URS

May 22, 2013

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

RE: 1191150002 – Madison County
Equilon Enterprises LLC d/b/a Shell Oil Products US
Log No. B-43R-CA-25
Addendum to Monitoring Well and Vapor Monitoring Point Installation Report – Supplemental Investigation Activities
Roxana, Illinois

Dear Mr. Nightingale;

URS Corporation (URS), on behalf of Shell Oil Products US (SOPUS), recently conducted additional groundwater monitoring well installation activities in the Village of Roxana, Illinois, supplemental to the work reported in the *Monitoring Well and Vapor Monitoring Point Installation Report* ("Report") dated April 3, 2013. This addendum to the referenced Report presents a discussion of the supplemental investigation activities and results.

1.0 BACKGROUND

Based upon observations in the field during the installation activities for groundwater monitoring well MW-22, located at the approximate mid-point of East 4th Street between Chaffer Avenue and Route 111, and upon review of data, a step-out groundwater monitoring well was installed near the western end of East 4th Street near Route 111 (**Figure 1**).

1001 Highland Plaza Drive West, Suite 300
St. Louis, MO 63110
Phone: 314.429.0100
Fax: 314.429.0462

The work was performed in accordance with the First Addendum to the access agreement between the Village of Roxana and SOPUS, which was signed by the Village of Roxana on February 21, 2013 and was signed by SOPUS on February 25, 2013.

2.0 INVESTIGATION ACTIVITIES

The supplemental field investigation was performed in accordance with previously approved investigation procedures[1] and the IEPA conditions requiring the work outlined in the Report. The field activities were conducted in March 2013. The following subsections provide a brief description of the data collection activities that were performed. A more detailed explanation of the procedures for each of the activities can be found in Section 2 of the referenced Report.

Figure 1 shows the supplemental investigation location.

2.1 PRE-FIELD ACTIVITIES AND BOREHOLE CLEARANCE

Prior to the start of work, the investigation location was marked in the field with spray paint. A utility locate was arranged using Illinois' Joint Utility Locating Information for Excavators (JULIE) service. While JULIE provided identification of public utility lines, Roberts Environmental Drilling, Inc. (REDI) of Millstadt, Illinois was contracted to perform private utility locating services using ground penetrating radar (GPR) and electromagnetic (EM) technologies at the location.

Borehole clearance via an air-vacuum system (air-knife) operated by REDI was used to clear the location to a depth of 10 feet with respect to underground utility lines or other obstructions.

Subsurface material observations were made during borehole clearance activities by advancing a hand auger prior to air-knifing to collect grab samples to field-screen and classify the soil. An iterative process was used. A soil sample was collected via hand auger, the air knife advanced the borehole approximately one foot, another soil sample

[1] Investigation procedures previously approved by the Illinois Environmental Protection Agency (IEPA) can be found in the *Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation Report* dated February 2012, as well as subsequent correspondence and submittals.

was collected using the hand auger, and so forth. These observations were noted on the soil boring logs.

2.2 DRILLING AND SOIL SAMPLING

Drilling and soil sampling was performed by REDI with a CME-75 drill rig using 4.25-inch inside diameter hollow stem augers. Soil sampling was conducted via a split spoon sampler advanced in two-foot increments just below the lead auger. The subsurface stratigraphy was continuously logged by a qualified field scientist in accordance with applicable ASTM standards and the Unified Soil Classification System (USCS). The field scientist noted soil attributes such as color, particle size, consistency, moisture content, structure, plasticity, odor (if obvious), and organic content (if visible). Soil samples were screened in the field using a photoionization detector (PID) and observations were noted on the soil boring logs. The soil boring was advanced to a depth of 50 feet below ground surface (bgs). The soil boring log is included in **Attachment A**.

Three discrete soil samples were collected from the boring for analysis of volatile organic compounds (VOCs) based on field headspace readings and/or visual observations. The soil samples for laboratory analysis were separate from those used for the various field screening tests and were not composited prior to sample collection.

2.3 MONITORING WELL INSTALLATION AND DEVELOPMENT

Upon completion of soil sample collection, a groundwater monitoring well was installed through the augers. The well was constructed using a 2-inch diameter Schedule 40 PVC casing, with a 10-foot section of 0.010-inch slotted PVC well screen. The well screen was set at a similar depth with respect to the groundwater table as other monitoring wells in the project area, such that a portion of the screen extended above the current groundwater surface. The sand pack consisted of a combination of placed and native sand in the annular space, and extended to approximately 2 feet above the top of the well screen. A bentonite seal about 3 feet thick was placed above the sand pack. The borehole annulus was then grouted to the surface with cement-bentonite grout. A surface completion, including a locking expandable cap and flush-mount protector, was added. The groundwater monitoring well completion information for MW-24 is shown on the following page. The well construction diagram is provided in **Attachment A**.

Well ID	Top of Casing Elev. (ft MSL[1])	Ground Surface Elev. (ft MSL)	Height above Ground Surface (ft btoc[2])	Total Well Depth (ft btoc)	Bottom of Well Elev. (ft MSL)	Screened Interval	
						(ft btoc)	Elev. (ft MSL)
MW-24	443.42	443.80	-0.38	49.90	393.52	39.65-49.65	403.77-393.77

[1] MSL – Mean Sea Level
[2] btoc – below top of casing

Once the groundwater monitoring well installation was complete, the well was developed in order to remove fines from the screen and sand pack. The well was developed by surging and pumping throughout the screened zone with a high-flow submersible pump. No water was introduced during drilling throughout or above the screened zone. Approximately 30 gallons of water were removed during development, which represents approximately 29 well volumes of water. Development continued until the water being removed was visually sediment-free. The well development field sheet is provided in **Attachment A**.

2.4 SAMPLE HANDLING AND LABORATORY TESTING

Sample handling and laboratory testing were performed according to the procedures outlined in the Report.

Soil samples were collected in laboratory-supplied containers, labeled in the field and information was recorded on the chain of custody (COC) form at the time of collection. The COC can be found with the analytical report in **Attachment B**.

Upon collection and labeling, sample containers were immediately placed inside an iced cooler, packed in such a way as to prevent breakage and maintain an inside temperature at or below 4°C. The samples were then delivered via overnight courier, under the proper COC documentation, to the laboratory for analysis.

A total of 6 soil (3 investigative soil samples, 1 field duplicate soil sample, 1 soil matrix spike and matrix spike duplicate (MS/MSD)), 1 aqueous field equipment blank, and 1 aqueous trip blank set) were prepared and sent to Accutest Laboratories in Marlborough,

Massachusetts. Samples were analyzed for volatile organic compounds (VOCs) by USEPA SW846 Methods 8260B and 8011.

2.5 Health & Safety, Decontamination, & Investigation Derived Waste

This supplemental work was performed in general accordance with the health and safety practices as described in the Report.

Decontamination was also performed according to the procedures outlined in the Report.

Investigation derived waste (IDW), including soil cuttings, personal protective equipment (PPE) and expendable materials, and decontamination and development water were collected and disposed of properly. Expendable materials (e.g., disposal sampling equipment such as gloves) having a low probability of impact were collected in trash bags and disposed of as municipal waste. Soil cuttings from the boring and one other drilling location performed concurrently in the Village were collected and placed directly in a labeled and covered roll-off and managed by URS on behalf of SOPUS. Decontamination water generated and groundwater from development activities was collected and staged at the Village of Roxana Public Works Yard in 55-gallon steel drums prior to disposal.

Soil cuttings were disposed under an existing profile at the Waste Management, Inc. Milam Recycling and Disposal Facility (Milam) in Fairmont City, Illinois. Decontamination water and groundwater were disposed under an existing profile at the Heritage Environmental Services, LLC facility in Indianapolis, Indiana.

3.0 SOIL SAMPLING RESULTS

The results of the supplemental investigation activities are described in the subsections below.

3.1 Data Quality Review and Data Management

URS conducted an independent Level III review of the analytical data following procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 2008). Qualifiers were assigned to the data when results from the review were outside control limits. These qualifiers are

included in the data table (**Table 1**) and were manually transcribed on the laboratory results pages (included in **Attachment B**).

Based on laboratory control/laboratory control duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), surrogate, holding time, and field duplicate criteria, the soil results reported were accepted for their intended use.

URS data reviews are included with the analytical data reports in **Attachment B**.

Field data and documentation collected as part of this supplemental scope of work became part of the project file. URS maintains the project file for the site, including relevant records, logs, field logbooks, subcontractor reports, data reviews, and the database management system.

3.2 SOIL SAMPLING RESULTS

A tabular summary of the analytical detections for the soil samples collected during the supplemental groundwater monitoring well installation activities is presented in **Table 1. Attachment B** contains the URS data reviews and laboratory report with chain of custody for the MW-24 related soil data.

4.0 CONCLUSIONS

URS conducted a groundwater monitoring well installation supplemental subsurface investigation on behalf of SOPUS in the Village of Roxana. Well MW-24 will be integrated into the groundwater monitoring program.

If there are any questions on the information contained in this report, please do not hesitate to contact me (314-429-0100) or Kevin Dyer (SOPUS) (618-288-7237).

Sincerely,
URS Corporation, on behalf of Shell Oil Products US

Wendy Pennington
Staff Engineer

Robert B. Billman
Senior Project Manager

Enclosures: **Table 1** Summary of Supplemental Soil Analytical Detections
Figure 1 Groundwater Monitoring Well Location Map
Attachment A Soil Boring Log, Groundwater Monitoring Well Construction Diagram, Groundwater Monitoring Well Development Form
Attachment B Data Review Sheets and Laboratory Analytical Reports

cc: Amy Boley, IEPA
Kevin Dyer, SOPUS
Shannon Haney, Greensfelder, Hemker & Gale (2 copies)
Repositories (Village Hall, Public Library, Website)
Project File

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:

3.0 OPERATOR INFORMATION

Equilon Enterprises LLC d/b/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): Addendum to Groundwater Monitoring Well and Vapor Monitoring Point Installation Report – Supplemental Investigation Activities

IEPA Permit Log No. B-43R
Date of Last IEPA Letter on Project April 8, 2013
Log No. of Last IEPA Letter on Project B-43R-CA-25

Date of Submittal 5-22-13

Does this submittal include groundwater information: ☒ Yes ☐ No

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

Report describing the installation of groundwater monitoring wells supplemental activities

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

RCRA Corrective Action Certification, and Addendum to Groundwater Monitoring Well and Vapor Monitoring Point Installation Report – Supplemental Investigation Activities

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.

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 E. Allyn 5/22/13 (Date)

Title: 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: _____ Date: 5/22/13

Professional's Name: Robert B. Billman

Professional's Address: URS Corporation

1001 Highlands Plaza Drive West

St. Louis, MO 63110

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

Professional's Seal:

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

Mailing Address of Laboratory

495 Technology Center West

Marlborough, Massachusetts 01752

4-30-13

Signature of Laboratory Responsible Officer — Date

Reza Tand / Director

Name and Title of Laboratory Responsible Officer

Table 1
Summary of Supplemental Soil Analytical Detections

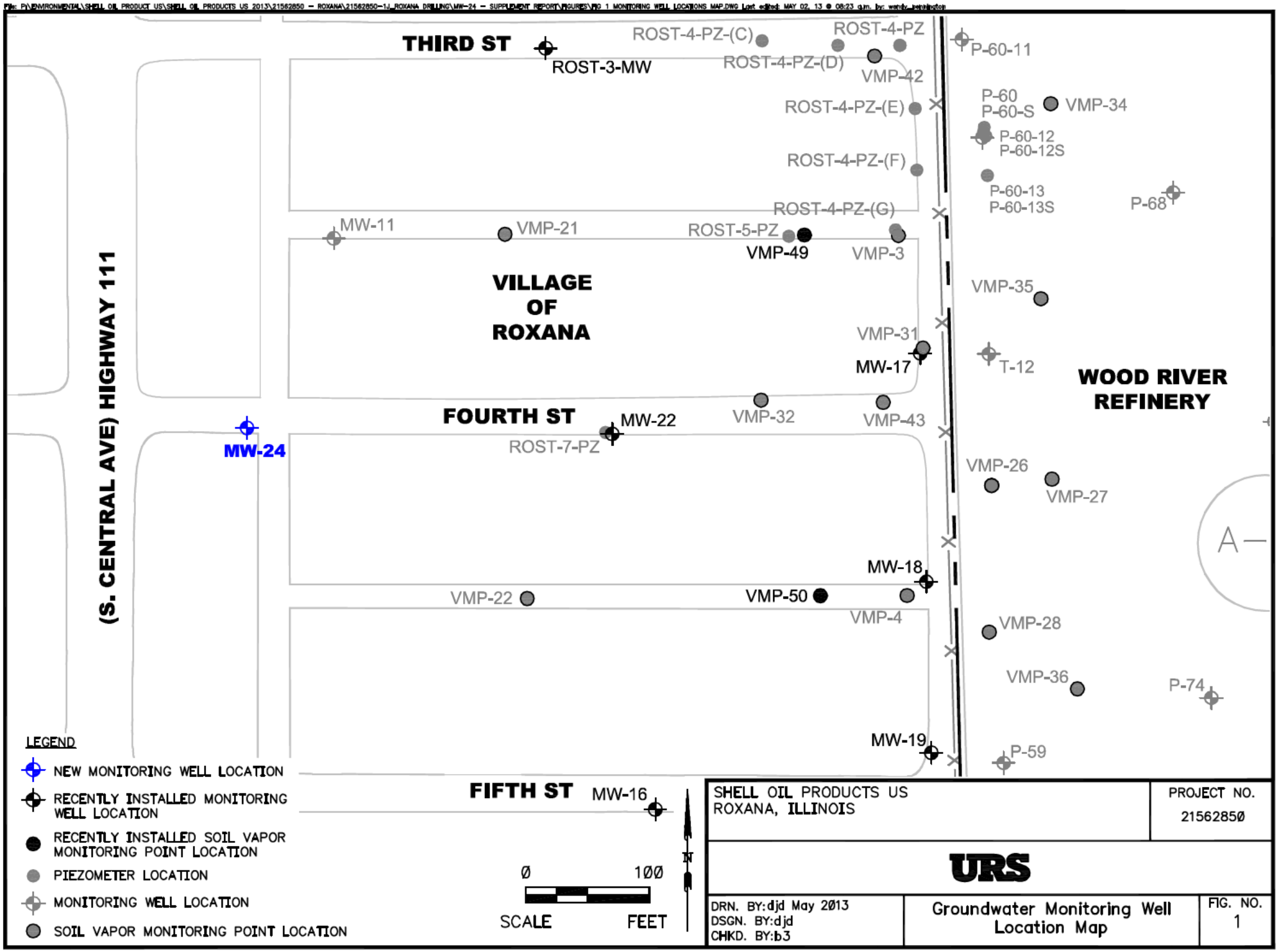
Location	Sample ID	Depth	Sample Date	Benzene			Ethylbenzene			Toluene		
				Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals
MW-24	MW-24-12	12 ft	3/7/2013	< 0.00059	U		< 0.0024	U		< 0.0059	U	
	MW-24-25	25 ft	3/7/2013	0.0012			0.0023	J		0.0028	J	
	MW-24-47	47 ft	3/7/2013	0.0014			0.0021	J		0.0026	J	
	MW-24-47-DUP	47 ft	3/7/2013	0.0012			0.0013	J		0.0018	J	

Location	Sample ID	Depth	Sample Date	Acetone			Carbon disulfide			Chloroform			Dichloromethane (Methylene chloride)		
				Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals
MW-24	MW-24-12	12 ft	3/7/2013	0 056		UJ	< 0.0059	U		0.0012	J		0.0031		U
	MW-24-25	25 ft	3/7/2013	< 0 006	U	UJ	0.0058	J		< 0.0024	U		0.0037		U
	MW-24-47	47 ft	3/7/2013	< 0.0057	U	UJ	< 0.0057	U		< 0.0023	U		< 0.0023	U	
	MW-24-47-DUP	47 ft	3/7/2013	< 0.0057	U	UJ	< 0.0057	U		< 0.0023	U		0.0032		U

NOTES:

Lab Qualifiers
J = Estimated value; results between the MDL and RL
U = Compound analyzed for but not detected above the RL

URS Qualifiers
R = Indicates analyte result was rejected
J = Estimated detection
UJ = Estimated non-detect
U = Non-detect, e.g. blank contamination


THIRD ST
ROST-3-MW
ROST-4-PZ-(C)
ROST-4-PZ
ROST-4-PZ-(D)
VMP-42
P-60-11
ROST-4-PZ-(E)
P-60
P-60-S
VMP-34
P-60-12
P-60-12S
ROST-4-PZ-(F)
P-60-13
P-60-13S
P-68
ROST-4-PZ-(G)
MW-11
VMP-21
ROST-5-PZ
VMP-49
VMP-3
VILLAGE OF ROXANA
VMP-35
VMP-31
MW-17
T-12
WOOD RIVER REFINERY
(S. CENTRAL AVE) HIGHWAY 111
FOURTH ST
MW-22
VMP-32
VMP-43
MW-24
ROST-7-PZ
VMP-26
VMP-27
MW-18
VMP-22
VMP-50
VMP-4
VMP-28
VMP-36
P-74
MW-19
P-59
FIFTH ST
MW-16
LEGEND
NEW MONITORING WELL LOCATION
RECENTLY INSTALLED MONITORING WELL LOCATION
RECENTLY INSTALLED SOIL VAPOR MONITORING POINT LOCATION
PIEZOMETER LOCATION
MONITORING WELL LOCATION
SOIL VAPOR MONITORING POINT LOCATION
Ø
100
SCALE
FEET
N
SHELL OIL PRODUCTS US
ROXANA, ILLINOIS
PROJECT NO.
21562850
URS
DRN. BY:djd May 2013
DSGN. BY:djd
CHKD. BY:bJ
Groundwater Monitoring Well Location Map
FIG. NO.
1

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-24

Sta t ng Date: 3/7/ 3
Comp et on Date: 3/8/ 3
Cas ng E evat on: 443 42
Ground E evat on: 443 80

Quadrangle
Sec:34 (Center of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793286 49
E: (Y):232 700 49

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
				0.4			ASPHALT	Asphalt and gravel	Air knifed to 10' bgs to clear utilities.
				0.1			FILL	Dark brown, sand and clay FILL (FILL)	
				0.0				Medium stiff, moist, brown, low plastic CLAY (CL)	
				0.2					
				0.1			CL	Becomes light brown	
5				0.2					
				0.1				Becomes sandy	
				0.1				Loose to medium dense, dry to moist, brown, fine grained SAND (SP)	
				0.1					
				0.2					
10		24	6	0.2					
		24	24	0.8				Becomes medium dense, dry Trace black banding (1")	Sample MW 24 12 for VOCs at 0955
15		24	22	0.5			SP		
		24	20	0.7					
		24	19	0.5					
20		24	20	0.7					
		24	18	0.8					
		24	18	0.7				Trace black banding (1")	

