

May 23, 2017

Ms. Joyce Munie, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794

**Submittal of Corrected Information
Proposed Groundwater Monitoring Well Installation Plan – Location on BP Property
Roxana, Illinois
1191150002 – Madison County
Equilon Enterprises LLC d/b/a Shell Oil Products US
Log No. B-43R**

Dear Ms. Munie:

On behalf of Shell Oil Products US (SOPUS), AECOM Technical Services, Inc. (AECOM) hereby submits the enclosed addendum to the above-referenced report (the Report).

AECOM collects a variety of samples for SOPUS as part of the work performed in connection with the above-referenced site including the samples referenced and utilized in the Report. AECOM contracts with independent laboratories to analyze the samples collected. As noted in SOPUS' initial disclosure letter and our subsequent communications, Accutest Laboratories (Accutest) issued revised laboratory analyses in response to an internal evaluation performed of its process. Please note, the majority of the corrected analyses were issued only to include a revised footnote and the numeric value of the analytical results reported remained unchanged. If any numeric values of analytical results presented in the Report were updated by Accutest, the updated results are presented as part of the information included in the Report addendum. Moreover, based upon our evaluation of the Report and the revised information received from Accutest, the conclusion(s) of the Report as originally issued are unaffected.

The information provided within and the format of this addendum is as discussed during our meeting with IEPA on March 23, 2017. This addendum includes the following information:

- IEPA LPC form
- Data Review Addendum Table (summarizing changed information)
- Revised analytical results table
- Revised laboratory reports (on CD)



If you have any questions during your review, please contact Kevin Dyer, SOPUS Senior Principal Program Manager, at kevin.dyer@shell.com (618/288-7237), or Bob Billman at bob.billman@aecom.com (314/743-4108).

Sincerely,

AECOM, on behalf of Shell Oil Products US

A handwritten signature in blue ink that reads "Robert B. Billman".

Robert Billman, PG
Senior Project Manager

A handwritten signature in blue ink that reads "Robert E. Mooshegian".

Robert E. Mooshegian, CHMM
Senior Program Manager

Enclosures: 2 copies

cc: Kevin Dyer, SOPUS
Lori Littrell, Atlantic Richfield Company
Shannon Haney, Greensfelder, Hemker & Gale P.C.
Repositories – Village Hall, Roxana Public Library, website
Project File



Illinois Environmental Protection Agency

Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 FACILITY IDENTIFICATION

Name: WRB Refining LP Wood River Refinery County: Madison
 Street Address: 900 South Central Ave. Site No. (IEPA): 1191150002
 City: Roxana Site No. (USEPA): ILD 080 012 305

2.0 OWNER INFORMATION

Name: Not Applicable

Mailing Address: _____

Contact Name: _____

Contact Title: _____

Phone No.: _____

3.0 OPERATOR INFORMATION

Equilon Enterprises LLC dba Shell Oil Products US (SOPUS)

17 Junction Drive, PMB #399

Glen Carbon, IL 62034

Kevin Dyer

Senior Principal Program Manager

618-288-7237

4.0 TYPE OF SUBMISSION (check applicable item and provide requested information, as applicable)

- RFI Phase I Workplan/Report
- RFI Phase II Workplan/Report
- CMP Report; Phase _____
- Other (describe):

Multiple Document Addenda (see attached report list)
Date of Submittal May 2017

IEPA Permit Log No. B-43R

Date of Last IEPA Letter _____

on Project January 18, 2017

Log No. of Last IEPA _____

Letter on Project B-43R-CA-59, -60, -69

Does this submittal include groundwater information: Yes No

5.0 DESCRIPTION OF SUBMITTAL: (briefly describe what is being submitted and its purpose)

Addenda to multiple documents. List of documents is provided on the Attachment 1. Addenda being issued due to revised laboratory reports.

6.0 DOCUMENTS SUBMITTED (identify all documents in submittal, including cover letter; give dates of all documents)

Cover letter, RCRA Corrective Action Certification, Addenda to multiple documents identified on the attached list.

7.0 CERTIFICATION STATEMENT - (This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

IEPA RCRA Corrective Action Certification

For: Multiple document addenda (see attached)

Date of Submission: May 2017

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7.1 **OWNER/OPERATOR CERTIFICATION** (Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice-president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ (Date) _____

Title: _____

Operator Signature: Kevin Edger _____ 5/17/18 (Date) _____

Title: Senior Principal Program Manager

7.2 **PROFESSIONAL CERTIFICATION (if necessary)** - Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Professional's Signature: Robert B. Billman _____ 5/17/17 (Date) _____

Professional's Name: Robert B. Billman

Professional's Address: AECOM Technical Services, Inc.

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Professional's Phone No.: 314-429-0100



7.3 **LABORATORY CERTIFICATION (if necessary)** - The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory: See Attachment 2

Signature of Laboratory Responsible Officer _____ Date _____

Mailing Address of Laboratory: _____

Name and Title of Laboratory Responsible Officer _____

**Attachment 1
List of Documents**

Submittal	Date of Submittal
Roxana 3Q12 Groundwater Monitoring Report	10/15/2012
Roxana 4Q12 Groundwater Monitoring Report	1/15/2013
Roxana 4Q13 Soil Vapor Report	1/31/2014
Roxana 1Q14 Soil Vapor Report	4/30/2014
Roxana 2Q14 Soil Vapor Report	7/30/2014
Roxana 3Q14 Soil Vapor Report	10/30/2014
Roxana 2Q15 Soil Vapor Report	7/29/2015
GWP-28 Installation Plan	11/27/2012
Public Work Yard Soil Sampling Report	3/13/2013
GW Monitoring Well and Vapor Monitoring Point Installation Report	4/3/2013
April 30, 2013-Groundwater Profile Delineation Report	4/30/2013
Addendum to Monitoring Well & Vapor Monitoring Point Installation Report - Supplemental Investigation Activities	5/22/2013
SVE Expansion-Construction Completion Rpt Addendum 2	1/9/2014
SVE System Construction Completion Rpt Addendum 3	3/4/2015

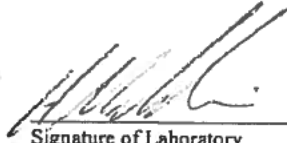
Note: Highlighted row represents subject Addendum

ATTACHMENT 2

LABORATORY CERTIFICATION

Revisions to previously reported laboratory data were required following a laboratory quality review. These revisions were performed in accordance with industry standards for testing laboratories accredited by the National Environmental Laboratory Accreditation Conference (NELAC). I certify the information contained in the revised and reissued laboratory reports are, to the best of my knowledge and belief, true, accurate and complete.

Name of Laboratory: SGS Accutest


 Signature of Laboratory Responsible Officer

5.17.17
Date

Mailing Address of Laboratory:
50 D'Angelo Drive
495 Technology Center West, Building 1
Marlboro, MA 01752

Hossain (Baro) Madadian
 Name and Title of Laboratory Responsible Officer
 Lab Director

LEGAL REVIEWED
 BY: MR
 DATE: 5.17.17

Laboratory Report (Sample Delivery Group[SDG])			
mc12669	mc23880	mc17144	mc18856
mc12784	mc26889	mc17324	mc18890
mc12833	mc27073	mc17401	mc18895
mc12905	mc23933	mc16336	mc18752
mc12941	mc32497	mc16445	mc24546
mc12942	mc32521	mc16475	mc32549
mc13051	mc38153	mc16587	mc32591
mc15232	mc38192	mc16644	mc32628
mc15892	mc14777	mc16798	mc32660
mc16960	mc14814	mc16889	mc32763
mc23682	mc16999	mc17501	mc33045

May 16, 2017

Analytical Method	Sample ID	Lab Sample ID	Sample Date	Analyte	Original Result	Corrected Result	Laboratory Qualifier	Units	Laboratory Footnote	AECOM Qualifier
SW846 8260B	GWP-28-80-ROX-101012	MC14814-1	10/10/2012	2-Chloroethyl vinyl ether	ND	ND		ug/l	Ana: Continuing Calibration Verification outside of acceptance criteria. Sample result may be biased low.	UJ

LABORATORY QUALIFIERS:

ND = Not detected.

AECOM QUALIFIERS:

UJ = Estimated nondetect.

SEE LAST PAGE OF TABLE FOR NOTES

**TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28**

Location	Sample ID	Sample Date	VOCs													
			Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	2-Butanone	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	
Screening Values (mg/L)						0.005							4.2	0.35		
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005	<0.005	
	GWP-28-60-ROX-100912	10/9/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005	<0.005	
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005	<0.005	
	GWP-28-80-ROX-101012	10/10/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005	<0.005	

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Location	Sample ID	Sample Date	VOCs												
			Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	Cymene (p-isopropyltoluene)	1,2-Dibromo-3-chloropropane (DBCP)	1,2-Dibromoethane
Screening Values (mg/L)			0.7	0.005	0.1				0.0002						0.00005
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000015	<0.000015
	GWP-28-60-ROX-100912	10/9/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000014	<0.000014
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000015	<0.000015
	GWP-28-80-ROX-101012	10/10/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005 UJ	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000015	<0.000015

SEE LAST PAGE OF TABLE FOR NOTES

**TABLE 1
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Location	Sample ID	Sample Date	VOCs													
			Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Dichloromethane (Methylene chloride)	1,2-Dichloropropane	1,3-Dichloropropane	
Screening Values (mg/L)				0.6		0.075		0.7	0.007							
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005
	GWP-28-60-ROX-100912	10/9/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005
	GWP-28-80-ROX-101012	10/10/2012	<0.005	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005

**TABLE 1
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Location	Sample ID	Sample Date	VOCs													
			2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,4-Dioxane	Ethylbenzene	Ethyl methacrylate	Hexachlorobutadiene	2-Hexanone (Methyl N-Butyl Ketone)	Isopropylbenzene (Cumene)	4-Methyl-2-pentanone (Methyl Isobutyl Ketone)	Methyl tert-Butyl Ether (MTBE)	Naphthalene	
Screening Values (mg/L)							0.005	0.7			0.007		0.7		0.07	0.14
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005	<0.005	<0.0005	<0.0005	<0.025	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0061	<0.005
	GWP-28-60-ROX-100912	10/9/2012	<0.005	<0.005	<0.0005	<0.0005	<0.025	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0032	<0.005
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005	<0.005	<0.0005	<0.0005	<0.025	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0032	<0.005
	GWP-28-80-ROX-101012	10/10/2012	<0.005	<0.005	<0.0005	<0.0005	<0.025	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0012	<0.005

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GWP-28**

Location	Sample ID	Sample Date	VOCs												
			n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane (Methyl chloroform)	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane
Screening Values (mg/L)			0.7	0.1			0.005	1	0.0056		0.2	210	0.005		
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005
	GWP-28-60-ROX-100912	10/9/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005
	GWP-28-80-ROX-101012	10/10/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005

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Location	Sample ID	Sample Date	VOCs							SVOCs					
			1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl acetate	Vinyl chloride	m,p-Xylenes	o-Xylenes	Xylenes (total)	Acenaphthene	Acenaphthylene	Aniline	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene
Screening Values (mg/L)				0.07			10	10	10	0.42	0.21		2.1	0.00013	0.0002
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011	<0.000053	<0.00011
	GWP-28-60-ROX-100912	10/9/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011	<0.000054	<0.00011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011	<0.000056	<0.00011
	GWP-28-80-ROX-101012	10/10/2012	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011	<0.000053	<0.00011

SEE LAST PAGE OF TABLE FOR NOTES

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Location	Sample ID	Sample Date	SVOCs												
			Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Benzyl alcohol	bis(2-Chloroethoxy)methane	bis(2-Chloroethyl)ether	Bis(2-chloroisopropyl)ether	bis(2-Ethylhexyl)phthalate	4-Bromophenyl phenyl ether	Butyl benzyl phthalate	p-Chloroaniline	4-Chloro-3-methylphenol (p-Chloro-m-cresol)
Screening Values (mg/L)			0.00018	0.21	0.00017	28	0.7					0.006		1.4	
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.000053	<0.00011	<0.00011	<0.011	<0.011	<0.0053	<0.0053	<0.0053	<0.0021 UJ	<0.0053	<0.0053	<0.011	<0.011
	GWP-28-60-ROX-100912	10/9/2012	<0.000054	<0.00011	<0.00011	<0.011	<0.011	<0.0054	<0.0054	<0.0054	<0.0022 UJ	<0.0054	<0.0054	<0.011	<0.011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.000056	<0.00011	<0.00011	<0.011	<0.011	<0.0056	<0.0056	<0.0056	<0.0022 UJ	<0.0056	<0.0056	<0.011	<0.011
	GWP-28-80-ROX-101012	10/10/2012	<0.000053	<0.00011	<0.00011	<0.011	<0.011	<0.0053	<0.0053	<0.0053	<0.0021	<0.0053	<0.0053	<0.011 UJ	<0.011

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GWP-28**

Location	Sample ID	Sample Date	SVOCs												
			2-Chloronaphthalene	2-Chlorophenol	4-Chlorophenyl phenyl ether	Chrysene (1,2-Benzphenanthracene)	Dibenzo(a,h)anthracene	Dibenzofuran	3,3'-Dichlorobenzidine	2,4-Dichlorophenol	Diethyl phthalate	2,4-Dimethylphenol	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate
Screening Values (mg/L)						0.0015	0.0003	0.007			5.6	0.14		0.7	0.14
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.0053	<0.0053	<0.0053	<0.00011	<0.00011	<0.0021	<0.0053	<0.011	<0.0053	<0.011	<0.0053	<0.0053	<0.0053
	GWP-28-60-ROX-100912	10/9/2012	<0.0054	<0.0054	<0.0054	<0.00011	<0.00011	<0.0022	<0.0054	<0.011	<0.0054	<0.011	<0.0054	<0.0054	<0.0054
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.0056	<0.0056	<0.0056	<0.00011	<0.00011	<0.0022	<0.0056	<0.011	<0.0056	<0.011	<0.0056	<0.0056	<0.0056
	GWP-28-80-ROX-101012	10/10/2012	<0.0053	<0.0053	<0.0053	<0.00011	<0.00011	<0.0021	<0.0053 UJ	<0.011	<0.0053	<0.011	<0.0053	<0.0053	<0.0053

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Location	Sample ID	Sample Date	SVOCs												
			4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol)	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	1,2-Diphenylhydrazine	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone (3,5,5-trimethyl-2-cyclohexene-1-one)	1-Methylnaphthalene
Screening Values (mg/L)				0.014				0.28	0.28				0.00043		0.49
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.011	<0.021	<0.011	<0.011	<0.0053	<0.00011	<0.00011	<0.0053	<0.011 UJ	<0.0053	<0.00011	<0.0053	<0.00021
	GWP-28-60-ROX-100912	10/9/2012	<0.011	<0.022	<0.011	<0.011	<0.0054	<0.00011	<0.00011	<0.0054	<0.011 UJ	<0.0054	<0.00011	<0.0054	<0.00022
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.011	<0.022	<0.011	<0.011	<0.0056	<0.00011	<0.00011	<0.0056	<0.011 UJ	<0.0056	<0.00011	<0.0056	<0.00022
	GWP-28-80-ROX-101012	10/10/2012	<0.011	<0.021	<0.011	<0.011	<0.0053	<0.00011	<0.00011	<0.0053	<0.011	<0.0053	<0.00011	<0.0053	<0.00021

**TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28**

Location	Sample ID	Sample Date	SVOCs												
			2-Methylnaphthalene	2-Methylphenol (o-Cresol)	3 & 4-Methylphenol (m & p-Cresol)	2-Nitroaniline	3-Nitroaniline	Nitrobenzene	2-Nitrophenol	4-Nitrophenol	4-Nitrophenylamine	N-Nitrosodimethylamine	N-Nitrosodi-n-propylamine	N-Nitrosodiphenylamine	Pentachlorophenol
Screening Values (mg/L)			0.028	0.35	0.35										
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.00021	<0.011	<0.011	<0.011	<0.011	<0.0053	<0.011	<0.021	<0.011	<0.0053	<0.0053	<0.0053	<0.011
	GWP-28-60-ROX-100912	10/9/2012	<0.00022	<0.011	<0.011	<0.011	<0.011	<0.0054	<0.011	<0.022	<0.011	<0.0054	<0.0054	<0.0054	<0.011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.00022	<0.011	<0.011	<0.011	<0.011	<0.0056	<0.011	<0.022	<0.011	<0.0056	<0.0056	<0.0056	<0.011
	GWP-28-80-ROX-101012	10/10/2012	<0.00021	<0.011	<0.011	<0.011	<0.011	<0.0053	<0.011	<0.021	<0.011	<0.0053	<0.0053	<0.0053	<0.011

SEE LAST PAGE OF TABLE FOR NOTES

**TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28**

Location	Sample ID	Sample Date	SVOCs					
			Phenanthrene	Phenol	Pyrene	Pyridine	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol
Screening Values (mg/L)			0.21	0.1	0.28	0.007		
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.000053	<0.0053	<0.00011	<0.011	<0.011	<0.011
	GWP-28-60-ROX-100912	10/9/2012	<0.000054	<0.0054	<0.00011	<0.011	<0.011	<0.011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.000056	<0.0056	<0.00011	<0.011	<0.011	<0.011
	GWP-28-80-ROX-101012	10/10/2012	<0.000053	<0.0053 UJ	<0.00011	<0.011 UJ	<0.011	<0.011

Notes:
URS Qualifiers
UJ = Estimated non-detect

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VERIFICATION, TESTING AND CERTIFICATION COMPANY.



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Automated Report

Technical Report for

Shell Oil

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, II
21562735.00015

SGS Accutest Job Number: MC14777

Sampling Date: 10/09/12

Report to:

AECOM, INC.

Melissa.mansker@aecom.com

ATTN: Melissa Mansker

Total number of pages in report: 95



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.

H. (Brad) Madadian
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) FL (E87579) NY (11791)
NJ (MA926) PA (6801121) ND (R-188) CO (MA00136) MN (11546AA) NC (653) IL (002337) WI (399080220)
DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.



ACCUTEST

October 21, 2016

AECOM
1001 Highlands Plaza Drive West Suite 300
St. Louis, MO 63110

RE: SGS Accutest Job # MC14777

Dear Elizabeth Kunkel

As you are aware, SGS Accutest Inc. - Marlborough has been conducting an extensive review of data associated with some historical Gas Chromatography-Mass Spectroscopy volatiles analyses. As a result of this review it was determined that some revisions of the original test report for this job were needed. These corrections have been incorporated into the revised report.

Please be assured that corrective actions have been put in place to address this matter and prevent a recurrence.

We apologize for any inconvenience that this issue may have caused. Please don't hesitate to contact us if we can be of further assistance.

Sincerely,

H. (Brad) Madadian

Regional Laboratory Director
SGS Accutest Inc. - Marlborough

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION,
TESTING AND CERTIFICATION COMPANY.

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Sample Summary

Shell Oil

Job No: MC14777

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Project No: 21562735.00015

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
MC14777-1	10/09/12	14:45 NM	10/10/12	AQ	Ground Water	GWP-28-40-ROX-100912
MC14777-2	10/09/12	16:25 NM	10/10/12	AQ	Ground Water	GWP-28-60-ROX-100912
MC14777-3	10/09/12	00:00 NM	10/10/12	AQ	Trip Blank Water	TB-100912-HCL
MC14777-4	10/09/12	00:00 NM	10/10/12	AQ	Trip Blank Water	TB-100912-ST
MC14777-5	10/09/12	16:25 NM	10/10/12	AQ	Ground Water	GWP-28-60-ROX-100912-DUP

SAMPLE DELIVERY GROUP CASE NARRATIVE



Client: She O

Job No MC 4777

Site: URSMOSTL:Roxana - Groundwater Prof'ng (Add' GW Character **Report Date** 10/21/2016 6:54:27 PM

3 Sample(s), 2 Trip Blank(s) and 0 Field Blank(s) were collected on 10/09/2016 and were received at SGS Accutest New England on 10/09/2016 properly preserved, at 29 Deg C and intact. These Samples received a job number of MC 4777. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. Chlorohexane, Benzene, D benz(a,h)acridene, Indene and Quinoline were searched in the library search and reported on if detections were found.

Except as noted below, all method specified calibration and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ

Batch ID: MSH 895

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specification criteria.
- Sample(s) MC 4860-5MS, MC 4860-5MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Butanone (MEK), Acetone are out of control limits.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone, Vinyl chloride are out of control limits. Out of control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone are out of control limits. Probable cause due to matrix interference.
- MC 4777-3 for Dichlorodifluoromethane: In this Calibration Bracket on Verification out of acceptance criteria. Sample result may be biased low.
- MC 4777-3 for Acetone: In this Calibration Bracket on Verification out of acceptance criteria. Sample result may be biased low.
- MC 4777-3 for 2-Butanone (MEK): In this Calibration Bracket on Verification out of acceptance criteria. Sample result may be biased low.

Matrix: AQ

Batch ID: MSN2594

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specification criteria.
- Sample(s) MC 4934-4MS, MC 4934-4MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acrylonitrile are out of control limits.
- Matrix Spike Recovery(s) for Dichlorodifluoromethane, Acrylonitrile are out of control limits. Out of control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Dichlorodifluoromethane are out of control limits. Probable cause due to matrix interference.
- MSN2594-BS for Acrylonitrile: Out of control limits. Associated samples are non-detect for this compound.
- MC 4934-4MS for Acrylonitrile: Out of control limits. Associated samples are non-detect for this compound.
- In this Calibration Bracket on Verification standard for Acetone exceeds 50% Difference Based high.

