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April 21, 2016

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

Re: PCB Groundwater Quality Assessment Program
1st Quarter 2016 Data Report
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

Dear Ms. Bury:

Enclosed please find the PCB Groundwater Quality Assessment Program 1st Quarter 2016 Data Report for Solutia Inc.'s W. G. Krummrich Plant, Sauget, IL.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Gerald M. Rinaldi".

Gerald M. Rinaldi
Manager, Remediation Services

Enclosure

cc: Distribution List

DISTRIBUTION LIST

**PCB Groundwater Quality Assessment Program
1st Quarter 2016 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

**1st QUARTER 2016 DATA REPORT
PCB GROUNDWATER QUALITY
ASSESSMENT PROGRAM
SOLUTIA INC., W.G. KRUMMRICH FACILITY
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

April 2016

140-3345

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) is pleased to submit this report summarizing the 1st Quarter 2016 (1Q16) PCB groundwater sampling activities at the Solutia Inc. (Solutia) W.G. Krummrich (WGK) facility (Site) in Sauget, Illinois. The facility is located at 500 Monsanto Avenue, Sauget, Illinois as shown on Figure 1. The 1Q16 sampling event was performed in general accordance with the Revised PCB Groundwater Quality Assessment Program Work Plan (Work Plan) (Solutia 2009).

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

Ten (10) monitoring wells are sampled during the PCB event. The locations of the monitoring wells are shown on Figure 2 and the sample locations are included in the table below.

Area	Location Relative to Area	Sample Identification
Former PCB Manufacturing	Source Area Well	PMA-MW-4S
		PMA-MW-4D
	Downgradient	PMA-MW-1S
		PMA-MW-1M
		PMA-MW-2S
		PMA-MW-2M
		PMA-MW-3S
		PMA-MW-3M
		PMA-MW-5M
		PMA-MW-6D

Water levels in the monitoring wells are measured quarterly and total depths are measured in the 1st quarter of each year.

During the quarterly sampling events, monitoring wells are sampled for the following polychlorinated biphenyl (PCB) isomer groups or homologs: monochlorobiphenyl; dichlorobiphenyl; trichlorobiphenyl; tetrachlorobiphenyl; pentachlorobiphenyl; hexachlorobiphenyl; heptachlorobiphenyl; octachlorobiphenyl; nonachlorobiphenyl; and decachlorobiphenyl.



2.0 FIELD ACTIVITIES

Golder conducted 1Q16 sampling events on February 19 and February 22, 2016. Activities were performed in general accordance with the Work Plan.

2.1 Water Level Measurement

Prior to sampling during the 1Q16 event, Golder performed a synoptic round of water level measurements at 77 monitoring wells and piezometers on February 16 and February 17, 2016. The following monitoring well and piezometer series are included in the PCB program:

- BSA-series
- CPA-series
- GM-series
- K-series
- PS-MW-series
- PMA-series
- Piezometer clusters installed for Sauget Area 2 RI/FS and WGK CA-750 Environmental Indicator projects

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 1Q16 sampling event, NAPL was not detected in monitoring wells or piezometers. Total depths are measured during the 1st quarter of each year. The 1Q16 well gauging information is shown on Table 1. The information collected from the Middle Hydrogeologic Unit (MHU) and the Deep Hydrogeologic Unit (DHU) was used to create a groundwater potentiometric surface map, as shown on Figure 3. The MHU and DHU are the primary migration pathways for constituents present in the groundwater at the Site.

2.2 Groundwater Sample Collection

Monitoring wells sampled during the 1Q16 PCB event were purged and sampled using low-flow sampling techniques, low-density polyethylene tubing (LDPE) and a submersible pump. The pump intake was placed at approximately the middle of the screened interval for each well. Purging was conducted 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. Parameters were measured for each system volume purged using a SmartTROLL™ multi-parameter meter. The system volume includes the volume of the tubing, the volume of the pump and the volume of flow-through cell containing the multi-parameter device. 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 analysis of PCBs by United States Environmental Protection Agency (USEPA) Method 680. 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 1Q16 PCB 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 “PMA-MW#-MMYY-QA/QC” where:

- “**PMA**” denotes “PCB Manufacturing Area” and “**MW#**” denotes monitoring well number
- “**MMYY**” denotes month and year of sampling quarter, e.g.: February (1st quarter), 2016 (0216)
- “**QA/QC**” denotes QA/QC sample
 - **AD** – Analytical Duplicate
 - **EB** – Equipment Blank
 - **MS or MSD** – Matrix Spike or Matrix Spike Duplicate

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. Copies of the COCs are 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 the TestAmerica laboratory in electronic format and reviewed for quality and completeness by Golder in accordance with the Work Plan. Results were submitted in two (2) sample delivery groups (SDGs) as follows:

Sample Delivery Group (SDG)	Sample Identification
KPM069	PMA-MW-1M-0216
	PMA-MW-1S-0216
	PMA-MW-2M-0216
	PMA-MW-2M-0216-AD
	PMA-MW-2S-0216
	PMA-MW-2S-0216-EB
	PMA-MW-5M-0216
	PMA-MW-6D-0216
KPM070	PMA-MW-3M-0216
	PMA-MW-3S-0216
	PMA-MW-4D-0216
	PMA-MW-4S-0216

Golder completed validation of the analytical data following the general guidelines in Section 3.4 Data Review and Validation of the Work Plan. The Work Plan specifies that the most recent version of the national data validation guidelines be 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

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

The groundwater analytical laboratory reports including data validation reports are included in Appendix D. Groundwater analytical data for the 1Q16 PCB event is discussed below and presented in Table 2. Sample results are also shown for the SHU and the MHU/DHU in Figures 4 and 5, respectively.

4.1 Shallow Hydrogeologic Unit

Historically, dense non-aqueous phase liquid (DNAPL) has been periodically detected in PMA-MW-4S, located in the former PCB Manufacturing Area. DNAPL was not detected in PMA-MW-4S during the 1Q16 event. A groundwater sample was collected at PMA-MW-4S and PCBs were detected at a concentration of 68.6 µg/L. PCBs were not detected in the monitoring wells in the SHU downgradient of the former PCB Manufacturing Area.

4.2 Middle/Deep Hydrogeologic Unit

PCBs were detected in four (4) of the six (6) monitoring wells located in the MHU and DHU. Results are summarized below.

- Former PCB Manufacturing Area: PCBs were detected at a concentration of 1.3 µg/L in PMA-MW-4D.
- Downgradient of Former PCB Manufacturing Area: PCBs were detected in three (3) of five (5) monitoring wells downgradient of the former PCB Manufacturing Area at concentrations of 0.58 µg/L (PMA-MW-1M), 5.9 µg/L / 5.6 µg/L (PMA-MW-2M and AD), and 0.79 µg/L (PMA-MW-3M). PCBs were not detected in PMA-MW-5M or PMA-MW-6D.

4.3 Mann-Kendall Trend Analysis

Mann-Kendall trend analyses of total PCBs in groundwater samples from select monitoring wells within (PMA-MW-4D) or downgradient (PMA-MW-1M, -2M, -3S, -3M, and -6D) of the former PCB Manufacturing Area were performed. Results are shown on Table 3. The trends using analytical data from the 1Q16 PCB event appeared similar to historical trends. There was an increasing trend in PCB concentrations at monitoring wells PMA-MW-1M, PMA-MW-2M, and PMA-MW-4D. Concentrations of PCBs show either no trend or stable at monitoring wells PMA-MW-3S, PMA-MW-3M, and PMA-MW-6D.



5.0 CLOSING

Golder appreciates the opportunity to assist Solutia Inc. with the PCB Groundwater Quality Assessment Program sampling events. Please contact the undersigned if you need additional information.

Sincerely,

GOLDER ASSOCIATES INC.

A handwritten signature in blue ink, reading "Amanda W. Derhake".

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

A handwritten signature in black ink, reading "Mark N. Haddock".

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



6.0 REFERENCES

Solutia Inc, 2009. Revised PCB Groundwater Quality Assessment Program Work Plan, W.G. Krummrich Facility, Sauget, IL, Prepared by URS Corporation, May 2009.

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

FIGURES



FORMER PCB MANUFACTURING AREA

STERLING STEEL

SITE H

SITE L

SITE M

SITE I

DEAD CREEK

SITE G

CONTAINMENT CELL

W.G. KRUMMRICH FACILITY

CERRO FLOW PRODUCTS

QUEENY AVE

ROUTE 3

AFTON CHEMICAL

BIG RIVER ZINC

CENTER ETHANOL COMPANY, LLC.

LOT F

MIDWEST RUBBER

AMEREN

PICHEM POTW

SITE O

AMERICAN BOTTOMS POTW

CLAYTON CHEMICAL

SITE S

VEOLIA INCINERATION

KINDER MORGAN

SITE R

SITE Q

BARRIER WALL

GROUNDWATER PUMPING WELLS

MISSISSIPPI RIVER

LEGEND

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



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

CONSULTANT	YYYY-MM-DD	2016-03-23
	PREPARED	EPW
	DESIGN	EPW
	REVIEW	AWD
	APPROVED	MRS



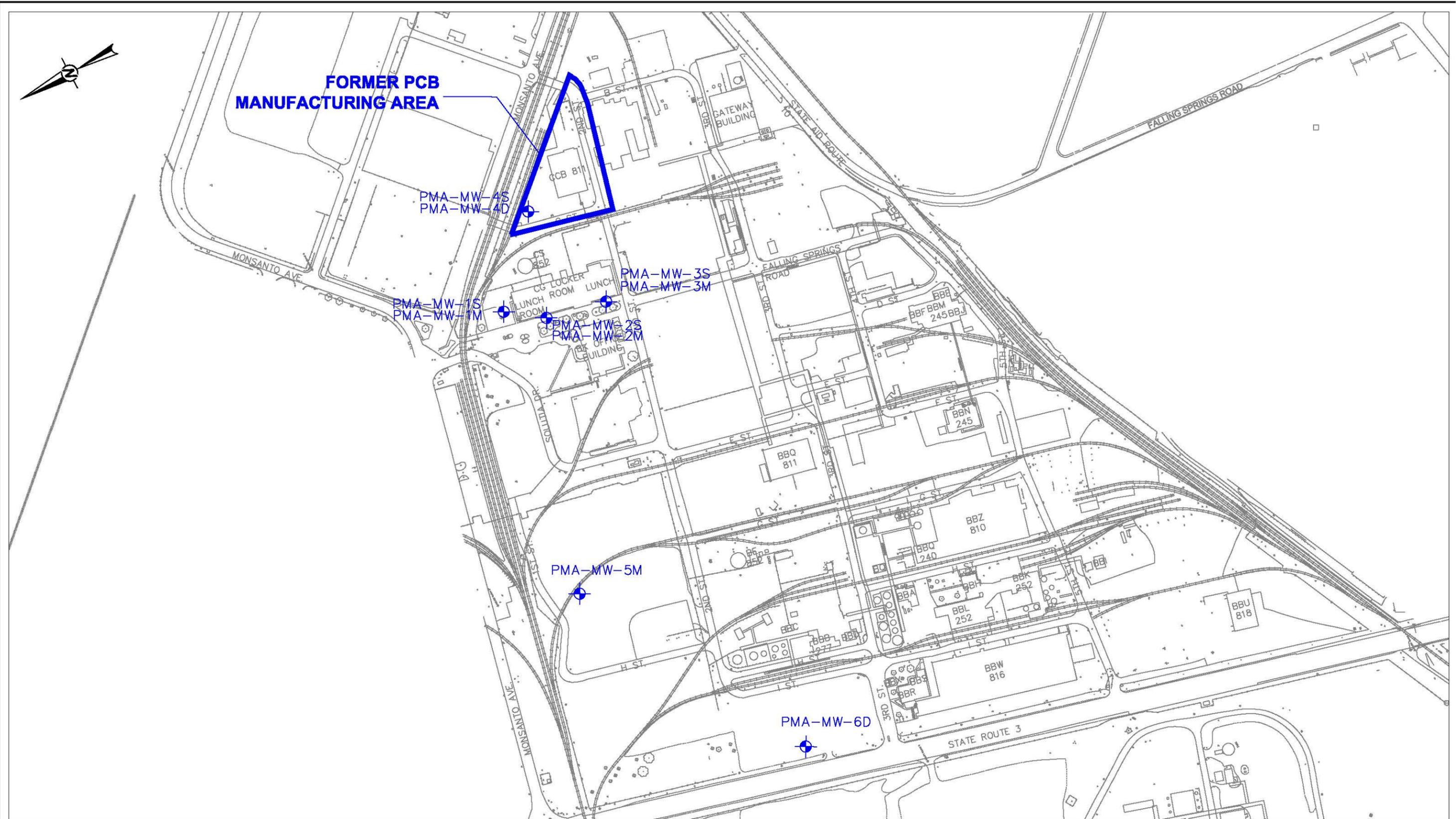
PROJECT
PCB GROUNDWATER QUALITY ASSESSMENT
1ST QUARTER 2016 DATA REPORT

TITLE
SITE LOCATION MAP

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0035	0	1

Path: \\utah\public\common\Projects\140\Projects\1403345 - Solutia GW Sampling\WGK\Plan - 11\Figures\1016\FigureA - 1\Figures\1403345PCB001.dwg

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



Path: \\atlas\common\Projects\140\Projects\1403345 - Solitia GW Sampling\WGK Plant - 1\Figures\1016\Figures - 1\Figures - 103345_PCB.dwg

LEGEND
 PCB MONITORING WELL LOCATION

NOTES
 1. REFER TO TABLE 1 FOR MONITORING WELL CONSTRUCTION INFORMATION.
 2. "D", "M", OR "S" IN THE WELL IDENTIFICATION DESIGNATES DEEP HYDROLOGIC UNIT (DHU), MIDDLE HYDROLOGIC UNIT (MHU), OR SHALLOW HYDROLOGIC UNIT (SHU), RESPECTIVELY.



