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July 19, 2017

Ms. Carolyn Bury - LU-9J  
U.S. EPA Region 5  
Corrective Action Section  
77 West Jackson Boulevard  
Chicago, IL 60604-3507

Re: Route 3 Drum Site Groundwater Monitoring Program  
2<sup>nd</sup> Quarter 2017 Data Report  
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

Dear Ms. Bury:

Enclosed please find the Route 3 Drum Site Groundwater Monitoring Program  
2<sup>nd</sup> Quarter 2017 Data Report for Solutia Inc.'s W. G. Krummrich Plant, Sauget, IL.

On May 2, 2017, Solutia submitted a "Periodic Technical Review" recommending changes to this groundwater monitoring program, along with similar Reviews for the other programs. Solutia will continue each program unchanged (e.g., ~ August 1 for 3<sup>rd</sup> quarter 2017), but we look forward to US EPA approval of our recommendations well before 4<sup>th</sup> quarter 2017 monitoring would otherwise be conducted ~ November 1.

If you have any questions or comments regarding this report, please contact me at (314) 674-3312 or gmrina@eastman.com

Sincerely,

Gerald M. Rinaldi  
Manager, Remediation Services

Enclosure

cc: Distribution List

## **DISTRIBUTION LIST**

**Route 3 Drum Site Groundwater Monitoring Program  
2<sup>nd</sup> Quarter 2017 Data Report  
Solutia Inc., W. G. Krummrich Plant, Sauget, IL**

### USEPA

Stephanie Linebaugh  
USEPA Region 5 - SR6J, 77 West Jackson Boulevard, Chicago, IL 60604

### Solutia

Donn Haines                      500 Monsanto Avenue, Sauget, IL 62206-1198



# GROUNDWATER MONITORING REPORT

## GROUNDWATER MONITORING REPORT

2<sup>nd</sup> QUARTER 2017 DATA REPORT  
ILLINOIS ROUTE 3 DRUM SITE  
GROUNDWATER MONITORING  
SOLUTIA INC., W.G. KRUMMRICH PLANT  
SAUGET, ILLINOIS

**Prepared For:** Solutia Inc.  
575 Maryville Centre Drive  
St. Louis, MO 63141 USA

**Submitted By:** Golder Associates Inc.  
820 S. Main Street, Suite 100  
St. Charles, MO 63301 USA

July 2017

140-3345

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capabilities  
delivered locally





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## 1.0 INTRODUCTION

Golder Associates Inc. (Golder) is pleased to submit this report summarizing the 2<sup>nd</sup> Quarter 2017 (2Q17) groundwater sampling activities at the Illinois Route 3 Drum Site (Site), located within “Lot F” on Figure 1. The Site is associated with the Solutia Inc. (Solutia) W.G. Krummrich (WGK) plant in Sauget, Illinois located at 500 Monsanto Avenue, Sauget, Illinois. The 2Q17 sampling event was performed in general accordance with the Revised Illinois Route 3 Drum Site Operation and Maintenance Plan (Work Plan) (Solutia 2008).

The scope of work detailed in the Work Plan is summarized below.

Two (2) monitoring wells, located in the shallow hydrogeologic unit (SHU), are sampled during the Drum Site monitoring event. The locations of the monitoring wells are shown on Figure 2 and the sample locations are included on the table below.

Area	Location Relative to Area	Sample Identification
Illinois Route 3 Drum Site	Adjacent	GM-31A
	Downgradient	GM-58A

The water levels of the two (2) monitoring wells are measured quarterly and total depths are measured in the 1<sup>st</sup> quarter of each year.

During the quarterly sampling events, monitoring wells are sampled for the following semi-volatile organic compound (SVOC) analytes: 1,1-biphenyl, 1-chloro-2,4-dinitrobenzene, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 2-chloronitrobenzene/4-chloronitrobenzene, 2-nitrobiphenyl, 3,4-dichlorodinitrobenzene, 3-nitrobiphenyl, 3-nitrochlorobenzene, 4-nitrobiphenyl, nitrobenzene, and pentachlorophenol. In addition, the following monitored natural attenuation (MNA) parameters are sampled quarterly to evaluate active natural attenuation occurring at the Site:

- Electron Donors – total and dissolved organic carbon
- Electron Acceptors – iron, manganese, nitrate, sulfate
- Biodegradation Byproducts – carbon dioxide, chloride, methane
- Biodegradation Indicators – alkalinity



## 2.0 FIELD ACTIVITIES

Golder conducted 2Q17 sampling activities on May 8, 2017. Activities were performed in general accordance with the Work Plan.

### 2.1 Water Level Measurement

Prior to sampling during the 2Q17 event, Golder performed a synoptic round of water level and total depth measurements at 76 monitoring wells and piezometers on January 26 and January 27, 2017. The following monitoring well series is included in the Drum Site program:

- GM-series

An oil/water interface probe was used to measure the water level (to 0.01 feet) and, if present, detect and measure the thickness of non-aqueous phase liquid (NAPL). During the 2Q17 sampling event, NAPL was not detected in any of the monitoring wells or piezometers. Total depths are measured during the 1<sup>st</sup> quarter of each year. The 2Q17 well gauging information is shown on Table 1.

### 2.2 Groundwater Sample Collection

Monitoring wells sampled during the 2Q17 Drum Site event were purged and sampled using low-flow sampling techniques, low-density polyethylene tubing (LDPE) and a submersible (GM-31A) or peristaltic pump (GM-58A). The pump intake was placed at approximately the middle of the screened interval for each well. Purging occurred at a rate of approximately 300 mL/min to reduce drawdown. Drawdown was measured throughout purging activities to ensure that it did not exceed 25% of the distance between the pump intake and the top of the screen. Measurement of field parameters began once the flow rate and drawdown were stable for each well. Parameters were measured for each system volume purged using a multi-parameter meter. The system volume includes the volume of the tubing, the volume of the pump and the volume of the flow-through cell containing the multi-parameter meter. Samples were collected after field parameters were stabilized within the ranges below for three (3) consecutive measurements:

- Dissolved Oxygen (DO): +/- 10% or +/- 0.2 mg/L, whichever is greatest
- Oxidation-Reduction Potential (ORP): +/- 20 mV
- pH: +/-0.2 standard units
- Specific Conductivity: +/- 3%

The flow rate was adjusted as needed to maintain approximately 300 mL/min during sampling activities. To reduce possible sample cross contamination, the flow-through cell was bypassed and gloves were replaced prior to sampling.



Sample bottles were provided by TestAmerica Laboratories, Inc. (TestAmerica) for the following analyses:

- SVOCs – United States Environmental Protection Agency (USEPA) SW-846 Method 8270D
- MNA parameters – alkalinity and carbon dioxide (USEPA Method 310.1), chloride (USEPA Method 352.5), total and dissolved iron and total and dissolved manganese (USEPA SW-846 Method 6010C), methane, ethane and ethylene (RSK-175), nitrate (USEPA Method 353.2), sulfate (USEPA Method 375.4), and total and dissolved organic carbon (USEPA Method 415.1)

Gas sensitive parameter sample bottles were filled first followed by SVOCs and general chemistry parameters. Ferrous iron was field analyzed with a HACH 890 Colorimeter and HACH AccuVac® ampules. Samples collected for ferrous iron and dissolved analyses were field filtered using an in-line 0.2 micron disposable filter. Groundwater purging and sampling forms are included in Appendix A.

## 2.3 Quality Assurance and Sample Handling

One (1) analytical duplicate (AD), one (1) equipment blank (EB) and one (1) matrix spike/matrix spike duplicate (MS/MSD) pair were collected during the 2Q17 Drum Site sampling event. Sample bottles were labeled with the date and time of sample collection, sampler initials, analysis requested, preservative used, and sample identification based on the following nomenclature “GM-##A-MMY-QA/QC” where:

- “GM” denotes “Geraghty & Miller” and “##A” denotes monitoring well location and number
- “MMY” denotes month and year of sampling quarter, e.g.: May (2<sup>nd</sup> Quarter), 2017 (0517)
- “QA/QC” denotes QA/QC sample
  - AD – Analytical Duplicate
  - EB – Equipment Blank
  - MS or MSD – Matrix Spike or Matrix Spike Duplicate

Samples that were field filtered with an in-line 0.2 micron filter include “F(0.2)” prior to the “MMY” portion of the sample identification. Sample information was recorded on a chain-of-custody (COC) that included project identification, sample identification, date and time of sample collection, analysis requested, preservative used, sample matrix and type, number of sample containers, sampler signature, and date COC was completed. A copy of the COC is included in Appendix B.

Directly after sampling, sample bottles were placed in an iced cooler to maintain a sample temperature of approximately 4°C. Prior to sample shipment, samples and ice were placed inside two (2) contractor trash bags. The bags were tied and the cooler was sealed between the lid and sides with a signed and dated custody seal. Samples were shipped overnight via FedEx to the TestAmerica facility in Savannah, Georgia.



## 2.4 Decontamination and Investigation Derived Waste

Sampling equipment was decontaminated prior to mobilizing to the Site, between sample locations and prior to demobilizing from the Site. Non-dedicated sampling equipment was decontaminated between samples with a non-phosphatic detergent solution and a deionized water rinse.

Investigation derived waste (IDW) was placed in 55-gallon drums, labeled with the generation date and staged for disposal by Solutia. IDW such as gloves and other disposable sampling equipment was bagged for disposal by Solutia.

## 3.0 QUALITY ASSURANCE

Sample results were provided by TestAmerica in electronic format and reviewed for quality and completeness by Golder in accordance with the Work Plan. Results were submitted in one (1) sample delivery group (SDG) as follows:

Sample Delivery Group (SDG)	Sample Identification
KOM037	GM-58A-0517
	GM-31A-0517
	GM-31A-0517-AD
	GM-31A-0517-EB

Golder completed validation of the analytical data following the general guidelines in the Work Plan, and the most recent versions of the national data validation guidelines. The following guidelines were generally used:

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

Although some data required qualifications due to quality control criteria that were not achieved, the data were deemed usable. Qualifications are included in Appendix C. The completeness for the data set was 100%.

## 4.0 OBSERVATIONS

SVOCs were not detected in groundwater samples collected from monitoring wells GM-58A or GM-31A during the 2Q17 sampling event. Groundwater analytical data for SVOCs and MNA parameters is presented in Tables 2 and 3, respectively. The groundwater analytical laboratory results including data validation reports are included in Appendix D.





## 5.0 CLOSING

Golder appreciates the opportunity to assist Solutia Inc. with the Illinois Route 3 Drum Site groundwater sampling events. Please contact the undersigned if you need additional information.