Extractables by GCMS By Method SW846 8270C

Matrix: AQ

Batch ID: OP30628

- A samples were extracted with the recommended method holding time
- A samples were analyzed with the recommended method holding time
- Sample(s) MC 4800-6MS, MC 4800-6MSD were used as the QC samples indicated
- A method blanks for this batch meet method specification
- Blank Spike Recovery(s) for bis(2-Ethylhexyl)phthalate, Butylbenzylphthalate, D-n-octylphthalate, Aniline are outside control limits
- Matrix Spike Recovery(s) for Aniline, D-n-octylphthalate are outside control limits. Out of control limits due to possible matrix interference. Refer to Blank Spike
- Matrix Spike Duplicate Recovery(s) for Aniline, D-n-octylphthalate are outside control limits. Probable cause due to matrix interference
- Sample(s) OP30628-BS, OP30628-MB have surrogates outside control limits. Probable cause due to matrix interference
- OP30628-BS for Terphenyl-d 4: Out of control limits. Associated target analytes are non-detect
- OP30628-BSD for Hexachlorocyclopentadiene: Out of control limits. Blank Spike meets program technical requirements
- OP30628-BSD for 4-Chloroaniline: Out of control limits. Blank Spike meets program technical requirements
- OP30628-BSD for 3-Nitroaniline: Out of control limits. Blank Spike meets program technical requirements
- OP30628-BSD for 2,4-Dimethylphenol: Out of control limits. Blank Spike meets program technical requirements
- OP30628-BSD for D-n-octylphthalate: Out of control limits. Associated samples are non-detect for this compound
- OP30628-BSD for Butylbenzylphthalate: Out of control limits. Associated samples are non-detect for this compound
- OP30628-MS for D-n-octylphthalate: Out of control limits. Associated samples are non-detect for this compound
- OP30628-BS for D-n-octylphthalate: Out of control limits. Associated samples are non-detect for this compound
- OP30628-BS for Butylbenzylphthalate: Out of control limits. Associated samples are non-detect for this compound
- OP30628-BS for bis(2-Ethylhexyl)phthalate: Out of control limits. Associated samples are non-detect for this compound
- OP30628-MB for Terphenyl-d 4: Out of control limits. Associated target analytes are non-detect
- OP30628-BSD for bis(2-Ethylhexyl)phthalate: Out of control limits. Associated samples are non-detect for this compound

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: AQ

Batch ID: OP30629

- A samples were extracted with the recommended method holding time
- A samples were analyzed with the recommended method holding time
- Sample(s) MC 4800-7MS, MC 4800-7MSD were used as the QC samples indicated
- A method blanks for this batch meet method specification

Volatiles by GC By Method SW846 8011

Matrix: AQ

Batch ID: OP30666

- A samples were extracted with the recommended method holding time
- A samples were analyzed with the recommended method holding time
- Sample(s) MC 4930-4MS, MC 4930-4MSD were used as the QC samples indicated
- A method blanks for this batch meet method specification

SGS Accutest New England certifies that all analyses were performed with the method specification. It is further recommended that this report be used in its entirety. The Laboratory Director for SGS Accutest New England or assignee as verified by the signature on the cover page has authorized the release of this report (MC 4777)

Friday, October 21, 2016

Page 2 of 2

Summary of Hits

Job Number: MC14777
Account: Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Collected: 10/09/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
MC14777-1	GWP-28-40-ROX-100912					
		Methyl Tert Butyl Ether	6.1	1.0	0.41	ug/l SW846 8260B
MC14777-2	GWP-28-60-ROX-100912					
		Methyl Tert Butyl Ether	3.2	1.0	0.41	ug/l SW846 8260B
MC14777-3	TB-100912-HCL					
No hits reported in this sample.						
MC14777-4	TB-100912-ST					
No hits reported in this sample.						
MC14777-5	GWP-28-60-ROX-100912-DUP					
		Methyl Tert Butyl Ether	3.2	1.0	0.41	ug/l SW846 8260B

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GWP-28-40-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-1	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N68973.D	1	10/23/12	JP	n/a	n/a	MSN2594
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-40-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-1	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	6.1	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-40-ROX-100912	Date Sampled: 10/09/12
Lab Sample ID: MC14777-1	Date Received: 10/10/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

4.1
4

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-130%
2037-26-5	Toluene-D8	85%		70-130%
460-00-4	4-Bromofluorobenzene	111%		70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-40-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-1	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5861.D	1	10/15/12	KR	10/10/12	OP30628	MSW266
Run #2							

Run #	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.2	ug/l	
95-57-8	2-Chlorophenol	ND	5.3	0.43	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.40	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.40	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	2.9	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.3	ug/l	
95-48-7	2-Methylphenol	ND	11	0.64	ug/l	
	3&4-Methylphenol	ND	11	0.80	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.50	ug/l	
100-02-7	4-Nitrophenol	ND	21	2.9	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.68	ug/l	
108-95-2	Phenol	ND	5.3	0.99	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.52	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.38	ug/l	
62-53-3	Aniline	ND	11	2.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	0.35	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.3	0.28	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.28	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.3	0.19	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.67	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.3	0.23	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.3	0.40	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.3	0.30	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.3	0.31	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.3	0.23	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.1	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.22	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	0.95	ug/l	
132-64-9	Dibenzofuran	ND	2.1	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	0.38	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.3	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-40-ROX-100912		Date Sampled: 10/09/12
Lab Sample ID: MC14777-1		Date Received: 10/10/12
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8270C SW846 3510C		
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.3	0.20	ug/l	
131-11-3	Dimethyl phthalate	ND	5.3	5.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	0.40	ug/l	
118-74-1	Hexachlorobenzene	ND	5.3	0.26	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.3	ug/l	
67-72-1	Hexachloroethane	ND	5.3	2.1	ug/l	
78-59-1	Isophorone	ND	5.3	0.34	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.24	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.27	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.1	ug/l	
98-95-3	Nitrobenzene	ND	5.3	0.26	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	0.63	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.3	0.29	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.46	ug/l	
110-86-1	Pyridine	ND	11	5.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		15-110%
4165-62-2	Phenol-d5	34%		15-110%
118-79-6	2,4,6-Tribromophenol	90%		15-110%
4165-60-0	Nitrobenzene-d5	89%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	70%		30-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID: GWP-28-40-ROX-100912	Date Sampled: 10/09/12
Lab Sample ID: MC14777-1	Date Received: 10/10/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58297.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.014	ug/l	
120-12-7	Anthracene	ND	0.11	0.019	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	0.032	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.019	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.053	0.025	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.062	ug/l	
218-01-9	Chrysene	ND	0.11	0.077	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.044	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.035	ug/l	
86-73-7	Fluorene	ND	0.11	0.049	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.049	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	0.15	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	0.055	ug/l	
85-01-8	Phenanthrene	ND	0.053	0.013	ug/l	
129-00-0	Pyrene	ND	0.11	0.038	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		30-130%
321-60-8	2-Fluorobiphenyl	62%		30-130%
1718-51-0	Terphenyl-d14	79%		30-130%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID: GWP-28-40-ROX-100912	Date Sampled: 10/09/12
Lab Sample ID: MC14777-1	Date Received: 10/10/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17939.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	35.8 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	91%		36-173%
460-00-4	Bromofluorobenzene (S)	74%		36-173%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-2	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N68974.D	1	10/23/12	JP	n/a	n/a	MSN2594
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-2	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.2	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-60-ROX-100912		Date Sampled: 10/09/12
Lab Sample ID: MC14777-2		Date Received: 10/10/12
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8260B		
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

4.2
4

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		70-130%
2037-26-5	Toluene-D8	86%		70-130%
460-00-4	4-Bromofluorobenzene	91%		70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-2	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5859.D	1	10/15/12	KR	10/10/12	OP30628	MSW266
Run #2							

Run #	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.3	ug/l	
95-57-8	2-Chlorophenol	ND	5.4	0.44	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.41	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.41	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	3.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	22	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.4	ug/l	
95-48-7	2-Methylphenol	ND	11	0.66	ug/l	
	3&4-Methylphenol	ND	11	0.82	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.51	ug/l	
100-02-7	4-Nitrophenol	ND	22	3.0	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.69	ug/l	
108-95-2	Phenol	ND	5.4	1.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.53	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.38	ug/l	
62-53-3	Aniline	ND	11	2.2	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.4	0.36	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.4	0.29	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.28	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.4	0.19	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.69	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.4	0.24	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.4	0.41	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.4	0.31	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.4	0.32	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.4	0.23	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.2	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.23	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.4	0.97	ug/l	
132-64-9	Dibenzofuran	ND	2.2	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.4	0.39	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.4	0.26	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-60-ROX-100912		Date Sampled: 10/09/12
Lab Sample ID: MC14777-2		Date Received: 10/10/12
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8270C SW846 3510C		
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

4.2
4

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.4	0.21	ug/l	
131-11-3	Dimethyl phthalate	ND	5.4	5.4	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	0.41	ug/l	
118-74-1	Hexachlorobenzene	ND	5.4	0.27	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.4	ug/l	
67-72-1	Hexachloroethane	ND	5.4	2.2	ug/l	
78-59-1	Isophorone	ND	5.4	0.35	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.25	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.28	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.4	0.26	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.4	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.4	0.30	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.4	0.47	ug/l	
110-86-1	Pyridine	ND	11	5.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		15-110%
4165-62-2	Phenol-d5	37%		15-110%
118-79-6	2,4,6-Tribromophenol	91%		15-110%
4165-60-0	Nitrobenzene-d5	93%		30-130%
321-60-8	2-Fluorobiphenyl	83%		30-130%
1718-51-0	Terphenyl-d14	94%		30-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-2	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58295.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
Run #2							

Run #	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.015	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.014	ug/l	
120-12-7	Anthracene	ND	0.11	0.019	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.054	0.033	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.019	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.054	0.026	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.041	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.064	ug/l	
218-01-9	Chrysene	ND	0.11	0.079	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.045	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.035	ug/l	
86-73-7	Fluorene	ND	0.11	0.050	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.050	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.22	0.15	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.22	0.056	ug/l	
85-01-8	Phenanthrene	ND	0.054	0.014	ug/l	
129-00-0	Pyrene	ND	0.11	0.039	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		30-130%
321-60-8	2-Fluorobiphenyl	75%		30-130%
1718-51-0	Terphenyl-d14	105%		30-130%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-60-ROX-100912	Date Sampled: 10/09/12
Lab Sample ID: MC14777-2	Date Received: 10/10/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17940.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	36.9 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0099	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	128%		36-173%
460-00-4	Bromofluorobenzene (S)	120%		36-173%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.2
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Report of Analysis

Client Sample ID:	TB-100912-HCL	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-3	Date Received:	10/10/12
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H57783.D	1	10/22/12	JS	n/a	n/a	MSH1895
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone ^a	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK) ^a	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane ^b	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-100912-HCL	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-3	Date Received:	10/10/12
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-100912-HCL		Date Sampled: 10/09/12
Lab Sample ID: MC14777-3		Date Received: 10/10/12
Matrix: AQ - Trip Blank Water		Percent Solids: n/a
Method: SW846 8260B		
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

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VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		70-130%
2037-26-5	Toluene-D8	102%		70-130%
460-00-4	4-Bromofluorobenzene	102%		70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

- (a) Initial Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- (b) Initial&Continuing Calibration Verification outside of acceptance criteria. Sample result may be biased low.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-100912-ST	Date Sampled: 10/09/12
Lab Sample ID: MC14777-4	Date Received: 10/10/12
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17941.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	36.2 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	93%		36-173%
460-00-4	Bromofluorobenzene (S)	83%		36-173%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.4

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912-DUP	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-5	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N68975.D	1	10/23/12	JP	n/a	n/a	MSN2594
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912-DUP	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-5	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.2	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-60-ROX-100912-DUP		Date Sampled: 10/09/12
Lab Sample ID: MC14777-5		Date Received: 10/10/12
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8260B		
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

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VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-130%
2037-26-5	Toluene-D8	87%		70-130%
460-00-4	4-Bromofluorobenzene	91%		70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912-DUP	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-5	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5860.D	1	10/15/12	KR	10/10/12	OP30628	MSW266
Run #2							

Run #	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.3	ug/l	
95-57-8	2-Chlorophenol	ND	5.6	0.45	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.42	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.42	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	3.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	22	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.6	ug/l	
95-48-7	2-Methylphenol	ND	11	0.67	ug/l	
	3&4-Methylphenol	ND	11	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.53	ug/l	
100-02-7	4-Nitrophenol	ND	22	3.1	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.71	ug/l	
108-95-2	Phenol	ND	5.6	1.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.55	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.39	ug/l	
62-53-3	Aniline	ND	11	2.2	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.6	0.36	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.6	0.29	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.29	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.6	0.20	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.70	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.6	0.24	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.6	0.42	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.6	0.32	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.6	0.32	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.6	0.24	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.2	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.23	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.6	0.99	ug/l	
132-64-9	Dibenzofuran	ND	2.2	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.6	0.40	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.6	0.26	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-60-ROX-100912-DUP	Date Sampled: 10/09/12
Lab Sample ID: MC14777-5	Date Received: 10/10/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

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ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.6	0.21	ug/l	
131-11-3	Dimethyl phthalate	ND	5.6	5.6	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	0.42	ug/l	
118-74-1	Hexachlorobenzene	ND	5.6	0.28	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.6	ug/l	
67-72-1	Hexachloroethane	ND	5.6	2.2	ug/l	
78-59-1	Isophorone	ND	5.6	0.35	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.25	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.28	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.6	0.27	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.6	0.66	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.6	0.31	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.48	ug/l	
110-86-1	Pyridine	ND	11	5.6	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		15-110%
4165-62-2	Phenol-d5	40%		15-110%
118-79-6	2,4,6-Tribromophenol	98%		15-110%
4165-60-0	Nitrobenzene-d5	90%		30-130%
321-60-8	2-Fluorobiphenyl	77%		30-130%
1718-51-0	Terphenyl-d14	94%		30-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912-DUP	Date Sampled:	10/09/12
Lab Sample ID:	MC14777-5	Date Received:	10/10/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58296.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.015	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.015	ug/l	
120-12-7	Anthracene	ND	0.11	0.020	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.056	0.033	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.019	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.056	0.026	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.042	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.065	ug/l	
218-01-9	Chrysene	ND	0.11	0.081	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.046	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.036	ug/l	
86-73-7	Fluorene	ND	0.11	0.051	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.051	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.22	0.16	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.22	0.058	ug/l	
85-01-8	Phenanthrene	ND	0.056	0.014	ug/l	
129-00-0	Pyrene	ND	0.11	0.039	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	103%		30-130%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-60-ROX-100912-DUP	Date Sampled: 10/09/12
Lab Sample ID: MC14777-5	Date Received: 10/10/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17942.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	35.8 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	89%		36-173%
460-00-4	Bromofluorobenzene (S)	82%		36-173%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

Client / Reporting Information Company Name: URS Corporation Street Address: 1001 Highlands Plaza D.W. City, State, Zip: St. Louis MO 63110 Project Contact: Elizabeth Kunkel Phone #: 314-429-0100		Project Information Project Name: Roxana-Groundwater Profiling (Add'l GW characterization) Billing Information (If different from Report to): Company Name: _____ Street Address: _____ City, State, Zip: _____		Requested Analysis (see TEST CODE sheet) VOC 82608 (MCL) SL+TICS VOC 8011 (Sod Thio) SL SVOC 82702 (MCL) SL+TICS PAH 8270 LL (MCL)		Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank										
Project Manager: Bob Moshagian Attention: _____		Project # 21562735.00015		PO# _____												
Collection		Number of preserved Bottles														
Field ID / Point of Collection	MEQNDI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	None	D/Water	MeOH	EM/CO2	Other	
-1		10/9/12	1445	NM	GW	6	2					2			X	X
-2		10/9/12	1625	NM	GW	6	2					2			X	X
-3		10/9/12	0800	NM	TB	2	2								X	
-4		10/9/12	0800	NM	TB	2									X	
-5		10/9/12	1625	NM	GW	6	2					2			X	X
															LAB USE ONLY	
															16AA, 1L1	
Turnaround Time (Business days) <input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush TJA data available VIA Lablink		Approved By (Accutest PM): / Date: _____		Data Deliverable Information <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> CT RCP <input type="checkbox"/> MA MCP Commercial "A" = Results Only Commercial "B" = Results + QC Summary				<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other Per Elizabeth Kunkel				Comments / Special Instructions				
Sample Custody must be documented below each time samples change possession, including courier delivery.																
Relinquished by Sampler: 1 Date/Time: 10/9/12 1845		Received By: 1 Date/Time: Fed EX		Relinquished By: 2 Date/Time: FX		Received By: 2 Date/Time: 10-10-12		Relinquished by: 3 Date/Time:		Received By: 4 Date/Time:		Relinquished by: 5 Date/Time:		Received By:		
Relinquished by: _____				Date/Time: _____				Relinquished by: _____				Date/Time: _____				
Relinquished by: _____				Date/Time: _____				Relinquished by: _____				Date/Time: _____				
Relinquished by: _____				Date/Time: _____				Relinquished by: _____				Date/Time: _____				
Relinquished by: _____				Date/Time: _____				Relinquished by: _____				Date/Time: _____				
Custody Seal # <input type="checkbox"/> Intact Preserved where applicable <input type="checkbox"/> On Ice Cooler Temp. 2.98																

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MC 14777

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 FACILITY IDENTIFICATION

Name: WRB Refining LP - Wood River Refinery County: Madison
Street Address: 900 South Central Ave. Site No. (IEPA): 1191150002
City: Roxana, IL 62084 Site No. (USEPA): ILD.080.012.305

2.0 OWNER INFORMATION

Name: Not Applicable
Mailing Address: Equilon Enterprises LLC db/a Shell Oil Products US

3.0 OPERATOR INFORMATION

Name: Not Applicable
Mailing Address: 17 Junction Drive, PMB #399
Glen Carbon, IL 62034

Contact Name: Kevin Dyer

Contact Title: Principal Program Manager

Phone No.: 618-288-7237

4.0 TYPE OF SUBMISSION (check applicable item and provide requested information, as applicable)

RFI Phase I Workplan/Report
RFI Phase II Workplan/Report
CMP Report, Phase
Other (describe): Groundwater monitoring well installation plan
Date of Submittal November 28, 2012
IEPA Permit Log No. B-43R
Date of Last IEPA Letter on Project 3/14/12
Log No. of Last IEPA Letter on Project B-43R-CA-25
Does this submittal include groundwater information: Yes No

5.0 DESCRIPTION OF SUBMITTAL: (briefly describe what is being submitted and its purpose)

Groundwater results from sampling performed on BP property, and proposed well installation plan.

6.0 DOCUMENTS SUBMITTED (identify all documents in submittal, including cover letter; give dates of all documents)

RCRA Corrective Action Certification and Groundwater Monitoring Well Installation Plan, dated November 28, 2012.

7.0 CERTIFICATION STATEMENT. (This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

MC14777: Chain of Custody
Page 2 of 6

MC14777

IEPA RCRA Corrective Action Certification
For: Equilon Enterprises LLC d/b/a Shell Oil Products US
Date of Submission: _____
Page 2

7.1 **OWNER/OPERATOR CERTIFICATION** (Must be completed for all submittals. Certification and signature requirements are set forth in 35 FAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

- 1. For a Corporation, by a principal executive officer of at least the level of vice-president.
- 2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
- 3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:
1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ (Date) _____

Title: _____

Operator Signature: _____ (Date) _____

Title: Principal Program Manager

MC14777: Chain of Custody
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MC 14777

IEPA RCRA Corrective Action Certification
For: Equilon Enterprises LLC d/b/a Shell Oil Products US
Date of Submission: _____
Page 3

7.2 PROFESSIONAL CERTIFICATION (if necessary) - Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Professional's Signature: _____ Date: _____
Professional's Name: Robert E. Billman
Professional's Address: URS Corporation
1001 Highlands Plaza Drive West
St. Louis, MO 63110
Professional's Phone No.: 314-743-4108
Professional's Seal: _____

MC14777: Chain of Custody
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MC14777

IEPA RCRA Corrective Action Certification
For: Equilon Enterprises LLC d/b/a Shell Oil Products US
Date of Submission: _____
Page 4

7.3 **LABORATORY CERTIFICATION (if necessary)** - The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory ACCUTEST LABORATORIES

Signature of Laboratory Responsible Officer [Signature]

Date 11-27-12

Name and Title of Laboratory Responsible Officer Kevin J. Jand / Director

Mailing Address of Laboratory 495 Technology Center West

Building one

Marlborough, MA 01752

MC14777: Chain of Custody
Page 5 of 6

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC14777 Client: URS Immediate Client Services Action Required: No
 Date / Time Received: 10/10/2012 Delivery Method: _____ Client Service Action Required at Login: No
 Project: ROXANA GW PROFILING No. Coolers: 1 Airbill #'s: _____

Cooler Security

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	<u>Infrared gun</u>		
3. Cooler media:	<u>Ice (bag)</u>		

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Internal Sample Tracking Chronicle

Shell Oil

Job No: MC14777

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
 Project No: 21562735.00015

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Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC14777-1 Collected: 09-OCT-12 14:45 By: NM Received: 10-OCT-12 By: GWP-28-40-ROX-100912						
MC14777-1	SW846 8270C BY SIM	12-OCT-12 16:16	KR	10-OCT-12	MT	B8270SIMP AH
MC14777-1	SW846 8270C	15-OCT-12 18:21	KR	10-OCT-12	AJ	AB8270SL +
MC14777-1	SW846 8011	18-OCT-12 13:19	AP	12-OCT-12	AJ	V8011SL
MC14777-1	SW846 8260B	23-OCT-12 16:05	JP			V8260SL +
MC14777-2 Collected: 09-OCT-12 16:25 By: NM Received: 10-OCT-12 By: GWP-28-60-ROX-100912						
MC14777-2	SW846 8270C BY SIM	12-OCT-12 15:31	KR	10-OCT-12	MT	B8270SIMP AH
MC14777-2	SW846 8270C	15-OCT-12 17:35	KR	10-OCT-12	AJ	AB8270SL +
MC14777-2	SW846 8011	18-OCT-12 13:44	AP	12-OCT-12	AJ	V8011SL
MC14777-2	SW846 8260B	23-OCT-12 16:33	JP			V8260SL +
MC14777-3 Collected: 09-OCT-12 00:00 By: NM Received: 10-OCT-12 By: TB-100912-HCL						
MC14777-3	SW846 8260B	22-OCT-12 11:13	JS			V8260SL +
MC14777-4 Collected: 09-OCT-12 00:00 By: NM Received: 10-OCT-12 By: TB-100912-ST						
MC14777-4	SW846 8011	18-OCT-12 14:09	AP	12-OCT-12	AJ	V8011SL
MC14777-5 Collected: 09-OCT-12 16:25 By: NM Received: 10-OCT-12 By: GWP-28-60-ROX-100912-DUP						
MC14777-5	SW846 8270C BY SIM	12-OCT-12 15:54	KR	10-OCT-12	MT	B8270SIMP AH
MC14777-5	SW846 8270C	15-OCT-12 17:58	KR	10-OCT-12	AJ	AB8270SL +
MC14777-5	SW846 8011	18-OCT-12 14:33	AP	12-OCT-12	AJ	V8011SL
MC14777-5	SW846 8260B	23-OCT-12 17:02	JP			V8260SL +

SGS Accutest Internal Chain of Custody

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Received: 10/10/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC14777-1.1	Walk In Ref #22	Michael Rolo	10/11/12 06:41	Retrieve from Storage
MC14777-1.1	Michael Rolo		10/15/12 21:21	Depleted
MC14777-1.3	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-1.3	Jeremiah Smith	GCMSH	10/22/12 10:12	Load on Instrument
MC14777-1.3	GCMSH	Jeremiah Smith	10/23/12 15:32	Unload from Instrument
MC14777-1.3	Jeremiah Smith	VOC Ref #1	10/23/12 15:32	Return to Storage
MC14777-1.3	Scott Parsick		12/19/12 15:08	Disposed
MC14777-1.4	VOC Ref #1	Tomasz Torski	10/19/12 11:51	Retrieve from Storage
MC14777-1.4	Tomasz Torski	GCMSH	10/19/12 11:52	Load on Instrument
MC14777-1.4	GCMSH	Tomasz Torski	10/22/12 08:22	Unload from Instrument
MC14777-1.4	Tomasz Torski	VOC Ref #1	10/22/12 08:22	Return to Storage
MC14777-1.4	Scott Parsick		12/19/12 15:08	Disposed
MC14777-1.5	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-1.5	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-1.6	VOC Ref #1	Jugal Patel	10/23/12 12:27	Retrieve from Storage
MC14777-1.6	Jugal Patel	GCMSN	10/23/12 12:27	Load on Instrument
MC14777-1.6	GCMSN	Jugal Patel	10/24/12 11:51	Unload from Instrument
MC14777-1.6	Jugal Patel	VOC Ref #1	10/24/12 11:51	Return to Storage
MC14777-1.6	Scott Parsick		12/19/12 15:08	Disposed
MC14777-2.2	Walk In Ref #22	Michael Rolo	10/11/12 06:41	Retrieve from Storage
MC14777-2.2	Michael Rolo		10/15/12 21:21	Depleted
MC14777-2.3	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-2.3	Jeremiah Smith	GCMSH	10/22/12 10:12	Load on Instrument
MC14777-2.3	GCMSH	Jeremiah Smith	10/23/12 15:32	Unload from Instrument
MC14777-2.3	Jeremiah Smith	VOC Ref #1	10/23/12 15:32	Return to Storage
MC14777-2.3	Scott Parsick		12/19/12 15:08	Disposed
MC14777-2.4	VOC Ref #1	Jugal Patel	10/23/12 12:27	Retrieve from Storage
MC14777-2.4	Jugal Patel	GCMSN	10/23/12 12:27	Load on Instrument
MC14777-2.4	GCMSN	Jugal Patel	10/24/12 11:51	Unload from Instrument
MC14777-2.4	Jugal Patel	VOC Ref #1	10/24/12 11:51	Return to Storage
MC14777-2.4	Scott Parsick		12/19/12 15:08	Disposed
MC14777-2.5	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-2.5	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-2.6	VOC Ref #1	Tomasz Torski	10/19/12 11:51	Retrieve from Storage
MC14777-2.6	Tomasz Torski	GCMSH	10/19/12 11:52	Load on Instrument