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

CONSULTANT	YYYY-MM-DD	2016-03-23
	PREPARED	EPW
	DESIGN	EPW
	REVIEW	AWD
	APPROVED	MRS



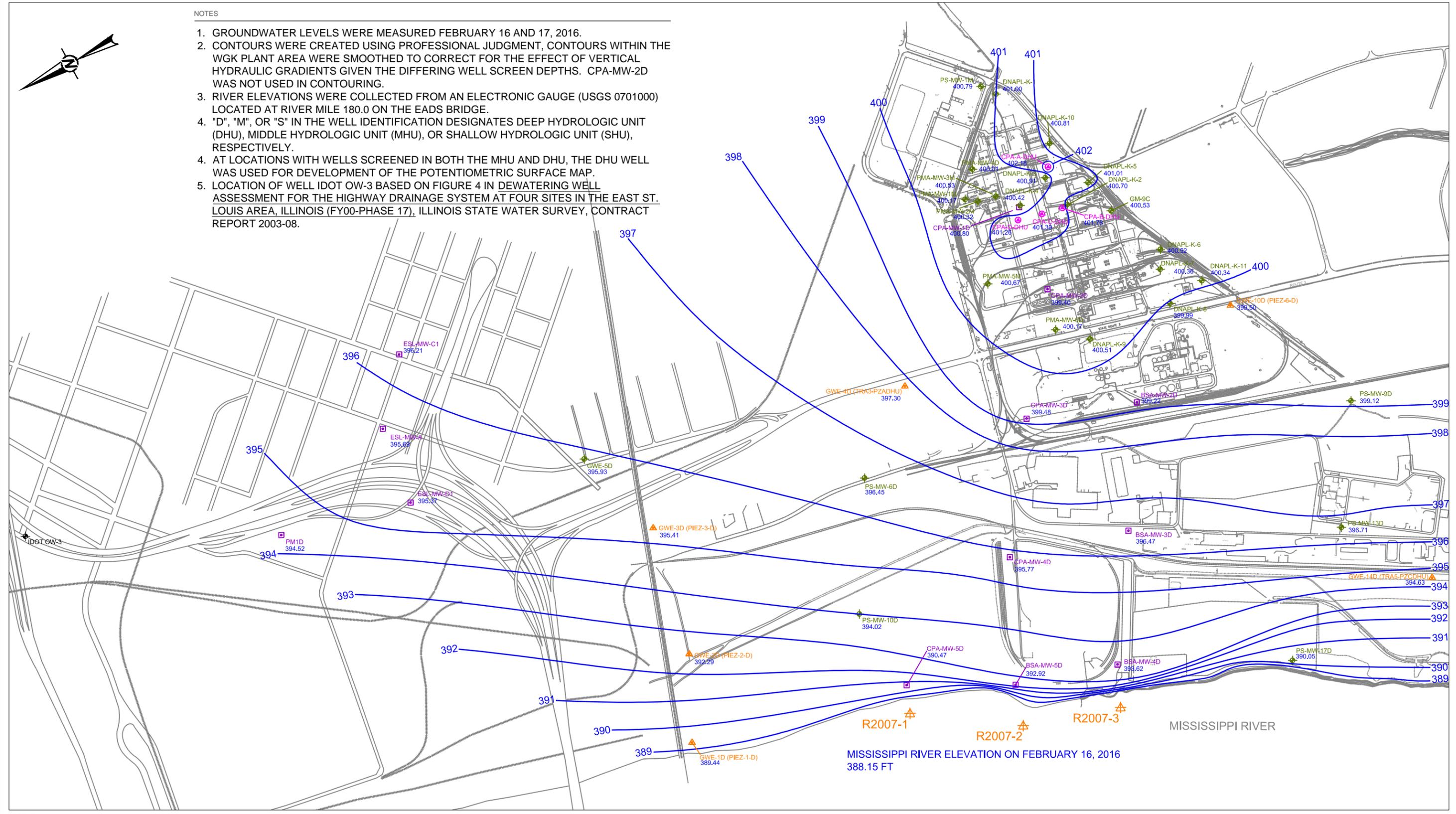
PROJECT
 PCB GROUNDWATER QUALITY ASSESSMENT
 1ST QUARTER 2016 DATA REPORT

TITLE
 FORMER PCB MANUFACTURING AREA
 MONITORING WELL LOCATIONS

PROJECT No.	PHASE:	Rev.	FIGURE:
140-3345	0035	0	2

NOTES

1. GROUNDWATER LEVELS WERE MEASURED FEBRUARY 16 AND 17, 2016.
2. CONTOURS WERE CREATED USING PROFESSIONAL JUDGMENT, CONTOURS WITHIN THE W.G.K. PLANT AREA WERE SMOOTHED TO CORRECT FOR THE EFFECT OF VERTICAL HYDRAULIC GRADIENTS GIVEN THE DIFFERING WELL SCREEN DEPTHS. CPA-MW-2D WAS NOT USED IN CONTOURING.
3. RIVER ELEVATIONS WERE COLLECTED FROM AN ELECTRONIC GAUGE (USGS 0701000) LOCATED AT RIVER MILE 180.0 ON THE EADS BRIDGE.
4. "D", "M", OR "S" IN THE WELL IDENTIFICATION DESIGNATES DEEP HYDROLOGIC UNIT (DHU), MIDDLE HYDROLOGIC UNIT (MHU), OR SHALLOW HYDROLOGIC UNIT (SHU), RESPECTIVELY.
4. AT LOCATIONS WITH WELLS SCREENED IN BOTH THE MHU AND DHU, THE DHU WELL WAS USED FOR DEVELOPMENT OF THE POTENTIOMETRIC SURFACE MAP.
5. LOCATION OF WELL IDOT OW-3 BASED ON FIGURE 4 IN DEWATERING WELL ASSESSMENT FOR THE HIGHWAY DRAINAGE SYSTEM AT FOUR SITES IN THE EAST ST. LOUIS AREA, ILLINOIS (FY00-PHASE 17), ILLINOIS STATE WATER SURVEY, CONTRACT REPORT 2003-08.





**FORMER PCB
MANUFACTURING AREA**

PMA-MW-4S

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	68.6

PMA-MW-1S

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	ND

PMA-MW-3S

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	ND

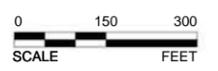
PMA-MW-2S

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	ND

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LEGEND
 PCB MONITORING WELL LOCATION

- NOTES
1. TOTAL PCB RESULTS INCLUDE THE SUM OF ALL METHOD 680 HOMOLOGS.
 2. RESULTS SHOWN ARE IN $\mu\text{g/L}$.
 3. ND - NOT DETECTED.
 4. "S" IN THE WELL IDENTIFICATION SHALLOW HYDROLOGIC UNIT (SHU)



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

CONSULTANT



YYYY-MM-DD	2016-03-23
PREPARED	EPW
DESIGN	EPW
REVIEW	AWD
APPROVED	MRS

PROJECT
 PCB GROUNDWATER QUALITY ASSESSMENT
 1ST QUARTER 2016 DATA REPORT

TITLE
**PCB RESULTS
 SHALLOW HYDROGEOLOGIC UNIT**

PROJECT No.	140-3345	PHASE:	0035	Rev.	0	FIGURE:	4
-------------	----------	--------	------	------	---	---------	---



**FORMER PCB
MANUFACTURING AREA**

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	2.6

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	0.79

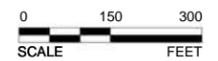
ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	0.58

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	5.9 / 5.6

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	ND

ANALYTE	1Q16 RESULTS
PCBs (unfiltered)	ND

LEGEND
 PCB MONITORING WELL LOCATION



- NOTES
- TOTAL PCB RESULTS INCLUDE THE SUM OF ALL METHOD 680 HOMOLOGS.
 - RESULTS SHOWN ARE IN $\mu\text{g/L}$.
 - ND - NOT DETECTED.
 - MULTIPLE SAMPLE RESULTS INDICATE DUPLICATE SAMPLES.
 - "D" OR "M" IN THE WELL IDENTIFICATION DESIGNATES DEEP HYDROLOGIC UNIT (DHU) OR MIDDLE HYDROLOGIC UNIT (MHU), RESPECTIVELY.

CLIENT
 SOLUTIA INC.
 W.G. KRUMMRICH FACILITY
 SAUGET, ILLINOIS
 CONSULTANT



YYYY-MM-DD	2016-03-23
PREPARED	EPW
DESIGN	EPW
REVIEW	AWD
APPROVED	MRS

PROJECT
 PCB GROUNDWATER QUALITY ASSESSMENT
 1ST QUARTER 2016 DATA REPORT

TITLE
**PCB RESULTS
 MIDDLE/DEEP HYDROGEOLOGIC UNIT**

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0035	0	5

Path: \\atlas\isom\m\Projects\140-3345 - Solutia - GW Sampling\WGR Plant - LU\Figures\016 Figure4 - J File Name: 1403345_PCB.dwg

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

TABLES

Table 1
Monitoring Well Gauging Information
1Q16 PCB Groundwater Quality Assurance Program
Solutia Inc., W.G. Krummrich Facility
Sauget, Illinois

Well Identification	Monitoring Well Construction Data						1Q16 - February 16 and 17, 2016			
	Ground Surface Elevation ¹ (ft)	Top of Casing Elevation ¹ (ft)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Top of Screen Elevation ¹ (ft)	Bottom of Screen Elevation ¹ (ft)	Water Level (ft btoc)	Depth to NAPL (ft btoc)	Total Depth ² (ft btoc)	Water Level Elevation ¹ (ft)
SHU 395-380 ft NAVD 88										
PMA-MW-1S	410.30	410.06	20.18	25.18	390.12	385.12	9.10	NP	24.90	400.96
PMA-MW-2S	412.27	411.66	22.94	27.94	389.33	384.33	11.35	NP	27.32	400.31
PMA-MW-3S	412.37	412.06	22.71	27.71	389.66	384.66	11.68	NP	27.38	400.38
PMA-MW-4S	411.09	410.43	20.99	25.99	390.10	385.10	9.89	NP	25.36	400.54
MHU 380-350 ft NAVD 88										
PMA-MW-1M	410.32	410.08	54.54	59.54	355.78	350.78	9.91	NP	59.56	400.17
PMA-MW-2M	412.26	411.93	56.87	61.87	355.39	350.39	11.61	NP	61.23	400.32
PMA-MW-3M	412.36	412.10	57.07	62.07	355.29	350.29	11.57	NP	61.77	400.53
PMA-MW-5M	411.27	410.97	52.17	57.17	359.10	354.10	10.30	NP	56.93	400.67
PS-MW-1M	409.37	412.59	37.78	42.78	371.59	366.59	11.80	NP	46.02	400.79
DHU 350 ft NAVD 88 - Bedrock										
BSA-MW-2D	412.00	415.13	68.92	73.92	343.08	338.08	15.91	NP	76.98	399.22
BSA-MW-3D	412.91	415.74	107.02	112.02	305.89	300.89	19.27	NP	114.75	396.47
BSA-MW-4D	425.00	424.69	118.54	123.54	306.46	301.46	31.07	NP	123.13	393.62
BSA-MW-5D	420.80	420.49	115.85	120.85	304.95	299.95	27.57	NP	120.90	392.92
CPA-MW-1D	408.62	412.23	66.12	71.12	342.50	337.50	11.43	NP	74.64	400.80
CPA-MW-2D	408.51	408.20	99.96	104.96	308.55	303.55	8.80	NP	104.55	399.40
CPA-MW-3D	410.87	410.67	108.20	113.20	302.67	297.67	11.19	NP	112.75	399.48
CPA-MW-4D	421.57	421.20	116.44	121.44	305.13	300.13	25.43	NP	120.91	395.77
CPA-MW-5D	411.03	413.15	107.63	112.63	303.40	298.40	22.68	NP	114.60	390.47
DNAPL-K-1	413.07	415.56	108.20	123.20	304.87	289.87	14.56	NP	123.08	401.00
DNAPL-K-2	407.94	407.72	97.63	112.63	310.31	295.31	7.02	NP	112.32	400.70
DNAPL-K-3	412.13	415.91	104.80	119.80	307.33	292.33	15.00	NP	123.28	400.91
DNAPL-K-4	409.48	412.53	102.55	117.55	306.93	291.93	12.11	NP	118.12	400.42
DNAPL-K-5	412.27	411.91	102.15	117.15	310.12	295.12	10.90	NP	116.42	401.01
DNAPL-K-6	410.43	410.09	102.47	117.47	307.96	292.96	9.57	NP	116.80	400.52
DNAPL-K-7	408.32	407.72	100.40	115.40	307.92	292.92	7.36	NP	117.27	400.36
DNAPL-K-8	408.56	411.38	102.65	117.65	305.91	290.91	11.39	NP	117.54	399.99
DNAPL-K-9	406.45	405.97	97.42	112.42	309.03	294.03	5.46	NP	111.10	400.51
DNAPL-K-10	413.50	413.25	105.43	120.43	308.07	293.07	12.44	NP	120.23	400.81
DNAPL-K-11	412.20	411.78	105.46	120.46	306.74	291.74	11.44	NP	120.20	400.34
GM-9C	409.54	411.21	88.00	108.00	321.54	301.54	10.68	NP	108.18	400.53
GWE-1D	412.80	415.60	117.00	127.00	295.80	285.80	26.16	NP	127.06	389.44
GWE-2D	417.45	417.14	127.00	137.00	290.45	280.45	24.85	NP	136.55	392.29
GWE-3D	415.03	417.66	104.60	114.60	313.06	303.06	22.25	NP	114.87	395.41
GWE-4D	406.05	405.74	74.00	80.00	332.05	326.05	8.44	NP	78.73	397.30
GWE-5D	408.79	408.38	100.43	105.43	308.36	303.36	12.45	NP	105.17	395.93
GWE-10D	410.15	412.87	102.50	112.50	307.65	297.65	13.37	NP	114.80	399.50
GWE-14D	420.47	422.90	90.00	96.00	330.47	324.47	28.27	NP	96.99	394.63
PMA-MW-4D	411.22	410.88	68.84	73.84	342.38	337.38	10.87	NP	73.32	400.01
PMA-MW-6D	407.63	407.32	96.49	101.49	311.14	306.14	7.15	NP	101.22	400.17
PS-MW-6D	404.11	406.63	102.32	107.32	304.31	299.31	10.18	NP	109.75	396.45
PS-MW-9D	403.92	403.52	100.40	105.40	303.52	298.52	4.40	NP	105.06	399.12
PS-MW-10D	409.63	412.18	103.78	108.78	308.40	303.40	18.16	NP	111.21	394.02
PS-MW-13D	405.80	405.53	106.08	111.08	299.72	294.72	8.82	NP	110.34	396.71
PS-MW-17D	420.22	423.26	121.25	126.25	298.97	293.97	33.21	NP	133.93	390.05

