L-LCSD/P-SERIAL DLTN/S-MS/X-SAMP DUP/Y-SAMP CONF/Z-PDS
SPIKING WITNESSED BY _____

RQC057

Quanterra Incorporated
METALS PREP LOG/BATCH SUMMARY

Run Date: 9/03/99
Time: 10:09:37

BATCH NUMBER: 9246193

PREP DATE: 9/07/99
DUE DATE 9/03/99

INITIALS: DC/LM

ICP ELEMENTS WITHIN THE BATCH:

AS CA CD CR PB

MS/MSD 1: D1PVN	(ICP - 1)	(ICP - 2A)	GFAA	(HG)	ODD
MS/MSD 2: D1PWC	(ICP - 1)	(ICP - 2A)	GFAA	(HG)	ODD
MS/MSD 3:	ICP - 1	ICP - 2	GFAA	HG	ODD
CHECK : D23V9	(ICP - 1)	(ICP - 2A)	GFAA	(HG)	ODD
CHECK DUP:	ICP - 1	ICP - 2	GFAA	HG	ODD
STANDARD NUMBERS	9H309	9H385	___	9I434	___

12C

DATE: 9-7-99

METALS PREPARATION REAGENTS

Reagents listed on this form are used for the entire day's prep batches unless otherwise noted on the individual prep log.

REAGENT NAME	REAGENT NUMBER
1:1 HNO_3 (nitric acid)	9MR319
1:1 HCl (hydrochloric acid)	9MR460
HNO_3 (nitric acid)	9MR461
HCl (hydrochloric acid)	9MR443
$KMnO_4$ (potassium permanganate)	9MR466
$K_2S_2O_8$ (potassium persulfate)	9MR467
H_2O_2 (hydrogen peroxide)	9MR334
H_2SO_4 (sulfuric acid)	9MR300
HCl/HNO_3 (aqua regia)	9MR472

Waters

Hg time in the water bath 10:15 am
Hg time out of the water bath 12:15 pm

Solids

Hg time in the water bath 2:40 pm
Hg time out of the water bath 3:10 pm

Times listed are for the waters and solids for that day unless otherwise noted.

Quanterra Inc.
Revision Date: 05/07/99
Word\n:\metals\reagent1.doc

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METALS PREPARATION SUMMARY

Preparation Type	Matrix	Amount of Standard added to LCS & MS/MSD		Initial Sample Vol/Wt	Final Sample Volume
		Amount	Standard name		
ICP	water	1 mL 1 mL 2.5 mL 1.0 mL	Ag ICP-1 ICP-2 ICP-2A	50 mL	50 mL
Flame	water	2.5 mL	Pb, Sn, Ti	50 mL	50 mL
Cd, Cr, Pb, Tl, Ag, Sb, As, Se - GFAA	water	1 mL	Graphite	50 mL	50 mL
Hg - CVAA	water	5 mL (LCS) 1 mL (MS/MSD)	HG-1 HG-1	100 mL	100 mL
ICP	solid	2 mL 2 mL 5 mL 2 mL	Ag ICP-1 ICP-2 ICP-2A	1.00 +/- .02g	100 mL
Flame	solid	5 mL	Pb, Sn, Ti	1.00 +/- .02g	100 mL
As, Se, Cd, Cr, Pb, Tl, Ag, Sb - GFAA	solid	2 mL	Graphite	1.00 +/- .02g	100 mL
Hg - CVAA	solid	5 mL (LCS) 1 mL (MS/MSD)	HG-1 HG-1	0.60 +/- .01g	100 mL
ICP	TCLP	1 mL (LCS) 1 mL(LCS)	Ag ICP-1	50 mL	50 mL
ICP	TCLP	0.5 mL(MS/MSD)	TCLP Spike I RCRA	50 mL	50 mL
ICP	TCLP	1 mL(MS/MSD)	TCLP Spike II Non-RCRA	50 mL	50 mL
Hg - CVAA	TCLP	5 mL (LCS) 5 mL (MS/MSD)	HG-1 HG-1	100 mL	100 mL

Mercury Standards Preparation				
Final Concentration		Spiking Standard		
		Amount	Standard	Concentration
Calibration Standards:				
0.0002 ppm		0.2 mL	HG-2	0.1 ppm
0.0005 ppm		0.5 mL	HG-2	0.1 ppm
0.001 ppm		1 mL	HG-2	0.1 ppm
0.005 ppm		5 mL	HG-2	0.1 ppm
0.010 ppm		10 mL	HG-2	0.1 ppm
ICV Prepartion				
0.0025 ppm		2.5 mL	HG-1	0.1 ppm
CCV Preparation:				
0.005 ppm		5 mL	HG-2	0.1 ppm

SPIKING STANDARD DEFINITIONS

Elements	Ag	ICP-1	ICP-2	ICP-2A	GFAA	HG-1	HG-2	TCLP Spike I	TCLP Spike II
Ag	2.5 ppm				0.25 ppm			100 ppm	
Al		100 ppm							100 ppm
As		100 ppm			2.0 ppm			500 ppm	
Ba		100 ppm						5000 ppm	
Be		2.5 ppm							2.5 ppm
Cd		2.5 ppm			0.2 ppm			100 ppm	
Ca			1000 ppm	2500 ppm					
Co		25 ppm							25 ppm
Cr		10 ppm			0.5 ppm			500 ppm	
Cu		12.5 ppm							12.5 ppm
Fe		50 ppm							50 ppm
Hg						0.1 ppm	0.1 ppm		
K			1000 ppm	2500 ppm					
Mg			1000 ppm	2500 ppm					
Mn		25 ppm							25 ppm
Na			1000 ppm	2500 ppm					
Ni		25 ppm							25 ppm
Pb		25 ppm			2.0 ppm			500 ppm	
Sb		25 ppm			2.0 ppm				25 ppm
Se		100 ppm			2.0 ppm			100 ppm	
Tl		100 ppm			2.0 ppm				100 ppm
V		25 ppm							25 ppm
Zn		25 ppm							25 ppm
B		50 ppm							50 ppm
Sr		50 ppm							
Mo		50 ppm							50 ppm
W		50 ppm							
Sn		100 ppm							100 ppm
Zr		50 ppm							
Ti		50 ppm							

	Flame
Pb	100 ppm
Sn	100 ppm
Ti	100 ppm

SCAL	STD 9G166	ICSA	STD 9I436
SCAL2	STD 9I422	ICSAB	STD 9I425
CRI	STD 9H373	ICV	STD 9I413
CLP CRI	STD ———	CCV	STD 9I416

✓DL320
✓BR124
✓A9H110116
✓A9H310140

Quanterra ICP Data Review Checklist

✓only A9H250128 A9H260105 A9H270119

Run/Project Information: 9-9-99

Run Date: 9-8-99 Analyst: KLC Instrument: I5

Prep Batches Run: 9250184 9246193 9235318 9251105 9246217 9243275 9245318 9245320 9246207

Cu/MnRatio: 0.221904205

Circle Methods used: (6010B / 200.7: CORP-MT-0001 Rev 2) CLP ILM03.0: CORP-MT-0002 Rev 1 (6010A/200.7: CORP-MT-0001NC, Rev 2)

Review Items

A. Calibration/Instrument Run QC	Yes	No	N/A	2nd Level
1. Instrument calibrated per manufacturer's instructions and at SOP specified levels ?	✓			✓
2. ICV/CCV analyzed at appropriate frequency and within control limits ? *(ICV: 6010B, CLP = 90 - 110%, 200.7 = 95 -105%) (CCV: 90 - 110%)*	✓			✓
3. ICB/CCB analyzed at appropriate frequency and within +/- RL or +/- CRDL (CLP) ?	✓			✓
4. High Std. (HCAL) reanalyzed before samples and recovered within QC limits ? (6010A/200.7 95-105%, CLP- N/A)	✓			✓
5. CRI run and recovered within QC limits ? (+/- 50% for non-CLP - 6010A only)	✓			✓
6. ICSA/ICSAB run at required frequency and within SOP limits ?	✓			✓
B. Sample Results				
1. Were samples with concentrations > the linear range for any parameter diluted and reanalyzed ?	✓			✓
2. All reported results bracketed by in control QC ?	✓			✓
3. Sample analyses done within holding time ?	✓			✓
C. Preparation/Matrix QC				
1. LCS done per prep batch and within QC limits ?	✓			✓
2. Method blank done per prep batch and < RL or CRDL (CLP) ?	✓			✓
3. MS/MSD run at required frequency and within limits ?	✓			✓
4. MSD or DU run at required frequency and RPD within SOP limits ?	✓			✓
5. Serial dilution done per prep batch (or per SDG for CLP) ?	✓			✓
6. Post digest spike analyzed if required (CLP only) ?			✓	
D. Other				
1. Are all *nonconformances documented appropriately* ?	✓			✓
2. Current IDL/LR/IEC data on file ?	✓			✓
3. Calculations checked for error ?	✓			✓
4. Transcriptions checked for error ?	✓			✓
5. All client/project specific requirements met ?	✓			✓
6. Date/time of analysis verified as correct ?	✓			✓

Level I Analyst: Karen L. Counts Date: 9-9-99 Time: 11:36 - 07:44

Comments:

Level II Reviewer: [signature] Date: 9-5-99 Time: 11:36 - 07:44

Comments:

SCAL	STD 9I432	ICSA	STD 9H251
SCAL2	STD 9I433	ICSAB	STD 9G136
CRI	STD 9H278	ICV	STD 9H228
CLP CRI	STD —	CCV	STD 9I426

A9H110179 (BR 124)
A9H130202 ✓
✓A9H140124

Quanterra ICP Data Review Checklist

806 H25128

Run/Project Information:

Run Date: 9/13/99 Analyst: PSO Instrument: I4
Prep Batches Run: 9253 113, 9245320, 9235318, 9243281, 9246193

Cu/MnRatio: 0.312 73457

Circle Methods used: 6010B / 200.7: CORP-MT-0001 Rev 2
~~CLP ILM03.0: CORP-MT-0002 Rev 1~~
6010A/200.7: CORP-MT-0001NC, Rev 2

Review Items

A. Calibration/Instrument Run QC	Yes	No	N/A	2nd Level
1. Instrument calibrated per manufacturer's instructions and at SOP specified levels ?	✓			✓
2. ICV/CCV analyzed at appropriate frequency and within control limits ? *(ICV: 6010B, CLP = 90 - 110%, 200.7 = 95 -105%) (CCV: 90 - 110%)*	✓			✓
3. ICB/CCB analyzed at appropriate frequency and within +/- RL or +/- CRDL (CLP) ?	✓			✓
4. High Std. (HCAL) reanalyzed before samples and recovered within QC limits ? (6010A/200.7 95-105%, CLP- N/A)	✓			✓
5. CRI run and recovered within QC limits ? (+/- 50% for non-CLP - 6010A only)	✓			✓
6. ICSA/ICSAB run at required frequency and within SOP limits ?	✓			✓
B. Sample Results				
1. Were samples with concentrations > the linear range for any parameter diluted and reanalyzed ?	✓			✓
2. All reported results bracketed by in control QC ?	✓			✓
3. Sample analyses done within holding time ?	✓			✓
C. Preparation/Matrix QC	✓			✓
1. LCS done per prep batch and within QC limits ?	✓			✓
2. Method blank done per prep batch and < RL or CRDL (CLP) ?	✓			✓
3. MS/MSD run at required frequency and within limits ?	✓			✓
4. MSD or DU run at required frequency and RPD within SOP limits ?	✓			✓
5. Serial dilution done per prep batch (or per SDG for CLP) ?	✓		✓	✓
6. Post digest spike analyzed if required (CLP only) ?			✓	
D. Other	✓			✓
1. Are all nonconformances documented appropriately ?	✓			✓
2. Current IDL/LR/IEC data on file ?	✓			✓
3. Calculations checked for error ?	✓			✓
4. Transcriptions checked for error ?	✓			✓
5. All client/project specific requirements met ?	✓			✓
6. Date/time of analysis verified as correct ?	✓			✓

Level I Analyst: Patricia K Oman Date: 9-13-99 Time: 1035-1818
Comments: Batch 9235318 LCS ↑ - samples ND

Level II Reviewer: Karen L. Counts Date: 9-14-99 Time: 1035-1818
Comments:

Mean	-0.002	4.179	0.001	-0.046	0.129	0.002	-0.000	1.013
S.D.	0.001	0.132	0.004	0.020	0.005	0.008	0.000	0.058
% R.S.D.	48.357	3.158	269.412	43.570	4.025	538.820	89.525	5.695

	Cd (ppm)	Cu (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Co (ppm)	Ni (ppm)	K (ppm)
Mean	-0.001	0.003	-0.002	0.015	-0.001	-0.001	0.001	0.691
S.D.	0.001	0.000	0.001	0.007	0.000	0.001	0.002	0.017
% R.S.D.	56.968	14.816	21.429	45.993	39.088	118.879	193.023	2.529

	Mn (ppm)	Fe (ppm)	Cr (ppm)	B (ppm)
Mean	0.003	0.041	0.001	0.028
S.D.	0.000	0.006	0.002	0.004
% R.S.D.	9.195	13.987	234.307	12.760

Identity 1: DIRMCL Identity 2: 6:05 PM September 13, 1999
Task name : I40423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

Analyte	Channel		Corrected	Counts
Sr	1	42.298	42.442	42.511
Zn	2	0.982	0.995	1.032
Ba	3	2.066	2.062	2.069
2Fe	5	4.385	4.358	4.386
Mg	6	19.001	19.022	19.042
Sn	7	0.002	-0.007	-0.004
Tl	8	0.027	0.023	0.022
As	9	0.008	0.003	0.002
V	10	0.136	0.130	0.141
Na	11	1.528	1.529	1.535
Mo	12	-0.027	0.001	0.001
Se	13	0.019	0.007	0.003
Al	14	2.198	2.196	2.201
Sb	15	0.001	0.012	-0.003
Be	16	0.400	0.400	0.402
Ca	17	81.376	81.514	81.671
Cd	18	0.012	0.004	0.001
Cu	19	1.045	1.042	1.045
Ag	20	0.010	0.008	0.008
Pb	21	0.008	0.012	0.016
Ti	22	0.391	0.393	0.373
Co	24	0.015	0.009	0.000
Ni	25	0.035	0.034	0.023
K	27	2.554	2.561	2.563
Mn	28	4.889	4.869	4.884
Fe	29	22.260	22.288	22.356
Cr	30	0.037	0.055	0.052
B	31	0.938	0.880	0.846

Serial Dilution

Identity 1: DIRMCL Identity 2: 6:05 PM September 13, 1999

Task name : I40423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Sr (ppm)	Zn (ppm)	Ba (ppm)	2Fe (ppm)	Mg (ppm)	Sn (ppm)	Ti (ppm)	As (ppm)
Mean	0.476	0.045	0.057	8.559	17.334	-0.001	0.058	-0.005
S.D.	0.001	0.001	0.000	0.031	0.020	0.004	0.015	0.003
% R.S.D.	0.256	3.244	0.378	0.366	0.115	483.366	25.754	68.942

	V (ppm)	Na (ppm)	Mo (ppm)	Se (ppm)	Al (ppm)	Sb (ppm)	Be (ppm)	Ca (ppm)
Mean	0.019	93.622	0.002	0.010	4.109	-0.009	0.000	109.568
S.D.	0.001	0.250	0.003	0.024	0.006	0.006	0.000	0.200
% R.S.D.	3.985	0.267	167.232	229.164	0.153	72.009	12.549	0.182

XS

	Cd (ppm)	Cu (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Co (ppm)	Ni (ppm)	K (ppm)
Mean	-0.000	0.013	-0.001	0.028	0.073	0.002	0.014	6.930
S.D.	0.001	0.000	0.000	0.005	0.002	0.002	0.003	0.024
% R.S.D.	242.784	2.388	18.232	17.701	2.730	80.891	21.019	0.344

	Mn (ppm)	Fe (ppm)	Cr (ppm)	B (ppm)
Mean	0.270	8.636	0.007	0.079
S.D.	0.001	0.019	0.003	0.006
% R.S.D.	0.214	0.222	36.621	7.854

Identity 1: ICSA Identity 2: 6:08 PM September 13, 1999
Task name : I40423A
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

Analyte	Channel	Corrected	Counts	
Sr	1	2.832	2.848	2.854
Zn	2	0.926	0.917	0.932
Ba	3	1.135	1.132	1.132
2Fe	5	93.860	94.258	94.696
Mg	6	490.957	493.442	495.947
Sn	7	0.019	0.030	0.017
Ti	8	0.001	0.008	-0.004
As	9	-0.103	-0.106	-0.060
V	10	0.070	0.062	0.062
Na	11	0.152	0.151	0.151
Mo	12	0.076	0.002	0.004
Se	13	0.033	0.024	0.044
Al	14	192.392	193.450	194.664
Sb	15	0.054	0.051	0.036
Be	16	0.397	0.397	0.398
Ca	17	366.768	368.489	371.348
	18	0.185	0.210	0.209
Cu	19	1.017	1.016	1.010
Ag	20	0.013	0.014	0.012
Pb	21	0.139	0.131	0.133

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-29

TOTAL Metals

Lot-Sample #...: A9H250128-001 Matrix.....: WATER
Date Sampled...: 08/23/99 09:30 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	556	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1PVN10C
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: PM4NA

TOTAL Metals

Lot-Sample #...: A9H250128-002 Matrix.....: WATER
Date Sampled...: 08/23/99 11:00 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	108	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1PW410
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-6

TOTAL Metals

Lot-Sample #...: A9H250128-003 Matrix.....: WATER
Date Sampled...: 08/23/99 12:00 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	640	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1PWC10
Dilution Factor: 1						

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-5

TOTAL Metals

Lot-Sample #...: A9H250128-004 Matrix.....: WATER
Date Sampled...: 08/23/99 13:00 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	1710	25.0	mg/L	SW846 6010A	09/07-09/13/99	D1PWT107
		Dilution Factor: 5				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-6

TOTAL Metals

Lot-Sample #...: A9H250128-005 Matrix.....: WATER
Date Sampled...: 08/23/99 14:05 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	2230	25.0	mg/L	SW846 6010A	09/07-09/13/99	D1PX3107
		Dilution Factor: 5				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-7

TOTAL Metals

Lot-Sample #...: A9H250128-006 Matrix.....: WATER
Date Sampled...: 08/23/99 14:10 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	881	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1PX510
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-13F

TOTAL Metals

Lot-Sample #...: A9H250128-007 Matrix.....: WATER
Date Sampled...: 08/23/99 15:15 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	187	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1PX610
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-13S

TOTAL Metals

Lot-Sample #...: A9H250128-008 Matrix.....: WATER
Date Sampled...: 08/23/99 15:45 Date Received..: 08/24/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	46.5	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1PXF10S
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-7

TOTAL Metals

Lot-Sample #...: A9H260105-001 Matrix.....: WATER
Date Sampled...: 08/24/99 09:40 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	451	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1QP410
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-8

TOTAL Metals

Lot-Sample #...: A9H260105-002 Matrix.....: WATER
Date Sampled...: 08/24/99 10:00 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	112	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1QP5107
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-9

TOTAL Metals

Lot-Sample #...: A9H260105-003 Matrix.....: WATER
Date Sampled...: 08/24/99 11:30 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	938	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1QP6107
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-18

TOTAL Metals

Lot-Sample #...: A9H260105-004 Matrix.....: WATER
Date Sampled...: 08/24/99 11:00 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	1020	25.0	mg/L	SW846 6010A	09/07-09/13/99	D1QP7107
		Dilution Factor: 5				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-10

TOTAL Metals

Lot-Sample #...: A9H260105-005 Matrix.....: WATER
Date Sampled...: 08/24/99 13:15 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	612	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1QP8107
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-11

TOTAL Metals

Lot-Sample #...: A9H260105-006 Matrix.....: WATER
Date Sampled...: 08/24/99 13:45 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	340	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1QP9107
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-16F

TOTAL Metals

Lot-Sample #...: A9H260105-007 Matrix.....: WATER
Date Sampled...: 08/24/99 14:30 Date Received..: 08/25/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	117	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1QPA107
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-12

TOTAL Metals

Lot-Sample #...: A9H270119-001 **Matrix.....:** WATER
Date Sampled...: 08/25/99 09:15 **Date Received..:** 08/26/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	**73.1**	**5.0**	**mg/L**	**SW846 6010A**	**09/07-09/13/99**	**D1RM8109**
	Dilution Factor: 1					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-14S

TOTAL Metals

Lot-Sample #...: A9H270119-002 Matrix.....: WATER
Date Sampled...: 08/25/99 10:00 Date Received..: 08/26/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	550	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1RMA109
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-39S

TOTAL Metals

Lot-Sample #...: A9H270119-003 Matrix.....: WATER
Date Sampled...: 08/25/99 11:00 Date Received..: 08/26/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	551	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1RMC109
		Dilution Factor: 1				

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: ERB-1

TOTAL Metals

Lot-Sample #...: A9H270119-004 Matrix.....: WATER
Date Sampled...: 08/25/99 09:00 Date Received..: 08/26/99

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9246193						
Calcium	ND	5.0	mg/L	SW846 6010A	09/07-09/13/99	D1RMD103
		Dilution Factor: 1				

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D22XN101		MB Lot-Sample #:	A9I020000-323	
	ND	5.0	mg/L	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1				
Chemical Oxygen Demand (COD)		Work Order #: D248C101		MB Lot-Sample #:	A9I030000-283	
	ND	5.0	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: D2672101		MB Lot-Sample #:	A9I070000-310	
	ND	2	mg/L	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: D2C3F101		MB Lot-Sample #:	A9I100000-369	
	ND	2	mg/L	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1				
Total Alkalinity		Work Order #: D1RP0101		MB Lot-Sample #:	A9H270000-136	
	ND	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1				
Total Alkalinity		Work Order #: D1RP6101		MB Lot-Sample #:	A9H270000-138	
	ND	5.0	mg/L	MCAWW 310.1	08/26/99	9239138
		Dilution Factor: 1				
Total Dissolved Solids		Work Order #: D207K101		MB Lot-Sample #:	A9H310000-367	
	ND	10	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D1WL3101		MB Lot-Sample #:	A9H300000-323	
	ND	1	mg/L	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D20P1101		MB Lot-Sample #:	A9I010000-178	
	ND	1	mg/L	MCAWW 415.1	08/30/99	9244178
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D22L0101		MB Lot-Sample #:	A9I020000-246	
	ND	1	mg/L	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1				

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METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)		Work Order #: D2083101		MB Lot-Sample #: A9H310000-376		
	ND	10	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 1				

NOTE(S):

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

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H260105 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D22XN101		MB Lot-Sample #:	A9I020000-323	
	ND	5.0	mg/L	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1				
Chemical Oxygen Demand (COD)		Work Order #: D248C101		MB Lot-Sample #:	A9I030000-283	
	ND	5.0	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: D2C3F101		MB Lot-Sample #:	A9I100000-369	
	ND	2	mg/L	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1				
Total Alkalinity		Work Order #: D24V9101		MB Lot-Sample #:	A9I030000-413	
	ND	5.0	mg/L	MCAWW 310.1	09/03/99	9246413
		Dilution Factor: 1				
Total Dissolved Solids		Work Order #: D207K101		MB Lot-Sample #:	A9H310000-367	
	ND	10	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D22L0101		MB Lot-Sample #:	A9I020000-246	
	ND	1	mg/L	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D23L7101		MB Lot-Sample #:	A9I030000-134	
	ND	1	mg/L	MCAWW 415.1	09/02/99	9246134
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D2083101		MB Lot-Sample #:	A9H310000-376	
	ND	10	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 1				

NOTE(S):

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

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H270119 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D22XN101		MB Lot-Sample #: A9I020000-323		
	ND	5.0	mg/L	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1				
Chemical Oxygen Demand (COD)		Work Order #: D248C101		MB Lot-Sample #: A9I030000-283		
	ND	5.0	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: D2C3F101		MB Lot-Sample #: A9I100000-369		
	ND	2	mg/L	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1				
Total Alkalinity		Work Order #: D24V9101		MB Lot-Sample #: A9I030000-413		
	ND	5.0	mg/L	MCAWW 310.1	09/03/99	9246413
		Dilution Factor: 1				
Total Dissolved Solids		Work Order #: D207K101		MB Lot-Sample #: A9H310000-367		
	ND	10	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: D22NT101		MB Lot-Sample #: A9I020000-248		
	ND	1	mg/L	MCAWW 415.1	09/01/99	9245248
		Dilution Factor: 1				
Total Solids (Residue)		Work Order #: D2083101		MB Lot-Sample #: A9H310000-376		
	ND	10	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 1				