Completion Depth: **50.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **E. Wetzel**
Drilling Method: **HSA**
Drill Rig Type: **CME 75**
Logged by: **W. Pennington, M. Miller**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/18/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-24

Sta t ng
Date: 3/7/ 3
Comp et on
Date: 3/8/ 3
Cas ng E evat on: 443 42
Ground E evat on: 443 80

Quadrangle
Sec:34 (Center of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793286 49
E: (Y):232 700 49

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
								Same: Medium dense, dry, brown, fine grained SAND (SP)	Sample MW 24 25 for VOCs at 1115
		24	19	0.7					
		24	19	0.7					
30		24	19	0.7				Trace black banding (3")	
		24	20	0.4					
35		24	20	0.6				Trace gravel Gravel grades out	
		24	20	0.5			SP	Trace black banding (3")	
		24	20	0.4				Trace black banding (2")	
40		24	20	0.4					
		24	21	0.5				▽ Becomes wet	
		24	21	0.8				Trace black banding (1") Becomes fine to medium grained, trace fine gravel	
45		24	21	1.1				Trace black banding (3")	
		24	24	0.5					Sample MW 24 47 for VOCs at 1215
								Bottom of boring at 50 ft bgs	

Completion Depth: **50.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **E. Wetzel**
Drilling Method: **HSA**
Drill Rig Type: **CME 75**
Logged by: **W. Pennington, M. Miller**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

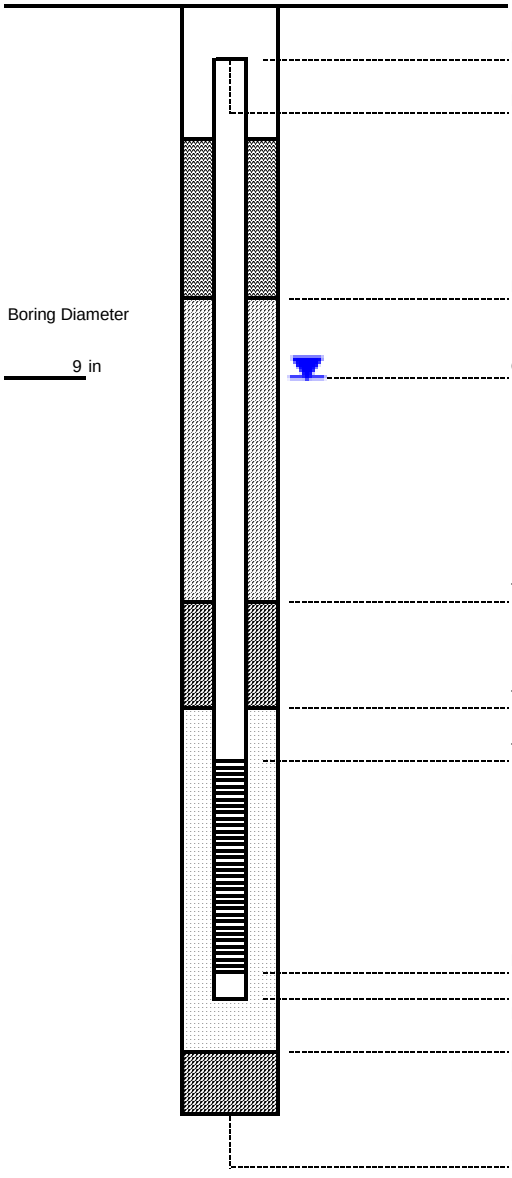
USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/18/13

Monitoring Well Installation Details
Flush Mount Monitoring Well Construction Diagram

URS Corporation

Project:	Roxana Monitoring Well Drilling and Installation			Well D:	MW-24
Project Location:	Roxana, Illinois	Date Started:	3/7/2013		
Well Location:	On East 4th St between N-S alley and Route 111	Date Completed:	3/8/2013	Boring ID:	MW-24
Drilling Contractor:	Roberts Environmental Drilling, Inc.	Time Seal Set:	1410	Northing:	793286.49
Driller:	E. Wetzel	Type of Rig:	CME-75	Easting:	2321700.59
Consulting Firm:	URS Corporation	Drilling Method:	HSA (4 25" ID)	Elevation Datum:	443.8
Geologist:	M. Miller	Owner:	Equilon Enterprises LLC d/b/a Shell Oil Products US	Township, Range, Section	T5N, R9W, Section 34 (central portion of NE 1/4)



	Depths (ft bgs)	Elevations (ft)
Ground Elevation:		443.80
Depth of Riser Below Ground:	0.38	
Elevation of Top of Riser Pipe:	0.38	443.42
D/Type of Surface Casing:	8" Flush Mount	
Type of Surface Seal:	Concrete	
Bottom of Surface Seal:	2.00	441.80
Groundwater (after completion):	43.38	400.42
Type of Riser Pipe:	Schedule 40 PVC	
Riser Diameter:	2.00 in	
Type of Backfill:	Cement/Bentonite Grout	
Top of Seal:	34.27	409.53
Type of Seal:	Bentonite Chips	
Top of Filter Pack	37.27	406.53
Top of Screen	39.27	404.53
Type of Filter Pack:	ANSI/NSF Quartz Sand	
Type of Screen:	Schedule 40 PVC	
Screen Diameter	2.00 in	
Screen Slot Size:	0.010 in	
Bottom of Screen:	49.27	394.53
Bottom of Blank Casing:	49.52	394.28
Backfill/Seal Below Well:	50.00	393.80
Type of Backfill/Seal Below Well:	Native soil (cave in) and placed ANSI/NSF Quartz Sand	
Bottom of Boring:	50.00	393.80

DIAGRAM IS NOT TO SCALE

GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: Additional Drilling Roxana **PROJECT NUMBER:** 215628S0.15000
DATE: 3/11/13
WEATHER: Cloudy 37°
FIELD PERSONNEL: EA/MC
MONITORING WELL ID: MW-24

INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 49.80 ft btoc
Depth to Water: 43.38 ~~6.42~~ ft btoc
Height of Water Column: 6.42 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.04 gallons
Min. Purge Volume: 5.23 gallons (5 volumes)
Depth to Top of Screen: ~~39.75~~ ft btoc

Water Added during Drilling: 0 gallons
Water to be Removed: 0 gallons (5x added)
Ambient PID/FID Reading: 0 ppm
Wellbore PID/FID Reading: 0 ppm

PURGE DATA

Purge Method: PVC Whaler Pump

Stabilized: +/- 0.2 +/- 1 °C +/- 10 % visually sediment free

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
0	0950	43.38	D. Brown	None						
7.5	0955	43.40	Milky							
15	1000	43.43	Milky							
22.5	1005	43.44	Clear							
30	1010	43.44	Clear							

Not Required By SOP

Start Time: 0950 **Purge Stop Time:** 1010 **Elapsed Time:** 20 **Total Volume Purged:** 30 gallons
Average Purge Rate (gallons/min): 1.5 **Well Volumes Purged:** 28 **Water Quality Meter ID:** N/A **Calibrated on:** N/A

SAMPLING DATA

Sampling Method:

Sample Date: N/A **Sample Time:** N/A **Analysis:** N/A

COMMENTS:

DTB = 49.80 ft btoc prior to development
DTB = 49.90 ft btoc after development

Visually Sediment Free

Roxana Drilling 2013 Data Review

Laboratory SDG: MC18752

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 4/25/2013

Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008

Sample Identification	Sample Identification
MW-24-12	MW-24-25
MW-24-47	MW-24-47-Dup
MW24-47-EB	TB-030713-01

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC as appropriate?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

Although not mentioned in the laboratory case narrative, naphthalene was detected in the equipment blank and trip blank, and methylene chloride was detected in the method blank. The laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Method 8011 VOC surrogate recovery for bromofluorobenzene was outside evaluation criteria in investigative and quality control samples. VOC MS/MSD recoveries and MS/MSD RPDs were outside of evaluation criteria in sample MW-24-25. The initial calibration verification recovery for acetone and 2-hexanone exceeded 50 percent difference (%D), and the continuing calibration verification recovery for acetone also exceeded 50 percent difference (%D). Professional judgment was used to qualify the common lab contaminant acetone in sample MW-24-12. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within applicable limits?

Yes

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration
MW-24-47-EB	VOCs	Naphthalene	0.0018 mg/L
TB-030713-01	VOCs	Naphthalene	0.00067 mg/L
MSM1869-MB1	VOCs	Methylene chloride	0.0041 mg/kg
MSM1871-MB	VOCs	Methylene chloride	0.0041 mg/kg

Blank ID	Parameter	Analyte	Concentration
MSM1869-MB	VOCs	Methylene chloride	0.0038 mg/kg

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
MW-24-12	VOCs	Methylene chloride	0.0031 mg/kg	**U**
MW-24-25	VOCs	Methylene chloride	0.0037 mg/kg	**U**
MW-24-47-Dup	VOCs	Methylene chloride	0.0032 mg/kg	**U**

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/ RPD Criteria
MSG4957-BS	VOCs	Acetone	**152**	NA	70-130
MSG4957-BS	VOCs	Acrolein	**51**	NA	70-130
MSG4957-BS	VOCs	2-Butanone (MEK)	**142**	NA	70-130
MSG4957-BS	VOCs	2-Chloroethyl vinyl ether	**66**	NA	70-130
MSG4957-BS	VOCs	2-Hexanone	**153**	NA	70-130
MSM1869-BS/BSD	VOCs	Dichlorodifluoromethane	**135/133**	1	70-130/25
MSM1871-BS/BSD	VOCs	Acetone	**69**/79	14	70-130/25
MSM1871-BS/BSD	VOCs	Vinyl acetate	**59/60**	2	70-130/25

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSD4957-BS is associated with the trip blank and equipment blank quality control samples and are not qualified.

Sample ID	Parameter	Analyte	Qualification
MW-24-47	VOCs	Acetone	**UJ**
MW-24-47	VOCs	Vinyl acetate	**UJ**

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No

Sample ID	Parameter	Surrogate	Recovery	Criteria
MW-24-12	VOCs by 8011	Bromofluorobenzene (S)	**202**	61-167
MW-24-25	VOCs by 8011	Bromofluorobenzene (S)	**177**	61-167
MW-24-25	VOCs by 8011	Bromofluorobenzene (S)	**208**	61-167
MW-24-47	VOCs by 8011	Bromofluorobenzene (S)	**200**	61-167
MW-24-47-Dup	VOCs by 8011	Bromofluorobenzene (S)	**218**	61-167
OP32247-MB	VOCs by 8011	Bromofluorobenzene (S)	**192**	61-167
OP32247-BS	VOCs by 8011	Bromofluorobenzene (S)	**194**	61-167
OP32247-BSD	VOCs by 8011	Bromofluorobenzene (S)	**218**	61-167
OP32247-MS	VOCs by 8011	Bromofluorobenzene (S)	**189**	61-167
OP32247-MSD	VOCs by 8011	Bromofluorobenzene (S)	**174**	61-167

Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. OP32247-BS/BSD and –MS/MSD are quality control samples and are not qualified. No qualification of data was required.

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples analyzed as part of this SDG?

Yes, sample MW-24-25 was spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/ RPD Criteria
MW-24-25	VOCs	Acetone	**153/146**	1	70-130/30
MW-24-25	VOCs	n-Butylbenzene	100/**61**	**45**	70-130/30
MW-24-25	VOCs	sec-Butylbenzene	99/**66**	**36**	70-130/30
MW-24-25	VOCs	2-Chloroethyl vinyl ether	**0/0**	NA	70-130/30
MW-24-25	VOCs	1,2-Dichlorobenzene	94/**69**	28	70-130/30
MW-24-25	VOCs	1,3-Dichlorobenzene	93/**68**	27	70-130/30
MW-24-25	VOCs	Dichlorodifluoromethane	**135**/118	9	70-130/30
MW-24-25	VOCs	1,4-Dioxane	**151/138**	5	70-130/30
MW-24-25	VOCs	Hexachlorobutadiene	91/**47**	**60**	70-130/30
MW-24-25	VOCs	2-Hexanone	**151/137**	6	70-130/30
MW-24-25	VOCs	p-Isopropyltoluene	105/70	**36**	70-130/30
MW-24-25	VOCs	4-Methyl-2-pentanone (MIBK)	**145/131**	6	70-130/30
MW-24-25	VOCs	Naphthalene	123/74	**47**	70-130/30
MW-24-25	VOCs	1,2,3-Trichlorobenzene	97/**52**	**58**	70-130/30
MW-24-25	VOCs	1,2,4-Trichlorobenzene	95/**53**	**53**	70-130/30
MW-24-25	VOCs	1,2,3-Trichloropropane	**132**/118	7	70-130/30

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

8.0 Internal Standard (IS) Recoveries

Were internal standard area recoveries within evaluation criteria?

Yes

9.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

10.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
MW-24-47	MW-24-47-Dup

Were field duplicates within evaluation criteria?

Yes

11.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Not applicable; samples analyzed did not require dilution.

12.0 Additional Qualifications

Were additional qualifications applied?

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL).

Field ID	Analyte	New RL	Qualification	Comments
MW-24-12	Acetone	0.0560 mg/kg	**U**	Professional Judgment

Additionally, samples MW-24-12, MW-24-25, MW-24-47-Dup were associated with the initial calibration verification recovery for acetone and 2-hexanone that exceeded 50 percent difference (%D). Analytes in samples associated with ICV %D greater than 50% were qualified as summarized in the following table.

Sample ID	Parameter	Analyte	Qualification
MW-24-12	VOCs	Acetone	**UJ**
MW-24-12	VOCs	2-Hexanone	**UJ**
MW-24-25	VOCs	Acetone	**UJ**
MW-24-25	VOCs	2-Hexanone	**UJ**
MW-24-47-Dup	VOCs	Acetone	**UJ**
MW-24-47-Dup	VOCs	2-Hexanone	**UJ**

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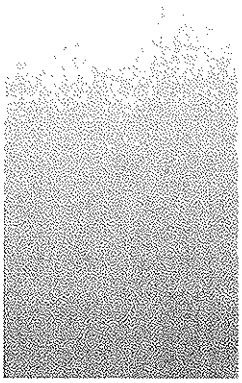
03/29/13



Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC18752

Sampling Date: 03/07/13

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **100**

Reviewed on 4/25/2013

ACCREDITED IN ACCORDANCE WITH nelac

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

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

Sections: 1 2 3 4 5 6 7 8

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Sample Summary

Shell Oil

Job No: MC18752

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
MC18752-1	03/07/13	09:55	MMM	03/08/13	SO	Soil	MW-24-12
MC18752-2	03/07/13	11:15	MMM	03/08/13	SO	Soil	MW-24-25
MC18752-2D	03/07/13	11:15	MMM	03/08/13	SO	Soil Dup/MSD	MW-24-25
MC18752-2S	03/07/13	11:15	MMM	03/08/13	SO	Soil Matrix Spike	MW-24-25
MC18752-3	03/07/13	12:15	MMM	03/08/13	SO	Soil	MW-24-47
MC18752-4	03/07/13	12:15	MMM	03/08/13	SO	Soil	MW-24-47DUP
MC18752-5	03/07/13	13:15	MMM	03/08/13	AQ	Equipment Blank	MW-24-47-EB
MC18752-6	03/07/13	08:00	MMM	03/08/13	AQ	Trip Blank Water	TB-030713-01

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Shell Oil	**Job No**	MC18752
Site:	URSMOSTL: Roxana Drilling, Roxana, IL	**Report Date**	3/22/2013 2:46:00 PM

5 Sample(s) and 1 Trip Blank(s) were collected on 03/07/2013 and were received at Accutest on 03/08/2013 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of MC18752. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations 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:** MSG4957

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC18723-2MS, MC18723-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Continuing calibration check standard MSG4957-CC4948 for acetone exceeds 50% Difference (respose bias high). Associated samples are non-detect for this compound.
- Initial calibration verification MSG4948-ICV4948 for acetone, 2-hexanone exceeds 50% Differenee (respose bias high). Associated samples are non-detect for these compounds.

Matrix SO **Batch ID:** MSK2225

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18768-6MS, MC18768-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO **Batch ID:** MSM1869

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18752-2MS, MC18752-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MSM1869-BS/BSD for Dichlorodifluoromethane: Outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichloropropane, 1,4-Dioxane, 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dioxane, 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, n-Butylbenzene, sec-Butylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, n-Butylbenzene, Naphthalene, p-Isopropyltoluene, sec-Butylbenzene are outside control limits for sample MC18752-2MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Initial calibration verification MSM1868-ICV1868 for acetone, 2-hexanone exceeds 50% Difference. Acetone is within criteria in continuing calibration check standard MSM1869-CC1868, MSM1871-CC1868.

Matrix SO **Batch ID:** MSM1871

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: MSM1871

- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC18887-3MS, MC18887-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specifie criteria.
- Blank Spike Recovery(s) for Acetone, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1.2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1.3-Dichlorobenzene, 1.4-Dichlorobenzene, Hexachlorobutadiene, Isopropylbenzene, n-Butylbenzene, n-Propylbenzene, Naphthalene, p-Isopropyltoluene, sec-Butylbenzene, tert-Butylbenzene are outside eontrol limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1.3-Dichlorobenzene, 1,4-Dichlorobenzene. Acetone, Acrolein, Bromobenzene. Chlorobenzene. Ethylbenzene. Hexachlorobutadiene. Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene. Naphthalene, o-Chlorotoluene. o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene. tert-Butylbenzene, Vinyl Acetate, Xylene (total), 1,2,3-Trichlorobenzene. 1,2,4-Trichlorobenzene are outside control limits. High RPD due to possible matrix interfereuce and/or sample non-homogeneity.
- RPD(s) for MSD for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene are outside control limits for sample MC18887-3MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- BSD Recovery(s) for Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP32212

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18700-10MS, MC18700-10MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane are outside control limits. Outside control limits. Associated samples are non-deteet for target analyte.
- OP32212-MS for Bromofluorobenzene (S): Outside control limits. Associated samples are non-detect for target analyte.
- OP32212-BS for 1,2-Dibromo-3-chloropropane: Outside control limits. Associated samples are non-deteet for target analyte.