Notes

- ft - feet
- bgs - below ground surface
- btoc - below top of casing
- NP - no product observed
- NR - not reported
- SHU - shallow hydrogeologic unit
- MHU - middle hydrogeologic unit
- DHU - deep hydrogeologic unit

¹ - Elevations based on North American Vertical Datum (NAVD) 88 datum.
² - Total depths are measured annually during the first quarter of each year.

Prepared By: PJJ 3/18/2016
Checked By: EPW 3/21/2016
Reviewed By: AWD 4/6/2016

Table 2
Groundwater Analytical Results
1Q16 PCB Groundwater Quality Assurance Program
Solutia Inc., W.G. Krummrich Facility
Sauget, Illinois

Sample Identification	Sample Date	PCBs (µg/L)									
		Monochlorobiphenyl	Dichlorobiphenyl	Trichlorobiphenyl	Tetrachlorobiphenyl	Pentachlorobiphenyl	Hexachlorobiphenyl	Heptachlorobiphenyl	Octachlorobiphenyl	Nonachlorobiphenyl	Decachlorobiphenyl
SHU											
PMA-MW-1S-0216	2/19/2016	<0.099	<0.099	<0.099	<0.20	<0.20	<0.20	<0.30	<0.30	<0.50	<0.50
PMA-MW-2S-0216	2/19/2016	<0.099	<0.099	<0.099	<0.20	<0.20	<0.20	<0.30	<0.30	<0.49	<0.49
PMA-MW-3S-0216	2/22/2016	<0.099	<0.099	<0.099	<0.20	<0.20	<0.20	<0.30	<0.30	<0.49	<0.49
PMA-MW-4S-0216	2/22/2016	2.2 D	9.3 D	18 D	12 D	9.1 D	12 D	6.0 D	<1.5	<2.5	<2.5
MHU/DHU											
PMA-MW-1M-0216	2/19/2016	0.58	<0.096	<0.096	<0.19	<0.19	<0.19	<0.29	<0.29	<0.48	<0.48
PMA-MW-2M-0216	2/19/2016	5.9 D	<0.20	<0.20	<0.39	<0.39	<0.39	<0.59	<0.59	<0.98	<0.98
PMA-MW-2M-0216-AD	2/19/2016	5.6 D	<0.20	<0.20	<0.40	<0.40	<0.40	<0.60	<0.60	<0.99	<0.99
PMA-MW-3M-0216	2/22/2016	0.79	<0.097	<0.097	<0.19	<0.19	<0.19	<0.29	<0.29	<0.49	<0.49
PMA-MW-4D-0216	2/22/2016	1.3	1.3	<0.098	<0.20	<0.20	<0.20	<0.29	<0.29	<0.49	<0.49
PMA-MW-5M-0216	2/19/2016	<0.099	<0.099	<0.099	<0.20	<0.20	<0.20	<0.30	<0.30	<0.50	<0.50
PMA-MW-6D-0216	2/19/2016	<0.48	<0.48	<0.48	<0.96	<0.96	<0.96	<1.4	<1.4	<2.4	<2.4

Notes

PCBs - polychlorinated biphenyls

µg/L - micrograms per liter

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

D - compound is analyzed at a dilution; result is an estimated value

AD - analytical duplicate

Bold - indicates concentration greater than reporting limit

SHU - shallow hydrogeologic unit

MHU - middle hydrogeologic unit

DHU - deep hydrogeologic unit

Prepared By: EPW 3/21/2016

Checked By: JS 3/25/2016

Reviewed By: AWD 4/6/2016

Table 3
Mann-Kendall Trend Analysis
1Q16 PCB Groundwater Quality Assessment Program
W.G. Krummich Facility
Sauget, IL

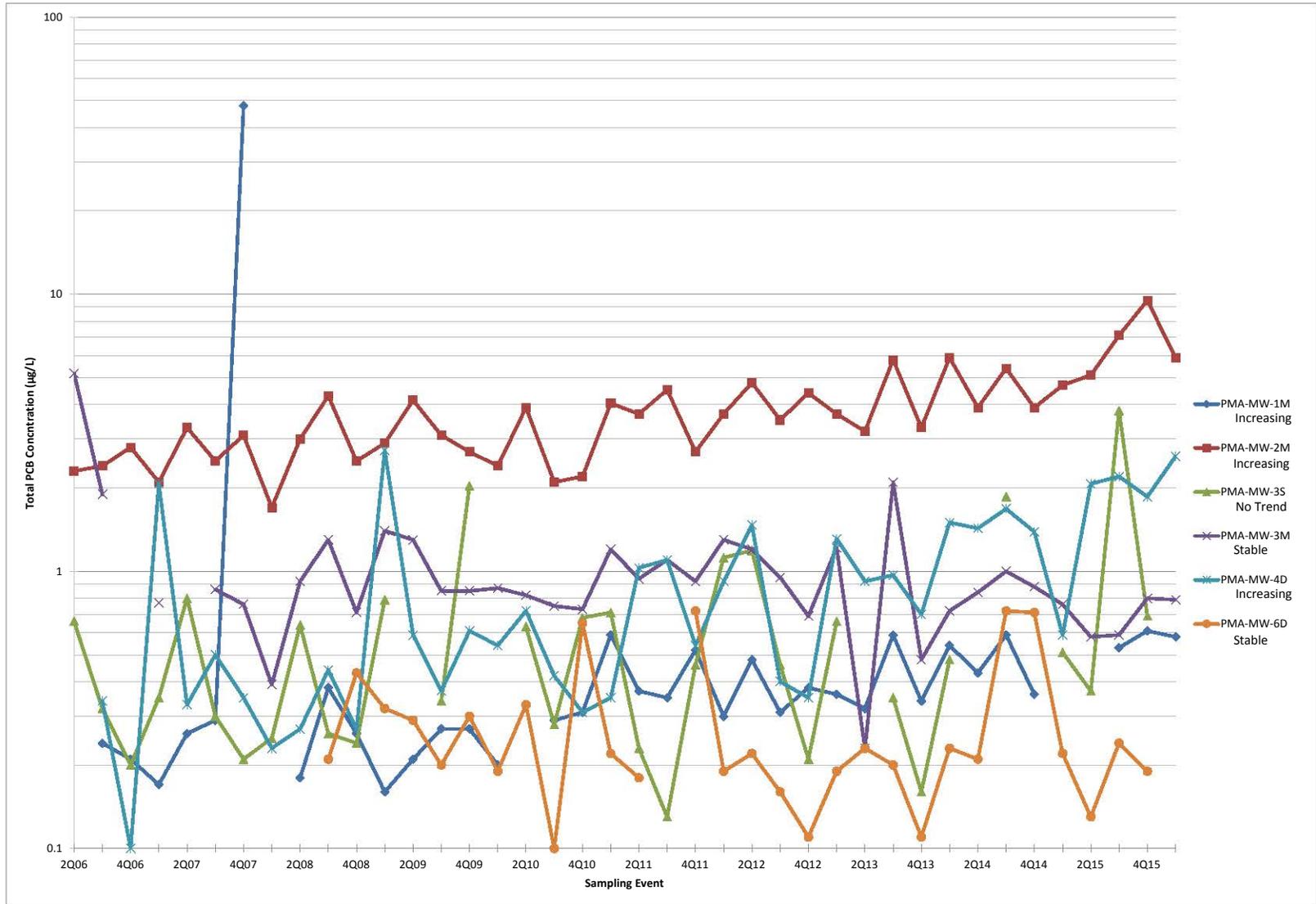
Event Number	Quarter	Total PCB Concentration (µg/L)					
		PMA-MW-1M	PMA-MW-2M	PMA-MW-3S	PMA-MW-3M	PMA-MW-4D	PMA-MW-6D
1	2Q06	ND	2.3	0.66	5.18	NA	NA
2	3Q06	0.24	2.4	0.32	1.90	0.34	NA
3	4Q06	0.21	2.8	0.20	ND	0.10	NA
4	1Q07	0.17	2.1	0.35	0.77	2.07	NA
5	2Q07	0.26	3.3	0.80	ND	0.33	NA
6	3Q07	0.29	2.5	0.30	0.86	0.50	NA
7	4Q07	48	3.1	0.21	0.76	0.35	NA
8	1Q08	ND	1.7	0.25	0.39	0.23	NA
9	2Q08	0.18	3.0	0.64	0.92	0.27	NA
10	3Q08	0.38	4.3	0.26	1.30	0.44	0.21
11	4Q08	0.26	2.5	0.24	0.71	0.27	0.43
12	1Q09	0.16	2.9	0.79	1.40	2.73	0.32
13	2Q09	0.21	4.14	ND	1.30	0.59	0.29
14	3Q09	0.27	3.1	0.34	0.85	0.37	0.20
15	4Q09	0.27	2.7	2.03	0.85	0.61	0.30
16	1Q10	0.20	2.4	ND	0.87	0.54	0.19
17	2Q10	ND	3.9	0.63	0.82	0.72	0.33
18	3Q10	0.29	2.1	0.28	0.75	0.42	0.10
19	4Q10	0.31	2.199	0.68	0.73	0.31	0.65
20	1Q11	0.59	4.04	0.71	1.20	0.35	0.22
21	2Q11	0.37	3.7	0.23	0.94	1.03	0.18
22	3Q11	0.35	4.52	0.13	1.10	1.10	ND
23	4Q11	0.52	2.7	0.46	0.92	0.54	0.72
24	1Q12	0.30	3.7	1.12	1.30	0.92	0.19
25	2Q12	0.48	4.79	1.19	1.20	1.47	0.22
26	3Q12	0.31	3.52	0.46	0.95	0.40	0.16
27	4Q12	0.38	4.4	0.21	0.69	0.35	0.11
28	1Q13	0.36	3.7	0.66	1.22	1.31	0.19
29	2Q13	0.32	3.2	ND	0.23	0.92	0.23
30	3Q13	0.59	5.8	0.35	2.10	0.97	0.20
31	4Q13	0.34	3.3	0.16	0.48	0.70	0.11
32	1Q14	0.54	5.9	0.48	0.72	1.50	0.23
33	2Q14	0.43	3.9	ND	0.84	1.43	0.21
34	3Q14	0.59	5.4	1.86	1.00	1.68	0.72
35	4Q14	0.36	3.9	ND	0.88	1.39	0.71
36	1Q15	ND	4.7	0.51	0.76	0.59	0.22
37	2Q15	ND	5.1	0.37	0.58	2.07	0.13
38	3Q15	0.53	7.1	3.8	0.59	2.2	0.24
39	4Q15	0.61	9.5	0.69	0.80	1.86	0.19
40	1Q16	0.58	5.9	ND	0.79	2.6	ND
Coefficient of Variation		4.68	0.41	1.07	0.75	0.76	0.65
Mann-Kendall Statistic (S)		234	316	46	-86	276	-34
Confidence in Trend ¹		>99.9%	>99.9%	76.6%	88.6%	>99.9%	75.3%
Concentration Trend		Increasing	Increasing	No Trend	Stable	Increasing	Stable