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H250128 **Matrix.....:** WATER
Date Sampled...: 08/25/99 10:50 **Date Received..:** 08/26/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		WO#: D1PVN10K-MS/D1PVN10L-MSD				MS Lot-Sample #: A9H250128-001	
	104	(90 - 110)			MCAWW 410.4	09/02/99	9245323
	100	(90 - 110)	3.7	(0-20)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1					
Chemical Oxygen Demand (COD)		WO#: D1PWC10D-MS/D1PWC10E-MSD				MS Lot-Sample #: A9H250128-003	
	96	(90 - 110)			MCAWW 410.4	09/02-09/03/99	9246283
	97	(90 - 110)	0.77	(0-20)	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1					
Hardness, as CaCO3		WO#: D1PVN109-MS/D1PVN10A-MSD				MS Lot-Sample #: A9H250128-001	
	99	(80 - 120)			MCAWW 130.2	09/07/99	9250310
	97	(80 - 120)	1.7	(0-20)	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1					
Hardness, as CaCO3		WO#: D1PWC103-MS/D1PWC104-MSD				MS Lot-Sample #: A9H250128-003	
	97	(80 - 120)			MCAWW 130.2	09/10/99	9253369
	99	(80 - 120)	1.2	(0-20)	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1					
Total Alkalinity		WO#: D1PVN10G-MS/D1PVN10H-MSD				MS Lot-Sample #: A9H250128-001	
	88	(80 - 120)			MCAWW 310.1	08/26/99	9239136
	91	(80 - 120)	1.7	(0-20)	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1					
Total Alkalinity		WO#: D1PWC109-MS/D1PWC10A-MSD				MS Lot-Sample #: A9H250128-003	
	91	(80 - 120)			MCAWW 310.1	08/26/99	9239138
	92	(80 - 120)	1.4	(0-20)	MCAWW 310.1	08/26/99	9239138
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1PVN10N-MS/D1PVN10P-MSD				MS Lot-Sample #: A9H250128-001	
	87 N	(90 - 110)			MCAWW 415.1	08/30/99	9242323
	86 N	(90 - 110)	0.88	(0-20)	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1PWC10G-MS/D1PWC10H-MSD				MS Lot-Sample #: A9H250128-003	
	94	(90 - 110)			MCAWW 415.1	09/01/99	9245246
	94	(90 - 110)	0.03	(0-20)	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1					

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MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H250128 **Matrix.....:** WATER
Date Sampled...: 08/25/99 10:50 **Date Received..:** 08/26/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon		WO#: D1R8W13F-MS/D1R8W13G-MSD				MS Lot-Sample #: A9H260179-002	
	88 N	(90 - 110)			MCAWW 415.1	09/01/99	9245246
batch QC	90	(90 - 110)	1.7	(0-20)	MCAWW 415.1	09/01/99	9245246

Dilution Factor: 1

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H260105 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		WO#: D1PVN10K-MS/D1PVN10L-MSD				MS Lot-Sample #: A9H250128-001	
	104	(90 - 110)			MCAWW 410.4	09/02/99	9245323
	100	(90 - 110)	3.7	(0-20)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1					
Chemical Oxygen Demand (COD)		WO#: D1PWC10D-MS/D1PWC10E-MSD				MS Lot-Sample #: A9H250128-003	
	96	(90 - 110)			MCAWW 410.4	09/02-09/03/99	9246283
	97	(90 - 110)	0.77	(0-20)	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1					
Hardness, as CaCO3		WO#: D1PWC103-MS/D1PWC104-MSD				MS Lot-Sample #: A9H250128-003	
	97	(80 - 120)			MCAWW 130.2	09/10/99	9253369
	99	(80 - 120)	1.2	(0-20)	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1					
Total Alkalinity		WO#: D1QPA108-MS/D1QPA109-MSD				MS Lot-Sample #: A9H260105-007	
	96	(80 - 120)			MCAWW 310.1	09/03/99	9246413
	96	(80 - 120)	0.29	(0-20)	MCAWW 310.1	09/03/99	9246413
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1PWC10G-MS/D1PWC10H-MSD				MS Lot-Sample #: A9H250128-003	
	94	(90 - 110)			MCAWW 415.1	09/01/99	9245246
	94	(90 - 110)	0.03	(0-20)	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1RWM103-MS/D1RWM104-MSD				MS Lot-Sample #: A9H270143-009	
batch QC	101	(90 - 110)			MCAWW 415.1	09/02/99	9246134
	104	(90 - 110)	2.0	(0-20)	MCAWW 415.1	09/02/99	9246134
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1R8W13F-MS/D1R8W13G-MSD				MS Lot-Sample #: A9H260179-002	
batch QC	88 N	(90 - 110)			MCAWW 415.1	09/01/99	9245246
not used	90	(90 - 110)	1.7	(0-20)	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1					
Total Organic Carbon		WO#: D1T10103-MS/D1T10104-MSD				MS Lot-Sample #: A9H270143-021	
batch QC	96	(90 - 110)			MCAWW 415.1	09/02/99	9246134
	96	(90 - 110)	0.22	(0-20)	MCAWW 415.1	09/02/99	9246134
		Dilution Factor: 1					

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H270119 **Matrix.....:** WATER
Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		WO#: D1PVN10K-MS/D1PVN10L-MSD				MS Lot-Sample #: A9H250128-001	
	104	(90 - 110)			MCAWW 410.4	09/02/99	9245323
	100	(90 - 110)	3.7	(0-20)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1					
Chemical Oxygen Demand (COD)		WO#: D1PWC10D-MS/D1PWC10E-MSD				MS Lot-Sample #: A9H250128-003	
	96	(90 - 110)			MCAWW 410.4	09/02-09/03/99	9246283
	97	(90 - 110)	0.77	(0-20)	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1					
Hardness, as CaCO3		WO#: D1PWC103-MS/D1PWC104-MSD				MS Lot-Sample #: A9H250128-003	
	97	(80 - 120)			MCAWW 130.2	09/10/99	9253369
	99	(80 - 120)	1.2	(0-20)	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1					
Total Alkalinity		WO#: D1QPA108-MS/D1QPA109-MSD				MS Lot-Sample #: A9H260105-00	
	96	(80 - 120)			MCAWW 310.1	09/03/99	9246413
	96	(80 - 120)	0.29	(0-20)	MCAWW 310.1	09/03/99	9246413
		Dilution Factor: 1					

NOTE(S):

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

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H250128 **Work Order #...:** D1PWC-SMP D1PWC-DUP **Matrix.....:** WATER

Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H250128-003		
	2900	2900	mg/L	0.82	(0-20)	MCAWW 160.3	08/30-08/31/99	924337
		Dilution Factor: 2						
Total Dissolved Solids						SD Lot-Sample #: A9H250128-003		
	3000	2900	mg/L	0.95	(0-20)	MCAWW 160.1	08/30-08/31/99	924336
		Dilution Factor: 2						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H250128 **Work Order #...:** D1PVN-SMP D1PVN-DUP **Matrix.....:** WATER

Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)						SD Lot-Sample #: A9H250128-001		
	7800	7700	mg/L	0.71	(0-20)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 5						
Total Dissolved Solids						SD Lot-Sample #: A9H250128-001		
	7300	7300	mg/L	0.0	(0-20)	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 5						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H260105 **Work Order #...:** D1PVN-SMP D1PVN-DUP **Matrix.....:** WATER

Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: A9H250128-001		
	7300	7300	mg/L	0.0	(0-20)	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 5						
Total Solids (Residue)						SD Lot-Sample #: A9H250128-001		
	7800	7700	mg/L	0.71	(0-20)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 5						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H260105 **Work Order #...:** D1PWC-SMP D1PWC-DUP **Matrix.....:** WATER

Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: A9H250128-003		
	3000	2900	mg/L	0.95	(0-20)	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 2						
Total Solids (Residue)						SD Lot-Sample #: A9H250128-003		
	2900	2900	mg/L	0.82	(0-20)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 2						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H270119 **Work Order #...:** D1PVN-SMP D1PVN-DUP **Matrix.....:** WATER

Date Sampled...: 08/23/99 09:30 **Date Received..:** 08/24/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: A9H250128-001		
	7300	7300	mg/L	0.0	(0-20)	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 5						
Total Solids (Residue)						SD Lot-Sample #: A9H250128-001		
	7800	7700	mg/L	0.71	(0-20)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 5						

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H270119 **Work Order #...:** D1PWC-SMP D1PWC-DUP **Matrix.....:** WATER

Date Sampled...: 08/23/99 12:00 **Date Received..:** 08/24/99

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Dissolved Solids						SD Lot-Sample #: A9H250128-003		
	3000	2900	mg/L	0.95	(0-20)	MCAWW 160.1	08/30-08/31/99	9243367
		Dilution Factor: 2						
Total Solids (Residue)						SD Lot-Sample #: A9H250128-003		
	2900	2900	mg/L	0.82	(0-20)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 2						

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: A9H250128 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	WO#:D20P1102-LCS/D20P1103-LCSD					LCS Lot-Sample#: A9I010000-178	
	104	(90 - 110)			MCAWW 415.1	08/30/99	9244178
	103	(90 - 110)	0.89	(0-20)	MCAWW 415.1	08/30/99	9244178
		Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D22XN102	LCS Lot-Sample#: A9I020000-323		
	98	(90 - 110)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1			
Chemical Oxygen Demand (COD)		Work Order #: D248C102	LCS Lot-Sample#: A9I030000-283		
	103	(90 - 110)	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1			
Hardness, as CaCO3		Work Order #: D2672102	LCS Lot-Sample#: A9I070000-310		
	100	(90 - 110)	MCAWW 130.2	09/07/99	9250310
		Dilution Factor: 1			
Hardness, as CaCO3		Work Order #: D2C3F102	LCS Lot-Sample#: A9I100000-369		
LCS1	98	(90 - 110)	MCAWW 130.2	09/10/99	9253369
LCS2	99%	Dilution Factor: 1			
Total Alkalinity		Work Order #: D1RP0102	LCS Lot-Sample#: A9H270000-136		
	95	(80 - 120)	MCAWW 310.1	08/26/99	9239136
		Dilution Factor: 1			
Total Alkalinity		Work Order #: D1RP6102	LCS Lot-Sample#: A9H270000-138		
	94	(80 - 120)	MCAWW 310.1	08/26/99	9239138
		Dilution Factor: 1			
Total Dissolved Solids		Work Order #: D207K102	LCS Lot-Sample#: A9H310000-367		
	104	(80 - 120)	MCAWW 160.1	prep: 08/30/99	9243367
		Dilution Factor: 1		analysis: 8/31/99	
Total Organic Carbon		Work Order #: D1WL3102	LCS Lot-Sample#: A9H300000-323		
	101	(90 - 110)	MCAWW 415.1	08/30/99	9242323
		Dilution Factor: 1			
Total Organic Carbon		Work Order #: D22L0102	LCS Lot-Sample#: A9I020000-246		
	102	(90 - 110)	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1			

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H250128 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Solids (Residue)		Work Order #: D2083102 LCS Lot-Sample#: A9H310000-376			
	94	(80 - 120)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 1			

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H260105 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D22XN102	LCS Lot-Sample#: A9I020000-323		
	98	(90 - 110)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1			
Chemical Oxygen Demand (COD)		Work Order #: D248C102	LCS Lot-Sample#: A9I030000-283		
	103	(90 - 110)	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1			
Hardness, as CaCO3		Work Order #: D2C3F102	LCS Lot-Sample#: A9I100000-369		
	98	(90 - 110)	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1			
Total Alkalinity		Work Order #: D24V9102	LCS Lot-Sample#: A9I030000-413		
	94	(80 - 120)	MCAWW 310.1	09/03/99	9246413
		Dilution Factor: 1			
Total Dissolved Solids		Work Order #: D207K102	LCS Lot-Sample#: A9H310000-367		
	104	(80 - 120)	MCAWW 160.1	08/30/99	9243367
		Dilution Factor: 1			
Total Organic Carbon		Work Order #: D22L0102	LCS Lot-Sample#: A9I020000-246		
	102	(90 - 110)	MCAWW 415.1	09/01/99	9245246
		Dilution Factor: 1			
Total Organic Carbon		Work Order #: D23L7102	LCS Lot-Sample#: A9I030000-134		
	102	(90 - 110)	MCAWW 415.1	09/02/99	9246134
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D2083102	LCS Lot-Sample#: A9H310000-376		
	94	(80 - 120)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 1			

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: A9H270119 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	WO#:D22NT102-LCS/D22NT103-LCSD					LCS Lot-Sample#: A9I020000-248	
	102	(90 - 110)			MCAWW 415.1	09/01/99	9245248
	102	(90 - 110)	0.19	(0-20)	MCAWW 415.1	09/01/99	9245248
		Dilution Factor: 1					

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H270119 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: D22XN102	LCS Lot-Sample#: A9I020000-323		
	98	(90 - 110)	MCAWW 410.4	09/02/99	9245323
		Dilution Factor: 1			
Chemical Oxygen Demand (COD)		Work Order #: D248C102	LCS Lot-Sample#: A9I030000-283		
	103	(90 - 110)	MCAWW 410.4	09/02-09/03/99	9246283
		Dilution Factor: 1			
Hardness, as CaCO3		Work Order #: D2C3F102	LCS Lot-Sample#: A9I100000-369		
	98	(90 - 110)	MCAWW 130.2	09/10/99	9253369
		Dilution Factor: 1			
Total Alkalinity		Work Order #: D24V9102	LCS Lot-Sample#: A9I030000-413		
	94	(80 - 120)	MCAWW 310.1	09/03/99	9246413
		Dilution Factor: 1			
Total Dissolved Solids		Work Order #: D207K102	LCS Lot-Sample#: A9H310000-367		
	104	(80 - 120)	MCAWW 160.1	08/30/99	9243367
		Dilution Factor: 1			
Total Solids (Residue)		Work Order #: D2083102	LCS Lot-Sample#: A9H310000-376		
	94	(80 - 120)	MCAWW 160.3	08/30-08/31/99	9243376
		Dilution Factor: 1			

NOTE(S):

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

QUANTERRA-NORTH CANTON

INITIAL AND CONTINUING CALIBRATION VERIFICATION
CONCENTRATION UNITS: mg/L

1464

LOT NUMBER(S): A9H250128 A9H260105 A9H270119
SDG NUMBER: H25128
CLIENT CODE: 2508
YEAR: 1999

ANALYTE	BATCH #	DATES		INITIAL CALIBRATION			CONTINUING CALIBRATION		
		PREP	ANAL.	TRUE	FOUND	%R	TRUE	FOUND	%R
COD	9245323	9/2	9/2	50	49.04500	98	50	49.045	98
							50	49.373	99
	9246283	9/2	9/3	50	51.34000	103	50	51.012	102
							50	51.34	103
TOC	Cal	7/13	7/13	25	23.94500	96			
	9242323	8/30	8/30				25	25.2576	101
							25	25.1956	101
							25	26.0544	104
	9245246	9/1	9/1			25.4028	25	24.4028	98 10 2 (pg. 1429)
	9245248						25	25.5279	102
							25	25.8022	103
							25	25.5294	102
	9244178	8/30	8/30				25	26.0544	104
							25	25.8219	103
									KO 9-23-99

QUANTERRA- NORTH CANTON

INITIAL AND CONTINUING CALIBRATION VERIFICATION
CONCENTRATION UNITS: mg/L

1465

LOT NUMBER(S): A9H250128 A9H260105 A9H270119
SDG NUMBER: H25128
CLIENT CODE: 2508
YEAR: 1999

ANALYTE	BATCH #	DATES		INITIAL CALIBRATION			CONTINUING CALIBRATION		
		PREP	ANAL.	TRUE	FOUND	%R	TRUE	FOUND	%R
TOC	Cal	7/13	7/13	25	23.94500	96			
	9246134	9/2	9/2				25	25.5196	102
							25	25.2421	101
									KD 9.23.99

KD 9.23.99

COD

9245323

Analyze / Colorimetry

Analysis Mode: Manual

Operator: AKH Test: LLCOD Run Date: 9/2/99

Calibration Information:

5 CD9418
25 CD9419
50 CD9420
100 CD9421
150 CD9422
LCS CD9423

Intercept: 0.4636 R^2: 0.9993

1st Order: -0.0031 SD: 0.0054

2nd Order: 0.0000 Corr. Coef.: 0.9996

3rd Order: 0.0000

Sample ID	Dilution	Weight	Time	Absorbance	Concentration	Flag	
S1	1	1	0:00:00	0.461	0.862	sH	
S2	1	1	0:00:00	0.447	5.451	sPH	
S3	1	1	0:00:00	0.386	25.445	sH	
S4	1	1	0:00:00	0.315	48.718	sH	
S5	1	1	0:00:00	0.166	97.556	sH	
S6	1	1	0:00:00	0.000	151.967	sH	
ICV/LCS	1	1	0:00:00	0.314	49.045/50	H	98%
ICB/BLK	1	1	0:00:00	0.463	0.207	EH	
D1NT2	5	1	0:00:00	0.421	69.866	H	
D1NT8	5	1	0:00:00	0.420	71.505	H	
D1PVN	1	1	0:00:00	0.301	53.306	H	
D1PVN/S	20	1	0:00:00	0.137	2141.237	H	53.306/2000 104%
D1PVN/D	20	1	0:00:00	0.149	2062.571	H	100%
D1PW4	20	1	0:00:00	0.239	1472.573	H	
D1PWT	2	1	0:00:00	0.273	124.968	H	
D1PX3	2	1	0:00:00	0.153	203.635	H	
D1PX5	1	1	0:00:00	0.104	117.879	H	
D1PX6	5	1	0:00:00	0.338	205.894	H	
CCV	1	1	0:00:00	0.314	49.045/50	H	98%
CCB	1	1	0:00:00	0.462	0.534	EH	
D1QP5	5	1	0:00:00	0.311	250.144	H	
D1QP8	2	1	0:00:00	0.206	168.891	H	
D1QP9	2	1	0:00:00	0.043	275.746	H	
D1RMA	2	1	0:00:00	0.315	97.435	H	
D1RMC	2	1	0:00:00	0.309	101.369	H	
CCV	1	1	0:00:00	0.313	49.373/50	H	99%
CCB	1	1	0:00:00	0.461	0.862	H	

Quanterra General Chemistry Data Review Checklist

Parameter(s): LLCOD

Batch(es): 9245323

Method #/SOP#: 410.4

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓					
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?	✓					
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?	✓					
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: _____ **Date:** 990902

Level II Reviewer: _____ **Date:** 990903

COD 9246283

Analyze / Colorimetry Analysis Mode:

Operator:	AKH	Test:	LLCOD	Run Date:	9/3/99	
Calibration	Information:		Intercept:	0.4636	R^2:	0.9993
5	CD9418					
25	CD9419		1st Order:	-0.0031	SD:	0.0054
50	CD9420					
100	CD9421		2nd Order:	0.0000	Corr. Coef.:	0.9996
150	CD9422					
LCS	CD9432		3rd Order:	0.0000		

Sample ID	Dilution	Weight	Time	Absorbance	Concentration	Flag	
S1	1	1	1:51:28 PM	0.461	0.862	sH	
S2	1	1	1:51:30 PM	0.447	5.451	sPH	
S3	1	1	1:51:31 PM	0.386	25.445	sH	
S4	1	1	1:51:32 PM	0.315	48.718	sH	
S5	1	1	1:51:33 PM	0.166	97.556	sH	
S6	1	1	1:51:35 PM	0.000	151.967	sH	
ICV/LCS	1	1	0:00:00	0.307	51.340/50	H	103%
ICB/BLK	1	1	0:00:00	0.460	1.190	H	
D1PWC	1	1	0:00:00	0.372	30.034	H	
D1PWC/S	1	1	0:00:00	0.079	126.0737	H	30.034/100 96%
D1PWC/D	1	1	0:00:00	0.076	127.056	H	97%
D1PXF	10	1	0:00:00	0.186	910.008	H	
D1QP4	20	1	0:00:00	0.226	1557.795	H	
D1QP6	20	1	0:00:00	0.159	1997.016	H	
D1QP7	20	1	0:00:00	0.220	1597.128	H	
D1QPA	20	1	0:00:00	0.083	2495.236	H	
CCV	1	1	0:00:00	0.308	51.012/50	H	102%
CCB	1	1	0:00:00	0.455	2.829	H	
D1RM8	10	1	0:00:00	0.206	844.453	H	
CCV	1	1	0:00:00	0.307	51.340/50	H	103%
CCB	1	1	0:00:00	0.454	3.157	H	

Quanterra General Chemistry Data Review Checklist

Parameter(s): LL COD

Batch(es): 9246283

Method #/SOP#: 410.4

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓			✓		
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓			✓		
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?	✓			✓		
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓			✓		
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?	✓			✓		
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			✓
2. If no, standardization expires ____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): ____

Level I reviewer: [signature] **Date:** 990903

Level II Reviewer: [signature] **Date:** 09/08/99

			Quanterra, North Canton			
			Hardness Titrimetric Logsheet			
Prep Date	9/10/99				Batch	9253369/71
Anal Date	9/10/99				Lcs No.	HD9026/27
					Lcs Prep Date	9/10/99
Analyst	AKH				RL	2 mg/L
Titrant					Standardization	
Name:	EDTA				Date	8/16/99
Normality	0.0202				Intials	AKH

Sample No.	Sample Vol	dil	Titrant Vol (ml)	Final Conc mg/L	QC/Calc	
BLANK	25	1	0	0		
LCS1	25	1	4.85	195.94	196/200	98%
LCS2	25	1	4.9	197.96	198/200	99%
D1PW4	25	10	2.55	1030.2		
D1PWC	25	5	7.45	1504.9		
D1PWC/S	25	10	8.55	3454.2	1504.9/2000	97%
D1PWC/D	25	10	8.65	3494.6		99%
D1PWT	25	25	4.85	4898.5		
D1PX3	25	25	6.6	6666		
D1PX5	25	25	2.25	2272.5		
D1PX6	25	25	1	1010		
D1PXF	25	25	0.25	252.5		
D1QP4	25	25	1.45	1464.5		
D1QP5	25	25	0.4	404		
D1QP6	25	10	7.2	2908.8		
D1QP7	25	10	7.65	3090.6		
D1QP8	25	25	1.75	1767.5		
D1QP9	25	25	1.4	1414		
D1QPA	25	25	0.45	454.5		
D1RJ4	25	10	1.6	646.4		
D1RJE	25	10	2	808		
D1RJH	25	10	1.85	747.4		
D1RM8	25	10	1.45	585.8		
D1RMA	25	10	4.3	1737.2		
D1RMC	25	10	4.4	1777.6		

1400

			Quanterra, North Canton			
			Hardness Titrimetric Logsheet			
Prep Date	9/10/99				Batch	
Anal Date	9/10/99				Lcs No.	
					Lcs Prep Date	9/10/99
Analyst	AKH				RL	2 mg/L
Titrant					Standardization	
Name:	EDTA				Date	8/16/99
Normality	0.0202				Intials	AKH

Sample No.	Sample Vol	dil	Titrant Vol (ml)	Final Conc mg/L	QC/Calc	
BLANK 2	25	1	0	0		
D1VX2	25	10	1.4	565.6		
D2142	25	5	2.3	464.6		
D1T1H	25	5	7	1414		
D1T2D	25	10	6.1	2464.4		
D1T2E	25	10	3.9	1575.6		
D1T2F	25	10	7.15	2888.6		
D1W5Q	25	10	6.2	2504.8		
D1W5W	25	10	6.85	2767.4		
D1W5X	25	10	6.1	2464.4		
D1W60	25	10	6.5	2626		
D1W61	25	10	6.45	2605.8		
D1W62	25	10	6.4	2585.6		
D2066	25	10	5.65	2282.6		
D2066/S	25	10	10	4040	$\frac{-2282.6}{2000}$	88%
D2066/D	25	10	9.9	3999.6		86%
D206E	25	10	5.65	2282.6		
D20A9	25	10	5.95	2403.8		
D20AA	25	10	6.05	2444.2		
D20AC	25	10	6.1	2464.4		
D20AD	25	10	6.2	2504.8		