Matrix SO	Batch ID: OP32247

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC18752-2MS, MC18752-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specifie criteria.
- OP32247-BS/BSD for Bromofluorobenzene (S): Outside control limits.Targets recovery satisfactory.
- OP32247-MS/MSD for Bromofluorobenzene (S): Outside control limits.Spike reeovery satisfactory.
- MC18752-1.2.3,4 for Bromofluorobenzene (S): Outside control limits.Sample nou-detect for target analytes.
- OP32247-MB for Bromofluorobenzene (S): Outside control limit.Samples are non-detect for analyte.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix SO	Batch ID: GN41959

- Sample(s) MC18752-2DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC18752).

Summary of Hits

Job Number: MC18752
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 03/07/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
MC18752-1	MW-24-12					
Acetone		0.0560 U J	0.0059	0.0015	mg/kg	SW846 8260B
Chloroform		0.0012 J	0.0024	0.00061	mg/kg	SW846 8260B
Methylene chloride		0.0031 U	0.0024	0.0014	mg/kg	SW846 8260B
MC18752-2	MW-24-25					
Benzene		0.0012	0.00060	0.00035	mg/kg	SW846 8260B
Carbon disulfide		0.0058 J	0.0060	0.00020	mg/kg	SW846 8260B
Ethylbenzene		0.0023 J	0.0024	0.00029	mg/kg	SW846 8260B
Methylene chloride		0.0037 U	0.0024	0.0014	mg/kg	SW846 8260B
Toluene		0.0028 J	0.0060	0.0010	mg/kg	SW846 8260B
MC18752-3	MW-24-47					
Benzene		0.0014	0.00057	0.00034	mg/kg	SW846 8260B
Ethylbenzene		0.0021 J	0.0023	0.00028	mg/kg	SW846 8260B
Toluene		0.0026 J	0.0057	0.00097	mg/kg	SW846 8260B
MC18752-4	MW-24-47DUP					
Benzene		0.0012	0.00057	0.00033	mg/kg	SW846 8260B
Ethylbenzene		0.0013 J	0.0023	0.00027	mg/kg	SW846 8260B
Methylene chloride		0.0032 U	0.0023	0.0013	mg/kg	SW846 8260B
Toluene		0.0018 J	0.0057	0.00096	mg/kg	SW846 8260B
MC18752-5	MW-24-47-EB					
Naphthalene		1.8 J	5.0	0.50	ug/l	SW846 8260B
MC18752-6	TB-030713-01					
Naphthalene		0.67 J	5.0	0.50	ug/l	SW846 8260B

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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	MW-24-12		
Lab Sample ID:	MC18752-1	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	95.9
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M54870.D	1	03/20/13	AMY	n/a	n/a	MSM1869
Run #2							

	Initial Weight	Final Volume
Run #1	4.41 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	~~0.0560~~ 0.0560	~~0.0059~~	0.0015	mg/kg	J
107-02-8	Acrolein	ND	0.030	0.012	mg/kg	
107-13-1	Acrylonitrile	ND	0.030	0.0015	mg/kg	
71-43-2	Benzene	ND	0.00059	0.00035	mg/kg	
108-86-1	Bromobenzene	ND	0.0059	0.00026	mg/kg	
74-97-5	Bromochloromethane	ND	0.0059	0.00044	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0024	0.00025	mg/kg	
75-25-2	Bromoform	ND	0.0024	0.0024	mg/kg	
74-83-9	Bromomethane	ND	0.0024	0.00061	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0059	0.0015	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0059	0.00022	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0059	0.00027	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0059	0.0010	mg/kg	
75-15-0	Carbon disulfide	ND	0.0059	0.00019	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0024	0.00086	mg/kg	
108-90-7	Chlorobenzene	ND	0.0024	0.00033	mg/kg	
75-00-3	Chloroethane	ND	0.0059	0.0015	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0059	0.0024	mg/kg	
67-66-3	Chloroform	0.0012	0.0024	0.00061	mg/kg	J
74-87-3	Chloromethane	ND	0.0059	0.00055	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0059	0.0013	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0059	0.00027	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0024	0.00035	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0024	0.00026	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0024	0.00027	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0024	0.00025	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0024	0.0013	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0024	0.00032	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0024	0.00034	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0024	0.00043	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0024	0.00036	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0024	0.00034	mg/kg	

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:	MW-24-12		
Lab Sample ID:	MC18752-1	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	95.9
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0024	0.00044	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0059	0.00027	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0059	0.0010	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0059	0.00031	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0024	0.00020	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0024	0.00059	mg/kg	
123-91-1	1,4-Dioxane	ND	0.030	0.030	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0059	0.00081	mg/kg	
100-41-4	Ethylbenzene	ND	0.0024	0.00029	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0059	0.00055	mg/kg	
591-78-6	2-Hexanone	ND	0.0059	0.0015	mg/kg	U J
98-82-8	Isopropylbenzene	ND	0.0059	0.00027	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0059	0.00021	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0024	0.00034	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0059	0.00059	mg/kg	
74-95-3	Methylene bromide	ND	0.0059	0.00058	mg/kg	
75-09-2	Methylene chloride	~~0.0031~~ U	~~0.0024~~ 0.0059	0.0014	mg/kg	U
91-20-3	Naphthalene	ND	0.0059	0.0015	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0059	0.0012	mg/kg	
100-42-5	Styrene	ND	0.0059	0.00028	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0059	0.00028	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0024	0.00050	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0024	0.00027	mg/kg	
108-88-3	Toluene	ND	0.0059	0.0010	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0059	0.00028	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0059	0.00027	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0024	0.00037	mg/kg	
79-00-5	1,1,2-Trichloroetbane	ND	0.0024	0.00087	mg/kg	
79-01-6	Trichloroethene	ND	0.0024	0.00025	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0024	0.00036	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0059	0.00035	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0059	0.00026	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0059	0.00025	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0059	0.0015	mg/kg	
75-01-4	Vinyl chloride	ND	0.0024	0.00032	mg/kg	
	m,p-Xylene	ND	0.0024	0.00093	mg/kg	
95-47-6	o-Xylene	ND	0.0024	0.00028	mg/kg	
1330-20-7	Xylene (total)	ND	0.0024	0.00028	mg/kg	

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:	MW-24-12		
Lab Sample ID:	MC18752-1	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	95.9
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%		70-130%
2037-26-5	Toluene-D8	110%		70-130%
460-00-4	4-Bromofluorobenzene	95%		70-130%

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

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:	MW-24-12		
Lab Sample ID:	MC18752-1	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8011 SW846 3550B	Percent Solids:	95.9
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	YZ78546.D	1	03/16/13	CZ	03/13/13	OP32247	GYZ7047
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	50.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0026	0.0012	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0026	0.0010	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	162%		61-167%
460-00-4	Bromofluorobenzene (S)	202% [a]		61-167%

(a) Outside control limits.Sample non-detect for target analytes.

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:	MW-24-25		
Lab Sample ID:	MC18752-2	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	93.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M54871.D	1	03/20/13	AMY	n/a	n/a	MSM1869
Run #2							

	Initial Weight	Final Volume
Run #1	4.44 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0060	0.0015	mg/kg	UJ
107-02-8	Acrolein	ND	0.030	0.012	mg/kg	
107-13-1	Acrylonitrile	ND	0.030	0.0015	mg/kg	
71-43-2	Benzene	0.0012	0.00060	0.00035	mg/kg	
108-86-1	Bromobenzene	ND	0.0060	0.00027	mg/kg	
74-97-5	Bromochloromethane	ND	0.0060	0.00045	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0024	0.00025	mg/kg	
75-25-2	Bromoform	ND	0.0024	0.0024	mg/kg	
74-83-9	Bromomethane	ND	0.0024	0.00062	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0060	0.0015	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0060	0.00022	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0060	0.00028	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0060	0.0011	mg/kg	
75-15-0	Carbon disulfide	0.0058	0.0060	0.00020	mg/kg	J
56-23-5	Carbon tetrachloride	ND	0.0024	0.00087	mg/kg	
108-90-7	Chlorobenzene	ND	0.0024	0.00033	mg/kg	
75-00-3	Chloroethane	ND	0.0060	0.0015	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0060	0.0024	mg/kg	
67-66-3	Chloroform	ND	0.0024	0.00062	mg/kg	
74-87-3	Chloromethane	ND	0.0060	0.00056	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0060	0.0013	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0060	0.00027	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0024	0.00036	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0024	0.00026	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0024	0.00027	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0024	0.00025	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0024	0.0014	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0024	0.00032	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0024	0.00035	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0024	0.00044	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0024	0.00036	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0024	0.00034	mg/kg	

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:	MW-24-25		
Lab Sample ID:	MC18752-2	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	93.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0024	0.00045	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0060	0.00028	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0060	0.0010	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0060	0.00032	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0024	0.00021	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0024	0.00060	mg/kg	
123-91-1	1,4-Dioxane	ND	0.030	0.030	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0060	0.00082	mg/kg	
100-41-4	Ethylbenzene	0.0023	0.0024	0.00029	mg/kg	J
87-68-3	Hexachlorobutadiene	ND	0.0060	0.00056	mg/kg	
591-78-6	2-Hexanone	ND	0.0060	0.0015	mg/kg	U
98-82-8	Isopropylbenzene	ND	0.0060	0.00027	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0060	0.00021	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0024	0.00035	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0060	0.00060	mg/kg	
74-95-3	Methylene bromide	ND	0.0060	0.00059	mg/kg	
75-09-2	Methylene chloride	~~0.0037~~ 0.00037	~~0.0024~~	0.0014	mg/kg	U
91-20-3	Naphthalene	ND	0.0060	0.0015	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0060	0.0012	mg/kg	
100-42-5	Styrene	ND	0.0060	0.00028	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0060	0.00029	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0024	0.00051	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0024	0.00028	mg/kg	
108-88-3	Toluene	0.0028	0.0060	0.0010	mg/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	0.0060	0.00029	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0060	0.00028	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0024	0.00038	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0024	0.00088	mg/kg	
79-01-6	Trichloroethene	ND	0.0024	0.00025	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0024	0.00037	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0060	0.00035	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0060	0.00027	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0060	0.00026	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0060	0.0015	mg/kg	
75-01-4	Vinyl chloride	ND	0.0024	0.00033	mg/kg	
	m,p-Xylene	ND	0.0024	0.00095	mg/kg	
95-47-6	o-Xylene	ND	0.0024	0.00029	mg/kg	
1330-20-7	Xylene (total)	ND	0.0024	0.00029	mg/kg	

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:	MW-24-25		
Lab Sample ID:	MC18752-2	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	93.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-130%
2037-26-5	Toluene-D8	111%		70-130%
460-00-4	4-Bromofluorobenzene	89%		70-130%

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

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:	MW-24-25		
Lab Sample ID:	MC18752-2	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8011 SW846 3550B	Percent Solids:	93.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	YZ78547.D	1	03/16/13	CZ	03/13/13	OP32247	GYZ7047
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0026	0.0012	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0026	0.0010	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	177% [a]		61-167%
460-00-4	Bromofluorobenzene (S)	208% [a]		61-167%

(a) Outside control limits.Sample uon-detect for target analytes.

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 evideuce of a compound

Report of Analysis

Client Sample ID:	MW-24-47		
Lab Sample ID:	MC18752-3	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	81.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M54904.D	1	03/21/13	AMY	n/a	n/a	MSM1871
Run #2	K67892.D	1	03/12/13	GK	n/a	n/a	MSK2225

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.37 g	5.0 ml	
Run #2	4.15 g	10.0 ml	100 ul

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0057	0.0014	mg/kg	UJ
107-02-8	Acrolein	ND	0.029	0.011	mg/kg	
107-13-1	Acrylonitrile	ND	0.029	0.0014	mg/kg	
71-43-2	Benzene	0.0014	0.00057	0.00034	mg/kg	
108-86-1	Bromobenzene	ND	0.0057	0.00026	mg/kg	
74-97-5	Bromochloromethane	ND	0.0057	0.00043	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0023	0.00024	mg/kg	
75-25-2	Bromoform	ND	0.0023	0.0023	mg/kg	
74-83-9	Bromomethane	ND	0.0023	0.00059	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0057	0.0014	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0057	0.00021	mg/kg	
135-98-8	sec-Bntylbenzene	ND	0.0057	0.00026	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0057	0.0010	mg/kg	
75-15-0	Carbon disulfide	ND	0.0057	0.00019	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0023	0.00083	mg/kg	
108-90-7	Chlorobenzene	ND	0.0023	0.00032	mg/kg	
75-00-3	Chloroethane	ND	0.0057	0.0014	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND [a]	0.80	0.32	mg/kg	
67-66-3	Chloroform	ND	0.0023	0.00059	mg/kg	
74-87-3	Chloromethane	ND	0.0057	0.00053	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0057	0.0013	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0057	0.00026	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0023	0.00034	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0023	0.00025	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0023	0.00026	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0023	0.00024	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0023	0.0013	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0023	0.00031	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0023	0.00033	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0023	0.00042	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0023	0.00034	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0023	0.00033	mg/kg	

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:	MW-24-47		
Lab Sample ID:	MC18752-3	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	81.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0023	0.00043	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0057	0.00026	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0057	0.00099	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0057	0.00030	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0023	0.00020	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0023	0.00057	mg/kg	
123-91-1	1,4-Dioxane	ND	0.029	0.029	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0057	0.00078	mg/kg	
100-41-4	Ethylbenzene	0.0021	0.0023	0.00028	mg/kg	J
87-68-3	Hexachlorobutadiene	ND	0.0057	0.00053	mg/kg	
591-78-6	2-Hexanone	ND	0.0057	0.0014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0057	0.00026	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0057	0.00020	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0023	0.00033	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0057	0.00057	mg/kg	
74-95-3	Methylene bromide	ND	0.0057	0.00057	mg/kg	
75-09-2	Methylene chloride	ND	0.0023	0.0013	mg/kg	
91-20-3	Naphthalene	ND	0.0057	0.0014	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0057	0.0012	mg/kg	
100-42-5	Styrene	ND	0.0057	0.00027	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0057	0.00027	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0023	0.00049	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0023	0.00026	mg/kg	
108-88-3	Toluene	0.0026	0.0057	0.00097	mg/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	0.0057	0.00027	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0057	0.00026	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0023	0.00036	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0023	0.00084	mg/kg	
79-01-6	Trichloroethene	ND	0.0023	0.00024	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0023	0.00035	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0057	0.00033	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0057	0.00026	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0057	0.00024	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0057	0.0014	mg/kg	J5
75-01-4	Vinyl chloride	ND	0.0023	0.00031	mg/kg	
	m,p-Xylene	ND	0.0023	0.00090	mg/kg	
95-47-6	o-Xylene	ND	0.0023	0.00027	mg/kg	
1330-20-7	Xylene (total)	ND	0.0023	0.00027	mg/kg	

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:	MW-24-47		
Lab Sample ID:	MC18752-3	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	81.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%	115%	70-130%
2037-26-5	Toluene-D8	112%	110%	70-130%
460-00-4	4-Bromofluorobenzene	89%	104%	70-130%

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

(a) Result is from Run# 2

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:	MW-24-47		
Lab Sample ID:	MC18752-3	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8011 SW846 3550B	Percent Solids:	81.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	YZ78548.D	1	03/16/13	CZ	03/13/13	OP32247	GYZ7047
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	50.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0031	0.0014	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0031	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	158%		61-167%
460-00-4	Bromofluorobenzene (S)	200% [a]		61-167%

(a) Outside control limits.Sample non-detect for target analytes.

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:	MW-24-47DUP		
Lab Sample ID:	MC18752-4	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	81.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M54872.D	1	03/20/13	AMY	n/a	n/a	MSM1869
Run #2							

	Initial Weight	Final Volume
Run #1	5.40 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0057	0.0014	mg/kg	u J
107-02-8	Acrolein	ND	0.028	0.011	mg/kg	
107-13-1	Acrylonitrile	ND	0.028	0.0014	mg/kg	
71-43-2	Benzene	0.0012	0.00057	0.00033	mg/kg	
108-86-1	Bromobenzene	ND	0.0057	0.00025	mg/kg	
74-97-5	Bromochloromethane	ND	0.0057	0.00042	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0023	0.00024	mg/kg	
75-25-2	Bromoform	ND	0.0023	0.0023	mg/kg	
74-83-9	Bromomethane	ND	0.0023	0.00059	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0057	0.0014	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0057	0.00021	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0057	0.00026	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0057	0.0010	mg/kg	
75-15-0	Carbon disulfide	ND	0.0057	0.00019	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0023	0.00082	mg/kg	
108-90-7	Chlorobenzene	ND	0.0023	0.00031	mg/kg	
75-00-3	Chloroethane	ND	0.0057	0.0014	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0057	0.0023	mg/kg	
67-66-3	Chloroform	ND	0.0023	0.00058	mg/kg	
74-87-3	Chloromethane	ND	0.0057	0.00053	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0057	0.0012	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0057	0.00026	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0023	0.00033	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0023	0.00024	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0023	0.00026	mg/kg	
106-46-7	1,4-Dichlorobenzeue	ND	0.0023	0.00024	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0023	0.0013	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0023	0.00031	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0023	0.00033	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0023	0.00042	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0023	0.00034	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0023	0.00032	mg/kg	

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:	MW-24-47DUP		
Lab Sample ID:	MC18752-4	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	81.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0023	0.00042	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0057	0.00026	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0057	0.00098	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0057	0.00030	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0023	0.00019	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0023	0.00056	mg/kg	
123-91-1	1,4-Dioxane	ND	0.028	0.028	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0057	0.00077	mg/kg	
100-41-4	Ethylbenzene	0.0013	0.0023	0.00027	mg/kg	J
87-68-3	Hexachlorobutadiene	ND	0.0057	0.00053	mg/kg	
591-78-6	2-Hexanone	ND	0.0057	0.0014	mg/kg	ucJ
98-82-8	Isopropylbenzene	ND	0.0057	0.00026	mg/kg	
99-87-6	p-Isopropyltolnene	ND	0.0057	0.00020	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0023	0.00033	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0057	0.00057	mg/kg	
74-95-3	Methylene bromide	ND	0.0057	0.00056	mg/kg	
75-09-2	Methylene chloride	~~0.0032~~ A	0.0023	0.0013	mg/kg	A
91-20-3	Naphthalene	ND	0.0057	0.0014	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0057	0.0011	mg/kg	
100-42-5	Styrene	ND	0.0057	0.00026	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0057	0.00027	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0023	0.00048	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0023	0.00026	mg/kg	
108-88-3	Toluene	0.0018	0.0057	0.00096	mg/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	0.0057	0.00027	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0057	0.00026	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0023	0.00036	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0023	0.00083	mg/kg	
79-01-6	Trichloroethene	ND	0.0023	0.00024	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0023	0.00034	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0057	0.00033	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0057	0.00025	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0057	0.00024	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0057	0.0014	mg/kg	
75-01-4	Vinyl chloride	ND	0.0023	0.00031	mg/kg	
	m,p-Xylene	ND	0.0023	0.00089	mg/kg	
95-47-6	o-Xylene	ND	0.0023	0.00027	mg/kg	
1330-20-7	Xylene (total)	ND	0.0023	0.00027	mg/kg	