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SGS Accutest Internal Chain of Custody

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Received: 10/10/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC14777-2.6	GCMSP	Tomasz Torski	10/22/12 08:22	Unload from Instrument
MC14777-2.6	Tomasz Torski	VOC Ref #1	10/22/12 08:22	Return to Storage
MC14777-2.6	Scott Parsick		12/19/12 15:08	Disposed
MC14777-3.1	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-3.1	Jeremiah Smith	GCMSP	10/22/12 10:12	Load on Instrument
MC14777-3.1	GCMSP	Jeremiah Smith	10/23/12 14:17	Unload from Instrument
MC14777-3.1	Jeremiah Smith	VOC Ref #1	10/23/12 14:18	Return to Storage
MC14777-3.1	Scott Parsick		12/19/12 15:08	Disposed
MC14777-3.2	VOC Ref #1	Jugal Patel	10/23/12 12:27	Retrieve from Storage
MC14777-3.2	Jugal Patel	GCMSP	10/23/12 12:27	Load on Instrument
MC14777-3.2	GCMSP	Jugal Patel	10/23/12 14:03	Unload from Instrument
MC14777-3.2	Jugal Patel	VOC Ref #1	10/23/12 14:03	Return to Storage
MC14777-3.2	Scott Parsick		12/19/12 15:08	Disposed
MC14777-4.1	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-4.1	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-5.2	Walk In Ref #22	Michael Rolo	10/11/12 06:41	Retrieve from Storage
MC14777-5.2	Michael Rolo		10/15/12 21:21	Depleted
MC14777-5.3	VOC Ref #1	Jugal Patel	10/23/12 14:22	Retrieve from Storage
MC14777-5.3	Jugal Patel	GCMSP	10/23/12 14:23	Load on Instrument
MC14777-5.3	GCMSP	Jugal Patel	10/24/12 11:51	Unload from Instrument
MC14777-5.3	Jugal Patel	VOC Ref #1	10/24/12 11:51	Return to Storage
MC14777-5.3	Scott Parsick		12/19/12 15:08	Disposed
MC14777-5.4	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-5.4	Jeremiah Smith	GCMSP	10/22/12 10:12	Load on Instrument
MC14777-5.4	GCMSP	Jeremiah Smith	10/23/12 15:32	Unload from Instrument
MC14777-5.4	Jeremiah Smith	VOC Ref #1	10/23/12 15:32	Return to Storage
MC14777-5.4	Scott Parsick		12/19/12 15:08	Disposed
MC14777-5.5	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-5.5	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-5.6	VOC Ref #1	Tomasz Torski	10/19/12 11:51	Retrieve from Storage
MC14777-5.6	Tomasz Torski	GCMSP	10/19/12 11:52	Load on Instrument
MC14777-5.6	GCMSP	Tomasz Torski	10/22/12 08:22	Unload from Instrument
MC14777-5.6	Tomasz Torski	VOC Ref #1	10/22/12 08:22	Return to Storage
MC14777-5.6	Scott Parsick		12/19/12 15:08	Disposed

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-MB	H57782.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	

6.1.1
6

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-MB	H57782.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

6.1.1
6

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-MB	H57782.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	107% 70-130%
2037-26-5	Toluene-D8	102% 70-130%
460-00-4	4-Bromofluorobenzene	100% 70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

6.1.1
6

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-MB	N68969.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	

6.1.2
6

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-MB	N68969.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-MB	N68969.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	86% 70-130%
2037-26-5	Toluene-D8	86% 70-130%
460-00-4	4-Bromofluorobenzene	92% 70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

6.1.2
6

Blank Spike Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-BS	H57779.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	27.5	55* a	70-130
107-02-8	Acrolein	250	290	116	70-130
107-13-1	Acrylonitrile	50	49.4	99	70-130
71-43-2	Benzene	50	50.2	100	70-130
108-86-1	Bromobenzene	50	45.1	90	70-130
74-97-5	Bromochloromethane	50	53.0	106	70-130
75-27-4	Bromodichloromethane	50	58.0	116	70-130
75-25-2	Bromoform	50	62.0	124	70-130
74-83-9	Bromomethane	50	46.6	93	70-130
78-93-3	2-Butanone (MEK)	50	33.9	68* a	70-130
104-51-8	n-Butylbenzene	50	56.3	113	70-130
135-98-8	sec-Butylbenzene	50	47.3	95	70-130
98-06-6	tert-Butylbenzene	50	46.6	93	70-130
75-15-0	Carbon disulfide	50	50.0	100	70-130
56-23-5	Carbon tetrachloride	50	57.4	115	70-130
108-90-7	Chlorobenzene	50	42.9	86	70-130
75-00-3	Chloroethane	50	51.5	103	70-130
110-75-8	2-Chloroethyl vinyl ether	50	57.0	114	70-130
67-66-3	Chloroform	50	57.0	114	70-130
74-87-3	Chloromethane	50	46.1	92	70-130
95-49-8	o-Chlorotoluene	50	45.3	91	70-130
106-43-4	p-Chlorotoluene	50	43.5	87	70-130
124-48-1	Dibromochloromethane	50	50.9	102	70-130
95-50-1	1,2-Dichlorobenzene	50	46.3	93	70-130
541-73-1	1,3-Dichlorobenzene	50	45.4	91	70-130
106-46-7	1,4-Dichlorobenzene	50	48.3	97	70-130
75-71-8	Dichlorodifluoromethane	50	45.7	91	70-130
75-34-3	1,1-Dichloroethane	50	55.1	110	70-130
107-06-2	1,2-Dichloroethane	50	53.1	106	70-130
75-35-4	1,1-Dichloroethene	50	46.5	93	70-130
156-59-2	cis-1,2-Dichloroethene	50	53.7	107	70-130
156-60-5	trans-1,2-Dichloroethene	50	50.2	100	70-130
78-87-5	1,2-Dichloropropane	50	51.9	104	70-130
142-28-9	1,3-Dichloropropane	50	48.6	97	70-130
594-20-7	2,2-Dichloropropane	50	59.5	119	70-130
563-58-6	1,1-Dichloropropene	50	48.9	98	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-BS	H57779.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	53.2	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	48.6	97	70-130
123-91-1	1,4-Dioxane	250	211	84	70-130
97-63-2	Ethyl methacrylate	50	51.9	104	77-137
100-41-4	Ethylbenzene	50	46.5	93	70-130
87-68-3	Hexachlorobutadiene	50	54.8	110	70-130
591-78-6	2-Hexanone	50	35.4	71	70-130
98-82-8	Isopropylbenzene	50	44.6	89	70-130
99-87-6	p-Isopropyltoluene	50	48.7	97	70-130
1634-04-4	Methyl Tert Butyl Ether	50	52.5	105	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	52.8	106	70-130
74-95-3	Methylene bromide	50	53.7	107	70-130
75-09-2	Methylene chloride	50	52.1	104	70-130
91-20-3	Naphthalene	50	51.5	103	70-130
103-65-1	n-Propylbenzene	50	46.2	92	70-130
100-42-5	Styrene	50	47.7	95	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	52.3	105	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	53.3	107	70-130
127-18-4	Tetrachloroethene	50	42.8	86	70-130
108-88-3	Toluene	50	48.2	96	70-130
87-61-6	1,2,3-Trichlorobenzene	50	53.2	106	70-130
120-82-1	1,2,4-Trichlorobenzene	50	51.8	104	70-130
71-55-6	1,1,1-Trichloroethane	50	56.7	113	70-130
79-00-5	1,1,2-Trichloroethane	50	52.4	105	70-130
79-01-6	Trichloroethene	50	49.4	99	70-130
75-69-4	Trichlorofluoromethane	50	49.9	100	70-130
96-18-4	1,2,3-Trichloropropane	50	52.8	106	70-130
95-63-6	1,2,4-Trimethylbenzene	50	51.2	102	70-130
108-67-8	1,3,5-Trimethylbenzene	50	49.9	100	70-130
108-05-4	Vinyl Acetate	50	60.3	121	70-130
75-01-4	Vinyl chloride	50	53.6	107	70-130
	m,p-Xylene	100	89.6	90	70-130
95-47-6	o-Xylene	50	44.4	89	70-130
1330-20-7	Xylene (total)	150	134	89	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-BS	H57779.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	115%	70-130%
2037-26-5	Toluene-D8	103%	70-130%
460-00-4	4-Bromofluorobenzene	95%	70-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-BS	N68967.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	47.5	95	70-130
107-02-8	Acrolein	250	179	72	70-130
107-13-1	Acrylonitrile	50	264	528* a	70-130
71-43-2	Benzene	50	52.7	105	70-130
108-86-1	Bromobenzene	50	51.4	103	70-130
74-97-5	Bromochloromethane	50	55.3	111	70-130
75-27-4	Bromodichloromethane	50	55.1	110	70-130
75-25-2	Bromoform	50	44.9	90	70-130
74-83-9	Bromomethane	50	62.1	124	70-130
78-93-3	2-Butanone (MEK)	50	52.7	105	70-130
104-51-8	n-Butylbenzene	50	56.2	112	70-130
135-98-8	sec-Butylbenzene	50	56.9	114	70-130
98-06-6	tert-Butylbenzene	50	54.6	109	70-130
75-15-0	Carbon disulfide	50	60.0	120	70-130
56-23-5	Carbon tetrachloride	50	47.3	95	70-130
108-90-7	Chlorobenzene	50	54.8	110	70-130
75-00-3	Chloroethane	50	56.3	113	70-130
110-75-8	2-Chloroethyl vinyl ether	50	54.7	109	70-130
67-66-3	Chloroform	50	55.9	112	70-130
74-87-3	Chloromethane	50	54.1	108	70-130
95-49-8	o-Chlorotoluene	50	55.7	111	70-130
106-43-4	p-Chlorotoluene	50	58.2	116	70-130
124-48-1	Dibromochloromethane	50	48.6	97	70-130
95-50-1	1,2-Dichlorobenzene	50	55.9	112	70-130
541-73-1	1,3-Dichlorobenzene	50	56.3	113	70-130
106-46-7	1,4-Dichlorobenzene	50	53.6	107	70-130
75-71-8	Dichlorodifluoromethane	50	64.5	129	70-130
75-34-3	1,1-Dichloroethane	50	58.8	118	70-130
107-06-2	1,2-Dichloroethane	50	52.4	105	70-130
75-35-4	1,1-Dichloroethene	50	55.7	111	70-130
156-59-2	cis-1,2-Dichloroethene	50	54.0	108	70-130
156-60-5	trans-1,2-Dichloroethene	50	55.5	111	70-130
78-87-5	1,2-Dichloropropane	50	54.7	109	70-130
142-28-9	1,3-Dichloropropane	50	53.2	106	70-130
594-20-7	2,2-Dichloropropane	50	52.8	106	70-130
563-58-6	1,1-Dichloropropene	50	52.8	106	70-130

* = Outside of Control Limits.

6.2.2
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Blank Spike Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-BS	N68967.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	54.2	108	70-130
10061-02-6	trans-1,3-Dichloropropene	50	50.8	102	70-130
123-91-1	1,4-Dioxane	250	260	104	70-130
97-63-2	Ethyl methacrylate	50	54.2	108	77-137
100-41-4	Ethylbenzene	50	51.8	104	70-130
87-68-3	Hexachlorobutadiene	50	51.6	103	70-130
591-78-6	2-Hexanone	50	46.5	93	70-130
98-82-8	Isopropylbenzene	50	55.7	111	70-130
99-87-6	p-Isopropyltoluene	50	55.1	110	70-130
1634-04-4	Methyl Tert Butyl Ether	50	48.6	97	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	44.5	89	70-130
74-95-3	Methylene bromide	50	54.1	108	70-130
75-09-2	Methylene chloride	50	55.8	112	70-130
91-20-3	Naphthalene	50	51.9	104	70-130
103-65-1	n-Propylbenzene	50	56.9	114	70-130
100-42-5	Styrene	50	53.0	106	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	52.4	105	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	53.9	108	70-130
127-18-4	Tetrachloroethene	50	49.3	99	70-130
108-88-3	Toluene	50	53.0	106	70-130
87-61-6	1,2,3-Trichlorobenzene	50	54.0	108	70-130
120-82-1	1,2,4-Trichlorobenzene	50	53.4	107	70-130
71-55-6	1,1,1-Trichloroethane	50	57.0	114	70-130
79-00-5	1,1,2-Trichloroethane	50	53.1	106	70-130
79-01-6	Trichloroethene	50	50.1	100	70-130
75-69-4	Trichlorofluoromethane	50	54.4	109	70-130
96-18-4	1,2,3-Trichloropropane	50	56.3	113	70-130
95-63-6	1,2,4-Trimethylbenzene	50	51.1	102	70-130
108-67-8	1,3,5-Trimethylbenzene	50	50.8	102	70-130
108-05-4	Vinyl Acetate	50	56.8	114	70-130
75-01-4	Vinyl chloride	50	57.1	114	70-130
	m,p-Xylene	100	107	107	70-130
95-47-6	o-Xylene	50	56.0	112	70-130
1330-20-7	Xylene (total)	150	164	109	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-BS	N68967.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	70-130%
2037-26-5	Toluene-D8	85%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

(a) Outside control limits. Associated samples are non-detect for this compound.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14860-5MS	H57799.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5MSD	H57800.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5	H57789.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Compound	MC14860-5 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	30.4	61* a	50	28.5	57* a	6	70-130/30
107-02-8	Acrolein	ND	250	286	114	250	276	110	4	70-130/30
107-13-1	Acrylonitrile	ND	50	56.5	113	50	54.4	109	4	70-130/30
71-43-2	Benzene	ND	50	51.6	103	50	49.2	98	5	70-130/30
108-86-1	Bromobenzene	ND	50	44.8	90	50	44.2	88	1	70-130/30
74-97-5	Bromochloromethane	ND	50	54.4	109	50	51.7	103	5	70-130/30
75-27-4	Bromodichloromethane	ND	50	61.8	124	50	59.3	119	4	70-130/30
75-25-2	Bromoform	ND	50	56.9	114	50	55.2	110	3	70-130/30
74-83-9	Bromomethane	ND	50	47.4	95	50	45.5	91	4	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	33.2	66* a	50	33.5	67* a	1	70-130/30
104-51-8	n-Butylbenzene	ND	50	57.2	114	50	55.6	111	3	70-130/30
135-98-8	sec-Butylbenzene	ND	50	47.9	96	50	46.6	93	3	70-130/30
98-06-6	tert-Butylbenzene	ND	50	49.3	99	50	48.0	96	3	70-130/30
75-15-0	Carbon disulfide	ND	50	46.4	93	50	41.7	83	11	70-130/30
56-23-5	Carbon tetrachloride	ND	50	59.8	120	50	57.9	116	3	70-130/30
108-90-7	Chlorobenzene	ND	50	41.6	83	50	40.2	80	3	70-130/30
75-00-3	Chloroethane	ND	50	53.7	107	50	50.2	100	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	8.6	17* a	50	7.8	16* a	10	70-130/30
67-66-3	Chloroform	ND	50	62.8	126	50	59.1	118	6	70-130/30
74-87-3	Chloromethane	ND	50	52.4	105	50	50.9	102	3	70-130/30
95-49-8	o-Chlorotoluene	ND	50	46.3	93	50	45.1	90	3	70-130/30
106-43-4	p-Chlorotoluene	ND	50	45.5	91	50	44.6	89	2	70-130/30
124-48-1	Dibromochloromethane	ND	50	49.1	98	50	48.1	96	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	46.1	92	50	45.9	92	0	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	45.2	90	50	44.5	89	2	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	48.2	96	50	47.6	95	1	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	52.1	104	50	50.4	101	3	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	58.9	118	50	56.1	112	5	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	59.0	118	50	56.1	112	5	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	46.7	93	50	44.8	90	4	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	56.1	112	50	53.1	106	5	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	50.5	101	50	48.9	98	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	55.0	110	50	53.3	107	3	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	49.7	99	50	48.8	98	2	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	59.8	120	50	57.3	115	4	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	51.1	102	50	49.8	100	3	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14860-5MS	H57799.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5MSD	H57800.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5	H57789.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Compound	MC14860-5 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	51.5	103	50	49.6	99	4	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	47.2	94	50	46.2	92	2	70-130/30
123-91-1	1,4-Dioxane	ND	250	174	70	250	192	77	10	70-130/30
97-63-2	Ethyl methacrylate	ND	50	51.1	102	50	51.3	103	0	72-139/30
100-41-4	Ethylbenzene	ND	50	46.0	92	50	44.3	89	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	52.0	104	50	51.3	103	1	70-130/30
591-78-6	2-Hexanone	ND	50	35.6	71	50	35.2	70	1	70-130/30
98-82-8	Isopropylbenzene	ND	50	44.5	89	50	43.9	88	1	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	47.8	96	50	47.2	94	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	50	55.6	111	50	54.5	109	2	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	57.4	115	50	55.7	111	3	70-130/30
74-95-3	Methylene bromide	ND	50	56.5	113	50	55.2	110	2	70-130/30
75-09-2	Methylene chloride	ND	50	53.9	108	50	51.9	104	4	70-130/30
91-20-3	Naphthalene	ND	50	50.6	101	50	51.4	103	2	70-130/30
103-65-1	n-Propylbenzene	ND	50	46.4	93	50	45.7	91	2	70-130/30
100-42-5	Styrene	ND	50	36.9	74	50	36.5	73	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	50.8	102	50	49.9	100	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	56.8	114	50	56.9	114	0	70-130/30
127-18-4	Tetrachloroethene	ND	50	40.6	81	50	39.5	79	3	70-130/30
108-88-3	Toluene	ND	50	48.2	96	50	46.3	93	4	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	50.3	101	50	51.3	103	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	49.2	98	50	48.7	97	1	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	62.7	125	50	59.3	119	6	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	53.7	107	50	52.6	105	2	70-130/30
79-01-6	Trichloroethene	ND	50	52.0	104	50	49.2	98	6	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	56.6	113	50	53.1	106	6	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	53.9	108	50	53.5	107	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	46.5	93	50	46.6	93	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	45.9	92	50	46.3	93	1	70-130/30
108-05-4	Vinyl Acetate	ND	50	58.0	116	50	56.2	112	3	70-130/30
75-01-4	Vinyl chloride	ND	50	65.4	131* a	50	59.8	120	9	70-130/30
	m,p-Xylene	ND	100	84.1	84	100	80.3	80	5	70-130/30
95-47-6	o-Xylene	ND	50	42.1	84	50	40.5	81	4	70-130/30
1330-20-7	Xylene (total)	ND	150	126	84	150	121	81	4	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14860-5MS	H57799.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5MSD	H57800.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5	H57789.D	1	10/22/12	JS	n/a	n/a	MSH1895

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-3

CAS No.	Surrogate Recoveries	MS	MSD	MC14860-5	Limits
1868-53-7	Dibromofluoromethane	121%	118%	117%	70-130%
2037-26-5	Toluene-D8	102%	101%	103%	70-130%
460-00-4	4-Bromofluorobenzene	96%	99%	105%	70-130%

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14934-4MS	N68977.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4MSD	N68978.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4	N68971.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14934-4 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	246	98	250	252	101	2	70-130/30
107-02-8	Acrolein	ND	1250	908	73	1250	918	73	1	70-130/30
107-13-1	Acrylonitrile	ND	250	1410	564* a	250	1430	572* a	1	70-130/30
71-43-2	Benzene	ND	250	271	108	250	276	110	2	70-130/30
108-86-1	Bromobenzene	ND	250	253	101	250	264	106	4	70-130/30
74-97-5	Bromochloromethane	ND	250	275	110	250	280	112	2	70-130/30
75-27-4	Bromodichloromethane	ND	250	276	110	250	283	113	3	70-130/30
75-25-2	Bromoform	ND	250	216	86	250	224	90	4	70-130/30
74-83-9	Bromomethane	ND	250	233	93	250	292	117	22	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	255	102	250	260	104	2	70-130/30
104-51-8	n-Butylbenzene	ND	250	287	115	250	295	118	3	70-130/30
135-98-8	sec-Butylbenzene	ND	250	294	118	250	301	120	2	70-130/30
98-06-6	tert-Butylbenzene	ND	250	278	111	250	287	115	3	70-130/30
75-15-0	Carbon disulfide	ND	250	306	122	250	317	127	4	70-130/30
56-23-5	Carbon tetrachloride	ND	250	242	97	250	246	98	2	70-130/30
108-90-7	Chlorobenzene	ND	250	271	108	250	279	112	3	70-130/30
75-00-3	Chloroethane	ND	250	297	119	250	300	120	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	279	112	250	288	115	3	70-130/30
67-66-3	Chloroform	ND	250	281	112	250	290	116	3	70-130/30
74-87-3	Chloromethane	ND	250	265	106	250	281	112	6	70-130/30
95-49-8	o-Chlorotoluene	ND	250	278	111	250	285	114	2	70-130/30
106-43-4	p-Chlorotoluene	ND	250	291	116	250	301	120	3	70-130/30
124-48-1	Dibromochloromethane	ND	250	238	95	250	245	98	3	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	274	110	250	288	115	5	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	277	111	250	286	114	3	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	261	104	250	272	109	4	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	338	135* b	250	343	137* b	1	70-130/30
75-34-3	1,1-Dichloroethane	ND	250	300	120	250	303	121	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	261	104	250	268	107	3	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	288	115	250	290	116	1	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	250	274	110	250	285	114	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	250	278	111	250	284	114	2	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	279	112	250	288	115	3	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	263	105	250	270	108	3	70-130/30
594-20-7	2,2-Dichloropropane	ND	250	275	110	250	271	108	1	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	286	114	250	282	113	1	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14934-4MS	N68977.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4MSD	N68978.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4	N68971.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14934-4 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	250	272	109	250	281	112	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	250	251	100	250	261	104	4	70-130/30
123-91-1	1,4-Dioxane	ND	1250	1260	101	1250	1340	107	6	70-130/30
97-63-2	Ethyl methacrylate	ND	250	265	106	250	275	110	4	72-139/30
100-41-4	Ethylbenzene	ND	250	263	105	250	265	106	1	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	261	104	250	275	110	5	70-130/30
591-78-6	2-Hexanone	ND	250	232	93	250	236	94	2	70-130/30
98-82-8	Isopropylbenzene	ND	250	283	113	250	290	116	2	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	281	112	250	286	114	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	242	97	250	250	100	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	223	89	250	228	91	2	70-130/30
74-95-3	Methylene bromide	ND	250	275	110	250	278	111	1	70-130/30
75-09-2	Methylene chloride	ND	250	284	114	250	295	118	4	70-130/30
91-20-3	Naphthalene	ND	250	246	98	250	261	104	6	70-130/30
103-65-1	n-Propylbenzene	ND	250	288	115	250	298	119	3	70-130/30
100-42-5	Styrene	ND	250	258	103	250	265	106	3	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	262	105	250	268	107	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	265	106	250	277	111	4	70-130/30
127-18-4	Tetrachloroethene	ND	250	257	103	250	257	103	0	70-130/30
108-88-3	Toluene	ND	250	274	110	250	279	112	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	258	103	250	275	110	6	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	258	103	250	275	110	6	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	250	292	117	250	298	119	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	268	107	250	274	110	2	70-130/30
79-01-6	Trichloroethene	ND	250	259	104	250	265	106	2	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	285	114	250	288	115	1	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	277	111	250	288	115	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	255	102	250	262	105	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	254	102	250	262	105	3	70-130/30
108-05-4	Vinyl Acetate	ND	250	283	113	250	295	118	4	70-130/30
75-01-4	Vinyl chloride	ND	250	294	118	250	300	120	2	70-130/30
	m,p-Xylene	ND	500	540	108	500	546	109	1	70-130/30
95-47-6	o-Xylene	ND	250	280	112	250	287	115	2	70-130/30
1330-20-7	Xylene (total)	ND	750	819	109	750	833	111	2	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14934-4MS	N68977.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4MSD	N68978.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4	N68971.D	1	10/23/12	JP	n/a	n/a	MSN2594