RPD = $\frac{1.00}{0.01}$ AKH 990910

A9H250128

Quanterra General Chemistry Data Review Checklist

Parameter(s): HARDNESS

Batch(es): 9253369/71

Method #/SOP#: 130.2

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			✓
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			✓
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			✓
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			✓
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?		✓			✓	
2. If no, standardization expires 9/16/99						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓					

Comment on any "NO" response(s):

Level I reviewer: [signature] Date: 990910

Level II Reviewer: [signature] Date: 9-13-99

1402

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Corporate Policy

			Quanterra, North Canton			
			Hardness Titrimetric Logsheet			
Prep Date	9/7/99				Batch	9250310
Anal Date	9/7/99				Lcs No.	HD9025
					Lcs Prep Date	9/7/99
Analyst	AKH				RL	2 mg/L
Titrant					Standardization	
Name:	EDTA				Date	8/16/99
Normality	0.0202				Intials	AKH

Sample No.	Sample Vol	dil	Titrant Vol (ml)	Final Conc mg/L	QC/Calc	
BLANK	25	1	0	0		
LCS	25	1	4.95	199.98	200 100%	
D1HTQ	25	1	4.85	195.94		
D1LL1	25	5	8.3	1676.6		
D1LLH	25	10	1.95	787.8		
D1LLK	25	10	2.55	1030.2		
D1LLN	25	10	0.85	343.4		
D1LLR	25	25	4.25	4292.5		
D1LLW	25	10	5.4	2181.6		
D1LM0	25	10	3.2	1292.8		
D1LM5	25	10	5.05	2040.2		
D1LQW	25	10	2	808		
D1NRT	25	10	6.6	2666.4		
D1NRX	25	25	6.9	6969		
D1NT0	25	25	6.75	6817.5		
D1NT1	25	25	1.4	1414		
D1NT2	25	25	8.35	8433.5		
D1NT8	25	25	8.45	8534.5		
D1PVN	25	25	1.1	1111		
D1PVN/S	25	25	6	6060	1111 / 5000 99%	
D1PVN/D	25	25	5.9	5959	97%	

Quanterra General Chemistry Data Review Checklist

Parameter(s): HARDNESS

Batch(es): 9250310

Method #/SOP#: 130.2

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			
2. Calibration curve consist of the minimum number of calibration standards?			✓			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			
4. ICB analyzed immediately after ICV and within criteria (= RL)?			✓			
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (=RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?		✓		✓		
2. If no, standardization expires 9/16/99						
F. Other						✓
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: _____ Date: 990907

Level II Reviewer: _____ Date: 990909

			Quanterra, North Canton					
			Alkalinity Logsheet					
						9239130/35/36/38/39		
Prep Date	8/26/99		Lcs No. AL9067/68/69/70		Batch		RL	5,10 mg/L
Anal Date	8/26/99		Lcs Prep		Instrument			
			Date	8/26/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.4
Name	H2SO4		Date	7/29/99	Date	8/26/99		
Normality	0.01913		Intials	AKH	Intials	AKH		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc	
PH7	6.99			#VALUE!	#VALUE!	#VALUE!	0.00		
BLK	5.48	50	0.05	0.96	0.96	0.00	0.00		
LCS	10.57	50	24.33	465.43/500	99.47	347.39	18.58	93%.	
D1CHG	7.29	50	3.47	66.38	66.25	0.12	0.01		
D1CHP	7.3	50	3.2	61.22	61.09	0.11	0.01		
D1CHQ	7.27	50	3.28	62.75	62.63	0.11	0.01		
D1CHT	7.28	50	3.28	62.75	62.62	0.11	0.01		
D1K2M	7.15	50	13.64	260.93	260.58	0.35	0.01		
D1K2R	7.17	50	15.77	301.68	301.25	0.42	0.01		
D1GKM	7.03	50	18.1	346.25	345.90	0.35	0.01		
D1H14	5.26	50	0.28	5.36	5.36	0.00	0.00		
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1H1K	4.6	50	0.02	0.38	0.38	0.00	0.00		
D1H1N	5.39	50	1.93	36.9209	36.92	0.00	0.00		
D1H1T	4.97	50	0.5	9.565	9.56	0.00	0.00		
D1H1V	7.14	50	4.83	92.3979	92.27	0.12	0.01		
D1H1X	4.82	50	0.1	1.913	1.91	0.00	0.00		
D1K3F	7.31	50	22.4	428.512	427.68	0.82	0.01		
D1K3H	7.12	50	17.92	342.8096	342.38	0.42	0.01		
D1K3K	7.13	50	15	286.95	286.58	0.36	0.01		
D1K3P	7.17	50	15.68	299.9584	299.53	0.42	0.01		
D1J7X	6.73	50	29.3	560.509	560.22	0.28	0.00		
PH7	7.04			#VALUE!	#VALUE!	#VALUE!	0.01		
D1J8A	6.75	50	28.2	539.466	539.18	0.29	0.00		
D1K3X	7.24	50	15.3	292.689	292.20	0.48	0.01		
D1K3X/S	9.65	50	39.3	751.809	527.91	221.66	2.23	$\frac{-292.689}{500}$	92%.
D1K3X/D	9.58	50	40.77	779.9301	573.19	204.84	1.90		97%.
BLK	5.58	50	0.05	0.9565	0.96	0.00	0.00		
LCS	10.75	50	24.86	475.5718/500	71.18	376.27	28.12		95%.
D1K3T	7.13	50	14.5	277.385	277.03	0.35	0.01		
D1K42	7.15	50	14.82	283.5066	283.12	0.38	0.01		
D1LKG	7.33	50	15.2	290.776	290.18	0.58	0.01		
PH7	7.03			#VALUE!	#VALUE!	#VALUE!	0.01		

1405

			Quanterra, North Canton					
			Alkalinity Logsheet					
Prep Date	8/26/99		Lcs No.		Batch		RL	5,10 mg/L
Anal Date	8/26/99		Lcs Prep		Instrument			
			Date	8/26/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.4
Name	H2SO4		Date	7/29/99	Date	8/26/99		
Normality	0.01913		Intials	AKH	Intials	AKH		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc
PH7	7.03			#VALUE!	#VALUE!	#VALUE!	0.01	
D1LKL	7.01	50	14.5	277.39	277.11	0.27	0.01	
D1LKN	7.2	50	14.9	285.04	284.61	0.42	0.01	
D1LKR	7.2	50	15.9	304.17	303.71	0.45	0.01	
D1LL1	9.47	50	2.78	53.18	40.48	11.23	1.48	
D1LLH	6.93	50	7.8	149.21	149.09	0.12	0.00	
D1LLK	12.03	10	9.15	875.20	3.34	336.10	535.76	
D1LLN	10.16	1	6.5	6217.25	2632.80	3577.22	7.23	
D1LLR	11.36	50	10.69	204.50	3.99	85.96	114.54	
D1LLW	6.91	50	32.8	627.46	626.98	0.48	0.00	
D1LM0	7.63	50	19.4	371.12	369.62	1.48	0.02	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
D1LM5	7.05	50	32.2	615.99	615.33	0.65	0.01	
D1M28	7.43	50	15.35	293.6455	292.89	0.74	0.01	
D1M2M	7.31	50	15.57	297.8541	297.27	0.57	0.01	
D1M2Q	7.24	50	14.1	269.733	269.28	0.44	0.01	
D1M2T	7.25	50	15.8	302.254	301.74	0.50	0.01	
D1M2W	7.2	50	15.1	288.863	288.43	0.43	0.01	
D1M2C	7.06	50	18.39	351.8007	351.42	0.38	0.01	
D1M2C/S	9.33	50	43.5	832.155	692.01	139.07	1.07	-351.8007/500 96%
D1M2C/D	9.42	50	41.9	801.547	641.60	158.63	1.32	90%
BLK	5.4	50	0.05	0.9565	0.96	0.00	0.00	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
LCS	10.78	50	24.9	476.337/500	66.96	379.25	30.13	95%
D1M32	6.96	50	14.35	274.5155	274.28	0.24	0.00	
D1MDJ	6.75	50	45.4	868.502	868.04	0.46	0.00	
D1MDK	6.85	50	43.7	835.981	835.42	0.56	0.00	
D1M1Q	7.22	50	14.81	283.3153	282.87	0.44	0.01	
D1M1W	7.21	50	15.32	293.0716	292.62	0.45	0.01	
D1M20	7.25	50	15.6	298.428	297.92	0.50	0.01	
D1M22	7.33	50	16.2	309.906	309.27	0.62	0.01	
D1M25	7.36	50	15.6	298.428	297.78	0.64	0.01	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	

			Quanterra, North Canton					
			Alkalinity Logsheet					
Prep Date	8/26/99		Lcs No.		Batch		RL	5.10 mg/L
Anal Date	8/26/99		Lcs Prep		Instrument			
			Date	8/26/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.4
Name	H2SO4		Date	7/29/99	Date	8/26/99		
Normality	0.01913		Intials	AKH	Intials	AKH		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1M2G	7.06	50	17	325.21	324.85	0.35	0.01		
D1M2H	7.13	50	16	306.08	305.69	0.39	0.01		
D1MDL	6.63	25	27.6	1055.98	1055.55	0.42	0.00		
D1MDM	7.37	5	17	3252.10	3244.94	7.15	0.01		
D1MDN	7.6	5	50	9565.00	9529.32	35.66	0.02		
D1NRT	7.45	50	15.6	298.43	297.63	0.79	0.01		
D1NRX	6.55	50	36.5	698.25	698.01	0.23	0.00		
D1NT0	6.56	50	38.3	732.68	732.43	0.25	0.00		
D1NT1	7.1	50	36.74	702.84	702.00	0.83	0.01		
D1NT2	11.94	10	9.25	884.76	5.42	443.86	435.48		
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1NT8	10.76	50	4.13	79.01	7.84	42.40	28.77		
D1PVN	7.46	50	22.7	434.251	433.06	1.17	0.01		
D1PVN/S	9.19	50	45.7	874.241	762.46	111.01	0.77	-434.251/500	88%
D1PVN/D	9.23	50	46.47	888.9711	765.86	122.26	0.85		91%
BLK	5.26	50	0.04	0.7652	0.77	0.00	0.00		
LCS	10.43	50	24.62	470.9806/500	129.61	327.91	13.46		94%
D1PW4	8.88	5	44.8	8570.24	7999.45	570.41	0.38		
D1PWC	11.82	(10)	5.6	535.64	3.25	202.04	330.35		
D1PWC/S	11.31	10	29.3	2802.545	133.74	2566.72	102.09	-535.64/2500	91%
D1PWC/D	11.36	10	29.7	2840.805	120.98	2605.28	114.54		92%
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01		
D1PWT	12.16	25	35.2	1346.752	4.56	619.47	722.72		
D1PX3	11.91	25	18.53	708.9578	3.91	298.63	406.42		
D1PX5	11.64	10	11.5	1099.975	20.98	860.74	218.26		
D1PX6	9.38	10	8.6	822.59	670.25	151.14	1.20		
D1PXF	9.32	10	23.1	2209.515	1845.94	362.53	1.04		
D1HTQ	6.62	50	4.21	80.5373	80.50	0.03	0.00		
D1HTQ/X	6.65	50	4.15	79.3895	79.35	0.03	0.00		
D1LQW	6.26	50	13	248.69	248.65	0.04	0.00		
PH7	7.05			#DIV/0!	#DIV/0!	#DIV/0!	0.01		

1407

Quanterra General Chemistry Data Review Checklist

Parameter(s): ALK. - T + HCO_3

Batch(es): 9239130/35/36/38/39

Method #/SOP#: 2320

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			✓
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			✓
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			✓
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			✓
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?		✓			✓	~~[illegible]~~
2. If no, standardization expires 8/29/99						990[illegible]
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s):

Level I reviewer: A J K Herals Date: 990827

Level II Reviewer: Heather M Bosworth Date: 8-30-99

1408

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Corporate Policy, C

			Quanterra, North Canton					
			Alkalinity Logsheet					
Prep Date	9/3/99		Lcs No.	AL9072/3	Batch		RL	5,10 mg/L
					9246413/14/16/17			
Anal Date	9/3/99		Lcs Prep		Instrument			
			Date	9/3/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.8
Name	H2SO4		Date	8/31/99	Date	9/3/99		
Normality	0.01977		Intials	AKH	Intials	SAM		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc
PH7	6.99			#VALUE!	#VALUE!	#VALUE!	0.00	
BLK1	4.07	50	0	0.00	0.00	0.00	0.00	
LCS1	10.48	50	23.7	468.55/500	118.12	335.33	15.10	94%
D1QP4	12.01	10	19.5	1927.58	14.57	1401.36	511.65	
D1QP5	12.47	10	32.5	3212.63	6.24	1730.78	1475.60	
D1QP6	10.79	10	11.3	1117.01	159.83	926.35	30.83	
D1QP7	11.04	10	24.6	2431.71	210.22	2166.67	54.82	
D1QP8	12.31	10	25.47	2517.71	7.76	1489.08	1020.87	
D1QP9	12.01	5	27.5	5436.75	50.68	4874.43	511.65	
D1QPA	10.08	10	9.2	909.42	424.11	479.30	6.01	
D1QPA/S	10.52	10	33.6	3321.36	803.57	2501.23	16.56	96%
PH7	7.03			#VALUE!	#VALUE!	#VALUE!	0.01	
D1QPA/D	10.55	10	33.5	3311.48	759.76	2533.98	17.74	96%
D1RM8	9.09	10	42.4	4191.24	3756.23	434.39	0.62	
D1RMA	6.95	10	5.65	558.5025	558.03	0.47	0.00	
D1RMC	6.91	50	26.8	529.836	529.43	0.40	0.00	
D1VVM	7.02	50	3.47	68.6019	68.53	0.07	0.01	
D1VVV	7.23	50	18.74	370.4898	369.89	0.59	0.01	
D1VW0	7.43	50	5.3	104.781	104.50	0.26	0.01	
D1VW2	7.32	50	4.97	98.2569	98.05	0.19	0.01	
BLK2	5.63	50	0.05	0.9885	0.99	0.00	0.00	
LCS2	10.75	50	24.6	486.342/500	72.90	385.33	28.12	97%
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
D1VW3	5.08	50	0.03	0.5931	0.59	0.00	0.00	
D1VVQ	7.01	50	4.32	85.4064	85.32	0.08	0.01	
D1VVQ/S	9.51	50	29	573.33	438.37	133.34	1.62	98%
D1VVQ/D	9.52	50	29.53	583.8081	443.96	138.19	1.66	100%
D1VVR	7.16	50	3.75	74.1375	74.03	0.10	0.01	
D1VVT	7.06	50	3.25	64.2525	64.18	0.07	0.01	
D1VVW	7.03	50	6.95	137.4015	137.26	0.14	0.01	
D1VVX	7.25	50	4.56	90.1512	89.99	0.15	0.01	
D1VW1	7.49	50	4.96	98.0592	97.76	0.28	0.02	
D1RJ4	6.42	50	4	79.08	79.06	0.02	0.00	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	

			Quanterra, North Canton					
			Alkalinity Logsheet					
Prep Date	9/3/99		Lcs No.	AL9072/3	Batch		RL	5,10mg/L
					9216413/14/16/17			
Anal Date	9/3/99		Lcs Prep		Instrument			
			Date	9/3/99	ATC	Y___N___	pH 4	4
Analyst	AKH						pH 7	7
							pH 10	10.03
Titrant			Standardization		Calibration		slope=	99.8
Name	H2SO4		Date	8/31/99	Date	9/3/99		
Normality	0.01977		Intials	AKH	Intials	SAM		

Sample No.	pH	Sample Vol. (ml)	Titrant Vol (ml)	Alk mg/L	HCO3 mg/L	CO3 mg/L	OH mg/L	QC Calc
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
D1RJ4/X	6.48	50	3.94	77.89	77.87	0.02	0.00	
D1RJE	6.81	50	1.2	23.72	23.71	0.01	0.00	
D1RJH	4.81	50	0.1	1.98	1.98	0.00	0.00	
D1WJ1	7.48	50	17.2	340.04	339.07	0.96	0.02	
D1WJ5	7.43	50	17.3	342.02	341.14	0.86	0.01	
D1VX2	2.38	50	0	0.00	0.00	0.00	0.00	
D20L3	7.12	50	21.5	425.06	424.52	0.53	0.01	
D20L6	7.24	50	17.6	347.95	347.38	0.57	0.01	
D20L7	7.34	50	15.5	306.44	305.80	0.63	0.01	
D20L8	7.2	50	16.9	334.11	333.61	0.50	0.01	
PH7	7.05			#VALUE!	#VALUE!	#VALUE!	0.01	
D20L9	7.31	50	13.5	266.90	266.37	0.51	0.01	
D20LA	7.23	50	14.18	280.3386	279.88	0.45	0.01	
D20LC	6.88	50	29.8	589.146	588.72	0.42	0.00	
D20LD	6.86	50	30.7	606.939	606.52	0.41	0.00	
D20LD/X	6.9	50	30.56	604.1712	603.72	0.45	0.00	
PH7	7.05			#DIV/0!	#DIV/0!	#DIV/0!	0.01	

Quanterra General Chemistry Data Review Checklist

Parameter(s): ALKALINITY – $T, CO_3, + HCO_3$

Batch(es): 92416 4/3/14/16/17

Method #/SOP#: 310.1

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			✓
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			✓
4. ICB analyzed immediately after ICV and within criteria (= RL)?			✓			✓
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			✓
2. CCB analyzed every 10 samples, at end of sequence & within criteria (=RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?		✓			✓	
2. If no, standardization expires 9/31/99						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓			✓		
4. All client/project specific requirements met ?	✓			✓		
5. Date/time of preparation and analysis verified as correct ?	✓			✓		
6. Units verified as correct?	✓			✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓			✓		
8. SOP followed?	✓			✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓			✓		
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: A J K Hen[illegible] Date: 990902

Level II Reviewer: [signature] Date: 09-08-99

14 11

			Quanterra, North Canton							
			TS/TDS/TSS Logsheet							
Analysis	TDS					Batch	9243367			
Prep Date	8/30/99	Time	2.30PM	Temp	105	Lcs No.	TD9003			
						Lcs prep date	5/3/99			
Anal Date	8/31/99	Time	3.30PM	Temp	180	RL	10MG/L			
Analyst	CKK									
Sample No.	Tare wt (g)	Sample ml	wt 1 g	wt 2 g	wt 3 g	Final wt (g)	diff g	Result mg/L	Conductivity Screen	Take Third Weight
BLANK	66.3805	100	66.3804	66.3805		66.3804	-0.0001	-1	NA	
LCS	69.1543	100	69.1596	69.1595		69.1595	0.0052	52	NA x100 /50 = 104%	
D1PVN ✓	68.0783	(20)	68.2253	68.2345	68.2243	68.2243	0.146	7300	10000	Yes
D1PVN-D	70.2689	20	70.4184	70.4149	70.4175	70.4149	0.146	7300	10000	Yes
D1PWC ✓	68.9355	(50)	69.0840	69.0967	69.1006	69.0840	0.1485	2970	4456	Yes
D1PWC-D	67.1971	50	67.3442	67.3446		67.3442	0.1471	2942	4456	
D1PW4	70.611	2	70.6970	70.6969		70.6969	0.0859	42950	67000	
D1PWT	69.6331	25	69.7442	69.7467	69.7574	69.7442	0.1111	4444	8770	Yes
D1PX3	72.1619	5	72.2663	72.2663		72.2663	0.1044	20880	32000	
D1PX5	80.6044	10	80.7373	80.7371		80.7371	0.1327	13270	23000	
D1PX6	68.0067	25	68.1330	68.1328		68.1328	0.1261	5044	7040	
D1PXF	70.5664	20	70.7285	70.7244	70.7261	70.7244	0.158	7900	8645	Yes
D1QP4	65.6597	10	65.7196	65.7165	65.7178	65.7165	0.0568	5680	7200	Yes
D1QP5	69.1625	10	69.2828	69.2822	69.2819	69.2819	0.1194	11940	20000	Yes
D1QP6	65.3711	10	65.4229	65.4209	65.4212	65.4209	0.0498	4980	6715	Yes
D1QP7	67.6512	10	67.6964	67.6961		67.6961	0.0449	4490	5764	
D1QP8	69.621	10	69.6678	69.6675		69.6675	0.0465	4650	12000	
D1QP9	66.8708	5	66.9513	66.9509		66.9509	0.0801	16020	36000	
D1QPA ✓	69.0616	(10)	69.1178	69.1179		69.1178	0.0562	5620	7545	
D1RLF	68.2259	100	68.2674	68.2664	68.2665	68.2664	0.0405	405	555	Yes
D1RM8	70.8768	10	70.9860	70.9836	70.9845	70.9836	0.1068	10680	15000	Yes
D1RMA ✓	67.3712	(50)	67.5182	67.5181		67.5181	0.1469	2938	3271	
D1RMC ✓	68.0552	(50)	68.2045	68.2041		68.2041	0.1489	2978	3124	
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
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						0.0000	0	#DIV/0!		
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						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		

Quanterra General Chemistry Data Review Checklist

Parameter(s): TDS'

Batch(es): 9243367

Method #/SOP#: NC-WC-0055

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓					
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): TDS RESULTS FOR SAMPLES -2, -3, -4 CONFIRMED 9-21-99

Level I reviewer: [signature] Date: 09-02-99.

Level II Reviewer: [signature] Date: 111802

\\QCANCHM\PUBLIC\QACC\LAB FORM\GChem_

Quanterra, North Canton

TS/TDS/TSS Logsheet

Analysis	TS(WATER)					Batch	924337b			
Prep Date	8/30/99	Time	2.30PM	Temp	105	Lcs No.	TD9003			
						Lcs prep date	5/3/99			
Anal Date	8/31/99	Time	4.00PM	Temp	180	RL	10MG/L			
Analyst	CKK									

Sample No.	Tare wt (g)	Sample ml	wt 1 g	wt 2 g	wt 3 g	Final wt (g)	diff g	Result mg/L	Conductivity Screen	Take Third Weight
BLANK	71.4037	100	71.4035	71.4035		71.4035	-0.0002	-2	NA x100	
LCS	68.0207	25	68.0794	68.0794		68.0794	0.0587	2348	NA /2500	= 94%
D1PVN	65.6058	20	65.7614	65.7618		65.7614	0.1556	7780		
D1PVN-D	70.278	20	70.4328	70.4325		70.4325	0.1545	7725		
D1PWC	68.804	50	68.9509	68.9505		68.9505	0.1465	2930		
D1PWC-D	70.7108	50	70.8564	70.8561		70.8561	0.1453	2906		
D1PW4	70.7284	2	70.8133	70.8133		70.8133	0.0849	42450		
D1PWT	68.4177	25	68.6027	68.6023		68.6023	0.1846	7384		
D1PX3	65.1035	5	65.2275	65.2271		65.2271	0.1236	24720		
D1PX5	67.4334	10	67.5679	67.5676		67.5676	0.1342	13420		
D1PX6	70.0539	25	70.1875	70.1873		70.1873	0.1334	5336		
D1PXF	69.4485	20	69.6115	69.6098	69.6108	69.6098	0.1613	8065		Yes
D1QP4	68.8039	25	69.0035	68.9982	68.9999	68.9982	0.1943	7772		Yes
D1QP5	69.4341	10	69.5584	69.5580		69.5580	0.1239	12390		
D1QP6	69.8905	25	70.0719	70.0729	70.0695	70.0695	0.179	7160		Yes
D1QP7	67.0321	25	67.1876	67.1875		67.1875	0.1554	6216		
D1QP8	67.8361	10	67.8885	67.8881		67.8881	0.052	5200		
D1QP9	67.2999	5	67.4108	67.4103		67.4103	0.1104	22080		
D1QPA	70.8805	25	71.0305	71.0302		71.0302	0.1497	5988		
D1RLF	70.6231	100	70.6672	70.6670		70.6670	0.0439	439		
D1RM8	110.2555	10	110.3630	110.3634		110.3630	0.1075	10750		
D1RMA	111.5353	50	111.7570	111.7568		111.7568	0.2215	4430		
D1RMC	109.9081	50	110.0634	110.0630		110.0630	0.1549	3098		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
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						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		
						0.0000	0	#DIV/0!		