Notes

NA - not analyzed
 ND - non-detect (values detected below the detection limit)
¹ - confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0)
 > 90% - probably increasing or decreasing
 > 95% - Increasing or Decreasing
 Data from 2Q06 to 1Q14 was compiled by former consultant

Prepared By: EPW 3/21/2016
 Checked By: JS 3/25/2016
 Reviewed By: AWD 4/6/2016

Table 3
Mann-Kendall Trend Analysis
1Q16 PCB Groundwater Quality Assessment Program
W.G. Krummrich Facility
Sauget, IL



APPENDIX A
GROUNDWATER PURGING AND SAMPLING FORMS

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 28.44 ft
 Pump Placement from TOC 22.44 ft

Well Information:

Well Id PMA-MW-1S
 Well Diameter 2 in
 Well Total Depth 24.90 ft
 Depth to Top of Screen 19.94 ft
 Screen Length 5 ft
 Depth to Water 9.10 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 349 mL
 Calculated Sample Rate 69 sec
 Sample Rate 69 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	14:05:38	19.30	6.81	1150.45	1.86	0.61	83.34
	14:06:27	19.25	6.81	1149.41	1.22	0.68	73.96
	14:07:16	19.26	6.81	1148.75	1.58	0.68	71.16
	14:08:05	19.27	6.81	1150.32	1.42	0.68	70.28
	14:08:54	19.30	6.81	1151.73	1.03	0.67	68.47
Variance in Last 3 Readings		0.01	0.00	-0.66	0.36	0.00	-2.80
		0.01	0.00	1.57	-0.16	0.00	-0.88
		0.03	0.00	1.41	-0.39	-0.01	-1.81

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 62.80 ft
 Pump Placement from TOC 56.80 ft

Well Information:

Well Id PMA-MW-1M
 Well Diameter 2 in
 Well Total Depth 59.56 ft
 Depth to Top of Screen 54.30 ft
 Screen Length 5 ft
 Depth to Water 9.91 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 540 mL
 Calculated Sample Rate 108 sec
 Sample Rate 108 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	13:32:10	18.77	6.83	2203.95	5.54	0.25	-13.47
	13:33:38	18.34	6.82	2202.38	4.66	0.15	-13.76
	13:35:06	18.23	6.82	2209.62	4.52	0.11	-14.28
	13:36:35	18.27	6.81	2198.97	4.08	0.07	-14.14
	13:38:04	18.28	6.81	2176.05	3.20	0.06	-14.09
Variance in Last 3 Readings		-0.11	0.00	7.24	-0.14	-0.04	-0.52
		0.04	-0.01	-10.65	-0.44	-0.04	0.14
		0.01	0.00	-22.92	-0.88	-0.01	0.05

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 30.83 ft
 Pump Placement from TOC 24.83 ft

Well Information:

Well Id PMA-MW-2S
 Well Diameter 2 in
 Well Total Depth 27.32 ft
 Depth to Top of Screen 22.33 ft
 Screen Length 5 ft
 Depth to Water 11.35 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 362 mL
 Calculated Sample Rate 72 sec
 Sample Rate 72 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	15:34:06	20.28	6.96	1892.13	8.66	0.30	76.41
	15:34:58	19.73	6.94	1904.18	8.54	0.26	72.14
	15:35:50	19.56	6.93	1909.52	8.38	0.24	71.29
	15:36:42	19.45	6.92	1912.21	8.74	0.23	70.54
	15:37:34	19.39	6.91	1909.53	7.90	0.22	72.03
Variance in Last 3 Readings		-0.17	-0.01	5.34	-0.16	-0.02	-0.85
		-0.11	-0.01	2.69	0.36	-0.01	-0.75
		-0.06	-0.01	-2.68	-0.84	-0.01	1.49

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 65.04 ft
 Pump Placement from TOC 59.04 ft

Well Information:

Well Id PMA-MW-2M
 Well Diameter 2 in
 Well Total Depth 61.23 ft
 Depth to Top of Screen 56.54 ft
 Screen Length 5 ft
 Depth to Water 11.61 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 553 mL
 Calculated Sample Rate 110 sec
 Sample Rate 110 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	15:00:30	18.29	7.00	2083.59	7.60	0.08	-5.80
	15:02:00	18.36	7.00	2070.35	5.87	0.07	-7.21
	15:03:30	18.28	7.00	2061.64	5.42	0.05	-7.23
	15:05:00	18.25	7.00	2060.61	3.14	0.04	-6.83
	15:06:32	18.23	7.00	2076.87	2.32	0.04	-7.38
Variance in Last 3 Readings		-0.08	0.00	-8.71	-0.45	-0.02	-0.02
		-0.03	0.00	-1.03	-2.28	-0.01	0.40
		-0.02	0.00	16.26	-0.82	0.00	-0.55

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 30.90 ft
 Pump Placement from TOC 24.90 ft

Well Information:

Well Id PMA-MW-3S
 Well Diameter 2 in
 Well Total Depth 27.38 ft
 Depth to Top of Screen 22.40 ft
 Screen Length 5 ft
 Depth to Water 11.68 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 362 mL
 Calculated Sample Rate 72 sec
 Sample Rate 72 sec
 Stabilized Drawdown 0.01 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	9:49:20	16.29	7.41	2378.48	12.80	0.42	-0.55
	9:50:12	16.76	7.34	2371.14	10.80	0.37	-2.45
	9:51:05	16.97	7.31	2357.95	10.30	0.34	-3.85
	9:52:05	16.98	7.28	2361.20	8.11	0.34	-3.11
	9:52:57	17.21	7.26	2370.56	8.39	0.33	-2.02
Variance in Last 3 Readings		0.21	-0.03	-13.19	-0.50	-0.03	-1.40
		0.01	-0.03	3.25	-2.19	0.00	0.74
		0.23	-0.02	9.36	0.28	-0.01	1.09

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 75.13 ft
 Pump Placement from TOC 59.31 ft

Well Information:

Well Id PMA-MW-3M
 Well Diameter 2 in
 Well Total Depth 61.77 ft
 Depth to Top of Screen 56.81 ft
 Screen Length 5 ft
 Depth to Water 11.57 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 609 mL
 Calculated Sample Rate 121 sec
 Sample Rate 121 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	9:19:09	15.99	9.52	2378.85	4.57	0.09	-98.26
	9:20:50	16.20	9.53	2369.53	3.91	0.05	-99.86
	9:22:31	16.38	9.54	2361.84	4.22	0.04	-103.00
	9:24:12	16.48	9.54	2351.91	4.16	0.03	-103.67
	9:25:53	16.47	9.54	2352.20	3.91	0.02	-103.94
Variance in Last 3 Readings		0.18	0.01	-7.69	0.31	-0.01	-3.14
		0.10	0.00	-9.93	-0.06	-0.01	-0.67
		-0.01	0.00	0.29	-0.25	-0.01	-0.27

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 25.88 ft
 Pump Placement from TOC 22.83 ft

Well Information:

Well Id PMA-MW-4S
 Well Diameter 2 in
 Well Total Depth 25.36 ft
 Depth to Top of Screen 20.33 ft
 Screen Length 5 ft
 Depth to Water 9.89 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 334 mL
 Calculated Sample Rate 66 sec
 Sample Rate 66 sec
 Stabilized Drawdown 0.30 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	11:01:35	17.98	7.07	1925.03	15.50	0.09	-33.60
	11:02:24	17.94	7.07	2052.26	10.60	0.08	-33.49
	11:03:10	17.94	7.07	2109.83	9.64	0.08	-33.71
	11:03:56	17.76	7.07	2131.58	8.37	0.07	-33.23
	11:04:42	17.61	7.07	2158.69	5.96	0.07	-33.18
Variance in Last 3 Readings		0.00	0.00	57.57	-0.96	0.00	-0.22
		-0.18	0.00	21.75	-1.27	-0.01	0.48
		-0.15	0.00	27.11	-2.41	0.00	0.05

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 74.80 ft
 Pump Placement from TOC 71.00 ft

Well Information:

Well Id PMA-MW-4D
 Well Diameter 2 in
 Well Total Depth 73.32 ft
 Depth to Top of Screen 68.50 ft
 Screen Length 5 ft
 Depth to Water 10.87 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 607 mL
 Calculated Sample Rate 121 sec
 Sample Rate 121 sec
 Stabilized Drawdown 0.01 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	10:27:17	16.18	7.11	1370.38	1.69	0.21	-69.53
	10:28:58	16.30	7.09	1383.61	1.81	0.19	-69.06
	10:30:39	16.48	7.08	1385.49	1.59	0.14	-68.48
	10:32:20	16.54	7.07	1384.98	1.41	0.11	-66.91
	10:34:02	16.54	7.07	1388.12	1.34	0.10	-66.12
Variance in Last 3 Readings		0.18	-0.01	1.88	-0.22	-0.05	0.58
		0.06	-0.01	-0.51	-0.18	-0.03	1.57
		0.00	0.00	3.14	-0.07	-0.01	0.79

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 60.37 ft
 Pump Placement from TOC 54.37 ft

Well Information:

Well Id PMA-MW-5M
 Well Diameter 2 in
 Well Total Depth 56.93 ft
 Depth to Top of Screen 51.87 ft
 Screen Length 5 ft
 Depth to Water 10.30 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 527 mL
 Calculated Sample Rate 105 sec
 Sample Rate 105 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	12:47:11	17.88	7.48	2352.72	2.62	0.19	4.43
	12:48:36	17.74	7.49	2366.62	2.22	0.12	3.49
	12:50:01	17.70	7.49	2376.78	2.21	0.10	4.26
	12:51:26	17.86	7.50	2373.51	1.77	0.10	5.80
	12:52:53	17.79	7.51	2378.61	1.34	0.13	5.07
Variance in Last 3 Readings		-0.04	0.00	10.16	-0.01	-0.02	0.77
		0.16	0.01	-3.27	-0.44	0.00	1.54
		-0.07	0.01	5.10	-0.43	0.03	-0.73

Notes:

Project Information:

Operator Name SJD
 Company Name Golder Associates
 Project Name W.G. Krummrich
 Site Name PCB

Pump Information:

Pump Model/Type SS Monsoon
 Tubing Type LDPE
 Tubing Diameter 0.19 in
 Tubing Length 104.68 ft
 Pump Placement from TOC 98.68 ft

Well Information:

Well Id PMA-MW-6D
 Well Diameter 2 in
 Well Total Depth 101.22 ft
 Depth to Top of Screen 96.18 ft
 Screen Length 5 ft
 Depth to Water 7.15 ft

Pumping Information:

Final Pumping Rate 300 mL/min
 System Volume 774 mL
 Calculated Sample Rate 154 sec
 Sample Rate 154 sec
 Stabilized Drawdown 0.00 ft

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [μ 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	11:28:32	17.92	7.06	1148.83	2.05	0.30	-34.30
	11:30:46	17.94	7.07	1154.61	1.66	0.20	-35.82
	11:33:00	17.98	7.07	1159.25	1.15	0.15	-36.92
	11:35:15	17.92	7.07	1165.37	0.91	0.12	-35.92
	11:37:29	17.90	7.07	1167.56	0.65	0.10	-35.34
Variance in Last 3 Readings		0.04	0.00	4.64	-0.51	-0.05	-1.10
		-0.06	0.00	6.12	-0.24	-0.03	1.00
		-0.02	0.00	2.19	-0.26	-0.02	0.58

Notes:

**APPENDIX B
CHAINS-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: DV NPDES RCR Other: Emily White

Client Contact Golder Associates Inc. 820 South Main Street St. Charles, MO 63301 (636) 724-9191 Phone (636) 724-9323 FAX		Project Manager: Amanda Derhake Tel/Fax: 636-724-9191		Site Contact: Lori Bingham Lab Contact: Michele Kersey		Date: 02/19/16 Carrier: FedEx		COC No: ____ of ____ COCs	
Project Name: 5 PCB GW Sampling-1403345 Site: Solutia WG Krummrich Facility P O # 42447936		Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR <input type="checkbox"/> WORKING TAT if different from Below <u>Standard</u> 2 1 week 2 days 1 day		Filtered Sample (Y/N)		Perform MS / MSD (Y/N)		Total PCBs by 680	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total PCBs by 680
PMA-MW-6D-0216		02/19/16	1137	G	W	2	N	2	
PMA-MW-5M-0216			1253			2	N	2	
PMA-MW-1M-0216			1338			2	N	2	
PMA-MW-1S-0216			1410			2	N	2	
PMA-MW-1S-0216-MS			1410			2	N	2	
PMA-MW-1S-0216-MSD			1410			2	N	2	
PMA-MW-2M-0216		02/19/16	1506	G	W	2	N	2	
PMA-MW-2M-0216-AD			1506			2	N	2	
PMA-MW-2S-0216			1538			2	N	2	
PMA-MW-2S-0216-EB			1555			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.									
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammab <input type="checkbox"/> Skin <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown									
Special Instructions/QC Requirements & Comments:									
Custody Seals Intact <input type="checkbox"/> No <input type="checkbox"/>		Custody Seal No.: 671340 / 671339 / 671338		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____			
Relinquished by: <u>Samantha Jones</u>		Company: <u>Golder</u>		Date/Time: 02/19/16 / 1445		Received by: <u>Chris Tassaw</u>		Company: _____	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	