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14777-1, MC14777-2, MC14777-5

CAS No.	Surrogate Recoveries	MS	MSD	MC14934-4	Limits
1868-53-7	Dibromofluoromethane	88%	88%	87%	70-130%
2037-26-5	Toluene-D8	87%	86%	86%	70-130%
460-00-4	4-Bromofluorobenzene	84%	84%	91%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSH1895-CC1872	Injection Date:	10/22/12
Lab File ID:	H57778.D	Injection Time:	08:49
Instrument ID:	GCMSH	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	178671	8.72	269037	9.59	131239	12.84	156496	15.41	33702	6.29
Upper Limit ^a	357342	9.22	538074	10.09	262478	13.34	312992	15.91	67404	6.79
Lower Limit ^b	89336	8.22	134519	9.09	65620	12.34	78248	14.91	16851	5.79

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSH1895-BS	193415	8.72	285120	9.59	137833	12.84	161665	15.41	36813	6.29
MSH1895-MB	173593	8.72	249656	9.59	114042	12.84	123369	15.41	34452	6.30
MC14777-3	162307	8.72	235725	9.59	106250	12.85	114240	15.41	28602	6.30
ZZZZZZ	156334	8.72	225214	9.59	102960	12.85	110226	15.41	29807	6.30
ZZZZZZ	149714	8.72	220197	9.59	101085	12.84	106660	15.41	30327	6.30
ZZZZZZ	139422	8.72	206167	9.59	95173	12.84	99794	15.41	28089	6.30
ZZZZZZ	143788	8.72	211735	9.59	97295	12.85	102969	15.41	29761	6.30
ZZZZZZ	139806	8.72	208351	9.59	97412	12.84	100525	15.41	30869	6.30
MC14860-5	136452	8.72	204844	9.59	96518	12.85	98249	15.41	30595	6.30
MC14920-2	139092	8.72	208237	9.59	95487	12.84	98801	15.41	31262	6.30
ZZZZZZ	134136	8.72	202663	9.59	92314	12.84	95105	15.41	30551	6.30
ZZZZZZ	133112	8.72	198314	9.59	91812	12.84	95391	15.41	30826	6.30
ZZZZZZ	135928	8.72	202574	9.59	94029	12.84	95915	15.41	31321	6.30
ZZZZZZ	123632	8.72	184279	9.59	85378	12.85	87323	15.41	26135	6.30
ZZZZZZ	128863	8.72	192196	9.59	89453	12.85	90291	15.41	27415	6.29
ZZZZZZ	131400	8.72	194081	9.59	90085	12.85	92668	15.41	29333	6.29
ZZZZZZ	127796	8.72	191499	9.59	90037	12.85	92081	15.41	28347	6.30
ZZZZZZ	128838	8.72	188806	9.59	89257	12.85	106978	15.41	29426	6.29
MC14860-5MS	147767	8.72	225156	9.59	112100	12.84	129110	15.41	29876	6.29
MC14860-5MSD	154041	8.72	232155	9.59	115133	12.84	129541	15.41	31432	6.29
MC14920-2MS	156080	8.72	235887	9.59	115954	12.84	130987	15.41	32447	6.29
MC14920-2MSD	163047	8.72	245135	9.59	119940	12.84	138048	15.41	33826	6.29

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1

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Volatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSN2594-CC2591	Injection Date:	10/23/12
Lab File ID:	N68967.D	Injection Time:	13:16
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	258709	9.01	351720	9.88	159678	13.14	177370	15.70	87025	6.56
Upper Limit ^a	517418	9.51	703440	10.38	319356	13.64	354740	16.20	174050	7.06
Lower Limit ^b	129355	8.51	175860	9.38	79839	12.64	88685	15.20	43513	6.06

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2594-BS	258709	9.01	351720	9.88	159678	13.14	177370	15.70	87025	6.56
MSN2594-MB	271469	9.01	355939	9.88	159918	13.14	160208	15.70	89681	6.57
ZZZZZZ	266161	9.01	354620	9.88	160605	13.14	164036	15.70	88451	6.57
MC14934-4	267512	9.01	359486	9.88	160607	13.14	160549	15.70	87248	6.56
ZZZZZZ	264124	9.01	353860	9.88	161513	13.14	162409	15.70	91425	6.56
MC14777-1	263718	9.01	353543	9.88	159954	13.14	163888	15.70	93872	6.56
MC14777-2	267442	9.01	352622	9.88	157246	13.14	157678	15.70	88226	6.56
MC14777-5	256784	9.01	339728	9.88	155858	13.14	153661	15.70	85905	6.56
ZZZZZZ	264139	9.01	352168	9.88	161123	13.14	170435	15.70	91379	6.56
MC14934-4MS	271256	9.01	364042	9.88	168316	13.14	187737	15.70	84862	6.56
MC14934-4MSD	258526	9.01	349321	9.88	162056	13.14	178400	15.70	77494	6.56
ZZZZZZ	270350	9.01	359830	9.88	163283	13.14	162452	15.70	77118	6.56
ZZZZZZ	269691	9.01	357565	9.88	162027	13.14	159342	15.70	77063	6.56
ZZZZZZ	254287	9.01	338719	9.88	153140	13.14	149550	15.70	76753	6.56
ZZZZZZ	266743	9.01	354275	9.88	160950	13.14	158473	15.70	71428	6.56
ZZZZZZ	265898	9.01	358199	9.88	162701	13.14	169865	15.70	76697	6.56
ZZZZZZ	272817	9.01	375330	9.88	174867	13.14	192602	15.70	89273	6.56
ZZZZZZ	275878	9.01	366121	9.88	165147	13.14	172569	15.70	78255	6.56
ZZZZZZ	278579	9.01	369422	9.88	168086	13.14	166744	15.70	76704	6.57
ZZZZZZ	275350	9.01	367213	9.88	167735	13.14	169269	15.70	86336	6.56
ZZZZZZ	273175	9.01	359917	9.88	163771	13.14	162953	15.70	71075	6.56
ZZZZZZ	261947	9.02	348931	9.88	155936	13.14	154919	15.70	76706	6.56

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC14777-1	N68973.D	87	85	111
MC14777-2	N68974.D	86	86	91
MC14777-3	H57783.D	108	102	102
MC14777-5	N68975.D	87	87	91
MC14860-5MS	H57799.D	121	102	96
MC14860-5MSD	H57800.D	118	101	99
MC14934-4MS	N68977.D	88	87	84
MC14934-4MSD	N68978.D	88	86	84
MSH1895-BS	H57779.D	115	103	95
MSH1895-MB	H57782.D	107	102	100
MSN2594-BS	N68967.D	89	85	86
MSN2594-MB	N68969.D	86	86	92

Surrogate Compounds

Recovery Limits

S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

GC/MS Semi-volatiles

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MB	W5759.D	1	10/11/12	KR	10/10/12	OP30628	MSW263

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	1.2	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.40	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.38	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.37	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	5.0	ug/l	
95-48-7	2-Methylphenol	ND	10	0.60	ug/l	
	3&4-Methylphenol	ND	10	0.75	ug/l	
88-75-5	2-Nitrophenol	ND	10	0.47	ug/l	
100-02-7	4-Nitrophenol	ND	20	2.8	ug/l	
87-86-5	Pentachlorophenol	ND	10	0.64	ug/l	
108-95-2	Phenol	ND	5.0	0.93	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.35	ug/l	
62-53-3	Aniline	ND	10	2.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	0.33	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	0.27	ug/l	
100-51-6	Benzyl Alcohol	ND	10	0.26	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.18	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.38	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.28	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	0.29	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	0.21	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	2.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	0.21	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.89	ug/l	
132-64-9	Dibenzofuran	ND	2.0	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	1.9	5.0	0.36	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	0.19	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	34.7	2.0	0.38	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.25	ug/l	

7.1.1
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Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MB	W5759.D	1	10/11/12	KR	10/10/12	OP30628	MSW263

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	2.0	ug/l	
78-59-1	Isophorone	ND	5.0	0.32	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.23	ug/l	
99-09-2	3-Nitroaniline	ND	10	0.25	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.24	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	0.59	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	0.28	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.44	ug/l	
110-86-1	Pyridine	ND	10	5.0	ug/l	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	103%	15-110%
4165-60-0	Nitrobenzene-d5	93%	30-130%
321-60-8	2-Fluorobiphenyl	85%	30-130%
1718-51-0	Terphenyl-d14	171%* a	30-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

(a) Outside control limits. Associated target analytes are non-detect.

7.1.1
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Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30629-MB	F58281.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.013	ug/l	
120-12-7	Anthracene	ND	0.10	0.018	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	0.030	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.017	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.038	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.059	ug/l	
218-01-9	Chrysene	ND	0.10	0.073	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.042	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.033	ug/l	
86-73-7	Fluorene	ND	0.10	0.046	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.046	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	0.14	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.052	ug/l	
85-01-8	Phenanthrene	ND	0.050	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.036	ug/l	

CAS No.	Surrogate Recoveries	Limits	
4165-60-0	Nitrobenzene-d5	86%	30-130%
321-60-8	2-Fluorobiphenyl	77%	30-130%
1718-51-0	Terphenyl-d14	124%	30-130%

7.1.2
7

Blank Spike Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30629-BS	F58282.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	42.8	86	40-140
208-96-8	Acenaphthylene	50	36.4	73	40-140
120-12-7	Anthracene	50	41.8	84	40-140
56-55-3	Benzo(a)anthracene	50	47.0	94	40-140
50-32-8	Benzo(a)pyrene	50	41.3	83	40-140
205-99-2	Benzo(b)fluoranthene	50	44.8	90	40-140
191-24-2	Benzo(g,h,i)perylene	50	43.1	86	40-140
207-08-9	Benzo(k)fluoranthene	50	46.3	93	40-140
218-01-9	Chrysene	50	42.7	85	40-140
53-70-3	Dibenzo(a,h)anthracene	50	46.4	93	40-140
206-44-0	Fluoranthene	50	44.5	89	40-140
86-73-7	Fluorene	50	38.4	77	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	44.6	89	40-140
90-12-0	1-Methylnaphthalene	50	40.6	81	40-140
91-57-6	2-Methylnaphthalene	50	36.7	73	40-140
85-01-8	Phenanthrene	50	42.5	85	40-140
129-00-0	Pyrene	50	41.2	82	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	91%	30-130%
321-60-8	2-Fluorobiphenyl	84%	30-130%
1718-51-0	Terphenyl-d14	113%	30-130%

* = Outside of Control Limits.

7.2.1
7

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-BS	W5760.D	1	10/11/12	KR	10/10/12	OP30628	MSW263
OP30628-BSD	W5821.D	1	10/12/12	KR	10/10/12	OP30628	MSW265

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	100	45.5	46	39.5	40	14	30-130/20
95-57-8	2-Chlorophenol	100	89.2	89	90.6	91	2	30-130/20
59-50-7	4-Chloro-3-methyl phenol	100	97.1	97	96.3	96	1	30-130/20
120-83-2	2,4-Dichlorophenol	100	93.0	93	95.2	95	2	30-130/20
105-67-9	2,4-Dimethylphenol	100	72.2	72	93.5	94	26* a	30-130/20
51-28-5	2,4-Dinitrophenol	100	74.5	75	65.8	66	12	30-130/20
534-52-1	4,6-Dinitro-o-cresol	100	104	104	89.1	89	15	30-130/20
95-48-7	2-Methylphenol	100	80.8	81	83.5	84	3	30-130/20
	3&4-Methylphenol	200	161	81	160	80	1	30-130/20
88-75-5	2-Nitrophenol	100	94.7	95	98.7	99	4	30-130/20
100-02-7	4-Nitrophenol	100	68.3	68	59.8	60	13	30-130/20
87-86-5	Pentachlorophenol	100	107	107	111	111	4	30-130/20
108-95-2	Phenol	100	44.8	45	43.3	43	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	100	97.4	97	102	102	5	30-130/20
88-06-2	2,4,6-Trichlorophenol	100	101	101	105	105	4	30-130/20
62-53-3	Aniline	50	18.7	37* a	21.7	43	15	40-140/20
101-55-3	4-Bromophenyl phenyl ether	50	47.9	96	49.1	98	2	40-140/20
85-68-7	Butyl benzyl phthalate	50	70.7	141* b	49.6	99	35* b	40-140/20
100-51-6	Benzyl Alcohol	50	38.8	78	40.4	81	4	40-140/20
91-58-7	2-Chloronaphthalene	50	47.2	94	51.7	103	9	40-140/20
106-47-8	4-Chloroaniline	50	23.2	46	39.1	78	51* a	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	50	41.5	83	44.0	88	6	40-140/20
111-44-4	bis(2-Chloroethyl)ether	50	47.7	95	51.7	103	8	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	50	54.8	110	58.7	117	7	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	50	49.9	100	52.7	105	5	40-140/20
122-66-7	1,2-Diphenylhydrazine	50	52.3	105	55.1	110	5	40-140/20
121-14-2	2,4-Dinitrotoluene	50	50.4	101	51.6	103	2	40-140/20
606-20-2	2,6-Dinitrotoluene	50	49.0	98	51.2	102	4	40-140/20
91-94-1	3,3'-Dichlorobenzidine	50	44.7	89	47.2	94	5	40-140/20
132-64-9	Dibenzofuran	50	44.2	88	46.7	93	6	40-140/20
84-74-2	Di-n-butyl phthalate	50	52.1	104	52.7	105	1	40-140/20
117-84-0	Di-n-octyl phthalate	50	95.5	191* b	56.3	113	52* b	40-140/20
84-66-2	Diethyl phthalate	50	51.0	102	52.2	104	2	40-140/20
131-11-3	Dimethyl phthalate	50	49.1	98	51.0	102	4	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	50	71.7	143* b	50.0	100	36* b	40-140/20
118-74-1	Hexachlorobenzene	50	48.9	98	50.8	102	4	40-140/20

* = Outside of Control Limits.

7.3.1
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Blank Spike/Blank Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-BS	W5760.D	1	10/11/12	KR	10/10/12	OP30628	MSW263
OP30628-BSD	W5821.D	1	10/12/12	KR	10/10/12	OP30628	MSW265

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	50	26.8	54	18.0	36* a	39* a	40-140/20
67-72-1	Hexachloroethane	50	36.6	73	44.7	89	20	40-140/20
78-59-1	Isophorone	50	49.8	100	51.7	103	4	40-140/20
88-74-4	2-Nitroaniline	50	47.1	94	48.9	98	4	40-140/20
99-09-2	3-Nitroaniline	50	27.7	55	41.5	83	40* a	40-140/20
100-01-6	4-Nitroaniline	50	38.0	76	40.2	80	6	40-140/20
98-95-3	Nitrobenzene	50	47.9	96	51.1	102	6	40-140/20
62-75-9	n-Nitrosodimethylamine	50	31.5	63	32.7	65	4	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	50	52.6	105	58.1	116	10	40-140/20
86-30-6	N-Nitrosodiphenylamine	50	49.9	100	53.0	106	6	40-140/20
110-86-1	Pyridine	50	25.5	51	27.3	55	7	40-140/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	64%	62%	15-110%
4165-62-2	Phenol-d5	46%	44%	15-110%
118-79-6	2,4,6-Tribromophenol	107%	107%	15-110%
4165-60-0	Nitrobenzene-d5	97%	103%	30-130%
321-60-8	2-Fluorobiphenyl	93%	93%	30-130%
1718-51-0	Terphenyl-d14	156%* c	106%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) Outside control limits. Associated target analytes are non-detect.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MS	W5804.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
OP30628-MSD	W5805.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
MC14800-6	W5806.D	1	10/12/12	KR	10/11/12	OP30628	MSW265

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14800-6 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	42.4	42	100	42.8	43	1	30-130/20
95-57-8	2-Chlorophenol	ND	100	79.3	79	100	78.3	78	1	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	89.4	89	100	89.5	90	0	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	81.8	82	100	82.8	83	1	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	60.3	60	100	69.9	70	15	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	80.3	80	100	84.5	85	5	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	102	102	100	107	107	5	30-130/20
95-48-7	2-Methylphenol	ND	100	71.6	72	100	72.5	73	1	30-130/20
	3&4-Methylphenol	ND	200	143	72	200	142	71	1	30-130/20
88-75-5	2-Nitrophenol	ND	100	83.9	84	100	83.6	84	0	30-130/20
100-02-7	4-Nitrophenol	ND	100	59.1	59	100	62.6	63	6	30-130/20
87-86-5	Pentachlorophenol	ND	100	93.0	93	100	104	104	11	30-130/20
108-95-2	Phenol	ND	100	39.3	39	100	38.3	38	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	87.7	88	100	91.8	92	5	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	88.3	88	100	93.0	93	5	30-130/20
62-53-3	Aniline	ND	50	18.0	36* a	50	16.3	33* a	10	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	41.6	83	50	42.6	85	2	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	63.1	126	50	61.3	123	3	40-140/20
100-51-6	Benzyl Alcohol	ND	50	34.9	70	50	34.6	69	1	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	40.7	81	50	40.2	80	1	40-140/20
106-47-8	4-Chloroaniline	ND	50	29.6	59	50	27.8	56	6	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	37.6	75	50	37.6	75	0	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	43.5	87	50	43.3	87	0	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	50.4	101	50	50.5	101	0	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	41.7	83	50	42.8	86	3	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	48.7	97	50	49.2	98	1	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	46.0	92	50	47.8	96	4	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	44.2	88	50	45.8	92	4	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	40.8	82	50	34.1	68	18	40-140/20
132-64-9	Dibenzofuran	ND	50	39.2	78	50	38.9	78	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	50.0	100	50	51.3	103	3	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	96.8	194* b	50	94.3	189* b	3	40-140/20
84-66-2	Diethyl phthalate	ND	50	47.2	94	50	48.3	97	2	40-140/20
131-11-3	Dimethyl phthalate	ND	50	45.5	91	50	46.2	92	2	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	61.4	123	50	60.2	120	2	40-140/20
118-74-1	Hexachlorobenzene	ND	50	43.0	86	50	44.4	89	3	40-140/20

* = Outside of Control Limits.

7.4.1

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MS	W5804.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
OP30628-MSD	W5805.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
MC14800-6	W5806.D	1	10/12/12	KR	10/11/12	OP30628	MSW265

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

7.4.1
7

CAS No.	Compound	MC14800-6 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	21.8	44	50	23.3	47	7	40-140/20
67-72-1	Hexachloroethane	ND	50	33.6	67	50	32.5	65	3	40-140/20
78-59-1	Isophorone	ND	50	45.5	91	50	45.5	91	0	40-140/20
88-74-4	2-Nitroaniline	ND	50	43.8	88	50	44.5	89	2	40-140/20
99-09-2	3-Nitroaniline	ND	50	35.5	71	50	35.7	71	1	40-140/20
100-01-6	4-Nitroaniline	ND	50	35.5	71	50	37.6	75	6	40-140/20
98-95-3	Nitrobenzene	ND	50	43.5	87	50	43.2	86	1	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	25.3	51	50	25.2	50	0	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	43.2	86	50	44.3	89	3	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	45.4	91	50	46.9	94	3	40-140/20
110-86-1	Pyridine	ND	50	20.8	42	50	19.9	40	4	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC14800-6	Limits
367-12-4	2-Fluorophenol	56%	55%	50%	15-110%
4165-62-2	Phenol-d5	40%	38%	34%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	98%	88%	15-110%
4165-60-0	Nitrobenzene-d5	87%	87%	86%	30-130%
321-60-8	2-Fluorobiphenyl	79%	77%	76%	30-130%
1718-51-0	Terphenyl-d14	130%	125%	126%	30-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30629-MS	F58290.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
OP30629-MSD	F58291.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
MC14800-7	F58292.D	1	10/12/12	KR	10/11/12	OP30629	MSF2754

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14800-7 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.018	50	36.8	74	50	36.7	73	0	40-140/20
208-96-8	Acenaphthylene	ND	50	31.5	63	50	31.8	64	1	40-140/20
120-12-7	Anthracene	ND	50	39.4	79	50	40.1	80	2	40-140/20
56-55-3	Benzo(a)anthracene	ND	50	47.6	95	50	49.3	99	4	40-140/20
50-32-8	Benzo(a)pyrene	ND	50	43.7	87	50	45.7	91	4	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	50	46.8	94	50	50.3	101	7	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	50	48.8	98	50	50.5	101	3	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	50	49.0	98	50	52.8	106	7	40-140/20
218-01-9	Chrysene	ND	50	44.0	88	50	45.8	92	4	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	50	50.7	101	50	53.8	108	6	40-140/20
206-44-0	Fluoranthene	ND	50	44.3	89	50	45.4	91	2	40-140/20
86-73-7	Fluorene	ND	50	34.4	69	50	34.7	69	1	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	49.3	99	50	52.3	105	6	40-140/20
90-12-0	1-Methylnaphthalene	ND	50	32.6	65	50	33.6	67	3	40-140/20
91-57-6	2-Methylnaphthalene	ND	50	32.3	65	50	32.0	64	1	40-140/20
85-01-8	Phenanthrene	0.028	50	39.5	79	50	41.0	82	4	40-140/20
129-00-0	Pyrene	ND	50	40.8	82	50	41.8	84	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC14800-7	Limits
4165-60-0	Nitrobenzene-d5	81%	82%	81%	30-130%
321-60-8	2-Fluorobiphenyl	71%	70%	73%	30-130%
1718-51-0	Terphenyl-d14	108%	112%	107%	30-130%

* = Outside of Control Limits.