Sincerely,

**GOLDER ASSOCIATES INC.**

Amanda W. Derhake, Ph.D., P.E.  
Associate, Senior Engineer

Mark N. Haddock, R.G., P.E.  
Principal, Senior Consultant



## 6.0 REFERENCES

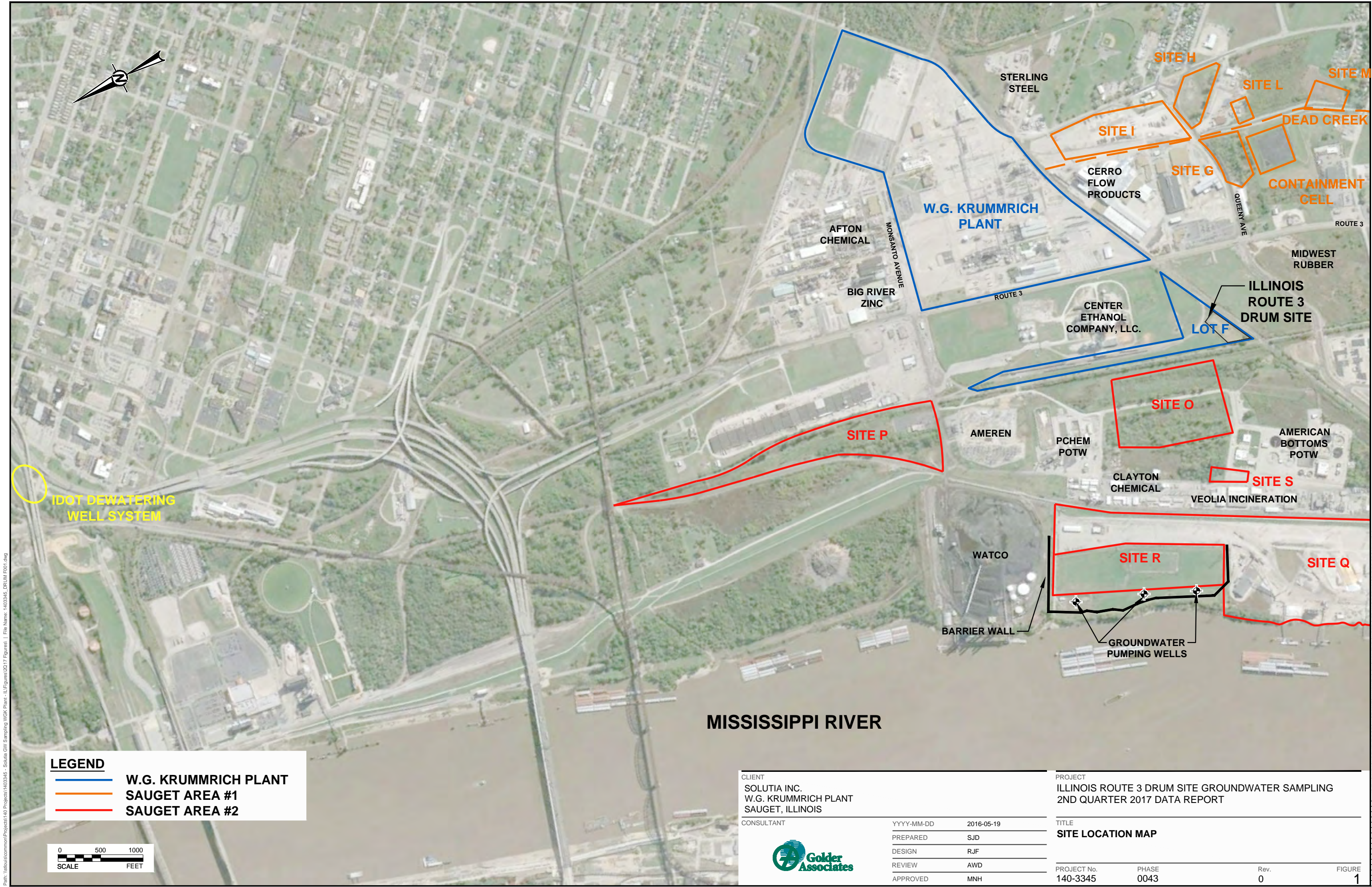
Solutia Inc., 2008. Revised Illinois Route 3 Drum Site Operation and Maintenance Plan, W.G. Krummrich Facility, Sauget, IL, May 2008.

USEPA, 2008. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.

USEPA, 2010. Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review.

## FIGURES

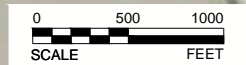




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**LEGEND**

- W.G. KRUMMRICH PLANT
- SAUGET AREA #1
- SAUGET AREA #2



MISSISSIPPI RIVER

CLIENT  
SOLUTIA INC.  
W.G. KRUMMRICH PLANT  
SAUGET, ILLINOIS

CONSULTANT



YYYY-MM-DD	2016-05-19
PREPARED	SJD
DESIGN	RJF
REVIEW	AWD
APPROVED	MNH

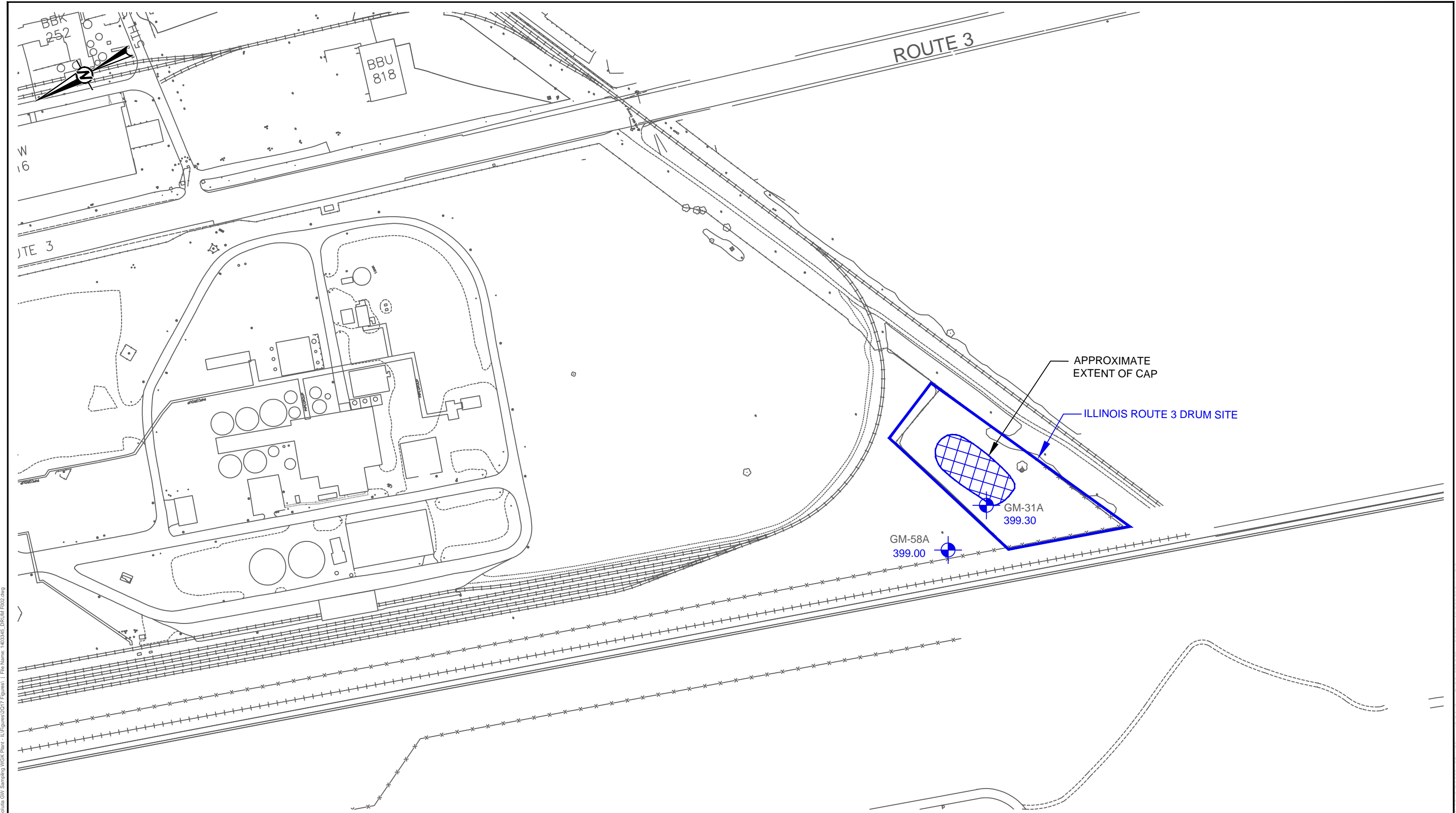
PROJECT  
ILLINOIS ROUTE 3 DRUM SITE GROUNDWATER SAMPLING  
2ND QUARTER 2017 DATA REPORT

TITLE  
**SITE LOCATION MAP**

PROJECT No. 140-3345	PHASE 0043	Rev. 0	FIGURE 1
-------------------------	---------------	-----------	-------------

1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B





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LEGEND



MONITORING WELL LOCATION  
WITH GROUNDWATER ELEVATION  
(FT NAVD)

NOTES

1. REFER TO TABLE 1 FOR MONITORING  
WELL CONSTRUCTION INFORMATION.



CLIENT  
SOLUTIA INC.  
W.G. KRUMMRICH PLANT  
SAUGET, ILLINOIS

CONSULTANT



YYYY-MM-DD	2016-05-19
PREPARED	SJD
DESIGN	TJG
REVIEW	AWD
APPROVED	MNH

PROJECT  
ILLINOIS ROUTE 3 DRUM SITE GROUNDWATER SAMPLING  
2ND QUARTER 2017 DATA REPORT

TITLE  
**MONITORING WELL LOCATIONS AND  
GROUNDWATER ELEVATION MAP**

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0043	0	2

## TABLES

**Table 1**  
**Monitoring Well Gauging Information**  
**2Q17 Route 3 Drum Site Monitoring Program**  
**Solutia Inc., W.G. Krummrich Plant**  
**Sauget, Illinois**

Well Identification	Monitoring Well Construction Data						2Q17 - April 27 and April 28, 2017			
	Ground Surface Elevation <sup>1</sup> (ft)	Top of Casing Elevation <sup>1</sup> (ft)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Top of Screen Elevation <sup>1</sup> (ft)	Bottom of Screen Elevation <sup>1</sup> (ft)	Water Level (ft btoc)	Depth to NAPL (ft btoc)	Total Depth <sup>2</sup> (ft btoc)	Water Level Elevation <sup>1</sup> (ft)
<b>SHU 395-380 ft NAVD 88</b>										
GM-31A	416.63	418.63	19.00	39.00	397.63	377.63	19.33	NP	39.67	399.30
GM-58A	412.24	414.24	19.40	39.40	392.84	372.84	15.24	NP	40.78	399.00

**Notes**

ft - feet

bgs - below ground surface

btoc - below top of casing

NP - no product observed

SHU - shallow hydrogeologic unit

<sup>1</sup> - Elevations based on North American Vertical Datum (NAVD) 88 datum.