680-122107
0.9 (0.1 / 1.4 CF)
1.3 (0.5 / 1.8 CF)

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Regulatory Program: D4 NPDE RCR Other: Emily White

Client Contact Golder Associates Inc. 820 South Main Street St. Charles, MO 63301 (636) 724-9191 Phone (636) 724-9323 FAX		Project Manager: Amanda Derhake Tel/Fax: 636-724-9191		Site Contact: <u>Len Bader</u> Lab Contact: Michele Kersey		Date: <u>02/22/16</u> Carrier: FedEx		COC No: 1 of 1 COCs	
Project Name: PCB PCB GW Sampling-1403345 Site: Solutia WG Krummrich Facility P O # 42447936		Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR <input type="checkbox"/> WORKING TAT if different from Below <u>Standard</u> <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS/MSD (Y/N) Total PCBs by 680		Sampler: <u>S. Dicenso</u> For Lab Use Only: Walk-in Client: Lab Sampling:		Job / SDG No.:	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Total PCBs by 680
PMA-MW-3M-0216		02/22/16	0926	G	W	2	N	Z	Z
PMA-MW-3S-0216		I	0953	I	I	2	N	Z	Z
PMA-MW-4D-0216		I	1033	I	I	2	N	Z	Z
PMA-MW-4S-0216		I	1105	I	I	2	N	Z	Z
680-122161 Chain of Custody									
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				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammab <input type="checkbox"/> Skn <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months				
Special Instructions/QC Requirements & Comments:									
Custody Seals Intact: <input type="checkbox"/> <input type="checkbox"/> No		Custody Seal No: <u>672747</u>		Cooler Temp. (°C): Obs'd: _____		Corr'd: _____		Therm ID No.: _____	
Relinquished by: <u>[Signature]</u>		Company: <u>Golder</u>		Date/Time: <u>02/22/16/1415</u>		Received by: <u>[Signature]</u>		Company: <u>Saw.</u>	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received In Laboratory by:		Company:	

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APPENDIX C
QUALITY ASSURANCE REPORT



QUALITY ASSURANCE REPORT

1st QUARTER 2016
PCB GROUNDWATER QUALITY
ASSESSMENT PROGRAM
SOLUTIA INC., W.G. KRUMMRICH FACILITY
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

April 2016

140-3345

A world of
capabilities
delivered locally





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1.0 INTRODUCTION

Golder Associates Inc. (Golder) completed a review of analytical data for the groundwater samples collected on February 19 and 22, 2016 at the Solutia Inc. (Solutia) W.G. Krummrich (WGK) facility (Site) in Sauget, Illinois. Golder collected a total of fourteen (14) samples from groundwater monitoring wells as part of the 1st Quarter 2016 (1Q16) PCB Groundwater Quality Assessment Program (PCB). Ten (10) 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 locations were located at the WGK facility. The samples were submitted to the TestAmerica Laboratories, Inc. (TestAmerica) facility located in Savannah, Georgia for analysis using United States Environmental Protection Agency (USEPA) Method 680. Samples submitted to TestAmerica were analyzed for polychlorinated biphenyls (PCBs). The analytical results were placed into two (2) sample delivery groups (SDGs) as described in the table below:

Sample Delivery Group (SDG)	Sample Identification
KPM069	PMA-MW-1M-0216
	PMA-MW-1S-0216
	PMA-MW-2M-0216
	PMA-MW-2M-0216-AD
	PMA-MW-2S-0216
	PMA-MW-2S-0216-EB
	PMA-MW-5M-0216
	PMA-MW-6D-0216
KPM070	PMA-MW-3M-0216
	PMA-MW-3S-0216
	PMA-MW-4D-0216
	PMA-MW-4S-0216

The samples were collected and analyzed in general accordance with the Revised PCB Groundwater Quality Assessment Program Work Plan (Work Plan) (Solutia 2009). Groundwater samples were analyzed for polychlorinated biphenyls (PCBs) using USEPA Method 680. In addition, the EB, AD and MS/MSD pair were submitted and analyzed for PCBs.

Golder completed validation of the analytical data following the general guidelines in Section 3.4 Data Review and Validation of the Work Plan. The Work Plan specifies that the most recent version of the national data validation guidelines be 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



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 SDGs were 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

Section 2 summarizes 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 3.0.

Following data validation, the qualified data were summarized in tables, which are included in the main body of the report.

2.0 POLYCHLORINATED BIPHENYLS

Samples were collected from ten (10) groundwater monitoring locations and analyzed for PCBs. One (1) AD sample was collected from sampling location, PMA-MW-2M. One (1) EB, associated with PMA-MW-2S was also prepared and shipped for laboratory analysis. The samples were submitted to TestAmerica, placed into two (2) data packages or SDGs (KPM069 and KPM070), and were prepared and analyzed using USEPA Method 680. 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 Narratives, chain-of-custodies, 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, associated with sample PMA-MW-2S, was collected during the 1Q16 event to assess the effectiveness of the decontamination procedure. There were no detections in the EB.

2.3 Surrogate Spike Recoveries

Samples to be analyzed for PCBs were spiked with surrogate compound decachlorobiphenyl-13C12 prior to analysis, to evaluate overall laboratory performance. No deficiencies were noted, therefore no qualification was 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.

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 1Q16 event associated with sample PMA-MW-1S. MS/MSD accuracy and precision data met criteria; therefore qualification was not required.

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 4Q15 event associated with sample PMA-MW-2M. The relative percent difference (RPD) between the sample, PMA-MW-2M, and the AD, PMA-MW-2M-AD, did not exceed 25%; therefore, data qualification was not required.

2.7 Results Reported From Dilutions

PCB samples, PMA-MW-2M, PMA-MW-2M-AD, and PMA-MW-4S required dilutions due to high levels of target analytes or initial appearance. Reporting limits were adjusted to reflect the dilution. Result qualifications are shown in Section 3.0.

3.0 SUMMARY

Golder validated the data collected during the 1Q16 sampling event from the Solutia Inc. WGK facility 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	Heptachlorobiphenyl, Hexachlorobiphenyl, Monochlorobiphenyl, Dichlorobiphenyl, Pentachlorobiphenyl, Tetrachlorobiphenyl, and Trichlorobiphenyl	D	PMA-MW-2M, PMA-MW-2M-AD and PMA-MW-4S



4.0 REFERENCES

Solutia Inc, 2009. Revised PCB Groundwater Quality Assessment Program Work Plan, W.G. Krummrich Facility, Sauget, IL, Prepared by URS Corporation, May 2009.

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

APPENDIX D
GROUNDWATER ANALYTICAL RESULTS
(INCLUDING DATA VALIDATION REPORTS)

SDG KPM069

Sample Results from:

PMA-MW-1S

PMA-MW-1M

PMA-MW-2S

PMA-MW-2M

PMA-MW-5M

PMA-MW-6D



Level IV Data Validation Summary
Solutia Inc., W.G. Krummrich, Sauget, Illinois
1Q16 PCB Groundwater Quality Assessment

Company Name: Golder Associates
Project Name: WGK-1Q16 PCB
Reviewer: A. Derhake
Laboratory: TestAmerica
SDG#: KPM069
Matrix: Water

Project Manager: A. Derhake
Project Number: 140-3345
Sample Date: February 2016

Analytical Method: PCB (680)

Sample Names: PMA-MW-6D-0216, PMA-MW-5M-0216, PMA-MW-1M-0216, PMA-MW-1S-0216, PMA-MW-2M-0216, PMA-MW-2M-0216-AD, PMA-MW-2S-0216, and PMA-MW-2S-0216-EB

Table with 4 columns: Field Information, YES, NO, NA. Rows include 'a) Sampling dates noted?' and 'b) Does the laboratory narrative indicate deficiencies?'.

Comments:

PCBs: Samples PMA-MW-6D-0216, PMA-MW-2M-0216 and PMA-MW-2M-0216-AD required a dilution prior to analysis, reporting limits were adjusted accordingly.

Table with 4 columns: Chain-of-Custody (COC), YES, NO, NA. Rows include 'a) Was the COC signed by both field and laboratory personnel?' and 'b) Were samples received in good condition?'.

Comments: Samples were received at 0.5°C, 1.3°C and 1.8°C, outside the 4°C +/- 2°C criteria.

Table with 4 columns: General, YES, NO, NA. Rows include 'a) Were hold times met for sample analysis?', 'b) Were the correct preservatives used?', 'c) Was the correct method used?', and 'd) Any sample dilutions noted?'.

Comments: Detections in diluted analysis were qualified.

Table with 4 columns: Calibrations, YES, NO, NA. Rows include 'a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards?' and 'b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards?'.

Comments: Analytes of interest met calibration standards.

Table with 4 columns: Blanks, YES, NO, NA. Rows include 'a) Were blanks (trip, equipment, method) performed at required frequency?' and 'b) Were analytes detected in any blanks?'.

Comments: Equipment blank PMA-MW-2S-0216-EB was submitted with SDG KPM069.





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: None

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 PMA-MW-2M-0216-AD was submitted with SDG KPM069.

Additional Comments: None

Qualifications:

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Monochlorobiphenyl	D	PMA-MW-2M and PMA-MW-2M-AD

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: 680-122107-1
TestAmerica Sample Delivery Group: KPM069
Client Project/Site: 1Q16 PCB GW Sampling - 1403345

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

Attn: Mr. Jerry Rinaldi

Michele Kersey

Authorized for release by:
3/16/2016 5:32:16 PM

Michele Kersey, Project Manager I
(912)354-7858
michele.kersey@testamericainc.com

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC 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.

*AKD
3/17/16*

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AWD
3/17/16

Case Narrative

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Job ID: 680-122107-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Solutia Inc.

Project: 1Q16 PCB GW Sampling - 1403345

Report Number: 680-122107-1

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 2/20/2016 9:54 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.5° C, 1.3° C and 1.8° C.

POLYCHLORINATED BIPHENYLS (PCBS)

Samples PMA-MW-6D-0216 (680-122107-1), PMA-MW-5M-0216 (680-122107-2), PMA-MW-1M-0216 (680-122107-3), PMA-MW-1S-0216 (680-122107-4), PMA-MW-2M-0216 (680-122107-5), PMA-MW-2M-0216-AD (680-122107-6), PMA-MW-2S-0216 (680-122107-7) and PMA-MW-2S-0216-EB (680-122107-8) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA Method 680. The samples were prepared on 03/02/2016 and 03/03/2016 and analyzed on 03/15/2016.

Samples PMA-MW-6D-0216 (680-122107-1)[5X], PMA-MW-2M-0216 (680-122107-5)[2X] and PMA-MW-2M-0216-AD (680-122107-6)[2X] 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.