7.4.2
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSF2754-CC2731	Injection Date:	10/12/12
Lab File ID:	F58280.D	Injection Time:	09:54
Instrument ID:	GCMSF	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	102169	3.59	315619	4.57	189110	5.99	364049	7.28	345801	10.06	540420	11.48
Upper Limit ^a	204338	4.09	631238	5.07	378220	6.49	728098	7.78	691602	10.56	1080840	11.98
Lower Limit ^b	51085	3.09	157810	4.07	94555	5.49	182025	6.78	172901	9.56	270210	10.98

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30629-MB	105143	3.60	324783	4.57	191090	5.99	362905	7.28	262397	10.06	358572	11.48
OP30629-BS	130057	3.60	388121	4.57	223057	5.99	420109	7.28	287218	10.06	357348	11.48
ZZZZZZ	98204	3.60	306602	4.57	182007	5.99	342783	7.28	287768	10.06	339872	11.48
ZZZZZZ	89943	3.60	278770	4.57	165246	5.99	310753	7.28	264397	10.06	307516	11.48
ZZZZZZ	93139	3.60	284757	4.57	170855	5.99	325380	7.28	274505	10.06	328203	11.48
ZZZZZZ	99634	3.60	311121	4.57	183200	5.99	348391	7.28	266391	10.06	297541	11.48
ZZZZZZ	112375	3.60	342096	4.57	205510	5.99	382254	7.28	290362	10.06	394084	11.48
ZZZZZZ	106648	3.59	327204	4.57	191662	5.99	368181	7.28	260767	10.06	343219	11.48
ZZZZZZ	408878*	3.59	1487043*	4.57	957268*	5.98	1858276*	7.28	1360861*	10.06	1072793 ^c	11.48
OP30629-MS	88888	3.60	277065	4.57	168435	5.99	320978	7.28	249768	10.06	282271	11.48
OP30629-MSD	103205	3.60	314828	4.57	188152	5.99	362379	7.28	298026	10.06	348315	11.48
MC14800-7	99036	3.59	313793	4.57	186584	5.99	351645	7.28	287472	10.06	344732	11.48
ZZZZZZ	110213	3.60	342601	4.57	200422	5.99	384893	7.28	408175	10.06	604688	11.49
ZZZZZZ	105965	3.60	329615	4.57	195821	5.99	374254	7.28	401286	10.06	630062	11.48
MC14777-2	104164	3.59	320428	4.57	189896	5.99	356935	7.28	389644	10.06	601361	11.48
MC14777-5	108326	3.60	342427	4.57	204281	5.99	387570	7.28	415807	10.06	667450	11.49
MC14777-1	96858	3.60	302287	4.57	180741	5.99	344815	7.28	363407	10.06	557262	11.49

IS 1 = 1,4-Dichlorobenzene-d4
 IS 2 = Naphthalene-d8
 IS 3 = Acenaphthene-D10
 IS 4 = Phenanthrene-d10
 IS 5 = Chrysene-d12
 IS 6 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

7.5.1
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW267-CC254	Injection Date:	10/11/12
Lab File ID:	W5758A.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	104697	3.72	421216	4.71	255647	6.13	459172	7.45	552347	10.32	530736	11.90
Upper Limit ^a	209394	4.22	842432	5.21	511294	6.63	918344	7.95	1104694	10.82	1061472	12.40
Lower Limit ^b	52349	3.22	210608	4.21	127824	5.63	229586	6.95	276174	9.82	265368	11.40

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30628-MB	116118	3.72	449999	4.71	265539	6.13	471627	7.44	412339	10.32	330413	11.89
OP30628-BS	125312	3.73	491305	4.71	290591	6.13	508944	7.45	461089	10.32	328895	11.90
ZZZZZZ	122933	3.72	476608	4.71	283800	6.13	496644	7.44	442859	10.32	354803	11.89
ZZZZZZ	120961	3.72	472118	4.71	280332	6.13	499393	7.45	459315	10.32	374688	11.89
ZZZZZZ	109590	3.72	432403	4.71	257592	6.13	448128	7.45	424875	10.32	382909	11.90
ZZZZZZ	105353	3.73	442495	4.71	285103	6.14	497914	7.46	544203	10.32	477778	11.90
ZZZZZZ	133106	3.72	526463	4.71	312448	6.13	553206	7.45	491588	10.32	371838	11.90
ZZZZZZ	117999	3.72	474190	4.71	288789	6.13	508209	7.45	483479	10.32	363785	11.89
ZZZZZZ	118977	3.72	463365	4.71	270941	6.13	475604	7.45	422488	10.32	310355	11.89
ZZZZZZ	112867	3.72	434312	4.71	256888	6.13	454835	7.45	411563	10.32	307139	11.89
ZZZZZZ	118353	3.72	468924	4.71	286338	6.13	505201	7.45	501419	10.32	428202	11.90
ZZZZZZ	100322	3.72	397236	4.71	235572	6.13	417041	7.45	409600	10.32	332029	11.90
ZZZZZZ	122704	3.73	484006	4.71	290462	6.13	513076	7.45	520102	10.32	450938	11.90
ZZZZZZ	112941	3.72	449348	4.71	276188	6.13	512531	7.45	505451	10.32	413864	11.90
ZZZZZZ	108393	3.72	425457	4.71	253821	6.13	448695	7.45	486977	10.32	478866	11.90
ZZZZZZ	100862	3.72	389979	4.71	227833	6.13	406259	7.45	434121	10.32	382440	11.90
ZZZZZZ	116054	3.72	478251	4.71	325797	6.14	574813	7.46	579116	10.32	486629	11.90
ZZZZZZ	114890	3.73	473341	4.72	306129	6.16	610814	7.48	568621	10.32	498732	11.90
ZZZZZZ	127145	3.72	492122	4.71	301723	6.13	526541	7.45	556570	10.32	454220	11.89
ZZZZZZ	110003	3.72	436295	4.71	282627	6.14	486928	7.45	490408	10.32	407986	11.90
ZZZZZZ	108389	3.72	433382	4.71	277797	6.14	488344	7.45	476832	10.32	400748	11.90
ZZZZZZ	106327	3.72	420538	4.71	246841	6.13	444197	7.44	551102	10.32	410684	11.90
ZZZZZZ	108827	3.72	434698	4.71	261002	6.13	468615	7.45	600445	10.32	610793	11.90
ZZZZZZ	99796	3.72	408153	4.71	271100	6.14	481724	7.45	518697	10.32	483812	11.90
ZZZZZZ	99829	3.72	395521	4.71	234566	6.13	417811	7.44	429423	10.32	295793	11.89
ZZZZZZ	101389	3.72	398677	4.71	234791	6.13	420283	7.45	439944	10.32	311167	11.89
ZZZZZZ	100074	3.72	395572	4.71	232847	6.13	414381	7.44	440803	10.32	307328	11.89
ZZZZZZ	97133	3.72	383630	4.71	228169	6.13	403395	7.45	449486	10.32	339035	11.90
ZZZZZZ	95763	3.72	375044	4.71	224508	6.13	401248	7.45	454667	10.32	344911	11.90
ZZZZZZ	101689	3.72	400703	4.71	238532	6.13	425304	7.45	491304	10.32	376408	11.90

IS 1 = 1,4-Dichlorobenzene-d4
 IS 2 = Naphthalene-d8
 IS 3 = Acenaphthene-D10
 IS 4 = Phenanthrene-d10

7.5.2
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW267-CC254	Injection Date:	10/11/12
Lab File ID:	W5758A.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA RT	AREA RT	AREA RT	AREA RT	AREA RT	AREA RT

IS 5 = Chrysene-d12
 IS 6 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

7.5.2
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW263-CC246	Injection Date:	10/11/12
Lab File ID:	W5758.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	104697	3.72	421216	4.71	255647	6.13	459172	7.45	552347	10.32	530736	11.90
Upper Limit ^a	209394	4.22	842432	5.21	511294	6.63	918344	7.95	1104694	10.82	1061472	12.40
Lower Limit ^b	52349	3.22	210608	4.21	127824	5.63	229586	6.95	276174	9.82	265368	11.40

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30628-MB	116118	3.72	449999	4.71	265539	6.13	471627	7.44	412339	10.32	330413	11.89
OP30628-BS	125312	3.73	491305	4.71	290591	6.13	508944	7.45	461089	10.32	328895	11.90
ZZZZZZ	122933	3.72	476608	4.71	283800	6.13	496644	7.44	442859	10.32	354803	11.89
ZZZZZZ	120961	3.72	472118	4.71	280332	6.13	499393	7.45	459315	10.32	374688	11.89
ZZZZZZ	109590	3.72	432403	4.71	257592	6.13	448128	7.45	424875	10.32	382909	11.90
ZZZZZZ	105353	3.73	442495	4.71	285103	6.14	497914	7.46	544203	10.32	477778	11.90
ZZZZZZ	133106	3.72	526463	4.71	312448	6.13	553206	7.45	491588	10.32	371838	11.90
ZZZZZZ	117999	3.72	474190	4.71	288789	6.13	508209	7.45	483479	10.32	363785	11.89
ZZZZZZ	118977	3.72	463365	4.71	270941	6.13	475604	7.45	422488	10.32	310355	11.89
ZZZZZZ	112867	3.72	434312	4.71	256888	6.13	454835	7.45	411563	10.32	307139	11.89
ZZZZZZ	118353	3.72	468924	4.71	286338	6.13	505201	7.45	501419	10.32	428202	11.90
ZZZZZZ	100322	3.72	397236	4.71	235572	6.13	417041	7.45	409600	10.32	332029	11.90
ZZZZZZ	122704	3.73	484006	4.71	290462	6.13	513076	7.45	520102	10.32	450938	11.90
ZZZZZZ	112941	3.72	449348	4.71	276188	6.13	512531	7.45	505451	10.32	413864	11.90
ZZZZZZ	108393	3.72	425457	4.71	253821	6.13	448695	7.45	486977	10.32	478866	11.90
ZZZZZZ	100862	3.72	389979	4.71	227833	6.13	406259	7.45	434121	10.32	382440	11.90
ZZZZZZ	116054	3.72	478251	4.71	325797	6.14	574813	7.46	579116	10.32	486629	11.90
ZZZZZZ	114890	3.73	473341	4.72	306129	6.16	610814	7.48	568621	10.32	498732	11.90
ZZZZZZ	127145	3.72	492122	4.71	301723	6.13	526541	7.45	556570	10.32	454220	11.89
ZZZZZZ	110003	3.72	436295	4.71	282627	6.14	486928	7.45	490408	10.32	407986	11.90
ZZZZZZ	108389	3.72	433382	4.71	277797	6.14	488344	7.45	476832	10.32	400748	11.90
ZZZZZZ	106327	3.72	420538	4.71	246841	6.13	444197	7.44	551102	10.32	410684	11.90
ZZZZZZ	108827	3.72	434698	4.71	261002	6.13	468615	7.45	600445	10.32	610793	11.90
ZZZZZZ	99796	3.72	408153	4.71	271100	6.14	481724	7.45	518697	10.32	483812	11.90
ZZZZZZ	99829	3.72	395521	4.71	234566	6.13	417811	7.44	429423	10.32	295793	11.89
ZZZZZZ	101389	3.72	398677	4.71	234791	6.13	420283	7.45	439944	10.32	311167	11.89
ZZZZZZ	100074	3.72	395572	4.71	232847	6.13	414381	7.44	440803	10.32	307328	11.89
ZZZZZZ	97133	3.72	383630	4.71	228169	6.13	403395	7.45	449486	10.32	339035	11.90
ZZZZZZ	95763	3.72	375044	4.71	224508	6.13	401248	7.45	454667	10.32	344911	11.90
ZZZZZZ	101689	3.72	400703	4.71	238532	6.13	425304	7.45	491304	10.32	376408	11.90

IS 1 = 1,4-Dichlorobenzene-d4
 IS 2 = Naphthalene-d8
 IS 3 = Acenaphthene-D10
 IS 4 = Phenanthrene-d10

7.5.3
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW263-CC246	Injection Date:	10/11/12
Lab File ID:	W5758.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6				
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

IS 5 = Chrysene-d12
IS 6 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW265-CC246	Injection Date:	10/12/12
Lab File ID:	W5801.D	Injection Time:	08:42
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	121465	3.71	482803	4.70	290035	6.12	534991	7.44	649389	10.32	614682	11.89
Upper Limit ^a	242930	4.21	965606	5.20	580070	6.62	1069982	7.94	1298778	10.82	1229364	12.39
Lower Limit ^b	60733	3.21	241402	4.20	145018	5.62	267496	6.94	324695	9.82	307341	11.39

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30630-MB	113638	3.71	442573	4.70	261649	6.12	460499	7.43	572589	10.31	457741	11.88
OP30630-BS	114924	3.71	450155	4.70	265583	6.12	459859	7.43	617313	10.31	460012	11.88
OP30628-MS	95299	3.71	376053	4.70	221884	6.12	386940	7.43	380946	10.31	235270 ^c	11.88
OP30628-MSD	109727	3.71	430866	4.70	251232	6.12	439229	7.43	458298	10.31	285614 ^c	11.88
MC14800-6	114685	3.71	455162	4.70	270314	6.12	474863	7.43	471768	10.31	322423	11.88
OP30630-MS	106446	3.71	428112	4.70	256406	6.12	444683	7.43	579796	10.31	478947	11.88
OP30630-MSD	109544	3.71	433903	4.70	258715	6.12	452645	7.43	585807	10.31	494489	11.88
MC14726-2	105687	3.71	421463	4.70	252458	6.12	448512	7.43	574420	10.31	486921	11.88
OP30643-MB	122762	3.71	477994	4.70	278077	6.12	484414	7.43	603313	10.31	526566	11.88
OP30643-BS	122114	3.71	480424	4.70	284237	6.12	490467	7.43	625157	10.32	541251	11.89
ZZZZZZ	127901	3.71	498091	4.70	292913	6.12	505518	7.43	618083	10.31	561810	11.89
ZZZZZZ	121855	3.71	484772	4.70	291669	6.12	520821	7.43	693255	10.32	612349	11.89
OP30643-MS	123892	3.72	480764	4.70	284154	6.12	488502	7.44	619951	10.32	536559	11.89
OP30643-MSD	126545	3.72	496204	4.70	290060	6.12	507177	7.44	646385	10.32	537198	11.89
MC14755-2	133200	3.72	518736	4.70	303714	6.12	526891	7.44	623312	10.31	554601	11.89
OP30628-BSD	120958	3.72	479240	4.70	281986	6.12	495493	7.44	643998	10.32	551385	11.89
ZZZZZZ	119171	3.71	490109	4.70	308618	6.12	544636	7.44	637680	10.31	502050	11.89
ZZZZZZ	115798	3.71	453963	4.70	268128	6.12	469056	7.43	579305	10.31	461709	11.89
ZZZZZZ	124566	3.71	490764	4.70	286933	6.12	508567	7.43	634996	10.31	507478	11.89
ZZZZZZ	115419	3.71	454466	4.70	265677	6.12	466413	7.43	573535	10.31	463753	11.89
ZZZZZZ	116864	3.71	460320	4.70	271926	6.12	480236	7.43	601521	10.31	474815	11.89
ZZZZZZ	125177	3.71	491401	4.70	291463	6.12	515220	7.43	643921	10.31	522708	11.89
ZZZZZZ	122444	3.71	489059	4.70	320267	6.13	559791	7.44	643859	10.31	517686	11.89
ZZZZZZ	111871	3.71	437293	4.70	259405	6.12	452584	7.43	585971	10.31	486425	11.89
ZZZZZZ	112726	3.71	441223	4.70	263280	6.12	459884	7.43	583549	10.31	501059	11.89
ZZZZZZ	109955	3.71	432827	4.70	256907	6.12	456810	7.43	595503	10.31	522069	11.89

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

7.5.4
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW265-CC246	Injection Date:	10/12/12
Lab File ID:	W5801.D	Injection Time:	08:42
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

7.5.4
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW264-CC254	Injection Date:	10/12/12
Lab File ID:	W5801A.D	Injection Time:	08:42
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	121465	3.71	482803	4.70	290035	6.12	534991	7.44	649389	10.32	614682	11.89
Upper Limit ^a	242930	4.21	965606	5.20	580070	6.62	1069982	7.94	1298778	10.82	1229364	12.39
Lower Limit ^b	60733	3.21	241402	4.20	145018	5.62	267496	6.94	324695	9.82	307341	11.39

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30630-MB	113638	3.71	442573	4.70	261649	6.12	460499	7.43	572589	10.31	457741	11.88
OP30630-BS	114924	3.71	450155	4.70	265583	6.12	459859	7.43	617313	10.31	460012	11.88
OP30628-MS	95299	3.71	376053	4.70	221884	6.12	386940	7.43	380946	10.31	235270 ^c	11.88
OP30628-MSD	109727	3.71	430866	4.70	251232	6.12	439229	7.43	458298	10.31	285614 ^c	11.88
MC14800-6	114685	3.71	455162	4.70	270314	6.12	474863	7.43	471768	10.31	322423	11.88
OP30630-MS	106446	3.71	428112	4.70	256406	6.12	444683	7.43	579796	10.31	478947	11.88
OP30630-MSD	109544	3.71	433903	4.70	258715	6.12	452645	7.43	585807	10.31	494489	11.88
MC14726-2	105687	3.71	421463	4.70	252458	6.12	448512	7.43	574420	10.31	486921	11.88
OP30643-MB	122762	3.71	477994	4.70	278077	6.12	484414	7.43	603313	10.31	526566	11.88
OP30643-BS	122114	3.71	480424	4.70	284237	6.12	490467	7.43	625157	10.32	541251	11.89
ZZZZZZ	127901	3.71	498091	4.70	292913	6.12	505518	7.43	618083	10.31	561810	11.89
ZZZZZZ	121855	3.71	484772	4.70	291669	6.12	520821	7.43	693255	10.32	612349	11.89
OP30643-MS	123892	3.72	480764	4.70	284154	6.12	488502	7.44	619951	10.32	536559	11.89
OP30643-MSD	126545	3.72	496204	4.70	290060	6.12	507177	7.44	646385	10.32	537198	11.89
MC14755-2	133200	3.72	518736	4.70	303714	6.12	526891	7.44	623312	10.31	554601	11.89
OP30628-BSD	120958	3.72	479240	4.70	281986	6.12	495493	7.44	643998	10.32	551385	11.89
ZZZZZZ	119171	3.71	490109	4.70	308618	6.12	544636	7.44	637680	10.31	502050	11.89
ZZZZZZ	115798	3.71	453963	4.70	268128	6.12	469056	7.43	579305	10.31	461709	11.89
ZZZZZZ	124566	3.71	490764	4.70	286933	6.12	508567	7.43	634996	10.31	507478	11.89
ZZZZZZ	115419	3.71	454466	4.70	265677	6.12	466413	7.43	573535	10.31	463753	11.89
ZZZZZZ	116864	3.71	460320	4.70	271926	6.12	480236	7.43	601521	10.31	474815	11.89
ZZZZZZ	125177	3.71	491401	4.70	291463	6.12	515220	7.43	643921	10.31	522708	11.89
ZZZZZZ	122444	3.71	489059	4.70	320267	6.13	559791	7.44	643859	10.31	517686	11.89
ZZZZZZ	111871	3.71	437293	4.70	259405	6.12	452584	7.43	585971	10.31	486425	11.89
ZZZZZZ	112726	3.71	441223	4.70	263280	6.12	459884	7.43	583549	10.31	501059	11.89
ZZZZZZ	109955	3.71	432827	4.70	256907	6.12	456810	7.43	595503	10.31	522069	11.89

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

7.5.5
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW264-CC254	Injection Date:	10/12/12
Lab File ID:	W5801A.D	Injection Time:	08:42
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

7.5.5
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW266-CC246	Injection Date:	10/15/12
Lab File ID:	W5834.D	Injection Time:	08:08
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	124207	3.71	483043	4.70	287606	6.11	519914	7.43	631785	10.31	591290	11.88
Upper Limit ^a	248414	4.21	966086	5.20	575212	6.61	1039828	7.93	1263570	10.81	1182580	12.38
Lower Limit ^b	62104	3.21	241522	4.20	143803	5.61	259957	6.93	315893	9.81	295645	11.38

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30665-MB	141469	3.71	540545	4.69	315147	6.11	546484	7.42	596047	10.30	577497	11.88
OP30665-BS	132273	3.71	511392	4.70	297391	6.11	509557	7.43	576188	10.31	512841	11.88
OP30665-MS	133415	3.71	509316	4.69	159898	6.11	436132	7.43	164556 ^c	10.30	3811 ^c	11.87
ZZZZZZ	121924	3.71	474495	4.69	281286	6.11	498575	7.43	386341	10.30	269618 ^d	11.87
ZZZZZZ	123287	3.71	477234	4.69	280687	6.11	497365	7.43	372355	10.30	258092 ^d	11.87
ZZZZZZ	134736	3.71	522783	4.69	305512	6.11	542261	7.42	413417	10.30	289564 ^d	11.87
ZZZZZZ	128411	3.71	537406	4.70	321971	6.12	556910	7.43	458011	10.31	326293	11.88
OP30664-MB	115927	3.71	449832	4.69	265746	6.11	466100	7.42	509370	10.30	489171	11.88
OP30664-BS	131626	3.71	500709	4.69	296623	6.11	516105	7.43	576770	10.30	512809	11.88
OP30664-MS	131100	3.71	503469	4.69	294423	6.11	510485	7.43	584116	10.30	517490	11.88
OP30664-MSD	137524	3.71	529989	4.69	311649	6.11	549721	7.43	611644	10.31	542659	11.88
MC14849-1	129541	3.71	501222	4.69	292694	6.11	518555	7.43	575251	10.30	538006	11.88
ZZZZZZ	127309	3.71	496444	4.69	293228	6.11	518143	7.42	568794	10.30	528967	11.88
ZZZZZZ	123219	3.71	472295	4.69	279971	6.11	485015	7.43	520029	10.30	495338	11.88
ZZZZZZ	115046	3.71	443862	4.69	256198	6.11	455488	7.43	489716	10.30	467478	11.87
ZZZZZZ	134757	3.71	523360	4.69	306957	6.11	536308	7.42	590778	10.30	547980	11.87
ZZZZZZ	123303	3.71	475303	4.69	279225	6.11	487052	7.42	523260	10.30	487485	11.87
ZZZZZZ	111162	3.71	434564	4.69	252876	6.11	442141	7.42	471987	10.30	448318	11.88
OP30665-MSD	123303	3.71	445143	4.70	76898 ^c	6.11	256664 ^c	7.43	43803 ^c	10.30	411 ^c	11.88
MC14810-2	118273	3.71	459460	4.69	270397	6.11	482585	7.43	542541	10.30	500679	11.87
ZZZZZZ	119401	3.71	467269	4.69	273065	6.11	477209	7.42	525139	10.30	497563	11.87
ZZZZZZ	115672	3.71	452349	4.69	270135	6.11	476611	7.42	542379	10.30	510616	11.88
ZZZZZZ	176119	3.71	695956	4.69	411697	6.11	730560	7.43	928386	10.30	674565	11.88
ZZZZZZ	141825	3.71	549819	4.69	324758	6.11	564119	7.42	708487	10.30	600584	11.88
MC14777-2	148581	3.71	584696	4.69	351145	6.11	622576	7.43	815592	10.30	571150	11.88
MC14777-5	149176	3.71	591146	4.69	350503	6.11	637859	7.42	824349	10.30	725018	11.88
MC14777-1	145183	3.71	563348	4.69	337592	6.11	609590	7.43	803615	10.31	592770	11.88
ZZZZZZ	128515	3.71	498399	4.69	295145	6.11	513381	7.42	562100	10.30	537579	11.88
ZZZZZZ	101033	3.71	390494	4.69	232660	6.11	403101	7.42	455212	10.30	437426	11.87

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12

7.5.6
7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW266-CC246	Injection Date:	10/15/12
Lab File ID:	W5834.D	Injection Time:	08:08
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6						
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

IS 6 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.
- (d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

Semivolatile Surrogate Recovery Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC14777-1	W5861.D	51	34	90	89	69	70
MC14777-2	W5859.D	54	37	91	93	83	94
MC14777-5	W5860.D	58	40	98	90	77	94
OP30628-BS	W5760.D	64	46	107	97	93	156* a
OP30628-BSD	W5821.D	62	44	107	103	93	106
OP30628-MB	W5759.D	56	38	103	93	85	171* a
OP30628-MS	W5804.D	56	40	94	87	79	130
OP30628-MSD	W5805.D	55	38	98	87	77	125

Surrogate Compounds **Recovery Limits**

S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

(a) Outside control limits. Associated target analytes are non-detect.