<sup>2</sup> - Total depths are measured annually during the first quarter of each year.

Prepared By: SJD 05/19/2017

Checked By: TJG 06/02/2017

Reviewed By: AWD 07/05/2017

**Table 2**  
**Groundwater Analytical Results**  
**2Q17 Route 3 Drum Site Monitoring Program**  
**Solutia Inc., W.G. Krummrich Plant**  
**Sauget, Illinois**

Sample Identification	Sample Date	SVOCs (µg/L)											
		1,1'-Biphenyl	1-Chloro-2,4-Dinitrobenzene	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2-Chloronitrobenzene/ 4-Chloronitrobenzene	2-Nitrobiphenyl	3,4-Dichloronitrobenzene	3-Nitrobiphenyl	3-Nitrochlorobenzene	4-Nitrobiphenyl	Nitrobenzene	Pentachlorophenol
SHU													
GM-31A-0517	5/8/2017	<9.7	<9.7	<9.7	<9.7	<19	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<49
GM-31A-0517-AD	5/8/2017	<9.7	<9.7	<9.7	<9.7	<19	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<48
GM-58A-0517	5/8/2017	<9.9	<9.9	<9.9	<9.9	<20	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<49

**Notes**

SVOCs - semi-volatile organic compounds

µg/L - micrograms per liter

< - result is non-detect, less than the reporting limit

AD - analytical duplicate

Prepared By: SJD 06/06/2017

Checked By: TJG 06/29/2017

Reviewed By: AWD 07/05/2017



**Table 3**  
**2Q17 Route 3 Drum Site Monitoring Program**  
**Solutia Inc., W.G. Krummrich Plant**  
**Sauget, Illinois**

Sample Identification	Sample Date	Monitored Natural Attenuation Parameters																
		Alkalinity (mg/L)	Carbon Dioxide (mg/L)	Chloride (mg/L)	Dissolved Oxygen (mg/L)	Ethane (µg/L)	Ethylene (µg/L)	Ferrous Iron (mg/L)	Iron (mg/L)	Iron, Dissolved (mg/L)	Manganese (mg/L)	Manganese, Dissolved (mg/L)	Methane (µg/L)	Nitrogen, Nitrate (mg/L)	Sulfate as SO4 (mg/L)	Total Organic Carbon (mg/L)	Dissolved Organic Carbon (mg/L)	ORP ( mV)
SHU																		
GM-31A-0517	5/8/2017	260	49	21	0.08	<1.1	<1.0	-	0.23	-	0.37	-	<0.58	4.9 D	50 D	3.3	-	56.64
GM-31A-F(0.2)-0517	5/8/2017	-	-	-	-	-	-	0.0	-	<0.050	-	0.37	-	-	-	-	3.4	-
GM-58A-0217	5/8/2017	320	52	43	0.09	<1.1	<1.0	-	0.49	-	0.83	-	<0.58	0.090	90 D	4.3	-	52.05
GM-58A-F(0.2)-0517	5/8/2017	-	-	-	-	-	-	0.0	-	<0.050	-	0.78	-	-	-	-	4.3	-

**Notes**

Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) values represent the final field measurements prior to sampling  
 Ferrous Iron was field measured using a 0.2 µm field filtered sample  
 F(0.2) - sample was field filtered using a 0.2 µm filter during sample collection  
 µg/L - micrograms per liter  
 mg/L - milligrams per liter  
 mV - millivolts  
 < - result is non-detect, less than the reporting limit  
 "-" - not analyzed  
 D - compound analyzed at a dilution  
 SHU - shallow hydrogeologic unit

Prepared By: SJD 06/07/2017  
 Checked By: TJG 06/29/2017  
 Reviewed By: AWD 07/05/2017

**APPENDIX A**  
**GROUNDWATER PURGING AND SAMPLING FORMS**



5/8/2017

Low-Flow System  
ISI Low-Flow Log**Project Information:**

Operator Name SJD  
Company Name Golder Associates  
Project Name Drum  
Site Name W.G.K.

**Pump Information:**

Pump Model/Type SS Monsoon  
Tubing Type LDPE  
Tubing Diameter 0.19 in  
Tubing Length 44.32 ft  
Pump Placement from TOC 31.00 ft

**Well Information:**

Well Id GM-31A  
Well Diameter 2 in  
Well Total Depth 39.67 ft  
Depth to Top of Screen 21.00 ft  
Screen Length 20 ft  
Depth to Water 13.91 ft

**Pumping Information:**

Final Pumping Rate 300 mL/min  
System Volume 437 mL  
Calculated Sample Rate 87 sec  
Sample Rate 87 sec  
Stabilized Drawdown 0.01 ft

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [C]	pH [pH]	Cond [ $\mu$ S/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	13:45:24	17.72	6.88	805.99	10.80	0.12	69.69
	13:46:51	17.71	6.88	799.76	8.89	0.11	64.35
	13:48:18	17.64	6.88	800.51	9.62	0.10	60.84
	13:49:45	17.53	6.89	793.33	8.35	0.08	58.33
	13:51:12	17.38	6.88	794.81	7.31	0.08	56.64
Variance in Last 3 Readings		-0.07	0.00	0.75	0.73	-0.01	-3.51
		-0.11	0.01	-7.18	-1.27	-0.02	-2.51
		-0.15	-0.01	1.48	-1.04	0.00	-1.69

**Notes:**

**Project Information:**

Operator Name SJD  
Company Name Golder Associates  
Project Name Drum  
Site Name W.G.K.

**Pump Information:**

Pump Model/Type Peristaltic  
Tubing Type LDPE  
Tubing Diameter 0.19 in  
Tubing Length 48.33 ft  
Pump Placement from TOC 31.40 ft

**Well Information:**

Well Id GM-58A  
Well Diameter 2 in  
Well Total Depth 40.78 ft  
Depth to Top of Screen 21.40 ft  
Screen Length 20 ft  
Depth to Water 9.52 ft

**Pumping Information:**

Final Pumping Rate 300 mL/min  
System Volume 359 mL  
Calculated Sample Rate 71 sec  
Sample Rate 71 sec  
Stabilized Drawdown 0.00 ft

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [C]	pH [pH]	Cond [ $\mu$ S/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	11:51:07	16.37	6.80	969.45	2.00	0.11	57.96
	11:52:18	16.37	6.81	968.44	3.74	0.10	55.65
	11:53:29	16.28	6.82	967.51	8.52	0.10	53.22
	11:54:43	16.28	6.81	961.03	11.3	0.09	52.47
	11:55:58	16.28	6.83	958.82	5.27	0.09	52.05
Variance in Last 3 Readings		-0.09	0.01	-0.93	4.78	0.00	-2.43
		0.00	-0.01	-6.48	2.78	-0.01	-0.75
		0.00	0.02	-2.21	-6.03	0.00	-0.42

**Notes:**

**APPENDIX B**  
**CHAIN-OF-CUSTODY**

## TestAmerica Savannah

5102 LaRoche Avenue

Savannah, GA 31404  
phone 912.354.7858 fax

## Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ GW ☐ NPDES ☒ RCRA ☐ Other:

Client Contact		Project Manager: Amanda Derhake		Site Contact: Samantha DiCenso		Date: 5/8/17		COC No:	
Golder Associates Inc.		Tel/Fax: 636-724-9191		Lab Contact: Michele Kersey		Carrier: FedEx		1 of 1 COCs	
820 South Main Street		Analysis Turnaround Time						Sampler: JRM	
St. Charles, MO 63301		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						For Lab Use Only:	
(636) 724-9191 Phone		TAT if different from Below Standard						Walk-in Client:	
(636) 724-9323 FAX		<input type="checkbox"/> 2 weeks						Lab Sampling:	
Project Name: 2Q17 Drum Site GW Sampling-1403345		<input type="checkbox"/> 1 week						Job / SDG No:	
Site: Solus WG Krummrich Facility		<input type="checkbox"/> 2 days						2 coolers	
P O # 42262863		<input type="checkbox"/> 1 day						Sample Specific Notes:	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grav)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	
GM-31A-0517	5/8/17	1352	G	W	12	N	2	1	1
GM-31A-F(0.2)-0517		1352			4	Y			1
GM-31A-0517-AD		1352			2	N	2		
GM-31A-0517-EB		1440			2	N	2		
GM-58A-0517		1155			12	N	2	1	1
GM-58A-F(0.2)-0517		1155			4	Y			1
GM-58A-0517-MS		1155			2	N	2		
GM-58A-0517-MSD		1155			2	N	2		
Preservation/Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other							1	4	1
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input type="checkbox"/> Dispose by Lab <input type="checkbox"/> Archive for _____ Months		
Special Instructions/QC Requirements & Comments:									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Relinquished by: Samantha Derhake		Company: Golder		Date/Time: 5/8/17 1700		Received by:		Company: TA	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company: TA	
								Date/Time: 5-9-17 904	

Form No. CA-C-WI-002, Rev. 4.3, dated 12/05/2013

**APPENDIX C**  
**QUALITY ASSURANCE REPORT**



# QUALITY ASSURANCE REPORT

## QUALITY ASSURANCE REPORT

2<sup>nd</sup> QUARTER 2017  
ILLINOIS ROUTE 3 DRUM SITE  
GROUNDWATER MONITORING  
SOLUTIA INC., W.G. KRUMMRICH PLANT  
SAUGET, ILLINOIS

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July 2017

140-3345

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## 1.0 INTRODUCTION

Golder Associates Inc. (Golder) completed a review of analytical data for the groundwater samples collected on May 8, 2017 at the Illinois Route 3 Drum Site (Site) associated with the Solutia Inc. (Solutia) W.G. Krummrich (WKG) plant in Sauget, Illinois. Golder collected a total of six (6) samples from groundwater monitoring wells as part of the 2<sup>nd</sup> Quarter 2017 (2Q17) Illinois Route 3 Drum Site groundwater monitoring. Two (2) groundwater samples, one (1) equipment blank (EB), one (1) analytical duplicate (AD), and one (1) matrix spike/matrix spike duplicate (MS/MSD) pair were prepared. Groundwater monitoring location GM-31A is located at the Site and monitoring location GM-58A is located just north of the Site. The samples were submitted to the TestAmerica Laboratories, Inc. (TestAmerica) facility located in Savannah, Georgia for analysis using United States Environmental Protection Agency (USEPA) methods, standard methods and USEPA SW-846 test methods. Samples submitted to TestAmerica were analyzed for semi-volatile organic compounds (SVOCs), total and dissolved metals, dissolved gases, and general chemistry parameters. The analytical results were placed into one (1) sample delivery group (SDG) as described in the table below:

Sample Delivery Group (SDG)	Sample Identification
KOM037	GM-58A-0517
	GM-31A-0517
	GM-31A-0517-AD
	GM-31A-0517-EB

The samples were collected and analyzed in general accordance with the Revised Illinois Route 3 Drum Site Operation and Maintenance Plan (Work Plan) (Solutia 2008). The groundwater monitoring well samples were analyzed for SVOCs, total and dissolved metals, dissolved gases, and general chemistry parameters. The general chemistry parameters included chloride, nitrate, sulfate, total organic carbon (TOC), alkalinity, carbon dioxide, and dissolved organic carbon (DOC). One (1) EB, one (1) AD, and one (1) MS/MSD pair were submitted and analyzed for SVOCs only. The following analytical methods used are from USEPA document SW-846, Test Methods for Evaluating Solid Waste, Revision 6 contained in Final Update III August 2002 and listed below:

- SVOCs were analyzed using USEPA SW-846 Method 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- Total and Dissolved Iron and Manganese analyzed by USEPA SW-846 Method 6010C Inductively Coupled Plasma-Atomic Emission Spectrometry

The following standard methods were used to analyze monitored natural attenuation (MNA) parameters:

- Dissolved Gases analyzed by Method RSK-175
- Alkalinity and Free Carbon Dioxide analyzed by USEPA Method 310.1 by Titration
- Chloride analyzed by USEPA Method 325.2 by Automated Colorimetry



- Nitrogen, Nitrate analyzed by USEPA Method 353.2 by Automated Colorimetry
- Sulfate analyzed by USEPA Method 375.4 by Spectrophotometer
- Total and Dissolved Organic Carbon analyzed by USEPA Method 415.1

Golder completed validation of the analytical data following the general guidelines in the Work Plan. The most recent versions of the national data validation guidelines were used for data review. The following guidelines were generally used:

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

These documents are hereafter referred to as the "functional guidelines". If there was a conflict between the functional guidelines and the quality control criteria specified in the analytical method, the method-specific criteria were used. The SDG was prepared as a Level IV data report package containing quality control information and raw data. Golder completed Level III review of 100% of the analytical data and Level IV review of 10% of the analytical data.

Data that has been qualified by the data validator has been added to the laboratory report. The qualifiers indicate data that did not meet acceptance criteria and corrective actions were not successful or not performed. Laboratory data qualifiers are defined below:

- U – The analyte was analyzed for but not was not detected

Golder data qualifiers are defined below:

- D – The analyte was analyzed at a dilution

Sections 2 and 3 summarize the specific instances where quality control criteria in the functional guidelines were not met. As specified in the functional guidelines, if the non-adherence to quality control criteria is slight, professional judgment was used in qualification of the data. However, if the non-adherence is significant, qualification and rejection of the data may be necessary. A summary of qualified data is provided in Section 4.0.



## 2.0 SEMI-VOLATILE ORGANIC COMPOUNDS

Samples were collected from two (2) groundwater monitoring locations and analyzed for SVOCs. An AD sample was collected from one (1) sampling location, GM-31A. One (1) EB was also prepared and shipped for laboratory analysis. The samples were submitted to TestAmerica, placed into one (1) data package or SDG (KOM037), and were prepared and analyzed using SW-846 Method 8270D. Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

### 2.1 Receipt Condition and Sample Holding Times

The SDG Case Narrative, chain-of-custody, login sample receipt checklists, and analysis dates were reviewed to verify analytical method holding times and proper preservation upon sampling. Samples were received by TestAmerica in good condition.

### 2.2 Blanks

Laboratory and field blanks, including method blanks and equipment blanks, are prepared and analyzed to determine if contamination occurred as a result of laboratory or field activities.

Laboratory method blanks were performed for each laboratory system as outlined for each analytical method to evaluate whether cross contamination occurred during laboratory analysis activities. Results for the method blanks were non-detect.

One (1) EB was collected during the 2Q17 event, associated with sample GM-31A, to assess the effectiveness of the decontamination procedure. Results for the EB were non-detect.

### 2.3 Surrogate Spike Recoveries

Samples to be analyzed for SVOCs were spiked with surrogate compounds: 2-fluorobiphenyl, 2-fluorophenol, nitrobenzene-d5, phenol-d5, terphenyl-d14, and 2,4,6-tribromophenol, prior to analysis, to evaluate overall laboratory performance. Surrogate recoveries were within acceptance criteria; therefore, data qualification was not required.

### 2.4 Laboratory Control Sample Recoveries

A laboratory control sample (LCS) is analyzed on each laboratory system to evaluate the analytical method accuracy and laboratory performance. LCS recoveries were within acceptance criteria; therefore, data qualification was not required.

### 2.5 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples are analyzed to determine long term precision and accuracy of the analytical method on various matrices. One (1) MS/MSD pair is sampled for every twenty (20) field samples. One (1)



MS/MSD pair was collected during the 2Q17 event associated with sample GM-58A. Results were within accuracy and precision criteria.

## **2.6 Analytical Duplicates**

One (1) AD is collected for every ten (10) field samples to determine the overall precision of field and laboratory methods. One (1) AD was collected during the 2Q17 event associated with sample GM-31A. The relative percent difference (RPD) between the sample GM-31A and the AD, GM-31A-AD, did not exceed 25%; therefore, data qualification was not required.

## **2.7 Internal Standard Responses**

Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during each analysis. Internal standard area counts did not vary by more than a factor of two (2) from the associated 12 hour calibration standard. Internal standard retention times did not vary more than +/-30 seconds from the retention time of the associated 12 hour calibration standard. Qualification of data was not required.

## **2.8 Results Reported From Dilutions**

SVOC samples in the SDG did not require dilutions.



### 3.0 INORGANICS AND GENERAL CHEMISTRY

Samples were collected from two (2) groundwater monitoring locations and analyzed for inorganics and general chemistry. The samples were submitted to TestAmerica, placed into one (1) data package or SDG (KOM037), and were prepared and analyzed using the following methods:

- Total and Dissolved Iron and Manganese analyzed by USEPA Method 6010C Inductively Coupled Plasma-Atomic Emission Spectrometry
- Dissolved Gases analyzed by Method RSK-175
- Alkalinity and Free Carbon Dioxide analyzed by USEPA Method 310.1 by Titration
- Chloride analyzed by USEPA Method 325.2 by Automated Colorimetry
- Nitrogen, Nitrate analyzed by USEPA Method 353.2 by Automated Colorimetry
- Sulfate analyzed by USEPA Method 375.4 by Spectrophotometer
- Total and Dissolved Organic Carbon analyzed by USEPA Method 415.1

Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

#### 3.1 Receipt Condition and Sample Holding Times

The SDG Case Narrative, chain-of-custody, login sample receipt checklists, and analysis dates were reviewed to verify analytical method holding times and proper preservation upon sampling. Samples were received by TestAmerica in good condition.

#### 3.2 Blanks

Laboratory method blanks are prepared and analyzed to determine if contamination occurred as a result of laboratory activities.

Laboratory method blanks were performed for each laboratory system as outlined for each analytical method to evaluate whether cross contamination occurred during laboratory analysis activities. Results for the method blanks were non-detect.

#### 3.3 Laboratory Control Sample Recoveries

A LCS is analyzed on each laboratory system to evaluate the analytical method accuracy and laboratory performance. LCS recoveries were within acceptance criteria; therefore, data qualification was not required.

#### 3.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples are analyzed to determine long term precision and accuracy of the analytical method on various matrices. Although MS/MSD analysis was not required for inorganic and general chemistry per the Work Plan, the laboratory spiked groundwater samples GM-31A and GM-58A for various analytes.



Some MS/MSD data for these samples was outside acceptance criteria. Since MS/MSD data alone cannot be used to evaluate the precision and accuracy of data, data qualification was not required for the associated samples.

### 3.5 Results Reported From Dilutions

Samples in the SDG required dilutions due to high levels of target analytes chloride and sulfate. Reporting limits were adjusted to reflect the dilution. Result qualifications are shown in Section 4.0.



## 4.0 SUMMARY

Golder validated the data collected during the 2Q17 sampling event from the Illinois Route 3 Drum Site in general accordance with the Work Plan and USEPA functional guidelines. Although some data required qualifications due to quality control criteria that were not achieved, the data were deemed usable. Where a positive result was qualified as estimated, the analyte should be considered present. Similarly, a result that was qualified as an estimated reporting limit should be considered not present for the purposes of this program, although the limit itself may not be precise. The completeness for the entire data set was 100%.

**Qualification Summary Table**

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Nitrate and Sulfate	D	GM-31A and GM-58A





## 5.0 REFERENCES

Solutia Inc., 2008. Revised Illinois Route 3 Drum Site Operation and Maintenance Plan, W.G. Krummrich Facility, Sauget, IL, May 2008.

USEPA, 2010. Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review.

USEPA, 2008. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.

**APPENDIX D**  
**GROUNDWATER ANALYTICAL RESULTS**  
**(INCLUDING DATA VALIDATION REPORT)**



**Level IV Data Validation Summary**  
**Solutia Inc., W.G. Krummrich, Sauget, Illinois**  
**2Q17 Route 3 Drum Site Monitoring Program**

**Company Name:** Golder Associates  
**Project Name:** WGK-2Q17 Drum Site  
**Reviewer:** S. DiCenso  
**Laboratory:** TestAmerica  
**SDG#:** KOM037  
**Matrix:** Water

**Project Manager:** A. Derhake  
**Project Number:** 140-3345  
**Sample Date:** May 2017

**Analytical Method:** SVOC (8270D), Dissolved Gases (RSK-175), Metals (6010C), Alkalinity (310.1), Chloride (325.2), Nitrogen, Nitrate-Nitrite (353.2), Sulfate (375.4), TOC (415.1), and DOC (415.1)

**Sample Names:** GM-31A-0517, GM-31A-F(0.2)-0517, GM-31A-0517-AD, GM-31A-0517-EB, GM-58A-0517, GM-58A-F(0.2)-0517

**Field Information****YES NO NA**

- a) Sampling dates noted? ☒ ☐ ☐
- b) Does the laboratory narrative indicate deficiencies? ☒ ☐ ☐

**Comments:**

**SVOC:** No deficiencies noted.

**Dissolved Gases:** Insufficient sample volume to perform MS/MSD associated with batch 480178.

**Metals:** No deficiencies noted.

**Alkalinity:** No deficiencies noted.

**Chloride:** No deficiencies noted.

**Nitrate-Nitrite as Nitrogen:** Sample GM-31A required dilution prior to analysis, reporting limits were adjusted accordingly.