Sample Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-122107-1	PMA-MW-6D-0216	Water	02/19/16 11:37	02/20/16 09:54
680-122107-2	PMA-MW-5M-0216	Water	02/19/16 12:53	02/20/16 09:54
680-122107-3	PMA-MW-1M-0216	Water	02/19/16 13:38	02/20/16 09:54
680-122107-4	PMA-MW-1S-0216	Water	02/19/16 14:10	02/20/16 09:54
680-122107-5	PMA-MW-2M-0216	Water	02/19/16 15:06	02/20/16 09:54
680-122107-6	PMA-MW-2M-0216-AD	Water	02/19/16 15:06	02/20/16 09:54
680-122107-7	PMA-MW-2S-0216	Water	02/19/16 15:38	02/20/16 09:54
680-122107-8	PMA-MW-2S-0216-EB	Water	02/19/16 15:55	02/20/16 09:54



AWD
3/17/16
TestAmerica Savannah

Method Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Method	Method Description	Protocol	Laboratory
680	Polychlorinated Biphenyls (PCBs) (GC/MS)	EPA	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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



AWD
3/17/16
TestAmerica Savannah

Definitions/Glossary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

AWD
3/17/16
TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-6D-0216

Lab Sample ID: 680-122107-1

Date Collected: 02/19/16 11:37

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	1.4	U	1.4		ug/L		03/02/16 16:01	03/15/16 10:21	5
Hexachlorobiphenyl	0.96	U	0.96		ug/L		03/02/16 16:01	03/15/16 10:21	5
Nonachlorobiphenyl	2.4	U	2.4		ug/L		03/02/16 16:01	03/15/16 10:21	5
Octachlorobiphenyl	1.4	U	1.4		ug/L		03/02/16 16:01	03/15/16 10:21	5
Monochlorobiphenyl	0.48	U	0.48		ug/L		03/02/16 16:01	03/15/16 10:21	5
DCB Decachlorobiphenyl	2.4	U	2.4		ug/L		03/02/16 16:01	03/15/16 10:21	5
Dichlorobiphenyl	0.48	U	0.48		ug/L		03/02/16 16:01	03/15/16 10:21	5
Pentachlorobiphenyl	0.96	U	0.96		ug/L		03/02/16 16:01	03/15/16 10:21	5
Tetrachlorobiphenyl	0.96	U	0.96		ug/L		03/02/16 16:01	03/15/16 10:21	5
Trichlorobiphenyl	0.48	U	0.48		ug/L		03/02/16 16:01	03/15/16 10:21	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	76		25 - 113				03/02/16 16:01	03/15/16 10:21	5



AWD
3/17/16

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-5M-0216

Lab Sample ID: 680-122107-2

Date Collected: 02/19/16 12:53

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/15/16 06:03	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 06:03	1
Nonachlorobiphenyl	0.50	U	0.50		ug/L		03/02/16 16:01	03/15/16 06:03	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/15/16 06:03	1
Monochlorobiphenyl	0.099	U	0.099		ug/L		03/02/16 16:01	03/15/16 06:03	1
DCB Decachlorobiphenyl	0.50	U	0.50		ug/L		03/02/16 16:01	03/15/16 06:03	1
Dichlorobiphenyl	0.099	U	0.099		ug/L		03/02/16 16:01	03/15/16 06:03	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 06:03	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 06:03	1
Trichlorobiphenyl	0.099	U	0.099		ug/L		03/02/16 16:01	03/15/16 06:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	64		25 - 113				03/02/16 16:01	03/15/16 06:03	1



AWD
3/17/16

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-1M-0216

Lab Sample ID: 680-122107-3

Date Collected: 02/19/16 13:38

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.29	U	0.29		ug/L		03/02/16 16:01	03/15/16 06:32	1
Hexachlorobiphenyl	0.19	U	0.19		ug/L		03/02/16 16:01	03/15/16 06:32	1
Nonachlorobiphenyl	0.48	U	0.48		ug/L		03/02/16 16:01	03/15/16 06:32	1
Octachlorobiphenyl	0.29	U	0.29		ug/L		03/02/16 16:01	03/15/16 06:32	1
Monochlorobiphenyl	0.58		0.096		ug/L		03/02/16 16:01	03/15/16 06:32	1
DCB Decachlorobiphenyl	0.48	U	0.48		ug/L		03/02/16 16:01	03/15/16 06:32	1
Dichlorobiphenyl	0.096	U	0.096		ug/L		03/02/16 16:01	03/15/16 06:32	1
Pentachlorobiphenyl	0.19	U	0.19		ug/L		03/02/16 16:01	03/15/16 06:32	1
Tetrachlorobiphenyl	0.19	U	0.19		ug/L		03/02/16 16:01	03/15/16 06:32	1
Trichlorobiphenyl	0.096	U	0.096		ug/L		03/02/16 16:01	03/15/16 06:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	67		25 - 113				03/02/16 16:01	03/15/16 06:32	1



AWP
3/17/16

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-1S-0216

Lab Sample ID: 680-122107-4

Date Collected: 02/19/16 14:10

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/15/16 07:58	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 07:58	1
Nonachlorobiphenyl	0.50	U	0.50		ug/L		03/03/16 15:46	03/15/16 07:58	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/15/16 07:58	1
Monochlorobiphenyl	0.099	U	0.099		ug/L		03/03/16 15:46	03/15/16 07:58	1
DCB Decachlorobiphenyl	0.50	U	0.50		ug/L		03/03/16 15:46	03/15/16 07:58	1
Dichlorobiphenyl	0.099	U	0.099		ug/L		03/03/16 15:46	03/15/16 07:58	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 07:58	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 07:58	1
Trichlorobiphenyl	0.099	U	0.099		ug/L		03/03/16 15:46	03/15/16 07:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	82		25 - 113				03/03/16 15:46	03/15/16 07:58	1



MWD
 3/17/16
 TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-2M-0216

Lab Sample ID: 680-122107-5

Date Collected: 02/19/16 15:06

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.59	U	0.59		ug/L		03/02/16 16:01	03/15/16 07:01	2
Hexachlorobiphenyl	0.39	U	0.39		ug/L		03/02/16 16:01	03/15/16 07:01	2
Nonachlorobiphenyl	0.98	U	0.98		ug/L		03/02/16 16:01	03/15/16 07:01	2
Octachlorobiphenyl	0.59	U	0.59		ug/L		03/02/16 16:01	03/15/16 07:01	2
Monochlorobiphenyl	5.9	D	0.20		ug/L		03/02/16 16:01	03/15/16 07:01	2
DCB Decachlorobiphenyl	0.98	U	0.98		ug/L		03/02/16 16:01	03/15/16 07:01	2
Dichlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 07:01	2
Pentachlorobiphenyl	0.39	U	0.39		ug/L		03/02/16 16:01	03/15/16 07:01	2
Tetrachlorobiphenyl	0.39	U	0.39		ug/L		03/02/16 16:01	03/15/16 07:01	2
Trichlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 07:01	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	70		25 - 113				03/02/16 16:01	03/15/16 07:01	2

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AND
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TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Client Sample ID: PMA-MW-2M-0216-AD

Lab Sample ID: 680-122107-6

Date Collected: 02/19/16 15:06

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.60	U	0.60		ug/L		03/02/16 16:01	03/15/16 04:38	2
Hexachlorobiphenyl	0.40	U	0.40		ug/L		03/02/16 16:01	03/15/16 04:38	2
Nonachlorobiphenyl	0.99	U	0.99		ug/L		03/02/16 16:01	03/15/16 04:38	2
Octachlorobiphenyl	0.60	U	0.60		ug/L		03/02/16 16:01	03/15/16 04:38	2
Monochlorobiphenyl	5.6	U	0.20		ug/L		03/02/16 16:01	03/15/16 04:38	2
DCB Decachlorobiphenyl	0.99	U	0.99		ug/L		03/02/16 16:01	03/15/16 04:38	2
Dichlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 04:38	2
Pentachlorobiphenyl	0.40	U	0.40		ug/L		03/02/16 16:01	03/15/16 04:38	2
Tetrachlorobiphenyl	0.40	U	0.40		ug/L		03/02/16 16:01	03/15/16 04:38	2
Trichlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 04:38	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	80		25 - 113				03/02/16 16:01	03/15/16 04:38	2



TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-2S-0216

Lab Sample ID: 680-122107-7

Date Collected: 02/19/16 15:38

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/15/16 08:26	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 08:26	1
Nonachlorobiphenyl	0.49	U	0.49		ug/L		03/03/16 15:46	03/15/16 08:26	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/15/16 08:26	1
Monochlorobiphenyl	0.099	U	0.099		ug/L		03/03/16 15:46	03/15/16 08:26	1
DCB Decachlorobiphenyl	0.49	U	0.49		ug/L		03/03/16 15:46	03/15/16 08:26	1
Dichlorobiphenyl	0.099	U	0.099		ug/L		03/03/16 15:46	03/15/16 08:26	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 08:26	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 08:26	1
Trichlorobiphenyl	0.099	U	0.099		ug/L		03/03/16 15:46	03/15/16 08:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	77		25 - 113				03/03/16 15:46	03/15/16 08:26	1



TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Client Sample ID: PMA-MW-2S-0216-EB

Lab Sample ID: 680-122107-8

Date Collected: 02/19/16 15:55

Matrix: Water

Date Received: 02/20/16 09:54

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/15/16 08:55	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 08:55	1
Nonachlorobiphenyl	0.50	U	0.50		ug/L		03/03/16 15:46	03/15/16 08:55	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/15/16 08:55	1
Monochlorobiphenyl	0.10	U	0.10		ug/L		03/03/16 15:46	03/15/16 08:55	1
DCB Decachlorobiphenyl	0.50	U	0.50		ug/L		03/03/16 15:46	03/15/16 08:55	1
Dichlorobiphenyl	0.10	U	0.10		ug/L		03/03/16 15:46	03/15/16 08:55	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 08:55	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/15/16 08:55	1
Trichlorobiphenyl	0.10	U	0.10		ug/L		03/03/16 15:46	03/15/16 08:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	82		25 - 113				03/03/16 15:46	03/15/16 08:55	1



AWD
3/17/16

TestAmerica Savannah

QC Sample Results

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Lab Sample ID: MB 680-423555/21-A
Matrix: Water
Analysis Batch: 424245

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423555

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/08/16 11:50	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/08/16 11:50	1
Nonachlorobiphenyl	0.50	U	0.50		ug/L		03/02/16 16:01	03/08/16 11:50	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/08/16 11:50	1
Monochlorobiphenyl	0.10	U	0.10		ug/L		03/02/16 16:01	03/08/16 11:50	1
DCB Decachlorobiphenyl	0.50	U	0.50		ug/L		03/02/16 16:01	03/08/16 11:50	1
Dichlorobiphenyl	0.10	U	0.10		ug/L		03/02/16 16:01	03/08/16 11:50	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/08/16 11:50	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/08/16 11:50	1
Trichlorobiphenyl	0.10	U	0.10		ug/L		03/02/16 16:01	03/08/16 11:50	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Decachlorobiphenyl-13C12	73		25 - 113	03/02/16 16:01	03/08/16 11:50	1

Lab Sample ID: LCS 680-423555/22-A
Matrix: Water
Analysis Batch: 424245

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423555
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Hexachlorobiphenyl	4.00	2.99		ug/L		75	62 - 130
Nonachlorobiphenyl	10.0	13.2		ug/L		132	70 - 195
Octachlorobiphenyl	6.00	4.66		ug/L		78	64 - 130
Monochlorobiphenyl	2.00	1.52		ug/L		76	42 - 130
DCB Decachlorobiphenyl	10.0	7.86		ug/L		79	59 - 130
Dichlorobiphenyl	2.00	1.56		ug/L		78	49 - 130
Pentachlorobiphenyl	4.00	3.09		ug/L		77	63 - 130
Tetrachlorobiphenyl	4.00	2.99		ug/L		75	54 - 130
Trichlorobiphenyl	2.00	1.56		ug/L		78	51 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Decachlorobiphenyl-13C12	74		25 - 113

Lab Sample ID: MB 680-423715/9-A
Matrix: Water
Analysis Batch: 425044

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423715

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/14/16 20:24	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/14/16 20:24	1
Nonachlorobiphenyl	0.50	U	0.50		ug/L		03/03/16 15:46	03/14/16 20:24	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/03/16 15:46	03/14/16 20:24	1
Monochlorobiphenyl	0.10	U	0.10		ug/L		03/03/16 15:46	03/14/16 20:24	1
DCB Decachlorobiphenyl	0.50	U	0.50		ug/L		03/03/16 15:46	03/14/16 20:24	1
Dichlorobiphenyl	0.10	U	0.10		ug/L		03/03/16 15:46	03/14/16 20:24	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/14/16 20:24	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/03/16 15:46	03/14/16 20:24	1

TestAmerica Savannah

AWD 3/17/16

QC Sample Results

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS) (Continued)

Lab Sample ID: MB 680-423715/9-A
Matrix: Water
Analysis Batch: 425044

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423715

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Trichlorobiphenyl	0.10	U	0.10		ug/L		03/03/16 15:46	03/14/16 20:24	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Decachlorobiphenyl-13C12	87		25 - 113	03/03/16 15:46	03/14/16 20:24	1

Lab Sample ID: LCS 680-423715/10-A
Matrix: Water
Analysis Batch: 425044

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423715

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Heptachlorobiphenyl	6.00	5.31		ug/L		89	62 - 130
Hexachlorobiphenyl	4.00	3.47		ug/L		87	62 - 130
Nonachlorobiphenyl	10.0	13.7		ug/L		137	70 - 195
Octachlorobiphenyl	6.00	5.35		ug/L		89	64 - 130
Monochlorobiphenyl	2.00	1.60		ug/L		80	42 - 130
DCB Decachlorobiphenyl	10.0	8.80		ug/L		88	59 - 130
Dichlorobiphenyl	2.00	1.63		ug/L		81	49 - 130
Pentachlorobiphenyl	4.00	3.45		ug/L		86	63 - 130
Tetrachlorobiphenyl	4.00	3.47		ug/L		87	54 - 130
Trichlorobiphenyl	2.00	1.68		ug/L		84	51 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Decachlorobiphenyl-13C12	87		25 - 113