Quanterra General Chemistry Data Review Checklist

Parameter(s): TS (water)

Batch(es): 9243376

Method #/SOP#: NC-WC-0004

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	N/A	YES	NO	N/A
1. Initial calibration correlation coefficient ≥ 0.995?			✓			✓
2. Calibration curve consist of the minimum number of calibration standards?			✓			
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)			✓			
4. ICB analyzed immediately after ICV and within criteria (± RL)?			✓			
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?			✓			
2. CCB analyzed every 10 samples, at end of sequence & within criteria (±RL)?			✓			✓
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?	✓			✓		
E. Titrant						
1. Titrant standardized?			✓			✓
2. If no, standardization expires _____			✓			
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?	✓			✓		
3. Transcriptions checked for error ?	✓					
4. All client/project specific requirements met ?	✓					
5. Date/time of preparation and analysis verified as correct ?	✓					
6. Units verified as correct?	✓					
7. Dilutions have been properly applied and RL's adjusted appropriately?	✓					
8. SOP followed?	✓					
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?	✓					
10. All reagent and standard numbers recorded in logbook?	✓			✓		
11. Edits dated and initialed	✓					

Comment on any "NO" response(s): _____

Level I reviewer: [signature] Date: 09-02-99

Level II Reviewer: [signature] Date: 990902

1462

****
** CALIBRATION **
****

713A Tue Jul 13 18:15:03 1999

Std. #	Used	Conc. (ppm)	Volume (mL)
1	Yes	0.000	2.000
2	Yes	1.000	2.000
3	Yes	10.000	2.000
4	Yes	25.000	2.000
5	Yes	50.000	2.000

RF (ugC/k-cnt): 1.0427
R-Squared: 0.9983

Calibration Mode: TOC
Allow Editing: No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	444	3199	18818	46346	97856
2	296	2178	17713	44909	97420
3	328	2284	17304	44841	96585
4	275	2260	18027	45531	97909
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

****
** RUN SETUP **
****

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990830 Firmware Version: 3.0

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15:03 1999

****
** METHODS **
****

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

****
** SEQUENCE **
****

990830 Mon Aug 30 10:39:19 1999

Start Pos/Vial #: 2, Stop Pos/Vial #: 27

Pos/ Vial	Sample Name	Method Type	Run Rep	# (mL)	Vol Blk	# Rng	Ovr	Remarks
2	ICV TC 9119	tic/toc	Chk. 3	1	2.000	0	No	
3	CCB	tic/toc	Chk. 1	1	2.000	0	No	
4	D1R6M	tic/toc	Sample	1	2.000	0	No	
5	D1R5C4X	tic/toc	Sample	1	2.000	0	No	
6	DIR59 10X	tic/toc	Sample	1	2.000	0	No	
7	DIR6L 20X	tic/toc	Sample	1	2.000	0	No	
8	D1NRT	tic/toc	Sample	1	2.000	0	No	
9	DINRX	tic/toc	Sample	1	2.000	0	No	
10	DINTO	tic/toc	Sample	1	2.000	0	No	
11	DINT1	tic/toc	Sample	1	2.000	0	No	
12	DINT2	tic/toc	Sample	1	2.000	0	No	
13	DINT8	tic/toc	Sample	1	2.000	0	No	
14	CCV	tic/toc	Chk. 3	1	2.000	0	No	
15	CCB	tic/toc	Chk. 1	1	2.000	0	No	
16	DINK7	tic/toc	Sample	1	2.000	0	No	
17	D1NK8	tic/toc	Sample	1	2.000	0	No	

18	DINKC	tic/toc	Sample	1	2.000	0 No
19	DINKF	tic/toc	Sample	1	2.000	0 No — rerun
20	DIPVN	tic/toc	Sample	1	2.000	0 No
21	DIPVN MS	tic/toc	Sample	1	2.000	0 No
22	DIPVN MSD	tic/toc	Sample	1	2.000	0 No
23	D1PW4 20X	tic/toc	Sample	1	2.000	0 No
24	DIPWT	tic/toc	Sample	1	2.000	0 No
25	DIPX3	tic/toc	Sample	1	2.000	0 No
26	CCV	tic/toc	Chk. 3	1	2.000	0 No
27	CCB	tic/toc	Chk. 1	1	2.000	0 No

****

** RESULTS - 990830 **

****

LCS

Pos/Vial: 2 Name: ICV TC 9119 Analyzed: 08-30-99 10:40
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

	CHK. 3	TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	08301	48321	50.970	25.2576

101%

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

BLK

Pos/Vial: 3 Name: CCB Analyzed: 08-30-99 10:51
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

	CHK. 1	TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	08302	1222	1.861	0.9222

< 1

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 4 Name: D1R6M Analyzed: 08-30-99 11:03
Run ID: 3 Meth: tic/toc Vol (mL): 2.018

	SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	08303	30817	31.984	15.8494	1543	1.108	0.5492

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 13 Name: DINT8 Analyzed: 08-30-99 12:43
Run ID: 12 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 083012	313631	326.867	161.9756	15582	15.746	7.8030

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 14 Name: CCV ✓ Analyzed: 08-30-99 12:54
Run ID: 13 Meth: tic/toc Vol (mL): 2.018

CHK. 3	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 083013	48201	50.845	25.1956

101 %

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 15 Name: CCB ✓ Analyzed: 08-30-99 13:05
Run ID: 14 Meth: tic/toc Vol (mL): 2.018

CHK. 1	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 083014	1338	1.982	0.9822

2 \

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 16 Name: DINK7 Analyzed: 08-30-99 13:16
Run ID: 15 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 083015	301004	313.701	155.4514	34126	35.082	17.3844

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 25 Name: DIPX3 Analyzed: 08-30-99 14:56
Run ID: 24 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	083024	341797	356.235	176.5286	14332	14.443	7.1571

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 26 Name: CCV Analyzed: 08-30-99 15:07
Run ID: 25 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	083025	49863	52.578	26.0544

104 %

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 27 Name: CCB Analyzed: 08-30-99 15:18
Run ID: 26 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	083026	1164	1.801	0.8923

2 \

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 9242323

Method #/SOP#: NC-WC-00167

QC Items	Level II Review			Level III Review		
Initial Calibration	YES	NO	NA	YES	NO	NA
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓					
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?	✓					
Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?	✓					
Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?		✓				✓
Titrant						
1. Titrant standardized?		✓				
2. If no, standardization expires _____						
Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?		✓				
2. Calculations checked for error ?	✓					
3. Transcriptions checked for error ?				✓		
4. All client/project specific requirements met ?						
5. Date/time of preparation and analysis verified as correct ?						
6. Units verified as correct?						
7. Dilutions have been properly applied and RL's adjusted appropriately?						
8. SOP followed?						
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?						
10. All reagent and standard numbers recorded in logbook?						
11. Edits dated and initialed	✓			✓		

Comment on any "NO" response(s): _____

Level I reviewer: SAM Date: 8/1/99

Level II Reviewer: _____ Date: 8/2/99

****
** RUN SETUP **
****

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990901A Firmware Version: 3.0

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15:03 1999

****
** METHODS **
****

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

****
** SEQUENCE **
****

990901 Wed Sep 01 11:52:52 1999

Start Pos/Vial #: 11, Stop Pos/Vial #: 53

Pos/ Vial	Sample Name	Method Type	Run Rep	# (mL)	Vol Blk	# Rng	Ovr	Remarks
11	CCV LCS TC9120	tic/toc	Chk. 3	1	2.000	0	No	
12	CCB	tic/toc	Chk. 1	1	2.000	0	No	
13	D1PWC	tic/toc	Sample	1	2.000	0	No	
14	D1PWC MS	tic/toc	Sample	1	2.000	0	No	
15	D1PWC MSD	tic/toc	Sample	1	2.000	0	No	
16	D1QP6	tic/toc	Sample	1	2.000	0	No	
17	D1QP7	tic/toc	Sample	1	2.000	0	No	
18	D1QP8 4X	tic/toc	Sample	1	2.000	0	No	
19	D1QP9 4X	tic/toc	Sample	1	2.000	0	No	
20	D1Q63	tic/toc	Sample	1	2.000	0	No	
21	D1P4H	tic/toc	Sample	1	2.000	0	No	
22	D1RCT	tic/toc	Sample	1	2.000	0	No	
23	CCV LCS TC9120	tic/toc	Chk. 3	1	2.000	0	No	
24	CCB	tic/toc	Chk. 1	1	2.000	0	No	
25	D1QPA 4X	tic/toc	Sample	1	2.000	0	No	—rerun @ 10X
26	D1PXF 4X	tic/toc	Sample	1	2.000	0	No	

BATCH 9245246

27 D1QP4 4X tic/toc Sample 1 2.000 0 No
28 D1QP5 2X tic/toc Sample 1 2.000 0 No
29 D1R8E tic/toc Sample 1 2.000 0 No
30 D1R8W tic/toc Sample 1 2.000 0 No
31 D1R8W MS tic/toc Sample 1 2.000 0 No
32 D1R8W MSD tic/toc Sample 1 2.000 0 No
33 DIR92 tic/toc Sample 1 2.000 0 No
34 D1R94 tic/toc Sample 1 2.000 0 No
35 CCV LCS TC9120 tic/toc Chk. 3 1 2.000 0 No
36 CCB tic/toc Chk. 1 1 2.000 0 No
37 DIRM8 10X tic/toc Sample 1 2.000 0 No
38 DIRMA tic/toc Sample 1 2.000 0 No
39 D1RMC tic/toc Sample 1 2.000 0 No
40 D1RV3 tic/toc Sample 1 2.000 0 No
41 D1RV5 tic/toc Sample 1 2.000 0 No
42 D1RV7 tic/toc Sample 1 2.000 0 No
43 D1RW4 tic/toc Sample 1 2.000 0 No
44 D1RW9 tic/toc Sample 1 2.000 0 No
45 D1RWE tic/toc Sample 1 2.000 0 No
46 D1RWH tic/toc Sample 1 2.000 0 No
47 CCV LCS TC9120 tic/toc Chk. 3 1 2.000 0 No
48 CCB tic/toc Chk. 1 1 2.000 0 No
49 D1RWK tic/toc Sample 1 2.000 0 No
50 D1RWN tic/toc Sample 1 2.000 0 No
51 D1RWV tic/toc Sample 1 2.000 0 No
52 CCV LCS TC9120 tic/toc Chk. 3 1 2.000 0 No
53 CCB tic/toc Chk. 1 1 2.000 0 No

BATCH 9245248

RESULTS - 990901

Pos/Vial: 11 Name: CCV LCS TC9120 Analyzed: 09-01-99 11:53
Run ID: 20 Meth: tic/toc Vol (mL): 2.018

CHK. 3 Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	09011	48602	51.263	25.4028

102%

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 12 Name: CCB BLK Analyzed: 09-01-99 12:05
Run ID: 11 Meth: tic/toc Vol (mL): 2.018

CHK. 1 Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	09012	1218	1.857	0.9202

<1

RF (ugC/k-cnt): 1.0426700

1	090110	722	0.605	0.2997	1382	0.940	0.4661

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 21 Name: D1P4H Analyzed: 09-01-99 13:45
Run ID: 20 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090111	494	0.367	0.1819	1431	0.992	0.4914

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 22 Name: D1RCT Analyzed: 09-01-99 13:56
Run ID: 21 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090112	79831	83.090	41.1742	48192	49.748	24.6522

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 23 Name: CCV LCS TC9120 Analyzed: 09-01-99 14:07
Run ID: 22 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	090113	48844	51.515	25.5279

102 %

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 24 Name: CCB Analyzed: 09-01-99 14:18
Run ID: 23 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)

1	090114	1100	1.734	0.8592				

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 25 Name: D1QPA 4X Analyzed: 09-01-99 14:29
Run ID: 24 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 090115	36412	37.818	18.7402	149559	155.441	77.0271

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 26 Name: D1PXF 4X Analyzed: 09-01-99 14:40
Run ID: 25 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 090116	164394	171.261	84.8668	52556	54.298	26.9070

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 27 Name: D1QP4 4X Analyzed: 09-01-99 14:51
Run ID: 26 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 090117	53593	55.732	27.6174	47659	49.192	24.3768

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 28 Name: D1QP5 2X Analyzed: 09-01-99 15:02
Run ID: 27 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)

1	090122	48834	50.770	25.1585	24454	24.997	12.3870

X 2 24.774

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 33 Name: DIR92 Analyzed: 09-01-99 15:57
Run ID: 32 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090123	1595278	1663.206	824.1855	30159	30.946	15.3347

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 34 Name: D1R94 Analyzed: 09-01-99 16:08
Run ID: 33 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090124	2052410	2139.846	1060.3795	30920	31.739	15.7279

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 35 Name: CCV LCS TC9120 Analyzed: 09-01-99 16:19
Run ID: 34 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	090125	49375	52.069	25.8022

103%

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 36 Name: CCB Analyzed: 09-01-99 16:31
Run ID: 35 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090126	1035	1.666	0.8256			

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 37 Name: DIRM8 10X Analyzed: 09-01-99 16:42
Run ID: 36 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090127	63068	65.611	32.5130	17410	17.652	8.7475

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 38 Name: DIRMA Analyzed: 09-01-99 16:53
Run ID: 37 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090128	607116	632.876	313.6154	45994	47.456	23.5165

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 39 Name: D1RMC Analyzed: 09-01-99 17:04
Run ID: 38 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090129	571080	595.302	294.9961	45732	47.183	23.3811

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 40 Name: D1RV3 Analyzed: 09-01-99 17:15
Run ID: 39 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090134	129785	135.175	66.9848	15267	15.418	7.6402

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 45 Name: D1RWE Analyzed: 09-01-99 18:11
Run ID: 44 Meth: tic/toc Vol (mL): 2.018

SAMPLES

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090135	184864	192.605	95.4434	7041	6.841	3.3900

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 46 Name: D1RWH Analyzed: 09-01-99 18:22
Run ID: 45 Meth: tic/toc Vol (mL): 2.018

SAMPLES

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090136	209725	218.527	108.2887	7179	6.985	3.4613

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 47 Name: CCV LCS TC9120 Analyzed: 09-01-99 18:33
Run ID: 46 Meth: tic/toc Vol (mL): 2.018

CHK. 3

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090137	48847	51.518	25.5294

102 1.

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 48 Name: CCB Analyzed: 09-01-99 18:45
Run ID: 47 Meth: tic/toc Vol (mL): 2.018

CHK. 1

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090138	1009	1.639	0.8122			

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 49 Name: D1RWK Analyzed: 09-01-99 18:56
Run ID: 48 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090139	369150	384.755	190.6615	8899	8.778	4.3500

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 50 Name: D1RWN Analyzed: 09-01-99 19:07
Run ID: 49 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090140	216194	225.272	111.6312	23367	23.864	11.8254

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 51 Name: D1RWV Analyzed: 09-01-99 19:18
Run ID: 50 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090141	611	0.489	0.2423	3354	2.997	1.4850

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 52 Name: CCV LCS TC9120 Analyzed: 09-01-99 19:29
Run ID: 51 Meth: tic/toc Vol (mL): 2.018

Rep	Data File	CHK. 3 TOC Area (cts)	CHK. 3 TOC Mass (ugC)	CHK. 3 TOC Conc (ppm)

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090142	48750	51.417	25.4793

102%

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 53 Name: CCB Analyzed: 09-01-99 19:40
Run ID: 52 Meth: tic/toc Vol (mL): 2.018

CHK. 1

Rep	Data File	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)
1	090143	993	1.622	0.8039

<1

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 9245246, 9245248

Method #/SOP#: WC-WC-0017

Review Items	Level I Review			Level II Review		
	YES	NO	N/A	YES	NO	N/A
A. Initial Calibration						
1. Initial calibration correlation coefficient ≥ 0.995?	✓					
2. Calibration curve consist of the minimum number of calibration standards?	✓			✓		
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?	✓					
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?	✓					
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓					
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			
2. Calculations checked for error ?			✓	✓		
3. Transcriptions checked for error ?						
4. All client/project specific requirements met ?						
5. Date/time of preparation and analysis verified as correct ?						
6. Units verified as correct?						
7. Dilutions have been properly applied and RL's adjusted appropriately?						
8. SOP followed?						
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?						
10. All reagent and standard numbers recorded in logbook?						
11. Edits dated and initialed						✓

Comment on any "NO" response(s): _____

Level I reviewer: SAM Date: 9/7/99

Level II Reviewer: _____ Date: 9/8/99

LCS

Pos/Vial: 26 Name: CCV Analyzed: 08-30-99 15:07
Run ID: 25 Meth: tic/toc Vol (mL): 2.018

LCV

CHK. 3	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	083025	49863	52.578	26.0544

104%.

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 27 Name: CCB Analyzed: 08-30-99 15:18
Run ID: 26 Meth: tic/toc Vol (mL): 2.018

CHK. 1	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	083026	1164	1.801	0.8923

< 1

ND

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****
** RUN SETUP **
****

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990830A Firmware Version: 3.0

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15:03 1999

****
** METHODS **
****

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

****
** SEQUENCE **
****

990830A Mon Aug 30 13:39:01 1999

Start Pos/Vial #: 1, Stop Pos/Vial #: 53

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Vol (mL)	# Blk	Ovr Rng	Remarks
1	DIRKG	tic/toc	Sample	1	2.000	0	No	
2	DIVX3	tic/toc	Sample	1	2.000	0	No	
3	DIVX4	tic/toc	Sample	1	2.000	0	No	
4	DIVX5	tic/toc	Sample	1	2.000	0	No	
5	DIVX6	tic/toc	Sample	1	2.000	0	No	
6	DIQ71	tic/toc	Sample	1	2.000	0	No	
7	DIQ76	tic/toc	Sample	1	2.000	0	No	
8	DIQ7C	tic/toc	Sample	1	2.000	0	No	
9	DIPX5	tic/toc	Sample	1	2.000	0	No	
10	DIPX6 2X	tic/toc	Sample	1	2.000	0	No	
11	CCV LCS TC9	tic/toc	Chk. 3	1	2.000	0	No	
12	CCB	tic/toc	Chk. 1	1	2.000	0	No	
13	D1PWC	tic/toc	Sample	1	2.000	0	No	
14	D1PWC MS	tic/toc	Sample	1	2.000	0	No	
15	D1PWC MSD	tic/toc	Sample	1	2.000	0	No	
16	D1QP6	tic/toc	Sample	1	2.000	0	No	

BATCH 924178

17	D1QP7	tic/toc	Sample	1	2.000	0	No
18	D1QP8	tic/toc	Sample	1	2.000	0	No
19	D1QP9	tic/toc	Sample	1	2.000	0	No
20	D1Q63	tic/toc	Sample	1	2.000	0	No
21	D1P4H	tic/toc	Sample	1	2.000	0	No
22	D1RCT	tic/toc	Sample	1	2.000	0	No
23	CCV LCS TC9119	tic/toc	Chk. 3	1	2.000	0	No
24	CCB	tic/toc	Chk. 1	1	2.000	0	No
25	D1QPA 4X	tic/toc	Sample	1	2.000	0	No
26	D1PXF 4X	tic/toc	Sample	1	2.000	0	No
27	D1QP4 4X	tic/toc	Sample	1	2.000	0	No
28	D1QP5 2X	tic/toc	Sample	1	2.000	0	No
29	D1R8E	tic/toc	Sample	1	2.000	0	No
30	D1R8W	tic/toc	Sample	1	2.000	0	No
31	D1R8W MS	tic/toc	Sample	1	2.000	0	No
32	D1R8W MSD	tic/toc	Sample	1	2.000	0	No
33	DIR92	tic/toc	Sample	1	2.000	0	No
34	D1R94	tic/toc	Sample	1	2.000	0	No
35	CCV LCS TC9119	tic/toc	Chk. 3	1	2.000	0	No
36	CCB	tic/toc	Chk. 1	1	2.000	0	No
37	DIRM8 10X	tic/toc	Sample	1	2.000	0	No
38	DIRMA	tic/toc	Sample	1	2.000	0	No
39	D1RMC	tic/toc	Sample	1	2.000	0	No
40	D1RV3	tic/toc	Sample	1	2.000	0	No
41	D1RV5	tic/toc	Sample	1	2.000	0	No
42	D1RV7	tic/toc	Sample	1	2.000	0	No
43	D1RW4	tic/toc	Sample	1	2.000	0	No
44	D1RW9	tic/toc	Sample	1	2.000	0	No
45	D1RWE	tic/toc	Sample	1	2.000	0	No
46	D1RWH	tic/toc	Sample	1	2.000	0	No
47	CCV LCS TC9119	tic/toc	Chk. 3	1	2.000	0	No
48	CCB	tic/toc	Chk. 1	1	2.000	0	No
49	D1RWK	tic/toc	Sample	1	2.000	0	No
50	D1RWN	tic/toc	Sample	1	2.000	0	No
51	D1RWV	tic/toc	Sample	1	2.000	0	No
52	CCV LCS TC9119	tic/toc	Chk. 3	1	2.000	0	No
53	CCB	tic/toc	Chk. 1	1	2.000	0	No

low gas pressure - rerun samples. SAM 9/1/99

****

RESULTS - 990830A

****

Pos/Vial: 1 Name: DIRKG Analyzed: 08-30-99 15:43
Run ID: 27 Meth: tic/toc Vol (mL): 2.018

		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	0830A1	6771	6.912	3.4251	7505	7.325	3.6297

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

R-Squared: 0.9983

Pos/Vial: 10 Name: DIPX6 2X Analyzed: 08-30-99 17:24
Run ID: 9 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 0830A10	247112	257.509	127.6061	25255	25.832	12.8009

x2
25.6016

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 11 Name: CCV LCS TC9 Analyzed: 08-30-99 17:35
Run ID: 10 Meth: tic/toc Vol (mL): 2.018

CHK. 3	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 0830A11	49413	52.109	25.8219

103 %

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 12 Name: CCB Analyzed: 08-30-99 17:46
Run ID: 11 Meth: tic/toc Vol (mL): 2.018

CHK. 1	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 0830A12	1222	1.861	0.9222

<1

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Pos/Vial: 13 Name: D1PWC Analyzed: 08-30-99 17:57
Run ID: 12 Meth: tic/toc Vol (mL): 2.018

SAMPLES	TIC	TIC	TIC	TOC	TOC	TOC
	Area	Mass	Conc	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1 0830A13	5161	5.233	2.5933	13884	13.976	6.9257

rerun

RF (ugC/k-cnt): 1.0426700

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 9244178

Method #/SOP#: TOC WC 00767

Review Items	Level I Review			Level II Review		
A. Initial Calibration	YES	NO	NA	YES	NO	NA
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓					
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓					
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?	✓					
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓					
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?	✓					
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓					
2. All reported results bracketed by in control QC ?	✓					
3. Sample analyses done within holding time ?	✓					
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓					
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?			✓			✓
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			
E. Titrant						
1. Titrant standardized?			✓			
2. If no, standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?				✓		
3. Transcriptions checked for error ?						
4. All client/project specific requirements met ?						
5. Date/time of preparation and analysis verified as correct ?						
6. Units verified as correct?						
7. Dilutions have been properly applied and RL's adjusted appropriately?						
8. SOP followed?						
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?						
10. All reagent and standard numbers recorded in logbook?						
11. Edits dated and initialed				✓		

Comment on any "NO" response(s): _____

Level I reviewer: SAM Date: 8/1/99

Level II Reviewer: _____ Date: 8/20/99

2 09022	734	0.617	0.3059	25208	25.783	12.7766
3 09023	277	0.141	0.0698	1384	0.943	0.4671
4 09024	366	0.234	0.1157	990	0.532	0.2635
Avg	386	0.254	0.1261	9123	9.012	4.4659
Std.Dev.	245.86			11325.63		
RSD (%)	63.70			124.14		

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 2 Name: ICV LCS TC9118 Analyzed: 09-02-99 10:23
Run ID: 1 Meth: tic/toc Vol (mL): 2.018

CHK. 3	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 09025	48828	51.499	25.5196

125 102%

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 3 Name: CCB Analyzed: 09-02-99 10:34
Run ID: 2 Meth: tic/toc Vol (mL): 2.018

CHK. 1	TOC	TOC	TOC
	Area	Mass	Conc
Rep Data File	(cts)	(ugC)	(ppm)
1 09026	1142	1.778	0.8809

<1

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****
** RUN SETUP **
****

Operator: SAM WinTOC Version: 3.0
Data Path: C:\WINTOC\DATA10\990902 Firmware Version: 3.0

****
** CALIBRATION **
****

990713A Tue Jul 13 18:15:03 1999

****
** METHODS **
****

TIC/TOC Fri Apr 09 08:40:31 1999
Acid Volume: 200 uL Rinse Volume (mL): 15
Oxidant Volume: 1000 uL Rinses Per Rep: 0
Auto-Repeat Time: 00:00:00 (hr:min:sec) Rinses Per Sample: 1

	TIC	TOC	TC
React: (min:sec):	02:00	02:30	02:30
Detect: (min:sec):	01:30	01:30	01:30

****
** SEQUENCE **
****

990902 Thu Sep 02 10:26:33 1999

Start Pos/Vial #: 1, Stop Pos/Vial #: 53

Pos/ Vial	Sample Name	Method Type	Run Rep	# Vol (mL)	# Blk	Ovr Rng	Remarks
1	DIVX5 4X	tic/toc	Sample	1 2.000	0	No	
2	D1VX6 20X	tic/toc	Sample	1 2.000	0	No	
3	DINKF 4X	tic/toc	Sample	1 2.000	0	No	
4	DIQPA 10X	tic/toc	Sample	1 2.000	0	No	
5	DIRWM	tic/toc	Sample	1 2.000	0	No	
6	DIRWM MS	tic/toc	Sample	1 2.000	0	No	
7	DIRWM MSD	tic/toc	Sample	1 2.000	0	No	
8	DIRWW	tic/toc	Sample	1 2.000	0	No	
9	DIRXN	tic/toc	Sample	1 2.000	0	No	
10	DIRXP	tic/toc	Sample	1 2.000	0	No	
11	CCV LCS TC9120	tic/toc	Chk. 3	1 2.000	0	No	
12	CCB	tic/toc	Chk. 1	1 2.000	0	No	
13	DIRXT	tic/toc	Sample	1 2.000	0	No	
14	DIT01	tic/toc	Sample	1 2.000	0	No	
15	DIT03	tic/toc	Sample	1 2.000	0	No	
16	DIT05	tic/toc	Sample	1 2.000	0	No	
17	DIT08	tic/toc	Sample	1 2.000	0	No	
18	DIT0E	tic/toc	Sample	1 2.000	0	No	
19	DIT10	tic/toc	Sample	1 2.000	0	No	
20	DIT10 MS	tic/toc	Sample	1 2.000	0	No	
21	DIT10 MSD	tic/toc	Sample	1 2.000	0	No	
22	DIT5J	tic/toc	Sample	1 2.000	0	No	
23	CCV LCS TC9120	tic/toc	Chk. 3	1 2.000	0	No	
24	CCB	tic/toc	Chk. 1	1 2.000	0	No	

BATCH 9246134

****
** RESULTS - 990902 **
****

Pos/Vial: 1 Name: DIVX5 4X Analyzed: 09-02-99 11:02
Run ID: 3 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC Area	TIC Mass	TIC Conc	TOC Area	TOC Mass	TOC Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090215	172735	179.958	89.1765	12452	12.483	6.1858

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 10 Name: DIRXP Analyzed: 09-02-99 12:43
Run ID: 9 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090216	192174	200.227	99.2204	8387	8.244	4.0854

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 11 Name: CCV LCS TC9120 Analyzed: 09-02-99 12:54
Run ID: 10 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	090217	48291	50.939	25.2421

101 /.