7.6.1

7

Semivolatile Surrogate Recovery Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC14777-1	F58297.D	83	62	79
MC14777-2	F58295.D	86	75	105
MC14777-5	F58296.D	83	69	103
OP30629-BS	F58282.D	91	84	113
OP30629-MB	F58281.D	86	77	124
OP30629-MS	F58290.D	81	71	108
OP30629-MSD	F58291.D	82	70	112

Surrogate Compounds **Recovery Limits**

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

7.6.2
7

GC Volatiles

QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

Method Blank Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MB	BK17933.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14777-1, MC14777-2, MC14777-4, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	Bromofluorobenzene (S)	93%	36-173%
460-00-4	Bromofluorobenzene (S)	88%	36-173%

8.1.1
8

Blank Spike Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-BS	BK17934.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples:

Method: SW846 8011

MC14777-1, MC14777-2, MC14777-4, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.054	76	60-140
106-93-4	1,2-Dibromoethane	0.071	0.060	85	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	91%	36-173%
460-00-4	Bromofluorobenzene (S)	84%	36-173%

8.2.1
8

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MS	BK17936.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
OP30666-MSD	BK17937.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
MC14930-4	BK17938.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14777-1, MC14777-2, MC14777-4, MC14777-5

CAS No.	Compound	MC14930-4 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.058	82	0.071	0.054	76	7	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.069	97	0.071	0.067	94	3	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC14930-4	Limits
460-00-4	Bromofluorobenzene (S)	96%	90%	94%	36-173%
460-00-4	Bromofluorobenzene (S)	87%	78%	84%	36-173%

8.3.1
8

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC14777

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
MC14777-1	BK17939.D	91	74
MC14777-2	BK17940.D	128	120
MC14777-4	BK17941.D	93	83
MC14777-5	BK17942.D	89	82
OP30666-BS	BK17934.D	91	84
OP30666-MB	BK17933.D	93	88
OP30666-MS	BK17936.D	96	87
OP30666-MSD	BK17937.D	90	78

Surrogate Compounds **Recovery Limits**

S1 = Bromofluorobenzene (S) 36-173%

(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

GC Surrogate Retention Time Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17924.D	Injection Time:	06:57
Instrument ID:	GCBK	Method:	SW846 8011

S1^a S1^b
 RT RT

Check Std	4.70	4.91
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
MC14800-5	BK17925.D	10/18/12	07:21	4.70	4.91
ZZZZZZ	BK17926.D	10/18/12	07:45	4.70	4.91
ZZZZZZ	BK17927.D	10/18/12	08:10	4.70	4.91
ZZZZZZ	BK17928.D	10/18/12	08:34	4.70	4.91
ZZZZZZ	BK17929.D	10/18/12	08:58	4.70	4.91
ZZZZZZ	BK17930.D	10/18/12	09:36	4.70	4.91
ZZZZZZ	BK17931.D	10/18/12	10:01	4.70	4.91
ZZZZZZ	BK17932.D	10/18/12	10:25	4.70	4.91
OP30666-MB	BK17933.D	10/18/12	10:50	4.70	4.91
OP30667-MB	BK17933A.D	10/18/12	10:50	4.70	4.91
OP30666-BS	BK17934.D	10/18/12	11:14	4.70	4.91
OP30667-BS	BK17934A.D	10/18/12	11:14	4.70	4.91

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

8.5.1
8

GC Surrogate Retention Time Summary

Job Number: MC14777
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17935.D	Injection Time:	11:39
Instrument ID:	GCBK	Method:	SW846 8011

S1^a S1^b
 RT RT

Check Std	4.70	4.91
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP30666-MS	BK17936.D	10/18/12	12:04	4.70	4.91
OP30667-MS	BK17936A.D	10/18/12	12:04	4.70	4.91
OP30666-MSD	BK17937.D	10/18/12	12:29	4.70	4.91
OP30667-MSD	BK17937A.D	10/18/12	12:29	4.70	4.91
MC14930-4	BK17938.D	10/18/12	12:54	4.70	4.91
MC14930-3	BK17938A.D	10/18/12	12:54	4.70	4.91
MC14777-1	BK17939.D	10/18/12	13:19	4.70	4.91
MC14777-2	BK17940.D	10/18/12	13:44	4.70	4.91
MC14777-4	BK17941.D	10/18/12	14:09	4.70	4.91
MC14777-5	BK17942.D	10/18/12	14:33	4.70	4.91
ZZZZZZ	BK17943.D	10/18/12	14:57	4.70	4.91
ZZZZZZ	BK17944.D	10/18/12	15:22	4.70	4.91
ZZZZZZ	BK17945.D	10/18/12	15:47	4.70	4.91

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

8.5.2
8

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VERIFICATION, TESTING AND CERTIFICATION COMPANY.



e-Hardcopy 2.0
Automated Report

Technical Report for

Shell Oil

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, II
21562735.00015

SGS Accutest Job Number: MC14814

Sampling Date: 10/10/12

Report to:

AECOM, INC.

Melissa.mansker@aecom.com

ATTN: Melissa Mansker

Total number of pages in report: 66



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.

H. (Brad) Madadian
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) FL (E87579) NY (11791)
NJ (MA926) PA (6801121) ND (R-188) CO (MA00136) MN (11546AA) NC (653) IL (002337) WI (399080220)
DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.



ACCUTEST

October 21, 2016

AECOM
1001 Highlands Plaza Drive West Suite 300
St. Louis, MO 63110

RE: SGS Accutest Job # MC14814

Dear Elizabeth Kunkel

As you are aware, SGS Accutest Inc. - Marlborough has been conducting an extensive review of data associated with some historical Gas Chromatography-Mass Spectroscopy volatiles analyses. As a result of this review it was determined that some revisions of the original test report for this job were needed. These corrections have been incorporated into the revised report.

Please be assured that corrective actions have been put in place to address this matter and prevent a recurrence.

We apologize for any inconvenience that this issue may have caused. Please don't hesitate to contact us if we can be of further assistance.

Sincerely,

H. (Brad) Madadian

Regional Laboratory Director
SGS Accutest Inc. - Marlborough

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION,
TESTING AND CERTIFICATION COMPANY.

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Sample Summary

Shell Oil

Job No: MC14814

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Project No: 21562735.00015

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
MC14814-1	10/10/12	12:55 NM	10/11/12	AQ	Ground Water	GWP-28-80-ROX-101012
MC14814-2	10/10/12	00:00 NM	10/11/12	AQ	Trip Blank Water	TB-101012-HCL
MC14814-3	10/10/12	00:00 NM	10/11/12	AQ	Trip Blank Water	TB-101012-ST

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: She O

Job No MC 48 4

Site: URSMOSTL:Roxana - Groundwater Prof'ng (Add' GW Character

Report Date 10/20/2016 5:50:07 P

Samp e(s), 2 Trip Blank(s) and 0 Field Blank(s) were collected on 10/20/2016 and were received at SGS Accutest New England on 10/20/2016 properly preserved, at 0-6 Deg C and intact. These Samples received a job number of MC 48 4. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. Chlorohexane, Benzene, D-benz(a,h)acridene, Indene and Quinoline were searched in the library search and reported on if detections were found.

Except as noted below, all method specified calibration and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ

Batch ID: MSP2 50

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specification criteria.
- Sample(s) MC 5048-3MS, MC 5048-3MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Naphthalene are outside control limits.
- Matrix Spike Recovery(s) for Chloroethane, Dichlorodifluoromethane are outside control limits. Out of control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichloropropane, 2,2-Dichloropropane, Acrylonitrile, Carbon disulfide, Chloroethane, Dichlorodifluoromethane, Naphthalene are outside control limits. Probable cause due to matrix interference.
- MC 48 4- for Ethyl methacrylate: In the Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- MC 48 4- for 2,2-Dichloropropane: In the Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- MC 48 4-2 for Ethyl methacrylate: In the Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- MC 48 4-2 for 2,2-Dichloropropane: In the Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- In the Calibration Verification standard for Acetone exceeds 50% Difference. Biased high. Associated samples are non-detect for these compounds.

Matrix: AQ

Batch ID: MSV520

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC 4908- MS, MC 4908- MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specification criteria.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits. Out of control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits. Probable cause due to matrix interference.
- MSV520-BSD for 2-Chloroethyl vinyl ether: Out of control limits. Blank Spike meets program technical requirements.
- MC 48 4-2 for 2-Chloroethyl vinyl ether: Continuing Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- MC 48 4- for 2-Chloroethyl vinyl ether: Continuing Calibration Verification outside of acceptance criteria. Sample result may be biased low.

Friday, October 21, 2016

Page 1 of 2

Extractables by GCMS By Method SW846 8270C

Matrix: AQ

Batch ID: OP3065

- A samples were extracted with the recommended method holding time
- A samples were analyzed with the recommended method holding time
- Sample(s) MC 5000-7MS, MC 5000-7MSD were used as the QC samples indicated
- A method blanks for this batch meet method specification
- Blank Spike Recovery(s) for 3,3'-Dichlorobenzene, 4-Chloroaniline, Aniline, Phenol, Pyridine are outside control limits
- Matrix Spike Recovery(s) for Aniline, Benzoic Acid, Pyridine are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike
- Matrix Spike Duplicate Recovery(s) for 3,3'-Dichlorobenzene, 3-Nitroaniline, 4-Chloroaniline, 4-Nitroaniline, Aniline, Pyridine are outside control limits. High RPD due to possible matrix interference and/or sample non-homogeneity
- RPD(s) for MSD for 3,3'-Dichlorobenzene, 3-Nitroaniline, 4-Chloroaniline, 4-Nitroaniline, Aniline, Benzoic Acid, Pyridine are outside control limits for sample OP3065 -MSD. High RPD due to possible matrix interference and/or sample non-homogeneity

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: AQ

Batch ID: OP30652

- A samples were extracted with the recommended method holding time
- A samples were analyzed with the recommended method holding time
- Sample(s) MC 4797-5MS, MC 4797-5MSD were used as the QC samples indicated
- A method blanks for this batch meet method specification

Volatiles by GC By Method SW846 8011

Matrix: AQ

Batch ID: OP30666

- A samples were extracted with the recommended method holding time
- A samples were analyzed with the recommended method holding time
- A method blanks for this batch meet method specification
- Sample(s) MC 4930-4MS, MC 4930-4MSD were used as the QC samples indicated

SGS Accutest New England certifies that all analyses were performed with the method specification. It is further recommended that this report be used in its entirety. The Laboratory Director for SGS Accutest New England or assignee as verified by the signature on the cover page has authorized the release of this report (MC 48 4)

Summary of Hits

Job Number: MC14814

Account: Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Collected: 10/10/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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MC14814-1 GWP-28-80-ROX-101012

Methyl Tert Butyl Ether	1.2	1.0	0.41	ug/l	SW846 8260B
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MC14814-2 TB-101012-HCL

No hits reported in this sample.

MC14814-3 TB-101012-ST

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GWP-28-80-ROX-101012	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-1	Date Received:	10/11/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P65723.D	1	10/23/12	TT	n/a	n/a	MSP2150
Run #2	V12681.D	1	10/24/12	AMY	n/a	n/a	MSV520

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether ^a	ND ^b	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-80-ROX-101012	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-1	Date Received:	10/11/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane ^c	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate ^c	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.2	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-80-ROX-101012	Date Sampled: 10/10/12
Lab Sample ID: MC14814-1	Date Received: 10/11/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

4.1
4

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	91%	70-130%
2037-26-5	Toluene-D8	86%	101%	70-130%
460-00-4	4-Bromofluorobenzene	113%	94%	70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

- (a) Continuing Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- (b) Result is from Run# 2
- (c) Initial Calibration Verification outside of acceptance criteria. Sample result may be biased low.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-80-ROX-101012	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-1	Date Received:	10/11/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58313.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.2	ug/l	
95-57-8	2-Chlorophenol	ND	5.3	0.42	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.39	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.39	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	2.9	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.3	ug/l	
95-48-7	2-Methylphenol	ND	11	0.64	ug/l	
	3&4-Methylphenol	ND	11	0.79	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.50	ug/l	
100-02-7	4-Nitrophenol	ND	21	2.9	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.67	ug/l	
108-95-2	Phenol	ND	5.3	0.98	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.52	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.37	ug/l	
62-53-3	Aniline	ND	11	2.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	0.34	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.3	0.28	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.28	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.3	0.19	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.67	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.3	0.23	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.3	0.40	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.3	0.30	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.3	0.31	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.3	0.23	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.1	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.22	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	0.94	ug/l	
132-64-9	Dibenzofuran	ND	2.1	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	0.38	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.3	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-80-ROX-101012	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-1	Date Received:	10/11/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.3	0.20	ug/l	
131-11-3	Dimethyl phthalate	ND	5.3	5.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	0.39	ug/l	
118-74-1	Hexachlorobenzene	ND	5.3	0.26	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.3	ug/l	
67-72-1	Hexachloroethane	ND	5.3	2.1	ug/l	
78-59-1	Isophorone	ND	5.3	0.33	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.24	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.27	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.1	ug/l	
98-95-3	Nitrobenzene	ND	5.3	0.25	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	0.62	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.3	0.29	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.46	ug/l	
110-86-1	Pyridine	ND	11	5.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		15-110%
4165-62-2	Phenol-d5	38%		15-110%
118-79-6	2,4,6-Tribromophenol	95%		15-110%
4165-60-0	Nitrobenzene-d5	80%		30-130%
321-60-8	2-Fluorobiphenyl	76%		30-130%
1718-51-0	Terphenyl-d14	71%		30-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-80-ROX-101012	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-1	Date Received:	10/11/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U10098.D	1	10/15/12	NS	10/12/12	OP30652	MSU545
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.014	ug/l	
120-12-7	Anthracene	ND	0.11	0.019	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	0.032	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.018	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.053	0.025	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.062	ug/l	
218-01-9	Chrysene	ND	0.11	0.077	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.044	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.034	ug/l	
86-73-7	Fluorene	ND	0.11	0.049	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.048	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	0.15	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	0.055	ug/l	
85-01-8	Phenanthrene	ND	0.053	0.013	ug/l	
129-00-0	Pyrene	ND	0.11	0.037	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		30-130%
321-60-8	2-Fluorobiphenyl	78%		30-130%
1718-51-0	Terphenyl-d14	76%		30-130%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GWP-28-80-ROX-101012	Date Sampled: 10/10/12
Lab Sample ID: MC14814-1	Date Received: 10/11/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17943.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	36.1 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	87%		36-173%
460-00-4	Bromofluorobenzene (S)	70%		36-173%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID:	TB-101012-HCL	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-2	Date Received:	10/11/12
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P65709.D	1	10/23/12	TT	n/a	n/a	MSP2150
Run #2	V12682.D	1	10/24/12	AMY	n/a	n/a	MSV520

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether ^a	ND ^b	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-101012-HCL	Date Sampled:	10/10/12
Lab Sample ID:	MC14814-2	Date Received:	10/11/12
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane ^c	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate ^c	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-101012-HCL		Date Sampled: 10/10/12
Lab Sample ID: MC14814-2		Date Received: 10/11/12
Matrix: AQ - Trip Blank Water		Percent Solids: n/a
Method: SW846 8260B		
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

4.2
4

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%	93%	70-130%
2037-26-5	Toluene-D8	85%	102%	70-130%
460-00-4	4-Bromofluorobenzene	107%	94%	70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

- (a) Continuing Calibration Verification outside of acceptance criteria. Sample result may be biased low.
- (b) Result is from Run# 2
- (c) Initial Calibration Verification outside of acceptance criteria. Sample result may be biased low.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-101012-ST	Date Sampled: 10/10/12
Lab Sample ID: MC14814-3	Date Received: 10/11/12
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17944.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	36.8 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0099	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	96%		36-173%
460-00-4	Bromofluorobenzene (S)	85%		36-173%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.3
4

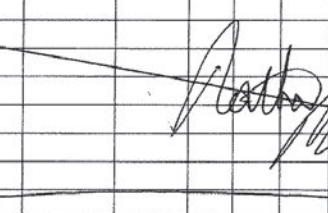
Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

FED-EX Tracking # 800725321430 Bill of Materials #
Accutest Quote # MC14814 Accutest Job #

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes							
Company Name <u>URS Corporation</u>		Project Name <u>Roxana - Groundwater Profiling (Add'l GW Characterization)</u>		VOC 8260B SL + TRES (HCL) VOC 8011 SL (Std Thio) SUBC 8270C SL + TRES (above) PAH 8270L (None)										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank							
Street Address <u>1001 Highlands Plaza Dr W</u>		Street																			
City State Zip <u>St. Louis MO 63110</u>		City																			
Project Contact <u>Elizabeth Kunkel</u>		Project# <u>2156273500015</u>																			
Billing Information (If different from Report to)		Company Name		Street Address		City		State		Zip		Attention:		PO#							
Phone # <u>314-429-0100</u>		Fax #		Client PO#		City		State		Zip		Attention:		PO#							
Sampler(s) Name(s) <u>McNulson</u>		Phone # <u>314-429-0100</u>		Project Manager <u>Bob Mooshejian</u>		City		State		Zip		Attention:		PO#							
Field ID / Point of Collection		MECH/D1-1#		Date		Time		Sampled by		Matrix		# of bottles		Number of preserved Bottles							
-1 GWP-2B-80-ROX-101012				10/10/12		1255		NM		GW		6		2							
-2 TB-101012-HCL				10/10/12		0000		NM		TB		2		2							
-3 TB-101012-ST				10/10/12		0000		NM		TB		2		2							
														LAB USE ONLY							
Turnaround Time (Business days) <input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY														Approved By (Accutest PM) / Date: _____ _____		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> CT RCP <input type="checkbox"/> MA MCP		<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other <u>P&C</u>		Comments / Special Instructions _____ _____ _____	
Emergency & Rush TIA data available VIA Lablink																					
Sample Custody must be documented below each time samples change possession, including courier delivery.																					
Relinquished by Sampler: <u>Elizabeth Kunkel</u>		Date Time: <u>10/10/12 1845</u>		Received By: <u>Fed Ex</u>		Date Time: <u>10/11/12 1330</u>		Relinquished By: <u>Wayman</u>		Date Time: <u>10/11/12</u>		Received By: <u>Wayman</u>		Date Time:							
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:							
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:							
Custody Seal #		<input type="checkbox"/> Intact		<input type="checkbox"/> Not intact		Preserved where applicable		<input type="checkbox"/>		On Ice		<input checked="" type="checkbox"/>		Cooled Temp. <u>0.6</u>							

5.1
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MC14814

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 FACILITY IDENTIFICATION

Name: WRB Refining LP - Wood River Refinery County: Madison
Street Address: 900 South Central Ave. Site No. (IEPA): 1191150002
City: Roxana, IL 62084 Site No. (USEPA): ILD 080 012 305

2.0 OWNER INFORMATION

Name: Not Applicable
Mailing Address: Equilon Enterprises LLC db/a Shell Oil Products US

17 Junction Drive, PMB #399
Glen Carbon, IL 62034

Contact Name: Kevin Dyer
Contact Title: Principal Program Manager
Phone No.: 618-288-7237

4.0 TYPE OF SUBMISSION (check applicable item and provide requested information, as applicable)

RFI Phase I Workplan/Report
RFI Phase II Workplan/Report
CMP Report; Phase
Other (describe): Groundwater monitoring well installation plan
Date of Submittal: November 28, 2012
IEPA Permit Log No. B-43R
Date of Last IEPA Letter on Project 3/14/12
Log No. of Last IEPA Letter on Project B-43R-CA-25
Does this submittal include groundwater information: Yes No

5.0 DESCRIPTION OF SUBMITTAL: (briefly describe what is being submitted and its purpose)

Groundwater results from sampling performed on BP property, and proposed well installation plan.

6.0 DOCUMENTS SUBMITTED (identify all documents in submittal, including cover letter; give dates of all documents)

RCRA Corrective Action Certification and Groundwater Monitoring Well Installation Plan, dated November 28, 2012.

7.0 CERTIFICATION STATEMENT - (This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

MC14814: Chain of Custody
Page 2 of 6

MC 14814

HEPA RCRA Corrective Action Certification
For: Equilon Enterprises LLC, d/b/a Shell Oil Products US
Date of Submission: _____
Page 2

7.1 **OWNER/OPERATOR CERTIFICATION** (Must be completed for all submittals. Certification and signature requirements are set forth in 35 TAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice-president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ (Date) _____

Title: _____

Operator Signature: _____ (Date) _____

Title: Principal Program Manager

MC14814: Chain of Custody
Page 3 of 6

MC14814

IEPA RCRA Corrective Action Certification
For: Equilon Enterprises LLC d/b/a Shell Oil Products US
Date of Submission: _____
Page 3

7.2 **PROFESSIONAL CERTIFICATION (if necessary)** - Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Professional's Signature: _____ Date: _____
Professional's Name: Robert B. Billman Professional's Seal:
Professional's Address: URS Corporation
1001 Highlands Plaza Drive West
St. Louis, MO 63110
Professional's Phone No.: 314-743-4108

MC14814: Chain of Custody
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MC 14814

7.3 LABORATORY CERTIFICATION (if necessary) - The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory ACCUTEST LABORATORIES

Signature of Laboratory Responsible Officer [Signature]

Date 11-27-12

Mailing Address of Laboratory
495 Technology Center West
Building one
Marlborough, MA 01752

Name and Title of Laboratory Responsible Officer
Reza Fard / Director

MC14814: Chain of Custody
Page 5 of 6

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC14814 Client: URS Immediate Client Services Action Required: No
 Date / Time Received: 10/11/2012 Delivery Method: _____ Client Service Action Required at Login: No
 Project: ROXANA GW PROFILING No. Coolers: 1 Airbill #'s: _____

Cooler Security Y or N Y or N
 1. Custody Seals Present: 3. COC Present:
 2. Custody Seals Intact: 4. Smpl Dates/Time OK:

Cooler Temperature Y or N
 1. Temp criteria achieved:
 2. Cooler temp verification: Infrared gun
 3. Cooler media: Ice (bag)

Quality Control Preservation Y or N N/A
 1. Trip Blank present / cooler:
 2. Trip Blank listed on COC:
 3. Samples preserved properly:
 4. VOCs headspace free:

Sample Integrity - Documentation Y or N
 1. Sample labels present on bottles:
 2. Container labeling complete:
 3. Sample container label / COC agree:

Sample Integrity - Condition Y or N
 1. Sample recvd within HT:
 2. All containers accounted for:
 3. Condition of sample: Intact

Sample Integrity - Instructions Y or N N/A
 1. Analysis requested is clear:
 2. Bottles received for unspecified tests:
 3. Sufficient volume recvd for analysis:
 4. Compositing instructions clear:
 5. Filtering instructions clear:

Comments

Internal Sample Tracking Chronicle

Shell Oil

Job No: MC14814

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
 Project No: 21562735.00015

5.2
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Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC14814-1 Collected: 10-OCT-12 12:55 By: NM Received: 11-OCT-12 By: GWP-28-80-ROX-101012						
MC14814-1	SW846 8270C	15-OCT-12 10:38	KR	12-OCT-12 PA		AB8270SL +
MC14814-1	SW846 8270C BY SIM	15-OCT-12 21:00	NS	12-OCT-12 PA		B8270SIMP AH
MC14814-1	SW846 8011	18-OCT-12 14:57	AP	12-OCT-12 AJ		V8011SL
MC14814-1	SW846 8260B	23-OCT-12 20:16	TT			V8260SL +
MC14814-1	SW846 8260B	24-OCT-12 15:53	AMY			V8260SL +
MC14814-2 Collected: 10-OCT-12 00:00 By: NM Received: 11-OCT-12 By: TB-101012-HCL						
MC14814-2	SW846 8260B	23-OCT-12 13:16	TT			V8260SL +
MC14814-2	SW846 8260B	24-OCT-12 16:22	AMY			V8260SL +
MC14814-3 Collected: 10-OCT-12 00:00 By: NM Received: 11-OCT-12 By: TB-101012-ST						
MC14814-3	SW846 8011	18-OCT-12 15:22	AP	12-OCT-12 AJ		V8011SL