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:	MW-24-47DUP		
Lab Sample ID:	MC18752-4	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	81.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-130%
2037-26-5	Toluene-D8	112%		70-130%
460-00-4	4-Bromofluorobenzene	89%		70-130%

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

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:	MW-24-47DUP		
Lab Sample ID:	MC18752-4	Date Sampled:	03/07/13
Matrix:	SO - Soil	Date Received:	03/08/13
Method:	SW846 8011 SW846 3550B	Percent Solids:	81.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	YZ78549.D	1	03/16/13	CZ	03/13/13	OP32247	GYZ7047
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	50.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0030	0.0014	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0030	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	158%		61-167%
460-00-4	Bromofluorobenzene (S)	218% [a]		61-167%

(a) Outside control limits.Sample non-detect for target analytes.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne 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:	MW-24-47-EB		
Lab Sample ID:	MC18752-5	Date Sampled:	03/07/13
Matrix:	AQ - Equipment Blank	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G125263.D	1	03/13/13	JM	n/a	n/a	MSG4957
Run #2							

	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	1.3	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	0.61	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	1.3	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-Chlorotolueue	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 valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-24-47-EB		
Lab Sample ID:	MC18752-5	Date Sampled:	03/07/13
Matrix:	AQ - Equipment Blank	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, 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	1.8	5.0	0.50	ug/l	J
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	1.3	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	1.3	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:	MW-24-47-EB		
Lab Sample ID:	MC18752-5	Date Sampled:	03/07/13
Matrix:	AQ - Equipment Blank	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	77%		70-130%
2037-26-5	Toluene-D8	76%		70-130%
460-00-4	4-Bromoflnorobenzene	77%		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
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:	MW-24-47-EB		
Lab Sample ID:	MC18752-5	Date Sampled:	03/07/13
Matrix:	AQ - Equipment Blank	Date Received:	03/08/13
Method:	SW846 8011 SW846 8011	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB46162.D	1	03/11/13	CZ	03/11/13	OP32212	GBB2782
Run #2							

	Initial Volume	Final Volume
Run #1	35.9 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	0.015	0.013	ng/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)	83%		36-173%
460-00-4	Bromofluorobenzene (S)	149%		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

Report of Analysis

Client Sample ID:	TB-030713-01		
Lab Sample ID:	MC18752-6	Date Sampled:	03/07/13
Matrix:	AQ - Trip Blank Water	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G125264.D	1	03/13/13	JM	n/a	n/a	MSG4957
Run #2							

	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	1.3	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	0.61	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	1.3	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-030713-01		
Lab Sample ID:	MC18752-6	Date Sampled:	03/07/13
Matrix:	AQ - Trip Blank Water	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, 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	0.67	5.0	0.50	ug/l	J
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	1.3	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	1.3	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-030713-01		
Lab Sample ID:	MC18752-6	Date Sampled:	03/07/13
Matrix:	AQ - Trip Blank Water	Date Received:	03/08/13
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	76%		70-130%
2037-26-5	Toluene-D8	76%		70-130%
460-00-4	4-Bromofluorobenzene	78%		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
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-030713-01		
Lab Sample ID:	MC18752-6	Date Sampled:	03/07/13
Matrix:	AQ - Trip Blank Water	Date Received:	03/08/13
Method:	SW846 8011 SW846 8011	Percent Solids:	n/a
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB46163.D	1	03/12/13	CZ	03/11/13	OP32212	GBB2782
Run #2							

	Initial Volume	Final Volume
Run #1	37.2 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	0.014	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0098	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	61%		36-173%
460-00-4	Bromofluorobenzene (S)	75%		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

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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

Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
☐ XENCO
☐ TestAmerica ( )
☑ OTHER Accutest Labs: 495 Technology Ctr W Marlborough, MA 01752 (508-481-6200)
☐ Lab Vendor # ( )
☐ SPL ( )
Lab Vendor #

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SD&CM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER ____

Print Bill To Contact Name: BOB BILLMAN
PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0
☐ CHECK IF NO INCIDENT # APPLIES
SAP #: 3 4 0 0 6 1
DATE: 3/7/13
PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110
PROJECT CONTACT (Hardcopy or PDF Report to): ELIZABETH KUNKEL
TELEPHONE: 314-429-0100
FAX: 314-429-0462
LOG CODE:
SITE ADDRESS: Street and City: 900 SOUTH CENTRAL AVE -- ROXANA
State: IL
GLOBAL ID NO.:
EDF DELIVERABLE TO (Name, Company, Office Location):
PHONE NO.:
E-MAIL:
CONSULTANT PROJECT NO.: 4Ethanol Complex 21562850.13005
SAMPLER NAME(S) (Print): Michael Miller / Michael Curren
LAB USE ONLY: MC18752

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND
☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C°: Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED

REQUESTED ANALYSIS

FIELD NOTES:
TEMPERATURE ON RECEIPT C°
Container PID Readings or Laboratory Notes

LAB USE ONLY	Field Sample Identification	DATE	TIME	MATRIX	HCL	HNO3	H2SO4	NONE	OTHER	NO. OF CONT.	VOC 8260B	VOC 8011	SVOC 8270D	PAH 8270LL	PID (ppm)	Field Notes
-1	MW-24-12	3/7/13	0955	Soil				1	3	4	X	X				
-2	MW-24-25	↓	1115	Soil				1	3	4	X	X				
-2S	MW-24-25-MS	↓	1115	Soil				1	3	4	X	X				
-2SD	MW-24-25-MSD	↓	1115	Soil				1	3	4	X	X				
-3	MW-24-47	↓	1215	Soil				1	3	4	X	X				
	~~MW-47-Dup-MPM~~															
-4	MW-24-47-Dup	↓	1215	Soil				1	3	4	X	X				
-5	MW-24-47-EB	↓	1315	Water	2				2	4	X	X				IC3, IC,
-6	TB-030713-01	↓	0800	Water	2				2	4	X	X				10D3
																2.0°

Relinquished by (Signature)	Received by (Signature)	Date	Time
[signature]	FED EX	3/7/13	1700
Fedex	[signature]	3/8/13	11:00

05/2008 Revision

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MC18752: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC18752 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 3/8/2013 Delivery Method: Client Service Action Required at Login: No

Project: 900 SO CENTRAL AVE 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:	Infared gun
3. Cooler media:	Ice (bag)

Quality Control Preservatio	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

Accutest Laboratories
V 508 481 6200
495 Technology Center West, Bldg One
F 508 481.7753
Marlborough, MA
www.accutest.com

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MC18752: Chain of Custody
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Internal Sample Tracking Chronicle

Shell Oil

Job No: MC18752

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC18752-1 Collected: 07-MAR-13 09:55 By: MMMC Received: 08-MAR-13 By: MW-24-12						
MC18752-1	SM21 2540 B MOD.	12-MAR-13	BF			%SOL
MC18752-1	SW846 8011	16-MAR-13 02:46	CZ	13-MAR-13	CC	V8011SL
MC18752-1	SW846 8260B	20-MAR-13 11:01	AMY			V8260SL+
MC18752-2 Collected: 07-MAR-13 11:15 By: MMMC Received: 08-MAR-13 By: MW-24-25						
MC18752-2	SM21 2540 B MOD.	12-MAR-13	BF			%SOL
MC18752-2	SW846 8011	16-MAR-13 03:14	CZ	13-MAR-13	CC	V8011SL
MC18752-2	SW846 8260B	20-MAR-13 11:31	AMY			V8260SL+
MC18752-3 Collected: 07-MAR-13 12:15 By: MMMC Received: 08-MAR-13 By: MW-24-47						
MC18752-3	SM21 2540 B MOD.	12-MAR-13	BF			%SOL
MC18752-3	SW846 8260B	12-MAR-13 12:18	GK			V8260SL+
MC18752-3	SW846 8011	16-MAR-13 03:42	CZ	13-MAR-13	CC	V8011SL
MC18752-3	SW846 8260B	21-MAR-13 13:07	AMY			V8260SL+
MC18752-4 Collected: 07-MAR-13 12:15 By: MMMC Received: 08-MAR-13 By: MW-24-47DUP						
MC18752-4	SM21 2540 B MOD.	12-MAR-13	BF			%SOL
MC18752-4	SW846 8011	16-MAR-13 04:10	CZ	13-MAR-13	CC	V8011SL
MC18752-4	SW846 8260B	20-MAR-13 12:01	AMY			V8260SL+
MC18752-5 Collected: 07-MAR-13 13:15 By: MMMC Received: 08-MAR-13 By: MW-24-47-EB						
MC18752-5	SW846 8011	11-MAR-13 23:38	CZ	11-MAR-13	BJ	V8011SL
MC18752-5	SW846 8260B	13-MAR-13 14:29	JM			V8260SL+
MC18752-6 Collected: 07-MAR-13 08:00 By: MMMC Received: 08-MAR-13 By: TB-030713-01						
MC18752-6	SW846 8011	12-MAR-13 00:05	CZ	11-MAR-13	BJ	V8011SL
MC18752-6	SW846 8260B	13-MAR-13 14:57	JM			V8260SL+

Accutest Internal Chain of Custody

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 03/08/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC18752-1.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-1.1	Bijan Firowznin	Walk In Ref #5	03/12/13 09:48	Return to Storage
MC18752-1.1	Walk In Ref #5	Chris Cataldo	03/13/13 17:50	Retrieve from Storage
MC18752-1.1	Chris Cataldo	Walk In Ref #5	03/13/13 21:09	Return to Storage
MC18752-1.2	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-1.2	Amy Min Yang	GCMSM	03/19/13 10:48	Load on Instrument
MC18752-1.3	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-1.3	Amy Min Yang	GCMSM	03/20/13 09:53	Load on Instrument
MC18752-1.4	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-1.4	Gary Krasinski	VOC Ref #10	03/12/13 08:44	Return to Storage
MC18752-2.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-2.1	Bijan Firowznin	Walk In Ref #5	03/12/13 09:48	Return to Storage
MC18752-2.1	Walk In Ref #5	Chris Cataldo	03/13/13 21:01	Retrieve from Storage
MC18752-2.1	Chris Cataldo	Walk In Ref #5	03/13/13 21:09	Return to Storage
MC18752-2.2	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-2.2	Amy Min Yang	GCMSM	03/20/13 09:53	Load on Instrument
MC18752-2.3	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-2.3	Amy Min Yang	GCMSM	03/19/13 10:48	Load on Instrument
MC18752-2.6	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-2.6	Amy Min Yang	GCMSM	03/19/13 10:48	Load on Instrument
MC18752-2.7	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-2.7	Amy Min Yang	GCMSM	03/20/13 09:53	Load on Instrument
MC18752-2.10	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-2.10	Amy Min Yang	GCMSM	03/19/13 10:48	Load on Instrument
MC18752-2.11	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-2.11	Amy Min Yang	GCMSM	03/20/13 09:53	Load on Instrument
MC18752-2.12	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-2.12	Gary Krasinski	VOC Ref #10	03/12/13 08:44	Return to Storage
MC18752-3.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-3.1	Bijan Firowznin	Walk In Ref #5	03/12/13 09:48	Return to Storage
MC18752-3.1	Walk In Ref #5	Chris Cataldo	03/13/13 21:01	Retrieve from Storage
MC18752-3.1	Chris Cataldo	Walk In Ref #5	03/13/13 21:09	Return to Storage

Accutest Internal Chain of Custody

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 03/08/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC18752-3.3	VOC Ref #10	Amy Min Yang	03/21/13 12:18	Retrieve from Storage
MC18752-3.3	Amy Min Yang	GCMSM	03/21/13 12:18	Load on Instrument
MC18752-3.4	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-3.4	Gary Krasinski	VOC Ref #10	03/12/13 08:44	Return to Storage
MC18752-3.4	VOC Ref #10	Gary Krasinski	03/12/13 09:44	Retrieve from Storage
MC18752-3.4	Gary Krasinski	VOC Ref #10	03/13/13 07:53	Return to Storage
MC18752-4.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-4.1	Bijan Firowzniu	Walk In Ref #5	03/12/13 09:48	Return to Storage
MC18752-4.1	Walk In Ref #5	Chris Cataldo	03/13/13 21:01	Retrieve from Storage
MC18752-4.1	Chris Cataldo	Walk In Ref #5	03/13/13 21:09	Return to Storage
MC18752-4.2	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-4.2	Amy Min Yang	GCMSM	03/19/13 10:48	Load on Instrument
MC18752-4.3	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-4.3	Amy Min Yang	GCMSM	03/20/13 09:53	Load on Instrument
MC18752-4.4	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-4.4	Gary Krasinski	VOC Ref #10	03/12/13 08:44	Return to Storage
MC18752-5.2	VOC Ref #1	Jaime Maslowski	03/13/13 11:24	Retrieve from Storage
MC18752-5.2	Jaime Maslowski	GCMSG	03/13/13 11:24	Load on Instrument
MC18752-5.2	GCMSG	Jaime Maslowski	03/14/13 14:28	Unload from Instrument
MC18752-5.2	Jaime Maslowski	VOC Ref #1	03/14/13 14:29	Return to Storage
MC18752-5.4	VOC Ref #1	Bijan Jafari	03/11/13 13:01	Retrieve from Storage
MC18752-5.4	Bijan Jafari		03/11/13 14:33	Depleted
MC18752-6.1	VOC Ref #1	Jaime Maslowski	03/13/13 11:24	Retrieve from Storage
MC18752-6.1	Jaime Maslowski	GCMSG	03/13/13 11:24	Load on Instrument
MC18752-6.1	GCMSG	Jaime Maslowski	03/14/13 14:28	Unload from Instrument
MC18752-6.1	Jaime Maslowski	VOC Ref #1	03/14/13 14:29	Return to Storage
MC18752-6.4	VOC Ref #1	Bijan Jafari	03/11/13 13:01	Retrieve from Storage
MC18752-6.4	Bijan Jafari		03/11/13 14:33	Depleted

New England ACCUTEST LABORATORIES

GC/MS Volatiles

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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: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK2225-MB	K67889.D	1	03/12/13	GK	n/a	n/a	MSK2225

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	Result	RL	MDL	Units	Q
110-75-8	2-Chloroethyl vinyl ether	ND	250	100	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	113%	70-130%
2037-26-5	Toluene-D8	107%	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/kg	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB	G125256.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

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	1.3	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	0.61	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	1.3	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	Dihromochloromethane	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	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB	G125256.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

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	0.50	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	1.3	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	1.3	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: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB	G125256.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	78%	70-130%
2037-26-5	Toluene-D8	76%	70-130%
460-00-4	4-Bromofluorobenzene	78%	70-130%

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

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB1	M54869.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	1.3	ug/kg	
107-02-8	Acrolein	ND	25	10	ug/kg	
107-13-1	Acrylonitrile	ND	25	1.3	ug/kg	
71-43-2	Benzene	ND	0.50	0.29	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.22	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg	
75-25-2	Bromoform	ND	2.0	2.0	ug/kg	
74-83-9	Bromomethane	ND	2.0	0.52	ug/kg	
78-93-3	2-Butanone (MEK)	ND	5.0	1.3	ug/kg	
104-51-8	n-Butylbenzene	ND	5.0	0.18	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.0	0.23	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	0.88	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	0.16	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.73	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.28	ug/kg	
75-00-3	Chloroethane	ND	5.0	1.3	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	2.0	ug/kg	
67-66-3	Chloroform	ND	2.0	0.52	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.46	ug/kg	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	0.23	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.30	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.22	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.23	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.21	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.29	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	0.37	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.30	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.29	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.37	ug/kg	
142-28-9	1,3-Dichloropropane	ND	5.0	0.23	ug/kg	
594-20-7	2,2-Dichloropropane	ND	5.0	0.87	ug/kg	
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB1	M54869.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.17	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.50	ug/kg	
123-91-1	1,4-Dioxane	ND	25	25	ug/kg	
97-63-2	Ethyl methacrylate	ND	5.0	0.68	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.24	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.46	ug/kg	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.23	ug/kg	
99-87-6	p-Isopropyltoluene	ND	5.0	0.18	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.29	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.50	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.49	ug/kg	
75-09-2	Methylene chloride	4.1	2.0	1.2	ug/kg	
91-20-3	Naphthalene	ND	5.0	1.3	ug/kg	
103-65-1	n-Propylbenzene	ND	5.0	1.0	ug/kg	
100-42-5	Styrene	ND	5.0	0.23	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.24	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.43	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.23	ug/kg	
108-88-3	Toluene	ND	5.0	0.85	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.24	ug/kg	
120-82-1	1,2,4-Tricblorobenzene	ND	5.0	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.31	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.73	ug/kg	
79-01-6	Trichloroethene	ND	2.0	0.21	ng/kg	
75-69-4	Trichlorofluoromethane	ND	2.0	0.30	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.29	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.22	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-05-4	Vinyl Acetate	ND	5.0	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.27	ug/kg	
	m,p-Xylene	ND	2.0	0.79	ug/kg	
95-47-6	o-Xylene	ND	2.0	0.24	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	0.24	ug/kg	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB1	M54869.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	88%	70-130%
2037-26-5	Toluene-D8	110%	70-130%
460-00-4	4-Bromofluorobenzene	88%	70-130%