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 12 Name: CCB Analyzed: 09-02-99 13:05
Run ID: 11 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	090218	976	1.605	0.7951

∠1

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 13 Name: DIRXT Analyzed: 09-02-99 13:17
Run ID: 12 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090227	90951	94.684	46.9198	27162	27.821	13.7862

x 2

27.5724

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 22 Name: DIT5J Analyzed: 09-02-99 14:56
Run ID: 21 Meth: tic/toc Vol (mL): 2.018

SAMPLES		TIC	TIC	TIC	TOC	TOC	TOC
		Area	Mass	Conc	Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)	(cts)	(ugC)	(ppm)
1	090228	315796	329.124	163.0942	7320	7.132	3.5341

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

****

Pos/Vial: 23 Name: CCV LCS TC9120 Analyzed: 09-02-99 15:07
Run ID: 22 Meth: tic/toc Vol (mL): 2.018

CHK. 3		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	090229	47378	49.987	24.7704

99 /.

Pos/Vial: 24 Name: CCB Analyzed: 09-02-99 15:21
Run ID: 23 Meth: tic/toc Vol (mL): 2.018

CHK. 1		TOC	TOC	TOC
		Area	Mass	Conc
Rep	Data File	(cts)	(ugC)	(ppm)
1	090230	1142	1.178	0.8809

< 1

RF (ugC/k-cnt): 1.0426700
R-Squared: 0.9983

Quanterra General Chemistry Data Review Checklist

Parameter(s): TOC

Batch(es): 9246134

Method #/SOP#: NC-WC-0017

Review Items	Level I Review			Level II Review		
	YES	NO	N/A	YES	NO	N/A
A. Initial Calibration						
1. Initial calibration correlation coefficient ≥ 0.995?	✓			✓		
2. Calibration curve consist of the minimum number of calibration standards?	✓			✓		
3. ICV analyzed at immediately after calibration and within control limits ? (TRAACS Nitrate/Nitrite, Cyanide 85-115%; all others 90-110%)	✓			✓		
4. ICB analyzed immediately after ICV and within criteria (≤ RL)?	✓			✓		
B. Continuing Calibration						
1. CCV analyzed every 10 samples, at end of sequence and within criteria?	✓			✓		
2. CCB analyzed every 10 samples, at end of sequence & within criteria (≤RL)?	✓			✓		
C. Sample Results						
1. Were samples with concentrations > the linear range diluted and reanalyzed ?	✓			✓		
2. All reported results bracketed by in control QC ?	✓			✓		
3. Sample analyses done within holding time ?	✓			✓		
D. Quality Control						
1. LCS per prep batch and within QC limits ? *(LCSD, where applicable)*	✓			✓		
2. Method blank done per prep batch and < RL. Method blank RL supports the lowest RL reported for the batch?	✓			✓		
3. MS/MSD run at required frequency and evaluated? MS/MSD reported properly and calculated correctly?	✓			✓		
4. Duplicate samples run at required frequency (duplicate sample performed per matrix encountered)?			✓			✓
E. Titrant						
1. Titrant standardized?			✓			✓
2. If no. standardization expires _____						
F. Other						
1. Are all nonconformances documented appropriately (NCM or narrative)?			✓			✓
2. Calculations checked for error ?				✓		
3. Transcriptions checked for error ?				✓		
4. All client/project specific requirements met ?				✓		
5. Date/time of preparation and analysis verified as correct ?				✓		
6. Units verified as correct?				✓		
7. Dilutions have been properly applied and RL's adjusted appropriately?				✓		
8. SOP followed?				✓		
9. Calculations checked at minimum frequency (at least 20%, 100% for QC)?				✓		
10. All reagent and standard numbers recorded in logbook?				✓		
11. Edits dated and initialed				✓		

Comment on any "NO" response(s): _____

Level I reviewer: SAM Date: 9/3/99

Level II Reviewer: R. Wood Date: 9/8/99

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-29

General Chemistry

Lot-Sample #...: A9H250128-001 Work Order #...: D1PVN Matrix.....: WATER
Date Sampled...: 08/23/99 09:30 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	53.3	5.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 1					
Hardness, as CaCO3	1100	50	mg/L	MCAWW 130.2	09/07/99	9250310
	Dilution Factor: 25					
Total Alkalinity	430	5.0	mg/L	MCAWW 310.1	08/26/99	9239136
	Dilution Factor: 1					
Total Dissolved Solids	7300	50	mg/L	MCAWW 160.1	08/30-09/01/99 8/31/99	9243367
	Dilution Factor: 5					
Total Organic Carbon	5	1	mg/L	MCAWW 415.1	08/30/99	9242323
	Dilution Factor: 1					
Total Solids (Residue)	7800	50	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 5					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: PM4NA

General Chemistry

Lot-Sample #...: A9H250128-002 Work Order #...: D1PW4 Matrix.....: WATER
Date Sampled...: 08/23/99 11:00 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	1470	100	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 20					
Hardness, as CaCO3	1000	20	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 10					
Total Alkalinity	8600	50	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 10					
Total Dissolved Solids	43000	500	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 50					
Total Organic Carbon	360	20	mg/L	MCAWW 415.1	08/30/99	924
	Dilution Factor: 20					
Total Solids (Residue)	42000	500	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 50					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-6

General Chemistry

Lot-Sample #...: A9H250128-003 Work Order #...: D1PWC Matrix.....: WATER
Date Sampled...: 08/23/99 12:00 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	30.0	5.0	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 1					
Hardness, as CaCO3	1500	10	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 5					
Total Alkalinity	540	25	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 5					
Total Dissolved Solids	3000	20	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 2					
Total Organic Carbon	7	1	mg/L	MCAWW 415.1	09/01/99	9245246
	Dilution Factor: 1					
Total Solids (Residue)	2900	20	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 2					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-5

General Chemistry

Lot-Sample #...: A9H250128-004 **Work Order #...:** D1PWT **Matrix.....:** WATER
Date Sampled...: 08/23/99 13:00 **Date Received..:** 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	125	10.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 2					
Hardness, as CaCO3	4900	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	1300	10	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 2					
Total Dissolved Solids	4400	40	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 4					
Total Organic Carbon	19	1	mg/L	MCAWW 415.1	08/30/99	9247
	Dilution Factor: 1					
Total Solids (Residue)	7400	40	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-6

General Chemistry

Lot-Sample #...: A9H250128-005 Work Order #...: D1PX3 Matrix.....: WATER
Date Sampled...: 08/23/99 14:05 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	204	10.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 2					
Hardness, as CaCO3	6700	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	710	10	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 2					
Total Dissolved Solids	21000	200	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 20					
Total Organic Carbon	7	1	mg/L	MCAWW 415.1	08/30/99	9242323
	Dilution Factor: 1					
Total Solids (Residue)	25000	200	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 20					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: RFIMW-7

General Chemistry

Lot-Sample #...: A9H250128-006 Work Order #...: D1PX5 Matrix.....: WATER
Date Sampled...: 08/23/99 14:10 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	118	5.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 1					
Hardness, as CaCO3	2300	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	1100	25	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 5					
Total Dissolved Solids	13000	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	7	1	mg/L	MCAWW 415.1	08/30/99	9244
	Dilution Factor: 1					
Total Solids (Residue)	13000	100	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 10					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-13F

General Chemistry

Lot-Sample #...: A9H250128-007 Work Order #...: D1PX6 Matrix.....: WATER
Date Sampled...: 08/23/99 15:15 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	206	25.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 5					
Hardness, as CaCO3	1000	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	820	25	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 5					
Total Dissolved Solids	5000	40	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 4					
Total Organic Carbon	26	2	mg/L	MCAWW 415.1	08/30/99	9244178
	Dilution Factor: 2					
Total Solids (Residue)	5300	40	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-13S

General Chemistry

Lot-Sample #...: A9H250128-008 Work Order #...: D1PXF Matrix.....: WATER
Date Sampled...: 08/23/99 15:45 Date Received..: 08/24/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	910	50.0	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 10					
Hardness, as CaCO3	250	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	2200	25	mg/L	MCAWW 310.1	08/26/99	9239138
	Dilution Factor: 5					
Total Dissolved Solids	7900	50	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 5					
Total Organic Carbon	110	4	mg/L	MCAWW 415.1	09/01/99	9245
	Dilution Factor: 4					
Total Solids (Residue)	8100	50	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 5					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-7

General Chemistry

Lot-Sample #...: A9H260105-001 Work Order #...: D1QP4 Matrix.....: WATER
Date Sampled...: 08/24/99 09:40 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	1560	100	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 20					
Hardness, as CaCO3	1500	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	1900	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	5700	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	98	4	mg/L	MCAWW 415.1	09/01/99	9245246
	Dilution Factor: 4					
Total Solids (Residue)	7800	40	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-8

General Chemistry

Lot-Sample #...: A9H260105-002 Work Order #...: D1QP5 Matrix.....: WATER
Date Sampled...: 08/24/99 10:00 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	25[illegible]	25.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 5					
Hardness, as CaCO3	400	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	3200	2[illegible]	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	12000	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	57	2	mg/L	MCAWW 415.1	09/01/99	9245[illegible]
	Dilution Factor: 2					
Total Solids (Residue)	12000	100	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 10					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-9

General Chemistry

Lot-Sample #...: A9H260105-003 Work Order #...: D1QP6 Matrix.....: WATER
Date Sampled...: 08/24/99 11:30 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	2000	100	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 20					
Hardness, as CaCO3	2900	20	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 10					
Total Alkalinity	1100	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	5000	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	47	1	mg/L	MCAWW 415.1	09/01/99	9245246
	Dilution Factor: 1					
Total Solids (Residue)	7200	40	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-18

General Chemistry

Lot-Sample #...: A9H260105-004 Work Order #...: D1QP7 Matrix.....: WATER
Date Sampled...: 08/24/99 11:00 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	1600	100	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 20					
Hardness, as CaCO3	3100	20	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 10					
Total Alkalinity	2400	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	4500	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	38	1	mg/L	MCAWW 415.1	09/01/99	9245
	Dilution Factor: 1					
Total Solids (Residue)	6200	40	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-10

General Chemistry

Lot-Sample #...: A9H260105-005 Work Order #...: D1QP8 Matrix.....: WATER
Date Sampled...: 08/24/99 13:15 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	169	10.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 2					
Hardness, as CaCO3	1800	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	2500	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	4600	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	65	4	mg/L	MCAWW 415.1	09/01/99	9245246
	Dilution Factor: 4					
Total Solids (Residue)	5200	100	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 10					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-11

General Chemistry

Lot-Sample #...: A9H260105-006 Work Order #...: D1QP9 Matrix.....: WATER
Date Sampled...: 08/24/99 13:45 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	276	10.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 2					
Hardness, as CaCO3	1400	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	5400	50	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 10					
Total Dissolved Solids	16000	200	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 20					
Total Organic Carbon	100	4	mg/L	MCAWW 415.1	09/01/99	9245
	Dilution Factor: 4					
Total Solids (Residue)	22000	200	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 20					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-16F

General Chemistry

Lot-Sample #...: A9H260105-007 Work Order #...: D1QPA Matrix.....: WATER
Date Sampled...: 08/24/99 14:30 Date Received..: 08/25/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	2500	100	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 20					
Hardness, as CaCO3	450	50	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 25					
Total Alkalinity	910	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	5600	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	300	10	mg/L	MCAWW 415.1	09/02/99	9246134
	Dilution Factor: 10					
Total Solids (Residue)	6000	40	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 4					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-12

General Chemistry

Lot-Sample #...: A9H270119-001 Work Order #...: D1RM8 Matrix.....: WATER
Date Sampled...: 08/25/99 09:15 Date Received..: 08/26/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	844	50.0	mg/L	MCAWW 410.4	09/02-09/03/99	9246283
	Dilution Factor: 10					
Hardness, as CaCO3	590	20	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 10					
Total Alkalinity	4200	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	11000	100	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 10					
Total Organic Carbon	87	10	mg/L	MCAWW 415.1	09/01/99	9245248
	Dilution Factor: 10					
Total Solids (Residue)	11000	100	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 10					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-14S

General Chemistry

Lot-Sample #...: A9H270119-002 Work Order #...: D1RMA Matrix.....: WATER
Date Sampled...: 08/25/99 10:00 Date Received..: 08/26/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	97.4	10.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 2					
Hardness, as CaCO3	1700	20	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 10					
Total Alkalinity	560	25	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 5					
Total Dissolved Solids	2900	20	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 2					
Total Organic Carbon	24	1	mg/L	MCAWW 415.1	09/01/99	9245248
	Dilution Factor: 1					
Total Solids (Residue)	4400	20	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 2					

PARSONS ENGINEERING SCIENCE, INC.

Client Sample ID: CMSMW-39S

General Chemistry

Lot-Sample #...: A9H270119-003 Work Order #...: D1RMC Matrix.....: WATER
Date Sampled...: 08/25/99 11:00 Date Received..: 08/26/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	101	10.0	mg/L	MCAWW 410.4	09/02/99	9245323
	Dilution Factor: 2					
Hardness, as CaCO3	1800	20	mg/L	MCAWW 130.2	09/10/99	9253369
	Dilution Factor: 10					
Total Alkalinity	530	5.0	mg/L	MCAWW 310.1	09/03/99	9246413
	Dilution Factor: 1					
Total Dissolved Solids	3000	20	mg/L	MCAWW 160.1	08/30-08/31/99	9243367
	Dilution Factor: 2					
Total Organic Carbon	23	1	mg/L	MCAWW 415.1	09/01/99	9245
	Dilution Factor: 1					
Total Solids (Residue)	3100	20	mg/L	MCAWW 160.3	08/30-08/31/99	9243376
	Dilution Factor: 2					

SECTION 5

LABORATORY CASE NARRATIVES AND PROJECT CHAIN-OF-CUSTODY RECORDS

SAMPLE SUMMARY

H9H160123

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1DPK	001	BASF-AMBIENT	08/12/99	10:30
D1DPM	002	BASF-1-1	08/12/99	11:17
D1DPN	003	BASF-2-1	08/12/99	15:45
D1DPP	004	BASF-3-1	08/12/99	13:18

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ANALYTICAL METHODS SUMMARY

H9H160123

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO14	EPA-19 TO-14

References:

EPA-19 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA/600/4-89/017, June 1988.

EXECUTIVE SUMMARY - Detection Highlights

H9H160123

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
BASF-AMBIENT 08/12/99 10:30 001				
Dichlorodifluoromethane	0.62	0.57	ppb(v/v)	EPA-19 TO-14
n-Butane	2.5	0.57	ppb(v/v)	EPA-19 TO-14
Pentane	1.8	1.4	ppb(v/v)	EPA-19 TO-14
Benzene	0.62	0.57	ppb(v/v)	EPA-19 TO-14
Toluene	1.8	0.57	ppb(v/v)	EPA-19 TO-14
m-Xylene & p-Xylene	0.79	0.57	ppb(v/v)	EPA-19 TO-14
BASF-1-1 08/12/99 11:17 002				
n-Butane	1.4	0.83	ppb(v/v)	EPA-19 TO-14
n-Undecane	0.91	0.83	ppb(v/v)	EPA-19 TO-14
n-Dodecane	0.84	0.83	ppb(v/v)	EPA-19 TO-14
BASF-2-1 08/12/99 15:45 003				
n-Butane	4.6	0.66	ppb(v/v)	EPA-19 TO-14
n-Heptane	1.1	0.66	ppb(v/v)	EPA-19 TO-14
Nonane	1.6	0.66	ppb(v/v)	EPA-19 TO-14
n-Decane	5.5	0.66	ppb(v/v)	EPA-19 TO-14
1,2,4-Trimethylbenzene	0.71	0.66	ppb(v/v)	EPA-19 TO-14
n-Undecane	11	0.66	ppb(v/v)	EPA-19 TO-14
n-Dodecane	9.7	0.66	ppb(v/v)	EPA-19 TO-14
4-Methyl-2-pentanone (MIBK)	3.5	1.6	ppb(v/v)	EPA-19 TO-14
Acrolein	1.8	1.6	ppb(v/v)	EPA-19 TO-14
BASF-3-1 08/12/99 13:18 004				
n-Butane	2.0	0.71	ppb(v/v)	EPA-19 TO-14
n-Undecane	1.0	0.71	ppb(v/v)	EPA-19 TO-14
n-Dodecane	1.1	0.71	ppb(v/v)	EPA-19 TO-14

PROJECT NARRATIVE
H9H160123

The results reported herein are applicable to the samples submitted for analysis only.

Sample Receipt

The samples were received without custody seals present and/or intact.

Quality Control

All holding times and QC criteria were met.

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Quanterra Incorporated, Knoxville Laboratory maintains the following certifications, approvals and accreditations: California ELAP Cert. #2100, Connecticut DPH Cert. #PH-0233, Florida DOH SDWA Cert. #87293, Florida DOH Environmental Water Cert. #E87177, Florida DEP CompQAP #880566, Georgia EPD by US EPA Region IV, Hawaii DOH, Kentucky DEP Lab ID #90101, Maryland DHMH Cert. #277, Massachusetts Cert. #M-TN009, New York DOH Lab #10781, North Carolina DEHNR Cert. #64, North Dakota DOHCL Cert. #R-134, Ohio EPA VAP #CL0059, Oklahoma DEQ ID #9415, South Carolina DHEC Lab ID #84001, Tennessee DOH Lab ID #02014, Tennessee DEC UST, Utah DOH Cust. ID QUAN#, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, Wisconsin DNR Lab ID #998044300, AALA Cert. #486.01, US Army Corps of Engineers, Naval Facilities Engineering Service Center, and USDA Soil Permit #S-3929. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

HAH160123

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001305

PROJECT NUMBER	PROJECT NAME/LOCATION
733893	BASF / Wyandotte

PRESERVATIVES (All samples cooled to 4°C): None

PROJECT MANAGER: Mona Sutherland

ANALYSES REQUESTED

SAMPLER(S) NAME: (Please Print)

Jon Bolstad, Chris Athanassopoulos

(Signature)

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	EPA TO-14	REMARKS
8/12/99	1030			BASF - Ambient	Air	SUMMA	X	
"	1117			BASF - 1-1	Air	SUMMA	X	
"	1545			BASF - 2-1	Air	SUMMA	X	
"	1318			BASF - 3-1	Air	SUMMA	X	

Read at Ambient Temp
No Custody Seals
JW 8-13-99

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Athanassopoulos	8/12/99 1600	Jason Webb	8-13-99 10:00
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Airbill #:
Cooler #:
Laboratory: Quanterra - Knoxville
Attn.: Sample Receiving
Send Report to: Mona Sutherland
TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

SAMPLE SUMMARY

H9H160124

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1DPV	001	BASF-3-2	08/13/99	09:47
D1DQ0	002	BASF-2-2	08/13/99	11:35
D1DQ1	003	BASF-1-2	08/13/99	13:20
D1DQ2	004	BASF-CARRIER AIR	08/13/99	13:30

NOTE(S):

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- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following-parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ANALYTICAL METHODS SUMMARY

H9H160124

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO14	EPA-19 TO-14

References:

EPA-19 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA/600/4-89/017, June 1988.

PROJECT NARRATIVE
H9H160124

The results reported herein are applicable to the samples submitted for analysis only.

Sample Receipt

The samples were received without custody seals present and/or intact.

Quality Control

All holding times and QC criteria were met.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Quanterra Incorporated, Knoxville Laboratory maintains the following certifications, approvals and accreditations: California ELAP Cert. #2100, Connecticut DPH Cert. #PH-0233, Florida DOH SDWA Cert. #87293, Florida DOH Environmental Water Cert. #E87177, Florida DEP CompQAP #880566, Georgia EPD by US EPA Region IV, Hawaii DOH, Kentucky DEP Lab ID #90101, Maryland DHMH Cert. #277, Massachusetts Cert. #M-TN009, New York DOH Lab #10781, North Carolina DEHNR Cert. #64, North Dakota DOHCL Cert. #R-134, Ohio EPA VAP #CL0059, Oklahoma DEQ ID #9415, South Carolina DHEC Lab ID #84001, Tennessee DOH Lab ID #02014, Tennessee DEC UST, Utah DOH Cust. ID QUAN#, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, Wisconsin DNR Lab ID #998044300, AALA Cert. #486.01, US Army Corps of Engineers, Naval Facilities Engineering Service Center, and USDA Soil Permit #S-3929. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

EXECUTIVE SUMMARY - Detection Highlights

H9H160124

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
BASF-CARRIER AIR 08/13/99 13:30 004				
n-Decane	0.88	0.56	ppb(v/v)	EPA-19 TO-14
n-Undecane	1.4	0.56	ppb(v/v)	EPA-19 TO-14
n-Dodecane	0.61	0.56	ppb(v/v)	EPA-19 TO-14

H9H160121

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001306

PROJECT NUMBER	PROJECT NAME/LOCATION	PRESERVATIVES (All samples cooled to 4°C)
733893	BASF Wyandotte	none

PROJECT MANAGER: Mona Sutherland

SAMPLER(S) NAME: (Please Print)
Jon Bolstad Chris Athanassopoulos
(Signature) [signature] C Athanassopoulos

ANALYSES REQUESTED

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	EPA TO-14	REMARKS
8/13/99	0947			BASF-3-2	Air	Summa	X	
↓	1135			BASF-2-2	Air	Summa	X	
↓	1320			BASF-1-2	Air	Summa	X	
8/13/99	1330			BASF - Carrier Air	Air	Summa	X	

No custody seals received at ambient temp
BKP 8-16-99

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
C Athanassopoulos	8/13/99 1406	Bryan K Damron	8-16-99 10:00
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Airbill #:
Cooler #:
Laboratory: Quanterra - Knoxville
Attn.: Sample Receiving
Send Report to: Mona Sutherland
TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

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SAMPLE SUMMARY

H9H170116

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1EM4	001	BASF-3-3	08/16/99	09:55
D1EM6	002	BASF-2-3	08/16/99	11:32
D1EM7	003	BASF-1-3	08/16/99	14:05
D1EM8	004	BASF-TRIP BLANK	08/16/99	14:00
D1EM9	005	BASF-4-3	08/16/99	16:00

NOTE(S):

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ANALYTICAL METHODS SUMMARY

H9H170116

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO14	EPA-19 TO-14

References:

EPA-19 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA/600/4-89/017, June 1988.