Lab Sample ID: 680-122107-4 MS
Matrix: Water
Analysis Batch: 425054

Client Sample ID: PMA-MW-1S-0216
Prep Type: Total/NA
Prep Batch: 423715

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Heptachlorobiphenyl	0.30	U	5.73	4.87		ug/L		85	62 - 130
Hexachlorobiphenyl	0.20	U	3.82	3.21		ug/L		84	62 - 130
Nonachlorobiphenyl	0.50	U	9.55	12.6		ug/L		132	70 - 195
Octachlorobiphenyl	0.30	U	5.73	4.86		ug/L		85	64 - 130
Monochlorobiphenyl	0.099	U	1.91	1.26		ug/L		66	42 - 130
DCB Decachlorobiphenyl	0.50	U	9.55	7.95		ug/L		83	59 - 130
Dichlorobiphenyl	0.099	U	1.91	1.38		ug/L		72	49 - 130
Pentachlorobiphenyl	0.20	U	3.82	4.72		ug/L		124	63 - 130
Tetrachlorobiphenyl	0.20	U	3.82	2.95		ug/L		77	54 - 130
Trichlorobiphenyl	0.099	U	1.91	1.46		ug/L		76	51 - 130

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
Decachlorobiphenyl-13C12	79		25 - 113

AWD 3/17/16
TestAmerica Savannah

QC Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
 SDG: KPM069

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS) (Continued)

Lab Sample ID: 680-122107-4 MSD
 Matrix: Water
 Analysis Batch: 425054

Client Sample ID: PMA-MW-1S-0216
 Prep Type: Total/NA
 Prep Batch: 423715
 %Rec. RPD

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Heptachlorobiphenyl	0.30	U	5.99	4.86		ug/L		81	62 - 130	0	40
Hexachlorobiphenyl	0.20	U	3.99	3.20		ug/L		80	62 - 130	0	40
Nonachlorobiphenyl	0.50	U	9.99	13.1		ug/L		131	70 - 195	4	40
Octachlorobiphenyl	0.30	U	5.99	5.09		ug/L		85	64 - 130	5	40
Monochlorobiphenyl	0.099	U	2.00	1.31		ug/L		66	42 - 130	5	40
DCB Decachlorobiphenyl	0.50	U	9.99	7.94		ug/L		80	59 - 130	0	40
Dichlorobiphenyl	0.099	U	2.00	1.44		ug/L		72	49 - 130	4	40
Pentachlorobiphenyl	0.20	U	3.99	4.78		ug/L		120	63 - 130	1	40
Tetrachlorobiphenyl	0.20	U	3.99	2.98		ug/L		75	54 - 130	1	40
Trichlorobiphenyl	0.099	U	2.00	1.48		ug/L		74	51 - 130	2	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Decachlorobiphenyl-13C12	78		25 - 113

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QC Association Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

GC/MS Semi VOA

Prep Batch: 423555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122107-1	PMA-MW-6D-0216	Total/NA	Water	680	
680-122107-2	PMA-MW-5M-0216	Total/NA	Water	680	
680-122107-3	PMA-MW-1M-0216	Total/NA	Water	680	
680-122107-5	PMA-MW-2M-0216	Total/NA	Water	680	
680-122107-6	PMA-MW-2M-0216-AD	Total/NA	Water	680	
LCS 680-423555/22-A	Lab Control Sample	Total/NA	Water	680	
MB 680-423555/21-A	Method Blank	Total/NA	Water	680	

Prep Batch: 423715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122107-4	PMA-MW-1S-0216	Total/NA	Water	680	
680-122107-4 MS	PMA-MW-1S-0216	Total/NA	Water	680	
680-122107-4 MSD	PMA-MW-1S-0216	Total/NA	Water	680	
680-122107-7	PMA-MW-2S-0216	Total/NA	Water	680	
680-122107-8	PMA-MW-2S-0216-EB	Total/NA	Water	680	
LCS 680-423715/10-A	Lab Control Sample	Total/NA	Water	680	
MB 680-423715/9-A	Method Blank	Total/NA	Water	680	

Analysis Batch: 424245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-423555/22-A	Lab Control Sample	Total/NA	Water	680	423555
MB 680-423555/21-A	Method Blank	Total/NA	Water	680	423555

Analysis Batch: 425044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-423715/10-A	Lab Control Sample	Total/NA	Water	680	423715
MB 680-423715/9-A	Method Blank	Total/NA	Water	680	423715

Analysis Batch: 425054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122107-1	PMA-MW-6D-0216	Total/NA	Water	680	423555
680-122107-2	PMA-MW-5M-0216	Total/NA	Water	680	423555
680-122107-3	PMA-MW-1M-0216	Total/NA	Water	680	423555
680-122107-4	PMA-MW-1S-0216	Total/NA	Water	680	423715
680-122107-4 MS	PMA-MW-1S-0216	Total/NA	Water	680	423715
680-122107-4 MSD	PMA-MW-1S-0216	Total/NA	Water	680	423715
680-122107-5	PMA-MW-2M-0216	Total/NA	Water	680	423555
680-122107-6	PMA-MW-2M-0216-AD	Total/NA	Water	680	423555
680-122107-7	PMA-MW-2S-0216	Total/NA	Water	680	423715
680-122107-8	PMA-MW-2S-0216-EB	Total/NA	Water	680	423715

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Lab Chronicle

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Client Sample ID: PMA-MW-6D-0216

Lab Sample ID: 680-122107-1

Date Collected: 02/19/16 11:37

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1045.5 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		5	1045.5 mL	1.0 mL	425054	03/15/16 10:21	NED	TAL SAV

Client Sample ID: PMA-MW-5M-0216

Lab Sample ID: 680-122107-2

Date Collected: 02/19/16 12:53

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1009.3 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		1	1009.3 mL	1.0 mL	425054	03/15/16 06:03	NED	TAL SAV

Client Sample ID: PMA-MW-1M-0216

Lab Sample ID: 680-122107-3

Date Collected: 02/19/16 13:38

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1044.4 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		1	1044.4 mL	1.0 mL	425054	03/15/16 06:32	NED	TAL SAV

Client Sample ID: PMA-MW-1S-0216

Lab Sample ID: 680-122107-4

Date Collected: 02/19/16 14:10

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1008 mL	1.0 mL	423715	03/03/16 15:46	RBS	TAL SAV
Total/NA	Analysis	680		1	1008 mL	1.0 mL	425054	03/15/16 07:58	NED	TAL SAV

Client Sample ID: PMA-MW-2M-0216

Lab Sample ID: 680-122107-5

Date Collected: 02/19/16 15:06

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1016.3 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		2	1016.3 mL	1.0 mL	425054	03/15/16 07:01	NED	TAL SAV

Client Sample ID: PMA-MW-2M-0216-AD

Lab Sample ID: 680-122107-6

Date Collected: 02/19/16 15:06

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1006 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		2	1006 mL	1.0 mL	425054	03/15/16 04:38	NED	TAL SAV

TestAmerica Savannah

AWD 3/17/16



Lab Chronicle

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Client Sample ID: PMA-MW-2S-0216

Lab Sample ID: 680-122107-7

Date Collected: 02/19/16 15:38

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1013.2 mL	1.0 mL	423715	03/03/16 15:46	RBS	TAL SAV
Total/NA	Analysis	680		1	1013.2 mL	1.0 mL	425054	03/15/16 08:26	NED	TAL SAV

Client Sample ID: PMA-MW-2S-0216-EB

Lab Sample ID: 680-122107-8

Date Collected: 02/19/16 15:55

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			997.5 mL	1.0 mL	423715	03/03/16 15:46	RBS	TAL SAV
Total/NA	Analysis	680		1	997.5 mL	1.0 mL	425054	03/15/16 08:55	NED	TAL SAV

Laboratory References:

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

AWD 3/17/16
TestAmerica Savannah

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-122107-1
SDG Number: KPM069

Login Number: 122107

List Number: 1

Creator: Banda, Christy S

List Source: TestAmerica Savannah

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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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MWD
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Certification Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122107-1
SDG: KPM069

Laboratory: TestAmerica Savannah

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	200022	11-30-16

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TestAmerica Savannah

SDG KPM070

Sample Results from:

**PMA-MW-3S
PMA-MW-3M
PMA-MW-4S
PMW-MW-4D**



Level IV Data Validation Summary
Solutia Inc., W.G. Krummrich, Sauget, Illinois
1Q16 PCB Groundwater Quality Assessment

Company Name: Golder Associates
Project Name: WGK-1Q16 PCB
Reviewer: A. Derhake
Laboratory: TestAmerica
SDG#: KPM070
Matrix: Water

Project Manager: A. Derhake
Project Number: 140-3345
Sample Date: February 2016

Analytical Method: PCB (680)

Sample Names: PMA-MW-3M-0216, PMA-MW-3S-0216, PMA-MW-4D-0216, and PMA-MW-4S-0216

Table with 4 columns: Field Information, YES, NO, NA. Rows include 'a) Sampling dates noted?' and 'b) Does the laboratory narrative indicate deficiencies?'.

Comments:

PCBs: Sample PMA-MW-4S-0216 required a dilution prior to analysis, reporting limits were adjusted accordingly.

Table with 4 columns: Chain-of-Custody (COC), YES, NO, NA. Rows include 'a) Was the COC signed by both field and laboratory personnel?' and 'b) Were samples received in good condition?'.

Comments: Samples were received at 3.2°C, within the 4°C +/- 2°C criteria.

Table with 4 columns: General, YES, NO, NA. Rows include 'a) Were hold times met for sample analysis?', 'b) Were the correct preservatives used?', 'c) Was the correct method used?', and 'd) Any sample dilutions noted?'.

Comments: Detections in diluted analysis were qualified.

Table with 4 columns: Calibrations, YES, NO, NA. Rows include 'a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards?' and 'b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards?'.

Comments: Analytes of interest met calibration standards.

Table with 4 columns: Blanks, YES, NO, NA. Rows include 'a) Were blanks (trip, equipment, method) performed at required frequency?' and 'b) Were analytes detected in any blanks?'.

Comments: None





Matrix Spike/Matrix Spike Duplicate (MS/MSD)

YES NO NA

- a) Was MS/MSD accuracy criteria met? YES NO NA
- b) Was MS/MSD precision criteria met? YES NO NA

Comments: None

Laboratory Control Sample (LCS)

YES NO NA

- a) LCS analyzed at the appropriate frequency and met appropriate standards? YES NO NA

Comments: None

Surrogate (System Monitoring) Compounds

YES NO NA

- a) Surrogate compounds analyzed at the appropriate frequency and met appropriate standards? YES NO NA

Comments: None

Duplicates

YES NO NA

- a) Were field duplicates collected? YES NO NA
- b) Was field duplicate precision criteria met? YES NO NA

Comments: None

Additional Comments: None

Qualifications:

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Heptachlorobiphenyl, Hexachlorobiphenyl, Monochlorobiphenyl, Dichlorobiphenyl, Pentachlorobiphenyl, Tetrachlorobiphenyl, and Trichlorobiphenyl	D	PMA-MW-4S

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: 680-122161-1
TestAmerica Sample Delivery Group: KPM070
Client Project/Site: 1Q16 PCB GW Sampling - 1403345

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

Attn: Mr. Jerry Rinaldi

Michele Kersey

Authorized for release by:
3/16/2016 5:37:21 PM

Michele Kersey, Project Manager I
(912)354-7858
michele.kersey@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC 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.

*MWP
3/17/16*

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AWD
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Case Narrative

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Job ID: 680-122161-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Solutia Inc.

Project: 1Q16 PCB GW Sampling - 1403345

Report Number: 680-122161-1

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 2/23/2016 9:17 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

POLYCHLORINATED BIPHENYLS (PCBS)

Samples PMA-MW-3M-0216 (680-122161-1), PMA-MW-3S-0216 (680-122161-2), PMA-MW-4D-0216 (680-122161-3) and PMA-MW-4S-0216 (680-122161-4) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA Method 680. The samples were prepared on 03/02/2016 and analyzed on 03/15/2016.

Sample PMA-MW-4S-0216 (680-122161-4)[5X] 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.