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

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-MB	M54899.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	1.3	ug/kg	
107-02-8	Acrolein	ND	25	10	ug/kg	
107-13-1	Acrylonitrile	ND	25	1.3	ug/kg	
71-43-2	Benzene	ND	0.50	0.29	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.22	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg	
75-25-2	Bromoform	ND	2.0	2.0	ug/kg	
74-83-9	Bromomethane	ND	2.0	0.52	ug/kg	
78-93-3	2-Butanone (MEK)	ND	5.0	1.3	ug/kg	
104-51-8	n-Butylbenzene	ND	5.0	0.18	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.0	0.23	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	0.88	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	0.16	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.73	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.28	ug/kg	
75-00-3	Chloroethane	ND	5.0	1.3	ug/kg	
67-66-3	Chloroform	ND	2.0	0.52	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.46	ug/kg	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	0.23	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.30	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.22	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.23	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.21	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.29	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	0.37	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.30	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.29	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.37	ug/kg	
142-28-9	1,3-Dichloropropane	ND	5.0	0.23	ug/kg	
594-20-7	2,2-Dichloropropane	ND	5.0	0.87	ug/kg	
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.17	ug/kg	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-MB	M54899.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.50	ug/kg	
123-91-1	1,4-Dioxane	ND	25	25	ug/kg	
97-63-2	Ethyl methacrylate	ND	5.0	0.68	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.24	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.46	ug/kg	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.23	ug/kg	
99-87-6	p-Isopropyltoluene	ND	5.0	0.18	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.29	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.50	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.49	ug/kg	
75-09-2	Methylene chloride	4.1	2.0	1.2	ug/kg	
91-20-3	Naphthalene	ND	5.0	1.3	ug/kg	
103-65-1	n-Propylbenzene	ND	5.0	1.0	ug/kg	
100-42-5	Styrene	ND	5.0	0.23	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.24	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.43	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.23	ug/kg	
108-88-3	Toluene	ND	5.0	0.85	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.24	ug/kg	
120-82-1	1,2,4-Trichlorobenzeue	ND	5.0	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.31	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.73	ug/kg	
79-01-6	Trichloroetheue	ND	2.0	0.21	ug/kg	
75-69-4	Trichlorofluoromethane	ND	2.0	0.30	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.29	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.22	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-05-4	Vinyl Acetate	ND	5.0	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.27	ug/kg	
	m,p-Xylene	ND	2.0	0.79	ug/kg	
95-47-6	o-Xylene	ND	2.0	0.24	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	0.24	ug/kg	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-MB	M54899.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	88%	70-130%
2037-26-5	Toluene-D8	111%	70-130%
460-00-4	4-Bromofluorobenzene	88%	70-130%

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

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB1	G125279.D	1	03/14/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18723-2MS, MC18723-2MSD

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	1.3	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	ng/l	
104-51-8	n-Butylbenzene	ND	5.0	0.61	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ng/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	1.3	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	ng/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	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB1	G125279.D	1	03/14/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18723-2MS, MC18723-2MSD

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	0.50	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	1.3	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	ng/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.3	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: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB1	G125279.D	1	03/14/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18723-2MS, MC18723-2MSD

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	77%	70-130%
2037-26-5	Toluene-D8	76%	70-130%
460-00-4	4-Bromofluorobenzene	78%	70-130%

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB	M54845.D	1	03/19/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MSM1869-BSD, MSM1869-BS1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	1.3	ug/kg	
107-02-8	Acrolein	ND	25	10	ug/kg	
107-13-1	Acrylonitrile	ND	25	1.3	ug/kg	
71-43-2	Benzene	ND	0.50	0.29	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.22	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg	
75-25-2	Bromoform	ND	2.0	2.0	ug/kg	
74-83-9	Bromomethane	ND	2.0	0.52	ug/kg	
78-93-3	2-Butanone (MEK)	ND	5.0	1.3	ug/kg	
104-51-8	n-Butylbenzene	ND	5.0	0.18	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.0	0.23	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	0.88	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	0.16	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.73	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.28	ug/kg	
75-00-3	Chloroethane	ND	5.0	1.3	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	2.0	ug/kg	
67-66-3	Chloroform	ND	2.0	0.52	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.46	ug/kg	
95-49-8	o-Chlorotolueue	ND	5.0	1.1	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	0.23	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.30	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.22	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.23	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.21	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.29	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	0.37	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.30	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.29	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.37	ug/kg	
142-28-9	1,3-Dichloropropane	ND	5.0	0.23	ug/kg	
594-20-7	2,2-Dichloropropane	ND	5.0	0.87	ug/kg	
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg	

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB	M54845.D	1	03/19/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MSM1869-BSD, MSM1869-BS1

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.17	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.50	ug/kg	
123-91-1	1,4-Dioxane	ND	25	25	ug/kg	
97-63-2	Ethyl methacrylate	ND	5.0	0.68	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.24	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.46	ug/kg	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.23	ug/kg	
99-87-6	p-Isopropyltoluene	ND	5.0	0.18	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.29	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.50	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.49	ug/kg	
75-09-2	Methylene chloride	3.8	2.0	1.2	ug/kg	
91-20-3	Naphthalene	ND	5.0	1.3	ug/kg	
103-65-1	n-Propylbenzene	ND	5.0	1.0	ug/kg	
100-42-5	Styrene	ND	5.0	0.23	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.24	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.43	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.23	ug/kg	
108-88-3	Toluene	ND	5.0	0.85	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.24	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.23	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.31	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.73	ug/kg	
79-01-6	Trichloroethene	ND	2.0	0.21	ug/kg	
75-69-4	Trichlorofluoromethane	ND	2.0	0.30	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.29	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.22	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-05-4	Vinyl Acetate	ND	5.0	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.27	ug/kg	
	m,p-Xylene	ND	2.0	0.79	ug/kg	
95-47-6	o-Xylene	ND	2.0	0.24	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	0.24	ug/kg	

6.1.6

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB	M54845.D	1	03/19/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MSM1869-BSD, MSM1869-BS1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	86%	70-130%
2037-26-5	Toluene-D8	111%	70-130%
460-00-4	4-Bromofluorobenzene	88%	70-130%

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-BS	G125254.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	76.0	152* a	70-130
107-02-8	Acrolein	250	128	51* a	70-130
107-13-1	Acrylonitrile	50	36.7	73	70-130
71-43-2	Benzene	50	47.2	94	70-130
108-86-1	Bromobenzene	50	55.1	110	70-130
74-97-5	Bromochloromethane	50	49.6	99	70-130
75-27-4	Bromodichloromethane	50	46.6	93	70-130
75-25-2	Bromoform	50	47.2	94	70-130
74-83-9	Bromomethane	50	46.2	92	70-130
78-93-3	2-Butanone (MEK)	50	70.8	142* a	70-130
104-51-8	n-Butylbenzene	50	56.9	114	70-130
135-98-8	sec-Butylbenzene	50	54.1	108	70-130
98-06-6	tert-Butylbenzene	50	50.5	101	70-130
75-15-0	Carbon disulfide	50	45.7	91	70-130
56-23-5	Carbon tetrachloride	50	50.0	100	70-130
108-90-7	Chlorobenzene	50	52.2	104	70-130
75-00-3	Chloroethane	50	47.4	95	70-130
110-75-8	2-Chloroethyl vinyl ether	50	33.1	66* a	70-130
67-66-3	Chloroform	50	45.3	91	70-130
74-87-3	Chloromethane	50	46.0	92	70-130
95-49-8	o-Chlorotoluene	50	50.2	100	70-130
106-43-4	p-Chlorotoluene	50	50.3	101	70-130
124-48-1	Dibromochloromethane	50	50.1	100	70-130
95-50-1	1,2-Dichlorobenzene	50	49.7	99	70-130
541-73-1	1,3-Dichlorobenzene	50	52.1	104	70-130
106-46-7	1,4-Dichlorobenzene	50	53.7	107	70-130
75-71-8	Dichlorodifluoromethane	50	40.7	81	70-130
75-34-3	1,1-Dichloroethane	50	46.5	93	70-130
107-06-2	1,2-Dichloroethane	50	45.0	90	70-130
75-35-4	1,1-Dichloroethene	50	46.8	94	70-130
156-59-2	cis-1,2-Dichloroethene	50	49.3	99	70-130
156-60-5	trans-1,2-Dichloroethene	50	49.6	99	70-130
78-87-5	1,2-Dichloropropane	50	46.7	93	70-130
142-28-9	1,3-Dichloropropane	50	50.1	100	70-130
594-20-7	2,2-Dichloropropane	50	62.7	125	70-130
563-58-6	1,1-Dichloropropene	50	51.9	104	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-BS	G125254.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	43.0	86	70-130
10061-02-6	trans-1,3-Dichloropropene	50	44.3	89	70-130
123-91-1	1,4-Dioxane	250	253	101	70-130
97-63-2	Ethyl methacrylate	50	42.8	86	77-137
100-41-4	Ethylbenzene	50	53.7	107	70-130
87-68-3	Hexachlorobutadiene	50	64.2	128	70-130
591-78-6	2-Hexanone	50	76.5	153* a	70-130
98-82-8	Isopropylbenzene	50	50.8	102	70-130
99-87-6	p-Isopropyltoluene	50	60.2	120	70-130
1634-04-4	Methyl Tert Butyl Ether	50	41.5	83	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	39.8	80	70-130
74-95-3	Methylene bromide	50	45.6	91	70-130
75-09-2	Methylene chloride	50	46.3	93	70-130
91-20-3	Naphthalene	50	46.0	92	70-130
103-65-1	n-Propylbenzene	50	50.9	102	70-130
100-42-5	Styrene	50	54.2	108	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	55.3	111	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	47.8	96	70-130
127-18-4	Tetrachloroethene	50	58.2	116	70-130
108-88-3	Toluene	50	48.5	97	70-130
87-61-6	1,2,3-Trichlorobenzene	50	53.7	107	70-130
120-82-1	1,2,4-Trichlorobenzene	50	56.4	113	70-130
71-55-6	1,1,1-Trichloroethane	50	56.0	112	70-130
79-00-5	1,1,2-Trichloroethane	50	44.8	90	70-130
79-01-6	Trichloroethene	50	44.3	89	70-130
75-69-4	Trichlorofluoromethane	50	43.5	87	70-130
96-18-4	1,2,3-Trichloropropane	50	44.6	89	70-130
95-63-6	1,2,4-Trimethylbenzene	50	49.2	98	70-130
108-67-8	1,3,5-Trimethylbenzene	50	48.0	96	70-130
108-05-4	Vinyl Acetate	50	64.0	128	70-130
75-01-4	Vinyl chloride	50	43.8	88	70-130
	m,p-Xylene	100	106	106	70-130
95-47-6	o-Xylene	50	50.5	101	70-130
1330-20-7	Xylene (total)	150	157	105	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-BS	G125254.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	76%	70-130%
2037-26-5	Toluene-D8	76%	70-130%
460-00-4	4-Bromofluorobenzene	72%	70-130%

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

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS1	M54867.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	59.4	119	70-130
107-02-8	Acrolein	250	274	110	70-130
107-13-1	Acrylonitrile	50	47.6	95	70-130
71-43-2	Benzene	50	55.3	111	70-130
108-86-1	Bromobenzene	50	53.9	108	70-130
74-97-5	Bromochloromethane	50	54.4	109	70-130
75-27-4	Bromodichloromethane	50	54.1	108	70-130
75-25-2	Bromoform	50	48.9	98	70-130
74-83-9	Bromomethane	50	54.9	110	70-130
78-93-3	2-Butanone (MEK)	50	46.4	93	70-130
104-51-8	n-Butylbenzene	50	53.0	106	70-130
135-98-8	sec-Butylbenzene	50	52.3	105	70-130
98-06-6	tert-Butylbenzene	50	51.8	104	70-130
75-15-0	Carbon disulfide	50	55.6	111	70-130
56-23-5	Carbon tetrachloride	50	54.5	109	70-130
108-90-7	Chlorobenzene	50	50.6	101	70-130
75-00-3	Chloroethane	50	58.4	117	70-130
110-75-8	2-Chloroethyl vinyl ether	50	39.0	78	10-160
67-66-3	Chloroform	50	54.6	109	70-130
74-87-3	Chloromethane	50	60.3	121	70-130
95-49-8	o-Chlorotoluene	50	51.3	103	70-130
106-43-4	p-Chlorotoluene	50	53.2	106	70-130
124-48-1	Dibromochloromethane	50	52.1	104	70-130
95-50-1	1,2-Dichlorobenzene	50	50.7	101	70-130
541-73-1	1,3-Dichlorobenzene	50	49.8	100	70-130
106-46-7	1,4-Dichlorobenzene	50	52.1	104	70-130
75-71-8	Dichlorodifluoromethane	50	59.5	119	70-130
75-34-3	1,1-Dichloroethane	50	56.3	113	70-130
107-06-2	1,2-Dichloroethane	50	53.3	107	70-130
75-35-4	1,1-Dichloroethene	50	58.4	117	70-130
156-59-2	cis-1,2-Dichloroethene	50	54.1	108	70-130
156-60-5	trans-1,2-Dichloroethene	50	55.4	111	70-130
78-87-5	1,2-Dichloropropane	50	54.0	108	70-130
142-28-9	1,3-Dichloropropane	50	51.9	104	70-130
594-20-7	2,2-Dichloropropane	50	54.7	109	70-130
563-58-6	1,1-Dichloropropene	50	56.6	113	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS1	M54867.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	52.8	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	56.4	113	70-130
123-91-1	1,4-Dioxane	250	257	103	70-130
97-63-2	Ethyl methacrylate	50	53.7	107	76-141
100-41-4	Ethylbenzene	50	52.9	106	70-130
87-68-3	Hexachlorobutadiene	50	51.3	103	70-130
591-78-6	2-Hexanone	50	52.9	106	70-130
98-82-8	Isopropylbenzene	50	52.9	106	70-130
99-87-6	p-Isopropyltoluene	50	55.4	111	70-130
1634-04-4	Methyl Tert Bntyl Ether	50	53.2	106	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	48.7	97	70-130
74-95-3	Methylene bromide	50	53.1	106	70-130
75-09-2	Methylene chloride	50	54.7	109	70-130
91-20-3	Naphthalene	50	51.8	104	70-130
103-65-1	n-Propylbenzene	50	52.1	104	70-130
100-42-5	Styrene	50	51.5	103	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	52.6	105	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	51.6	103	70-130
127-18-4	Tetrachloroethene	50	53.9	108	70-130
108-88-3	Toluene	50	55.4	111	70-130
87-61-6	1,2,3-Trichlorobenzene	50	52.0	104	70-130
120-82-1	1,2,4-Trichlorobenzene	50	51.4	103	70-130
71-55-6	1,1,1-Trichloroethane	50	54.4	109	70-130
79-00-5	1,1,2-Trichloroethane	50	51.3	103	70-130
79-01-6	Trichloroethene	50	53.4	107	70-130
75-69-4	Trichlorofluoromethane	50	51.6	103	70-130
96-18-4	1,2,3-Trichloropropane	50	52.3	105	70-130
95-63-6	1,2,4-Trimethylbenzene	50	52.9	106	70-130
108-67-8	1,3,5-Trimethylbenzene	50	52.8	106	70-130
108-05-4	Vinyl Acetate	50	42.4	85	70-130
75-01-4	Vinyl chloride	50	53.8	108	70-130
	m,p-Xylene	100	103	103	70-130
95-47-6	o-Xylene	50	49.9	100	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

* = Ontside of Control Limits.

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS1	M54867.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	87%	70-130%
2037-26-5	Toluene-D8	109%	70-130%
460-00-4	4-Bromofluorobenzene	89%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK2225-BS	K67886.D	1	03/12/13	GK	n/a	n/a	MSK2225
MSK2225-BSD	K67887.D	1	03/12/13	GK	n/a	n/a	MSK2225

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl ether	2500	1830	73	1850	74	1	10-160/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	106%	105%	70-130%
2037-26-5	Toluene-D8	110%	107%	70-130%
460-00-4	4-Bromofluorobenzene	100%	101%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS	M54842.D	1	03/19/13	AMY	n/a	n/a	MSM1869
MSM1869-BSD	M54843.D	1	03/19/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	43.9	88	40.2	80	9	70-130/25
107-02-8	Acrolein	250	247	99	222	89	11	70-130/25
107-13-1	Acrylonitrile	50	51.0	102	48.3	97	5	70-130/25
71-43-2	Benzene	50	53.6	107	52.4	105	2	70-130/25
108-86-1	Bromobenzene	50	47.7	95	47.1	94	1	70-130/25
74-97-5	Bromochloromethane	50	50.2	100	48.5	97	3	70-130/25
75-27-4	Bromodichloromethane	50	49.6	99	47.6	95	4	70-130/25
75-25-2	Bromoform	50	46.1	92	44.4	89	4	70-130/25
74-83-9	Bromomethane	50	55.7	111	54.1	108	3	70-130/25
78-93-3	2-Butanone (MEK)	50	52.3	105	49.2	98	6	70-130/25
104-51-8	n-Butylbenzene	50	50.2	100	50.7	101	1	70-130/25
135-98-8	sec-Butylbenzene	50	49.0	98	49.8	100	2	70-130/25
98-06-6	tert-Butylbenzene	50	48.3	97	49.0	98	1	70-130/25
75-15-0	Carbon disulfide	50	59.1	118	57.9	116	2	70-130/25
56-23-5	Carbon tetrachloride	50	56.5	113	56.3	113	0	70-130/25
108-90-7	Chlorobenzene	50	47.8	96	46.9	94	2	70-130/25
75-00-3	Chloroethane	50	58.5	117	57.5	115	2	70-130/25
67-66-3	Chloroform	50	52.7	105	50.8	102	4	70-130/25
74-87-3	Chloromethane	50	63.1	126	62.3	125	1	70-130/25
95-49-8	o-Chlorotoluene	50	47.3	95	47.5	95	0	70-130/25
106-43-4	p-Chlorotoluene	50	48.7	97	48.3	97	1	70-130/25
124-48-1	Dibromochloromethane	50	46.9	94	45.4	91	3	70-130/25
95-50-1	1,2-Dichlorobenzene	50	45.3	91	44.0	88	3	70-130/25
541-73-1	1,3-Dichlorobenzene	50	45.7	91	45.0	90	2	70-130/25
106-46-7	1,4-Dichlorobenzene	50	47.1	94	46.4	93	1	70-130/25
75-71-8	Dichlorodifluoromethane	50	67.4	135* [a]	66.7	133* [a]	1	70-130/25
75-34-3	1,1-Dichloroethane	50	55.4	111	54.0	108	3	70-130/25
107-06-2	1,2-Dichloroethane	50	48.4	97	47.4	95	2	70-130/25
75-35-4	1,1-Dichloroethene	50	61.7	123	60.1	120	3	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	52.1	104	51.1	102	2	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	56.9	114	56.7	113	0	70-130/25
78-87-5	1,2-Dichloropropane	50	50.0	100	49.0	98	2	70-130/25
142-28-9	1,3-Dichloropropane	50	47.9	96	46.2	92	4	70-130/25
594-20-7	2,2-Dichloropropane	50	58.1	116	56.4	113	3	70-130/25
563-58-6	1,1-Dichloropropene	50	58.3	117	57.8	116	1	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	48.5	97	47.0	94	3	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS	M54842.D	1	03/19/13	AMY	n/a	n/a	MSM1869
MSM1869-BSD	M54843.D	1	03/19/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	51.5	103	49.5	99	4	70-130/25
123-91-1	1,4-Dioxane	250	260	104	263	105	1	70-130/25
97-63-2	Ethyl methacrylate	50	53.6	107	51.7	103	4	76-141/25
100-41-4	Ethylbenzene	50	52.2	104	51.0	102	2	70-130/25
87-68-3	Hexachlorobutadiene	50	47.8	96	48.4	97	1	70-130/25
591-78-6	2-Hexanone	50	61.8	124	56.8	114	8	70-130/25
98-82-8	Isopropylbenzene	50	49.7	99	50.7	101	2	70-130/25
99-87-6	p-Isopropyltoluene	50	51.8	104	53.0	106	2	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	47.3	95	43.2	86	9	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	55.7	111	54.3	109	3	70-130/25
74-95-3	Methylene bromide	50	48.8	98	46.6	93	5	70-130/25
75-09-2	Methylene chloride	50	51.5	103	49.6	99	4	70-130/25
91-20-3	Naphthalene	50	52.7	105	51.4	103	2	70-130/25
103-65-1	n-Propylbenzene	50	49.7	99	49.8	100	0	70-130/25
100-42-5	Styrene	50	48.0	96	46.6	93	3	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	48.3	97	46.9	94	3	70-130/25
79-34-5	1,1,2,2-Tetrachloroetbane	50	50.5	101	49.0	98	3	70-130/25
127-18-4	Tetrachloroethene	50	54.8	110	54.3	109	1	70-130/25
108-88-3	Toluene	50	53.8	108	53.1	106	1	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	45.6	91	44.5	89	2	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	45.9	92	45.1	90	2	70-130/25
71-55-6	1,1,1-Trichloroethane	50	56.7	113	54.6	109	4	70-130/25
79-00-5	1,1,2-Trichloroethane	50	47.8	96	45.8	92	4	70-130/25
79-01-6	Trichloroethene	50	53.9	108	53.8	108	0	70-130/25
75-69-4	Trichlorofluoromethane	50	56.2	112	55.1	110	2	70-130/25
96-18-4	1,2,3-Trichloropropane	50	53.2	106	52.4	105	2	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	48.6	97	49.1	98	1	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	49.3	99	50.0	100	1	70-130/25
108-05-4	Vinyl Acetate	50	41.1	82	36.1	72	13	70-130/25
75-01-4	Vinyl chloride	50	58.9	118	57.3	115	3	70-130/25
	m,p-Xylene	100	102	102	99.4	99	3	70-130/25
95-47-6	o-Xylene	50	48.7	97	47.8	96	2	70-130/25
1330-20-7	Xylene (total)	150	150	100	147	98	2	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS	M54842.D	1	03/19/13	AMY	n/a	n/a	MSM1869
MSM1869-BSD	M54843.D	1	03/19/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	91%	89%	70-130%
2037-26-5	Toluene-D8	110%	111%	70-130%
460-00-4	4-Bromofluorobenzene	88%	88%	70-130%