PROJECT NARRATIVE
H9H170116

The results reported herein are applicable to the samples submitted for analysis only.

Sample Receipt

The samples were received without custody seals present and/or intact.

Quality Control

Naphthalene in the daily instrument blank was above the reporting limit. No hits for naphthalene were found in the samples.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Quanterra Incorporated, Knoxville Laboratory maintains the following certifications, approvals and accreditations: California ELAP Cert. #2100, Connecticut DPH Cert. #PH-0233, Florida DOH SDWA Cert. #87293, Florida DOH Environmental Water Cert. #E87177, Florida DEP CompQAP #880566, Georgia EPD by US EPA Region IV, Hawaii DOH, Kentucky DEP Lab ID #90101, Maryland DHMH Cert. #277, Massachusetts Cert. #M-TN009, New York DOH Lab #10781, North Carolina DEHNR Cert. #64, North Dakota DOHCL Cert. #R-134, Ohio EPA VAP #CL0059, Oklahoma DEQ ID #9415, South Carolina DHEC Lab ID #84001, Tennessee DOH Lab ID #02014, Tennessee DEC UST, Utah DOH Cust. ID QUAN#, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, Wisconsin DNR Lab ID #998044300, AALA Cert. #486.01, US Army Corps of Engineers, Naval Facilities Engineering Service Center, and USDA Soil Permit #S-3929. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

EXECUTIVE SUMMARY - Detection Highlights

H9H170116

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
BASF-3-3 08/16/99 09:55 001				
1,4-Dichlorobenzene	0.94	0.67	ppb(v/v)	EPA-19 TO-14
4-Methyl-2-pentanone (MIBK)	2.3	1.7	ppb(v/v)	EPA-19 TO-14
BASF-1-3 08/16/99 14:05 003				
n-Decane	1.4	0.69	ppb(v/v)	EPA-19 TO-14
n-Undecane	2.1	0.69	ppb(v/v)	EPA-19 TO-14
n-Dodecane	1.8	0.69	ppb(v/v)	EPA-19 TO-14
BASF-4-3 08/16/99 16:00 005				
Carbon tetrachloride	1.2	0.74	ppb(v/v)	EPA-19 TO-14
Trichloroethene	3.6	0.74	ppb(v/v)	EPA-19 TO-14
Tetrachloroethene	1.9	0.74	ppb(v/v)	EPA-19 TO-14

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60521-2233
Voice 630/990-7200, Fax 630/990-7218

H9H170116

Chain-of-Custody Record

COC No. C00863

PROJECT NUMBER	PROJECT NAME/LOCATION	PRESERVATIVES (All samples cooled to 4°C)
733893	BASF Wyandotte	none

PROJECT MANAGER: Mona Sutherland

SAMPLER(S) NAME: (Please Print)
Jon Bolstad Chris Athanassopoulos
Athanassopoulos
(Signature)

ANALYSES REQUESTED: EPA TO-14

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	REMARKS
8/16/99	0955			BASF-3-3	Air	SUMMA	
	1132			BASF-2-3	Air	SUMMA	
	1405			BASF-1-3	Air	SUMMA	
	1400			BASF-Trip Blank	Air	SUMMA	
↓	1600			BASF-4-3	Air	SUMMA	
	C.A.						

Rec'd at Ambient Temp
No Custody Seals
8-17-99

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Athanassopoulos	8/16/99 1630		8-17-99 10:00
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Airbill #:
Cooler #:
Laboratory: Quanterra-Knoxville
Attn.: Sample Receiving
Send Report to: Mona Sutherland
TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

SAMPLE SUMMARY

A9H210120

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1LL1	001	CMSMW-1	08/19/99	09:45
D1LLH	002	RFIMW-23	08/19/99	09:45
D1LLK	003	CMSMW-2	08/19/99	10:45
D1LLN	004	RFIMW-22	08/19/99	11:00
D1LLR	005	CMSMW-15	08/19/99	11:50
D1LLW	006	RFIMW-1	08/19/99	12:00
D1LM0	007	CMSMW-3	08/19/99	14:10
D1LM5	008	RFIMW-13	08/19/99	14:45
D1LMD	009	TRIP BLANK	08/19/99	

NOTE(S):

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SAMPLE SUMMARY

A9H240148

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1NRT	001	CMSMW-4	08/20/99	10:45
D1NRX	002	RFIMW-14	08/20/99	11:00
D1NT0	003	RFIMW-39	08/20/99	12:00
D1NT1	004	RFIMW-4	08/20/99	12:10
D1NT2	005	RFIMW-5	08/20/99	12:30
D1NT8	006	RFIMW-30	08/20/99	13:30

NOTE(S):

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- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

H21120

CASE NARRATIVE

The following report contains the analytical results for fourteen samples and one quality control sample submitted to Quanterra-North Canton by Parsons Engineering Science, Inc. from the BASF-Wyandotte Site, project number 733893. The samples were received August 20 and 21, 1999, according to documented sample acceptance procedures.

Samples RFIMW-23, RFIMW-22, RFIMW-4, and RFIMW-5 exhibited total solids (TS) results less than total dissolved solids (TDS) analysis. Since the TS result should be equal to or greater than the TDS result, the samples were reanalyzed for TS. The TS reanalysis results show that the original TS results probably have a negative bias. The reanalysis was performed after the recommended holding times. Both sets of data are reported.

Quanterra-North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter listed on the analytical methods summary page in accordance with the methods indicated.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

The samples were received at the laboratory at temperatures of 0.2, ↑0.3 and 3.6° C. ↓rounds to 4°C

Supplemental QC Information

GC/MS VOLATILES

Methylene chloride was detected in the method blanks for batches 9243214 and 9238142. This is a common laboratory contaminant with concentrations less than five times the requested reporting limit. All affected sample results are qualified with a "B".

Low levels of benzene was detected in the method blank for batch 9238142.

Surrogate recovery is out in sample RFIMW-22. The associated QC was acceptable. No further corrective action taken. Surrogates were out due to probable matrix effect.

Internal standard areas were outside acceptance limits for sample RFIMW-22 due to matrix effects.

Samples CMSMW-2, CMSMW-15, RFIMW-22, and RFIMW-1 were run at a dilution due to foaming.

The pH of sample RFIMW-22 was greater than 2. The sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably benzene, toluene, and ethylbenzene are susceptible to biological degradation if samples are not perserved to a pH of 2.

CASE NARRATIVE (CONTINUE)

GC/MS VOLATILES

Sample(s) which contain results between the MDL and the RL are flagged with a "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for QC criteria may not be met at these quantitation levels.

GC/MS SEMIVOLATILES

Sample CMWMW-1 had up to one surrogate recovery per fraction outside acceptance limits. However, since the recovery was greater than 10% and all associated QC met criteria, no corrective action was taken.

Samples RFIMW-22 and RFIMW-1 had elevated reporting limits due to sample matrix or TICs.

METALS

Dilutions were performed on sample(s) in this lot due to high target constituent concentrations. See Report Pages for the dilution performed on each element.

No Form IX provided for batch 9243247. The serial dilution was performed on a different client's sample from the same QC batch.

GENERAL CHEMISTRY

Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were outside the acceptance limits for some parameters. The acceptable laboratory control sample analysis data indicated that the analytical systems were operating within control and this condition is most likely due to matrix interference. See the Matrix Spike Sample Evaluation Reports for the affected parameters which will be flagged with N.

There are samples reported with dilutions due to high target analytes.

ANALYTICAL METHODS SUMMARY

PARAMETER	ANALYTICAL METHOD
Alkalinity	MCAWW 310.1
Chemical Oxygen Demand	MCAWW 410.4
Filterable Residue (TDS)	MCAWW 160.1
Inductively Coupled Plasma (ICP) Metals	SW846 6010A
Semivolatile Organic Compounds by GC/MS	SW846 8270B
Total Hardness (Titrimetric, EDTA)	MCAWW 130.2
Total Organic Carbon	MCAWW 415.1
Total Residue (TS)	MCAWW 160.3
Volatile Organics by GC/MS	SW846 8260A → 8260B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001165

PROJECT NUMBER	PROJECT NAME/LOCATION	PRESERVATIVES (All samples cooled to 4°C)
733893	BASF Wyandotte	HCl / HNO_3 / HNO_3 / H_2SO_4 / H_2SO_4

PROJECT MANAGER: M. Sutherland

SAMPLER(S) NAME: (Please Print)
Chris Athanassopoulos Tom Reppe
C Athanassopoulos Thomas Reppe
(Signature)

ANALYSES REQUESTED

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	VOCs	SVOCs	Calcium	Alkalinity	Hardness	TDS	TS	COD	TOC							REMARKS
8/19/99	0945		X	CMSMW-1	W	10	X	X	X	X	X	X	X	X	X							
8/19/99	0945		X	RFIMW-23	W	10	X	X	X	X	X	X	X	X	X							
8/19/99	1045		X	CMSMW-2	W	10	X	X	X	X	X	X	X	X	X							
8/19/99	1100		X	RFIMW-22	W	10	X	X	X	X	X	X	X	X	X							
8/19/99	1150		X	CMSMW-15	W	10	X	X	X	X	X	X	X	X	X							
8/19/99	1200		X	RFIMW-1	W	10	X	X	X	X	X	X	X	X	X							
8/19/99	1410		X	CMSMW-3	W	6			X	X	X	X	X	X	X							
8/19/99	1445		X	RFIMW-13	W	6			X	X	X	X	X	X	X							
				Trip Blank	W	1	X															

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
C Athanassopoulos	8/19/99 1700	Kid Robertson	8/20 1000
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Airbill #: Fed Ex #'s 806307291702 / 806307288544
Cooler #:
Laboratory: Quanterra
Attn.: Sample Receiving
Send Report to: Mona Sutherland
TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

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PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001308

PROJECT NUMBER	PROJECT NAME/LOCATION
733893	BASF Wyandotte

PRESERVATIVES (All samples cooled to 4°C): HNO_3, H_2SO_4, H_2O_2

PROJECT MANAGER: Mona Sutherland

ANALYSES REQUESTED

SAMPLER(S) NAME: (Please Print)

Chris Athanassopoulos Tom Reppe

(Signature) Athanassopoulos Thomas Reppe

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	Calcium	Hardness	Alkalinity	TDS	TSS	SOD	TOC	REMARKS
08/20/99	1045		X	CMS MW-4	H_2O	6	X	X	X	X	X	X	X	
	1100		X	RFI MW-14			X	X	X	X	X	X	X	
	1200		X	RFI MW-39			X	X	X	X	X	X	X	
	1210		X	RFI MW-4			X	X	X	X	X	X	X	
	1230		X	RFI MW-5			X	X	X	X	X	X	X	
	1330		X	RFI MW-30			X	X	X	X	X	X	X	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Thomas Reppe	08/20/99 1600	Rick Robertson	8/21 1040
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Airbill #: Fed Ex # 806307288533
Cooler #:
Laboratory: Quanterra
Attn.: Sample Receiving
Send Report to: M. Sutherland
TAT Expected: ~~10~~ per contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

975

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client: Parsons Engineering Science Project: BASF Quote#: Q31633
Cooler Received on: 8/20/99 Opened on: ~~8/20/99~~ 8-21-99 by: [signature] (Signature)

Fedx ☑ Client Drop Off ☐ UPS ☐ Airborne ☐
Other: _____

Cooler ☑ Safe ☐ Foam Box ☐ Client Cooler ☐ Other: _____
Quanterra Shipper No#: See back

1. Were custody seals on the outside of the cooler and intact? Yes ☑ No ☐
   If YES, Quantity 2 on each cooler Location Lid Seal
   Were the custody seals signed and dated? Yes ☑ No ☐ NA ☐
2. Shipper's packing slip attached to this form? Yes ☑ No ☐
3. Were custody papers included inside the cooler and relinquished? Yes ☑ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☑ No ☐
5. Packing material used:
   Peanuts ☐ Bubble Wrap ☑ Vermiculite ☐ Foam ☑ None ☐ Other : _____
6. Cooler temperature upon receipt 0.2 °C (see back of form for multiple coolers/temp)
   METHOD: Temperature Vial ☐ Coolant ☑ Against Bottles ☐
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ None ☐
7. Were all the bottles sealed in separate plastic bags? Yes ☑ No ☐
8. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
9. Did all bottle labels and tags agree with the custody papers? Yes ☑ No ☐
10. Were samples at the correct pH? Yes ☐ No ☐ NA ☑
11. Were correct bottles used for the tests indicated? Yes ☑ No ☐
12. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☑
13. Was a sufficient amount of sample sent in each bottle? Yes ☑ No ☐

Contacted PM _____ Date: _____ by: _____ via Voice Mail ☐ Verbal ☐ Other ☐
Concerning: _____

Check √	MACRO	MACRO
1. CHAIN OF CUSTODY		
	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred _____
2. SAMPLE CONDITION		
	SR2A	Sample(s) _____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
	SR2C	Sample(s) _____ were received in a broken container.
3. SAMPLE PRESERVATION		
	SR3A	The temperature of the cooler was _____ ° C
√	SR3C	Sample(s) See back were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s) _____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s) _____ were received with bubble > 6 mm in diameter (cc: PM)
	N/A	See back for other anomalies

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials
CMSMW-1	<2 <2	8/21/99	RR
RFIMW-23	<2 <2	8/21/99	RR
CMSMW-2[illegible]	<2 <2	8/21/99	RR
RFI MW-22	<2 <2	8/21/99	RR
CMS MW-15	<2 <2	8/21/99	RR
RFI MW-1	<2 <2	8/21/99	RR
CMS MW-3	<2 <2	8/21/99	RR
RFI MW-13	<2 <2	8/21/99	RR

Cooler	Temp	Method	Comments
J467	.02 °C	Coolent	Wet ice
J468	0.3 °C	Coolent	Wet ice

Discrepancies Cont.

Macro Name: MW-22 pres met to <2

SR3C MW-15 pres met & COD to <2

ok ide 8-21-99

Macro Name:

Macro Name:

Other Anomalies:

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client: Parsons Engineering Sci Project: BASF Quote#: Q 26693
Cooler Received on: 8/21/99 Opened on: 8/21/99 by: [signature] (Signature)

Fedx ☑ Client Drop Off ☐ UPS ☐ Airborne ☐
Other: _____

Cooler ☑ Safe ☐ Foam Box ☐ Client Cooler ☐ Other: _____
Quanterra Shipper No#: 2103

1. Were custody seals on the outside of the cooler and intact? Yes ☑ No ☐
   If YES, Quantity 2 Location L.S Seal
   Were the custody seals signed and dated? Yes ☑ No ☐ NA ☐
2. Shipper's packing slip attached to this form? Yes ☑ No ☐
3. Were custody papers included inside the cooler and relinquished? Yes ☑ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☑ No ☐
5. Packing material used:
   Peanuts ☐ Bubble Wrap ☑ Vermiculite ☐ Foam ☐ None ☑ Other: _____
6. Cooler temperature upon receipt 3.6 °C (see back of form for multiple coolers/temp)
   METHOD: Temperature Vial ☑ Coolant ☐ Against Bottles ☐
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ None ☐
7. Were all the bottles sealed in separate plastic bags? Yes ☑ No ☐
8. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
9. Did all bottle labels and tags agree with the custody papers? Yes ☑ No ☐
10. Were samples at the correct pH? Yes ☑ No ☐ NA ☐
11. Were correct bottles used for the tests indicated? Yes ☑ No ☐
12. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☑
13. Was a sufficient amount of sample sent in each bottle? Yes ☑ No ☐

Contacted PM _____ Date: _____ by: _____ via Voice Mail ☐ Verbal ☐ Other ☐
Concerning: _____

Check √	MACRO	MACRO
1. CHAIN OF CUSTODY		
☑	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred _____
2. SAMPLE CONDITION		
	SR2A	Sample(s) _____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
	SR2C	Sample(s) _____ were received in a broken container.
3. SAMPLE PRESERVATION		
√	SR3A	The temperature of the cooler was _____ ° C
	SR3C	Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s) _____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s) _____ were received with bubble > 6 mm in diameter (cc: PM)
	N/A	See back for other anomalies

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH		Date	Initials
CMS MW-4	<2	<2	8/21/99	RR
RFI MW 14	<2	<2		
RFI MW-34	<2	<2		
RFI MW-4	<2	<2		
RFI MW-5	<2	<2		
RFI MW-30	<2	<2		

Cooler	Temp	Method	Comments

Discrepancies Cont.

Macro Name:

Macro Name:

Macro Name:

Other Anomalies:

SAMPLE SUMMARY

A9H250128

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1PVN	001	RFIMW-29	08/23/99	09:30
D1PW4	002	PM4NA	08/23/99	11:00
D1PWC	003	RFIMW-6	08/23/99	12:00
D1PWT	004	CMSMW-5	08/23/99	13:00
D1PX3	005	CMSMW-6	08/23/99	14:05
D1PX5	006	RFIMW-7	08/23/99	14:10
D1PX6	007	CMSMW-13F	08/23/99	15:15
D1PXF	008	CMSMW-13S	08/23/99	15:45

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

A9H260105

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1QP4	001	CMSMW-7	08/24/99	09:40
D1QP5	002	CMSMW-8	08/24/99	10:00
D1QP6	003	CMSMW-9	08/24/99	11:30
D1QP7	004	CMSMW-18	08/24/99	11:00
D1QP8	005	CMSMW-10	08/24/99	13:15
D1QP9	006	CMSMW-11	08/24/99	13:45
D1QPA	007	CMSMW-16F	08/24/99	14:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

A9H270119

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1RM8	001	CMSMW-12	08/25/99	09:15
D1RMA	002	CMSMW-14S	08/25/99	10:00
D1RMC	003	CMSMW-39S	08/25/99	11:00
D1RMD	004	ERB-1	08/25/99	09:00
D1RME	005	TRIP BLANK	08/25/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

H25128

CASE NARRATIVE

The following report contains the analytical results for nineteen water samples and one quality control sample submitted to Quanterra-North Canton by Parsons Engineering Science, Inc. from the BASF-Wyandotte Site, project number 733893. The samples were received August 24, 25, and 26, 1999, according to documented sample acceptance procedures.

Quanterra-North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter listed on the analytical methods summary page in accordance with the methods indicated. Results were provided by facsimile transmission to Mona Sutherland on September 14 and 20, 1999.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

The samples were received at the laboratory at temperatures of 0.3, 0.6, 3.4, and 1.4° C.

Supplemental QC Information

GC/MS VOLATILES

Methylene chloride was detected in the method blanks for batches 9243214, 9244134, and 9245137. This is a common laboratory contaminant with concentrations less than five times the requested reporting limit. All affected sample results are qualified with a "B".

Samples CMSMW-12, PM4NA, CMSMW-13F, and CMSMW-13S were run at a dilution due to foaming.

The pH of samples CMSMW-12 and PM4NA was greater than 2. The sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably benzene, toluene, and ethylbenzene are susceptible to biological degradation if samples are not perserved to a pH of 2.

Sample(s) which contain results between the MDL and the RL are flagged with a "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for QC criteria may not be met at these quantitation levels.

CASE NARRATIVE (CONTINUED)

GC/MS SEMIVOLATILES

Sample RFIMW-29 had surrogate recoveries outside acceptance limits. Upon reextraction and reanalysis, all surrogates were within acceptance limits; however, recommended holding time had been exceeded. Both sets of data have been included

Samples PM4NA and CMSMW-12 had elevated reporting limits due to TICs.

METALS

Matrix spike recovery and relative percent difference (RPD) data were not calculated for some analytes due to the sample concentration reading greater than four times the spike amount. See the Matrix Spike Report for the affected analytes which will be flagged with NC, MSB.

Dilutions were performed on sample(s) in this lot due to high target constituent concentrations. See Report Pages for the dilution performed on each element.

GENERAL CHEMISTRY

Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were outside the acceptance limits for some parameters. The acceptable laboratory control sample analysis data indicated that the analytical systems were operating within control and this condition is most likely due to matrix interference. See the Matrix Spike Sample Evaluation Reports for the affected parameters which will be flagged with N.

There are samples reported with dilutions due to high target analytes.

ANALYTICAL METHODS SUMMARY

PARAMETER	ANALYTICAL METHOD
Alkalinity	MCAWW 310.1
Chemical Oxygen Demand	MCAWW 410.4
Filterable Residue (TDS)	MCAWW 160.1
Inductively Coupled Plasma (ICP) Metals	SW846 6010A
Semivolatile Organic Compounds by GC/MS	SW846 8270B
Total Hardness (Titrimetric, EDTA)	MCAWW 130.2
Total Organic Carbon	MCAWW 415.1
Total Residue (TS)	MCAWW 160.3
Volatile Organics by GC/MS	SW846 8260A

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 200, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001307

PROJECT NUMBER	PROJECT NAME/LOCATION
733893	BASF Wyandotte

PRESERVATIVES (All samples cooled to 4°C): HCl / HNO3 / H2SO4

PROJECT MANAGER: Mona Sutherland

ANALYSES REQUESTED: VOCs / SVOCs / Calcium / Hardness / Alkalinity / COD / TOC / TDS / TSS

SAMPLER(S) NAME: (Please Print)

Mark Pawlyk, Tom Reppe, Chris Athanassopoulos

(Signature) Mark Pawlyk, Thomas Reppe, C Athanassopoulos

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	REMARKS
8/23/99	0930		X	RFIMW-29	W	10	
	0930		X	RFIMW-29-MS/MSD	W	~~20~~ 18 C.A	
	1100		X	PM4N/A	W	10	
	1200		X	RFIMW-6	W	6	
	1200		X	RFIMW-6-MS/MSD	W	~~12~~ 18 C.A	
	1300		X	CMSMW-5	W	6	
	1405		X	CMSMW-6	W	6	
	1410		X	RFIMW-7	W	6	
	1515		X	CMS MW-13F	W	10	
	1545		X	CMS MW-13S	W	10	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
C Athanassopoulos	8/23/99 1715		8/23/99 1715
	8/23/99 1720		8/24 930

Airbill #: FedEx 806307288474/485

Cooler #:

Laboratory: Quanterra - North Canton

Attn.: Sample Receiving

Send Report to: M. Sutherland

TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001172

PROJECT NUMBER	PROJECT NAME/LOCATION
733893	BASF Wyandotte

PRESERVATIVES (All samples cooled to 4°C): HCl, HNO_3, H_2SO_4, NaOH

PROJECT MANAGER: Mona Sutherland

ANALYSES REQUESTED: VOCs, SVOCs, Calcium, Hardness, Alkalinity, TDS, TSS, COD, TOC

SAMPLER(S) NAME: (Please Print)
Chris Athanassopoulos Tom Reppe Mark Pawlyk

(Signature)

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	REMARKS
8/24/99	0940		X	CMS MW-7	W	6	
	1000		X	CMS MW-8	W	6	
	1130		X	CMS MW-9	W	6	
	1100		X	CMS MW-18	W	6	
	1315		X	CMS MW-10	W	6	
	1345		X	CMS MW-11	W	6	
↓	1430		X	CMS MW-16F	W	6	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Athanassopoulos	8/24/99 1600	Rick Roberson	8/25 915
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Airbill #: FedEx 806307291735
Cooler #:
Laboratory: Quanterra - North Canton
Attn.: Sample Receiving
Send Report to: M. Sutherland
TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS ENGINEERING SCIENCE, INC.