SGS Accutest Internal Chain of Custody

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Received: 10/11/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC14814-1.1	Walk In Ref #22	Michael Rolo	10/12/12 07:34	Retrieve from Storage
MC14814-1.1	Michael Rolo		10/15/12 21:21	Depleted
MC14814-1.3	VOC Ref #1	Tomasz Torski	10/23/12 11:16	Retrieve from Storage
MC14814-1.3	Tomasz Torski	GCMSP	10/23/12 11:16	Load on Instrument
MC14814-1.3	GCMSP	Tomasz Torski	10/24/12 09:25	Unload from Instrument
MC14814-1.3	Tomasz Torski	VOC Ref #1	10/24/12 09:26	Return to Storage
MC14814-1.3	Scott Parsick		12/19/12 15:08	Disposed
MC14814-1.4	VOC Ref #1	Amy Min Yang	10/24/12 08:22	Retrieve from Storage
MC14814-1.4	Amy Min Yang	GCMSV	10/24/12 08:22	Load on Instrument
MC14814-1.4	GCMSV	Amy Min Yang	10/24/12 12:15	Unload from Instrument
MC14814-1.4	Amy Min Yang	VOC Ref #1	10/24/12 12:20	Return to Storage
MC14814-1.4	Scott Parsick		12/19/12 15:08	Disposed
MC14814-1.6	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14814-1.6	Nick Krasinski		10/15/12 21:21	Depleted
MC14814-2.1	VOC Ref #1	Amy Min Yang	10/24/12 08:22	Retrieve from Storage
MC14814-2.1	Amy Min Yang	GCMSV	10/24/12 08:22	Load on Instrument
MC14814-2.1	GCMSV	Amy Min Yang	10/24/12 12:15	Unload from Instrument
MC14814-2.1	Amy Min Yang	VOC Ref #1	10/24/12 12:20	Return to Storage
MC14814-2.1	Scott Parsick		12/19/12 15:08	Disposed
MC14814-2.2	VOC Ref #1	Tomasz Torski	10/23/12 11:16	Retrieve from Storage
MC14814-2.2	Tomasz Torski	GCMSP	10/23/12 11:16	Load on Instrument
MC14814-2.2	GCMSP	Tomasz Torski	10/24/12 09:25	Unload from Instrument
MC14814-2.2	Tomasz Torski	VOC Ref #1	10/24/12 09:26	Return to Storage
MC14814-2.2	Scott Parsick		12/19/12 15:08	Disposed
MC14814-3.1	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14814-3.1	Nick Krasinski		10/15/12 21:21	Depleted

5.3

5

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-MB	P65707.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	

6.1.1
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Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-MB	P65707.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-MB	P65707.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	98% 70-130%
2037-26-5	Toluene-D8	88% 70-130%
460-00-4	4-Bromofluorobenzene	112% 70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

6.1.1
6

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSV520-MB	V12667.D	1	10/24/12	AMY	n/a	n/a	MSV520

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	Result	RL	MDL	Units	Q
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	88%	70-130%
2037-26-5	Toluene-D8	94%	70-130%
460-00-4	4-Bromofluorobenzene	90%	70-130%

6.1.2
6

Blank Spike Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-BS	P65705.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	45.0	90	70-130
107-02-8	Acrolein	250	174	70	70-130
107-13-1	Acrylonitrile	50	63.8	128	70-130
71-43-2	Benzene	50	49.2	98	70-130
108-86-1	Bromobenzene	50	50.9	102	70-130
74-97-5	Bromochloromethane	50	53.6	107	70-130
75-27-4	Bromodichloromethane	50	53.7	107	70-130
75-25-2	Bromoform	50	38.2	76	70-130
74-83-9	Bromomethane	50	46.6	93	70-130
78-93-3	2-Butanone (MEK)	50	52.8	106	70-130
104-51-8	n-Butylbenzene	50	59.2	118	70-130
135-98-8	sec-Butylbenzene	50	58.6	117	70-130
98-06-6	tert-Butylbenzene	50	56.9	114	70-130
75-15-0	Carbon disulfide	50	57.5	115	70-130
56-23-5	Carbon tetrachloride	50	47.3	95	70-130
108-90-7	Chlorobenzene	50	51.4	103	70-130
75-00-3	Chloroethane	50	61.8	124	70-130
67-66-3	Chloroform	50	55.0	110	70-130
74-87-3	Chloromethane	50	48.3	97	70-130
95-49-8	o-Chlorotoluene	50	58.2	116	70-130
106-43-4	p-Chlorotoluene	50	63.2	126	70-130
124-48-1	Dibromochloromethane	50	44.5	89	70-130
95-50-1	1,2-Dichlorobenzene	50	55.6	111	70-130
541-73-1	1,3-Dichlorobenzene	50	55.7	111	70-130
106-46-7	1,4-Dichlorobenzene	50	53.8	108	70-130
75-71-8	Dichlorodifluoromethane	50	38.5	77	70-130
75-34-3	1,1-Dichloroethane	50	55.5	111	70-130
107-06-2	1,2-Dichloroethane	50	50.2	100	70-130
75-35-4	1,1-Dichloroethene	50	54.7	109	70-130
156-59-2	cis-1,2-Dichloroethene	50	51.1	102	70-130
156-60-5	trans-1,2-Dichloroethene	50	46.8	94	70-130
78-87-5	1,2-Dichloropropane	50	57.3	115	70-130
142-28-9	1,3-Dichloropropane	50	44.5	89	70-130
594-20-7	2,2-Dichloropropane	50	51.4	103	70-130
563-58-6	1,1-Dichloropropene	50	49.9	100	70-130
10061-01-5	cis-1,3-Dichloropropene	50	49.8	100	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-BS	P65705.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-02-6	trans-1,3-Dichloropropene	50	50.0	100	70-130
123-91-1	1,4-Dioxane	250	208	83	70-130
97-63-2	Ethyl methacrylate	50	41.7	83	77-137
100-41-4	Ethylbenzene	50	47.7	95	70-130
87-68-3	Hexachlorobutadiene	50	59.9	120	70-130
591-78-6	2-Hexanone	50	55.8	112	70-130
98-82-8	Isopropylbenzene	50	56.1	112	70-130
99-87-6	p-Isopropyltoluene	50	54.9	110	70-130
1634-04-4	Methyl Tert Butyl Ether	50	44.8	90	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	54.8	110	70-130
74-95-3	Methylene bromide	50	52.0	104	70-130
75-09-2	Methylene chloride	50	53.7	107	70-130
91-20-3	Naphthalene	50	67.7	135* a	70-130
103-65-1	n-Propylbenzene	50	57.9	116	70-130
100-42-5	Styrene	50	45.1	90	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	46.5	93	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	62.6	125	70-130
127-18-4	Tetrachloroethene	50	42.8	86	70-130
108-88-3	Toluene	50	49.6	99	70-130
87-61-6	1,2,3-Trichlorobenzene	50	60.4	121	70-130
120-82-1	1,2,4-Trichlorobenzene	50	57.2	114	70-130
71-55-6	1,1,1-Trichloroethane	50	48.9	98	70-130
79-00-5	1,1,2-Trichloroethane	50	46.8	94	70-130
79-01-6	Trichloroethene	50	48.5	97	70-130
75-69-4	Trichlorofluoromethane	50	49.0	98	70-130
96-18-4	1,2,3-Trichloropropane	50	63.6	127	70-130
95-63-6	1,2,4-Trimethylbenzene	50	51.3	103	70-130
108-67-8	1,3,5-Trimethylbenzene	50	51.3	103	70-130
108-05-4	Vinyl Acetate	50	49.4	99	70-130
75-01-4	Vinyl chloride	50	43.2	86	70-130
	m,p-Xylene	100	99.6	100	70-130
95-47-6	o-Xylene	50	53.3	107	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-BS	P65705.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	112%	70-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSV520-BS	V12664.D	1	10/24/12	AMY	n/a	n/a	MSV520
MSV520-BSD	V12665.D	1	10/24/12	AMY	n/a	n/a	MSV520

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl ether	50	14.9	30* a	11.4	23* a	27* a	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	94%	93%	70-130%
2037-26-5	Toluene-D8	105%	98%	70-130%
460-00-4	4-Bromofluorobenzene	90%	87%	70-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC15048-3MS	P65714.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3MSD	P65715.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3	P65708.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	MC15048-3 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	4.4	250	231	91	250	227	89	2	70-130/30
107-02-8	Acrolein	ND	1250	1060	85	1250	1080	86	2	70-130/30
107-13-1	Acrylonitrile	ND	250	302	121	250	347	139* a	14	70-130/30
71-43-2	Benzene	ND	250	247	99	250	251	100	2	70-130/30
108-86-1	Bromobenzene	ND	250	237	95	250	252	101	6	70-130/30
74-97-5	Bromochloromethane	ND	250	268	107	250	263	105	2	70-130/30
75-27-4	Bromodichloromethane	ND	250	270	108	250	271	108	0	70-130/30
75-25-2	Bromoform	ND	250	193	77	250	194	78	1	70-130/30
74-83-9	Bromomethane	ND	250	265	106	250	282	113	6	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	286	114	250	290	116	1	70-130/30
104-51-8	n-Butylbenzene	ND	250	280	112	250	300	120	7	70-130/30
135-98-8	sec-Butylbenzene	ND	250	273	109	250	290	116	6	70-130/30
98-06-6	tert-Butylbenzene	ND	250	263	105	250	280	112	6	70-130/30
75-15-0	Carbon disulfide	ND	250	318	127	250	329	132* a	3	70-130/30
56-23-5	Carbon tetrachloride	ND	250	248	99	250	253	101	2	70-130/30
108-90-7	Chlorobenzene	ND	250	245	98	250	253	101	3	70-130/30
75-00-3	Chloroethane	ND	250	359	144* a	250	357	143* a	1	70-130/30
67-66-3	Chloroform	ND	250	280	112	250	282	113	1	70-130/30
74-87-3	Chloromethane	ND	250	259	104	250	288	115	11	70-130/30
95-49-8	o-Chlorotoluene	ND	250	271	108	250	285	114	5	70-130/30
106-43-4	p-Chlorotoluene	ND	250	293	117	250	311	124	6	70-130/30
124-48-1	Dibromochloromethane	ND	250	216	86	250	221	88	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	261	104	250	273	109	4	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	260	104	250	276	110	6	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	256	102	250	265	106	3	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	434	174* a	250	447	179* a	3	70-130/30
75-34-3	1,1-Dichloroethane	ND	250	285	114	250	289	116	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	259	104	250	259	104	0	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	295	118	250	301	120	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	250	252	101	250	254	102	1	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	250	236	94	250	246	98	4	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	283	113	250	286	114	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	223	89	250	224	90	0	70-130/30
594-20-7	2,2-Dichloropropane	ND	250	324	130	250	334	134* a	3	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	257	103	250	267	107	4	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	250	255	102	250	262	105	3	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC15048-3MS	P65714.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3MSD	P65715.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3	P65708.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	MC15048-3 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	ND	250	255	102	250	265	106	4	70-130/30
123-91-1	1,4-Dioxane	ND	1250	1060	85	1250	1340	107	23	70-130/30
97-63-2	Ethyl methacrylate	ND	250	204	82	250	211	84	3	72-139/30
100-41-4	Ethylbenzene	ND	250	226	90	250	235	94	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	288	115	250	299	120	4	70-130/30
591-78-6	2-Hexanone	ND	250	270	108	250	294	118	9	70-130/30
98-82-8	Isopropylbenzene	ND	250	259	104	250	275	110	6	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	260	104	250	276	110	6	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	215	86	250	223	89	4	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	283	113	250	296	118	4	70-130/30
74-95-3	Methylene bromide	ND	250	271	108	250	274	110	1	70-130/30
75-09-2	Methylene chloride	ND	250	277	111	250	278	111	0	70-130/30
91-20-3	Naphthalene	ND	250	302	121	250	340	136* a	12	70-130/30
103-65-1	n-Propylbenzene	ND	250	271	108	250	287	115	6	70-130/30
100-42-5	Styrene	ND	250	213	85	250	220	88	3	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	227	91	250	230	92	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	308	123	250	321	128	4	70-130/30
127-18-4	Tetrachloroethene	4.6	250	217	85	250	226	89	4	70-130/30
108-88-3	Toluene	ND	250	243	97	250	250	100	3	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	271	108	250	299	120	10	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	255	102	250	285	114	11	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	250	252	101	250	256	102	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	235	94	250	239	96	2	70-130/30
79-01-6	Trichloroethene	ND	250	244	98	250	248	99	2	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	292	117	250	294	118	1	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	314	126	250	329	132* a	5	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	239	96	250	254	102	6	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	241	96	250	253	101	5	70-130/30
108-05-4	Vinyl Acetate	ND	250	286	114	250	294	118	3	70-130/30
75-01-4	Vinyl chloride	ND	250	275	110	250	277	111	1	70-130/30
	m,p-Xylene	ND	500	475	95	500	493	99	4	70-130/30
95-47-6	o-Xylene	ND	250	258	103	250	265	106	3	70-130/30
1330-20-7	Xylene (total)	ND	750	733	98	750	758	101	3	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC15048-3MS	P65714.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3MSD	P65715.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3	P65708.D	1	10/23/12	TT	n/a	n/a	MSP2150

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Surrogate Recoveries	MS	MSD	MC15048-3	Limits
1868-53-7	Dibromofluoromethane	98%	98%	97%	70-130%
2037-26-5	Toluene-D8	88%	89%	87%	70-130%
460-00-4	4-Bromofluorobenzene	104%	108%	110%	70-130%

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14908-11MS	V12679.D	1	10/24/12	AMY	n/a	n/a	MSV520
MC14908-11MSD	V12680.D	1	10/24/12	AMY	n/a	n/a	MSV520
MC14908-11	V12678.D	1	10/24/12	AMY	n/a	n/a	MSV520

The QC reported here applies to the following samples:

Method: SW846 8260B

MC14814-1, MC14814-2

CAS No.	Compound	MC14908-11 Spike ug/l	Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl ether	ND	50	ND	0* a	50	ND	0* a	nc	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC14908-11 Limits
1868-53-7	Dibromofluoromethane	96%	96%	93% 70-130%
2037-26-5	Toluene-D8	102%	101%	106% 70-130%
460-00-4	4-Bromofluorobenzene	93%	95%	98% 70-130%

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

6.4.2
6

Volatile Internal Standard Area Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSP2150-CC2106	Injection Date:	10/23/12
Lab File ID:	P65705.D	Injection Time:	11:22
Instrument ID:	GCMSP	Method:	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	412626	8.51	735004	9.37	398008	12.60	323209	15.16	139705	6.13
Upper Limit ^a	825252	9.01	1470008	9.87	796016	13.10	646418	15.66	279410	6.63
Lower Limit ^b	206313	8.01	367502	8.87	199004	12.10	161605	14.66	69853	5.63

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSP2150-BS	412626	8.51	735004	9.37	398008	12.60	323209	15.16	139705	6.13
MSP2150-MB	390655	8.51	693950	9.37	350994	12.61	266801	15.17	136360	6.13
MC15048-3	387285	8.51	690555	9.37	350902	12.61	264682	15.17	145025	6.13
MC14814-2	377792	8.51	674887	9.37	339173	12.61	259148	15.17	130382	6.13
ZZZZZZ	375239	8.51	672689	9.37	341752	12.61	258463	15.17	130088	6.14
ZZZZZZ	364462	8.51	656582	9.37	332401	12.61	253091	15.17	130283	6.13
ZZZZZZ	356216	8.51	636786	9.37	324833	12.61	248519	15.17	127866	6.13
ZZZZZZ	354353	8.51	638303	9.37	324652	12.61	248173	15.17	135759	6.13
MC15048-3MS	372675	8.51	664747	9.37	366881	12.60	307572	15.16	139437	6.13
MC15048-3MSD	392141	8.51	695190	9.37	381673	12.60	311967	15.16	152980	6.13
ZZZZZZ	355299	8.51	637229	9.37	324322	12.61	246703	15.17	132164	6.13
ZZZZZZ	339421	8.51	610716	9.37	309522	12.61	232723	15.17	128773	6.13
ZZZZZZ	351357	8.51	628253	9.37	317873	12.61	239495	15.17	114876	6.13
ZZZZZZ	351682	8.51	622904	9.37	317531	12.61	239122	15.17	97348	6.12
ZZZZZZ	333215	8.51	603246	9.37	307943	12.61	231232	15.17	102433	6.13
ZZZZZZ	318209	8.51	571249	9.37	291160	12.61	219363	15.17	85205	6.13
ZZZZZZ	337370	8.51	605892	9.37	309443	12.61	230578	15.17	88979	6.13
MC14814-1	325108	8.51	584046	9.37	298893	12.61	222499	15.17	84962	6.13
ZZZZZZ	318097	8.51	576869	9.37	293712	12.61	219390	15.17	83426	6.13
ZZZZZZ	333227	8.51	602115	9.37	304006	12.61	225646	15.17	93376	6.13
ZZZZZZ	368577	8.51	652739	9.37	345137	12.61	295139	15.16	118906	6.13
ZZZZZZ	425151	8.51	752831	9.37	390785	12.61	314695	15.16	110872	6.12
ZZZZZZ	451076	8.51	793203	9.37	399063	12.61	309670	15.16	127811	6.12

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.1
6

Volatile Internal Standard Area Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSV520-CC436	Injection Date:	10/24/12
Lab File ID:	V12664.D	Injection Time:	07:34
Instrument ID:	GCMSV	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	515417	6.51	803405	7.70	471796	11.06	438254	13.30	119258	3.47
Upper Limit ^a	1030834	7.01	1606810	8.20	943592	11.56	876508	13.80	238516	3.97
Lower Limit ^b	257709	6.01	401703	7.20	235898	10.56	219127	12.80	59629	2.97

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSV520-BS	515417	6.51	803405	7.70	471796	11.06	438254	13.30	119258	3.47
MSV520-BSD	512167	6.51	858439	7.70	482676	11.06	443287	13.30	123442	3.47
MSV520-MB	587470	6.51	888012	7.70	489344	11.06	441026	13.30	131001	3.47
ZZZZZZ	578101	6.51	949886	7.70	477016	11.06	444699	13.30	129182	3.47
ZZZZZZ	587464	6.51	954905	7.70	527531	11.06	469316	13.30	124673	3.46
ZZZZZZ	518630	6.51	863423	7.70	473552	11.06	441686	13.30	118319	3.47
ZZZZZZ	532904	6.51	855207	7.70	525838	11.06	431315	13.30	130581	3.47
ZZZZZZ	536468	6.51	872103	7.70	484871	11.06	451900	13.30	127173	3.46
ZZZZZZ	526662	6.51	845019	7.70	462623	11.06	416981	13.30	129235	3.47
ZZZZZZ	556229	6.51	915035	7.70	488780	11.06	435555	13.30	124285	3.47
ZZZZZZ	554890	6.52	928179	7.71	509495	11.07	456813	13.30	188174	3.49
ZZZZZZ	565089	6.52	927273	7.71	511170	11.07	453875	13.30	126962	3.48
MC14908-11	556311	6.52	927236	7.71	520987	11.07	446046	13.30	128870	3.48
MC14908-11MS	562979	6.52	936153	7.71	513840	11.07	462203	13.30	123249	3.48
MC14908-11MSD	563231	6.52	944088	7.71	517575	11.07	463510	13.30	132480	3.48
MC14814-1	569483	6.51	954520	7.70	537807	11.07	468979	13.30	129262	3.47
MC14814-2	572668	6.51	956556	7.70	523971	11.07	464371	13.30	130302	3.47
ZZZZZZ	562592	6.51	938643	7.70	519705	11.06	451715	13.30	128118	3.47
ZZZZZZ	563061	6.51	952884	7.71	517234	11.06	454485	13.30	133502	3.47
ZZZZZZ	565964	6.51	975239	7.71	526812	11.07	459301	13.30	190104	3.50
ZZZZZZ	562396	6.51	952367	7.71	518400	11.06	452403	13.30	133646	3.50

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.2

6

Volatile Surrogate Recovery Summary

Job Number: MC14814

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC14814-1	V12681.D	91	101	94
MC14814-1	P65723.D	101	86	113
MC14814-2	V12682.D	93	102	94
MC14814-2	P65709.D	96	85	107
MC14908-11MS	V12679.D	96	102	93
MC14908-11MSD	V12680.D	96	101	95
MC15048-3MS	P65714.D	98	88	104
MC15048-3MSD	P65715.D	98	89	108
MSP2150-BS	P65705.D	100	92	112
MSP2150-MB	P65707.D	98	88	112
MSV520-BS	V12664.D	94	105	90
MSV520-BSD	V12665.D	93	98	87
MSV520-MB	V12667.D	88	94	90

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

GC/MS Semi-volatiles

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MB	F58308.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14814-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	1.2	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.40	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.38	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.37	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	5.0	ug/l	
95-48-7	2-Methylphenol	ND	10	0.60	ug/l	
	3&4-Methylphenol	ND	10	0.75	ug/l	
88-75-5	2-Nitrophenol	ND	10	0.47	ug/l	
100-02-7	4-Nitrophenol	ND	20	2.8	ug/l	
87-86-5	Pentachlorophenol	ND	10	0.64	ug/l	
108-95-2	Phenol	ND	5.0	0.93	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.35	ug/l	
62-53-3	Aniline	ND	10	2.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	0.33	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	0.27	ug/l	
100-51-6	Benzyl Alcohol	ND	10	0.26	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.18	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.38	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.28	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	0.29	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	0.21	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	2.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	0.21	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.89	ug/l	
132-64-9	Dibenzofuran	ND	2.0	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	0.36	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	0.19	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	0.38	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.25	ug/l	

7.1.1
7

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MB	F58308.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14814-1

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	2.0	ug/l	
78-59-1	Isophorone	ND	5.0	0.32	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.23	ug/l	
99-09-2	3-Nitroaniline	ND	10	0.25	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.24	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	0.59	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	0.28	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.44	ug/l	
110-86-1	Pyridine	ND	10	5.0	ug/l	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	38%	15-110%
4165-62-2	Phenol-d5	28%	15-110%
118-79-6	2,4,6-Tribromophenol	85%	15-110%
4165-60-0	Nitrobenzene-d5	75%	30-130%
321-60-8	2-Fluorobiphenyl	68%	30-130%
1718-51-0	Terphenyl-d14	103%	30-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

7.1.1
7

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30652-MB	U10093.D	1	10/15/12	NS	10/12/12	OP30652	MSU545

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC14814-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.013	ug/l	
120-12-7	Anthracene	ND	0.10	0.018	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	0.030	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.017	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.038	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.059	ug/l	
218-01-9	Chrysene	ND	0.10	0.073	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.042	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.033	ug/l	
86-73-7	Fluorene	ND	0.10	0.046	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.046	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	0.14	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.052	ug/l	
85-01-8	Phenanthrene	ND	0.050	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.036	ug/l	

CAS No.	Surrogate Recoveries	Limits	
4165-60-0	Nitrobenzene-d5	76%	30-130%
321-60-8	2-Fluorobiphenyl	71%	30-130%
1718-51-0	Terphenyl-d14	105%	30-130%

7.1.2
7

Blank Spike Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-BS	F58309.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14814-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	34.5	35	30-130
95-57-8	2-Chlorophenol	100	57.1	57	30-130
59-50-7	4-Chloro-3-methyl phenol	100	75.7	76	30-130
120-83-2	2,4-Dichlorophenol	100	68.9	69	30-130
105-67-9	2,4-Dimethylphenol	100	68.2	68	30-130
51-28-5	2,4-Dinitrophenol	100	83.7	84	30-130
534-52-1	4,6-Dinitro-o-cresol	100	97.0	97	30-130
95-48-7	2-Methylphenol	100	54.0	54	30-130
	3&4-Methylphenol	200	107	54	30-130
88-75-5	2-Nitrophenol	100	69.0	69	30-130
100-02-7	4-Nitrophenol	100	37.3	37	30-130
87-86-5	Pentachlorophenol	100	102	102	30-130
108-95-2	Phenol	100	25.6	26* a	30-130
95-95-4	2,4,5-Trichlorophenol	100	76.3	76	30-130
88-06-2	2,4,6-Trichlorophenol	100	75.9	76	30-130
62-53-3	Aniline	50	5.1	10* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	43.5	87	40-140
85-68-7	Butyl benzyl phthalate	50	44.3	89	40-140
100-51-6	Benzyl Alcohol	50	27.0	54	40-140
91-58-7	2-Chloronaphthalene	50	33.6	67	40-140
106-47-8	4-Chloroaniline	50	13.1	26* a	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	29.8	60	40-140
111-44-4	bis(2-Chloroethyl)ether	50	30.4	61	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	34.4	69	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	38.7	77	40-140
122-66-7	1,2-Diphenylhydrazine	50	42.1	84	40-140
121-14-2	2,4-Dinitrotoluene	50	41.9	84	40-140
606-20-2	2,6-Dinitrotoluene	50	39.3	79	40-140
91-94-1	3,3'-Dichlorobenzidine	50	7.0	14* a	40-140
132-64-9	Dibenzofuran	50	35.2	70	40-140
84-74-2	Di-n-butyl phthalate	50	43.2	86	40-140
117-84-0	Di-n-octyl phthalate	50	44.3	89	40-140
84-66-2	Diethyl phthalate	50	38.9	78	40-140
131-11-3	Dimethyl phthalate	50	39.6	79	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.3	93	40-140
118-74-1	Hexachlorobenzene	50	45.7	91	40-140

* = Outside of Control Limits.