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

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-BS	M54896.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MSM1871-BSD	M54897.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	34.3	69* a	39.4	79	14	70-130/25
107-02-8	Acrolein	250	188	75	185	74	2	70-130/25
107-13-1	Acrylonitrile	50	41.7	83	46.3	93	10	70-130/25
71-43-2	Benzene	50	45.2	90	51.3	103	13	70-130/25
108-86-1	Bromobenzene	50	39.7	79	45.1	90	13	70-130/25
74-97-5	Bromochloromethane	50	41.5	83	45.7	91	10	70-130/25
75-27-4	Bromodichloromethane	50	41.7	83	47.4	95	13	70-130/25
75-25-2	Bromoform	50	38.7	77	43.2	86	11	70-130/25
74-83-9	Bromomethane	50	48.0	96	51.5	103	7	70-130/25
78-93-3	2-Butanone (MEK)	50	41.7	83	43.1	86	3	70-130/25
104-51-8	n-Butylbenzene	50	41.1	82	47.5	95	14	70-130/25
135-98-8	sec-Butylbenzene	50	40.6	81	47.3	95	15	70-130/25
98-06-6	tert-Butylbenzene	50	41.7	83	47.7	95	13	70-130/25
75-15-0	Carbon disulfide	50	49.5	99	55.0	110	11	70-130/25
56-23-5	Carbon tetrachloride	50	47.1	94	53.6	107	13	70-130/25
108-90-7	Chlorobenzene	50	39.4	79	44.9	90	13	70-130/25
75-00-3	Chloroethane	50	52.0	104	55.4	111	6	70-130/25
67-66-3	Chloroform	50	43.6	87	48.9	98	11	70-130/25
74-87-3	Chloromethane	50	53.6	107	58.6	117	9	70-130/25
95-49-8	o-Chlorotoluene	50	39.2	78	45.4	91	15	70-130/25
106-43-4	p-Chlorotoluene	50	40.0	80	45.8	92	14	70-130/25
124-48-1	Dibromochloromethane	50	39.8	80	44.5	89	11	70-130/25
95-50-1	1,2-Dichlorobenzene	50	36.4	73	41.7	83	14	70-130/25
541-73-1	1,3-Dichlorobenzene	50	37.3	75	42.4	85	13	70-130/25
106-46-7	1,4-Dichlorobenzene	50	37.4	75	42.7	85	13	70-130/25
75-71-8	Dichlorodifluoromethane	50	56.2	112	61.5	123	9	70-130/25
75-34-3	1,1-Dichloroethane	50	46.5	93	52.5	105	12	70-130/25
107-06-2	1,2-Dichloroethane	50	41.6	83	46.0	92	10	70-130/25
75-35-4	1,1-Dichloroethene	50	50.5	101	57.8	116	13	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	44.1	88	49.3	99	11	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	48.1	96	53.4	107	10	70-130/25
78-87-5	1,2-Dichloropropane	50	41.8	84	47.8	96	13	70-130/25
142-28-9	1,3-Dichloropropane	50	40.7	81	45.3	91	11	70-130/25
594-20-7	2,2-Dichloropropane	50	47.7	95	54.2	108	13	70-130/25
563-58-6	1,1-Dichloropropene	50	48.8	98	55.1	110	12	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	40.3	81	45.4	91	12	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-BS	M54896.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MSM1871-BSD	M54897.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	42.9	86	48.2	96	12	70-130/25
123-91-1	1,4-Dioxane	250	212	85	261	104	21	70-130/25
97-63-2	Ethyl methacrylate	50	44.1	88	49.7	99	12	76-141/25
100-41-4	Ethylbenzene	50	42.8	86	49.1	98	14	70-130/25
87-68-3	Hexachlorobutadiene	50	39.0	78	46.2	92	17	70-130/25
591-78-6	2-Hexanone	50	48.0	96	55.3	111	14	70-130/25
98-82-8	Isopropylbenzene	50	41.3	83	48.4	97	16	70-130/25
99-87-6	p-Isopropyltolnene	50	42.5	85	49.6	99	15	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	37.3	75	43.6	87	16	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	45.5	91	51.7	103	13	70-130/25
74-95-3	Methylene bromide	50	40.9	82	45.9	92	12	70-130/25
75-09-2	Methylene chloride	50	43.4	87	48.5	97	11	70-130/25
91-20-3	Naphthalene	50	42.7	85	48.6	97	13	70-130/25
103-65-1	n-Propylbenzene	50	40.8	82	47.4	95	15	70-130/25
100-42-5	Styrene	50	39.2	78	44.7	89	13	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	40.2	80	46.1	92	14	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	41.7	83	47.2	94	12	70-130/25
127-18-4	Tetrachloroethene	50	45.7	91	52.2	104	13	70-130/25
108-88-3	Toluene	50	44.6	89	51.3	103	14	70-130/25
87-61-6	1,2,3-Trichlorohenzene	50	36.9	74	41.8	84	12	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	36.6	73	41.0	82	11	70-130/25
71-55-6	1,1,1-Trichloroethane	50	47.5	95	53.5	107	12	70-130/25
79-00-5	1,1,2-Trichloroethane	50	40.0	80	45.1	90	12	70-130/25
79-01-6	Trichloroethene	50	45.2	90	50.5	101	11	70-130/25
75-69-4	Trichlorofluoromethane	50	48.0	96	53.1	106	10	70-130/25
96-18-4	1,2,3-Trichloropropane	50	43.9	88	49.0	98	11	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	39.9	80	46.4	93	15	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	40.7	81	47.3	95	15	70-130/25
108-05-4	Vinyl Acetate	50	29.6	59* a	30.1	60* a	2	70-130/25
75-01-4	Vinyl chloride	50	50.1	100	54.5	109	8	70-130/25
	m,p-Xylene	100	85.4	85	96.1	96	12	70-130/25
95-47-6	o-Xylene	50	40.9	82	46.1	92	12	70-130/25
1330-20-7	Xylene (total)	150	126	84	142	95	12	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-BS	M54896.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MSM1871-BSD	M54897.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	90%	89%	70-130%
2037-26-5	Toluene-D8	110%	110%	70-130%
460-00-4	4-Bromofluorobenzene	88%	90%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18768-6MS	K67901.D	1	03/12/13	GK	n/a	n/a	MSK2225
MC18768-6MSD	K67902.D	1	03/12/13	GK	n/a	n/a	MSK2225
MC18768-6	K67893.D	1	03/12/13	GK	n/a	n/a	MSK2225

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	MC18768-6 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl ether	ND		3300	2530	77	2550	77	1	10-160/30

CAS No.	Surrogate Recoveries	MS	MSD	MC18768-6	Limits
1868-53-7	Dibromofluoromethane	103%	101%	107%	70-130%
2037-26-5	Toluene-D8	111%	106%	101%	70-130%
460-00-4	4-Bromofluorobenzene	105%	100%	98%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18723-2MS	G125284.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2MSD	G125285.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2	G125266.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Compound	MC18723-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		50	35.4	71	37.1	74	5	70-130/30
107-02-8	Acrolein	ND		250	125	50* [a]	131	52* [a]	5	70-130/30
107-13-1	Acrylonitrile	ND		50	35.3	71	35.4	71	0	70-130/30
71-43-2	Benzene	ND		50	46.7	93	46.2	92	1	70-130/30
108-86-1	Bromobenzene	ND		50	53.1	106	53.5	107	1	70-130/30
74-97-5	Bromochloromethane	ND		50	48.8	98	48.0	96	2	70-130/30
75-27-4	Bromodichloromethane	ND		50	46.6	93	45.5	91	2	70-130/30
75-25-2	Bromoform	ND		50	44.3	89	44.9	90	1	70-130/30
74-83-9	Bromomethane	ND		50	44.8	90	44.4	89	1	70-130/30
78-93-3	2-Butanone (MEK)	ND		50	38.3	77	38.5	77	1	70-130/30
104-51-8	n-Butylbenzene	ND		50	51.5	103	51.1	102	1	70-130/30
135-98-8	sec-Butylbenzene	ND		50	51.1	102	51.5	103	1	70-130/30
98-06-6	tert-Butylbenzene	ND		50	48.3	97	48.8	98	1	70-130/30
75-15-0	Carbon disulfide	ND		50	39.1	78	38.8	78	1	70-130/30
56-23-5	Carbon tetrachloride	ND		50	50.2	100	49.0	98	2	70-130/30
108-90-7	Chlorobenzene	ND		50	51.8	104	50.6	101	2	70-130/30
75-00-3	Chloroethane	ND		50	47.8	96	46.7	93	2	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		50	ND	0* [a]	ND	0* [a]	nc	70-130/30
67-66-3	Chloroform	ND		50	44.4	89	44.0	88	1	70-130/30
74-87-3	Chloromethane	ND		50	47.1	94	45.7	91	3	70-130/30
95-49-8	o-Chlorotoluene	ND		50	47.8	96	47.9	96	0	70-130/30
106-43-4	p-Chlorotoluene	ND		50	48.7	97	48.9	98	0	70-130/30
124-48-1	Dibromochloromethane	ND		50	48.6	97	48.8	98	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		50	47.4	95	48.2	96	2	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		50	49.3	99	49.5	99	0	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		50	51.3	103	51.1	102	0	70-130/30
75-71-8	Dichlorodifluoromethane	ND		50	38.0	76	40.0	80	5	70-130/30
75-34-3	1,1-Dichloroethane	ND		50	46.6	93	46.1	92	1	70-130/30
107-06-2	1,2-Dichloroethane	ND		50	43.9	88	43.7	87	0	70-130/30
75-35-4	1,1-Dichloroethene	ND		50	46.0	92	45.4	91	1	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		50	48.8	98	48.5	97	1	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		50	49.4	99	48.6	97	2	70-130/30
78-87-5	1,2-Dichloropropane	ND		50	45.8	92	45.7	91	0	70-130/30
142-28-9	1,3-Dichloropropane	ND		50	48.9	98	48.4	97	1	70-130/30
594-20-7	2,2-Dichloropropane	ND		50	35.4	71	35.3	71	0	70-130/30
563-58-6	1,1-Dichloropropene	ND		50	50.9	102	49.4	99	3	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18723-2MS	G125284.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2MSD	G125285.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2	G125266.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Compound	MC18723-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		50	38.7	77	38.3	77	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		50	39.8	80	39.5	79	1	70-130/30
123-91-1	1,4-Dioxane	ND		250	256	102	283	113	10	70-130/30
97-63-2	Ethyl methacrylate	ND		50	41.0	82	41.3	83	1	72-139/30
100-41-4	Ethylbenzene	ND		50	52.2	104	51.7	103	1	70-130/30
87-68-3	Hexachlorobutadiene	ND		50	58.4	117	60.1	120	3	70-130/30
591-78-6	2-Hexanone	ND		50	38.6	77	39.6	79	3	70-130/30
98-82-8	Isopropylbenzene	ND		50	49.6	99	49.5	99	0	70-130/30
99-87-6	p-Isopropyltoluene	ND		50	56.7	113	56.6	113	0	70-130/30
1634-04-4	Methyl Tert Bntyl Ether	ND		50	40.0	80	39.8	80	1	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	26.5	53* [a]	26.4	53* [a]	0	70-130/30
74-95-3	Methylene bromide	ND		50	44.5	89	44.3	89	0	70-130/30
75-09-2	Methylene chloride	ND		50	46.1	92	46.1	92	0	70-130/30
91-20-3	Naphthalene	ND		50	41.9	84	45.9	92	9	70-130/30
103-65-1	n-Propylbenzene	ND		50	48.1	96	48.1	96	0	70-130/30
100-42-5	Styrene	ND		50	51.9	104	51.4	103	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		50	53.8	108	53.7	107	0	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	45.9	92	47.9	96	4	70-130/30
127-18-4	Tetrachloroethene	1.2		50	56.0	110	54.0	106	4	70-130/30
108-88-3	Tolnene	ND		50	48.2	96	47.3	95	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		50	49.2	98	53.0	106	7	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		50	51.9	104	54.1	108	4	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		50	55.8	112	54.7	109	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		50	44.0	88	44.1	88	0	70-130/30
79-01-6	Trichloroethene	ND		50	43.4	87	42.6	85	2	70-130/30
75-69-4	Trichlorofluoromethane	ND		50	42.4	85	42.2	84	0	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		50	42.1	84	43.7	87	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		50	46.7	93	47.0	94	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		50	46.1	92	46.2	92	0	70-130/30
108-05-4	Vinyl Acetate	ND		50	58.0	116	58.2	116	0	70-130/30
75-01-4	Vinyl chloride	ND		50	43.9	88	42.8	86	3	70-130/30
	m,p-Xylene	ND		100	103	103	101	101	2	70-130/30
95-47-6	o-Xylene	ND		50	49.5	99	48.9	98	1	70-130/30
1330-20-7	Xylene (total)	ND		150	153	102	150	100	2	70-130/30

* = Outside of Control Limits.

6.4.2

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18723-2MS	G125284.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2MSD	G125285.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2	G125266.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Surrogate Recoveries	MS	MSD	MC18723-2	Limits
1868-53-7	Dibromofluoromethane	77%	77%	79%	70-130%
2037-26-5	Toluene-D8	77%	77%	77%	70-130%
460-00-4	4-Bromofluorobenzene	72%	73%	77%	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: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18752-2MS	M54873.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2MSD	M54874.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2	M54871.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	MC18752-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		59.8	91.4	153* a	90.2	146* a	1	70-130/30
107-02-8	Acrolein	ND		299	283	95	271	87	4	70-130/30
107-13-1	Acrylonitrile	ND		59.8	72.1	121	72.2	117	0	70-130/30
71-43-2	Benzene	1.2		59.8	65.5	108	60.9	96	7	70-130/30
108-86-1	Bromobenzene	ND		59.8	60.3	101	51.9	84	15	70-130/30
74-97-5	Bromochloromethane	ND		59.8	63.8	107	61.3	99	4	70-130/30
75-27-4	Bromodichloromethane	ND		59.8	62.1	104	59.3	96	5	70-130/30
75-25-2	Bromoform	ND		59.8	64.2	107	61.5	99	4	70-130/30
74-83-9	Bromomethane	ND		59.8	67.1	112	63.6	103	5	70-130/30
78-93-3	2-Butanone (MEK)	ND		59.8	76.9	129	75.6	122	2	70-130/30
104-51-8	n-Butylbenzene	ND		59.8	59.6	100	37.9	61* a	45* b	70-130/30
135-98-8	sec-Butylbenzene	ND		59.8	59.0	99	40.8	66* a	36* b	70-130/30
98-06-6	tert-Butylbenzene	ND		59.8	58.4	98	45.7	74	24	70-130/30
75-15-0	Carbon disulfide	5.8	J	59.8	66.4	101	63.6	93	4	70-130/30
56-23-5	Carbon tetrachloride	ND		59.8	66.3	111	61.0	98	8	70-130/30
108-90-7	Chlorobenzene	ND		59.8	57.3	96	51.4	83	11	70-130/30
75-00-3	Chloroethane	ND		59.8	69.4	116	64.9	105	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		59.8	ND	0* a	ND	0* a	nc	10-160/30
67-66-3	Chloroform	ND		59.8	62.7	105	59.7	96	5	70-130/30
74-87-3	Chloromethane	ND		59.8	77.0	129	71.7	116	7	70-130/30
95-49-8	o-Chlorotoluene	ND		59.8	58.2	97	45.7	74	24	70-130/30
106-43-4	p-Chlorotoluene	ND		59.8	59.2	99	47.0	76	23	70-130/30
124-48-1	Dibromochloromethane	ND		59.8	62.6	105	60.5	98	3	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		59.8	56.4	94	42.7	69* a	28	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		59.8	55.5	93	42.2	68* a	27	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		59.8	58.1	97	44.3	71	27	70-130/30
75-71-8	Dichlorodifluoromethane	ND		59.8	80.7	135* a	73.4	118	9	70-130/30
75-34-3	1,1-Dichloroethane	ND		59.8	65.7	110	62.2	100	5	70-130/30
107-06-2	1,2-Dichloroethane	ND		59.8	65.7	110	62.5	101	5	70-130/30
75-35-4	1,1-Dichloroethene	ND		59.8	70.3	118	65.7	106	7	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		59.8	62.2	104	59.4	96	5	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		59.8	64.3	108	61.5	99	4	70-130/30
78-87-5	1,2-Dichloropropane	ND		59.8	62.1	104	58.4	94	6	70-130/30
142-28-9	1,3-Dichloropropane	ND		59.8	63.7	107	62.2	100	2	70-130/30
594-20-7	2,2-Dichloropropane	ND		59.8	65.3	109	61.0	98	7	70-130/30
563-58-6	1,1-Dichloropropene	ND		59.8	68.6	115	62.9	101	9	70-130/30

* = Outside of Control Limits.