1000 Jorie Boulevard, Suite 250, Oak Brook, Illinois 60523-2233
Voice 630/990-7200, Fax 630/990-7218

Chain-of-Custody Record

COC No. 001281

PROJECT NUMBER	PROJECT NAME/LOCATION
733893	BASF / Wyandotte, MI

PRESERVATIVES (All samples cooled to 4°C): HCl | HNO_3 | HNO_3 | H_2SO_4 | H_2SO_4

PROJECT MANAGER: M. Sutherland

ANALYSES REQUESTED: VOCs | SVOCs | Calcium | Hardness | Alkalinity | TDS | TSS | COD | TOC

SAMPLER(S) NAME: (Please Print)
Chris Athanassopoulos Mark Pawlyk Tom Reppe

(Signature) Athanassopoulos Thomas Reppe

Date MM/DD/YY	Military Time	Comp	Grab	Sample Identification	Matrix	Container	REMARKS
08/25/99	0915		X	CMS MW-12	H_2O	10	Please preserve COD samples w/ H_2SO_4 upon receipt.
"	1000		X	CMS MW-14S	"	10	
	1100		X	CMS MW-39S	"	10	
↓	0900		X	ERB-1	"	5	
			X	TRIP Blank	↓	5	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Athanassopoulos	8/25/99 1400		
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
		[signature]	8-26-99 925

Airbill #: FedEx 806307291908
Cooler #:
Laboratory: Quanterra - North Canton
Attn.: Sample Receiving
Send Report to: Mona Sutherland
TAT Expected: Per Contract

DISTRIBUTION: Pink Sampling Coordinator - White and Yellow Accompany Shipment - White Returned with Report

PARSONS

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client: Parsons Engineering Science Project: _____ Quote#: 31633
Cooler Received on: 8/24/99 Opened on: 8/24/99 by: [signature] (Signature)

Fedx ☑ Client Drop Off ☐ UPS ☐ Airborne ☐ Other: _____

Cooler ☑ Safe ☐ Foam Box ☐ Client Cooler ☐ Other: _____

Quanterra Shipper No#: See back

1. Were custody seals on the outside of the cooler and intact? Yes ☑ No ☐
   If YES, Quantity 1 on each Cooler Location Lid Seal
   Were the custody seals signed and dated? Yes ☑ No ☐ NA ☐
2. Shipper's packing slip attached to this form? Yes ☑ No ☐
3. Were custody papers included inside the cooler and relinquished? Yes ☑ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☐ No ☐
5. Packing material used:
   Peanuts ☐ Bubble Wrap ☑ Vermiculite ☐ Foam ☐ None ☐ Other: _____
6. Cooler temperature upon receipt See back °C (see back of form for multiple coolers/temp)
   METHOD: Temperature Vial ☐ Coolant ☑ Against Bottles ☐
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ None ☐
7. Were all the bottles sealed in separate plastic bags? Yes ☑ No ☐
8. Did all bottles arrive in good condition (Unbroken)? Yes ☐ No ☑
9. Did all bottle labels and tags agree with the custody papers? Yes ☒ No ☐
10. Were samples at the correct pH? Yes ☐ No ☒ NA ☐
11. Were correct bottles used for the tests indicated? Yes ☒ No ☐
12. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☒ NA ☐
13. Was a sufficient amount of sample sent in each bottle? Yes ☒ No ☐

Contacted PM _____ Date: _____ by: _____ via Voice Mail ☐ Verbal ☐ Other ☐
Concerning: _____

Check √	MACRO	MACRO
1. CHAIN OF CUSTODY		
	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred _____
2. SAMPLE CONDITION		
	SR2A	Sample(s) _____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
✓	SR2C	Sample(s) PM4NA had a broken cap were received in a broken container. replaced lid QA 990806
3. SAMPLE PRESERVATION		
√	SR3A	The temperature of the cooler was _____ °C
✓	SR3C	Sample(s) See back were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s) _____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s) _____ were received with bubble > 6 mm in diameter (cc: PM)
✓	N/A	See back for other anomalies See Back

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials
RFI MW-29	<2 <2	8-24-99	RR
RFI MW-29	<2 <2 <2 <2		
PM4NA	<2		
RFI MW-6	<2 <2		
RFI MW-6 MS/MSD	<2 <2 <2 <2		
CMS MW-15	<2 <2		
CMS MW-6	<2 <2		
RFI MW-7	<2 <2		
CMS MW-13F	<2 <2		
CMS MW-13S	<2 <2		

Cooler	Temp	Method	Comments
787	0.3°C	Wet Ice	Coolent
546	0.6°C	Coolent	Wet Ice

Discrepancies Cont.

Macro Name:

Macro Name:

Macro Name:

Other Anomalies:

Sample: PM4NA- I added 5mL of nitric acid to sample and it still wasn't enough to make it <2 PH (lab to preserve)

1488

Revision 8-31-99

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client: Parsons Engineering Project: _____ Quote#: Q26693
Cooler Received on: 8/25/99 Opened on: 8/25/99 by: Kelly Robertson (Signature)

Fedx ☑ Client Drop Off ☐ UPS ☐ Airborne ☐
Other: _____

Cooler ☑ Safe ☐ Foam Box ☐ Client Cooler ☐ Other: _____
Quanterra Shipper No#: H121

1. Were custody seals on the outside of the cooler and intact? Yes ☑ No ☐
   If YES, Quantity 1 Location Lid seal
   Were the custody seals signed and dated? Yes ☑ No ☐ NA ☐
2. Shipper's packing slip attached to this form? Yes ☑ No ☐
3. Were custody papers included inside the cooler and relinquished? Yes ☑ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☐ No ☐
5. Packing material used:
   Peanuts ☐ Bubble Wrap ☑ Vermiculite ☐ Foam ☐ None ☐ Other: _____
6. Cooler temperature upon receipt 3.4 °C (see back of form for multiple coolers/temp)
   METHOD: Temperature Vial ☑ Coolant ☐ Against Bottles ☐
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ None ☐
7. Were all the bottles sealed in separate plastic bags? Yes ☑ No ☐
8. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
9. Did all bottle labels and tags agree with the custody papers? Yes ☑ No ☐
10. Were samples at the correct pH? Yes ☐ No ☐ NA ☑
11. Were correct bottles used for the tests indicated? Yes ☑ No ☐
12. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☑
13. Was a sufficient amount of sample sent in each bottle? Yes ☑ No ☐

Contacted PM _____ Date: _____ by: _____ via Voice Mail ☐ Verbal ☐ Other ☐
Concerning: _____

Check √	MACRO	MACRO
1. CHAIN OF CUSTODY		
	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred _____
2. SAMPLE CONDITION		
	SR2A	Sample(s) _____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
	SR2C	Sample(s) _____ were received in a broken container.
3. SAMPLE PRESERVATION		
√	SR3A	The temperature of the cooler was _____ ° C
✓	SR3C	Sample(s) See back were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s) _____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s) _____ were received with bubble > 6 mm in diameter (cc: PM)
✓	N/A	See back for other anomalies See back

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials
CM5MW-7	<2 <2	8/25/99	RR
CM5MW-8	<2 <2	8/25/99	RR
CM5MW-9	<2 <2	8/25/99	RR
CM5MW-10	<2 <2	8/25/99	RR
CM5MW-10	<2 <2	8/25/99	RR
CM5MW-11	<2	8/25/99	RR
CM5MW-16F	<2 <2	8/25/99	RR

Cooler	Temp	Method	Comments

Discrepancies Cont.

Macro Name:

SR3C: Samples were adjusted in lab
CM5MW-9: added Nitric Acid
CM5MW-18: added nitric Aci
CM5MW-18: added sulfuric Ac

Macro Name:

Macro Name:

Other Anomalies:

NA: CM5MW-11 will have to be lab Preserved because we could not add any more nitric Acid to bring it down to <2. (added 1 squirt of nitric Acid.)

1 squirt = 5 ml
gab 990526

SOP NC-SC-[illegible] 1.00

Quanterra - Cooler Receipt Form/Narrative
North Canton Facility

Client: Parsons Project: _____ Quote#: _____
Cooler Received on: 8-26-99 Opened on: 8-27-99 by: _____ (Signature)

Fedx [X] Client Drop Off [ ] UPS [ ] Airborne [ ]
Other: _____

Cooler [X] Safe [ ] Foam Box [ ] Client Cooler [ ] Other: _____
Quanterra Shipper No#: A01

1. Were custody seals on the outside of the cooler and intact? Yes [X] No [ ]
   If YES, Quantity 2 Location over seal
   Were the custody seals signed and dated? Yes [X] No [ ] NA [ ]
2. Shipper's packing slip attached to this form? Yes [X] No [ ]
3. Were custody papers included inside the cooler and relinquished? Yes [X] No [ ]
4. Did you sign the custody papers in the appropriate place? Yes [X] No [ ]
5. Packing material used:
   Peanuts [ ] Bubble Wrap [X] Vermiculite [ ] Foam [X] None [ ] Other: _____
6. Cooler temperature upon receipt 1.4 °C (see back of form for multiple coolers/temp)
   METHOD: Temperature Vial [X] Coolant [ ] Against Bottles [ ]
   COOLANT: Wet Ice [X] Blue Ice [ ] Dry Ice [ ] None [ ]
7. Were all the bottles sealed in separate plastic bags? Yes [ ] No [X]
8. Did all bottles arrive in good condition (Unbroken)? Yes [X] No [ ]
9. Did all bottle labels and tags agree with the custody papers? Yes [X] No [ ]
10. Were samples at the correct pH? Yes [ ] No [X] NA [ ]
11. Were correct bottles used for the tests indicated? Yes [X] No [ ]
12. Were air bubbles >6 mm in any VOA vials? Yes [ ] No [X] NA [ ]
13. Was a sufficient amount of sample sent in each bottle? Yes [X] No [ ]

Contacted PM _____ Date: _____ by: _____ via Voice Mail [ ] Verbal [ ] Other [ ]
Concerning: _____

Check v	MACRO	MACRO
1. CHAIN OF CUSTODY		
	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred _____
2. SAMPLE CONDITION		
	SR2A	Sample(s) _____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
	SR2C	Sample(s) _____ were received in a broken container.
3. SAMPLE PRESERVATION		
v	SR3A	The temperature of the cooler was _____ ° C
X	SR3C	Sample(s) see back were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s) _____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s) _____ were received with bubble > 6 mm in diameter (cc: PM)
	N/A	See back for other anomalies

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials
12	<2 ~~<2~~	8-27-99	CP
14S	<2 <2		
39S	<2 <2		
ERB1	<2		

Cooler	Temp	Method	Comments

Discrepancies Cont.

Macro Name: SR3C

Rec'd unpres & preserved to <2 in rec:
39S – H_2SO_4
ERB1 – HNO_3

Macro Name:

Unable to preserve 12 - HNO_3 (lab to pres)

Macro Name:

Other Anomalies:

RSR280

Quanterra Incorporated
Sample Control Record

Client: 2508

Lot #: A9H250128

Case Number/SDG: 733893

Storage Location: W146 MS

1467

Laboratory Sample I.D.	Transferred By	Date	Entered	Removed	Reason	Date Returned
D1PVN	GIRARDJ	8/24/99	Yes		Storage	
D1PW4	GIRARDJ	8/24/99	Yes		Storage	
D1PWC	GIRARDJ	8/24/99	Yes		Storage	
D1PWT	GIRARDJ	8/24/99	Yes		Storage	
D1PX3	GIRARDJ	8/24/99	Yes		Storage	
D1PX5	GIRARDJ	8/24/99	Yes		Storage	
D1PX6	GIRARDJ	8/24/99	Yes		Storage	
D1PXF	GIRARDJ	8/24/99	Yes		Storage	

RSR280

Quanterra Incorporated
Sample Control Record

1468

Client: 2508

Lot #: A9H260105

Case Number/SDG: 733893

Storage Location: W147

Laboratory Sample I.D.	Transferred By	Date	Entered	Removed	Reason	Date Returned
D1QP4	GIRARDJ	8/25/99	Yes		Storage	
D1QP5	GIRARDJ	8/25/99	Yes		Storage	
D1QP6	GIRARDJ	8/25/99	Yes		Storage	
D1QP7	GIRARDJ	8/25/99	Yes		Storage	
D1QP8	GIRARDJ	8/25/99	Yes		Storage	
D1QP9	GIRARDJ	8/25/99	Yes		Storage	
D1QPA	GIRARDJ	8/25/99	Yes		Storage	

RSR280

Quanterra Incorporated
Sample Control Record

Client: 2508

Lot #: A9H270119

Case Number/SDG: 733893

Storage Location: MS/W153 MS/W153 S14 MS

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Laboratory Sample I.D.	Transferred By	Date	Entered	Removed	Reason	Date Returned
D1RM8	GIRARDJ	8/26/99	Yes		Storage	
D1RMA	GIRARDJ	8/26/99	Yes		Storage	
D1RMC	GIRARDJ	8/26/99	Yes		Storage	
D1RMD	GIRARDJ	8/26/99	Yes		Storage	
D1RME	GIRARDJ	8/26/99	Yes		Storage	

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LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	ANALYSIS DATE	ANALYST NAME
A9H270119	1	D1RM8102	MS8260LL	8/31/99	Jennifer McCrory
A9H270119	2	D1RMA102	MS8260LL	8/31/99	Jennifer McCrory
A9H270119	3	D1RMC102	MS8260LL	8/31/99	Jennifer McCrory
A9H270119	4	D1RMD101	MS8260LL	9/01/99	Jennifer McCrory
A9H270119	5	D1RME101	MS8260LL	8/31/99	Jennifer McCrory

* * * E N D O F R E P O R T * * *

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LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	ANALYSIS DATE	ANALYST NAME
A9H250128	1	D1PVN102	MS8260LL	8/30/99	Jennifer McCrory
A9H250128	2	D1PW4102	MS8260LL	8/30/99	Jennifer McCrory
A9H250128	7	D1PX6102	MS8260LL	8/30/99	Jennifer McCrory
A9H250128	8	D1PXF102	MS8260LL	8/30/99	Jennifer McCrory

* * * E N D O F R E P O R T * * *

LOT NUMBER	SAMPLE	SAMPLE SUFFIX	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	DATE OF TRANSFER	TRANSFERRED BY	ANALYSIS DATE	ANALYST
A9H250128	1		D1PVN105	MS8270_L	8/27/99	Eric Miller	8/30/99	Kami Rathburn	9/09/99	Mark Ulman
A9H250128	1	S	D1PVN106	MS8270_L	8/27/99	Eric Miller	8/30/99	Kami Rathburn	9/09/99	Mark Ulman
A9H250128	1	D	D1PVN107	MS8270_L	8/27/99	Eric Miller	8/30/99	Kami Rathburn	9/09/99	Mark Ulman
A9H250128	1		D1PVN205	MS8270_L	9/13/99	Eric Miller	9/15/99	Kami Rathburn	9/16/99	John Gruber
A9H250128	2		D1PW4103	MS8270_L	8/27/99	Eric Miller	8/30/99	Kami Rathburn	9/10/99	Mark Ulman
A9H250128	7		D1PX6103	MS8270_L	8/27/99	Eric Miller	8/30/99	Kami Rathburn	9/10/99	Mark Ulman
A9H250128	8		D1PXF103	MS8270_L	8/27/99	Eric Miller	8/30/99	Kami Rathburn	9/10/99	Mark Ulman

*** END OF REPORT ***

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LOT NUMBER	SAMPLE	SAMPLE SUFFIX	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	DATE OF TRANSFER	TRANSFERRED BY	ANALYSIS DATE	ANALYST
A9H270119	1		D1RM8103	MS8270_L	9/01/99	Eric Miller	9/03/99	Thomas Fausnight	9/08/99	Mark Ulman
A9H270119	2		D1RMA103	MS8270_L	9/01/99	Eric Miller	9/03/99	Thomas Fausnight	9/07/99	Mark Ulman
A9H270119	3		D1RMC103	MS8270_L	9/01/99	Eric Miller	9/03/99	Thomas Fausnight	9/07/99	Mark Ulman
A9H270119	4		D1RMD102	MS8270_L	9/01/99	Eric Miller	9/03/99	Thomas Fausnight	9/07/99	Mark Ulman

*** E N D O F R E P O R T ***

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LOT NUMBER	SAMPLE NUMBER	LAB ID	SAMPLE TYPE	PREP DATE	PREP ANALYST
A9H250128	1	D1PVN	TOTAL	9/07/99	Lina Mustafa
A9H250128	2	D1PW4	TOTAL	9/07/99	Lina Mustafa
A9H250128	3	D1PWC	TOTAL	9/07/99	Lina Mustafa
A9H250128	4	D1PWT	TOTAL	9/07/99	Lina Mustafa
A9H250128	5	D1PX3	TOTAL	9/07/99	Lina Mustafa
A9H250128	6	D1PX5	TOTAL	9/07/99	Lina Mustafa
A9H250128	7	D1PX6	TOTAL	9/07/99	Lina Mustafa
A9H250128	8	D1PXF	TOTAL	9/07/99	Lina Mustafa
A9H260105	1	D1QP4	TOTAL	9/07/99	Lina Mustafa
A9H260105	2	D1QP5	TOTAL	9/07/99	Lina Mustafa
A9H260105	3	D1QP6	TOTAL	9/07/99	Lina Mustafa
A9H260105	4	D1QP7	TOTAL	9/07/99	Lina Mustafa
A9H260105	5	D1QP8	TOTAL	9/07/99	Lina Mustafa
A9H260105	6	D1QP9	TOTAL	9/07/99	Lina Mustafa
A9H260105	7	D1QPA	TOTAL	9/07/99	Lina Mustafa
A9H270119	1	D1RM8	TOTAL	9/07/99	Lina Mustafa
A9H270119	2	D1RMA	TOTAL	9/07/99	Lina Mustafa
A9H270119	3	D1RMC	TOTAL	9/07/99	Lina Mustafa
A9H270119	4	D1RMD	TOTAL	9/07/99	Lina Mustafa

* * * E N D O F R E P O R T * * *

LOT NUMBER	SAMPLE	SAMPLE SUFFIX	LAB ID	TEST		PREP DATE	ANALYSIS DATE	ANALYST	INSTRUMENT CODE
A9H250128	1		D1PVN U	SW846	6010B	9/07/99	9/08/99	Karen Counts	I5
A9H250128	1	D	D1PVN U	SW846	6010B	9/07/99	9/08/99	Karen Counts	I5
A9H250128	1	S	D1PVN U	SW846	6010B	9/07/99	9/08/99	Karen Counts	I5
A9H250128	1		D1PVN U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	1	D	D1PVN U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	1	S	D1PVN U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	2		D1PW4 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	3		D1PWC U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	3	D	D1PWC U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	3	S	D1PWC U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	4		D1PWT U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	5		D1PX3 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	6		D1PX5 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	7		D1PX6 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H250128	8		D1PXF U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	1		D1QP4 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	2		D1QP5 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	3		D1QP6 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	4		D1QP7 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	5		D1QP8 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	6		D1QP9 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H260105	7		D1QPA U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H270119	1		D1RM8 U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H270119	2		D1RMA U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H270119	3		D1RMC U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4
A9H270119	4		D1RMD U	SW846	6010A	9/07/99	9/13/99	Patrick O'Meara	I4

* * * E N D O F R E P O R T * * *

U = Unfiltered F = Filtered T = TCLP L = SPLP East W = SPLP West

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LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H250128	1	D1PVN10J	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H250128	1	D1PVN108	HARDNESS	9/07/99	Amanda Hercules	9/07/99	Amanda Hercules
A9H250128	1	D1PVN10C	TDS	8/30/99	Kumudu Kulasekere	9/01/99	Kumudu Kulasekere
A9H250128	1	D1PVN101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	1	D1PVN10M	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H250128	1	D1PVN10F	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	2	D1PW4107	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H250128	2	D1PW4104	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	2	D1PW4105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	2	D1PW4101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	2	D1PW4108	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H250128	2	D1PW4106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	3	D1PWC10C	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H250128	3	D1PWC102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	3	D1PWC105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	3	D1PWC101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	3	D1PWC10F	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H250128	3	D1PWC108	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	4	D1PWT105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H250128	4	D1PWT102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	4	D1PWT103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	4	D1PWT101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	4	D1PWT106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H250128	4	D1PWT104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	5	D1PX3105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H250128	5	D1PX3102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	5	D1PX3103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	5	D1PX3101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	5	D1PX3106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H250128	5	D1PX3104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	6	D1PX5105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H250128	6	D1PX5102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	6	D1PX5103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	6	D1PX5101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	6	D1PX5106	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H250128	6	D1PX5104	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	7	D1PX6107	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H250128	7	D1PX6104	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	7	D1PX6105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	7	D1PX6101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	7	D1PX6108	TOC	8/30/99	Susan Macenczak	8/30/99	Susan Macenczak
A9H250128	7	D1PX6106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules
A9H250128	8	D1PXF107	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H250128	8	D1PXF104	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H250128	8	D1PXF105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	8	D1PXF101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H250128	8	D1PXF108	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H250128	8	D1PXF106	ALK-T	8/26/99	Amanda Hercules	8/26/99	Amanda Hercules

*** END OF REPORT ***

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LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H260105	1	D1QP4105	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	1	D1QP4102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	1	D1QP4103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	1	D1QP4101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	1	D1QP4106	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H260105	1	D1QP4104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	2	D1QP5105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H260105	2	D1QP5102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	2	D1QP5103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	2	D1QP5101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	2	D1QP5106	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H260105	2	D1QP5104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	3	D1QP6105	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	3	D1QP6102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	3	D1QP6103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	3	D1QP6101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	3	D1QP6106	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H260105	3	D1QP6104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	4	D1QP7105	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	4	D1QP7102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	4	D1QP7103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	4	D1QP7101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	4	D1QP7106	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H260105	4	D1QP7104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	5	D1QP8105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H260105	5	D1QP8102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	5	D1QP8103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	5	D1QP8101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	5	D1QP8106	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H260105	5	D1QP8104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	6	D1QP9105	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H260105	6	D1QP9102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	6	D1QP9103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	6	D1QP9101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	6	D1QP9106	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H260105	6	D1QP9104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	7	D1QPA105	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H260105	7	D1QPA102	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H260105	7	D1QPA103	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	7	D1QPA101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H260105	7	D1QPA106	TOC	9/02/99	Tanesha Roberts	9/02/99	Susan Macenczak
A9H260105	7	D1QPA104	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules

*** END OF REPORT ***

LOT NUMBER	SAMPLE	LAB ID	ANALYSIS TYPE	PREP DATE	PREP ANALYST	ANALYSIS DATE	ANALYST
A9H270119	1	D1RM8106	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H270119	1	D1RM8104	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H270119	1	D1RM8107	LL-COD	9/02/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H270119	1	D1RM8105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H270119	1	D1RM8108	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H270119	1	D1RM8101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H270119	2	D1RMA106	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H270119	2	D1RMA104	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H270119	2	D1RMA107	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H270119	2	D1RMA105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H270119	2	D1RMA108	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H270119	2	D1RMA101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H270119	3	D1RMC106	ALK-T	9/03/99	Amanda Hercules	9/03/99	Amanda Hercules
A9H270119	3	D1RMC104	HARDNESS	9/10/99	Amanda Hercules	9/10/99	Amanda Hercules
A9H270119	3	D1RMC107	LL-COD	9/02/99	Amanda Hercules	9/02/99	Amanda Hercules
A9H270119	3	D1RMC105	TDS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere
A9H270119	3	D1RMC108	TOC	9/01/99	Susan Macenczak	9/01/99	Susan Macenczak
A9H270119	3	D1RMC101	TS	8/30/99	Kumudu Kulasekere	8/31/99	Kumudu Kulasekere

*** E N D O F R E P O R T ***

SECTION 6

PROJECT CORRESPONDENCE

Konstadina Vlahogiani

From: Kendra Grega
Sent: Thursday, November 04, 1999 10:17 AM
To: Alesia Danford (E-mail)
CC: Konstadina Vlahogiani
Subject: FW: BASF

Alesia, here are the pages we are missing. Could you fax them to me when you get a chance - (610)935-5583. Thanks.

-----Original Message-----
From: Konstadina Vlahogiani
Sent: Thursday, November 04, 1999 10:00 AM
To: Kendra Grega
Subject: BASF

For SDG # H25128, pages 12, 39, 47, 51, 52, 61, 66, 1350, and 1470 are missing. Also, the first page of the quantitation report for the method blank D1R9F101 is missing (there is no missing page here but after the chromatogram is the second page of the quant. report).

Konstadina Vlahogiani

From: Kendra Grega
Sent: Friday, November 05, 1999 11:38 AM
To: Alesia Danford (E-mail)
Cc: Konstadina Vlahogiani
Subject: FW: BASF

Alesia, could you check on this.

-----Original Message-----
From: Konstadina Vlahogiani
Sent: Friday, November 05, 1999 11:28 AM
To: Kendra Grega
Subject: BASF

Alesia said that page 39 does not exist but this page should be the second page of the Form I for sample A9H250128-001.