**Sulfate:** Sulfate exceeded the recovery criteria high for the MS and MSD of sample GM-58A in batch 479829.

Samples GM-31A and GM-58A required dilution prior to analysis, reporting limits were adjusted accordingly.

**TOC:** No deficiencies noted.

**DOC:** No deficiencies noted.

**Chain-of-Custody (COC)****YES NO NA**

- a) Was the COC signed by both field and laboratory personnel? ☒ ☐ ☐
- b) Were samples received in good condition? ☒ ☐ ☐

**Comments:** Samples were received at 0.1°C and 0.6°C, outside the 4°C ± 2°C criteria.

**General****YES NO NA**

- a) Were hold times met for sample analysis? ☒ ☐ ☐
- b) Were the correct preservatives used? ☒ ☐ ☐
- c) Was the correct method used? ☒ ☐ ☐
- d) Any sample dilutions noted? ☒ ☐ ☐

**Comments:** Detections in diluted analysis were qualified.

**GC/MS Instrument Performance Check (IPC) and Internal Standards (IS)****YES NO NA**

- a) IPC analyzed at the appropriate frequency and met the appropriate standards? ☒ ☐ ☐
- b) Does DFTPP meet the ion abundance criteria? ☒ ☐ ☐
- c) Internal Standard retention times and areas met appropriate criteria? ☒ ☐ ☐

**Comments:** None**Calibrations****YES NO NA**

- a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards? ☒ ☐ ☐
- b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards? ☒ ☐ ☐
- c) Initial calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards? ☐ ☒ ☐
- d) Continuing calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards? ☐ ☒ ☐

**Comments:** Some compounds did not meet calibration requirements; however, calibration criteria were met by analytes of interest. No data qualification was required.**Blanks****YES NO NA**

- a) Were blanks (trip, equipment, method) performed at required frequency? ☒ ☐ ☐
- b) Were analytes detected in any blanks? ☐ ☒ ☐

**Comments:** Equipment blank for GM-31A was submitted with SDG KOM037.**Matrix Spike/Matrix Spike Duplicate (MS/MSD)****YES NO NA**

- a) Was MS/MSD accuracy criteria met? ☐ ☒ ☐
- b) Was MS/MSD precision criteria met? ☒ ☐ ☐

**Comments:** Sulfate exceeded the recovery criteria high for MS and MSD of sample GM-58A associated with batch 479829. Data was not qualified on MS/MSD data alone.**Laboratory Control Sample (LCS)****YES NO NA**

- a) LCS analyzed at the appropriate frequency and met appropriate standards? ☒ ☐ ☐

**Comments:** None**Surrogate (System Monitoring) Compounds****YES NO NA**

- a) Surrogate compounds analyzed at the appropriate frequency and met appropriate standards? ☒ ☐ ☐

**Comments:** None**Duplicates****YES NO NA**

- a) Were field duplicates collected? ☒ ☐ ☐
- b) Was field duplicate precision criteria met? ☒ ☐ ☐

**Comments:** Duplicate sample GM-31A-0517-AD was submitted with SDG KOM037.**Additional Comments:** None

**Qualifications:**

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Nitrate and Sulfate	D	GM-31A and GM-58A

**SDG KOM037**  
**Sample Results from:**

**GM-58A**  
**GM-31A**  
**GM-31A-AD**  
**GM-31A-EB**

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Savannah  
5102 LaRoche Avenue  
Savannah, GA 31404  
Tel: (912)354-7858

TestAmerica Job ID: 680-138507-1  
TestAmerica Sample Delivery Group: KOM037  
Client Project/Site: 2Q17 Drum Site GW Sampling - 1403345

For:  
Solutia Inc.  
575 Maryville Centre Dr.  
Saint Louis, Missouri 63141

Attn: Mr. Jerry Rinaldi



Authorized for release by:  
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The  
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The test results in this report meet all 2003 NELAP and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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SSD  
6/7/17

## Definitions/Glossary

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

### Qualifiers

#### GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

#### GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

#### Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

#### General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
■	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

SSD 6/7/17  
TestAmerica Savannah



## Sample Summary

Client: Solutia Inc.

Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1

SDG: KOM037

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-138507-1	GM-31A-0517	Water	05/08/17 13:52	05/09/17 09:05
680-138507-2	GM-31A-F(0.2)-0517	Water	05/08/17 13:52	05/09/17 09:05
680-138507-3	GM-31A-0517-AD	Water	05/08/17 13:52	05/09/17 09:05
680-138507-4	GM-31A-0517-EB	Water	05/08/17 14:40	05/09/17 09:05
680-138507-5	GM-58A-0517	Water	05/08/17 11:55	05/09/17 09:05
680-138507-6	GM-58A-F(0.2)-0517	Water	05/08/17 11:55	05/09/17 09:05

SSD 6/7/17  
TestAmerica Savannah

## Case Narrative

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Job ID: 680-138507-1

Laboratory: TestAmerica Savannah

### Narrative

## CASE NARRATIVE

Client: Solutia Inc.

Project: 2Q17 Drum Site GW Sampling - 1403345

Report Number: 680-138507-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

### RECEIPT

The samples were received on 5/9/2017 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.1° C and 0.6° C.

### SEMIVOLATILE ORGANIC COMPOUNDS (AQUEOUS)

Samples GM-31A-0517 (680-138507-1), GM-31A-0517-AD (680-138507-3), GM-31A-0517-EB (680-138507-4) and GM-58A-0517 (680-138507-5) were analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 05/12/2017 and analyzed on 05/16/2017 and 05/18/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### DISSOLVED GASES

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 05/17/2017.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with analytical batch 680-480178.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICP) - DISSOLVED

Samples GM-31A-F(0.2)-0517 (680-138507-2) and GM-58A-F(0.2)-0517 (680-138507-6) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/10/2017 and analyzed on 05/12/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICP)

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/10/2017 and analyzed on 05/12/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### ALKALINITY

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 05/16/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### CHLORIDE

## Case Narrative

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

### Job ID: 680-138507-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for Chloride in accordance with EPA Method 325.2. The samples were analyzed on 05/17/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### NITRATE-NITRITE AS NITROGEN

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 05/09/2017.

Sample GM-31A-0517 (680-138507-1)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### SULFATE

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for sulfate in accordance with EPA Method 375.4. The samples were analyzed on 05/12/2017.

Sulfate failed the recovery criteria high for the matrix spike/matrix spike duplicate (MS/MSD) of sample GM-58A-0517 (680-138507-5) in batch 680-479829. Refer to the QC report for details.

Samples GM-31A-0517 (680-138507-1)[2X] and GM-58A-0517 (680-138507-5)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### TOTAL ORGANIC CARBON

Samples GM-31A-0517 (680-138507-1) and GM-58A-0517 (680-138507-5) were analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 05/12/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### DISSOLVED ORGANIC CARBON (DOC)

Samples GM-31A-F(0.2)-0517 (680-138507-2) and GM-58A-F(0.2)-0517 (680-138507-6) were analyzed for Dissolved Organic Carbon (DOC) in accordance with EPA Method 415.1. The samples were analyzed on 05/12/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-31A-0517

Lab Sample ID: 680-138507-1

Date Collected: 05/08/17 13:52

Matrix: Water

Date Received: 05/09/17 09:05

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
1-chloro-2,4-dinitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
1-Chloro-3-nitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
2-chloronitrobenzene /	19	U	19		ug/L		05/12/17 16:07	05/16/17 20:12	1
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
2,4-Dichlorophenol	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
Nitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
2-Nitrobiphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
3-Nitrobiphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
4-Nitrobiphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1
Pentachlorophenol	49	U	49		ug/L		05/12/17 16:07	05/16/17 20:12	1
2,4,6-Trichlorophenol	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	58		32 - 113	05/12/17 16:07	05/16/17 20:12	1
2-Fluorophenol	46		26 - 109	05/12/17 16:07	05/16/17 20:12	1
Nitrobenzene-d5	59		32 - 118	05/12/17 16:07	05/16/17 20:12	1
Phenol-d5	51		27 - 110	05/12/17 16:07	05/16/17 20:12	1
Terphenyl-d14	44		10 - 126	05/12/17 16:07	05/16/17 20:12	1
2,4,6-Tribromophenol	69		39 - 124	05/12/17 16:07	05/16/17 20:12	1

## Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/17/17 15:55	1
Ethylene	1.0	U	1.0		ug/L			05/17/17 15:55	1
Methane	0.58	U	0.58		ug/L			05/17/17 15:55	1

## Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.23		0.050		mg/L		05/10/17 14:20	05/12/17 17:06	1
Manganese	0.37		0.010		mg/L		05/10/17 14:20	05/12/17 17:06	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21		1.0		mg/L			05/17/17 10:24	1
Nitrate as N	4.9	P	0.50		mg/L			05/09/17 16:45	10
Sulfate	50	P	10		mg/L			05/12/17 13:07	2
Total Organic Carbon	3.3		1.0		mg/L			05/12/17 15:30	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	260		5.0		mg/L			05/16/17 17:58	1
Carbon Dioxide, Free	49		5.0		mg/L			05/16/17 17:58	1

SSD 6/7/17

TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-31A-F(0.2)-0517

Lab Sample ID: 680-138507-2

Date Collected: 05/08/17 13:52

Matrix: Water

Date Received: 05/09/17 09:05

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.050	U	0.050		mg/L		05/10/17 14:20	05/12/17 16:56	1
Manganese, Dissolved	0.37		0.010		mg/L		05/10/17 14:20	05/12/17 16:56	1