6.4.3

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18752-2MS	M54873.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2MSD	M54874.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2	M54871.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	MC18752-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		59.8	61.6	103	57.5	93	7	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		59.8	68.0	114	64.0	103	6	70-130/30
123-91-1	1,4-Dioxane	ND		299	451	151* a	428	138* a	5	70-130/30
97-63-2	Ethyl methacrylate	ND		59.8	74.8	125	72.4	117	3	41-160/30
100-41-4	Ethylbenzene	2.3	J	59.8	62.9	101	54.9	85	14	70-130/30
87-68-3	Hexachlorobutadiene	ND		59.8	54.6	91	29.4	47* a	60* b	70-130/30
591-78-6	2-Hexanone	ND		59.8	90.3	151* a	85.0	137* a	6	70-130/30
98-82-8	Isopropylbenzene	ND		59.8	60.5	101	48.7	79	22	70-130/30
99-87-6	p-Isopropyltoluene	ND		59.8	62.6	105	43.3	70	36* b	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		59.8	64.7	108	61.7	100	5	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		59.8	86.4	145* a	81.1	131* a	6	70-130/30
74-95-3	Methylene bromide	ND		59.8	66.4	111	63.7	103	4	70-130/30
75-09-2	Methylene chloride	3.7		59.8	61.1	96	59.7	90	2	70-130/30
91-20-3	Naphthalene	ND		59.8	73.6	123	45.6	74	47* b	70-130/30
103-65-1	n-Propylbenzene	ND		59.8	59.5	100	45.8	74	26	70-130/30
100-42-5	Styrene	ND		59.8	57.7	97	50.0	81	14	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		59.8	60.2	101	55.9	90	7	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		59.8	73.3	123	68.1	110	7	70-130/30
127-18-4	Tetrachloroethene	ND		59.8	63.6	106	56.8	92	11	70-130/30
108-88-3	Toluene	2.8	J	59.8	66.6	107	60.5	93	10	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		59.8	58.2	97	32.2	52* a	58* b	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		59.8	56.7	95	32.9	53* a	53* b	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		59.8	65.4	109	61.6	99	6	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		59.8	65.3	109	62.0	100	5	70-130/30
79-01-6	Trichloroethene	ND		59.8	65.6	110	60.2	97	9	70-130/30
75-69-4	Trichlorofluoromethane	ND		59.8	64.9	109	59.5	96	9	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		59.8	79.0	132* a	73.4	118	7	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		59.8	59.6	100	44.9	72	28	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		59.8	60.3	101	45.1	73	29	70-130/30
108-05-4	Vinyl Acetate	ND		59.8	51.7	87	47.3	76	9	70-130/30
75-01-4	Vinyl chloride	ND		59.8	69.8	117	64.3	104	8	70-130/30
	m,p-Xylene	ND		120	120	100	105	85	13	70-130/30
95-47-6	o-Xylene	ND		59.8	57.9	97	51.9	84	11	70-130/30
1330-20-7	Xylene (total)	ND		179	178	99	157	84	13	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18752-2MS	M54873.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2MSD	M54874.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2	M54871.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Surrogate Recoveries	MS	MSD	MC18752-2	Limits
1868-53-7	Dibromofluoromethane	88%	89%	87%	70-130%
2037-26-5	Toluene-D8	112%	111%	111%	70-130%
460-00-4	4-Bromofluorobenzene	89%	89%	89%	70-130%

(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.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18887-3MS	M54906.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3MSD	M54907.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3	M54905.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	MC18887-3 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		156	122	78	110	67* [a]	10	70-130/30
107-02-8	Acrolein	ND		782	604	77	572	69* [a]	5	70-130/30
107-13-1	Acrylonitrile	ND		156	152	97	146	89	4	70-130/30
71-43-2	Benzene	ND		156	150	96	140	85	7	70-130/30
108-86-1	Bromobenzene	ND		156	122	78	106	64* [a]	14	70-130/30
74-97-5	Bromochloromethane	ND		156	147	94	138	84	6	70-130/30
75-27-4	Bromodichloromethane	ND		156	145	93	135	82	7	70-130/30
75-25-2	Bromoform	ND		156	137	88	126	76	8	70-130/30
74-83-9	Bromomethane	ND		156	157	100	152	92	3	70-130/30
78-93-3	2-Butanone (MEK)	ND		156	169	108	164	99	3	70-130/30
104-51-8	n-Butylbenzene	ND		156	80.7	52* [a]	64.1	39* [a]	23	70-130/30
135-98-8	sec-Butylbenzene	ND		156	84.8	54* [a]	69.0	42* [a]	21	70-130/30
98-06-6	tert-Butylbenzene	ND		156	98.0	63* [a]	84.0	51* [a]	15	70-130/30
75-15-0	Carbon disulfide	ND		156	162	104	155	94	4	70-130/30
56-23-5	Carbon tetrachloride	ND		156	154	99	142	86	8	70-130/30
108-90-7	Chlorobenzene	ND		156	125	80	113	69* [a]	10	70-130/30
75-00-3	Chloroethane	ND		156	168	107	160	97	5	70-130/30
67-66-3	Chloroform	ND		156	147	94	140	85	5	70-130/30
74-87-3	Chloromethane	ND		156	174	111	171	104	2	70-130/30
95-49-8	o-Chlorotoluene	ND		156	109	70	90.6	55* [a]	18	70-130/30
106-43-4	p-Chlorotoluene	ND		156	112	72	94.8	57* [a]	17	70-130/30
124-48-1	Dibromochloromethane	ND		156	139	89	130	79	7	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		156	99.6	64* [a]	83.1	50* [a]	18	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		156	102	65* [a]	84.2	51* [a]	19	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		156	105	67* [a]	88.5	54* [a]	17	70-130/30
75-71-8	Dichlorodifluoromethane	ND		156	176	113	166	101	6	70-130/30
75-34-3	1,1-Dichloroethane	ND		156	154	99	145	88	6	70-130/30
107-06-2	1,2-Dichloroethane	ND		156	149	95	137	83	8	70-130/30
75-35-4	1,1-Dichloroethene	ND		156	168	107	159	96	6	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		156	148	95	142	86	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		156	156	100	146	89	7	70-130/30
78-87-5	1,2-Dichloropropane	ND		156	144	92	134	81	7	70-130/30
142-28-9	1,3-Dichloropropane	ND		156	143	91	133	81	7	70-130/30
594-20-7	2,2-Dichloropropane	ND		156	156	100	148	90	5	70-130/30
563-58-6	1,1-Dichloropropene	ND		156	157	100	146	89	7	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND		156	139	89	129	78	7	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18887-3MS	M54906.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3MSD	M54907.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3	M54905.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Compound	MC18887-3 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	ND		156	150	96	139	84	8	70-130/30
123-91-1	1,4-Dioxane	ND		782	657	84	687	83	4	70-130/30
97-63-2	Ethyl methacrylate	ND		156	164	105	149	90	10	41-160/30
100-41-4	Ethylbenzene	ND		156	126	81	110	67* [a]	14	70-130/30
87-68-3	Hexachlorobutadiene	ND		156	62.8	40* [a]	48.2	29* [a]	26	70-130/30
591-78-6	2-Hexanone	ND		156	180	115	171	104	5	70-130/30
98-82-8	Isopropylbenzene	ND		156	107	68* [a]	88.6	54* [a]	19	70-130/30
99-87-6	p-Isopropyltoluene	ND		156	88.8	57* [a]	71.5	43* [a]	22	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		156	149	95	145	88	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		156	175	112	162	98	8	70-130/30
74-95-3	Methylene bromide	ND		156	147	94	135	82	9	70-130/30
75-09-2	Methylene chloride	8.4		156	149	90	141	80	6	70-130/30
91-20-3	Naphthalene	ND		156	90.9	58* [a]	69.0	42* [a]	27	70-130/30
103-65-1	n-Propylbenzene	ND		156	101	65* [a]	82.6	50* [a]	20	70-130/30
100-42-5	Styrene	ND		156	117	75	103	62* [a]	13	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		156	131	84	120	73	9	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		156	151	97	137	83	10	70-130/30
127-18-4	Tetrachloroethene	ND		156	138	88	124	75	11	70-130/30
108-88-3	Toluene	ND		156	144	92	130	79	10	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		156	69.7	45* [a]	51.1	31* [a]	31* [b]	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		156	72.7	47* [a]	53.1	32* [a]	31* [b]	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		156	153	98	146	89	5	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		156	143	91	132	80	8	70-130/30
79-01-6	Trichloroethene	ND		156	148	95	140	85	6	70-130/30
75-69-4	Trichlorofluoromethane	ND		156	150	96	143	87	5	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		156	160	102	145	88	10	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		156	97.8	63* [a]	78.9	48* [a]	21	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		156	97.9	63* [a]	79.5	48* [a]	21	70-130/30
108-05-4	Vinyl Acetate	ND		156	111	71	98.7	60* [a]	12	70-130/30
75-01-4	Vinyl chloride	ND		156	160	102	156	95	3	70-130/30
	m,p-Xylene	ND		313	248	79	223	68* [a]	11	70-130/30
95-47-6	o-Xylene	ND		156	121	77	109	66* [a]	10	70-130/30
1330-20-7	Xylene (total)	ND		469	369	79	332	67* [a]	11	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18887-3MS	M54906.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3MSD	M54907.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3	M54905.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples: Method: SW846 8260B

MC18752-3

CAS No.	Surrogate Recoveries	MS	MSD	MC18887-3	Limits
1868-53-7	Dibromofluoromethane	89%	89%	89%	70-130%
2037-26-5	Toluene-D8	111%	112%	111%	70-130%
460-00-4	4-Bromofluorobenzene	88%	88%	87%	70-130%

(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.

Volatile Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSG4957-CC4948	Injection Date:	03/13/13
Lab File ID:	G125253.D	Injection Time:	09:43
Instrument ID:	GCMSG	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	89396	5.08	132090	6.21	55001	9.55	63633	12.18	17376	3.08
Upper Limit [a]	178792	5.58	264180	6.71	110002	10.05	127266	12.68	34752	3.58
Lower Limit [b]	44698	4.58	66045	5.71	27501	9.05	31817	11.68	8688	2.58
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSG4957-BS	90808	5.08	130888	6.21	54999	9.55	63615	12.18	18124	3.08
MSG4957-MB	85402	5.08	126429	6.21	52700	9.55	55058	12.18	17677	3.09
ZZZZZZ	85662	5.08	126221	6.21	56363	9.55	65280	12.18	15389	3.08
ZZZZZZ	90176	5.08	131417	6.21	54376	9.55	58685	12.18	16898	3.08
ZZZZZZ	89629	5.08	129745	6.21	55960	9.55	58607	12.18	17532	3.08
ZZZZZZ	91227	5.08	134243	6.21	58429	9.55	61530	12.18	17147	3.08
ZZZZZZ	103075	5.08	152324	6.21	71358	9.56	72246	12.18	19007	3.08
ZZZZZZ	92797	5.08	133081	6.21	56134	9.55	59416	12.18	18307	3.08
MC18752-5	89719	5.08	130612	6.21	54508	9.55	57390	12.18	16408	3.09
MC18752-6	89263	5.08	131253	6.21	54276	9.55	56537	12.18	16415	3.08
ZZZZZZ	87406	5.08	129010	6.21	53988	9.55	55656	12.18	16890	3.08
MC18723-2	86738	5.08	128710	6.21	53351	9.55	56141	12.18	16543	3.09

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

Volatile Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSG4958-CC4948	Injection Date:	03/14/13
Lab File ID:	G125275.D	Injection Time:	12:17
Instrument ID:	GCMSG	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	97237	5.08	140264	6.21	59213	9.55	68425	12.18	20177	3.08
Upper Limit [a]	194474	5.58	280528	6.71	118426	10.05	136850	12.68	40354	3.58
Lower Limit [b]	48619	4.58	70132	5.71	29607	9.05	34213	11.68	10089	2.58

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSG4958-MB	89357	5.08	130864	6.21	54509	9.55	56264	12.18	16198	3.08
MSG4957-MB1	89357	5.08	130864	6.21	54509	9.55	56264	12.18	16198	3.08
MSG4958-BS	92371	5.08	133990	6.21	56354	9.55	64189	12.18	16252	3.08
MSG4957-BS1	92371	5.08	133990	6.21	56354	9.55	64189	12.18	16252	3.08
MC18835-1MS	94248	5.08	136178	6.21	56787	9.55	65091	12.18	17408	3.08
MC18835-1MSD	92925	5.08	136296	6.21	57039	9.55	64610	12.18	17163	3.08
MC18835-1	88275	5.08	129965	6.21	55640	9.55	57948	12.18	16920	3.08
MC18723-2MS	93663	5.08	135563	6.21	57130	9.55	65687	12.18	17651	3.08
MC18723-2MSD	93049	5.08	135002	6.21	56603	9.55	64058	12.18	17547	3.08
ZZZZZZ	90598	5.08	131979	6.21	54673	9.55	56940	12.18	17377	3.08
ZZZZZZ	88456	5.08	130222	6.21	55101	9.55	75501	12.18	16835	3.08
ZZZZZZ	93065	5.08	134867	6.21	56108	9.55	61870	12.18	18450	3.09
ZZZZZZ	91909	5.08	135124	6.21	58135	9.55	61308	12.18	19597	3.08
ZZZZZZ	92209	5.08	135696	6.21	55820	9.55	59283	12.18	19464	3.09
ZZZZZZ	91453	5.08	134697	6.21	55349	9.55	58541	12.18	18000	3.08
ZZZZZZ	92599	5.08	135450	6.21	59170	9.55	63335	12.18	18426	3.08
ZZZZZZ	92706	5.08	136152	6.21	57018	9.55	65690	12.18	18581	3.08
ZZZZZZ	93427	5.08	134142	6.21	56883	9.55	61875	12.18	18949	3.08
ZZZZZZ	93154	5.08	135429	6.21	56614	9.55	60514	12.18	18606	3.09
ZZZZZZ	91448	5.08	134288	6.21	56135	9.55	59474	12.18	18176	3.08
GP15707-LB1	91115	5.08	133497	6.21	55077	9.55	58810	12.18	18805	3.08
GP15707-LS1	92797	5.08	134223	6.21	56387	9.55	65758	12.18	18250	3.08

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Diflnorobenzene
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 Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSK2225-CC2209	Injection Date:	03/12/13
Lab File ID:	K67885.D	Injection Time:	09:07
Instrument ID:	GCMSK	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	301965	8.82	374896	9.67	197667	12.93	194702	15.49	55037	6.42
Upper Limit [a]	603930	9.32	749792	10.17	395334	13.43	389404	15.99	110074	6.92
Lower Limit [b]	150983	8.32	187448	9.17	98834	12.43	97351	14.99	27519	5.92
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSK2225-BS	294051	8.82	368594	9.67	193867	12.93	191942	15.49	57350	6.41
MSK2225-BSD	298719	8.82	377857	9.67	195558	12.93	191737	15.49	59208	6.42
MSK2225-MB	295770	8.82	378530	9.67	188205	12.93	190027	15.49	53725	6.42
MC18752-3	285185	8.82	360748	9.67	181300	12.93	180515	15.49	54140	6.41
MC18768-6	277825	8.82	355119	9.67	179215	12.93	178979	15.49	54495	6.42
ZZZZZZ	276061	8.82	352017	9.67	180127	12.93	182978	15.49	56653	6.42
ZZZZZZ	296027	8.82	373281	9.67	189588	12.93	193260	15.49	58438	6.42
ZZZZZZ	313151	8.82	402291	9.67	199577	12.93	203581	15.49	63409	6.42
ZZZZZZ	306524	8.82	388300	9.67	195392	12.93	199289	15.49	59512	6.42
ZZZZZZ	310804	8.82	394417	9.67	198517	12.93	204659	15.49	62592	6.42
ZZZZZZ	321163	8.82	414010	9.67	202868	12.93	205956	15.49	60533	6.41
ZZZZZZ	310465	8.82	386237	9.67	184645	12.93	196534	15.49	57677	6.42
MC18768-6MS	322680	8.82	403339	9.67	206463	12.93	203762	15.49	63595	6.42
MC18768-6MSD	320061	8.82	403624	9.67	205832	12.93	204274	15.49	60775	6.41
ZZZZZZ	329172	8.82	422117	9.67	205725	12.93	210253	15.49	63790	6.40
ZZZZZZ	328696	8.82	418402	9.67	206307	12.93	201799	15.49	63976	6.41
ZZZZZZ	331591	8.82	424511	9.67	203902	12.93	202138	15.49	63815	6.42
ZZZZZZ	330994	8.82	427163	9.67	209884	12.93	209130	15.49	62927	6.41
ZZZZZZ	339448	8.82	438382	9.67	212809	12.93	214970	15.49	67675	6.42
ZZZZZZ	318990	8.82	405017	9.67	209516	12.93	210575	15.49	66505	6.41

IS 1 = Pentaflnorobenzene
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 Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSM1869-CC1868	Injection Date:	03/19/13
Lab File ID:	M54841.D	Injection Time:	08:42
Instrument ID:	GCMSM	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	502665	9.35	729518	10.24	358694	13.51	413512	16.08	328730	6.85
Upper Limit [a]	1005330	9.85	1459036	10.74	717388	14.01	827024	16.58	657460	7.35
Lower Limit [b]	251333	8.85	364759	9.74	179347	13.01	206756	15.58	164365	6.35
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSM1869-BS	468995	9.36	697592	10.24	340612	13.51	396588	16.08	395623	6.85
MSM1869-BSD	470837	9.36	690180	10.24	338593	13.52	385247	16.08	400448	6.86
MSM1869-MB	508182	9.36	727896	10.24	341291	13.51	401062	16.08	194235	6.86
ZZZZZZ	528183	9.36	756292	10.24	350856	13.52	410738	16.08	342476	6.85
ZZZZZZ	503759	9.36	725984	10.24	331173	13.52	373619	16.08	254119	6.85
ZZZZZZ	493583	9.36	719228	10.24	328957	13.51	342879	16.08	279589	6.86
ZZZZZZ	498980	9.36	722030	10.24	329180	13.52	366330	16.08	319172	6.85
ZZZZZZ	378195	9.36	553266	10.24	264008	13.51	306490	16.08	356976	6.85
ZZZZZZ	476941	9.36	678876	10.24	316876	13.52	365488	16.08	370622	6.85
ZZZZZZ	505632	9.35	729878	10.24	341752	13.51	400752	16.08	402925	6.85