Konstadina Vlahogiani

From: Kendra Grega
Sent: Thursday, October 14, 1999 11:24 AM
To: Konstadina Vlahogiani
Subject: FW: RE: SOP's

-----Original Message-----
From: DanfordA [SMTP:DanfordA@quanterra.com]
Sent: Thursday, October 14, 1999 10:55 AM
To: Kendra Grega
Subject: RE: SOP's

Hi Kendra,
The SOP's should all arrive by Monday, October 18th. Please feel free to contact me @ 330-966-9783 should you require additional information.
Thank you,
Alesia

-----Original Message-----
From: Kendra Grega [mailto:KGREGA@envstd.com]
Sent: Tuesday, October 12, 1999 1:14 PM
To: Alesia Danford (E-mail)
Subject:

Hi Alesia. Can we get copies of all Quanterra SOPs used for the last BASF sampling round, including the TO-14 SOP. I know you already sent Dina the volatiles SOP so you don't have to include that one. Thanks.

Kendra Grega
Environmental Standards Inc.
(510) 935-5577

Facsimile Transmittal

Quanterra Incorporated
4101 Shuffel Drive NW
North Canton, Ohio 44720

(330) 966-9782 Telephone
(330) 497-0772 Fax

Quanterra Environmental Services

Date: 11-4-99

Deliver to: Kendra Grega

Company & Location:

Fax Destination: 610-935-5583

From: Michele Daley for Alesia Danford

Note: This telecopy contains 9 page(s) which includes this cover page. Please call the number at the top of this form if you do not receive all pages.

Comments:

Kendra,

Due to the automatic paginator machine, page numbers 12, 39, 1350, and 1470 do not exist. The counter on the machine skipped these numbers.

Confidentiality Notice:
The documents accompanying this telecopy transmission contain confidential information which is legally privileged. The information is intended only for the use of the recipient named above. If you received this telecopy in error, please notify us immediately by telephone to arrange for the return of the documents to us, and you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this telecopied information is strictly prohibited.

PARSONS ENGINEERING SCIENCE, INC.

Lab Name: QUANTERRA
SDG Number: H25128

Matrix: (soil/water) WATER
Lab Sample ID: A9H250128 002
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL
Date Received: 08/24/99
Work Order: D1PW4102
Date Extracted: 08/30/99
Dilution factor: 25
Date Analyzed: 08/30/99
Moisture %: NA

QC Batch: 9243214

Client Sample Id: PM4NA

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
100-41-4	Ethylbenzene	25	U
97-63-2	Ethyl methacrylate	25	U
591-78-6	2-Hexanone	250	U
74-88-4	Iodomethane	250	U
78-83-1	Isobutyl alcohol	12000	U
126-98-7	Methacrylonitrile	500	U
75-09-2	Methylene chloride	30	B
78-93-3	Methyl ethyl ketone	250	U
80-62-6	Methyl methacrylate	25	U
108-10-1	4-Methyl-2-pentanone (MIBK)	250	U
96-12-8	1,2-Dibromo-3-chloropropane	500	U
107-12-0	Propionitrile	2500	U
100-42-5	Styrene	25	U
630-20-6	1,1,1,2-Tetrachloroethane	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
127-18-4	Tetrachloroethene	25	U
108-88-3	Toluene	25	U
71-55-6	1,1,1-Trichloroethane	25	U
79-00-5	1,1,2-Trichloroethane	25	U
79-01-6	Trichloroethene	25	U
75-69-4	Trichlorofluoromethane	25	U
96-18-4	1,2,3-Trichloropropane	25	U
108-05-4	Vinyl acetate	250	U
75-01-4	Vinyl chloride	25	U
136777-61-2	m-Xylene & p-Xylene	25	U

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (UG/L)
	18 cis-1,2-dichloroethene	96.00	Compound Not Detected.					
M	19 1,2-Dichloroethene (total)	96.00	Compound Not Detected.					
	21 Chloroform	83.00	Compound Not Detected.					
	22 1,1,1-Trichloroethane	97.00	Compound Not Detected.					
	23 Carbon Tetrachloride	117.00	Compound Not Detected.					
	25 Benzene	78.00	Compound Not Detected.					
	26 1,2-Dichloroethane	62.00	Compound Not Detected.					
	27 Trichloroethene	130.00	Compound Not Detected.					
	28 1,2-Dichloropropane	63.00	Compound Not Detected.					
	29 Dibromomethane	93.00	Compound Not Detected.					
	30 Bromodichloromethane	83.00	Compound Not Detected.					
	31 cis-1,3-Dichloropropene	75.00	Compound Not Detected.					
	32 Toluene	91.00	Compound Not Detected.					
	33 trans-1,3-Dichloropropene	75.00	Compound Not Detected.					
	34 1,1,2-Trichloroethane	97.00	Compound Not Detected.					
	35 Tetrachloroethene	164.00	Compound Not Detected.					
	37 Dibromochloromethane	129.00	Compound Not Detected.					
	38 1,2-Dibromoethane	107.00	Compound Not Detected.					
	39 Chlorobenzene	112.00	Compound Not Detected.					
	41 Ethylbenzene	106.00	Compound Not Detected.					
	42 m + p-Xylene	106.00	Compound Not Detected.					
	43 Xylene-o	106.00	Compound Not Detected.					
M	44 Xylenes (total)	106.00	Compound Not Detected.					
	45 Styrene	104.00	Compound Not Detected.					
	46 Bromoform	173.00	Compound Not Detected.					
	49 1,2,3-Trichloropropane	110.00	Compound Not Detected.					
	50 1,1,2,2-Tetrachloroethane	83.00	Compound Not Detected.					
	57 1,3-Dichlorobenzene	146.00	Compound Not Detected.					
	59 1,4-Dichlorobenzene	146.00	Compound Not Detected.					
	61 1,2-Dichlorobenzene	146.00	Compound Not Detected.					
	68 Acetone	43.00	Compound Not Detected.					
	69 Carbon Disulfide	76.00	Compound Not Detected.					
	70 2-Butanone	43.00	Compound Not Detected.					
	71 Vinyl Acetate	43.00	Compound Not Detected.					
	72 4-Methyl-2-Pentanone	43.00	Compound Not Detected.					
	73 2-Hexanone	43.00	Compound Not Detected.					
	74 Acrolein	56.00	Compound Not Detected.					
	75 Acrylonitrile	53.00	Compound Not Detected.					
	76 2-Chloroethyl Vinyl ether	63.00	Compound Not Detected.					
	77 Iodomethane	142.00	Compound Not Detected.					
	78 1,4-Dichloro-2-butene	53.00	Compound Not Detected.					
	82 1,4-Dioxane	88.00	Compound Not Detected.					
	84 Ethyl methacrylate	69.00	Compound Not Detected.					
	88 Freon-113	151.00	Compound Not Detected.					
	93 Tetrahydrofuran	42	8.458	8.459	(0.839)	9269	109.474	109.47
	94 Methyl tert-butyl ether	73.00	Compound Not Detected.					
	98 tert-Butyl Alcohol	59.00	Compound Not Detected.					

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35596.d
Report Date: 31-Aug-1999 09:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (UG/L)
99	Hexane	57.00	Compound Not Detected.					
17	2,2-Dichloropropane	77.00	Compound Not Detected.					
20	Bromochloromethane	128.00	Compound Not Detected.					
24	1,1-Dichloropropene	75.00	Compound Not Detected.					
36	1,3-Dichloropropane	76.00	Compound Not Detected.					
40	1,1,1,2-Tetrachloroethane	131.00	Compound Not Detected.					
47	Bromobenzene	156.00	Compound Not Detected.					
48	Isopropylbenzene	105.00	Compound Not Detected.					
51	2-Chlorotoluene	126.00	Compound Not Detected.					
52	n-Propylbenzene	120.00	Compound Not Detected.					
53	4-Chlorotoluene	126.00	Compound Not Detected.					
54	1,3,5-Trimethylbenzene	105.00	Compound Not Detected.					
55	tert-Butylbenzene	119.00	Compound Not Detected.					
56	1,2,4-Trimethylbenzene	105.00	Compound Not Detected.					
58	sec-Butylbenzene	105.00	Compound Not Detected.					
60	4-Isopropyltoluene	119.00	Compound Not Detected.					
62	n-Butylbenzene	91.00	Compound Not Detected.					
63	1,2-Dibromo-3-chloropropane	157.00	Compound Not Detected.					
64	1,2,4-Trichlorobenzene	180.00	Compound Not Detected.					
65	Naphthalene	128.00	Compound Not Detected.					
66	Hexachlorobutadiene	225.00	Compound Not Detected.					
67	1,2,3-Trichlorobenzene	180.00	Compound Not Detected.					
79	Acetonitrile	41.00	Compound Not Detected.					
80	2-Chloro-1,3-butadiene	53.00	Compound Not Detected.					
81	3-Chloro-1-propene	76.00	Compound Not Detected.					
83	Isobutanol	41.00	Compound Not Detected.					
85	Methyl methacrylate	41.00	Compound Not Detected.					
86	Methacrylonitrile	41.00	Compound Not Detected.					
87	Propionitrile	54.00	Compound Not Detected.					
89	n-Butanol	56.00	Compound Not Detected.					
90	Ethyl Acetate	43.00	Compound Not Detected.					
91	Cyclohexanone	55.00	Compound Not Detected.					
92	Ethyl Ether	59.00	Compound Not Detected.					
95	Dichlorofluoromethane	67.00	Compound Not Detected.					
100	Isopropyl Ether	87.00	Compound Not Detected.					
101	2-Nitropropane	41.00	Compound Not Detected.					

Data File: /chem/can/msv/a3ux3.i/V90830A.b/ux35697.d

Page 9

Date : 30-AUG-1999 14:37

Client ID: CMSMW-13F

Instrument: a3ux3.i

Sample Info: D1PX6102,,1ML/10ML

Purge Volume: 1.0

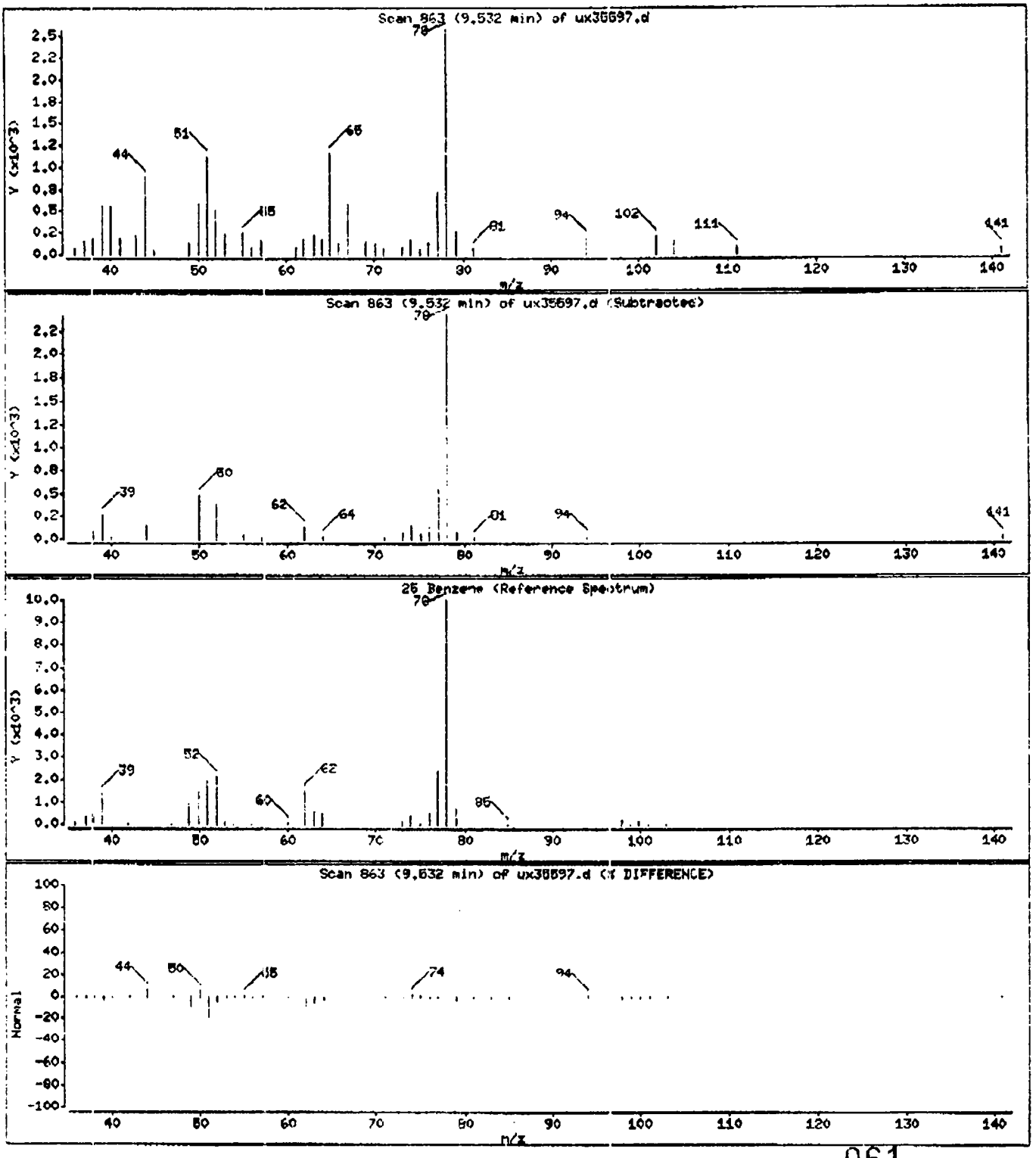
Operator: 01718

Column phase: DB 624

Column diameter: 0.53

25 Benzene

Concentration: 5.839 UG/L



061

PARSONS ENGINEERING SCIENCE, INC.

Lab Name: QUANTERRA
SDG Number: H25128

Matrix: (soil/water) WATER
Lab Sample ID: A9H250128 008
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Sample WT/Vol: 25 / mL
Date Received: 08/24/99
Work Order: D1PXF102
Date Extracted: 08/30/99
Dilution factor: 5
Date Analyzed: 08/30/99
Moisture %: NA

QC Batch: 9243214

Client Sample Id: CMSMW-13S

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
95-47-6	o-Xylene	0.68	J

QUANTERRA-NORTH CANTON

Semivolatile REPORT SW-846 Method 8270

Data file : /chem/can/mss/a4hp8.i/90909b.b/d1r9f101.d
Lab Smp Id: D1R9F101 Client Smp ID: INTRA-LAB BLANK
Inj Date : 09-SEP-1999 18:52
Operator : 001574 Inst ID: a4hp8.i
Smp Info : d1r9f101,90909b.b,8270b,8270ap9.sub
Misc Info :
Comment :
Method : /chem/can/mss/a4hp8.i/90909b.b/8270b.m
Meth Date : 10-Sep-1999 09:05 ulmanm Quant Type: ISTD
Cal Date : 08-SEP-1999 17:24 Cal File: 8sml0908.d
Als bottle: 14 QC Sample: METHOD BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8270ap9.sub
Target Version: 3.40
Processing Host: hpuxcs2

Concentration Formula: Amt * DF * Uf * Vt/(Vo * Vi)

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	2.000	Volume injected (uL)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 1	1,4-Dichlorobenzene-d4	152	8.067	8.062	(1.000)	441941		
* 2	Naphthalene-d8	136	10.556	10.562	(1.000)	1578418		
* 3	Acenaphthene-d10	164	14.231	14.238	(1.000)	940078		
* 4	Phenanthrene-d10	188	17.389	17.395	(1.000)	1322454		
* 5	Chrysene-d12	240	23.019	23.026	(1.000)	976537		
* 6	Perylene-d12	264	25.829	25.836	(1.000)	805967		
7	N-Nitrosomorpholine	56.00	Compound Not Detected.					
8	Ethyl methanesulfonate	79.00	Compound Not Detected.					
9	Pyridine	79.00	Compound Not Detected.					
10	N-Nitrosodimethylamine	74.00	Compound Not Detected.					
11	Ethyl methacrylate	69.00	Compound Not Detected.					
12	3-Chloropropionitrile	54.00	Compound Not Detected.					
13	Malononitrile	66.00	Compound Not Detected.					
14	2-Picoline	93.00	Compound Not Detected.					

8270A

Data File: /chem/can/mss/a4hp8.i/90909b.b/d1r9f101.d
Report Date: 10-Sep-1999 09:07

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/L)
15	N-Nitrosomethylethylamine	88.00	Compound Not Detected.					
16	Methyl methanesulfonate	80.00	Compound Not Detected.					
18	1,3-Dichloro-2-propanol	79.00	Compound Not Detected.					
19	N-Nitrosodiethylamine	102.00	Compound Not Detected.					
21	Aniline	93.00	Compound Not Detected.					
22	Phenol	94.00	Compound Not Detected.					
23	bis(2-Chloroethyl)ether	93.00	Compound Not Detected.					
24	2-Chlorophenol	128.00	Compound Not Detected.					
25	Pentachloroethane	167.00	Compound Not Detected.					
26	1,3-Dichlorobenzene	146.00	Compound Not Detected.					
27	1,4-Dichlorobenzene	146.00	Compound Not Detected.					
28	1,2-Dichlorobenzene	146.00	Compound Not Detected.					
29	Benzyl Alcohol	108.00	Compound Not Detected.					
30	2-Methylphenol	108.00	Compound Not Detected.					
31	bis(2-Chloroisopropyl)ether	45.00	Compound Not Detected.					
32	N-Nitroso-di-n-propylamine	70.00	Compound Not Detected.					
192	4-Methylphenol	108.00	Compound Not Detected.					
193	3-Methylphenol	108.00	Compound Not Detected.					
34	Hexachloroethane	117.00	Compound Not Detected.					
35	Nitrobenzene	77.00	Compound Not Detected.					
36	N-Nitrosopyrrolidine	100.00	Compound Not Detected.					
37	Acetophenone	105.00	Compound Not Detected.					
39	o-Toluidine	106.00	Compound Not Detected.					
40	N-Nitrosopiperidine	114.00	Compound Not Detected.					
41	Isophorone	82.00	Compound Not Detected.					
42	2-Nitrophenol	139.00	Compound Not Detected.					
43	2,4-Dimethylphenol	107.00	Compound Not Detected.					
44	bis(2-Chloroethoxy)methane	93.00	Compound Not Detected.					
45	O,O,O-Triethyl phosphorothioa	198.00	Compound Not Detected.					
46	2,4-Toluenediamene	121.00	Compound Not Detected.					
47	1,3,5-Trichlorobenzene	180.00	Compound Not Detected.					
48	2,4-Dichlorophenol	162.00	Compound Not Detected.					
49	Benzoic Acid	122.00	Compound Not Detected.					
50	1,2,4-Trichlorobenzene	180.00	Compound Not Detected.					
51	Naphthalene	128.00	Compound Not Detected.					
52	4-Chloroaniline	127.00	Compound Not Detected.					
53	a,a-Dimethyl-phenethylamine	58.00	Compound Not Detected.					
54	2,6-Dichlorophenol	162.00	Compound Not Detected.					
55	Hexachloropropene	213.00	Compound Not Detected.					
56	Hexachlorobutadiene	225.00	Compound Not Detected.					
57	1,2,3-Trichlorobenzene	180.00	Compound Not Detected.					
58	N-Nitrosodi-n-butylamine	84.00	Compound Not Detected.					
59	4-Chloro-3-Methylphenol	107.00	Compound Not Detected.					
60	p-Phenylene diamine	108.00	Compound Not Detected.					
61	Safrole	162.00	Compound Not Detected.					
62	2-Methylnaphthalene	142.00	Compound Not Detected.					
63	1-Methylnaphthalene	142.00	Compound Not Detected.					

R1n7.B

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/L)
64	Hexachlorocyclopentadiene	237.00	Compound Not Detected.					
65	1,2,4,5-Tetrachlorobenzene	216.00	Compound Not Detected.					
66	2,4,6-Trichlorophenol	196.00	Compound Not Detected.					
67	2,4,5-Trichlorophenol	196.00	Compound Not Detected.					
68	1,2,3,5-Tetrachlorobenzene	216.00	Compound Not Detected.					
69	1,4-Dinitrobenzene	168.00	Compound Not Detected.					
70	2-ChloronAphthalene	162.00	Compound Not Detected.					
71	Isosafrole 1	162.00	Compound Not Detected.					
M 188	Isosafrole, Total	162.00	Compound Not Detected.					
72	Isosafrole 2	162.00	Compound Not Detected.					
73	2-Nitroaniline	65.00	Compound Not Detected.					
74	1,2,3,4-Tetrachlorobenzene	216.00	Compound Not Detected.					
75	1,4-Naphthoquinone	158.00	Compound Not Detected.					
76	Dimethylphthalate	163.00	Compound Not Detected.					
77	m-Dinitrobenzene	168.00	Compound Not Detected.					
78	2,6-Dinitrotoluene	165.00	Compound Not Detected.					
79	Acenaphthylene	152.00	Compound Not Detected.					
80	1,2-Dinitrobenzene	168.00	Compound Not Detected.					
81	3-Nitroaniline	138.00	Compound Not Detected.					
82	Acenaphthene	153.00	Compound Not Detected.					
83	2,4-Dinitrophenol	184.00	Compound Not Detected.					
84	Pentachlorobenzene	250.00	Compound Not Detected.					
85	4-Nitrophenol	109.00	Compound Not Detected.					
86	Dibenzofuran	168.00	Compound Not Detected.					
87	2,4-Dinitrotoluene	165.00	Compound Not Detected.					
88	2,3,4,6-Tetrachlorophenol	232.00	Compound Not Detected.					
89	1-Naphthylamine	143.00	Compound Not Detected.					
90	Zinophos	97.00	Compound Not Detected.					
91	2,3,5,6-Tetrachlorophenol	232.00	Compound Not Detected.					
92	2-Naphthylamine	143.00	Compound Not Detected.					
93	Diethylphthalate	149.00	Compound Not Detected.					
94	Fluorene	166.00	Compound Not Detected.					
95	4-Chlorophenyl-phenylether	204.00	Compound Not Detected.					
96	4-Nitroaniline	138.00	Compound Not Detected.					
98	4,6-Dinitro-2-methylphenol	198.00	Compound Not Detected.					
99	N-Nitrosodiphenylamine	169.00	Compound Not Detected					
100	1,2-Diphenylhydrazine	77.00	Compound Not Detected.					
101	Diphenylamine	169.00	Compound Not Detected.					
102	Tetraethyl dithiopyrophosphat	302.00	Compound Not Detected.					
103	Diallate 1	86.00	Compound Not Detected.					
M 189	Diallate, Total	100.00	Compound Not Detected.					
104	Phorate	121.00	Compound Not Detected.					
105	1,3,5-Trinitrobenzene	213.00	Compound Not Detected.					
106	4-Bromophenyl-phenylether	248.00	Compound Not Detected.					
107	Hexachlorobenzene	284.00	Compound Not Detected.					
108	Phenacetin	108.00	Compound Not Detected.					
109	Diallate 2	86.00	Compound Not Detected.					

867C

Facsimile Transmittal

Quanterra Incorporated
4101 Shuffel Dr.
North Canton, Ohio 44720
(330) 497-9396 Telephone
(330) 497-0772 Fax

Quanterra®

Date: 11-8-99
Number of Pages: 2
Deliver to: Kendra Grega
Company: ESI
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From: Alesia M. Danford, Project Manager
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Comments:

Sorry for the confusion. Here's page 39.

Please call with any other issues.

Alesia

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PARSONS ENGINEERING SCIENCE, INC.

Lab Name:QUANTERRA

SDG Number: H25128

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:A9H250128 001

Sample WT/Vol: 25 / mL
Work Order: D1PVN102
Dilution factor: 1
Moisture %:NA

Date Received: 08/24/99
Date Extracted:08/30/99
Date Analyzed: 08/30/99

QC Batch: 9243214

Client Sample Id: RFIMW-29

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	10	U
78-83-1	Isobutyl alcohol	500	U
126-98-7	Methacrylonitrile	20	U
75-09-2	Methylene chloride	4.6	B
78-93-3	Methyl ethyl ketone	10	U
80-62-6	Methyl methacrylate	1.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
107-12-0	Propionitrile	100	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	1.0	U
136777-61-2	m-Xylene & p-Xylene	1.0	U