## General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	3.4		1.0		mg/L			05/12/17 11:29	1

SSD 6/7/17

TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-31A-0517-AD

Lab Sample ID: 680-138507-3

Date Collected: 05/08/17 13:52

Matrix: Water

Date Received: 05/09/17 09:05

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
1-chloro-2,4-dinitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
1-Chloro-3-nitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
2-chloronitrobenzene /	19	U	19		ug/L		05/12/17 16:07	05/16/17 20:36	1
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
2,4-Dichlorophenol	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
Nitrobenzene	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
2-Nitrobiphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
3-Nitrobiphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
4-Nitrobiphenyl	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1
Pentachlorophenol	48	U	48		ug/L		05/12/17 16:07	05/16/17 20:36	1
2,4,6-Trichlorophenol	9.7	U	9.7		ug/L		05/12/17 16:07	05/16/17 20:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	68		32 - 113	05/12/17 16:07	05/16/17 20:36	1
2-Fluorophenol	61		28 - 109	05/12/17 16:07	05/16/17 20:36	1
Nitrobenzene-d5	69		32 - 118	05/12/17 16:07	05/16/17 20:36	1
Phenol-d5	66		27 - 110	05/12/17 16:07	05/16/17 20:36	1
Terphenyl-d14	57		10 - 126	05/12/17 16:07	05/16/17 20:36	1
2,4,6-Tribromophenol	78		39 - 124	05/12/17 16:07	05/16/17 20:36	1

SSD 6/7/17  
TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-31A-0517-EB

Lab Sample ID: 680-138507-4

Date Collected: 05/08/17 14:40

Matrix: Water

Date Received: 05/09/17 09:05

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
1-chloro-2,4-dinitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
1-Chloro-3-nitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
2-chloronitrobenzene /	20	U	20		ug/L		05/12/17 16:07	05/16/17 21:00	1
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
2,4-Dichlorophenol	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
Nitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
2-Nitrobiphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
3-Nitrobiphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
4-Nitrobiphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
Pentachlorophenol	49	U	49		ug/L		05/12/17 16:07	05/16/17 21:00	1
2,4,6-Trichlorophenol	9.9	U	9.9		ug/L		05/12/17 16:07	05/16/17 21:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	75		32 - 113				05/12/17 16:07	05/16/17 21:00	1
2-Fluorophenol	60		26 - 109				05/12/17 16:07	05/16/17 21:00	1
Nitrobenzene-d5	75		32 - 116				05/12/17 16:07	05/16/17 21:00	1
Phenol-d5	64		27 - 110				05/12/17 16:07	05/16/17 21:00	1
Terphenyl-d14	96		10 - 126				05/12/17 16:07	05/16/17 21:00	1
2,4,6-Tribromophenol	79		39 - 124				05/12/17 16:07	05/16/17 21:00	1

SSD 6/7/17  
TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-58A-0517

Lab Sample ID: 680-138507-5

Date Collected: 05/08/17 11:55

Matrix: Water

Date Received: 05/09/17 09:05

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
1-chloro-2,4-dinitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
1-Chloro-3-nitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
2-chloronitrobenzene /	20	U	20		ug/L		05/12/17 16:07	05/18/17 17:06	1
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
2,4-Dichlorophenol	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
Nitrobenzene	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
2-Nitrobiphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
3-Nitrobiphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
4-Nitrobiphenyl	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1
Pentachlorophenol	49	U	49		ug/L		05/12/17 16:07	05/18/17 17:06	1
2,4,6-Trichlorophenol	9.9	U	9.9		ug/L		05/12/17 16:07	05/18/17 17:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	73		32 - 113	05/12/17 16:07	05/18/17 17:06	1
2-Fluorophenol	63		26 - 109	05/12/17 16:07	05/18/17 17:06	1
Nitrobenzene-d5	72		32 - 116	05/12/17 16:07	05/18/17 17:06	1
Phenol-d5	66		27 - 110	05/12/17 16:07	05/18/17 17:06	1
Terphenyl-d14	33		10 - 126	05/12/17 16:07	05/18/17 17:06	1
2,4,6-Tribromophenol	80		39 - 124	05/12/17 16:07	05/18/17 17:06	1

## Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/17/17 16:08	1
Ethylene	1.0	U	1.0		ug/L			05/17/17 16:08	1
Methane	0.58	U	0.58		ug/L			05/17/17 16:08	1

## Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.49		0.050		mg/L		05/10/17 14:20	05/12/17 17:11	1
Manganese	0.83		0.010		mg/L		05/10/17 14:20	05/12/17 17:11	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	43		1.0		mg/L			05/17/17 10:33	1
Nitrate as N	0.090		0.050		mg/L			05/09/17 16:41	1
Sulfate	90	✓	25		mg/L			05/12/17 13:17	5
Total Organic Carbon	4.3		1.0		mg/L			05/12/17 15:50	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	320		5.0		mg/L			05/16/17 18:07	1
Carbon Dioxide, Free	52		5.0		mg/L			05/16/17 18:07	1

SSD 6/7/17  
TestAmerica Savannah



# Client Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-58A-F(0.2)-0517

Lab Sample ID: 680-138507-6

Date Collected: 05/08/17 11:55

Matrix: Water

Date Received: 05/09/17 09:05

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.050	U	0.050		mg/L		05/10/17 14:20	05/12/17 17:01	1
Manganese, Dissolved	0.78		0.010		mg/L		05/10/17 14:20	05/12/17 17:01	1

## General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	4.3		1.0		mg/L			05/12/17 11:48	1

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TestAmerica Savannah

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-479702/5-A

Matrix: Water

Analysis Batch: 480102

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 479702

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
1-chloro-2,4-dinitrobenzene	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
1-Chloro-3-nitrobenzene	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
2-chloronitrobenzene /	20	U	20		ug/L		05/12/17 16:07	05/16/17 19:49	1
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
2,4-Dichlorophenol	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
Nitrobenzene	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
2-Nitrobiphenyl	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
3-Nitrobiphenyl	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
4-Nitrobiphenyl	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1
Pentachlorophenol	50	U	50		ug/L		05/12/17 16:07	05/16/17 19:49	1
2,4,6-Trichlorophenol	10	U	10		ug/L		05/12/17 16:07	05/16/17 19:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	70		32 - 113	05/12/17 16:07	05/16/17 19:49	1
2-Fluorophenol	59		26 - 109	05/12/17 16:07	05/16/17 19:49	1
Nitrobenzene-d5	72		32 - 118	05/12/17 16:07	05/16/17 19:49	1
Phenol-d5	61		27 - 110	05/12/17 16:07	05/16/17 19:49	1
Terphenyl-d14	97		10 - 126	05/12/17 16:07	05/16/17 19:49	1
2,4,6-Tribromophenol	79		39 - 124	05/12/17 16:07	05/16/17 19:49	1

Lab Sample ID: LCS 680-479702/6-A

Matrix: Water

Analysis Batch: 480102

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 479702

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,1'-Biphenyl	100	59.4		ug/L		59	45 - 130
1-chloro-2,4-dinitrobenzene	100	69.3		ug/L		69	51 - 130
1-Chloro-3-nitrobenzene	100	72.4		ug/L		72	31 - 130
2-chloronitrobenzene /	200	142		ug/L		71	34 - 130
4-chloronitrobenzene							
3,4-Dichloronitrobenzene	100	74.2		ug/L		74	34 - 130
2,4-Dichlorophenol	100	74.0		ug/L		74	44 - 130
Nitrobenzene	100	72.0		ug/L		72	43 - 130
2-Nitrobiphenyl	100	66.8		ug/L		66	39 - 130
3-Nitrobiphenyl	100	87.0		ug/L		87	40 - 130
4-Nitrobiphenyl	100	85.3		ug/L		85	39 - 130
Pentachlorophenol	200	171		ug/L		85	33 - 130
2,4,6-Trichlorophenol	100	63.3		ug/L		63	47 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	54		32 - 113
2-Fluorophenol	56		26 - 109
Nitrobenzene-d5	67		32 - 118
Phenol-d5	63		27 - 110
Terphenyl-d14	87		10 - 126
2,4,6-Tribromophenol	65		39 - 124

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TestAmerica Savannah

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Lab Sample ID: 680-138507-5 MS

Matrix: Water

Analysis Batch: 480102

Client Sample ID: GM-58A-0517

Prep Type: Total/NA

Prep Batch: 479702

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1'-Biphenyl	9.9	U	98.8	55.9		ug/L		57	45 - 130
1-chloro-2,4-dinitrobenzene	9.9	U	98.8	69.9		ug/L		71	51 - 130
1-Chloro-3-nitrobenzene	9.9	U	98.8	70.2		ug/L		71	31 - 130
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	198	143		ug/L		72	34 - 130
3,4-Dichloronitrobenzene	9.9	U	98.8	68.4		ug/L		69	34 - 130
2,4-Dichlorophenol	9.9	U	98.8	67.9		ug/L		69	44 - 130
Nitrobenzene	9.9	U	98.8	70.5		ug/L		70	43 - 130
2-Nitrobiphenyl	9.9	U	98.8	68.0		ug/L		62	39 - 130
3-Nitrobiphenyl	9.9	U	98.8	80.6		ug/L		82	40 - 130
4-Nitrobiphenyl	9.9	U	98.8	79.2		ug/L		80	39 - 130
Pentachlorophenol	49	U	198	164		ug/L		83	33 - 130
2,4,6-Trichlorophenol	9.9	U	98.8	60.5		ug/L		61	47 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	53		32 - 113
2-Fluorophenol	48		26 - 109
Nitrobenzene-d5	68		32 - 118
Phenol-d5	53		27 - 110
Terphenyl-d14	38		10 - 126
2,4,6-Tribromophenol	63		39 - 124

Lab Sample ID: 680-138507-5 MSD

Matrix: Water

Analysis Batch: 480102

Client Sample ID: GM-58A-0517

Prep Type: Total/NA

Prep Batch: 479702

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,1'-Biphenyl	9.9	U	97.8	52.7		ug/L		54	45 - 130	6	50
1-chloro-2,4-dinitrobenzene	9.9	U	97.8	69.3		ug/L		71	51 - 130	1	50
1-Chloro-3-nitrobenzene	9.9	U	97.8	61.2		ug/L		63	31 - 130	14	50
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	196	125		ug/L		64	34 - 130	13	50
3,4-Dichloronitrobenzene	9.9	U	97.8	63.3		ug/L		65	34 - 130	8	50
2,4-Dichlorophenol	9.9	U	97.8	60.2		ug/L		62	44 - 130	12	50
Nitrobenzene	9.9	U	97.8	63.4		ug/L		64	43 - 130	11	50
2-Nitrobiphenyl	9.9	U	97.8	66.4		ug/L		61	39 - 130	2	50
3-Nitrobiphenyl	9.9	U	97.8	82.4		ug/L		84	40 - 130	2	50
4-Nitrobiphenyl	9.9	U	97.8	81.8		ug/L		84	39 - 130	3	50
Pentachlorophenol	49	U	196	160		ug/L		82	33 - 130	2	50
2,4,6-Trichlorophenol	9.9	U	97.8	56.0		ug/L		57	47 - 130	8	50