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 Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSM1870-CC1868	Injection Date:	03/20/13
Lab File ID:	M54867.D	Injection Time:	09:30
Instrument ID:	GCMSM	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	562086	9.36	817082	10.24	398563	13.52	443387	16.08	211423	6.85
Upper Limit [a]	1124172	9.86	1634164	10.74	797126	14.02	886774	16.58	422846	7.35
Lower Limit [b]	281043	8.86	408541	9.74	199282	13.02	221694	15.58	105712	6.35

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSM1870-BS	562086	9.36	817082	10.24	398563	13.52	443387	16.08	211423	6.85
MSM1869-BS1	562086	9.36	817082	10.24	398563	13.52	443387	16.08	211423	6.85
MSM1869-MB1	490706	9.36	711160	10.24	334700	13.52	390992	16.08	209587	6.85
MSM1870-MB	490706	9.36	711160	10.24	334700	13.52	390992	16.08	209587	6.85
MC18752-1	498384	9.36	715817	10.24	321149	13.51	335108	16.08	360932	6.86
MC18752-2	485157	9.36	703987	10.24	335612	13.51	392567	16.08	331221	6.85
MC18752-4	485887	9.36	697087	10.24	329196	13.51	383953	16.08	320050	6.85
MC18752-2MS	470701	9.36	682054	10.24	341053	13.52	385195	16.08	394500	6.86
MC18752-2MSD	515200	9.35	752047	10.24	367214	13.51	419191	16.08	402047	6.85
MC18819-2MS	521176	9.36	764059	10.24	378022	13.52	426182	16.08	435141[c]	6.86
MC18819-2MSD	473702	9.35	695300	10.24	345131	13.51	385798	16.08	377698	6.85
ZZZZZZ	483998	9.35	698267	10.24	331173	13.51	395212	16.08	389720	6.85
MC18819-2	481280	9.36	699085	10.24	333931	13.52	394535	16.08	357982	6.85
ZZZZZZ	415927	9.36	600339	10.24	283293	13.52	332914	16.08	297142	6.86
ZZZZZZ	502475	9.36	719831	10.24	343019	13.52	406734	16.08	370290	6.85
ZZZZZZ	523843	9.36	761213	10.24	365047	13.52	428214	16.08	336677[c]	6.86
ZZZZZZ	505187	9.36	730090	10.24	346137	13.52	414365	16.08	322908	6.86
ZZZZZZ	497600	9.35	727165	10.24	343555	13.52	407218	16.08	339017	6.86
ZZZZZZ	500528	9.36	725740	10.24	346212	13.52	398976	16.08	431980[c]	6.85
ZZZZZZ	455229	9.35	664160	10.24	317306	13.52	372694	16.08	313719	6.86
ZZZZZZ	488510	9.35	702984	10.24	335636	13.51	399323	16.08	416537	6.85
ZZZZZZ	495451	9.36	710206	10.24	339805	13.52	393185	16.08	409888	6.85
ZZZZZZ	462626	9.35	667400	10.24	317036	13.52	376213	16.08	385976	6.85
ZZZZZZ	485851	9.35	700954	10.24	333939	13.51	386400	16.08	275465	6.85
ZZZZZZ	397435	9.36	573811	10.24	242744	13.52	220976[d]	16.08	191793	6.85

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.
(c) Outside control limits. Target aualytes not associated with this internal standard.

Volatile Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSM1870-CC1868	Injection Date:	03/20/13
Lab File ID:	M54867.D	Injection Time:	09:30
Instrument ID:	GCMSM	Method:	SW846 8260B

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

(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.5.5

Volatile Internal Standard Area Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSM1871-CC1868	Injection Date:	03/21/13
Lab File ID:	M54895.D	Injection Time:	08:37
Instrument ID:	GCMSM	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	533513	9.35	779419	10.24	379074	13.51	435546	16.08	222865	6.86
Upper Limit [a]	1067026	9.85	1558838	10.74	758148	14.01	871092	16.58	445730	7.36
Lower Limit [b]	266757	8.85	389710	9.74	189537	13.01	217773	15.58	111433	6.36
Lab Sample ID	1S 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	1S 4 AREA	RT	IS 5 AREA	RT
MSM1871-BS	499426	9.36	732728	10.24	358167	13.51	413679	16.08	388997	6.86
MSM1871-BSD	487795	9.36	711400	10.24	347500	13.52	396756	16.08	377796	6.85
MSM1871-MB	525096	9.36	764209	10.24	358446	13.51	418828	16.08	214639	6.86
ZZZZZZ	208251[c]	9.35	295300[c]	10.24	127013[c]	13.52	118278[c]	16.08	188650	6.85
ZZZZZZ	484490	9.35	708367	10.24	320354	13.52	343189	16.08	382916	6.85
ZZZZZZ	533850	9.35	778571	10.24	368949	13.51	446010	16.08	383184	6.85
ZZZZZZ	522880	9.35	757489	10.24	361984	13.51	430942	16.08	383083	6.86
MC18752-3	489490	9.35	706071	10.24	339318	13.52	397959	16.08	303478	6.85
MC18887-3	517098	9.35	746315	10.24	354714	13.52	427160	16.08	388800	6.85
MC18887-3MS	518108	9.36	754933	10.24	373245	13.52	426213	16.08	351000	6.85
MC18887-3MSD	507527	9.35	744059	10.24	364211	13.52	423504	16.08	396453	6.85
ZZZZZZ	537153	9.36	769708	10.24	371372	13.52	439832	16.08	379768	6.85
ZZZZZZ	517390	9.35	749342	10.24	360807	13.52	418778	16.08	305484	6.85
ZZZZZZ	505205	9.36	734615	10.24	355256	13.52	409143	16.08	365827	6.85
ZZZZZZ	475421	9.35	689853	10.24	324962	13.52	379500	16.08	335727	6.85
ZZZZZZ	508236	9.36	731972	10.24	351311	13.51	412922	16.08	316415	6.85
ZZZZZZ	475325	9.36	680993	10.24	325519	13.52	378298	16.08	344573	6.85
ZZZZZZ	478293	9.35	679914	10.24	328576	13.52	381500	16.08	350174	6.85
ZZZZZZ	464869	9.35	662897	10.24	366719	13.51	386002	16.08	287522	6.85
ZZZZZZ	464221	9.35	666231	10.24	320737	13.51	373098	16.08	307294	6.85

1S 1 = Pentafluorobenzene
1S 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
1S 4 = 1,4-Dichlorobenzene-d4
1S 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.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

Volatile Surrogate Recovery Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, 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
MC18752-5	G125263.D	77.0	76.0	77.0
MC18752-6	G125264.D	76.0	76.0	78.0
MC18723-2MS	G125284.D	77.0	77.0	72.0
MC18723-2MSD	G125285.D	77.0	77.0	73.0
MSG4957-BS	G125254.D	76.0	76.0	72.0
MSG4957-MB	G125256.D	78.0	76.0	78.0
MSG4957-MB1	G125279.D	77.0	76.0	78.0

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

Volatile Surrogate Recovery Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC18752-1	M54870.D	91.0	110.0	95.0
MC18752-2	M54871.D	87.0	111.0	89.0
MC18752-3	M54904.D	88.0	112.0	89.0
MC18752-3	K67892.D	115.0	110.0	104.0
MC18752-4	M54872.D	87.0	112.0	89.0
MC18752-2MS	M54873.D	88.0	112.0	89.0
MC18752-2MSD	M54874.D	89.0	111.0	89.0
MC18768-6MS	K67901.D	103.0	111.0	105.0
MC18768-6MSD	K67902.D	101.0	106.0	100.0
MC18887-3MS	M54906.D	89.0	111.0	88.0
MC18887-3MSD	M54907.D	89.0	112.0	88.0
MSK2225-BS	K67886.D	106.0	110.0	100.0
MSK2225-BSD	K67887.D	105.0	107.0	101.0
MSK2225-MB	K67889.D	113.0	107.0	100.0
MSM1869-BS1	M54867.D	87.0	109.0	89.0
MSM1869-BSD	M54843.D	89.0	111.0	88.0
MSM1869-MB1	M54869.D	88.0	110.0	88.0
MSM1871-BS	M54896.D	90.0	110.0	88.0
MSM1871-BSD	M54897.D	89.0	110.0	90.0
MSM1871-MB	M54899.D	88.0	111.0	88.0
MSM1869-MB	M54845.D	86.0	111.0	88.0

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

New England ACCUTEST LABORATORIES

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: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP32212-MB	BB46154.D	1	03/11/13	CZ	03/11/13	OP32212	GBB2782

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

MC18752-5, MCI8752-6

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)	127%	36-173%
460-00-4	Bromofluorobenzene (S)	154%	36-173%

Method Blank Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP32247-MB	YZ78535.D	1	03/15/13	CZ	03/13/13	OP32247	GYZ7047

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

MC18752-1, MC18752-2, MC18752-3, MC18752-4

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	1.1	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.4	0.94	ug/kg	

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	159%	61-167%
460-00-4	Bromofluorobenzene (S)	192%* [a]	61-167%

(a) Outside control limit.Samples are non-detect for analyte.

Blank Spike Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP32212-BS	BB46155.D	1	03/11/13	CZ	03/11/13	OP32212	GBB2782

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

MC18752-5, MC18752-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.11	155* [a]	60-140
106-93-4	1,2-Dibromoethane	0.071	0.099	139	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	123%	36-173%
460-00-4	Bromofluorobenzene (S)	157%	36-173%

(a) Outside control limits. Associated samples are non-detect for target analyte.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP32247-BS	YZ78536.D	1	03/15/13	CZ	03/13/13	OP32247	GYZ7047
OP32247-BSD	YZ78537.D	1	03/15/13	CZ	03/13/13	OP32247	GYZ7047

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

MC18752-1, MC18752-2, MC18752-3, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	32.9	42.8	130	44.1	134	3	59-142/30
106-93-4	1,2-Dibromoethane	32.9	39.2	120	39.4	120	1	56-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	Bromofluorobenzene (S)	149%	157%	61-167%
460-00-4	Bromofluorobenzene (S)	194%* [a]	218%* [a]	61-167%

(a) Outside control limits.Targets recovery satisfactory.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP32212-MS	BB46156.D	1	03/11/13	CZ	03/11/13	OP32212	GBB2782
OP32212-MSD	BB46157.D	1	03/11/13	CZ	03/11/13	OP32212	GBB2782
MC18700-10	BB46158.D	1	03/11/13	CZ	03/11/13	OP32212	GBB2782

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

MC18752-5, MC18752-6

CAS No.	Compound	MC18700-10 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND		0.071	0.12	169* [a]	0.12	169* [a]	0	64-141/29
106-93-4	1,2-Dibromoethane	ND		0.071	0.14	197* [a]	0.13	183* [a]	7	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC18700-10	Limits
460-00-4	Bromofluorobenzene (S)	164%	133%	156%	36-173%
460-00-4	Bromofluorobenzene (S)	174%* [a]	168%	159%	36-173%

(a) Outside control limits. Associated samples are non-detect for target analyte.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Projeet: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP32247-MS	YZ78538.D	1	03/15/13	CZ	03/13/13	OP32247	GYZ7047
OP32247-MSD	YZ78539.D	1	03/15/13	CZ	03/13/13	OP32247	GYZ7047
MC18752-2	YZ78547.D	1	03/16/13	CZ	03/13/13	OP32247	GYZ7047

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

MC18752-1, MC18752-2, MC18752-3, MC18752-4

CAS No.	Compound	MC18752-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND		35.6	49.3	138	48.4	136	2	40-156/27
106-93-4	1,2-Dibromoethane	ND		35.6	43.1	121	43.3	121	0	48-141/27

CAS No.	Surrogate Recoveries	MS	MSD	MC18752-2	Limits
460-00-4	Bromofluorobenzene (S)	152%	150%	177%* a	61-167%
460-00-4	Bromofluorobenzene (S)	189%* b	174%* b	208%* a	61-167%

(a) Outside control limits.Sample non-detect for target analytes.
(b) Outside control limits.Spike recovery satisfactory.

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, 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]
MC18752-5	BB46162.D	83.0	149.0
MC18752-6	BB46163.D	61.0	75.0
OP32212-BS	BB46155.D	123.0	157.0
OP32212-MB	BB46154.D	127.0	154.0
OP32212-MS	BB46156.D	164.0	174.0* [c]
OP32212-MSD	BB46157.D	133.0	168.0

Surrogate Compounds	Recovery Limits
S1 = Bromofluorobenzene (S)	36-173%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside control limits. Associated samples are non-detect for target analyte.

Volatile Surrogate Recovery Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011	Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
MC18752-1	YZ78546.D	162.0	202.0* [c]
MC18752-2	YZ78547.D	177.0* [c]	208.0* [c]
MC18752-3	YZ78548.D	158.0	200.0* [c]
MC18752-4	YZ78549.D	158.0	218.0* [c]
OP32247-BS	YZ78536.D	149.0	194.0* [d]
OP32247-BSD	YZ78537.D	157.0	218.0* [d]
OP32247-MB	YZ78535.D	159.0	192.0* [e]
OP32247-MS	YZ78538.D	152.0	189.0* [f]
OP32247-MSD	YZ78539.D	150.0	174.0* [f]

Surrogate Compounds	Recovery Limits
S1 = Bromofluorobenzene (S)	61-167%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside control limits.Sample non-detect for target analytes.
(d) Outside control limits.Targets recovery satisfactory.
(e) Outside control limit.Samples are non-detect for analyte.
(f) Outside control limits.Spike recovery satisfactory.

GC Surrogate Retention Time Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	GBB2782-ICC2782	Injection Date:	03/11/13
Lab File ID:	BB46149.D	Injection Time:	17:55
Instrument ID:	GCBB	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	3.50	3.25

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
ZZZZZZ	BB46152A.D	03/11/13	19:13	3.48	3.25
OP32212-MB	BB46154.D	03/11/13	20:04	3.50	3.25
OP32212-BS	BB46155.D	03/11/13	20:30	3.50	3.25
OP32212-MS	BB46156.D	03/11/13	20:57	3.50	3.25
OP32212-MSD	BB46157.D	03/11/13	21:23	3.50	3.25
MC18700-10	BB46158.D	03/11/13	21:50	3.50	3.24
MC18752-5	BB46162.D	03/11/13	23:38	3.51	3.25
MC18752-6	BB46163.D	03/12/13	00:05	3.53	3.25
GBB2782-ECC278	BB46164.D	03/12/13	00:32	3.53	3.25

Surrogate Compounds

S1 = Bromofluorobenzene (S)

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

7.6.1

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GC Surrogate Retention Time Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	GYZ7047-ICC7047	Injection Date:	03/15/13
Lab File ID:	YZ78529.D	Injection Time:	18:48
Instrument ID:	GCYZ	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.01	3.77

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
OP32247-MB	YZ78535.D	03/15/13	21:36	4.01	3.77
OP32247-BS	YZ78536.D	03/15/13	22:04	4.01	3.77
OP32247-BSD	YZ78537.D	03/15/13	22:32	4.00	3.77
OP32247-MS	YZ78538.D	03/15/13	23:00	4.00	3.77
OP32247-MSD	YZ78539.D	03/15/13	23:29	4.00	3.77
ZZZZZZ	YZ78540.D	03/15/13	23:57	4.00	3.77
ZZZZZZ	YZ78541.D	03/16/13	00:25	4.00	3.77
ZZZZZZ	YZ78542.D	03/16/13	00:53	4.00	3.77
ZZZZZZ	YZ78543.D	03/16/13	01:21	4.00	3.77
ZZZZZZ	YZ78544.D	03/16/13	01:49	4.00	3.77

Surrogate Compounds

S1 = Bromofluorobenzene (S)

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

GC Surrogate Retention Time Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	GYZ7047-CC7047	Injection Date:	03/16/13
Lab File ID:	YZ78545.D	Injection Time:	02:18
Instrument ID:	GCYZ	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.01	3.77

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
MC18752-1	YZ78546.D	03/16/13	02:46	4.00	3.77
MC18752-2	YZ78547.D	03/16/13	03:14	4.01	3.77
MC18752-3	YZ78548.D	03/16/13	03:42	4.00	3.77
MC18752-4	YZ78549.D	03/16/13	04:10	4.00	3.77
ZZZZZZ	YZ78550.D	03/16/13	04:38	4.00	3.77
MC18819-2	YZ78551.D	03/16/13	05:06	4.00	3.77
ZZZZZZ	YZ78552.D	03/16/13	05:34	4.00	3.77
ZZZZZZ	YZ78553.D	03/16/13	06:01	4.00	3.77
OP32247-MS1	YZ78554.D	03/16/13	06:29	4.00	3.77
OP32247-MSD1	YZ78555.D	03/16/13	06:58	4.00	3.77

Surrogate Compounds

S1 = Bromoflnorobenzene (S)

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

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

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Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: MC18752
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample: MC18752-1	**Analyzed:** 12-MAR-13 by BF		**Method:** SM21 2540 B MOD.
ClientID: MW-24-12			
Wet Weight (Total)	37.88	g	
Tare Weight	26.081	g	
Dry Weight (Total)	37.396	g	
Solids, Percent	95.9	%	
Sample: MC18752-2	**Analyzed:** 12-MAR-13 by BF		**Method:** SM21 2540 B MOD.
ClientID: MW-24-25			
Wet Weight (Total)	37.545	g	
Tare Weight	24.373	g	
Dry Weight (Total)	36.707	g	
Solids, Percent	93.6	%	
Sample: MC18752-3	**Analyzed:** 12-MAR-13 by BF		**Method:** SM21 2540 B MOD.
ClientID: MW-24-47			
Wet Weight (Total)	34.756	g	
Tare Weight	20.448	g	
Dry Weight (Total)	32.086	g	
Solids, Percent	81.3	%	
Sample: MC18752-4	**Analyzed:** 12-MAR-13 by BF		**Method:** SM21 2540 B MOD.
ClientID: MW-24-47DUP			
Wet Weight (Total)	34.62	g	
Tare Weight	21.176	g	
Dry Weight (Total)	32.179	g	
Solids, Percent	81.8	%	

8.1
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