Sample Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-122161-1	PMA-MW-3M-0216	Water	02/22/16 09:26	02/23/16 09:17
680-122161-2	PMA-MW-3S-0216	Water	02/22/16 09:53	02/23/16 09:17
680-122161-3	PMA-MW-4D-0216	Water	02/22/16 10:33	02/23/16 09:17
680-122161-4	PMA-MW-4S-0216	Water	02/22/16 11:05	02/23/16 09:17

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Method Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Method	Method Description	Protocol	Laboratory
680	Polychlorinated Biphenyls (PCBs) (GC/MS)	EPA	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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



AND3/17/16
TestAmerica Savannah

Definitions/Glossary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)



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TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
 SDG: KPM070

Client Sample ID: PMA-MW-3M-0216

Lab Sample ID: 680-122161-1

Date Collected: 02/22/16 09:26

Matrix: Water

Date Received: 02/23/16 09:17

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.29	U	0.29		ug/L		03/02/16 16:01	03/15/16 03:40	1
Hexachlorobiphenyl	0.19	U	0.19		ug/L		03/02/16 16:01	03/15/16 03:40	1
Nonachlorobiphenyl	0.49	U	0.49		ug/L		03/02/16 16:01	03/15/16 03:40	1
Octachlorobiphenyl	0.29	U	0.29		ug/L		03/02/16 16:01	03/15/16 03:40	1
Monochlorobiphenyl	0.79		0.097		ug/L		03/02/16 16:01	03/15/16 03:40	1
DCB Decachlorobiphenyl	0.49	U	0.49		ug/L		03/02/16 16:01	03/15/16 03:40	1
Dichlorobiphenyl	0.097	U	0.097		ug/L		03/02/16 16:01	03/15/16 03:40	1
Pentachlorobiphenyl	0.19	U	0.19		ug/L		03/02/16 16:01	03/15/16 03:40	1
Tetrachlorobiphenyl	0.19	U	0.19		ug/L		03/02/16 16:01	03/15/16 03:40	1
Trichlorobiphenyl	0.097	U	0.097		ug/L		03/02/16 16:01	03/15/16 03:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	72		25 - 113				03/02/16 16:01	03/15/16 03:40	1



MWD
 3/17/16

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
 SDG: KPM070

Client Sample ID: PMA-MW-3S-0216

Lab Sample ID: 680-122161-2

Date Collected: 02/22/16 09:53

Matrix: Water

Date Received: 02/23/16 09:17

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/15/16 04:09	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 04:09	1
Nonachlorobiphenyl	0.49	U	0.49		ug/L		03/02/16 16:01	03/15/16 04:09	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/15/16 04:09	1
Monochlorobiphenyl	0.099	U	0.099		ug/L		03/02/16 16:01	03/15/16 04:09	1
DCB Decachlorobiphenyl	0.49	U	0.49		ug/L		03/02/16 16:01	03/15/16 04:09	1
Dichlorobiphenyl	0.099	U	0.099		ug/L		03/02/16 16:01	03/15/16 04:09	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 04:09	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 04:09	1
Trichlorobiphenyl	0.099	U	0.099		ug/L		03/02/16 16:01	03/15/16 04:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	83		25 - 113				03/02/16 16:01	03/15/16 04:09	1

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RMP
3/17/16

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
 SDG: KPM070

Client Sample ID: PMA-MW-4D-0216

Lab Sample ID: 680-122161-3

Date Collected: 02/22/16 10:33

Matrix: Water

Date Received: 02/23/16 09:17

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	0.29	U	0.29		ug/L		03/02/16 16:01	03/15/16 05:06	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 05:06	1
Nonachlorobiphenyl	0.49	U	0.49		ug/L		03/02/16 16:01	03/15/16 05:06	1
Octachlorobiphenyl	0.29	U	0.29		ug/L		03/02/16 16:01	03/15/16 05:06	1
Monochlorobiphenyl	1.3		0.098		ug/L		03/02/16 16:01	03/15/16 05:06	1
DCB Decachlorobiphenyl	0.49	U	0.49		ug/L		03/02/16 16:01	03/15/16 05:06	1
Dichlorobiphenyl	1.3		0.098		ug/L		03/02/16 16:01	03/15/16 05:06	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 05:06	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/15/16 05:06	1
Trichlorobiphenyl	0.098	U	0.098		ug/L		03/02/16 16:01	03/15/16 05:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	79		25 - 113				03/02/16 16:01	03/15/16 05:06	1



AMG 3/17/16

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
 Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
 SDG: KPM070

Client Sample ID: PMA-MW-4S-0216

Lab Sample ID: 680-122161-4

Date Collected: 02/22/16 11:05

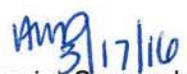
Matrix: Water

Date Received: 02/23/16 09:17

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlorobiphenyl	6.0	D	1.5		ug/L		03/02/16 16:01	03/15/16 16:48	5
Hexachlorobiphenyl	12	D	0.98		ug/L		03/02/16 16:01	03/15/16 16:48	5
Nonachlorobiphenyl	2.5	U	2.5		ug/L		03/02/16 16:01	03/15/16 16:48	5
Octachlorobiphenyl	1.5	U	1.5		ug/L		03/02/16 16:01	03/15/16 16:48	5
Monochlorobiphenyl	2.2	D	0.49		ug/L		03/02/16 16:01	03/15/16 16:48	5
DCB Decachlorobiphenyl	2.5	U	2.5		ug/L		03/02/16 16:01	03/15/16 16:48	5
Dichlorobiphenyl	9.3	D	0.49		ug/L		03/02/16 16:01	03/15/16 16:48	5
Pentachlorobiphenyl	9.1	D	0.98		ug/L		03/02/16 16:01	03/15/16 16:48	5
Tetrachlorobiphenyl	12	D	0.98		ug/L		03/02/16 16:01	03/15/16 16:48	5
Trichlorobiphenyl	18	D	0.49		ug/L		03/02/16 16:01	03/15/16 16:48	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Decachlorobiphenyl-13C12	55		25 - 113				03/02/16 16:01	03/15/16 16:48	5

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 TestAmerica Savannah

QC Sample Results

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Method: 680 - Polychlorinated Biphenyls (PCBs) (GC/MS)

Lab Sample ID: MB 680-423555/21-A
Matrix: Water
Analysis Batch: 424245

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423555

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Heptachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/08/16 11:50	1
Hexachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/08/16 11:50	1
Nonachlorobiphenyl	0.50	U	0.50		ug/L		03/02/16 16:01	03/08/16 11:50	1
Octachlorobiphenyl	0.30	U	0.30		ug/L		03/02/16 16:01	03/08/16 11:50	1
Monochlorobiphenyl	0.10	U	0.10		ug/L		03/02/16 16:01	03/08/16 11:50	1
DCB Decachlorobiphenyl	0.50	U	0.50		ug/L		03/02/16 16:01	03/08/16 11:50	1
Dichlorobiphenyl	0.10	U	0.10		ug/L		03/02/16 16:01	03/08/16 11:50	1
Pentachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/08/16 11:50	1
Tetrachlorobiphenyl	0.20	U	0.20		ug/L		03/02/16 16:01	03/08/16 11:50	1
Trichlorobiphenyl	0.10	U	0.10		ug/L		03/02/16 16:01	03/08/16 11:50	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Decachlorobiphenyl-13C12	73		25 - 113	03/02/16 16:01	03/08/16 11:50	1

Lab Sample ID: LCS 680-423555/22-A
Matrix: Water
Analysis Batch: 424245

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423555

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Heptachlorobiphenyl	6.00	4.54		ug/L		76	62 - 130
Hexachlorobiphenyl	4.00	2.99		ug/L		75	62 - 130
Nonachlorobiphenyl	10.0	13.2		ug/L		132	70 - 195
Octachlorobiphenyl	6.00	4.66		ug/L		78	64 - 130
Monochlorobiphenyl	2.00	1.52		ug/L		76	42 - 130
DCB Decachlorobiphenyl	10.0	7.86		ug/L		79	59 - 130
Dichlorobiphenyl	2.00	1.56		ug/L		78	49 - 130
Pentachlorobiphenyl	4.00	3.09		ug/L		77	63 - 130
Tetrachlorobiphenyl	4.00	2.99		ug/L		75	54 - 130
Trichlorobiphenyl	2.00	1.56		ug/L		78	51 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Decachlorobiphenyl-13C12	74		25 - 113

AMM 3/17/16
TestAmerica Savannah

QC Association Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

GC/MS Semi VOA

Prep Batch: 423555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122161-1	PMA-MW-3M-0216	Total/NA	Water	680	
680-122161-2	PMA-MW-3S-0216	Total/NA	Water	680	
680-122161-3	PMA-MW-4D-0216	Total/NA	Water	680	
680-122161-4	PMA-MW-4S-0216	Total/NA	Water	680	
LCS 680-423555/22-A	Lab Control Sample	Total/NA	Water	680	
MB 680-423555/21-A	Method Blank	Total/NA	Water	680	

Analysis Batch: 424245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-423555/22-A	Lab Control Sample	Total/NA	Water	680	423555
MB 680-423555/21-A	Method Blank	Total/NA	Water	680	423555

Analysis Batch: 425054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122161-1	PMA-MW-3M-0216	Total/NA	Water	680	423555
680-122161-2	PMA-MW-3S-0216	Total/NA	Water	680	423555
680-122161-3	PMA-MW-4D-0216	Total/NA	Water	680	423555

Analysis Batch: 425206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122161-4	PMA-MW-4S-0216	Total/NA	Water	680	423555

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AWD 3/17/16
TestAmerica Savannah

Lab Chronicle

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Client Sample ID: PMA-MW-3M-0216

Lab Sample ID: 680-122161-1

Date Collected: 02/22/16 09:26

Matrix: Water

Date Received: 02/23/16 09:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1027.5 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		1	1027.5 mL	1.0 mL	425054	03/15/16 03:40	NED	TAL SAV

Client Sample ID: PMA-MW-3S-0216

Lab Sample ID: 680-122161-2

Date Collected: 02/22/16 09:53

Matrix: Water

Date Received: 02/23/16 09:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1010.3 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		1	1010.3 mL	1.0 mL	425054	03/15/16 04:09	NED	TAL SAV

Client Sample ID: PMA-MW-4D-0216

Lab Sample ID: 680-122161-3

Date Collected: 02/22/16 10:33

Matrix: Water

Date Received: 02/23/16 09:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1018.7 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		1	1018.7 mL	1.0 mL	425054	03/15/16 05:06	NED	TAL SAV

Client Sample ID: PMA-MW-4S-0216

Lab Sample ID: 680-122161-4

Date Collected: 02/22/16 11:05

Matrix: Water

Date Received: 02/23/16 09:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	680			1016.3 mL	1.0 mL	423555	03/02/16 16:01	RBS	TAL SAV
Total/NA	Analysis	680		5	1016.3 mL	1.0 mL	425206	03/15/16 16:48	NED	TAL SAV

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: NPDES RCR Other: Emily White

Client Contact Golder Associates Inc. 820 South Main Street St. Charles, MO 63301 (636) 724-9191 Phone (636) 724-9323 <u>1016</u> FAX Project Name: 205 PCB GW Sampling-1403345 Site: Solutia WG Krummrich Facility P O # 42447936		Project Manager: Amanda Derhake Tel/Fax: 636-724-9191		Site Contact: <u>Len Emmer</u> Lab Contact: Michele Kersey		Date: <u>02/22/16</u> Carrier: FedEx		COC No: <u>1</u> of <u>1</u> COCs	
Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR <input type="checkbox"/> WORKING TAT if different from Below Standard <input type="checkbox"/> 2 <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Type (C=Comp, G=Grab)		Matrix		# of Cont.		Filtered Sample (Y/N)	
Sample Identification		Sample Date	Sample Time					Perform MS/MSD (Y/N)	Total PCBs by 680
<u>PMA-MW-3M-0216</u>		<u>02/22/16</u>	<u>0926</u>	<u>G</u>	<u>W</u>	<u>2</u>	<u>N</u>	<u>2</u>	<u>2</u>
<u>PMA-MW-3S-0216</u>		<u>I</u>	<u>0953</u>	<u>I</u>	<u>I</u>	<u>2</u>	<u>M</u>	<u>2</u>	<u>2</u>
<u>PMA-MW-4D-0216</u>		<u>I</u>	<u>1033</u>	<u>I</u>	<u>I</u>	<u>2</u>	<u>N</u>	<u>2</u>	<u>2</u>
<u>PMA-MW-4S-0216</u>		<u>I</u>	<u>1105</u>	<u>I</u>	<u>I</u>	<u>2</u>	<u>N</u>	<u>2</u>	<u>2</u>
Sample Specific Notes:									
 680-122161 Chain of Custody									
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				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammab <input type="checkbox"/> Sktn <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for: _____ Months				
Special Instructions/QC Requirements & Comments: <div style="text-align: right; font-size: 2em; font-family: cursive;"> 680422161 28(F)3.28 </div>									
Custody Seals Intact: <input type="checkbox"/> No		Custody Seal No: <u>672747</u>		Cooler Temp. (°C): Obs'd: _____		Therm ID No.: _____			
Relinquished by: <u>Suzanne [Signature]</u>		Company: <u>Golder</u>		Date/Time: <u>02/22/16/1415</u>		Received by: <u>[Signature]</u>		Company: <u>Saw.</u>	
Relinquished by: <u>[Signature]</u>		Company: _____		Date/Time: _____		Received by: _____		Company: _____	
Relinquished by: <u>[Signature]</u>		Company: _____		Date/Time: _____		Received in Laboratory by: _____		Company: _____	

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Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-122161-1

SDG Number: KPM070

Login Number: 122161

List Number: 1

Creator: Banda, Christy S

List Source: TestAmerica Savannah

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ 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?	True	
There are no discrepancies between the containers received and the COC.	N/A	
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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AMP
3/17/16

Certification Summary

Client: Solutia Inc.
Project/Site: 1Q16 PCB GW Sampling - 1403345

TestAmerica Job ID: 680-122161-1
SDG: KPM070

Laboratory: TestAmerica Savannah

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	200022	11-30-16

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MMP
TestAmerica Savannah
3/17/16

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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South America	+ 55 21 3095 9500

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