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	49		32 - 113
2-Fluorophenol	44		26 - 109
Nitrobenzene-d5	61		32 - 118
Phenol-d5	49		27 - 110
Terphenyl-d14	33		10 - 126
2,4,6-Tribromophenol	61		39 - 124

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TestAmerica Savannah

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 680-480178/9  
Matrix: Water  
Analysis Batch: 480178

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/17/17 10:23	1
Ethylene	1.0	U	1.0		ug/L			05/17/17 10:23	1
Methane	0.58	U	0.58		ug/L			05/17/17 10:23	1
Methane (TCD)	390	U	390		ug/L			05/17/17 10:23	1

Lab Sample ID: LCS 680-480178/4  
Matrix: Water  
Analysis Batch: 480178

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	288	299		ug/L		104	75 - 125
Ethylene	269	273		ug/L		101	75 - 125
Methane	154	169		ug/L		110	75 - 125

Lab Sample ID: LCS 680-480178/6  
Matrix: Water  
Analysis Batch: 480178

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane (TCD)	1920	2260		ug/L		117	75 - 125

Lab Sample ID: LCSD 680-480178/10  
Matrix: Water  
Analysis Batch: 480178

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	288	279		ug/L		97	75 - 125	7	30
Ethylene	269	251		ug/L		93	75 - 125	8	30
Methane	154	155		ug/L		101	75 - 125	9	30

Lab Sample ID: LCSD 680-480178/7  
Matrix: Water  
Analysis Batch: 480178

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane (TCD)	1920	2220		ug/L		115	75 - 125	2	30

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-479358/1-A  
Matrix: Water  
Analysis Batch: 479881

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 479358

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		05/10/17 14:20	05/12/17 15:51	1
Iron, Dissolved	0.050	U	0.050		mg/L		05/10/17 14:20	05/12/17 15:51	1
Manganese	0.010	U	0.010		mg/L		05/10/17 14:20	05/12/17 15:51	1
Manganese, Dissolved	0.010	U	0.010		mg/L		05/10/17 14:20	05/12/17 15:51	1

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# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-479358/2-A  
Matrix: Water  
Analysis Batch: 479881

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 479358  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Iron	5.00	4.89		mg/L		98	80 - 120
Iron, Dissolved	5.00	4.89		mg/L		98	80 - 120
Manganese	0.500	0.521		mg/L		104	80 - 120
Manganese, Dissolved	0.500	0.521		mg/L		104	80 - 120

## Method: 310.1 - Alkalinity

Lab Sample ID: MB 680-480172/5  
Matrix: Water  
Analysis Batch: 480172

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			05/16/17 16:54	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			05/16/17 16:54	1

Lab Sample ID: LCS 680-480172/6  
Matrix: Water  
Analysis Batch: 480172

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	250	243		mg/L		97	80 - 120

Lab Sample ID: LCSD 680-480172/32  
Matrix: Water  
Analysis Batch: 480172

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	250	251		mg/L		101	80 - 120	3	30

Lab Sample ID: 680-138507-5 DU  
Matrix: Water  
Analysis Batch: 480172

Client Sample ID: GM-58A-0517  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	320		310		mg/L		5	30
Carbon Dioxide, Free	52		46.1		mg/L		11	30

## Method: 325.2 - Chloride

Lab Sample ID: MB 680-480267/8  
Matrix: Water  
Analysis Batch: 480267

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0	U	1.0		mg/L			05/17/17 10:31	1

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# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Method: 325.2 - Chloride (Continued)

Lab Sample ID: LCS 680-480267/9  
Matrix: Water  
Analysis Batch: 480267

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	26.0		mg/L		104	85 - 115

Lab Sample ID: LCSD 680-480267/18  
Matrix: Water  
Analysis Batch: 480267

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	25.0	25.8		mg/L		103	85 - 115	1	30

Lab Sample ID: 680-138507-1 MS  
Matrix: Water  
Analysis Batch: 480267

Client Sample ID: GM-31A-0517  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	21		25.0	45.8		mg/L		97	85 - 115

Lab Sample ID: 680-138507-1 MSD  
Matrix: Water  
Analysis Batch: 480267

Client Sample ID: GM-31A-0517  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	21		25.0	45.8		mg/L		97	85 - 115	0	30

## Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-479202/13  
Matrix: Water  
Analysis Batch: 479202

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			05/09/17 16:36	1

Lab Sample ID: LCS 680-479202/16  
Matrix: Water  
Analysis Batch: 479202

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.500	0.534		mg/L		107	75 - 125
Nitrate Nitrite as N	1.00	1.04		mg/L		104	90 - 110
Nitrite as N	0.500	0.506		mg/L		101	90 - 110

Lab Sample ID: 680-138507-5 MS  
Matrix: Water  
Analysis Batch: 479202

Client Sample ID: GM-58A-0517  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.090		0.500	0.602		mg/L		102	75 - 125
Nitrate Nitrite as N	0.090		1.00	1.14		mg/L		105	90 - 110
Nitrite as N	0.050	U	0.500	0.538		mg/L		108	90 - 110

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# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: 680-138507-5 MSD

Matrix: Water

Analysis Batch: 479202

Client Sample ID: GM-58A-0517

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.090		0.500	0.587		mg/L		99	75 - 125	3	30
Nitrate Nitrite as N	0.090		1.00	1.13		mg/L		104	90 - 110	0	10
Nitrite as N	0.050	U	0.500	0.543		mg/L		109	90 - 110	1	10

## Method: 375.4 - Sulfate

Lab Sample ID: MB 680-479829/7

Matrix: Water

Analysis Batch: 479829

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			05/12/17 13:05	1

Lab Sample ID: LCS 680-479829/8

Matrix: Water

Analysis Batch: 479829

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	20.2		mg/L		101	75 - 125

Lab Sample ID: LCSD 680-479829/17

Matrix: Water

Analysis Batch: 479829

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	20.0	19.9		mg/L		100	75 - 125	1	30

Lab Sample ID: 680-138507-1 MS

Matrix: Water

Analysis Batch: 479829

Client Sample ID: GM-31A-0517

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	50		20.0	67.8		mg/L		91	75 - 125

Lab Sample ID: 680-138507-1 MSD

Matrix: Water

Analysis Batch: 479829

Client Sample ID: GM-31A-0517

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	50		20.0	68.8		mg/L		86	75 - 125	1	30

Lab Sample ID: 680-138507-5 MS

Matrix: Water

Analysis Batch: 479829

Client Sample ID: GM-58A-0517

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	90		20.0	116	4	mg/L		126	75 - 125

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# QC Sample Results

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Method: 375.4 - Sulfate (Continued)

Lab Sample ID: 680-138507-5 MSD  
Matrix: Water  
Analysis Batch: 479829

Client Sample ID: GM-58A-0517  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	90		20.0	117	4	mg/L		132	75 - 125	1	30

## Method: 415.1 - DOC

Lab Sample ID: MB 680-479824/2  
Matrix: Water  
Analysis Batch: 479824

Client Sample ID: Method Blank  
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			05/12/17 08:07	1

Lab Sample ID: LCS 680-479824/4  
Matrix: Water  
Analysis Batch: 479824

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	20.0	19.9		mg/L		100	80 - 120

Lab Sample ID: LCSD 680-479824/5  
Matrix: Water  
Analysis Batch: 479824

Client Sample ID: Lab Control Sample Dup  
Prep Type: Dissolved

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dissolved Organic Carbon	20.0	19.9		mg/L		100	80 - 120	0	20

## Method: 415.1 - TOC

Lab Sample ID: MB 680-479822/2  
Matrix: Water  
Analysis Batch: 479822

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			05/12/17 13:49	1

Lab Sample ID: LCS 680-479822/3  
Matrix: Water  
Analysis Batch: 479822

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	20.0	20.0		mg/L		100	80 - 120

Lab Sample ID: LCSD 680-479822/4  
Matrix: Water  
Analysis Batch: 479822

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	20.0	19.8		mg/L		99	80 - 120	1	25

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# QC Association Summary

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## GC/MS Semi VOA

### Prep Batch: 479702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	3520C	
680-138507-3	GM-31A-0517-AD	Total/NA	Water	3520C	
680-138507-4	GM-31A-0517-EB	Total/NA	Water	3520C	
680-138507-5	GM-58A-0517	Total/NA	Water	3520C	
MB 680-479702/5-A	Method Blank	Total/NA	Water	3520C	
LCS 680-479702/6-A	Lab Control Sample	Total/NA	Water	3520C	
680-138507-5 MS	GM-58A-0517	Total/NA	Water	3520C	
680-138507-5 MSD	GM-58A-0517	Total/NA	Water	3520C	

### Analysis Batch: 480102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	8270D	479702
680-138507-3	GM-31A-0517-AD	Total/NA	Water	8270D	479702
680-138507-4	GM-31A-0517-EB	Total/NA	Water	8270D	479702
MB 680-479702/5-A	Method Blank	Total/NA	Water	8270D	479702
LCS 680-479702/6-A	Lab Control Sample	Total/NA	Water	8270D	479702
680-138507-5 MS	GM-58A-0517	Total/NA	Water	8270D	479702
680-138507-5 MSD	GM-58A-0517	Total/NA	Water	8270D	479702

### Analysis Batch: 480487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-5	GM-58A-0517	Total/NA	Water	8270D	479702

## GC VOA

### Analysis Batch: 480178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	RSK-175	
680-138507-5	GM-58A-0517	Total/NA	Water	RSK-175	
MB 680-480178/9	Method Blank	Total/NA	Water	RSK-175	
LCS 680-480178/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 680-480178/6	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-480178/10	Lab Control Sample Dup	Total/NA	Water	RSK-175	
LCSD 680-480178/7	Lab Control Sample Dup	Total/NA	Water	RSK-175	

## Metals

### Prep Batch: 479358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total Recoverable	Water	3005A	
680-138507-2	GM-31A-F(0.2)-0517	Dissolved	Water	3005A	
680-138507-5	GM-58A-0517	Total Recoverable	Water	3005A	
680-138507-6	GM-58A-F(0.2)-0517	Dissolved	Water	3005A	
MB 680-479358/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-479358/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

### Analysis Batch: 479881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total Recoverable	Water	6010C	479358
680-138507-2	GM-31A-F(0.2)-0517	Dissolved	Water	6010C	479358

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# QC Association Summary

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

## Metals (Continued)

### Analysis Batch: 479881 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-5	GM-58A-0517	Total Recoverable	Water	6010C	479358
680-138507-6	GM-58A-F(0.2)-0517	Dissolved	Water	6010C	479358
MB 680-479358/1-A	Method Blank	Total Recoverable	Water	6010C	479358
LCS 680-479358/2-A	Lab Control Sample	Total Recoverable	Water	6010C	479358