7.2.1
7

Blank Spike Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-BS	F58309.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14814-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	25.9	52	40-140
67-72-1	Hexachloroethane	50	24.4	49	40-140
78-59-1	Isophorone	50	36.9	74	40-140
88-74-4	2-Nitroaniline	50	38.0	76	40-140
99-09-2	3-Nitroaniline	50	24.2	48	40-140
100-01-6	4-Nitroaniline	50	34.6	69	40-140
98-95-3	Nitrobenzene	50	34.3	69	40-140
62-75-9	n-Nitrosodimethylamine	50	20.7	41	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	37.8	76	40-140
86-30-6	N-Nitrosodiphenylamine	50	42.4	85	40-140
110-86-1	Pyridine	50	11.8	24* a	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	36%	15-110%
4165-62-2	Phenol-d5	27%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	15-110%
4165-60-0	Nitrobenzene-d5	69%	30-130%
321-60-8	2-Fluorobiphenyl	65%	30-130%
1718-51-0	Terphenyl-d14	101%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

7.2.1
7

Blank Spike Summary

Job Number: MC14814

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30652-BS	U10094.D	1	10/15/12	NS	10/12/12	OP30652	MSU545

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC14814-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	37.9	76	40-140
208-96-8	Acenaphthylene	50	32.3	65	40-140
120-12-7	Anthracene	50	42.3	85	40-140
56-55-3	Benzo(a)anthracene	50	49.6	99	40-140
50-32-8	Benzo(a)pyrene	50	42.1	84	40-140
205-99-2	Benzo(b)fluoranthene	50	46.6	93	40-140
191-24-2	Benzo(g,h,i)perylene	50	45.3	91	40-140
207-08-9	Benzo(k)fluoranthene	50	48.9	98	40-140
218-01-9	Chrysene	50	45.4	91	40-140
53-70-3	Dibenzo(a,h)anthracene	50	47.3	95	40-140
206-44-0	Fluoranthene	50	46.1	92	40-140
86-73-7	Fluorene	50	42.6	85	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	46.6	93	40-140
90-12-0	1-Methylnaphthalene	50	34.4	69	40-140
91-57-6	2-Methylnaphthalene	50	30.0	60	40-140
85-01-8	Phenanthrene	50	44.1	88	40-140
129-00-0	Pyrene	50	44.5	89	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	68%	30-130%
321-60-8	2-Fluorobiphenyl	68%	30-130%
1718-51-0	Terphenyl-d14	103%	30-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MS	F58310.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
OP30651-MSD	F58311.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
MC15000-7	F58312.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14814-1

CAS No.	Compound	MC15000-7 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	29.4	29* a	100	38.0	38	26* b	30-130/20
95-57-8	2-Chlorophenol	ND	100	62.8	63	100	58.7	59	7	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	79.7	80	100	82.3	82	3	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	74.1	74	100	69.8	70	6	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	72.5	73	100	68.5	69	6	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	81.0	81	100	89.9	90	10	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	95.9	96	100	100	100	4	30-130/20
95-48-7	2-Methylphenol	ND	100	66.1	66	100	62.2	62	6	30-130/20
	3&4-Methylphenol	ND	200	134	67	200	131	66	2	30-130/20
88-75-5	2-Nitrophenol	ND	100	72.7	73	100	67.0	67	8	30-130/20
100-02-7	4-Nitrophenol	ND	100	44.7	45	100	49.9	50	11	30-130/20
87-86-5	Pentachlorophenol	ND	100	109	109	100	112	112	3	30-130/20
108-95-2	Phenol	ND	100	36.9	37	100	38.2	38	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	77.7	78	100	78.7	79	1	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	80.3	80	100	79.0	79	2	30-130/20
62-53-3	Aniline	ND	50	10.5	21* a	50	4.8	10* a	75* b	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	43.2	86	50	43.1	86	0	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	43.1	86	50	44.3	89	3	40-140/20
100-51-6	Benzyl Alcohol	ND	50	28.5	57	50	27.0	54	5	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	36.5	73	50	34.5	69	6	40-140/20
106-47-8	4-Chloroaniline	ND	50	30.7	61	50	5.3	11* a	141* b	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	32.1	64	50	28.6	57	12	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	33.6	67	50	29.4	59	13	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	36.9	74	50	32.9	66	11	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	38.9	78	50	39.3	79	1	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	42.1	84	50	40.5	81	4	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	41.5	83	50	42.7	85	3	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	39.0	78	50	39.4	79	1	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	28.1	56	50	ND	0* a	200* b	40-140/20
132-64-9	Dibenzofuran	0.41	50	36.7	73	50	36.9	73	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	41.1	82	50	42.4	85	3	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	39.9	80	50	45.1	90	12	40-140/20
84-66-2	Diethyl phthalate	ND	50	39.3	79	50	40.4	81	3	40-140/20
131-11-3	Dimethyl phthalate	ND	50	39.5	79	50	39.7	79	1	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	43.5	87	50	45.4	91	4	40-140/20
118-74-1	Hexachlorobenzene	ND	50	44.8	90	50	44.6	89	0	40-140/20

* = Outside of Control Limits.

7.3.1
7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MS	F58310.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
OP30651-MSD	F58311.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
MC15000-7	F58312.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples:

Method: SW846 8270C

MC14814-1

CAS No.	Compound	MC15000-7 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	30.1	60	50	28.9	58	4	40-140/20
67-72-1	Hexachloroethane	ND	50	28.2	56	50	26.2	52	7	40-140/20
78-59-1	Isophorone	ND	50	38.4	77	50	35.3	71	8	40-140/20
88-74-4	2-Nitroaniline	ND	50	37.9	76	50	39.6	79	4	40-140/20
99-09-2	3-Nitroaniline	ND	50	31.9	64	50	3.7	7* a	158* b	40-140/20
100-01-6	4-Nitroaniline	ND	50	35.8	72	50	18.3	37* a	65* b	40-140/20
98-95-3	Nitrobenzene	ND	50	35.5	71	50	32.0	64	10	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	23.2	46	50	20.4	41	13	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	40.0	80	50	37.3	75	7	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	45.0	90	50	40.7	81	10	40-140/20
110-86-1	Pyridine	ND	50	19.1	38* a	50	ND	0* a	200* b	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC15000-7	Limits
367-12-4	2-Fluorophenol	40%	39%	43%	15-110%
4165-62-2	Phenol-d5	38%	41%	32%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	94%	100%	15-110%
4165-60-0	Nitrobenzene-d5	73%	65%	76%	30-130%
321-60-8	2-Fluorobiphenyl	71%	65%	72%	30-130%
1718-51-0	Terphenyl-d14	63%	73%	72%	30-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

7.3.1
7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30652-MS	U10095.D	1	10/15/12	NS	10/12/12	OP30652	MSU545
OP30652-MSD	U10096.D	1	10/15/12	NS	10/12/12	OP30652	MSU545
MC14797-5	U10097.D	1	10/15/12	NS	10/12/12	OP30652	MSU545

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC14814-1

CAS No.	Compound	MC14797-5 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.33	54.9	43.4	78	54.9	40.9	74	6	40-140/20
208-96-8	Acenaphthylene	ND	54.9	36.4	66	54.9	34.7	63	5	40-140/20
120-12-7	Anthracene	ND	54.9	45.8	83	54.9	46.1	84	1	40-140/20
56-55-3	Benzo(a)anthracene	ND	54.9	53.5	97	54.9	55.8	102	4	40-140/20
50-32-8	Benzo(a)pyrene	ND	54.9	44.7	81	54.9	45.3	82	1	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	54.9	49.1	89	54.9	50.4	92	3	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	54.9	47.3	86	54.9	48.1	88	2	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	54.9	50.6	92	54.9	53.5	97	6	40-140/20
218-01-9	Chrysene	ND	54.9	47.7	87	54.9	50.3	92	5	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	54.9	49.1	89	54.9	51.1	93	4	40-140/20
206-44-0	Fluoranthene	ND	54.9	49.5	90	54.9	51.2	93	3	40-140/20
86-73-7	Fluorene	1.3	54.9	48.6	86	54.9	47.5	84	2	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	54.9	48.6	88	54.9	49.9	91	3	40-140/20
90-12-0	1-Methylnaphthalene	ND	54.9	44.1	80	54.9	41.4	75	6	40-140/20
91-57-6	2-Methylnaphthalene	ND	54.9	35.0	64	54.9	33.2	60	5	40-140/20
85-01-8	Phenanthrene	ND	54.9	47.8	87	54.9	48.6	88	2	40-140/20
129-00-0	Pyrene	ND	54.9	47.5	86	54.9	49.7	90	5	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC14797-5	Limits
4165-60-0	Nitrobenzene-d5	71%	64%	75%	30-130%
321-60-8	2-Fluorobiphenyl	73%	67%	76%	30-130%
1718-51-0	Terphenyl-d14	68%	78%	77%	30-130%

* = Outside of Control Limits.

7.3.2
7

Semivolatile Internal Standard Area Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSF2755-CC2737	Injection Date:	10/15/12
Lab File ID:	F58307.D	Injection Time:	08:24
Instrument ID:	GCMSF	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	459439	3.58	1696151	4.56	1071737	5.98	2294908	7.27	2619128	10.06	2404644	11.48
Upper Limit ^a	918878	4.08	3392302	5.06	2143474	6.48	4589816	7.77	5238256	10.56	4809288	11.98
Lower Limit ^b	229720	3.08	848076	4.06	535869	5.48	1147454	6.77	1309564	9.56	1202322	10.98

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30651-MB	391684	3.59	1393872	4.56	893215	5.98	1736413	7.27	1969159	10.05	2034369	11.47
OP30651-BS	389638	3.58	1396384	4.56	920783	5.98	1750754	7.27	2008946	10.05	1984144	11.48
OP30651-MS	390103	3.59	1388703	4.57	900318	5.98	1719234	7.27	1956529	10.05	2036243	11.48
OP30651-MSD	374782	3.59	1345938	4.57	872095	5.98	1711043	7.27	1946550	10.05	1843361	11.48
MC15000-7	386893	3.58	1397074	4.56	902351	5.98	1694053	7.27	2001136	10.05	2107696	11.47
MC14814-1	396202	3.58	1424840	4.56	930703	5.98	1780028	7.27	2064714	10.05	2095263	11.47
OP30661-MB	396828	3.58	1419239	4.56	945627	5.98	1840034	7.27	2098936	10.05	2137934	11.47
OP30661-BS	415441	3.59	1465176	4.57	935334	5.98	1796813	7.27	1986028	10.05	2054690	11.47
OP30661-MS	425016	3.59	1485416	4.56	955113	5.98	1753909	7.27	1990542	10.05	2097153	11.48
OP30661-MSD	401018	3.59	1447308	4.56	919316	5.98	1742324	7.27	1965856	10.05	2122205	11.48
MC14826-2	428178	3.59	1534378	4.56	1003681	5.98	1846409	7.27	2092120	10.05	2178194	11.48
ZZZZZZ	393483	3.59	1446441	4.57	956348	5.98	1784108	7.27	2017214	10.05	2107297	11.47
ZZZZZZ	412916	3.58	1510520	4.56	1022145	5.98	1863645	7.27	2105439	10.05	2210416	11.48
ZZZZZZ	429294	3.59	1561407	4.56	1028801	5.98	1966191	7.27	2232649	10.05	2295561	11.48
ZZZZZZ	425412	3.59	1549570	4.56	1016351	5.98	1900337	7.27	1412471	10.05	1117043 ^c	11.48
ZZZZZZ	382014	3.59	1398176	4.57	924752	5.98	1759978	7.27	2025859	10.05	2148115	11.47
ZZZZZZ	388907	3.59	1412885	4.56	911235	5.98	1712261	7.27	1963070	10.05	2127308	11.47
ZZZZZZ	397436	3.58	1414010	4.56	896455	5.98	1690364	7.27	1986914	10.05	2141765	11.48
ZZZZZZ	412870	3.58	1450050	4.56	923446	5.98	1674245	7.27	2022463	10.05	2277122	11.48
ZZZZZZ	398298	3.59	1437955	4.56	932570	5.98	1682655	7.27	2030178	10.05	2233611	11.47
ZZZZZZ	377605	3.59	1340847	4.56	855191	5.98	1572488	7.27	1933035	10.05	2115139	11.47
ZZZZZZ	400717	3.59	1490493	4.56	959111	5.98	1765968	7.27	2153207	10.05	2371669	11.47
ZZZZZZ	369236	3.59	1308210	4.57	842179	5.98	1551530	7.27	1814310	10.05	2051473	11.48
ZZZZZZ	389393	3.59	1384377	4.56	912751	5.98	1710505	7.27	2022585	10.05	2199187	11.47
ZZZZZZ	385587	3.59	1412408	4.56	924501	5.98	1790093	7.27	2087161	10.05	2240685	11.47
ZZZZZZ	382746	3.59	1376736	4.56	894853	5.98	1700631	7.27	2026113	10.05	2183619	11.47
ZZZZZZ	373527	3.58	1350485	4.56	881038	5.98	1668688	7.27	1997469	10.05	2170904	11.47
ZZZZZZ	390374	3.59	1386039	4.56	902994	5.98	1749305	7.27	2070646	10.05	2251856	11.48
ZZZZZZ	385944	3.59	1354698	4.56	880355	5.98	1680967	7.27	1979909	10.05	2166178	11.47
ZZZZZZ	405365	3.58	1444991	4.57	926678	5.98	1766916	7.27	2176783	10.07	2127012	11.52
ZZZZZZ	452404	3.59	1652525	4.57	1090114	5.98	2056333	7.27	1552834	10.05	1273834	11.47
ZZZZZZ	423447	3.58	1537669	4.57	983515	5.98	1789877	7.27	1413434	10.05	1202116 ^c	11.47

IS 1 = 1,4-Dichlorobenzene-d4
 IS 2 = Naphthalene-d8

7.4.1
7

Semivolatile Internal Standard Area Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSF2755-CC2737	Injection Date:	10/15/12
Lab File ID:	F58307.D	Injection Time:	08:24
Instrument ID:	GCMSF	Method:	SW846 8270C

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA RT	AREA RT	AREA RT	AREA RT	AREA RT	AREA RT

IS 3 = Acenaphthene-D10
 IS 4 = Phenanthrene-d10
 IS 5 = Chrysene-d12
 IS 6 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

7.4.1
7

Semivolatile Internal Standard Area Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSU545-ICC545	Injection Date:	10/15/12
Lab File ID:	U10083.D	Injection Time:	15:02
Instrument ID:	GCMSU	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	149758	3.86	473867	4.84	247760	6.26	417287	7.60	275067	10.38	422447	11.83
Upper Limit ^a	299516	4.36	947734	5.34	495520	6.76	834574	8.10	550134	10.88	844894	12.33
Lower Limit ^b	74879	3.36	236934	4.34	123880	5.76	208644	7.10	137534	9.88	211224	11.33

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP30652-MB	147063	3.86	462167	4.84	244763	6.26	415210	7.60	290955	10.38	452330	11.83
OP30652-BS	149265	3.86	462771	4.84	244690	6.26	422317	7.60	278521	10.38	419999	11.83
OP30652-MS	144327	3.86	453715	4.84	234091	6.26	402449	7.60	277351	10.38	430251	11.83
OP30652-MSD	144293	3.86	458117	4.84	242137	6.26	419293	7.60	291373	10.38	418461	11.83
MC14797-5	147693	3.86	468385	4.84	241349	6.26	410611	7.60	297798	10.38	450471	11.83
MC14814-1	148151	3.86	475444	4.84	250069	6.26	424740	7.60	298407	10.38	459584	11.83
ZZZZZZ	136555	3.86	433877	4.84	229735	6.26	393985	7.59	278483	10.37	420872	11.83
ZZZZZZ	151749	3.86	476641	4.84	251321	6.26	423639	7.60	307442	10.38	466269	11.83
ZZZZZZ	140700	3.86	443090	4.84	235300	6.26	398278	7.60	278061	10.38	424447	11.83
ZZZZZZ	154183	3.86	487941	4.84	262749	6.26	447321	7.59	317733	10.38	476839	11.83
ZZZZZZ	146226	3.86	463921	4.84	247707	6.26	419619	7.60	296874	10.38	452102	11.83
ZZZZZZ	147917	3.86	464896	4.84	245672	6.26	425800	7.60	301142	10.38	455943	11.83
ZZZZZZ	142307	3.86	443743	4.84	234854	6.26	399719	7.60	282947	10.38	434151	11.83
ZZZZZZ	143277	3.86	446178	4.84	235463	6.26	400204	7.60	280332	10.38	420271	11.83
ZZZZZZ	148540	3.86	469790	4.84	248208	6.26	419433	7.60	296812	10.38	452582	11.83
ZZZZZZ	155480	3.86	480990	4.84	258658	6.26	443638	7.60	306582	10.38	465549	11.83
ZZZZZZ	148704	3.86	458495	4.84	246421	6.26	420184	7.60	292212	10.38	445676	11.83
ZZZZZZ	154785	3.86	482535	4.84	259773	6.26	436174	7.60	309002	10.38	465861	11.83
ZZZZZZ	155078	3.86	489000	4.84	258295	6.26	434410	7.60	313657	10.38	476085	11.83

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

7.4.2
7

Semivolatile Surrogate Recovery Summary

Job Number: MC14814

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC14814-1	F58313.D	42	38	95	80	76	71
OP30651-BS	F58309.D	36	27	94	69	65	101
OP30651-MB	F58308.D	38	28	85	75	68	103
OP30651-MS	F58310.D	40	38	94	73	71	63
OP30651-MSD	F58311.D	39	41	94	65	65	73

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

7.5.1
7

Semivolatile Surrogate Recovery Summary

Job Number: MC14814

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC14814-1	U10098.D	78	78	76
OP30652-BS	U10094.D	68	68	103
OP30652-MB	U10093.D	76	71	105
OP30652-MS	U10095.D	71	73	68
OP30652-MSD	U10096.D	64	67	78

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

7.5.2

7

GC Volatiles

QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

Method Blank Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MB	BK17933.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14814-1, MC14814-3

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	Bromofluorobenzene (S)	93%	36-173%
460-00-4	Bromofluorobenzene (S)	88%	36-173%

8.1.1
8

Blank Spike Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-BS	BK17934.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples:

Method: SW846 8011

MC14814-1, MC14814-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.054	76	60-140
106-93-4	1,2-Dibromoethane	0.071	0.060	85	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	91%	36-173%
460-00-4	Bromofluorobenzene (S)	84%	36-173%

8.2.1
8

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MS	BK17936.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
OP30666-MSD	BK17937.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
MC14930-4	BK17938.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples:

Method: SW846 8011

MC14814-1, MC14814-3

CAS No.	Compound	MC14930-4 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.058	82	0.071	0.054	76	7	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.069	97	0.071	0.067	94	3	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC14930-4	Limits
460-00-4	Bromofluorobenzene (S)	96%	90%	94%	36-173%
460-00-4	Bromofluorobenzene (S)	87%	78%	84%	36-173%

8.3.1
8

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC14814

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
MC14814-1	BK17943.D	87	70
MC14814-3	BK17944.D	96	85
OP30666-BS	BK17934.D	91	84
OP30666-MB	BK17933.D	93	88
OP30666-MS	BK17936.D	96	87
OP30666-MSD	BK17937.D	90	78

Surrogate Compounds Recovery Limits

S1 = Bromofluorobenzene (S) 36-173%

(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

GC Surrogate Retention Time Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17924.D	Injection Time:	06:57
Instrument ID:	GCBK	Method:	SW846 8011

S1^a S1^b
 RT RT

Check Std	4.70	4.91
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
MC14800-5	BK17925.D	10/18/12	07:21	4.70	4.91
ZZZZZZ	BK17926.D	10/18/12	07:45	4.70	4.91
ZZZZZZ	BK17927.D	10/18/12	08:10	4.70	4.91
ZZZZZZ	BK17928.D	10/18/12	08:34	4.70	4.91
ZZZZZZ	BK17929.D	10/18/12	08:58	4.70	4.91
ZZZZZZ	BK17930.D	10/18/12	09:36	4.70	4.91
ZZZZZZ	BK17931.D	10/18/12	10:01	4.70	4.91
ZZZZZZ	BK17932.D	10/18/12	10:25	4.70	4.91
OP30666-MB	BK17933.D	10/18/12	10:50	4.70	4.91
OP30667-MB	BK17933A.D	10/18/12	10:50	4.70	4.91
OP30666-BS	BK17934.D	10/18/12	11:14	4.70	4.91
OP30667-BS	BK17934A.D	10/18/12	11:14	4.70	4.91

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

8.5.1
8

GC Surrogate Retention Time Summary

Job Number: MC14814
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17935.D	Injection Time:	11:39
Instrument ID:	GCBK	Method:	SW846 8011

S1^a S1^b
 RT RT

Check Std	4.70	4.91
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP30666-MS	BK17936.D	10/18/12	12:04	4.70	4.91
OP30667-MS	BK17936A.D	10/18/12	12:04	4.70	4.91
OP30666-MSD	BK17937.D	10/18/12	12:29	4.70	4.91
OP30667-MSD	BK17937A.D	10/18/12	12:29	4.70	4.91
MC14930-4	BK17938.D	10/18/12	12:54	4.70	4.91
MC14930-3	BK17938A.D	10/18/12	12:54	4.70	4.91
ZZZZZZ	BK17939.D	10/18/12	13:19	4.70	4.91
ZZZZZZ	BK17940.D	10/18/12	13:44	4.70	4.91
ZZZZZZ	BK17941.D	10/18/12	14:09	4.70	4.91
ZZZZZZ	BK17942.D	10/18/12	14:33	4.70	4.91
MC14814-1	BK17943.D	10/18/12	14:57	4.70	4.91
MC14814-3	BK17944.D	10/18/12	15:22	4.70	4.91
ZZZZZZ	BK17945.D	10/18/12	15:47	4.70	4.91

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

8.5.2
8