## General Chemistry

### Analysis Batch: 479202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	353.2	
680-138507-5	GM-58A-0517	Total/NA	Water	353.2	
MB 680-479202/13	Method Blank	Total/NA	Water	353.2	
LCS 680-479202/16	Lab Control Sample	Total/NA	Water	353.2	
680-138507-5 MS	GM-58A-0517	Total/NA	Water	353.2	
680-138507-5 MSD	GM-58A-0517	Total/NA	Water	353.2	

### Analysis Batch: 479822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	415.1	
680-138507-5	GM-58A-0517	Total/NA	Water	415.1	
MB 680-479822/2	Method Blank	Total/NA	Water	415.1	
LCS 680-479822/3	Lab Control Sample	Total/NA	Water	415.1	
LCSD 680-479822/4	Lab Control Sample Dup	Total/NA	Water	415.1	

### Analysis Batch: 479824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-2	GM-31A-F(0.2)-0517	Dissolved	Water	415.1	
680-138507-6	GM-58A-F(0.2)-0517	Dissolved	Water	415.1	
MB 680-479824/2	Method Blank	Dissolved	Water	415.1	
LCS 680-479824/4	Lab Control Sample	Dissolved	Water	415.1	
LCSD 680-479824/5	Lab Control Sample Dup	Dissolved	Water	415.1	

### Analysis Batch: 479829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	375.4	
680-138507-5	GM-58A-0517	Total/NA	Water	375.4	
MB 680-479829/7	Method Blank	Total/NA	Water	375.4	
LCS 680-479829/8	Lab Control Sample	Total/NA	Water	375.4	
LCSD 680-479829/17	Lab Control Sample Dup	Total/NA	Water	375.4	
680-138507-1 MS	GM-31A-0517	Total/NA	Water	375.4	
680-138507-1 MSD	GM-31A-0517	Total/NA	Water	375.4	
680-138507-5 MS	GM-58A-0517	Total/NA	Water	375.4	
680-138507-5 MSD	GM-58A-0517	Total/NA	Water	375.4	

### Analysis Batch: 480172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	310.1	
680-138507-5	GM-58A-0517	Total/NA	Water	310.1	
MB 680-480172/5	Method Blank	Total/NA	Water	310.1	
LCS 680-480172/6	Lab Control Sample	Total/NA	Water	310.1	

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TestAmerica Savannah

## QC Association Summary

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

### General Chemistry (Continued)

#### Analysis Batch: 480172 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 680-480172/32	Lab Control Sample Dup	Total/NA	Water	310.1	
680-138507-5 DU	GM-58A-0517	Total/NA	Water	310.1	

#### Analysis Batch: 480267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-138507-1	GM-31A-0517	Total/NA	Water	325.2	
680-138507-5	GM-58A-0517	Total/NA	Water	325.2	
MB 680-480267/8	Method Blank	Total/NA	Water	325.2	
LCS 680-480267/9	Lab Control Sample	Total/NA	Water	325.2	
LCSD 680-480267/18	Lab Control Sample Dup	Total/NA	Water	325.2	
680-138507-1 MS	GM-31A-0517	Total/NA	Water	325.2	
680-138507-1 MSD	GM-31A-0517	Total/NA	Water	325.2	

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TestAmerica Savannah

# Lab Chronicle

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-31A-0517

Lab Sample ID: 680-138507-1

Date Collected: 05/08/17 13:52

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1026.4 mL	1 mL	479702	05/12/17 16:07	CEW	TAL SAV
Total/NA	Analysis	8270D		1			480102	05/16/17 20:12	OK	TAL SAV
Total/NA	Analysis	RSK-175		1	17 mL	17 mL	480178	05/17/17 15:55	SMC	TAL SAV
Total Recoverable	Prep	3005A			50 mL	50 mL	479358	05/10/17 14:20	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			479881	05/12/17 17:08	BCB	TAL SAV
Total/NA	Analysis	310.1		1			480172	05/16/17 17:58	KLD	TAL SAV
Total/NA	Analysis	325.2		1	2 mL	2 mL	480267	05/17/17 10:24	ALS	TAL SAV
Total/NA	Analysis	353.2		10	2 mL	2 mL	479202	05/09/17 16:45	GRX	TAL SAV
Total/NA	Analysis	375.4		2	2 mL	2 mL	479829	05/12/17 13:07	ALS	TAL SAV
Total/NA	Analysis	415.1		1	40 mL	40 mL	479822	05/12/17 15:30	KLD	TAL SAV

Client Sample ID: GM-31A-F(0.2)-0517

Lab Sample ID: 680-138507-2

Date Collected: 05/08/17 13:52

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	479358	05/10/17 14:20	AJR	TAL SAV
Dissolved	Analysis	6010C		1			479881	05/12/17 16:56	BCB	TAL SAV
Dissolved	Analysis	415.1		1			479824	05/12/17 11:29	KLD	TAL SAV

Client Sample ID: GM-31A-0517-AD

Lab Sample ID: 680-138507-3

Date Collected: 05/08/17 13:52

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1035.3 mL	1 mL	479702	05/12/17 16:07	CEW	TAL SAV
Total/NA	Analysis	8270D		1			480102	05/16/17 20:36	OK	TAL SAV

Client Sample ID: GM-31A-0517-EB

Lab Sample ID: 680-138507-4

Date Collected: 05/08/17 14:40

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1014.7 mL	1 mL	479702	05/12/17 16:07	CEW	TAL SAV
Total/NA	Analysis	8270D		1			480102	05/16/17 21:00	OK	TAL SAV

Client Sample ID: GM-58A-0517

Lab Sample ID: 680-138507-5

Date Collected: 05/08/17 11:55

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1011.3 mL	1 mL	479702	05/12/17 16:07	CEW	TAL SAV

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TestAmerica Savannah

# Lab Chronicle

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Client Sample ID: GM-58A-0517

Lab Sample ID: 680-138507-5

Date Collected: 05/08/17 11:55

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D		1			480487	05/18/17 17:06	OK	TAL SAV
Total/NA	Analysis	RSK-175		1	17 mL	17 mL	480178	05/17/17 16:08	SMC	TAL SAV
Total Recoverable	Prep	3005A			50 mL	50 mL	479358	05/10/17 14:20	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			479881	05/12/17 17:11	BCB	TAL SAV
Total/NA	Analysis	310.1		1			480172	05/16/17 18:07	KLD	TAL SAV
Total/NA	Analysis	325.2		1	2 mL	2 mL	480267	05/17/17 10:33	ALS	TAL SAV
Total/NA	Analysis	353.2		1	2 mL	2 mL	479202	05/09/17 16:41	GRX	TAL SAV
Total/NA	Analysis	375.4		5	2 mL	2 mL	479829	05/12/17 13:17	ALS	TAL SAV
Total/NA	Analysis	415.1		1	40 mL	40 mL	479822	05/12/17 15:50	KLD	TAL SAV

Client Sample ID: GM-58A-F(0.2)-0517

Lab Sample ID: 680-138507-6

Date Collected: 05/08/17 11:55

Matrix: Water

Date Received: 05/09/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	479358	05/10/17 14:20	AJR	TAL SAV
Dissolved	Analysis	6010C		1			479881	05/12/17 17:01	BCB	TAL SAV
Dissolved	Analysis	415.1		1			479824	05/12/17 11:49	KLD	TAL SAV

## Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

SD 6/7/17  
TestAmerica Savannah

## Accreditation/Certification Summary

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

### Laboratory: TestAmerica Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Illinois	NELAP	5	200022	11-30-17

1

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12

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TestAmerica Savannah

## Method Summary

Client: Solutia Inc.  
Project/Site: 2Q17 Drum Site GW Sampling - 1403345

TestAmerica Job ID: 680-138507-1  
SDG: KOM037

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
RSK-175	Dissolved Gases (GC)	RSK	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
310.1	Alkalinity	MCAWW	TAL SAV
325.2	Chloride	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
375.4	Sulfate	MCAWW	TAL SAV
415.1	TOC	MCAWW	TAL SAV
415.1	DOC	MCAWW	TAL SAV

### Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.  
RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab  
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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TestAmerica Savannah



## TestAmerica Savannah

5102 LaRoche Avenue

Savannah, GA 31404  
phone 912.354.7858 fax

## Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ GW ☐ NPDES ☒ RCRA ☐ Other:

Client Contact		Project Manager: Amanda Derhake		Site Contact: Samantha DiCenso		Date: 5/8/17		COC No:	
Golder Associates Inc.		Tel/Fax: 636-724-9191		Lab Contact: Michele Kersey		Carrier: FedEx		1 of 1 COCs	
820 South Main Street		Analysis Turnaround Time						Sampler: SRM	
St. Charles, MO 63301		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						For Lab Use Only:	
(636) 724-9191 Phone		TAT if different from Below Standard						Walk-in Client:	
(636) 724-9323 FAX		<input type="checkbox"/> 2 weeks						Lab Sampling:	
Project Name: 2Q17 Drum Site GW Sampling-1403345		<input type="checkbox"/> 1 week						Job / SDG No.:	
Site: Soluba WG Krummrich Facility		<input type="checkbox"/> 2 days						2 coolers	
P O # 42252863		<input type="checkbox"/> 1 day						Sample Specific Notes:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	SVOCs by B270	Total Fa/Mn by 5010C	AA/COD by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010C	DOC by 415.1
GM-31A-0517	5/8/17	1352	G	W	12	N	2	1	1	3	1	3				
GM-31A-F(0.2)-0517		1352			4	Y									1	3
GM-31A-0517-AD		1352			2	N	2									
GM-31A-0517-EB		1440			2	N	2									
GM-58A-0517		1155			12	N	2	1	1	3	1	3				
GM-58A-F(0.2)-0517		1155			4	Y									1	3
GM-58A-0517-MS		1155			2	N	2									
GM-58A-0517-MSD		1155			2	N	2									

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poisonous ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Dispose by Lab ☐ Archive for \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

1.3/0.6 0.8/0.1

Custody Seals Intact: ☐ Yes ☐ No

Custody Seal No.:

Relinquished by: Samantha DiCenso

Company: Golder

Date/Time: 5/8/17 1700

Received by:

Company:

Date/Time:

Received in Laboratory by:

Company: TA

Date/Time: 5-9-17 904

Form No. CA-C-WI-002, Rev. 4.3, dated 12/05/2013



## Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-138507-1

SDG Number: KOM037

Login Number: 138507

List Source: TestAmerica Savannah

List Number: 1

Creator: Jackson, Victor L

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $\leq 6$ mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

*SSD 6/7/17*

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

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